QLeisure,
London Rd, Albourne, Hassocks, BN6 9BQ

Surface Water Drainage Strategy

For

The Padel Club

Document Control Sheet

QLeisure,

London Rd, Albourne, Hassocks, BN6 9BQ

The Padel Club

This document has been issued and amended as follows:

Date	Issue	Prepared by	Approved by
29 May 2025	Draft	Chris Gray	Phil Allen MCIWEM C.WEM
2 June 2025	Final	Chris Gray	Phil Allen MCIWEM C.WEM
12 November 2025	Final B	Chris Gray	Phil Allen MCIWEM C.WEM
25 November 2025	Final C	Chris Gray	Phil Allen MCIWEM C.WEM
27 November 2025	Final D	Chris Gray	Phil Allen MCIWEM C.WEM

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Appendices

1.0 Introduction

1.1 This Surface Water Drainage Strategy has been produced by Motion on behalf of The Padel Club. It supports the planning application for the construction of 4no. indoor and 2no. outdoor padel courts, along with an outdoor seating area and social spaces at QLeisure, London Rd, Albourne, Hassocks, BN6 9BQ.

1.2 The site currently consists of an artificial turf football pitch, associated buildings and a gravel path providing pedestrian and bicycle access from an existing car parking area located elsewhere in the wider QLeisure site. A copy of the existing and proposed site layout plans can be found in **Appendix A** and the site location plan can be found in **Appendix B**.

1.3 The site is located within Flood Zone 1 according to the Environment Agency (EA) Flood Map for Planning (**Appendix C**), and the nearest area located in Flood Zone 2 is approximately 230m west southwest of the site. Therefore, the site is considered to be at very low fluvial flood risk.

1.4 With reference to the Risk of Flooding from Surface Water (RoFSW) Extent and Depth Maps shown in **Appendix D**, the site is located in the Very Low surface water flood risk category (less than 1 in 1000 chance of flooding each year).

1.5 This Surface Water Drainage Strategy will define how the site will manage surface water so that the development does not increase flood risk in the area or to neighbouring properties.

1.6 This surface water drainage strategy follows the guidance set out in:

- National Planning Policy Framework (NPPF);
- Technical Guidance to the NPPF;
- CIRIA SuDS Manual 2015 (C753);
- Environment Agency Rainfall Runoff Management for Developments;
- National standards for sustainable drainage systems (SuDS) Guidance Updated 30 July 2025;
- West Sussex County Council's Flood Risk Validation Checklist for Planning Applications; and,
- West Sussex County Council's Surface Water Drainage Proforma.

1.7 This surface water drainage strategy report pertains only to the design of the drainage system for the built site. It does not provide details of how the site will be drained during the construction phase. This is considered to be temporary works and can only be prescribed and provided by the eventual appointed contractor.

1.8 Similarly, this report does not provide information on how the drainage infrastructure will be protected during the construction phase of the project. The provision of this information is, again, the responsibility of the appointed contractor.

2.0 Site Description

Table 2.1 – Site Summary

Site Name	QLeisure
Location	London Rd, Albourne, Hassocks, BN6 9BQ
Grid Reference	526918, 115407
Site Area	0.252 ha
Development Type	Less Vulnerable
Flood Zone	Flood Zone 1
Surface Water Flood Risk	Very Low
Local Water Authority	Southern Water
Local Planning Authority	Mid Sussex District Council (MSDC)
Lead Local Flood Authority	West Sussex County Council (WSCC)

Site Location and Description

2.1 The development site is located in Albourne in the Mid Sussex district of West Sussex. The site currently consists of an artificial turf football pitch, associated buildings and a gravel path providing pedestrian and bicycle access from an existing car parking area located elsewhere in the wider QLeisure site. A copy of the existing and proposed site layout plans can be found in **Appendix A** and the site location plan can be found in **Appendix B**.

Topography

2.2 The elevations in and around the site have been reviewed using topographic levels shown on the proposed site layout plan in **Appendix A** and LiDAR data (2022 LIDAR TQ21ne_DTM_1m TIF File[1]) interrogated using Civil 3D software.

2.3 Overall, the artificial turf football pitch, associated buildings and gravel path area are nearly level, with a nominal slope towards the north and a low point of around 37.55m Above ordnance datum (AOD). The land immediately to the west, north, east and south of the site slopes steeply towards this area.

Geology

2.4 The British Geological Survey (BGS) online 1:50,000 GeoIndex[2] mapping identifies that:

- the superficial geology is HEAD - 'poorly sorted and poorly stratified, angular rock debris and/or clayey hillwash and soil creep, mantling a hillslope and deposited by solifluction and gelifluction processes'[3]; and,
- the bedrock geology is FOLKESTONE FORMATION – 'medium- and coarse-grained, well-sorted cross-bedded sands and weakly cemented sandstones'[4].

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[1] https://environment.data.gov.uk/DefraDataDownload/?Mode=survey

[2] https://www.bgs.ac.uk/map-viewers/geoindex-onshore/

[3] https://webapps.bgs.ac.uk/lexicon/lexicon.cfm?pub=HEAD

[4] https://webapps.bgs.ac.uk/lexicon/lexicon.cfm?pub=FO

2.5 Defra's Magic Map website[5] lists the soil as being both 'freely draining slightly acid loamy soils' and 'slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils'.

2.6 The nearest log in the BGS Geoindex website is for a trial pit excavated in September 1984 approximately 50m east of the site (TQ21NE85[6]). The ground level in the trial pit location was 36.50m AOD; slightly clayey very sandy SILT was recorded to 2.50m below ground level (bgl); and, slightly clayey silty fine to medium SAND with some gravel was recorded to 3.05m bgl. Groundwater was not encountered.

Hydrogeology

2.7 Groundwater Source Protection Zones (SPZ's) are defined around groundwater abstraction sources such as wells, boreholes and springs that are used for public drinking water supply.

2.8 SPZ's show the risk of contamination to groundwater from any activities that might cause pollution in the area. The closer the activity to the source of abstraction, the greater the risk. The maps show three main zones; inner – Zone 1; outer – Zone 2; and total catchment – Zone 3.

2.9 Defra's Magic Map was reviewed to see where the site is in relation to the Groundwater SPZ's, and the site is not within any SPZ's. The superficial geology is listed as both 'Secondary (undifferentiated)' and 'Secondary A' Aquifers, and the solid geology is listed as both 'Principal' and 'Unproductive' Aquifers.

2.10 The Groundwater Vulnerability Map (England) classification is 'High', 'Medium' and 'Medium-High'.

Hydrology

2.11 The EA Statutory Main River Map[7] shows that the nearest statutory main river to the site flows in a north westerly direction approximately 2.8km northwest of the site.

2.12 The EA Statutory Main River Map also shows an ordinary watercourse approximately 50m east of the site.

2.13 Reference to the OS 1:2,500 A ed. 1948-1974 map available to view on the National Library of Scotland Side by Side Georeferenced Maps Viewer Website[8] shows a drain flowing north from an Old Sand Pit close to the western boundary of the site. The drain appears to connect to the aforementioned ordinary watercourse approximately 50m east of the site. Please see **Figure 2.1** on the next page.

Existing Drainage Regime

2.14 A sketch of the existing soakaway serving the existing artificial turf football pitch, associated buildings and gravel path area is included in **Appendix E**. With reference to Section 2.2, it is noted that the existing soakaway is located along the approximate low point of the site.

2.15 Reference has been made to the Proposed soakaways Plan[9] available to view on the MSDC planning portal for discharge of condition application DM/20/3408, which is around 20m south of the site. The Proposed soakaways Plan shows eight eco pods, each draining to a '1 cubic metre' soakaway.

2.16 The Southern Water Wastewater Plan in **Appendix E** shows no assets within the map area.

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[5] https://magic.defra.gov.uk/magicmap.aspx

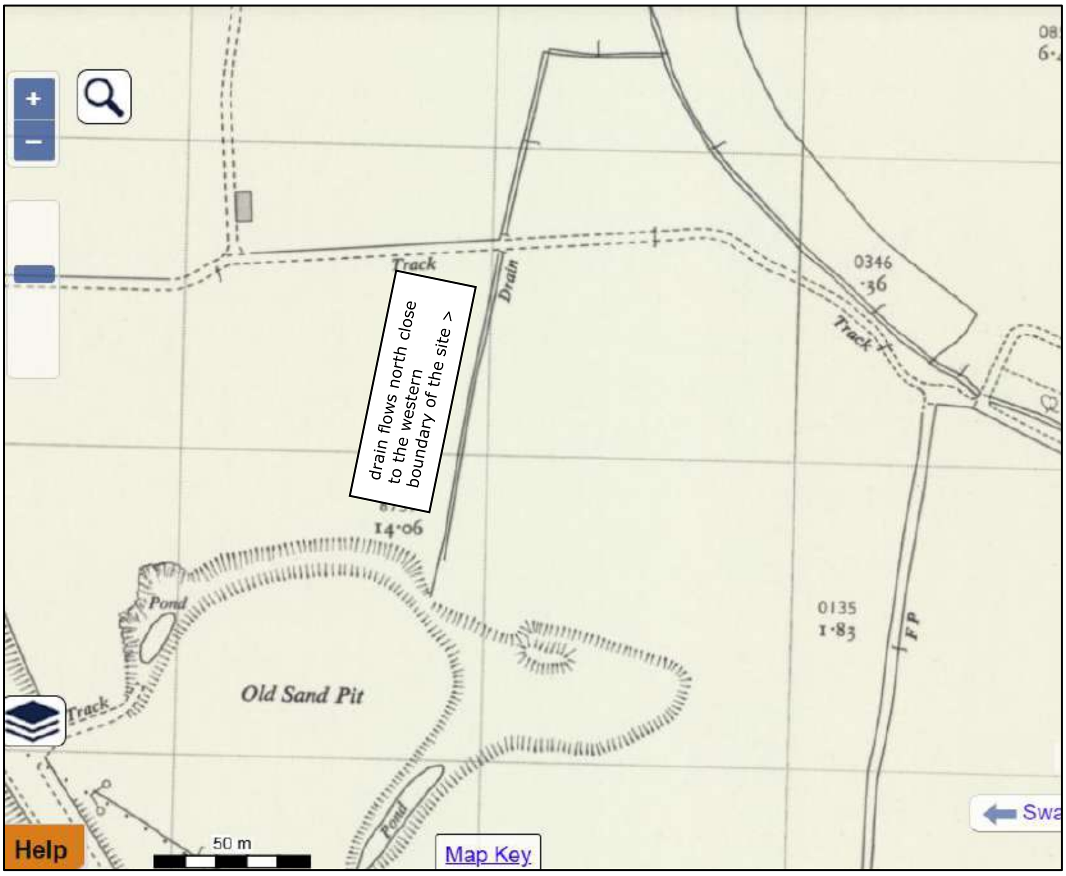
[6] https://api.bgs.ac.uk/sobi-scans/v1/borehole/scans/items/584293

[7] https://www.arcgis.com/apps/webappviewer/index.html?id=17cd53dfc524433980cc333726a56386

[8] https://maps.nls.uk/geo/explore/side-by-side/#zoom=18.9&lat=50.92426&lon=-0.19555&layers=258&right=ESRIWorld

[9] Just Plans, Proposed soakaways - 2020-10-09,

Figure 2.1 - OS 1:2,500 A ed. 1948-1974 map available to view on the National Library of Scotland Side by Side Georeferenced Maps Viewer Website



drain flows north close to the western boundary of the site >

(Reproduced with the permission of the National Library of Scotland)

Infiltration Potential

2.17 The Infiltration Testing Report prepared for the site in line with BRE Digest 365 Revised 2016 in **Appendix F** indicates that infiltration SuDS will be possible for the proposed development at a depth of 1.3m below ground level (bgl) on the basis water emptied via infiltration in HP2.

2.18 Due to the presence of the existing development and the surrounding raised land, it is not feasible to access the site to undertake deeper infiltration testing or to drill and install a borehole in the location of the proposed soakaways prior to planning approval.

2.19 However, the nearest log on the BGS GeoIndex website did not encounter groundwater to 33.45 m AOD (Section 2.6 of the Surface Water Drainage Strategy Report), and the low point of the proposed site layout is around 37.66 m AOD (**Appendix A**).

2.20 On this basis, the available information indicates that groundwater levels are unlikely to pose a constraint to the proposed geocellular soakaway locations, and the design can proceed accordingly without the need for further investigation at this stage. Geocellular soakaways have been approved previously on site in relation to application DM/18/1807 and therefore such an approach is considered entirely appropriate.

2.21 Based on the results of the third infiltration test in HP2, an infiltration rate of $1.8x10^{-6}$ m/s will be used for the 'Slightly clayey, Slightly silty SAND' underlying the site.

2.22 CIRIA SuDS Manual 2015, states 'Infiltration viability should be given full consideration where rates of 10-6 m/s or greater exist on the site (subject to geotechnical and contamination considerations). Where rates are less than that, the soils can still usefully be used for Interception delivery, but disposal of significant volumes of runoff may not be cost-effective or appropriate, unless there is a large area of land available for this purpose'.

2.23 The proposed surface water drainage strategy can be seen in **Appendix G** of this report.

3.0 Peak Rainfall Intensity & Climate Change

3.1 The NPPF and the supporting PPG sets out how flood risk should be considered over the lifetime of a development. This requires an increase in flood risk due to climate change to be taken into account. Both peak river flows and rainfall intensity should be assessed.

Peak River Flows

3.2 Please see Section 1.3.

Peak Rainfall Intensity and Climate Change

3.3 The site is currently an artificial turf football pitch, associated buildings and gravel path which can be described as brownfield. The proposed development will not increase the impermeable area on site and, therefore, will not increase the quantity of surface water runoff from rainfall.

3.4 With climate change it is becoming more common to see rainfall events of higher intensity, particularly in the southeast of England. Increased rainfall intensity affects river levels and drainage systems, with the result being an increase in surface water flooding and sewerage surcharge.

3.5 The NPPF states that, for flood risk assessments, the Peak Rainfall Allowances Map should be referenced to find out what the anticipated changes in peak rainfall are. The Surface Water Drainage Strategy will be designed based on the Government guidance on Flood risk assessments: climate change allowances[10] for developments which have a lifetime of between 2061 and 2100, whereby the central climate change allowances for both the 3.3% and 1% annual exceedance rainfall events should be used.

3.6 The development site lies within the Adur and Ouse Management Catchment[11]. In this catchment, the upper end climate change allowances for the 3.3% and 1% annual exceedance rainfall events are 20% and 25% respectively.

3.7 The site is at Very Low risk of surface water flooding and is anticipated to remain that way.

3.8 In addition, it is important that:

- Any changes to the land in this area must remain sensitive to the local surface water flood risk. This will ensure that any natural overland flow routes and surface water pathways will remain the same and the conveyance of surface water is not impeded.
- The surface water strategy for the site takes the latest climate change predictions into account, so as not to increase flood risk on- or off-site.

Residual Flood Risk

3.9 It is important to recognise that flood risk can never be fully mitigated and there will always be a residual risk of flooding. The residual risk is associated with several potential risk factors, including (but not limited to):

- A flood event that exceeds that for which the local flood defences or local drainage system has been designed to withstand.
- A residual danger posed to property and life because of flood defence failure through overtopping or structural collapse.
- General uncertainties inherent in the prediction of flooding.

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[10] https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

[11] https://environment.data.gov.uk/hydrology/climate-change-allowances/rainfall

3.10 Modelling of flood events is not an exact science. Therefore, there is an inherent uncertainty in the prediction of flood levels and extents used in the assessment of flood risk. EA's Flood Map for Planning is largely based upon detailed modelling within the area. However, other mapping products require numerous assumptions to be made. Whilst they all provide a good depiction of flood risk for specific modelled conditions, all modelling requires the making of core assumptions, and these might not occur in the open and dynamic environment of a flood event. Also, the EA's Flood Map for Planning and other flood modelling is updated regularly. Interested parties are recommended to keep abreast of this so that a significant change or increase in flood risk can be determined.

4.0 Proposed Surface Water Drainage Strategy

Sustainable Drainage Overview

4.1 Current planning policy and EA guidance requires developments to employ SuDS (Sustainable Drainage Systems) techniques wherever feasible. Careful design of SuDS features can ensure that a development's surface water drainage closely reflects the natural hydrology of the pre-developed site.

