CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

New Artificial Grass Pitch
Brian Holden Memorial Field
Longridge
PR3 3FQ

Surface Water Strategy

R - 00338 – 001 – SDS – 0
February 2026

Report Originator(s)

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Revision Record

Revision	Date	Description	Written	Approved
0	19.02.26	First Issue	WRA	WRA

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1.0 Introduction

1.1 Design Brief

1.1.1 The client, Labosport, requires a surface water drainage design for the installation of a new Artificial grass pitch (AGP) at Brian Holden Memorial Field in Longridge.

1.1.2 This report provides design proposals to ensure surface water is managed adequately, along with a SUDS assessment and maintenance schedule.

1.1.3 This report has been prepared by SEA Consulting Engineers Ltd. With the benefit limited to our instructing Client, Labosport.

1.2 Site Location

1.2.1 The proposed development lies within Longridge, approximately 1km southwest of the town centre, at the following postal address:

Brian Holden Memorial Playing Field
Mardale Drive
Longridge
PR3 3FQ .

1.2.2 A site location plan is presented in Appendix A

1.3 Current Land Use

1.3.1 The existing site comprises an open playing field.

1.4 Proposed Development

1.4.1 The proposed development will comprise the construction of a new AGP. A proposed site plan is presented in Appendix B.

2.0 Surface Water Drainage

2.1 Existing Surface Water Drainage

2.1.1 The site does not have any formal surface water drainage, but there is an existing ditch located to the south of the proposed AGP.

2.2 Proposed Storm Drainage Discharge

2.2.1 In accordance with the National Planning Policy Framework (NPPF) and the National Planning Practice Guidance (NPPG), the site should be drained in the most sustainable manner.

2.2.2 The National standards for sustainable drainage systems (SuDS) (2025) clearly outline the hierarchy to be investigated by the developer when considering a surface water drainage strategy. As such, the developer must consider the following drainage options in the following order of priority:

- Priority 1 – Collected for non-potable use;
- Priority 2 – Infiltrated to ground;
- Priority 3 – Discharged to an above-ground surface water body;
- Priority 4 – Discharged to a surface water sewer, highway drain, or other piped system;
- Priority 5 – Discharged to a combined sewer.

Each of these is considered separately below.

Priority 1 – Collected for non-potable use

2.2.3 There is no significant or continuous on-site water demand, and therefore there is no scope for the reuse of surface water within the site, and so rainwater re-use is not proposed.

Priority 2 – Infiltrated to ground

2.2.4 A ground investigation has been carried out by Soiltechnics Ltd. Infiltration testing was carried out with negative results, and they have determined that the use of infiltration techniques is not viable. Extracts of the ground investigation report are presented in Appendix C

Priority 3 – Discharged to an above-ground surface water body

2.2.5 As described in section 2.1 above, there is an existing ditch to the south, which offers a viable outfall for the site's surface water.

Priority 4 – Discharged to a surface water sewer, highway drain, or other piped system

2.2.6 As an outfall to an above-ground surface water body is viable, this option has not been explored

2.3 Proposed Surface Water Drainage Strategy

2.3.1 Proposals are to drain the AGP to the existing ditch to the south of the site.

2.3.2 The design will use FEH22 rainfall parameters and will be for all drained areas of the site to accommodate storms up to the 1 in 100-year event and allow for an increase in storm intensities up to 50%. This is based on the Environment Agency updates of May 2022, which bases peak rainfall climate change allowance on river management catchment areas. An extract from the EA website based on the site location is presented in Appendix D. The site's drained areas are presented in Appendix E and equate to a total area of 6440m^2.

2.3.3 Proposals are to restrict the pitches' surface water to as close to greenfield runoff rates as possible. The online greenfield runoff tool by HR Wallingford has been used to assess the greenfield runoff rates, based on the site's drained areas. The calculations are presented in Appendix F and show that the Qbar value is 7.6l/s.