4.2 SuDS will attenuate and treat surface water run-off quantities at the source (source control) in line with NPPF and EA policies.

4.3 The key benefits of SuDS are as follows:

- Improving water quality over a conventional piped system by removing pollutants from diffuse pollutant sources (e.g., roads);
- Improving amenity through the provision of open green space;
- Improving biodiversity through increased areas for wildlife habitat; and
- Enabling a natural drainage regime that recharges groundwater (where possible).

4.4 SuDS provide a flexible approach to drainage, with a wide range of components from soakaways to large-scale basins or ponds. The individual techniques should be used where possible in a management train that mimics the natural pre-developed pattern of drainage.

Site Areas

4.5 The site area to undergo development is assessed as follows in Table 4.1:

Table 4.1 – Site Areas

Breakdown of site areas	Existing (ha)	Proposed (ha)
Total site area	0.2525	0.2525
Total impermeable areas	0.2108	0.2438
Total permeable areas	0.0417	0.0087

Greenfield Runoff Rate

4.6 Please see **Appendix F** for the Greenfield Runoff Rate Results for the 1 in 2, 1 in 30 and 1 in 100 events.

Urban Creep

4.7 With reference to Section 3.33 of the National standards for SuDS Guidance Updated 30 July 2025, a 10% urban creep uplift factor shall not be applied on the basis there will not be external permeable spaces post development.

Drainage Strategy Overview

4.8 Please see Sections 2.17 to 2.22. The proposed surface water drainage strategy can be seen in **Appendix G** of this report.

4.9 The design criteria achieved by the proposed surface water drainage strategy, and how it has been developed in accordance with the sequential check of the drainage hierarchy is discussed, below.

Design Criteria

4.10 The surface water drainage strategy has been designed in accordance with local and national standards for sustainable drainage. In brief, this includes:

- Using a runoff coefficient (CV) value of 1.0 in all hydraulic modelling (for both summer and winter storms, both of which have been assessed in the model).
- Using a worst-case site specific infiltration rate based on the results of the third infiltration test in HP2.
- Using a factor of safety of 1.5 in the hydraulic design of the soakaways.
- The full suite of rainfall events has been used.

4.11 The proposed surface water drainage strategy for the development and how it has been designed has been outlined. With specific reference to how the proposed surface water drainage strategy has been considered within each tier of the drainage hierarchy, this is discussed, below.

The Drainage Hierarchy

4.12 The drainage hierarchy is a sequential check that intends to ensure that all practical and reasonable measures are taken to manage surface water as high up the hierarchy (with '1' being the highest) as possible, and that the amount of surface water managed at the bottom of the hierarchy is minimised. The Planning Practice Guidance to the National Planning Policy Framework (NPPF) states that *"Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable".*

4.13 The drainage hierarchy presented in the NPPF presents only four tiers of drainage options. This has been expanded on and adopted by others and now can be viewed as the following:

1. Store rainwater for later use
2. Use infiltration techniques, such as porous surfaces in non-clay areas
3. Attenuate rainwater in ponds or open water features for gradual release
4. Attenuate rainwater by storing in tanks or sealed water features for gradual release
5. Discharge rainwater direct to a watercourse
6. Discharge rainwater to a surface water sewer/drain
7. Discharge rainwater to the combined sewer
8. Discharge rainwater to the foul sewer

4.14 The first two tiers of the drainage hierarchy ensure that surface water is retained within the site boundary and does not increase flood risk to others. This is always the most preferable method of surface water management.

4.15 The next six tiers of the hierarchy provide regional control, but with decreasing levels of pollution removal and reduced potential for amenity and habitat creation.

4.16 Within the lower six tiers of the drainage hierarchy, there must be some form of flow restriction, so that off-site surface water discharge resembles greenfield runoff rates, as much as is reasonably practicable. This requires on-site storage facilities, which may include ponds, swales, subsurface storage tanks and

System C (non-infiltration) permeable paviours with flow control devices. Again, methods that provide the most potential for amenity and pollution removal should be favoured.

Tier 1 – Store rainwater for later use

4.17 The site has limited opportunities to use water reuse and recycling techniques. However, waterbutts could be considered.

Tier 2 - Use Infiltration techniques, such as porous surfaces in non-clay areas

4.18 Please see Sections 2.17 to 2.22. Based on the results of the third infiltration test in HP2, an infiltration rate of 1.8×10^{-6} m/s will be used for the 'Slightly clayey, Slightly silty SAND' underlying the site.

4.19 The surface water drainage strategy for the development will look to use Type A total infiltration pervious pavements and geocellular soakaways for the attenuation and disposal of surface water.

4.20 The design features of the pervious pavements are as follows:

- Area: 227m^2
- Pervious surface layer to the suppliers design
- 50mm Type 2/6mm Sharp Grit or Clean Sand or to the suppliers design
- Permeable Separating Geotextile or to the suppliers design
- 300mm Type 4/20 Coarse Graded Aggregate (CGA) Subbase (nominal porosity = 30%) or to the suppliers design
- Permeable Separating Geotextile or to the suppliers design

4.21 The total depth of the pervious pavements in the drainage strategy is 430mm, with an effective storage depth of 300mm.

4.22 Please note that the above depth of CGA has been designed on its hydraulic requirements and surface water storage capacity. At the detailed design stage, the depth of the CGA, which forms the foundation of the pavement, may need to be refined once the bearing capacity of the sub-grade is known.

4.23 Surface water falling directly onto the permeable paviours will drain into the sub-base, percolating through the joints in the paviours and then through the sharp grit and the geotextile.

4.24 It is intended to use 2no. geocellular soakaways for the discharge of water from the remaining 0.216 ha.

4.25 The design features of the 2no. geocellular soakaways are as follows:

- Dimensions: 7.0 x 18.0 x 2.0m and 7.0 x 18.0 x 2.0m (L x W x D) suitable for minimum 650mm cover;
- Heavy Duty Permeable Separating Geotextile wrapped on all sides to allow infiltration; and,
- 100mm Type 2/6mm Sharp Grit or Clean Sand Surround.

Tier 3 - Attenuate rainwater in ponds or open water features for gradual

4.26 This tier of the drainage hierarchy will not be needed for surface water discharge.

Tier 4 - Attenuate rainwater by storing in tanks or sealed water features for gradual release

4.27 This tier of the drainage hierarchy will not be needed for surface water discharge.

Tier 5 - Discharge rainwater direct to a watercourse

4.28 This tier of the drainage hierarchy will not be needed for surface water discharge.

Tier 6 - Discharge rainwater to a surface water sewer/drain

4.29 This tier of the drainage hierarchy will not be needed for surface water discharge.

Tier 7 - Discharge rainwater to the combined sewer

4.30 This tier of the drainage hierarchy will not be needed for surface water discharge.

Tier 8 - Discharge rainwater to the foul sewer

4.31 This tier of the drainage hierarchy will not be needed for surface water discharge.

MicroDrainage Hydraulic Modelling

4.32 The surface water drainage strategy outlined above has been designed and hydraulically modelled in the MicroDrainage Network Module. The results of the MicroDrainage hydraulic modelling for the proposed development can be seen in **Appendix H**.

4.33 The results of the hydraulic modelling shows that the surface water drainage strategy as outlined above can attenuate and infiltrate the surface water generated in the 1 in 100-year + 25% critical rainfall event without flooding; the soakaways have half drain times of 2711 and 2417 minutes for the 1 in 2-year critical rainfall event; and, the soakaways will have a spare approximately 40% attenuation storage volume after the 1 in 100-year + 25% critical rainfall event. This manages flood risk on- and off-site and reduces overall local flood risk.

5.0 Surface Water Runoff Quality

5.1 The NPPF states that the development should not have a detrimental impact on the environment, including the water environment. The technical guidance to the NPPF provides further advice on the benefits of ensuring runoff quality is to an appropriate standard.

5.2 The CIRIA SuDS Manual provides guidance on the treatment of surface water runoff. With regards to the proposed development, Table 4.3 of the CIRIA SuDS Manual rates the pollution hazards from roof water runoff as ‘very low’. The only requirement for roof water runoff is the ‘removal of gross solids and sediments’, which will be achieved using catchpits and silt traps upstream of the geocellular soakaways.

5.3 With regards to the proposed landscaping associated with the existing buildings, proposed covered padel courts and proposed external padel courts, it is considered the pollution hazards from this runoff are also ‘very low’ on the basis there will be no roads or vehicles onsite post development. Therefore, the requirement for proposed landscaping runoff is also the ‘removal of gross solids and sediments’, which will be achieved using catchpits and silt traps upstream of the geocellular soakaways.

5.4 The above information shows how the development may be constructed to provide sufficient pollution mitigation prior to discharge to groundwater.

6.0 Residual Risk

6.1 Whilst the surface water drainage strategy for the site has been designed to current standards, there would remain a small residual risk of flooding due to blockage or failure of on-site infrastructure. Therefore, appropriate and regular maintenance of the drainage infrastructure should be undertaken by the site management company or their agents (and the residents, where applicable).

6.2 To assist with this process, a Drainage Management and Maintenance Plan has been prepared, which sets out the principles for the long-term management and maintenance of the proposed surface water drainage system on the development. The Drainage Management and Maintenance Plan can be seen in **Appendix I**.

6.3 The purpose of this document is to ensure that those responsible for site maintenance have a robust inspection and maintenance plan going forwards. This will help ensure the optimum operation of the surface water drainage system and that it will be regularly maintained for the lifetime of the development. This will contribute to reducing the risk of surface water flooding both on- and off-site.

7.0 Summary and Conclusions

7.1 This Surface Water Drainage Strategy has been produced by Motion on behalf of The Padel Club. It supports the planning application for the construction of 4no. indoor and 2no. outdoor padel courts, along with an outdoor seating area and social spaces at QLeisure, London Rd, Albourne, Hassocks, BN6 9BQ.

7.2 The Infiltration Testing Report prepared for the site in line with BRE Digest 365 Revised 2016 in **Appendix F** indicates that infiltration SuDS will be possible for the proposed development at a depth of 1.3m bgl on the basis water emptied via infiltration in HP2.

7.3 Due to the presence of the existing development and the surrounding raised land, it is not feasible to access the site to undertake deeper infiltration testing or to drill and install a borehole in the location of the proposed soakaways prior to planning approval.

7.4 However, the nearest log on the BGS GeoIndex website did not encounter groundwater to 33.45 m AOD (Section 2.6 of the Surface Water Drainage Strategy Report), and the low point of the proposed site layout is around 37.66 m AOD (**Appendix A**).

7.5 On this basis, the available information indicates that groundwater levels are unlikely to pose a constraint to the proposed geocellular soakaway locations, and the design can proceed accordingly without the need for further investigation at this stage. Geocellular soakaways have been approved previously on site in relation to application DM/18/1807 and therefore such an approach is considered entirely appropriate.

7.6 Based on the results of the third infiltration test in HP2, an infiltration rate of $1.8\text{x}10^{-6}$ m/s will be used for the 'Slightly clayey, Slightly silty SAND' underlying the site.

7.7 CIRIA SuDS Manual 2015, states 'Infiltration viability should be given full consideration where rates of 10-6 m/s or greater exist on the site (subject to geotechnical and contamination considerations). Where rates are less than that, the soils can still usefully be used for Interception delivery, but disposal of significant volumes of runoff may not be cost-effective or appropriate, unless there is a large area of land available for this purpose'.

7.8 The proposed surface water drainage strategy can be seen in **Appendix G** of this report.

7.9 The surface water drainage strategy has been designed in accordance with local and national standards for sustainable drainage. In brief, this includes:

- Using a runoff coefficient (CV) value of 1.0 in all hydraulic modelling (for both summer and winter storms, both of which have been assessed in the model).
- Using a worst-case site specific infiltration rate based on the results of the third infiltration test in HP2.
- Using a factor of safety of 1.5 in the hydraulic design of the soakaways.
- The full suite of rainfall events has been used.

7.10 The surface water drainage strategy for the development will look to use Type A total infiltration pervious pavements and geocellular soakaways for the attenuation and disposal of surface water.

7.11 The results of the hydraulic modelling shows that the surface water drainage strategy as outlined above can attenuate and infiltrate the surface water generated in the 1 in 100-year + 25% critical rainfall event without flooding; the soakaways have half drain times of 2711 and 2417 minutes for the 1 in 2-year critical rainfall event; and, the soakaways will have a spare approximately 40% attenuation storage volume after the 1 in 100-year + 25% critical rainfall event. This manages flood risk on- and off-site and reduces overall local flood risk.

7.12 The proposed surface water drainage strategy is able to mitigate all pollution hazards created on site using SuDS features and no further pollution mitigation is needed.

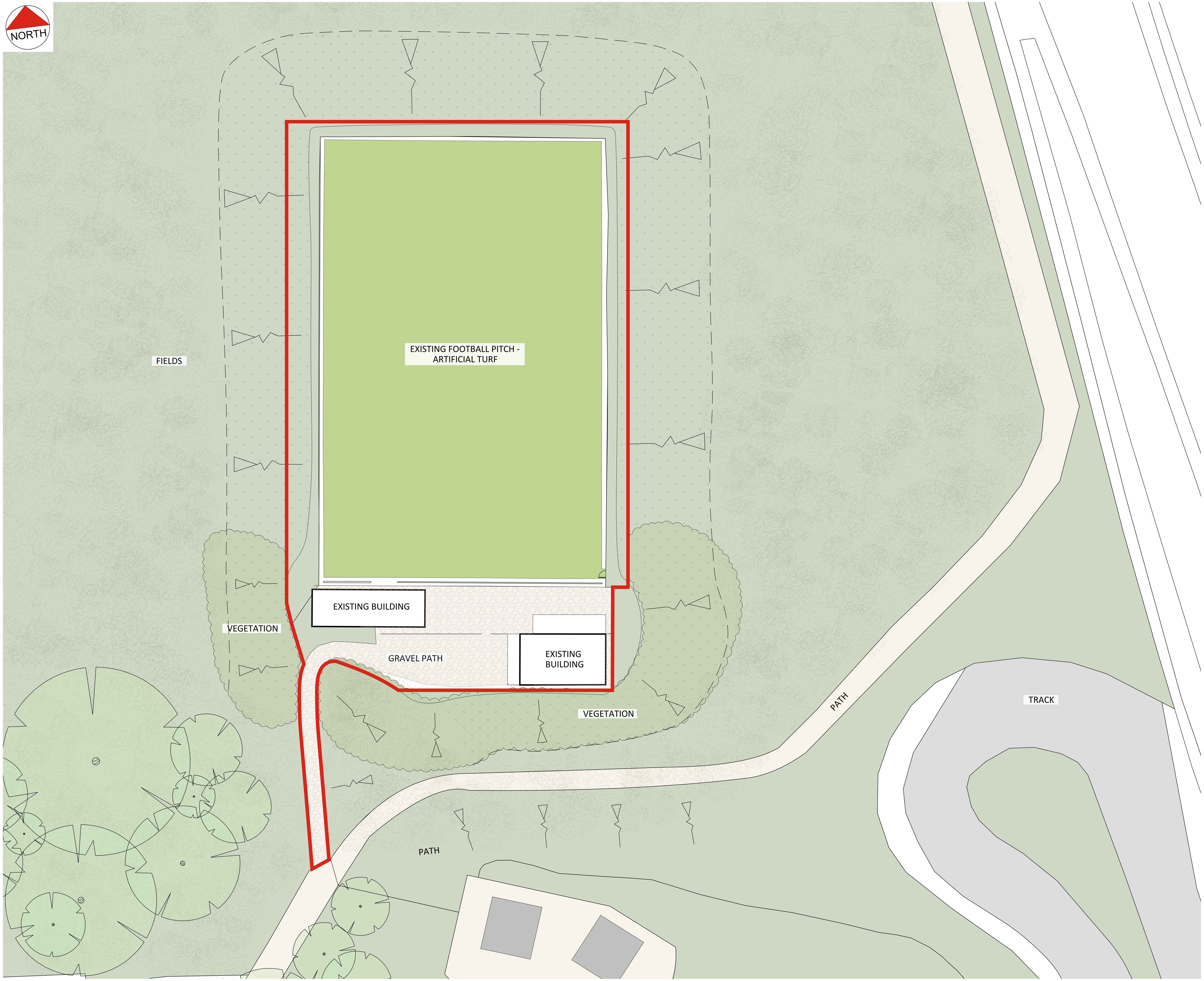
7.13 Residual risk has been addressed through the development of a drainage management and maintenance plan that provides a framework through which the site's drainage system should be managed in perpetuity.

7.14 In conclusion, the proposed surface water drainage strategy can discharge the 1 in 100-year + 25% critical rainfall event with no flooding. As such, surface water management should not form an impediment to the progress of this planning application.

7.15 The completed LLFA Surface Water Drainage Proforma is included in **Appendix J**.

Appendix A

Existing and Proposed Site Layout



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No dimensions should be scaled during construction and any missing dimensions required should be requested and confirmed before proceeding. All dimensions must be checked on site and agreed with the client prior to construction.

The scale bar provided is for use so that the drawings can be scaled during the planning application process.

0 100

Scale bar 100mm at 1:1

NOTES:

- THESE DRAWINGS HAVE BEEN PREPARED FOR PLANNING PURPOSES ONLY.

KEY:

🟥 SITE APPLICATION BOUNDARY

REV	DATE	NOTE	IN

THE PADEL CLUB

Project
THE PADEL CLUB
Q LEISURE, LONDON ROAD
ALBOURNE, BRIGHTON
BN6 9BQ

Title
EXISTING SITE LAYOUT

Scale
1:200 @A1

Date
NOV 2025

Drawn
YT

Checked
SH

Drawing Number
10150/P001

Revision
-

Saunders
Architecture+Urban Design

saundersarchitects.com | 01707 385300 | London | Welwyn Garden City

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0 100

Scale bar 100mm at 1:1

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- LEVELS ARE SHOWN INDICATIVELY ONLY TO DEMONSTRATE DESIGN INTENT.
- LANDSCAPING SHOWN INDICATIVELY ONLY, REFER TO LANDSCAPE DRAWINGS FOR FURTHER DETAILS.
- ROAD MARKINGS ARE SHOWN INDICATIVELY ONLY, SUBJECT TO DETAILED DESIGN.
- FURNISHING SHOWN INDICATIVELY ONLY.

KEY:

🟥	SITE APPLICATION BOUNDARY
⬚	EXISTING BUILDINGS TO BE DEMOLISHED
🟩	ASTROTURF
▭	OUTDOOR PAVING
▭	INDOOR FLOOR FINISH
▭	RESIN BOUND FINISH
+00.00	EXISTING LEVEL
+00.00	PROPOSED LEVEL
●	PROPOSED PLANTING/HEDGES

REV	DATE	NOTE	IN

THE PADEL CLUB

Project

THE PADEL CLUB
Q LEISURE, LONDON ROAD
ALBOURNE, BRIGHTON
BN6 9BQ

Title

PROPOSED SITE LAYOUT

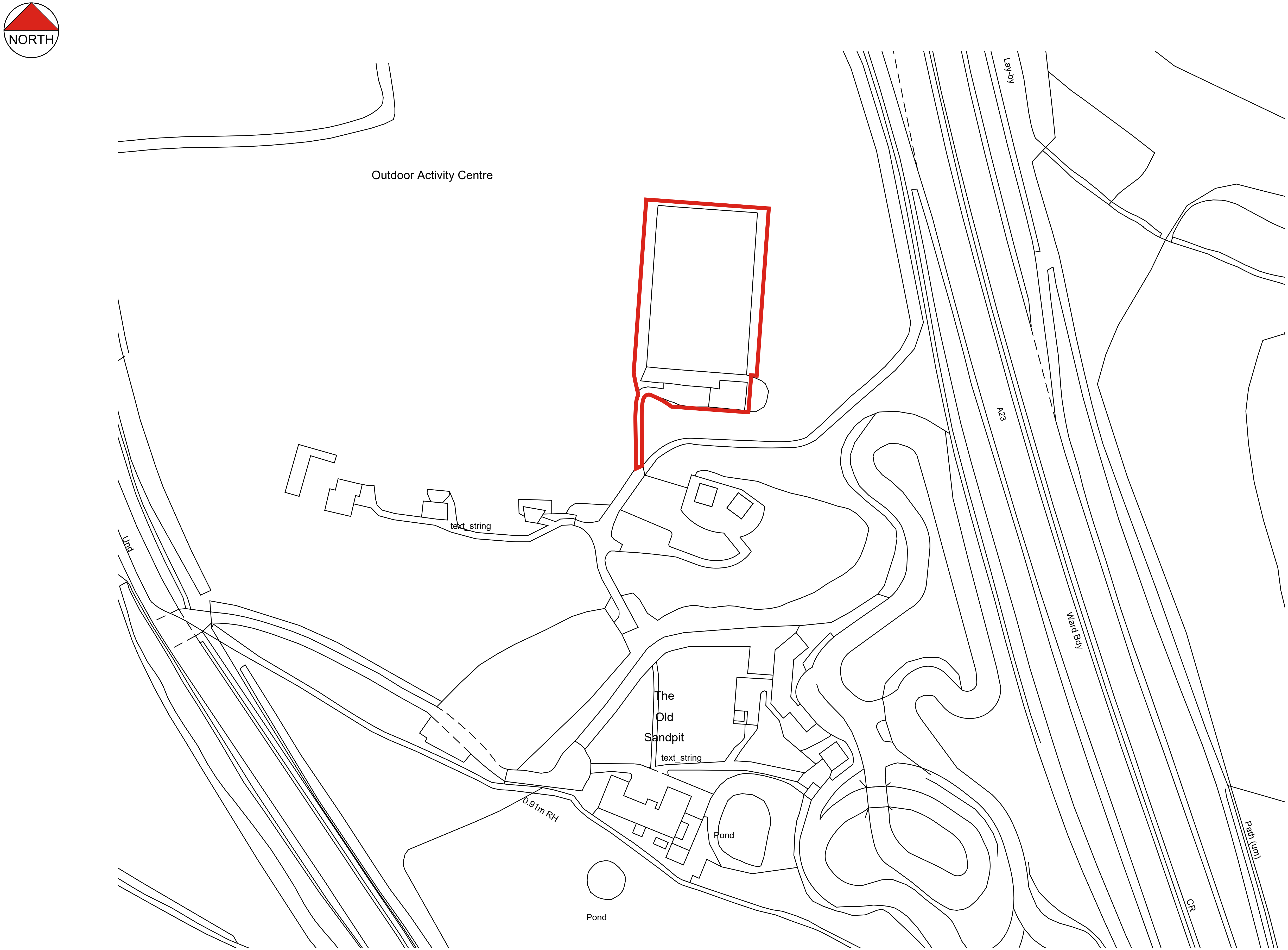
Scale 1:200 @A1	Date NOV 2025
Drawn YT	Checked SH
Drawing Number 10150/P101	Revision -

Saunders
Architecture + Urban Design

saundersarchitects.com | 01707 385300 | London | Welwyn Garden City

Appendix B

Site Location Plan



NOTES ©

No dimensions should be scaled during construction and any missing dimensions required should be requested and confirmed before proceeding. All dimensions must be checked on site and agreed with the client prior to construction.

The scale bar provided is for use so that the drawings can be Scaled during the planning application process.

0 50

Scale bar 50mm at 1:1

NOTES:

- THESE DRAWINGS HAVE BEEN PREPARED FOR PLANNING PURPOSES ONLY

KEY:

🟥 SITE APPLICATION BOUNDARY

REV	DATE	NOTE	IN

Project

THE PADEL CLUB
Q LEISURE, LONDON ROAD
ALBOURNE, BRIGHTON
BN6 9BQ

Title

LOCATION PLAN

Scale
1:1250 @A3

Date
NOV 2025

Drawn
YT

Checked
SH

Drawing Number
10150/P100

Revision
-

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Appendix C

EA Flood Map for Planning

Flood map for planning

Your reference	Location (easting/northing)	Created
1ecalb 2407053	**526861/115322**	**11 November 2025 07:27**

Your selected location is in flood zone 1, an area with a low probability of flooding.

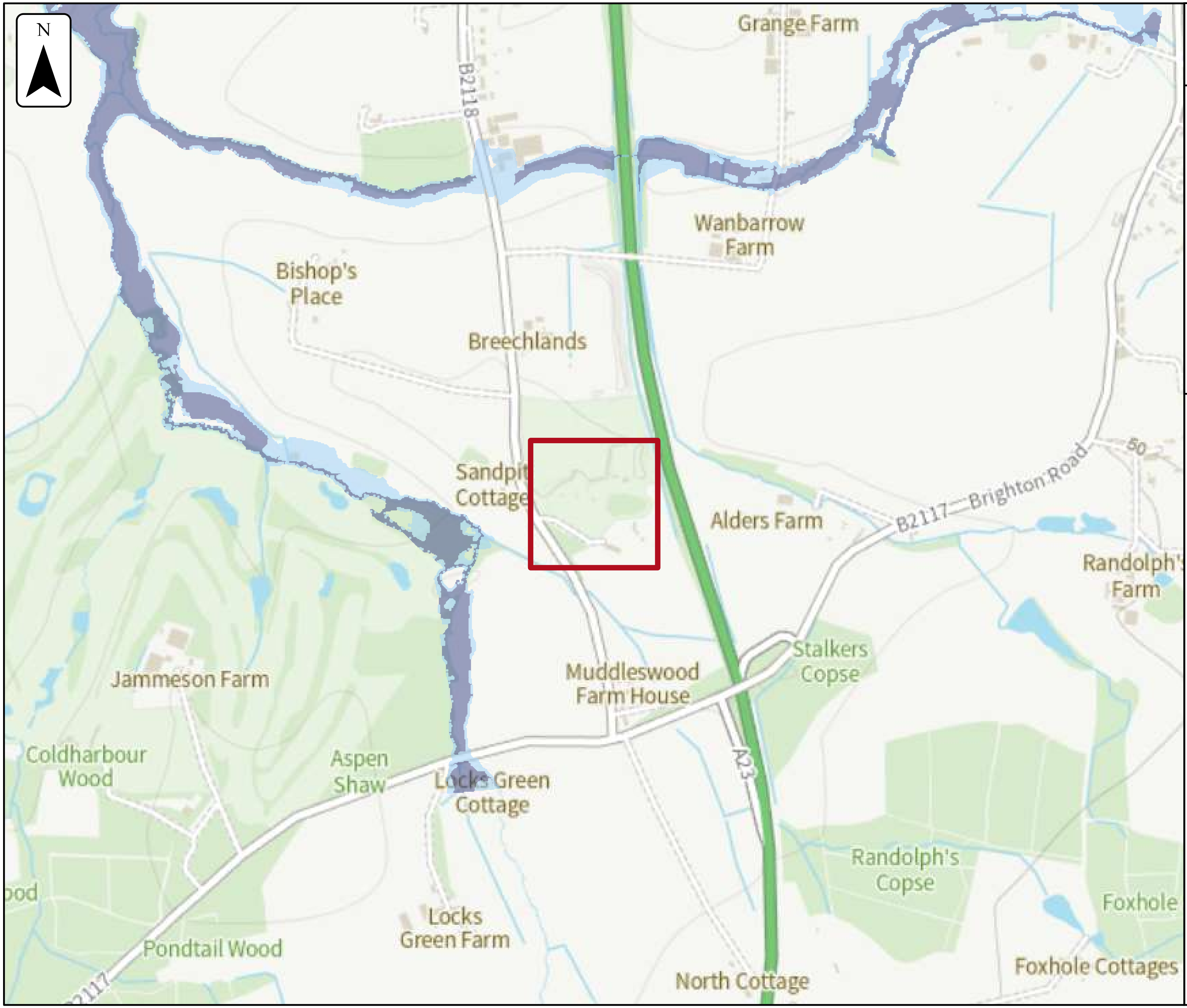
You will need to do a flood risk assessment if your site is **any of the following**:

- bigger than 1 hectare (ha)
- in an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.



Environment Agency

Flood map for planning

Your reference
1ecalb 2407053

Location (easting/northing)
526861/115322

Scale
1:10,000

Created
11 Nov 2025 07:27

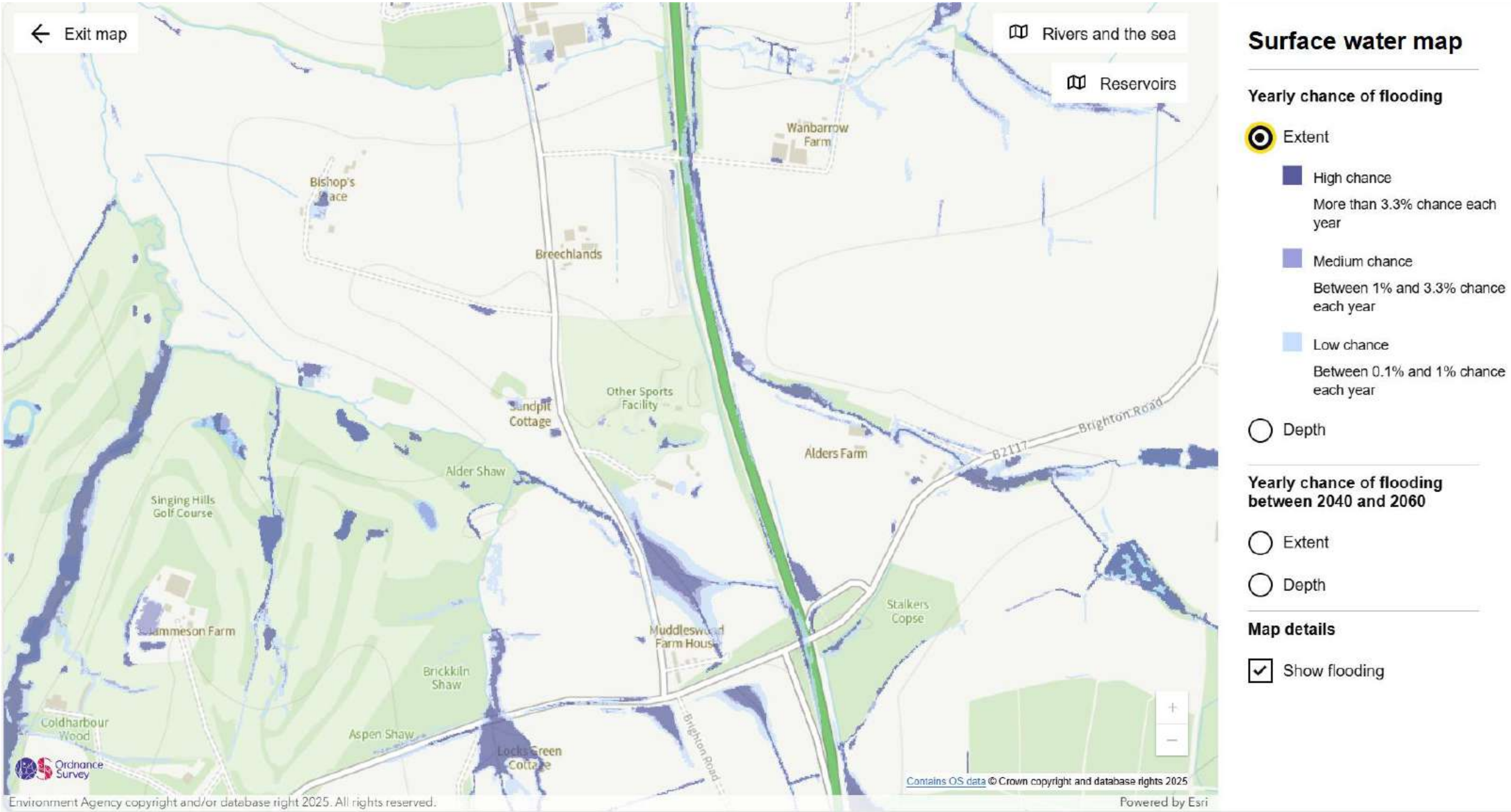
☐	Selected area
■	Flood zone 3
■	Flood zone 2
☐	Flood zone 1
—	Flood defence
—	Main river
▨	Water storage area

0 100 200 300m

Appendix D

RoFSW Extent and Maximum Extent of Flooding from Reservoirs Maps

Surface Water Flood Risk (Extent)



Surface water map

Yearly chance of flooding

● Extent

▇ High chance
More than 3.3% chance each year

▇ Medium chance
Between 1% and 3.3% chance each year

▇ Low chance
Between 0.1% and 1% chance each year

○ Depth

Yearly chance of flooding between 2040 and 2060

○ Extent

○ Depth

Map details

☑ Show flooding

Surface Water Flood Risk (Extent)