2.3.4 The new artificial grass pitch will consist of a synthetic surface, porous shockpad, along with porous macadam and a 300mm permeable type 3 subbase, all laid with a gradient of 1:230 north to south, which will allow water to infiltrate through the pitch make up to a series of new lateral drains which will collect surface water before outfalling into a HydroBrake flow control device, restricted to 7.6l/s with attenuation provided within the pitches make up. Flows will then outfall into the existing ditch to the south.

2.3.5 The system has been modelled using Causeway Flow for all storm durations up to 10,080mins. The calculations are presented in Appendix G and show that the pitch subbase provides adequate attenuation for the 1-in-30-year storm event. However, during the 1in100 year + 50% event, the calculations show a flooded volume of 103.5m^3.

2.3.6 Flooding in the 1in100 + 50% storm event is acceptable as long as it can be demonstrated that water can be contained on site and not cause any issue to buildings or 3rd party land. It is proposed to provide an edging/kerb with a 125mm upstand kerb at the pitch edge to store this flooded water within the pitch extent. Based on the pitch gradient of 1:230, a maximum water depth of 120mm can be expected.

2.3.7 A drainage layout is presented in Appendix H, which shows the extent of this edging/kerb along with the aforementioned designs.

2.4 SUDS

2.4.1 The use of SUDS and pollution control measures has been assessed using the Simple Index Approach set out within the CIRIA SUDS Manual 2015. Based on Table 26.2 of the SUDS Manual, the pollution indices for the site are set out in Table 2.1 below.

Pollution Hazard Indices for Different Land Use Classifications				
Land use	**Pollution Hazard Level**	**Total Suspended Solids (TSS)**	**Metals**	**Hydrocarbons**
Residential Roofs	Very Low	0.2	0.2	0.05

Table 2.1 – Extract of table 26.2 of the SUD manual.

2.4.2 Residential roofs are considered to be the most appropriate category for the AGP, due to the minimal pollution hazard associated with it, which will have no vehicle movements within its extent.

2.4.3 Surface water from the AGP will pass through a permeable subbase. Therefore, it acts very similar to permeable paving.

2.4.4 Table 26.3 of The SuDS Manual shows the mitigation indices for a range of SuDS components for discharges to surface waters. An extract of this is provided in Table 2.2 below for the components relevant to the proposed development.

Indicative mitigation indices			
Type of SUDS Component	**Mitigation Indices**		
	Total Suspended Solids (TSS)	**Metals**	**Hydrocarbons**
Permeable Paving	0.7	0.6	0.7

Table 2.2 – Extract from table 26.3 of the SUDS Manual

2.4.5 Based on the above, it can be seen that the permeable subbase will provide adequate treatment for the site's surface water.

2.5 Maintenance

2.5.1 All new surface water will remain private, and maintenance will be the responsibility of the landowner. The following maintenance plan shall be implemented.

Pitch and Permeable Subbase

Maintenance Schedule		
Maintenance Category	**Required Action**	**Frequency**
Regular Maintenance	Brushing (Standard cosmetic sweep over all areas)	Once a year, after the autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturers' recommendations. Particular attention to be paid to areas where water flows into pervious areas from adjacent impermeable areas, as this area is most likely to collect sediment
Occasional maintenance	Stabilise and mow adjacent contributing areas	As required
	Removal of weeds or management using an appropriate weed killer, applied directly into the weeds by an applicator rather than spraying	As required
Remedial Actions	Remediate any landscaping which, through vegetation maintenance strip, has been raised to within 50mm of the finished surface	As required
	Remedial work to any depressions, rutting and cracked surfacing considered detrimental to the performance or hazardous to users	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10-15 years, or as required (if infiltration performance is reduced due to significant clogging
Monitoring	Initial inspection	Monthly for 3 months after installation
	Inspect for areas of poor operation and/or weed growth – if required, take remedial action	3-monthly, 48 hours after large storms for the first 6 months
	Establish slit accumulation rates and establish appropriate brushing frequencies.	Annually
	Monitor Inspection chambers	Annually

3.0 Conclusion

3.1.1 Based on the above, and providing the above strategies are adopted, the developed site will not contribute further to flood risk and therefore satisfy the requirements of the National Planning Policies Framework.