Surface water map

Yearly chance of flooding

○ Extent

○ Depth

Yearly chance of flooding between 2040 and 2060

● Extent

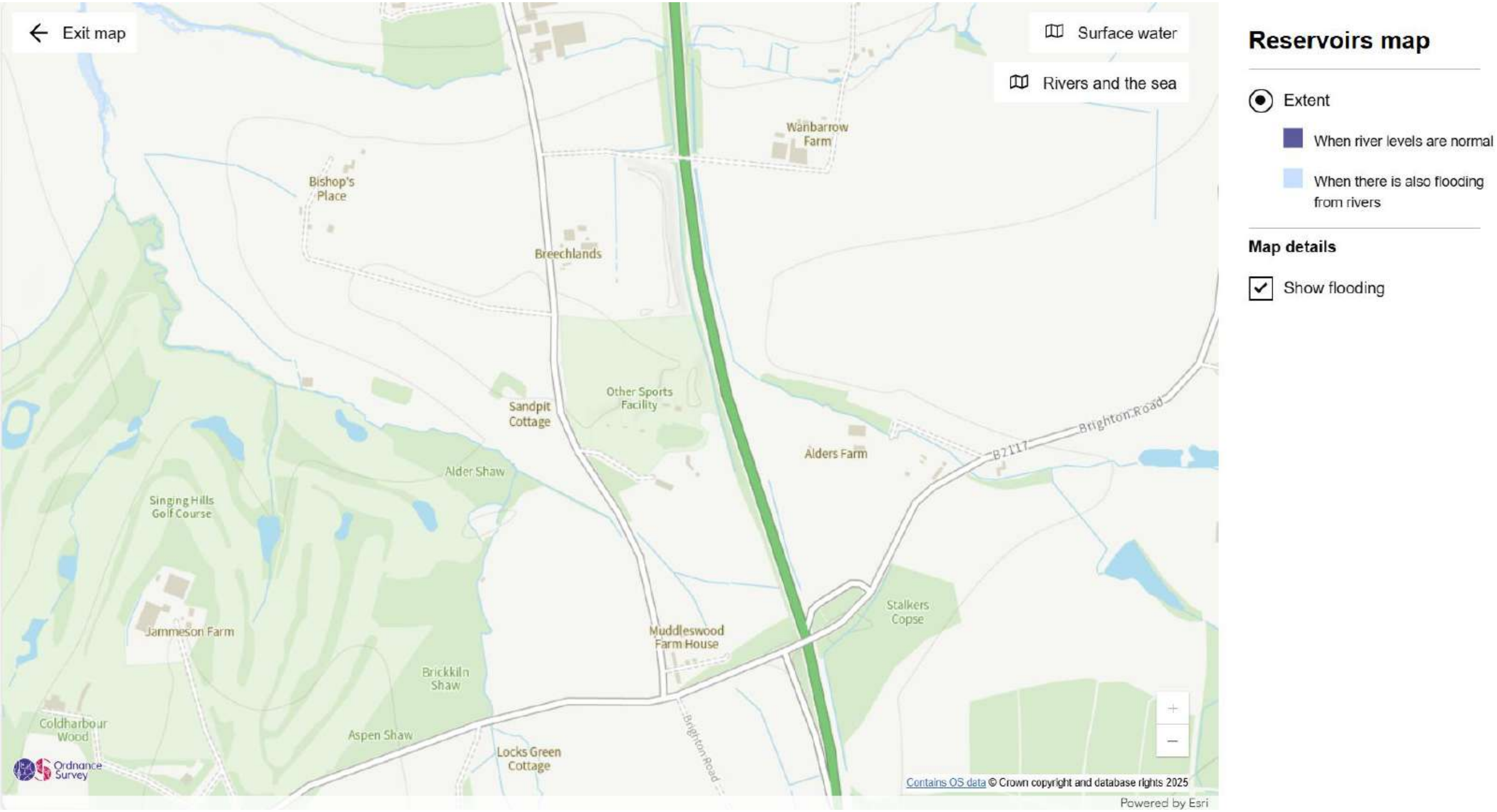
- ■ High chance
  More than 3.3% chance each year
- ■ Medium chance
  Between 1% and 3.3% chance each year
- ■ Low chance
  Between 0.1% and 1% chance each year

○ Depth

Map details

☑ Show flooding

Reservoir Flooding



Reservoirs map

● Extent

🟪 When river levels are normal

🟦 When there is also flooding from rivers

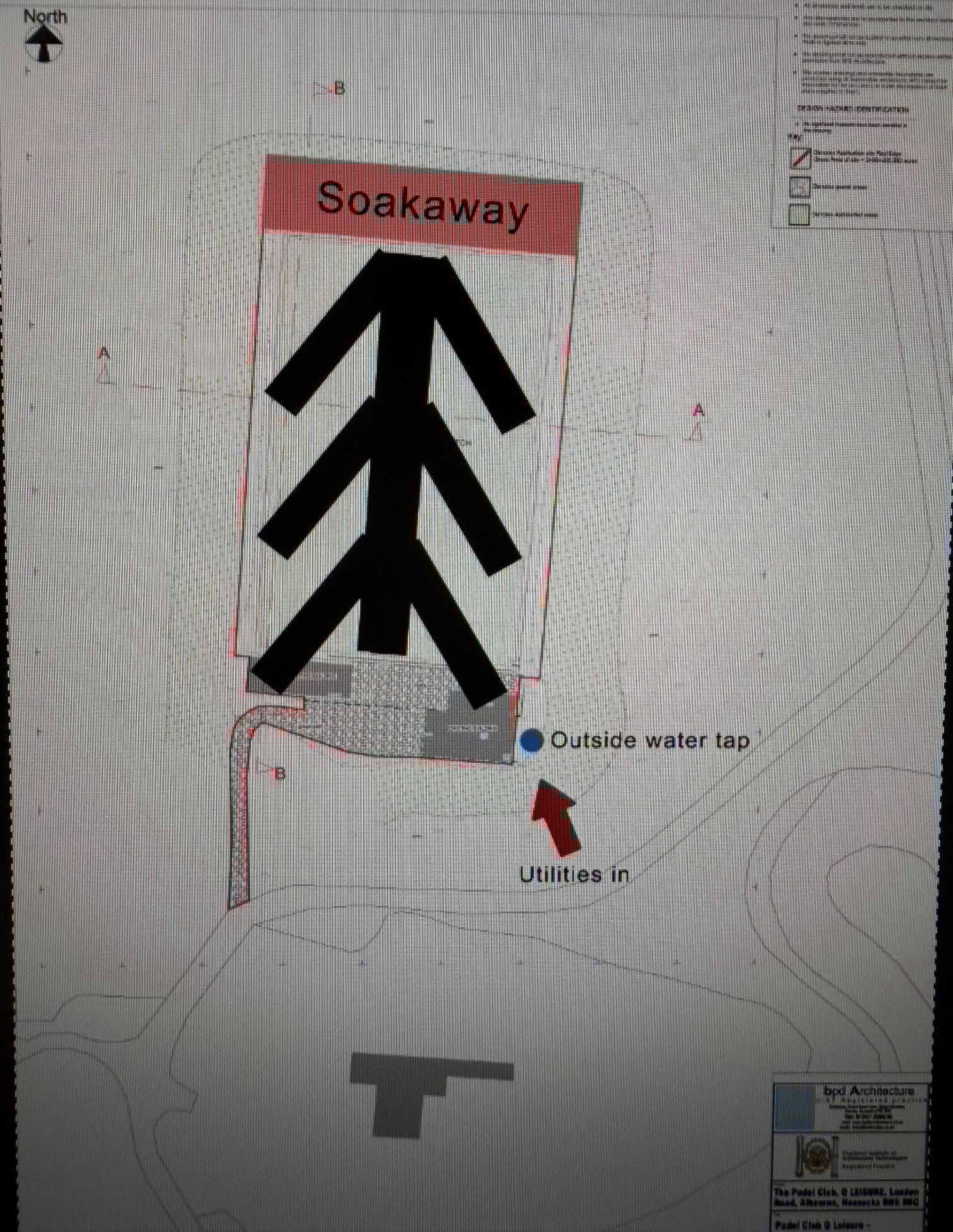
Map details

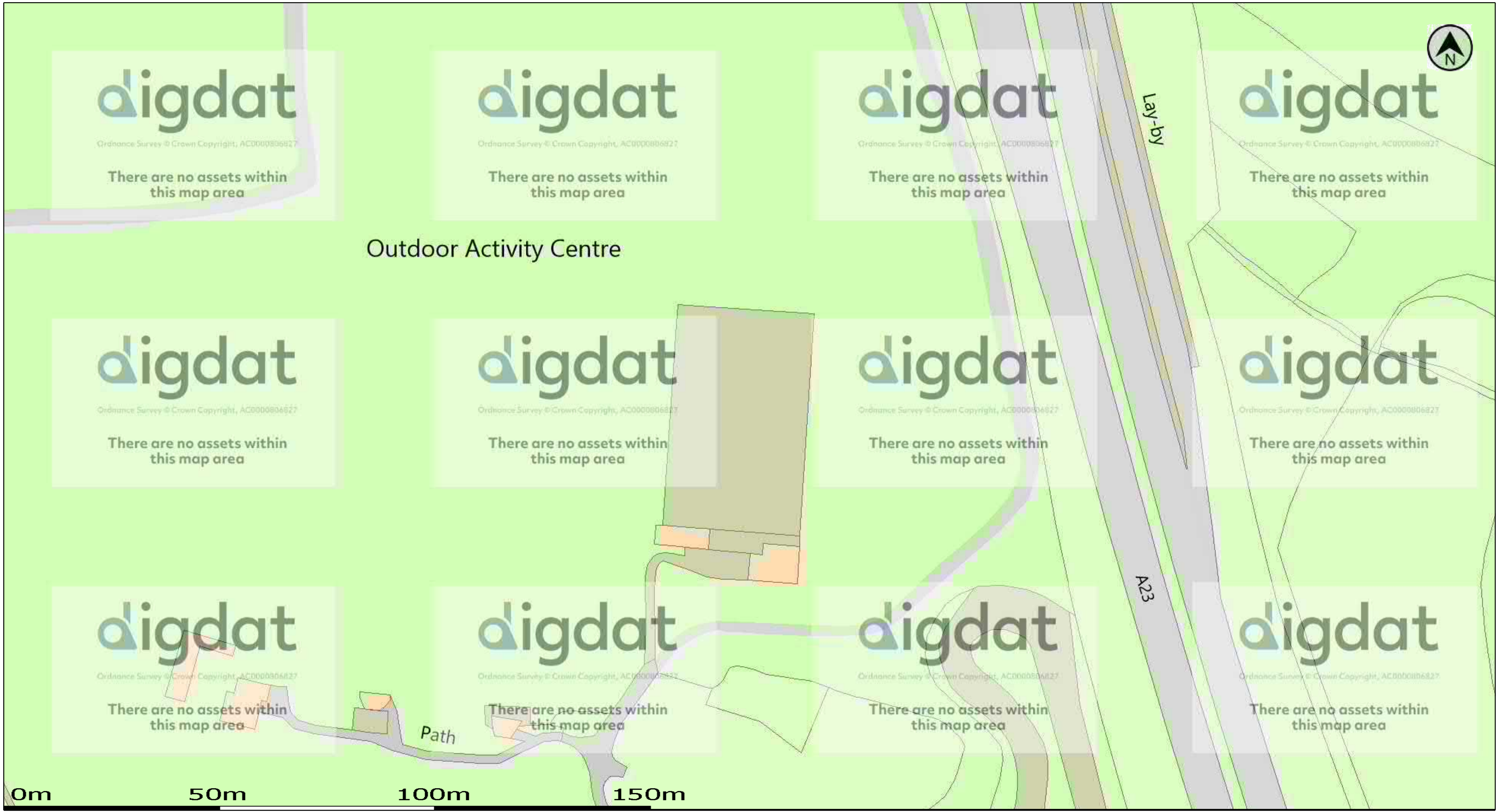
☑ Show flooding

Appendix E

Sketch of Existing Soakaway Location and Southern Water Wastewater Plan

The Padel Club, London Road, Albourne, Hassocks BN6 9BQ





Date: 22/05/25 Scale: 1:1250 Map Centre: 526918,115407 Data updated: 20/03/25 Our Ref: 1777356 - 1

Wastewater Plan A4
Powered by digdat

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2025 Ordnance Survey AC0000808122 .This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

cgray@motion.co.uk

QLeisure, Albourne

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Our Ref: 1777356 - 1

Appendix F

Infiltration Testing Report and Greenfield Runoff Rate Calculations

BRE Digest 365
Soil Infiltration Test
November 2025

Location: QLeisure, London Rd, Albourne, Hassocks, BN6 9BQ
Client: The Padel Club
Project ID: CWKS559
Test Date: 01-03.11.2025
Report Issue: 07.11.2025
Rev. 1

Contents

INTRODUCTION

A. OVERVIEW

Clever Works LTD was commissioned to undertake soakaway testing to determine the permeability of the ground. The tests were to be required in accordance with BRE Digest 365 and the results are included in this document.

The development property is located at QLeisure, London Rd, Albourne, Hassocks, BN6 9BQ, highlighted in red on the snippet below. To prepare the percolation testing, Clever Works have reviewed the available documents, including specifications, feasibility reports, site surveys and the initial proposals for the property extension with other relevant information.

B. TERMS OF REFERENCE

This report has been produced on behalf of The Padel Club and no responsibility is accepted to any third party for all or any part. This report should not be relied upon or transferred to any other parties without the express written authorisation of Clever Works Ltd. If any unauthorised third party comes into possession of this report, they rely on it at their own risk, and the authors owe them no duty of care or skill.

C. PITS LOCATION

The approximate location of the trial pits are shown in *Figure 0-1 – Trial Pits Location Map* below

1. TRIAL PIT TP1

1.1 – DIMENSIONS

Site:	QLeisure
Soakaway test location:	HP01
Trench length (1 to 3 m long):	1.20m
Trench width (0.3 to 1 m wide):	0.50m
Trench depth (from ground level):	1.30m
Ground water encountered at:	Not encountered
Test conducted by:	CP

1.2 – PHOTOS

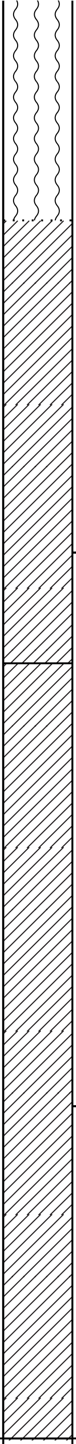
HAND DUG TRIAL PIT HP01

PROJECT NUMBER 559
PROJECT NAME BRE365 Perc Testing
CLIENT The Padel Club
ADDRESS QLeisure, BN6 9BQ

DRILLING DATE 01.11.25
DRILLING COMPANY Clever works
DRILLER Clever Works
DRILLING METHOD Hand dug
TOTAL DEPTH 1.20 - 1.40m

Easting 526934.211
Northing 115416.05
Lng DecMinSec:
Lat DecMinSec:
CHECKED BY MA

COMMENTS

Depth (m)	Is Analysed?	Graphic Log	Samples taken	Material Description	Additional Observations
				TOPSOIL: PT Dark gray, dry.	
-0.1					
-0.2				Compact dark-brown Slightly Sandy, Very Silty CLAY	
-0.3					
-0.4					
-0.5			S1		
-0.6				Orangeish-brown slightly sandy stiff CLAY	
-0.7					
-0.8					
-0.9					
-1			S2		
-1.1					
-1.2					
-1.3					
				Termination Depth at: 1.30m No groundwater encountered	Termination Depth at: 1.30m No groundwater encountered