3.1.2 **References**

- Department for Communities and Local Government (Feb 2025) - National Planning Policy Framework.
- BS 8533:2011 Assessing and managing flood risk in development – Code of Practice.
- CIRIA Report C635 Designing for exceedance in urban drainage – good practice.
- The SUDS Manual
- BS 8533:2011 Assessing and managing flood risk in development – Code of Practice.
- Design and Analysis of Urban Storm Drainage – The Wallingford procedure – Volume 1.

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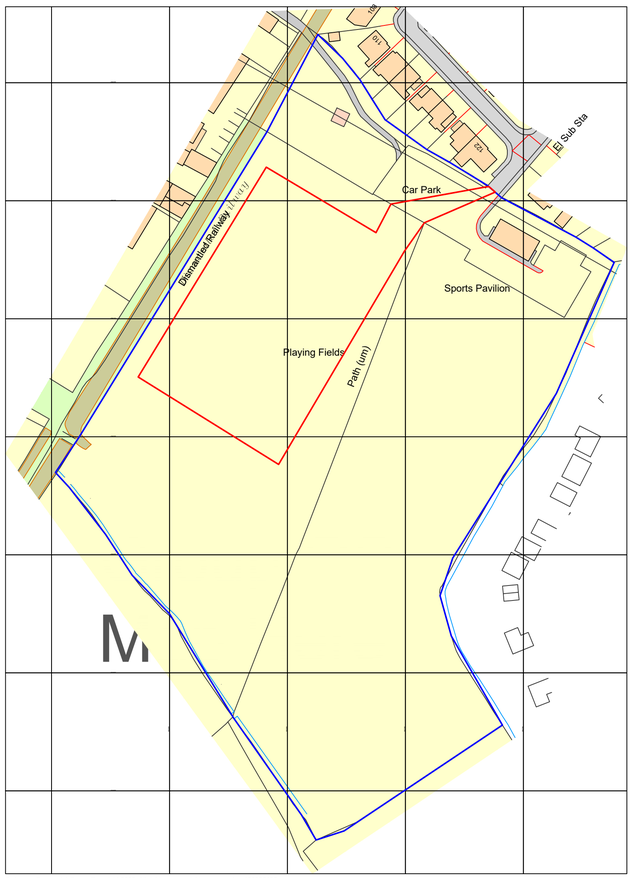
Client	Labosport
Project	New Artificial Grass Pitch, Brian Holden Memorial Field
Title	Surface Water Strategy

Appendix A

Site Location Plan

LOCATION PLAN



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RELEVANT SERVICE DRAWINGS SHOULD BE OBTAINED FROM APPROPRIATE SERVICE PROVIDERS AND USED IN CONJUNCTION WITH THIS DRAWING