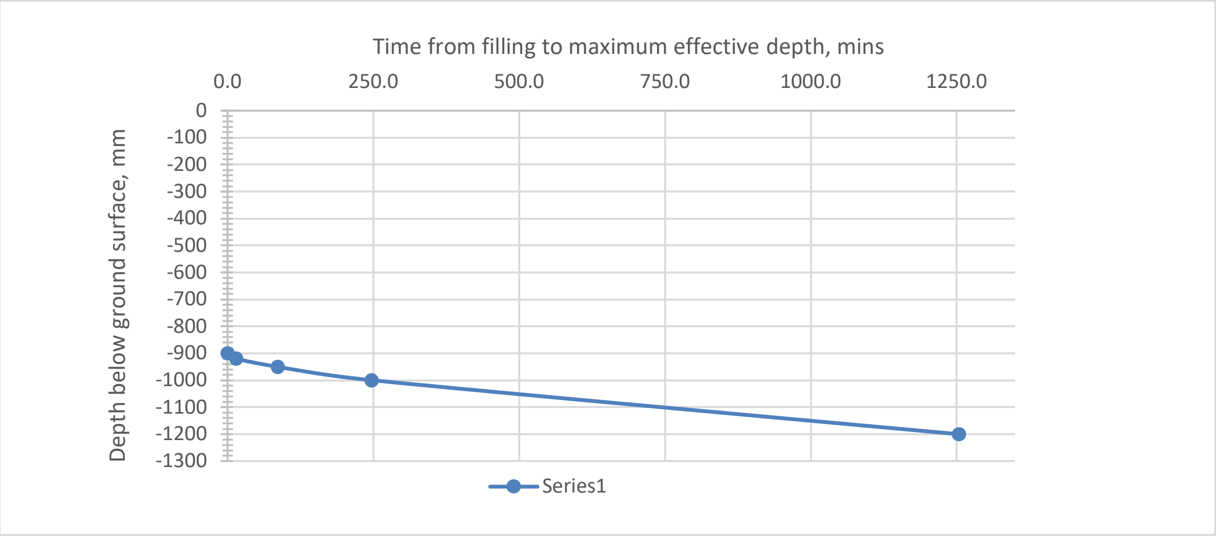
Soil infiltration Test
in General Accordance with BRE Digest 365

Job reference	559	**Client**	The Padel Club
Test Location	HP-1	**Site**	QLeisure, London Rd, Albourne, Hassocks, BN6 9BQ
Test Number	1	**Date carried out**	01.11.25 & 02.11.25
Weather	Sunny	**Technician**	Chris P

	Readings			
Markers	**Water column (mm)**	**Invert from GL (mm)**	**Minutes passed**	**Time reading**
WL	400	-900	0.0	12:17:00
	380	-920	15.0	12:32:00
	350	-950	86.0	13:43:00
75%	300	-1000	247.0	16:24:00
25%	100	-1200	1254.0	09:11:00
				DAY2

Size of pit (m)		
Actual depth of pit, D':	1.30	*m*
Effective depth of Pit, D:	0.40	*m*
Length of pit, L:	1.20	*m*
Width of pit, W:	0.50	*m*

Effective depths (m)		**Minutes passed**
25 % Eff Depth	0.100	247
75 % Eff Depth	0.300	1254



Remarks

$V p_{75-25}=$ 0.12 m^3

$a_{p50}=$ 1.28 m^3

$a_{s50}=$ 0.68 m^2

t_{p75-2} = 1007.00 min

$f = \frac{V_{p75-}}{a_{p50} \times t_{p75-2}} =$ 1.6E-06 m/sec

1.7 – SOIL INFILTRATION RATES

To calculate the soil infiltration rate, the time taken for the water level to fall from 75% to 25% of the effective storage depth of the pit is calculated.

Soil infiltration rate : $f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}} =$

Where:

Vp_{75-25} = the effective storage volume of water in the trial pit between 75% and 25% effective depth

a_{p50}= = the internal surface area of the trial pit up to 50% effective depth and including the base. The trial pit is assumed to represent the true soil conditions before long-term use. (used in this model)

a_{s50}= the internal surface area of the trial pit up to 50% effective depth excluding the base to account for long-term clogging and ensure reliable performance. (not used in this model)

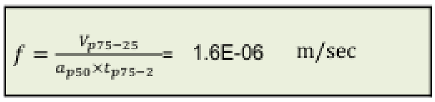
t_{p75-25} = the time for the water level to fall from 75% to 25% effective depth

For the design of any SUDS, it would be prudent to use the lowest, most conservative, infiltration rate. Soakaway drainage, if incorporated, should be designed in accordance with BRE Special Digest 365 – Soakaway Design.

Once excavated, the pit was then filled with water, raising the water column in the pit from 0 to 400mm. The time and depth of water was then recorded at regular intervals to measure the rate of infiltration.

These results of the infiltration testing are shown below.

Trial Pit TP01
TEST01



$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-2}} =$ 1.6E-06 m/sec

Trial Pit TP01
TEST02

N/A

Trial Pit TP01
TEST03

N/A

2. TRIAL PIT TP2

2.1 – DIMENSIONS

Site:	QLeisure
Soakaway test location:	HP02
Trench length (1 to 3 m long):	1.20m
Trench width (0.3 to 1 m wide):	0.50m
Trench depth (from ground level)	1.20m
Ground water encountered at:	Not encountered
Test conducted by:	CP

2.2 – PHOTOS

HAND DUG TRIAL PIT HP02

PROJECT NUMBER 559	**DRILLING DATE** 01.11.25	**Easting** 526932.660
PROJECT NAME BRE365 Perc Testing	**DRILLING COMPANY** Clever works	**Northing** 115394.901
CLIENT The Padel Club	**DRILLER** Clever Works	**Lng DecMinSec:**
ADDRESS QLeisure, BN6 9BQ	**DRILLING METHOD** Hand dug	**Lat DecMinSec:**
	TOTAL DEPTH 1.20 - 1.40m	**CHECKED BY** MA

COMMENTS

Depth (m)	Is Analysed?	Graphic Log	Samples taken	Material Description	Additional Observations
-0.1 -0.2 -0.3 -0.4 -0.5		≀ ▨	S1	TOPSOIL: PT Dark gray, dry.	
-0.6 -0.7 -0.8 -0.9 -1 -1.1 -1.2 -1.3		▨	S2	Compact dark-brown Slightly clayey, Slightly silty SAND	
				Termination Depth at: 1.30m No groundwater encountered	Termination Depth at: 1.30m No groundwater encountered

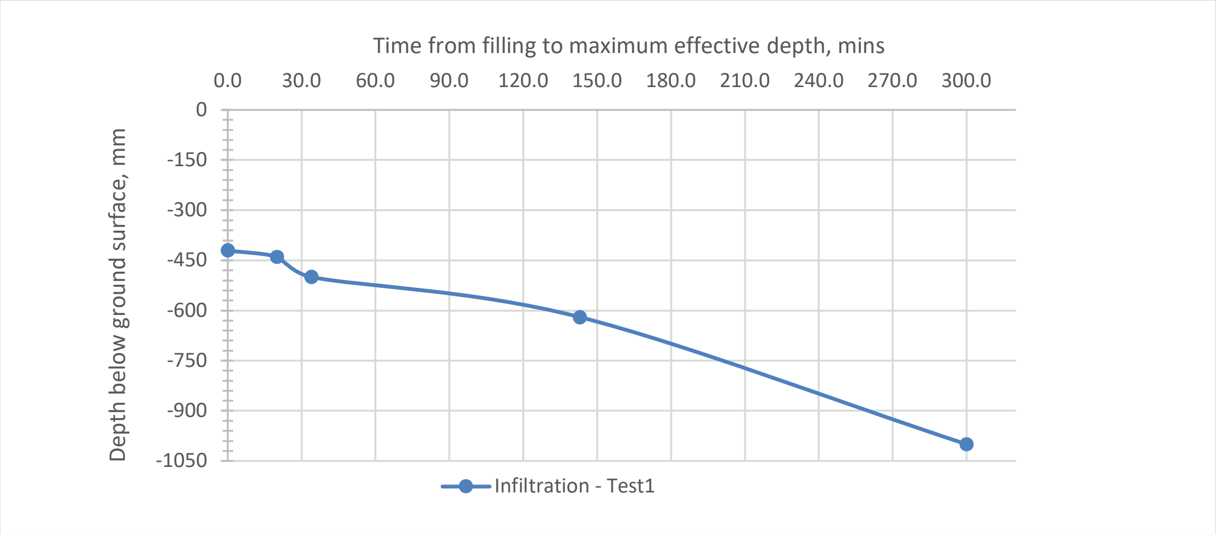
Soil infiltration Test
in General Accordance with BRE Digest 365

Job reference	559	**Client**	The Padel Club
Test Location	HP-2	**Site**	QLeisure, London Rd, Albourne, Hassocks, BN6 9BQ
Test Number	1	**Date carried out**	01.11.25
Weather	Sunny	**Technician**	Chris P

	Readings			
Markers	**Water column (mm)**	**Invert from GL (mm)**	**Minutes passed**	**Time reading**
WL	780	-420	0.0	11:20:00
	760	-440	20.0	11:40:00
	700	-500	34.0	11:54:00
75%	580	-620	143.0	13:43:00
25%	200	-1000	300.0	16:20:00

Size of pit (m)		
Actual depth of pit, D':	1.20	*m*
Effective depth of Pit, D:	0.78	*m*
Length of pit, L:	1.20	*m*
Width of pit, W:	0.50	*m*

Effective depths (m)		**Minutes passed**
75 % Eff Depth	0.585	143
25 % Eff Depth	0.195	380



Remarks

$Vp_{75-25}=$	0.234	m^3
$a_{p50}=$	1.926	m^3
$a_{s50}=$	1.326	m^2
$t_{p75-25}=$	237.00	min

$$f = \frac{V_{p75-2}}{a_{p50} \times t_{p75-}} = \text{ 8.5E-06 } \mathrm{m/sec}$$

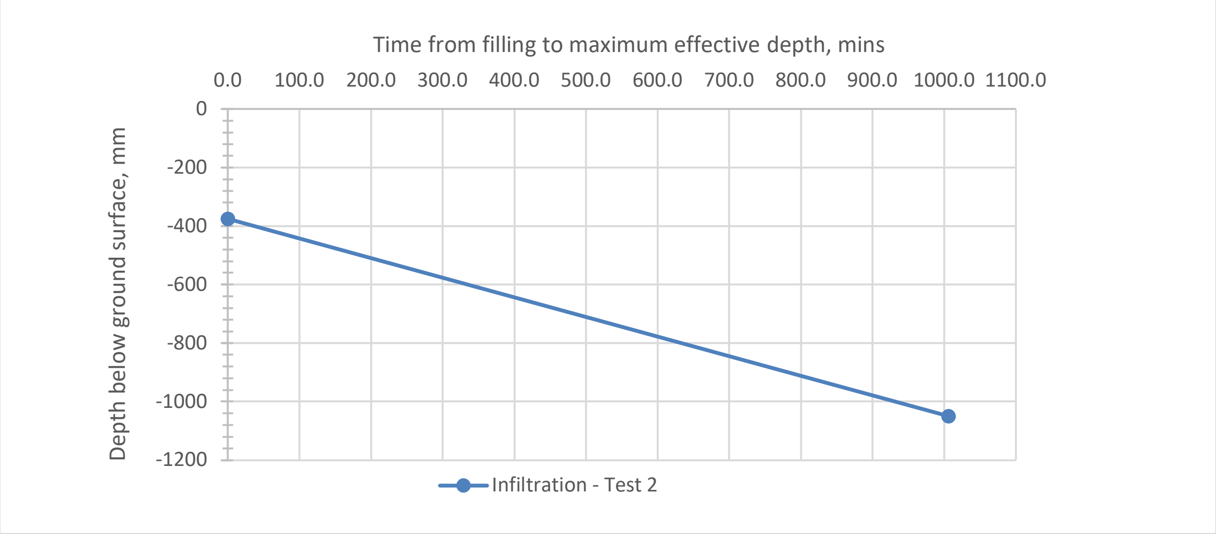
Soil infiltration Test
in General Accordance with BRE Digest 365

Job reference	559	**Client**	The Padel Club
Test Location	HP-2	**Site**	QLeisure, London Rd, Albourne, Hassocks, BN6 9BQ
Test Number	2	**Date carried out**	01.11.25 & 02.11.25
Weather	Light Rain	**Technician**	Chris P

		Readings		
Markers	**Water column (mm)**	**Invert from GL (mm)**	**Minutes passed**	**Time reading**
75%	825	-375	0.0	16:25:00
25%	150	-1050	1006.0	DAY2 09:11:00

Size of pit (m)		
Actual depth of pit, D':	1.20	*m*
Effective depth of Pit, D:	0.83	*m*
Length of pit, L:	1.20	*m*
Width of pit, W:	0.50	*m*

Effective depths (m)		**Minutes passed**
75 % Eff Depth	0.619	0
25 % Eff Depth	0.206	1006



Remarks

For Test 2 we filled to 830mm (0.25m³) at 16:25. As the critical 75% (0.62m) start depth was missed, the 825mm level (from the base) will be used as the proxy 75% depth for the tp75-25 calculation. This yields a conservative (longer) drain-down time, ensuring the resulting infiltration coefficient (f) is within scope.

Vp_{75-25}=	0.2475	m^3
a_{p50}=	2.0025	m^3
a_{s50}=	1.4025	m^2
t_{p75-25}=	1006.00	min

$$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-2}} = \quad 2E\text{-}06 \quad \mathrm{m/sec}$$

Soil infiltration Test
in General Accordance with BRE Digest 365

Job reference	559	**Client**	The Padel Club
Test Location	HP-2	**Site**	QLeisure, London Rd, Albourne, Hassocks, BN6 9BQ
Test Number	3	**Date carried out**	02.11.25 & 03.11.25
Weather	Light Rain	**Technician**	Chris P

CLEVER WORKS

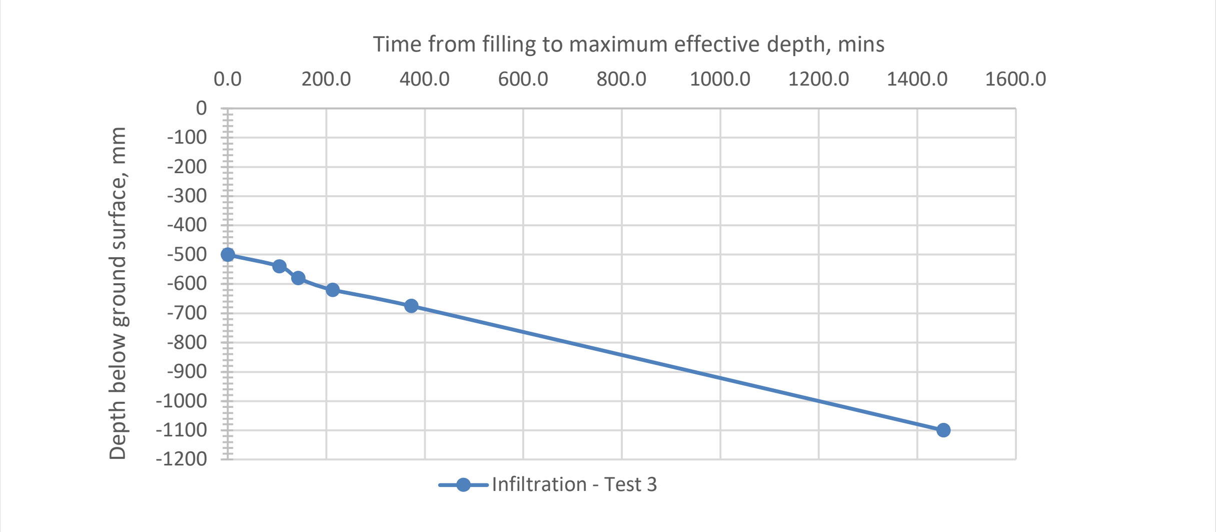
Readings

Markers	**Water column (mm)**	**Invert from GL (mm)**	**Minutes passed**	**Time reading**
	700	-500	0.0	09:17:00
	660	-540	105.0	11:02:00
	620	-580	143.0	11:40:00
	580	-620	213.0	12:50:00
75%	525	-675	373.0	15:30:00
				DAY3
25%	100	-1100	1453	09:31:00

Size of pit (m)

Actual depth of pit, D':	1.20 *m*
Effective depth of Pit, D:	0.70 *m*
Length of pit, L:	1.20 *m*
Width of pit, W:	0.50 *m*

Effective depths (m)		**Minutes passed**
75 % Eff Depth	0.525	373
25 % Eff Depth	0.175	1453



Remarks

For Test 3 we raised the water level in the pit to 0.70m. The 75% start depth was recorded before departing site. The 25% (0.175m) depth for the tp75-25 calculation has been missed, and we utilised the 100mm time-stamp as the 25% This yields a conservative (longer) drain-down time, ensuring the resulting infiltration coefficient (f) is within scope.