REFERENCE SHOULD ALSO BE MADE TO HISTORICAL PLANS AND AS BUILT DRAWINGS

NOTES

APPLICATION SITE AREA REQUIRED

LAND AREA UNDER OWNERSHIP OF CLIENT

N

LEGEND / KEY

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AUTHOR

CLIENT: THE FOOTBALL FOUNDATION

PROJECT: G-234211 BRIAN HOLDEN MEMORIAL SYNTHETIC TURF PITCH (STP) DEVELOPMENT

DRAWING: LOCATION PLAN

STATUS: PLANNING	ISSUED BY: OG	VERSION: 01
PROJECT: G-234211 25-0628	ISSUE DATE: 03.02.26	DRAWING: 25-0628(G-234211) 01
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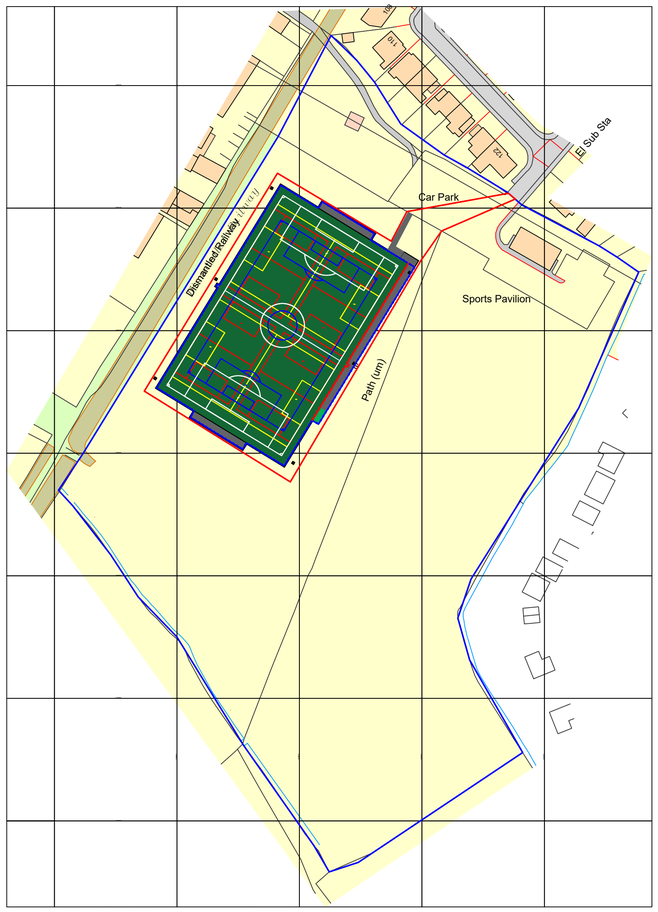
Appendix B

Proposed Site Plan

SITE PLAN



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APPLICATION SITE AREA REQUIRED

LAND AREA UNDER OWNERSHIP OF CLIENT

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PROJECT
BRIAN HOLDEN MEMORIAL
SYNTHETIC TURF PITCH (STP) DEVELOPMENT

DRAWING
SITE PLAN

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PROJECT	G-234211 25-0628	ISSUE DATE	03.02.26		
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Appendix C

Ground Investigation Extracts

7.6.8 The above assessment assumes floodlights will be located centrally on the pad and eccentric loading has not been considered. This should be accounted for by the foundation designer where necessary.

7.7 Artificial Pitch and Car Park

7.7.1 It is anticipated that the proposed AGP and car park will be located at or about existing ground levels, with the formation located on Devensian Till, and possibly a veneer of Made Ground following removal of any Topsoil type material. Deeper Made Ground deposits are present in the area of WLS01 associated with the infilled pond.

7.7.2 CBR value has been determined for the proposed AGP and car park using in-situ Dynamic Cone Penetrometer testing following the methodology defined by the Highways England Document CS229 Data for Pavement Assessment. The results are presented in Appendix D and the location of test positions are shown on Drawing 01.

7.7.3 Based on the anticipated founding depth and DCP results, a CBR design value of 5% can be adopted for soils that are likely to be representative of those which remain at or near pitch formation levels.

7.7.4 It is recommended that the formation level is trimmed and rolled following the requirements outlined in the Specification for Highway Works Series 600. Such a process will identify any soft/loose areas, which should either be excavated out and backfilled with a suitable well compacted material similar to those exposed in the sides of the resulting excavation, or large cobbles of a good quality stone rolled into the formation to stabilise the 'soft/loose' area.

7.7.5 Consideration will need to be given to the area of deeper Made Ground in the area of WLS01 and the impact this could have the pitch formation long term. Whilst DCP results (<1m bgl) were consistent with depth across the site, and the near surface clay deposits exhibited a degree of compaction in WLS01 to depths of 1.9m bgl, the deposits below are extremely soft and organic, and may consolidate further overtime. We recommend the use of a geosynthetic reinforcement in this area of the site to minimise the potential effects of differential settlement which may occur between deeper Made Ground in the area of WLS01 and the surrounding natural soils.

7.7.6 The Devensian Till/Made Ground deposits soils are considered frost susceptible and this may override the CBR criteria for pavement foundation design purposes.

7.8 Drainage

7.8.1 Infiltration testing has been undertaken at the site following the principles of BRE 365: Soakaway Design (2016). The results are presented in Appendix D.

7.8.2 The deposits of the Devensian Till were encountered as a cohesive material. Indicative testing was undertaken within HP01, considered representative of the natural soils site wide, however only one cycle could be undertaken during the fieldwork due to the very slow dissipation of water added. Due to insufficient infiltration over the test period, permeability could not be determined.

7.8.3 As a result, such soils are considered to be effectively impermeable for the purposes of drainage design. On this basis, disposal of stormwater via a soakaway is not considered viable.

7.8.4 As an alternative, it is possible that the AGP drainage could key into the existing surface water drainage system currently used by the pavilion/car park. If this is considered an option for the development a comprehensive drainage assessment will be required to determine the potential impact on the capacity of the existing systems, to identify the invert levels of existing features, and to confirm drainage gradients achievable across the proposed AGP area.

7.8.5 Surface water ditches were also noted along the southern and eastern boundaries of the wider site which could potentially be utilised as a disposal point, subject to relevant permissions being sought.

7.8.6 In addition, a 525mm diameter combined sewer is present adjacent to the northeast of the site (refer to Section 2.8). Given the proximity of the combined sewer, this could be considered a feasible and practical option for the disposal of surface water collected by the proposed pitch development, subject to obtaining relevant permissions. However, a comprehensive drainage assessment will be required to determine the potential impact on the capacity of the existing systems and to confirm drainage gradients will be achievable across the proposed pitch area.