Vp_{75-25}= 0.21 m^3

a_{p50}= 1.79 m^3

a_{s50}= 1.19 m^2

t_{p75} = 1080.00 min

$$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}} = \text{1.8E-06} \quad \mathrm{m/sec}$$

To calculate the soil infiltration rate, the time taken for the water level to fall from 75% to 25% of the effective storage depth of the pit is calculated.

Soil infiltration rate : $f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$=

Where:

Vp_{75-25} = the effective storage volume of water in the trial pit between 75% and 25% effective depth

a_{p50}= = the internal surface area of the trial pit up to 50% effective depth and including the base. The trial pit is assumed to represent the true soil conditions before long-term use.

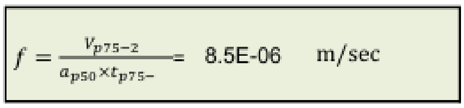
a_{s50}= the internal surface area of the trial pit up to 50% effective depth excluding the base to account for long-term clogging and ensure reliable performance. (not used in this model)

t_{p75-25} = the time for the water level to fall from 75% to 25% effective depth

For the design of any SUDS, it would be prudent to use the lowest, most conservative, infiltration rate. Soakaway drainage, if incorporated, should be designed in accordance with BRE Special Digest 365 – Soakaway Design.

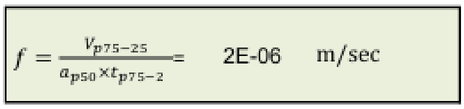
Once excavated, the pit was then filled with water, raising the water column in the pit from 0 to 780mm. The time and depth of water was then recorded at regular intervals to measure the rate of infiltration. For the 2nd test, the pit was filled with 830mm of water, and a final reading was taken the following morning, 02.11.25. The 3rd test was started the same morning of 02.11.25 by adding 700mm of water and a final reading was taken the following morning 03.11.25.

Trial Pit TP02
TEST01



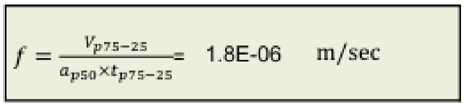
$f = \frac{V_{p75-2}}{a_{p50} \times t_{p75-}}$= 8.5E-06 m/sec

Trial Pit TP02
TEST02



$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-2}}$= 2E-06 m/sec

Trial Pit TP02
TEST03



$f = \frac{V_{p75-25}}{a_{p50} \times t_{p75-25}}$= 1.8E-06 m/sec

01932 544 095
hello@clever-works.co.uk

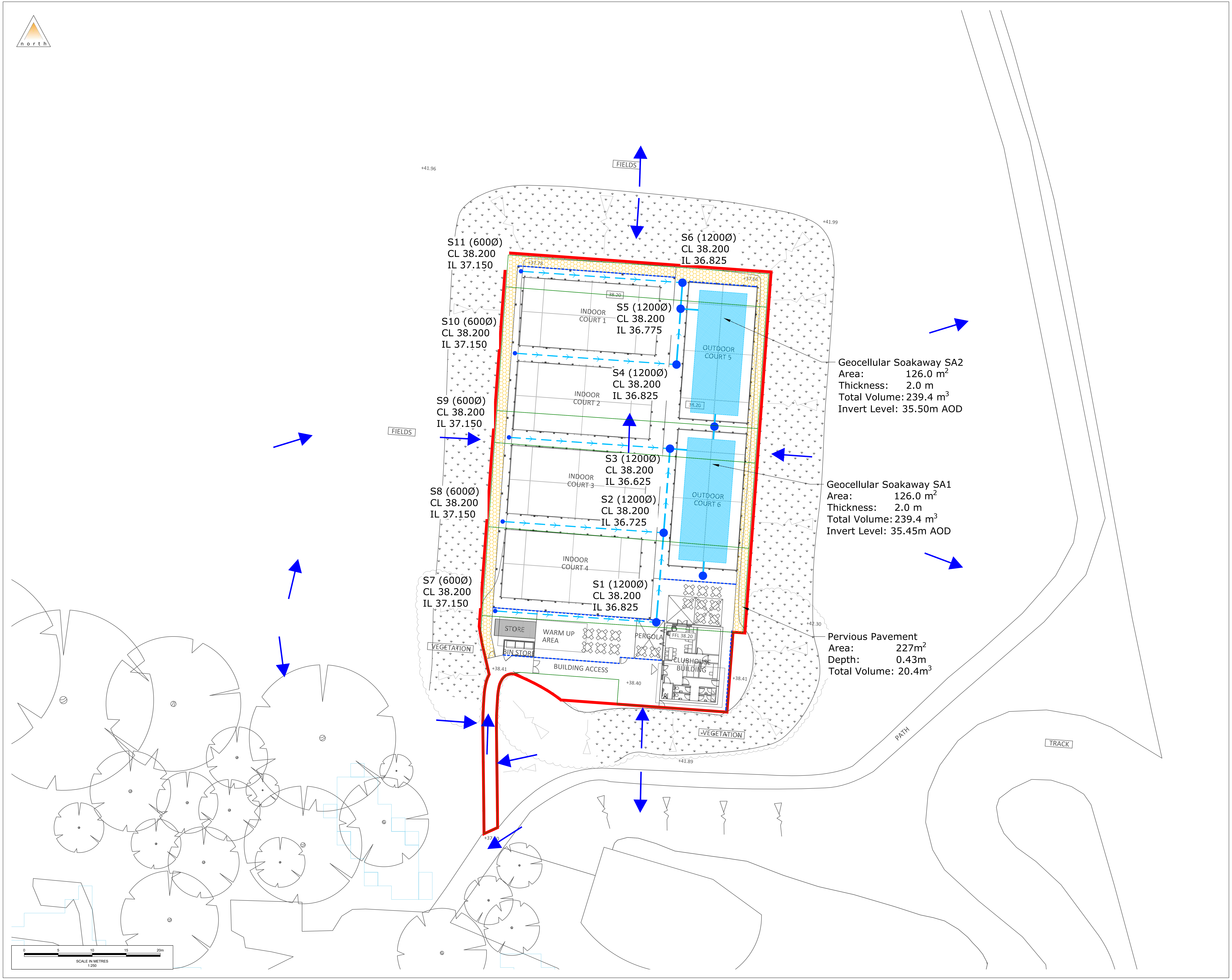
Clever Works Ltd is a limited company specialising in drainage and site investigation
Registered #13947390 in England and Wales.

Drainage Surveys | Drainage Design | Drainage Mapping | Drainage Repairs
Site Topographical Surveys | Boreholes | Trial pits | Opening-up Work

DECISIONS ARE ONLY AS GOOD AS THE DATA BEHIND THEM

Appendix G

Surface Water Drainage Strategy



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C:\Users\cgray\Motion\StaffSite - 1ecalb 2407053\Drawings\2407053-0501 P06 [Surface Water Drainage Strategy].dwg

Notes

1. All levels and dimensions are to be checked on site before any work commences. All dimensions are in metres unless stated otherwise.
2. Any discrepancies shall be reported to the engineer immediately, so that clarification can be sought prior to the commencement of works.
3. This drawing shall be read in conjunction with all other relevant engineering details, drawings and specification.
4. The contractor is to keep a record of any variations made on site, including the relocation of sewers or drains, for their "as built" drawings to be prepared upon project completion.
5. All works to adopted systems are to be carried out in accordance with Sewerage Sector Guidance Appendix C, Approved Version 2.1, 25 May 2021. All works to private drainage systems are to be in accordance with the Building Regulations Approved Document Part "H" 2015 edition.
6. 900mm min cover to be provided for private pipes laid beneath agricultural land and public open space unless not practicable. 1200mm min cover to be provided for highways and parking areas with unrestricted access to vehicles with a gross vehicle weight in excess of 7.5 tonnes unless not practicable. Where unachievable, shallow private drains may require protection using ductile iron pipe, concrete surround or concrete slabs bridging the trench, subject to the NHBC inspector's requirements.
7. All pipes shall be laid soffit to soffit with outgoing pipes unless otherwise stated.
8. Manholes situated within areas accessible to motor vehicles are to be fitted with suitable strength covers and frames. Please refer to the manhole schedule for guidance on this.
9. Due to the presence of the existing development and the surrounding raised land, it is not feasible to access the site to undertake deeper infiltration testing or to drill and install a borehole in the location of the proposed soakaways prior to planning approval.
10. However, the nearest log on the BGS GeoIndex website did not encounter groundwater to 33.45 m AOD (Section 2.6 of the Surface Water Drainage Strategy Report), and the low point of the proposed site layout is around 37.66 m AOD.
11. On this basis, the available information indicates that groundwater levels are unlikely to pose a constraint to the proposed geocellular soakaway locations, and the design can proceed accordingly without the need for further investigation at this stage. Geocellular soakaways have been approved previously on site in relation to application DM/18/1807 and therefore such an approach is considered entirely appropriate.
12. Based on the results of the third infiltration test in HP2, an infiltration rate of 1.8x10-6 m/s will be used for the 'Slightly clayey, Slightly silty SAND' underlying the site.
13. This drawing has been based upon survey information supplied by bpd Architecture and Saunders Architecture + Urban Design and Motion cannot guarantee the accuracy of the data provided.
14. Adjacent areas of hardstanding will comply with building regulations and divert water away from the buildings.
15. The top surface of the pervious pavement should finish at least 150mm below any adjoining DPC level. Advice should always be sought from the manufacturer.
16. Linear Drainage Channels and Gullys are required to convey surface water for up to the 100 year + 25% climate change critical flow rate. Construction details and supporting calculations are to be provided at the detailed design stage.
17. The Surface Water Drainage Strategy is based on preliminary levels and is subject to detailed design.
18. The exact location of all private rainwater pipes are to be confirmed with the architect details prior to commencement of works.

Legend

🟥	Site Boundary
⬡	Type A Total Infiltration Pervious Pavement - 300mm permeable subbase (30% void ratio)
▨	Geocellular Soakaway - Refer to Drawing for Dimensions
— → —	New Surface Water Gravity Pipe
→	Indicative existing exceedance flow route
●	New Surface Water Catchpit Chamber
🟦	EA Risk of Flooding from Surface Water - Climate Change 1 - shows the overall risk, rather than the risk associated with a specific event or scenario - includes the 'Central' climate change allowance for the 2050s epoch (2040-2060) for risk of flooding from surface water - Publication Date 28 January 2025)
☐	Catchment Areas in MicroDrainage Model
‐ ‐ ‐	New Surface Water Linear Drainage with Sump Unit

Rev.	Description	Drn	Chk	App	Date
P06	Sixth Issue	ST	CG	PA	27/11/2025
P05	Fifth Issue	ST	CG	PA	25/11/2025
P04	Fourth Issue	ST	CG	PA	12/11/2025
P03	Third Issue	ST	CG	PA	12/11/2025
P02	Second Issue	ST	CG	PA	02/06/2025
P01	First Issue	ST	CG	PA	29/05/2025

Drawing Status:

FOR PLANNING
NOT FOR CONSTRUCTION

motion
Guildford - Reading - London
www.motion.co.uk

Client:
QLeisure Ltd

Project:
QLeisure
London Rd, Albourne, Hassocks, BN6 9BQ

Title:
Surface Water Drainage Strategy

Scale: 1:250 (@ A1)

Drawing: 2407053-0501
Revision: P06

Appendix H

MicroDrainage Modelling Results

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FEH Rainfall Model

Return Period (years)	100	Volumetric Runoff Coeff.	1.000
		PIMP (%)	100
FEH Rainfall Version	2013	Add Flow / Climate Change (%)	25
Site Location	GB 526950 115550 TQ 26950 15550	Minimum Backdrop Height (m)	0.200
Data Type	Catchment	Maximum Backdrop Height (m)	1.500
Maximum Rainfall (mm/hr)	50	Min Design Depth for Optimisation (m)	1.200
Maximum Time of Concentration (mins)	30	Min Vel for Auto Design only (m/s)	1.00
Foul Sewage (l/s/ha)	0.000	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm at outfall S (pipe S1.003)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.102	4-8	0.016	8-12	0.011	12-16	0.009

Total Area Contributing (ha) = 0.137

Total Pipe Volume (m³) = 1.394

Time Area Diagram at outfall S (pipe S2.002)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.077	4-8	0.012	8-12	0.010	12-16	0.008

Total Area Contributing (ha) = 0.107

Total Pipe Volume (m³) = 0.847

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design

Network Design Table for Storm

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
S1.000	13.192	0.100	131.9	0.040	15.00	0.0	0.600	o	225	Pipe/Conduit	🔒
S1.001	12.413	0.100	124.1	0.049	0.00	0.0	0.600	o	225	Pipe/Conduit	🔒
S1.002	2.582	0.150	17.2	0.048	0.00	0.0	0.600	o	225	Pipe/Conduit	🔒
S1.003	6.861	0.050	137.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	🔒
S2.000	8.220	0.050	164.4	0.019	15.00	0.0	0.600	o	225	Pipe/Conduit	🔒
S3.000	3.854	0.050	77.1	0.018	15.00	0.0	0.600	o	225	Pipe/Conduit	🔒
S2.001	2.468	0.225	11.0	0.069	0.00	0.0	0.600	o	225	Pipe/Conduit	🔒
S2.002	6.748	0.050	135.0	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit	🔒

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
S1.000	50.00	15.19	36.825	0.040	0.0	0.0	1.8	1.14	45.2	9.0
S1.001	50.00	15.37	36.725	0.089	0.0	0.0	4.0	1.17	46.6	20.1
S1.002	50.00	15.38	36.625	0.137	0.0	0.0	6.2	3.17	126.0	31.0
S1.003	50.00	15.49	36.500	0.137	0.0	0.0	6.2	1.11	44.3	31.0
S2.000	50.00	15.13	36.825	0.019	0.0	0.0	0.8	1.02	40.4	4.2
S3.000	50.00	15.04	36.825	0.018	0.0	0.0	0.8	1.49	59.3	4.2
S2.001	50.00	15.15	36.775	0.107	0.0	0.0	4.8	3.97	158.0	24.1
S2.002	50.00	15.25	36.550	0.107	0.0	0.0	4.8	1.12	44.7	24.1

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
S1	38.200	1.375	Open Manhole	1200	S1.000	36.825	225				
S2	38.200	1.475	Open Manhole	1200	S1.001	36.725	225	S1.000	36.725	225	
S3	38.200	1.575	Open Manhole	1200	S1.002	36.625	225	S1.001	36.625	225	
SSA1	38.200	1.725	Junction		S1.003	36.500	225	S1.002	36.475	225	
S	37.850	1.400	Open Manhole	0		OUTFALL		S1.003	36.450	225	
S4	38.200	1.375	Open Manhole	1200	S2.000	36.825	225				
S6	38.200	1.375	Open Manhole	1200	S3.000	36.825	225				
S5	38.200	1.425	Open Manhole	1200	S2.001	36.775	225	S2.000	36.775	225	
								S3.000	36.775	225	
SSA2	38.200	1.650	Junction		S2.002	36.550	225	S2.001	36.550	225	
S	37.600	1.100	Open Manhole	0		OUTFALL		S2.002	36.500	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S1	526918.929	115378.755	526918.929	115378.755	Required	
S2	526920.023	115391.901	526920.023	115391.901	Required	
S3	526920.954	115404.279	526920.954	115404.279	Required	
SSA1	526923.390	115403.424			No Entry	
S	526930.216	115404.117			No Entry	
S4	526922.000	115416.632	526922.000	115416.632	Required	
S6	526922.969	115428.666	526922.969	115428.666	Required	
S5	526922.636	115424.827	526922.636	115424.827	Required	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
SSA2	526925.102	115424.714			No Entry	
S	526931.824	115425.301			No Entry	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	o	225	S1	38.200	36.825	1.150	Open Manhole	1200
S1.001	o	225	S2	38.200	36.725	1.250	Open Manhole	1200
S1.002	o	225	S3	38.200	36.625	1.350	Open Manhole	1200
S1.003	o	225	SSA1	38.200	36.500	1.475	Junction	
S2.000	o	225	S4	38.200	36.825	1.150	Open Manhole	1200
S3.000	o	225	S6	38.200	36.825	1.150	Open Manhole	1200
S2.001	o	225	S5	38.200	36.775	1.200	Open Manhole	1200
S2.002	o	225	SSA2	38.200	36.550	1.425	Junction	