7.9 Aggressiveness of the Ground to Buried Concrete

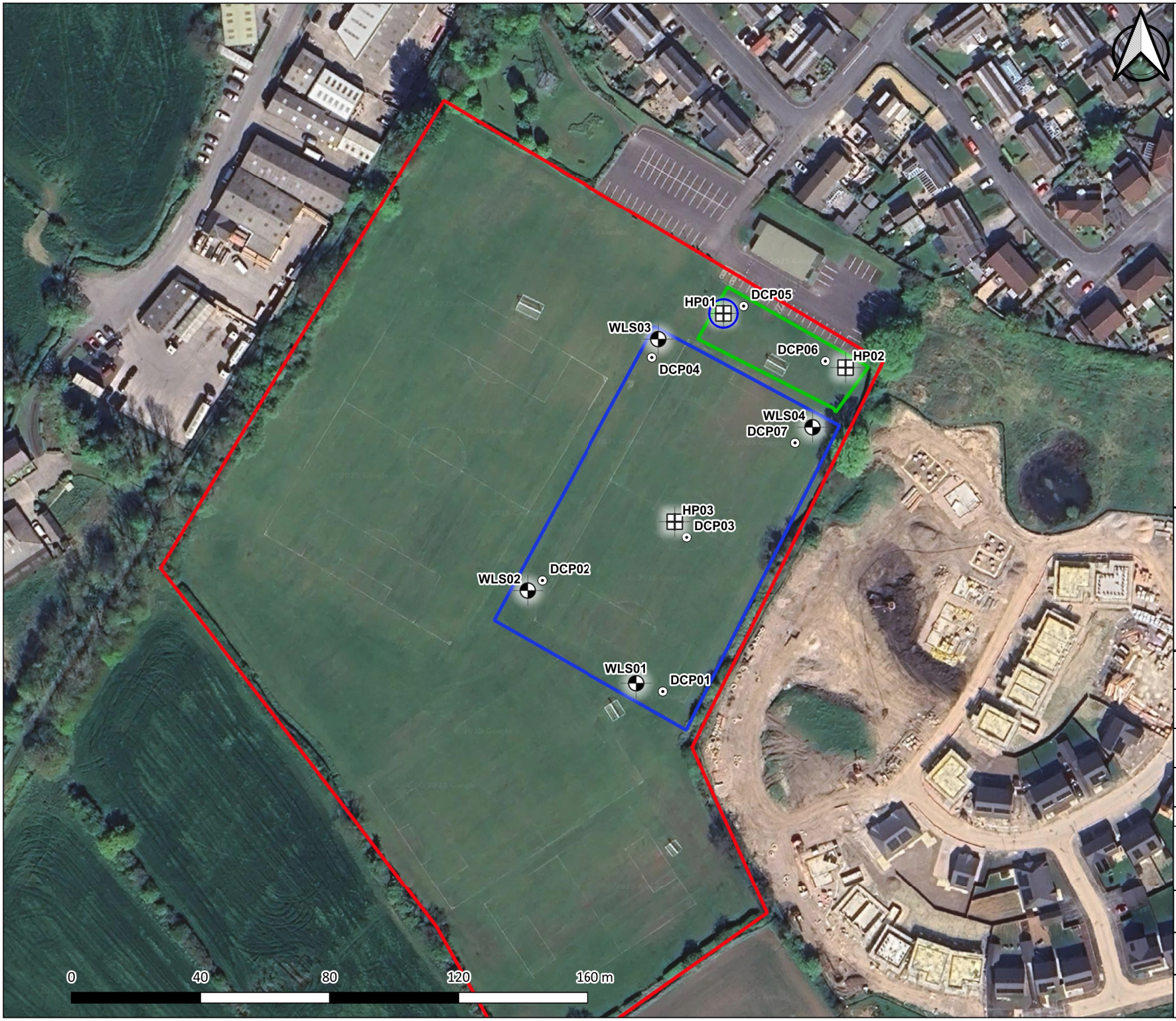
7.9.1 The aggressiveness of the ground with respect to buried concrete has been assessed in accordance with Building Research Establishment Special Digest 1: Concrete in Aggressive Ground Third Edition (2005).

7.9.2 The site is interpreted to be a brownfield site where pyrite is unlikely to be present.

7.9.3 The classification of the strata is tabulated below:

Stratum	Disturbed / Undisturbed	Design sulphate class	Aggressive chemical environment for concrete class
Made Ground	N/A	DS-1	AC-1s
Devensian Till	N/A	DS-1	AC-1s

Table 7-B: Summary of the aggressiveness of the ground to buried concrete



Key:

- Site Boundary
- Proposed AGP Footprint
- Propsed Car Park Extension
- Windowless Sampling (WLS)
- Dynamic Cone Penetrometer (DCP)
- Soakaway Testing

Notes

1) Base image provided by Google.

2) All drawn features are approximate.

REV	DATE	COMMENT ON VARIATION
A	Dec 2025	First issue

soiltechnics
environmental ▪ geotechnical ▪ building fabric

PROJECT
Brian Holden Memorial Playing Fields

TITLE
Exploratory Hole Location Plan

DRAWING No.
STX7134-D01-A

Brian Holden Memorial Playing Field, Longridge

STX7134

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STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto brown slightly gravelly CLAY. Gravel is medium subrounded siltstone. (TOPSOIL)	0.20						0.10		ES
Soft to firm brown slightly sandy slightly gravelly CLAY with low cobble content of subangular concrete. Gravel is fine to coarse angular to subangular brick, concrete, and siltstone with occasional plastic. (MADE GROUND)	0.45				PP 0.30	PP 42	0.30 0.40		ES D
					PP 0.60	PP 75	0.60		D
Firm grey mottled orangish brown slightly CLAY. Gravel is medium to coarse siltstone. (DEVENSIAN TILL)	1.00			▽	PP 0.90	PP 71			
TRIAL PIT TERMINATED AT 1.00m									

Notes
Trial pit sides remained upright and stable upon completion. Trial pit terminated at scheduled depth. Infiltration testing performed.