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
S1.000	13.192	131.9	S2	38.200	36.725	1.250	Open Manhole	1200
S1.001	12.413	124.1	S3	38.200	36.625	1.350	Open Manhole	1200
S1.002	2.582	17.2	SSA1	38.200	36.475	1.500	Junction	
S1.003	6.861	137.2	S	37.850	36.450	1.175	Open Manhole	0
S2.000	8.220	164.4	S5	38.200	36.775	1.200	Open Manhole	1200
S3.000	3.854	77.1	S5	38.200	36.775	1.200	Open Manhole	1200
S2.001	2.468	11.0	SSA2	38.200	36.550	1.425	Junction	
S2.002	6.748	135.0	S	37.600	36.500	0.875	Open Manhole	0

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.040	0.040	0.040
1.001	User	-	100	0.049	0.049	0.049
1.002	User	-	100	0.048	0.048	0.048
1.003	-	-	100	0.000	0.000	0.000
2.000	User	-	100	0.019	0.019	0.019
3.000	User	-	100	0.018	0.018	0.018
2.001	User	-	100	0.069	0.069	0.069
2.002	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.244	0.244	0.244

Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
S1.000	S1	225	1.150	1.250	Unclassified	1200	0	1.150	Unclassified
S1.001	S2	225	1.250	1.350	Unclassified	1200	0	1.250	Unclassified
S1.002	S3	225	1.350	1.500	Unclassified	1200	0	1.350	Unclassified
S1.003	SSA1	225	1.175	1.475	Unclassified				Junction
S2.000	S4	225	1.150	1.200	Unclassified	1200	0	1.150	Unclassified
S3.000	S6	225	1.150	1.200	Unclassified	1200	0	1.150	Unclassified
S2.001	S5	225	1.200	1.425	Unclassified	1200	0	1.200	Unclassified
S2.002	SSA2	225	0.875	1.425	Unclassified				Junction

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S1.003	S	37.850	36.450	0.000	0	0

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
S2.002	S	37.600	36.500	0.000	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	1.000	Hot Start Level (mm)	0	Additional Flow - % of Total Flow	0.000	Flow per Person per Day (l/per/day)	0.000
Areal Reduction Factor	1.000	Manhole Headloss Coeff (Global)	0.500	MADD Factor * 10m³/ha Storage	0.000	Run Time (mins)	60
Hot Start (mins)	0	Foul Sewage per hectare (l/s)	0.000	Inlet Coeffiecient	0.800	Output Interval (mins)	1

Number of Input Hydrographs	0	Number of Online Controls	2	Number of Offline Controls	1	Number of Storage Structures	3	Number of Time/Area Diagrams	0	Number of Real Time Controls	0

Synthetic Rainfall Details

Rainfall Model	FEH	Data Type	Catchment	Cv (Winter)	0.840
Return Period (years)	100	Summer Storms	Yes	Storm Duration (mins)	30
FEH Rainfall Version	2013	Winter Storms	No		
Site Location	GB 526950 115550 TQ 26950 15550	Cv (Summer)	1.000		

Online Controls for Storm

Pump Manhole: SSA1, DS/PN: S1.003, Volume (m^3): 0.1

Invert Level (m) 36.500

Pump Manhole: SSA2, DS/PN: S2.002, Volume (m^3): 0.1

Invert Level (m) 36.550

Offline Controls for Storm

Pipe Manhole: SSA2, DS/PN: S2.002, Loop to PN: S1.003

Diameter (m)	0.225	Slope (1:X)	149.3	Roughness k (mm)	0.600	Coefficient of Contraction	0.600
Section Type	Pipe/Conduit	Length (m)	3.733	Entry Loss Coefficient	0.500	Upstream Invert Level (m)	36.500

Storage Structures for Storm

Cellular Storage Manhole: SSA1, DS/PN: S1.003

```
                   Invert Level (m)   35.450  Infiltration Coefficient Side (m/hr)  0.00648  Porosity  0.95
Infiltration Coefficient Base (m/hr)  0.00648                        Safety Factor      1.5
```

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	126.0	126.0	2.000	126.0	226.0	2.001	0.0	226.0

Porous Car Park Manhole: S6, DS/PN: S3.000

```
Infiltration Coefficient Base (m/hr)  0.00648     Safety Factor    10.0    Width (m)    1.5 Depression Storage (mm)    5
        Membrane Percolation (mm/hr)     1000          Porosity    0.30   Length (m)  184.5    Evaporation (mm/day)    3
               Max Percolation (l/s)     76.9  Invert Level (m)  37.770  Slope (1:X)    0.0      Membrane Depth (mm)  130
```

Cellular Storage Manhole: SSA2, DS/PN: S2.002

```
                   Invert Level (m)   35.500  Infiltration Coefficient Side (m/hr)  0.00648  Porosity  0.95
Infiltration Coefficient Base (m/hr)  0.00648                        Safety Factor      1.5
```

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	126.0	126.0	2.000	126.0	226.0	2.001	0.0	226.0

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
S1.000	S1	0.500
S1.001	S2	0.500
S1.002	S3	0.500
S1.003	SSA1	0.000
S2.000	S4	0.500
S3.000	S6	0.500
S2.001	S5	0.500
S2.002	SSA2	0.000

Volume Summary (Static)

Length Calculations based on Centre-Centre

Pipe Number	**USMH Name**	**Manhole Volume (m³)**	**Pipe Volume (m³)**	**Storage Structure Volume (m³)**	**Total Volume (m³)**
S1.000	S1	1.555	0.525	0.000	2.080
S1.001	S2	1.668	0.494	0.000	2.162
S1.002	S3	1.781	0.103	0.000	1.884
S1.003	SSA1	0.000	0.273	239.440	239.713
S2.000	S4	1.555	0.327	0.000	1.882
S3.000	S6	1.555	0.153	24.907	26.616
S2.001	S5	1.612	0.098	0.000	1.710
S2.002	SSA2	0.000	0.268	239.440	239.708
Total		9.726	2.240	503.787	515.754

Volume Summary (Static)

Length Calculations based on True Length

Pipe Number	**USMH Name**	**Manhole Volume (m³)**	**Pipe Volume (m³)**	**Storage Structure Volume (m³)**	**Total Volume (m³)**
S1.000	S1	1.555	0.477	0.000	2.032
S1.001	S2	1.668	0.446	0.000	2.114
S1.002	S3	1.781	0.079	0.000	1.860
S1.003	SSA1	0.000	0.273	239.440	239.713
S2.000	S4	1.555	0.279	0.000	1.834
S3.000	S6	1.555	0.106	24.907	26.568
S2.001	S5	1.612	0.074	0.000	1.686
S2.002	SSA2	0.000	0.268	239.440	239.708
Total		9.726	2.001	503.787	515.515

Summary of Critical Results by Maximum Level (Rank 1) for Storm

```
                                    Simulation Criteria
     Areal Reduction Factor  1.000    Manhole Headloss Coeff (Global)  0.500        MADD Factor * 10m³/ha Storage  0.000
           Hot Start (mins)      0      Foul Sewage per hectare (l/s)  0.000                   Inlet Coeffiecient  0.800
         Hot Start Level (mm)      0  Additional Flow - % of Total Flow  0.000  Flow per Person per Day (l/per/day)  0.000

Number of Input Hydrographs  0  Number of Online Controls  2  Number of Offline Controls  1  Number of Storage Structures  3  Number of Time/Area Diagrams  0  Number of Real Time Controls  0

                                  Synthetic Rainfall Details
                  Rainfall Model   FEH  Site Location  GB 526950 115550 TQ 26950 15550  Cv (Winter)  1.000
             Return Period (years)     2      Data Type                        Catchment
              FEH Rainfall Version  2013    Cv (Summer)                          1.000

        Margin for Flood Risk Warning (mm)                             300.0  DTS Status  ON  Inertia Status  ON
                        Analysis Timestep  2.5 Second Increment (Extended)  DVD Status  ON


                        Profile(s)                                                       Summer and Winter
                Duration(s) (mins)  15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880
             Sensitivity flows(s) (%)                                                                   0
```

PN	US/MH Name	Event	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Overflow Vol (m³)	Maximum Vol (m³)	Discharge Vol (m³)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1	30 minute 2 year Summer Q+0%	30	38.200	36.873	-0.177	0.000		0.049	4.642		4.1	OK
S1.001	S2	15 minute 2 year Summer Q+0%	15	38.200	36.808	-0.142	0.000		0.155	7.801		11.4	OK
S1.002	S3	15 minute 2 year Summer Q+0%	15	38.200	36.719	-0.131	0.000		0.172	12.000		19.4	OK
S1.003	SSA1	2880 minute 2 year Winter Q+0%	2880	38.200	35.890	-0.835	0.000		53.055	0.000	2711	0.0	OK*
S2.000	S4	30 minute 2 year Summer Q+0%	30	38.200	36.862	-0.188	0.000		0.037	2.180		1.9	OK
S3.000	S6	30 minute 2 year Summer Q+0%	30	38.200	36.860	-0.190	0.000		0.034	0.766	8	1.8	OK
S2.001	S5	15 minute 2 year Summer Q+0%	15	38.200	36.843	-0.157	0.000		0.143	7.955		13.2	OK
S2.002	SSA2	2880 minute 2 year Summer Q+0%	2880	38.200	35.812	-0.963	0.000	0.000	37.629	0.000	2417	0.0	OK*

Summary of Critical Results by Maximum Level (Rank 1) for Storm

```
                                     Simulation Criteria
Areal Reduction Factor  1.000    Manhole Headloss Coeff (Global)  0.500        MADD Factor * 10m³/ha Storage  0.000
      Hot Start (mins)      0      Foul Sewage per hectare (l/s)  0.000                    Inlet Coeffiecient  0.800
   Hot Start Level (mm)      0  Additional Flow - % of Total Flow  0.000  Flow per Person per Day (l/per/day)  0.000

Number of Input Hydrographs  0  Number of Online Controls  2  Number of Offline Controls  1  Number of Storage Structures  3  Number of Time/Area Diagrams  0  Number of Real Time Controls  0

                                  Synthetic Rainfall Details
          Rainfall Model   FEH  Site Location  GB 526950 115550 TQ 26950 15550  Cv (Winter)  1.000
     Return Period (years)    30      Data Type                          Catchment
      FEH Rainfall Version  2013    Cv (Summer)                              1.000

Margin for Flood Risk Warning (mm)                            300.0  DTS Status  ON  Inertia Status  ON
                 Analysis Timestep  2.5 Second Increment (Extended)  DVD Status  ON


              Profile(s)                                                          Summer and Winter
        Duration(s) (mins)  15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880
     Sensitivity flows(s) (%)                                                              0, +20
```

PN	US/MH Name	Event	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Overflow Vol (m³)	Maximum Vol (m³)	Discharge Vol (m³)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1	15 minute 30 year Summer Q+20%	15	38.200	37.005	-0.045	0.000		0.197	9.152		10.9	OK
S1.001	S2	15 minute 30 year Summer Q+20%	15	38.200	36.990	0.040	0.000		0.712	20.365		35.2	SURCHARGED
S1.002	S3	15 minute 30 year Summer Q+20%	15	38.200	36.892	0.042	0.000		0.689	31.315		60.5	SURCHARGED
S1.003	SSA1	2880 minute 30 year Winter Q+20%	2880	38.200	36.454	-0.271	0.000		121.185	0.000	5199	0.0	OK*
S2.000	S4	15 minute 30 year Summer Q+20%	15	38.200	36.914	-0.136	0.000		0.096	4.298		4.7	OK
S3.000	S6	15 minute 30 year Summer Q+20%	15	38.200	36.910	-0.140	0.000		0.090	2.562	14	4.7	OK
S2.001	S5	15 minute 30 year Summer Q+20%	15	38.200	36.910	-0.090	0.000		0.322	22.704		44.2	OK
S2.002	SSA2	2880 minute 30 year Winter Q+20%	2880	38.200	36.235	-0.540	0.000	0.000	88.704	0.000	4082	0.0	OK*

Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) 0.500 MADD Factor * 10m³/ha Storage 0.000
Hot Start (mins) 0 Foul Sewage per hectare (l/s) 0.000 Inlet Coeffiecient 0.800
Hot Start Level (mm) 0 Additional Flow - % of Total Flow 0.000 Flow per Person per Day (l/per/day) 0.000

Number of Input Hydrographs 0 Number of Online Controls 2 Number of Offline Controls 1 Number of Storage Structures 3 Number of Time/Area Diagrams 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FEH Site Location GB 526950 115550 TQ 26950 15550 Cv (Winter) 1.000
Return Period (years) 100 Data Type Catchment
FEH Rainfall Version 2013 Cv (Summer) 1.000

Margin for Flood Risk Warning (mm) 300.0 DTS Status ON Inertia Status ON
Analysis Timestep 2.5 Second Increment (Extended) DVD Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880
Sensitivity flows(s) (%) 0, +25

PN	US/MH Name	Event	Duration (mins)	US/CL (m)	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Overflow Vol (m³)	Maximum Vol (m³)	Discharge Vol (m³)	Half Drain Time (mins)	Pipe Flow (l/s)	Status
S1.000	S1	15 minute 100 year Summer Q+25%	15	38.200	37.211	0.161	0.000		0.431	11.966		15.4	SURCHARGED
S1.001	S2	15 minute 100 year Summer Q+25%	15	38.200	37.192	0.242	0.000		1.000	26.624		47.1	SURCHARGED
S1.002	S3	15 minute 100 year Summer Q+25%	15	38.200	37.047	0.197	0.000		0.918	40.940		80.5	SURCHARGED
S1.003	SSA1	2880 minute 100 year Winter Q+25%	2880	38.200	36.693	-0.032	0.000		150.078	0.000	6119	0.0	OK*
S2.000	S4	30 minute 100 year Summer Q+25%	30	38.200	36.944	-0.106	0.000		0.129	7.651		7.0	OK
S3.000	S6	30 minute 100 year Summer Q+25%	30	38.200	36.942	-0.108	0.000		0.127	5.788	13	6.9	OK
S2.001	S5	15 minute 100 year Summer Q+25%	15	38.200	36.938	-0.062	0.000		0.412	30.123		58.2	OK
S2.002	SSA2	2880 minute 100 year Winter Q+25%	2880	38.200	36.692	-0.083	0.000	-19.136	143.935	0.000	5907	0.0	OK*

Appendix I

Drainage Management and Maintenance Plan

QLeisure,
London Rd, Albourne, Hassocks, BN6 9BQ

Sustainable Drainage Management and Maintenance Plan

For

The Padel Club

Document Control Sheet

QLeisure,

London Rd, Albourne, Hassocks, BN6 9BQ

The Padel Club

This document has been issued and amended as follows:

Date	Issue	Prepared by	Approved by
29/05/2025	Draft	Chris Gray	Phil Allen MCIWEM C.WEM
02/06/2025	Final	Chris Gray	Phil Allen MCIWEM C.WEM
12/11/2025	Final B	Chris Gray	Phil Allen MCIWEM C.WEM

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Contents

1.0 Introduction

1.1 This document sets out the principles for the long-term management and maintenance of the proposed sustainable drainage system on the QLeisure development.

1.2 The purpose of this document is to ensure that the site management company or their agents have a robust inspection and maintenance plan going forwards. This ensures the optimum operation of the sustainable surface water drainage system and that it will be continually maintained for the lifetime of the development. This will contribute to reducing the risk of surface water flooding both on- and off-site.

1.3 All those responsible for maintenance should follow relevant health and safety legislation for all activities listed within this report (including lone working, if relevant). Method statements and risk assessments should always be undertaken and made available, if requested.

1.4 This document has been produced by Motion on behalf of their client, The Padel Club. This document describes the typical management and maintenance tasks that are known at the design stage (maintenance frequencies and typical tasks, for example). These have been drawn from industry guidance such as CIRIA C753 - The SuDS Manual - and manufacturer's own guidance.

1.5 Maintenance is considered as a construction activity under the CDM Regulations 2015. Under the CDM Regulations, it is a requirement that a competent person be appointed to carry out a required role. CDM defines a competent person as an individual with sufficient knowledge of the specific tasks to be undertaken, as well as sufficient experience and ability to carry out their duties in relation to the task in a way that secures health and safety on site.