Groundwater observations

Strike (m)	Comments
0.95	No significant rise upon completion

Title Trial pit record	**Dimensions (w x l)** 0.30m x 0.30m	**Date(s)** 25/11/2025
Method Hand Excavated	**Plant used** Hand Tools	**Sheet number** Sheet 1 of 1
Level (m OD) -	**Logged by** OH	**Revision** A
Co-ordinates Not surveyed	**Status** FINAL	**HP01**

Brian Holden Memorial Playing Field, Longridge

STX7134

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STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)	0.10				PP 0.20	PP 50			
...between 0.03m and 1m depth, orangish brown medium SAND.							0.35		ES
							0.40		D
Soft brown slightly gravelly sandy CLAY. Gravel is fine to medium subangular siltstone with occasional fragments of wood. (MADE GROUND)	0.45				PP 0.60	PP 84	0.50		D
Firm grey mottled orangish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded siltstone and quartzite. (DEVENSIAN TILL)					PP 0.90	PP 84			
	1.00						0.95		D
TRIAL PIT TERMINATED AT 1.00m									

Notes
Trial pit sides remained upright and stable upon completion. Trial pit terminated at scheduled depth.

Groundwater observations

Strike (m)	Comments

No groundwater strike recorded

Title Trial pit record	**Dimensions (w x l)** 0.30m x 0.35m	**Date(s)** 25/11/2025
Method Hand Excavated	**Plant used** Hand Tools	**Sheet number** Sheet 1 of 1
Level (m OD) -	**Logged by** OH	**Revision** A
Co-ordinates Not surveyed	**Status** FINAL	**HP02**

Brian Holden Memorial Playing Field, Longridge

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STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)	0.20						0.10		ES
Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium angular to subangular sandstone, siltstone and quartzite. (DEVENSIAN TILL)	0.55						0.50		ES
Stiff brown mottled grey slightly gravelly slightly sandy CLAY. Gravel is fine subangular to subrounded siltstone, quartzite and sandstone. (DEVENSIAN TILL)							0.80		D
TRIAL PIT TERMINATED AT 1.20m	1.20								

Notes

Trial pit sides remained upright and stable upon completion. Trial pit terminated at scheduled depth.

Groundwater observations

Strike (m)	Comments
1.20	Rising to 1.10m upon completion

Title Trial pit record	**Dimensions (w x l)** 0.30m x 0.35m	**Date(s)** 25/11/2025
Method Hand Excavated	**Plant used** Hand Tools	**Sheet number** Sheet 1 of 1
Level (m OD) -	**Logged by** OH	**Revision** A
Co-ordinates Not surveyed	**Status** FINAL	**HP03**

Brian Holden Memorial Playing Field, Longridge

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INSTALL	STRATA DESCRIPTION	DEPTH (m)	REDUCED LVL (mOD)	LEGEND	WATER STRIKES	SPT TESTING TYPE / DEPTH (m)	SPT TESTING RESULT	SPT TESTING CASING DEPTH (m)	SPT TESTING WATER LEVEL (m)	OTHER IN SITU TESTING TYPE / DEPTH (m)	OTHER IN SITU TESTING RESULT	SAMPLING FROM (m)	SAMPLING TO (m)	SAMPLING TYPE
	Grass onto brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)	0.20										0.10		ES
	Firm brown mottled grey slightly sandy slightly gravelly CLAY with low cobble content of angular brick fragments. Gravel is fine to coarse angular to subangular brick, siltstone and quartzite. (MADE GROUND)	0.70								PP 0.50	PP 34	0.50		ES
	Soft to firm greyish brown slightly gravelly slightly sandy CLAY. Gravel is medium subangular sandstone. (MADE GROUND)					S 1.00	(3) 11							
	...between 1.2m and 1.4m depth, faint hydrocarbon odour.									PP 1.20	PP 34	1.30		ES
										PP 1.50	PP 50	1.60		D
	Very soft dark brown CLAY with frequent wood and relict rootlets. Strong organic odour noted. (MADE GROUND)	1.90				S 2.00	(0) 0					2.00		ES
												2.50		ES
	Firm greyish brown CLAY. (DEVENSIAN TILL)	3.00				S 3.00	(7) 16							
										PP 3.50	PP 100			
						S 4.00	(6) 17					4.00		D
										PP 4.50	PP 84			
						S 5.00	(6) 15							
	BOREHOLE TERMINATED AT 5.45m	5.45												