1.6 In recognition of the requirements of the CDM Regulations 2015, this sustainable drainage management and maintenance plan expects that the maintenance work will be carried out by a competent person who must have prior knowledge of the drainage components and SuDS systems on site.

1.7 There are limitations on what this document can prescribe at this time. At this stage this document cannot name the specific individuals who will carry out the maintenance and what equipment is to be used. Related to this, this document is unable to provide method statements for exactly how maintenance practices will be carried out. These can only be determined at the time of the maintenance being carried out and the exact maintenance need. Therefore, this is to be the responsibility of the site management company and/or the individuals carrying out the work. We urge those who are carrying out the maintenance to record this information and make it available to the Local Planning Authority (LPA), if required to do so. This drainage management and maintenance plan needs to be a living document that is owned and maintained by the adopting site management company.

2.0 Maintenance Categories

2.1 There are three categories of maintenance activities referred to in this report. These are:

Regular maintenance (including inspections and monitoring)

- Regular maintenance consists of basic tasks done on a frequent and predictable schedule, including inspections, vegetation management, and litter, silt and debris removal.

Occasional maintenance

- Occasional maintenance comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).

Remedial maintenance

- Remedial maintenance comprises of intermittent tasks that may be required to rectify faults associated with the system. The likelihood of faults can be minimised by correct installation, regular inspection and timely maintenance. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events and, as such, timings are difficult to predict.
- This document should be read in conjunction with the design drawings of the sustainable drainage system, so that the location and type of each feature can be recognised and understood.

3.0 The Sustainable Surface Water Drainage System

3.1 The proposed sustainable surface water drainage system is made up of a number of components. These include:

- Geocellular soakaways
- Pervious paving
- Catchpit manholes/silt traps
- Manholes
- Pipes

3.2 All components should be installed in accordance with the manufacturer's instructions and to the levels/arrangement as defined on the designer's drawings. Not doing so will invalidate any warranty provided by the manufacturer.

3.3 All maintenance and cleaning must be carried out in accordance with manufacturer's recommendations and by competent and suitably qualified staff, as defined in the CDM regulations 2015.

4.0 General Maintenance Principles

4.1 All surface water drainage systems, whether piped gravity systems or Sustainable Drainage Systems (SuDS), require regular maintenance to keep them working at optimum efficiency and capacity. The maintenance of the sustainable surface water drainage system on the development should be carried out alongside other regular maintenance tasks on site.

4.2 Timely and adequate maintenance will increase the lifespan of all the drainage components. Inadequate maintenance will do the reverse. Therefore, the projected lifespan and anticipated replacement date of each drainage component cannot be forecast at the time of this document being produced.

4.3 The site management company and/or their agents are responsible for the maintenance of the sustainable surface water drainage system.

4.4 Construction activities can create and discharge significant quantities of sediment that will quickly clog the sustainable surface water drainage system. Therefore, construction-stage sediment removal is required immediately post-construction. This may require several cleans of the system during the first year after installation. The construction site manager should assess this and carry out cleaning as necessary.

4.5 Catchpit manholes/silt traps will be specified upstream of the attenuation storage and pervious paving. They will remove gross solids and the majority of silts. It is important that any debris build-up in the catchpit manholes/silt traps is removed at regular intervals. This will reduce the risk of the pervious paving becoming silted up. It will maintain its design capacity and function.

4.6 Cleaning should also take place after large storms when there have been increased surface water flows and visible entrainment and deposition of debris.

4.7 An increased frequency of inspection and maintenance should be programmed into the autumn and winter months in acknowledgement that:

- Leaf fall from deciduous trees in autumn will result in an increased amount of leaf litter and an elevated blockage risk of drainage infrastructure.
- Increased rainfall during winter months will result in greater quantities of water moving through the drainage system and a greater input of silt and other debris.

4.8 Table 4.1, below, gives an overview of typical maintenance tasks and the frequency with which they need to be undertaken. Section 5 – Inspection and Maintenance Frequency of Components – will assign typical maintenance frequencies and tasks to the specific components used within the sustainable surface water drainage system used on the development.

Table 4.1: Typical maintenance tasks and frequencies

Activity	Indicative Frequency	Typical Tasks
Routine/regular maintenance	Monthly to annually	▶ Litter picking ▶ Silt removal ▶ Inspection of all inlets, outlets and control structures ▶ Weed removal and invasive plant control
Occasional maintenance	Annually up to 25 years	▶ Silt control around components ▶ Vegetation management around components ▶ Sweeping of pavement areas to remove surface silt ▶ Silt removal from catchpits, cellular storage structures
Remedial maintenance	As required	▶ Inlet/outlet repairs ▶ Erosion repairs ▶ Reinstatement of edgings ▶ Reinstatement following pollution ▶ Removal of silt build-up and leaf litter after storms ▶ Repair of vandalism ▶ Replacement of any blocked filter ▶ membranes/materials

5.0 Inspection and Maintenance Frequency of Components

5.1 Table 5.1 below lists each of the components used within the site's sustainable surface water drainage system. It suggests an indicative maintenance frequency for each component and ascribes typical maintenance tasks to them.

5.2 This list is not exhaustive, nor is it prescriptive. As mentioned in Section 3, additional, unscheduled maintenance may be required following adverse weather conditions or after autumn leaf falls. Additional maintenance tasks may be required to adequately clean and maintain individual components.

5.3 The list of components should be cross-referenced with the designer's drawings so that the location of each component can be identified.

5.4 It is the responsibility of the site management company and/or their agents to ensure that all necessary maintenance activities are carried out in a timely manner and that the design performance of each drainage component is preserved.

5.5 If there is any uncertainty regarding the correct and safe methods of cleaning, or what equipment should be used, the manufacturer should be consulted.

Table 5.1: Maintenance Frequency and Task for Drainage Components

Activity	Indicative Frequency	Anticipated Tasks
Pipes	As required	▸ Identify any pipes that may not be operating properly and employ a competent, qualified contractor to inspect using CCTV. ▸ If the pipe is blocked with silt or debris, the pipe should be jetted clean from an upstream access point. All silt and debris should be captured and removed at a downstream access point. ▸ Inspect once clean. ▸ If any other defects are encountered (cracks, displaced joints, root ingress), appropriate solutions should be discussed with a competent and qualified contractor. These services are usually provided by the same companies that offer CCTV surveys and pipe jetting services.
Manholes	Annually	▸ Inspect/identify any damage or areas that are not operating correctly ▸ Remove silt, litter, leaves and other detritus. ▸ Inspect once clean.
Catchpit Manholes/Silt Traps	Twice a year, before and after autumn/winter	▸ Inspect/identify any damage or areas that are not operating correctly ▸ Remove silt, litter, leaves and other detritus. ▸ Inspect once clean.
Geocellular Crates	Every three months for the first year, then annually thereafter	▸ Contact manufacturer for instruction on approved and safe inspection and maintenance practices ▸ Inspect/identify any areas that are not operating correctly ▸ Remove debris from catchment surface

		▶ Remove sediment from pre-treatment structures ▶ Check for silt build-up and flush and remove as required (in accordance with manufacturer's instructions). ▶ Inspect once clean. ▶ See Table 21.3 of CIRIA C753 for more information. ▶ Most geocellular units have a 60 year creep limited life expectancy, so they should be planned for replacement by 2081 (approx.).
Pervious pavements	Once a year after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations.	▶ Remove litter including leaf litter and debris from surface and agitate surface to ensure no vegetation or moss is allowed to establish and grow. ▶ Locally refill with the correct aggregate once a year or as appropriate ▶ Remove weeds from the surface through the application of glyphosate-based weed killers ▶ Stabilise and mow contributing and adjacent areas. ▶ Inspect once clean. ▶ See Table 20.15 of CIRIA C753 for more information. ▶ Major oil spills have the potential to contaminate the surface and the underlying crushed stone. In the event of a major oil spill, the area of crushed stone that is affected should be removed, cleaned and reinstalled.

5.6 Upon completion of maintenance activities, a record should be kept of the work carried out. This should be retained and an annual maintenance report should be compiled, which should include the following:

- Observations resulting from inspections
- Maintenance and operation activities undertaken during the year
- Recommendations for inspections and maintenance programmes for the following year

5.7 On the last page of this document is a table with suggested information should be recorded and included with the maintenance plan. As mentioned in the introduction to this document, this should be a living document and regularly updated, as required.

5.8 The Local Planning Authority (Mid Sussex District Council) may request to check and sign off any maintenance activities. Therefore, it is the recommendation that the LPA is contacted prior to any scheduled routine maintenance. The table mentioned above and on the next page, as well as the annual maintenance report, should be offered to the LPA for their records and approval.

Date	Component requiring maintenance	Issues prompting maintenance	Scheduled maintenance (Y/N)	Maintenance carried out	Additional works required (Y/N). If yes, please detail	Next scheduled date of inspection and maintenance

Appendix J

Surface Water Drainage Proforma

Surface Water Drainage Proforma

West Sussex County Council (WSCC) as Lead Local Flood Authority recommends this proforma is completed and submitted to support any planning application for a major development. The information contained in this form will be used by WSCC officers in their role as 'statutory consultee' on surface water drainage. The proforma should accompany the site-specific Flood Risk Assessment and Drainage Strategy submitted as part of the planning application.

1. Site Details

No.	Requirement	Answer	Application Type
1.1	Address including postcode	QLeisure Ltd, London Rd, Albourne, Hassocks, BN6 9BQ	Outline & Full
1.2	OS grid reference (easting and northing)	526918,115407	Outline & Full
1.3	Planning application reference	-	Outline & Full
1.4	Total site area (hectares)	0.252	Outline & Full
1.5	Pre-development use	Artificial turf football pitch, associated buildings and a gravel path	Outline & Full
1.6	Proposed design life	40 years	Outline & Full
1.7	Have agreements in principle for discharge been provided (where applicable)? (YES/NO)	N/A	Outline & Full
1.8	Topographic Survey Plan showing existing site layout, site levels and drainage system	Appendix A	Outline & Full

2. Discharge Hierarchy/Methods of Discharge[1]

No.	Requirement	Answer	Application Type
2.1	Store rainwater for later use (reuse) (YES/NO)	No	Full
2.2	Infiltration techniques such as soakaways, permeable paving, etc (YES/NO)	Yes	Outline & Full
2.3	Hybrid (YES/NO)	No	Outline & Full

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[1] Runoff may be discharged via one or multiple methods.

No.	Requirement	Answer	Application Type
2.4	Attenuation with restricted discharge to watercourse (YES/NO)	No	Outline & Full
2.5	Attenuation with restricted discharge to surface water sewer (YES/NO)	No	Outline & Full
2.6	Attenuation with restricted discharge to combined sewer (YES/NO)	No	Outline & Full

3. Calculation Inputs

No.	Requirement	Answer	Application Type
3.1	Area within site which is drained by SuDS[2] (hectares)	0.244	Outline & Full
3.2	Impermeable area drained pre-development[3] (hectares)	0.211	Outline & Full
3.3	Impermeable area drained post-development[3] (hectares)	0.244	Outline & Full
3.4	Urban Creep (hectares)	N/A	Outline & Full
3.5	Climate change factor applied (1 in 30 and 1 in 100) (percentage)	20 and 25%	Outline & Full

4. Infiltration Feasibility/Ground Investigations

No.	Requirement	Answer	Application Type
4.1	Has winter groundwater monitoring and infiltration been undertaken? (YES/NO)	No. See section 2.18-2.20 of the report.	Outline & Full
4.2	Period of winter groundwater monitoring (from/to)	-	Outline & Full
4.3	Depth to highest recorded groundwater level (mAOD)	33.45m AOD based on section 2.6 of the report	Full
4.4	Infiltration rate	Based on sections 2.17-2.22 of the report, worst-case infiltration rate 1.8x10-6 m/s	Outline & Full

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[2] Impermeable area should be measured pre and post development. Impermeable surfaces include roofs, pavements, driveways and paths, where runoff is conveyed to the drainage system.

[3] 10% Urban Creep should be added to the volumes required for storage and not increase discharge rates.

No.	Requirement	Answer	Application Type
4.5	Depth of infiltration structure (mAOD)	35.45m AOD	Full
4.6	Safety factor used for sizing infiltration storage	1.5	Outline & Full

5. Calculation Outputs: Greenfield Runoff Rates[4]

No.	Requirement	Answer	Application Type
5.1	Qbar (l/s)	1.3	Outline & Full
5.2	1 in 1 year rainfall (l/s)	1.2	Outline & Full
5.3	1 in 30 year rainfall (l/s)	3.3	Outline & Full
5.4	1 in 100 year rainfall (l/s)	4.6	Outline & Full

6. Calculation Outputs: Brownfield Runoff Rates (including Urban Creep) (if applicable)

No.	Requirement	Answer	Application Type
6.1	1 in 1 year rainfall (l/s)	N/A	Outline & Full
6.2	1 in 30 year rainfall (l/s)	N/A	Outline & Full
6.3	1 in 100 year rainfall (l/s)	N/A	Outline & Full

7. Calculation Outputs: Volume Control/Infiltration Provision

No.	Requirement	Answer	Application Type
7.1	Infiltration (m^3)	478.8	Outline & Full
7.2	Attenuation (m^3)	0	Outline & Full
7.3	Separate volume designated as long-term storage[5] (m^3)	20.4	Full
7.4	Total volume control (sum of inputs for 7.1 to 7.3) (m^3)	499.2	Full

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[4] Flows within long term storage areas should be infiltrated to the ground or discharged at low flow rate of maximum 2 litres per second per hectare (l/s/ha).

[5] In calculations and for the avoidance of doubt FEH shall be used FSR is not acceptable, and CV values must equal 1.

8. Calculation Outputs: Attenuation/Restricted Discharge

No.	Requirement		Answer	Application Type
8.1	Proposed discharge rate (critical storm)	1 in 1 (100%) AEP (m/s)	N/A	Outline & Full
		1 in 30 (3.33%) AEP (m/s)	N/A	Outline & Full
		1 in 30 (3.33%) AEP plus climate change (m/s)	N/A	Outline & Full
		1 in 100 (1%) AEP (m/s)	N/A	Outline & Full
		1 in 100 (1%) AEP plus climate change (m/s)	N/A	Outline & Full
8.2	Calculations show critical storm durations (both by max height and max discharge) for 1 in 1, 1 in 30, 1 in 30 plus climate change, 1 in 100 and 1 in 100 year plus climate change allowance can be accommodated on site (YES/NO)		Yes. Appendix H of the report.	Outline & Full
8.3	Has treatment of potential contaminants been considered? (YES/NO)		Yes	Outline & Full
8.4	Demonstration of source control features with substantive evidence why these cannot be used if not (YES/NO)		Yes	Full
8.5	If discharging into a watercourse, piped system or the sea, has the proposed drainage network been modelled against predicted top water levels for the 1 in 100 year storm event plus climate change allowance, within the existing system? (YES/NO)		N/A	Full

9. Other Supporting Details

No.	Requirement	Answer	Application Type
9.1	Plan detailing location of groundwater monitoring and infiltration testing	Appendix F	Outline & Full
9.2	Detailed drainage design layout	Appendix G	Full
9.3	Maintenance strategy	Appendix I	Full

No.	Requirement	Answer	Application Type
9.4	Detailed development layout	Appendix A	Full
9.5	Impermeable area plan	Appendix A & Appendix G	Full
9.6	Phasing plan?	N/A	Full
9.7	If ground levels are being raised over 300mm above existing levels and is unavoidable, have detailed plans been provided, together with drainage proposals, to address any potential drainage related issues?	N/A	Full

The above form should be completed using evidence from information which should be appended to this form. The information being submitted should be proportionate to the site conditions, flood risks and magnitude of development. It should serve as a summary of the drainage proposals and should clearly show that the proposed discharge rate and volume as a result of development will not be increasing. Where there is an increase in discharge rate or volume, then the relevant section of this form must be completed with clear evidence demonstrating how the requirements will be met.

This form is completed using factual information and can be used as a summary of the surface water drainage strategy on this site.

Form completed by	Chris Gray
Qualification of person responsible for signing off this proforma	B.Sc. Honours qualification in Earth Science and twenty one years post graduate experience most recently as principal drainage engineer
Company	Motion
On behalf of (client's details)	QLeisure Ltd
Date	27/11/2025