Notes

Inspection pit excavated to 1.0m depth. Borehole terminated at scheduled depth.

Groundwater observations

Strike (m)	5mins	10mins	15mins	20mins	Comments
1.50					1.2m upon completion

Recovery details

Range (m)	% Recv
1.00 - 2.00	100
2.00 - 3.00	40
3.00 - 4.00	100
4.00 - 5.00	60

Title
Dynamic windowless sampling record

Date(s)
25/11/2025

Method
Windowless Sampling

Plant used
Dando Terrier

Sheet number
Sheet 1 of 1

Level (m OD)
-

Logged by
OH

Revision
A

Co-ordinates
Not surveyed

Status
FINAL

WLS01

Brian Holden Memorial Playing Field, Longridge

STX7134

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INSTALL	STRATA DESCRIPTION	DEPTH (m)	REDUCED LVL (mOD)	LEGEND	WATER STRIKES	SPT TESTING TYPE / DEPTH (m)	SPT TESTING RESULT	SPT TESTING CASING DEPTH (m)	SPT TESTING WATER LEVEL (m)	OTHER IN SITU TESTING TYPE / DEPTH (m)	OTHER IN SITU TESTING RESULT	SAMPLING FROM (m)	SAMPLING TO (m)	SAMPLING TYPE
	Grass onto brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)	0.25										0.20		ES
	Soft greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded brick and siltstone. (MADE GROUND)	0.50								PP 0.40	PP 29	0.40		ES
												0.40		D
	Stiff brown mottled grey slightly gravelly CLAY. Gravel is fine to medium angular subangular siltstone, sandstone and quartzite. (DEVENSIAN TILL)					S 1.00	(8) 22			PP 1.00	PP 100			
												1.20		D
										PP 1.50	PP 225			
						S 2.00	(9) 25			PP 2.00	PP 225			
						S 3.00	(13) 30			PP 3.00	PP 171	3.00		D
						S 4.00	(10) 25			PP 4.00	PP 125			
						S 5.00	(14) 32			PP 4.90	PP 167			
	BOREHOLE TERMINATED AT 5.45m	5.45												

Notes

Inspection pit excavated to 1.1m depth. Borehole terminated at scheduled depth.

Groundwater observations

Strike (m)	5mins	10mins	15mins	20mins	Comments
4.80				4.8	No significant rise

Recovery details

Range (m)	% Recv
1.10 - 2.00	100
2.00 - 3.00	40
3.00 - 4.00	90
4.00 - 5.00	100

Title
Dynamic windowless sampling record

Date(s)
25/11/2025

Method
Windowless Sampling

Plant used
Dando Terrier

Sheet number
Sheet 1 of 1

Level (m OD)
-

Logged by
OH

Revision
A

Co-ordinates
Not surveyed

Status
FINAL

WLS02

Brian Holden Memorial Playing Field, Longridge

STX7134

soiltechnics

environmental ▪ geotechnical ▪ building fabric

INSTALL	STRATA DESCRIPTION	DEPTH (m)	REDUCED LVL (mOD)	LEGEND	WATER STRIKES	SPT TESTING TYPE / DEPTH (m)	SPT RESULT	SPT CASING DEPTH (m)	SPT WATER LEVEL (m)	OTHER IN SITU TESTING TYPE / DEPTH (m)	OTHER IN SITU RESULT	SAMPLING FROM (m)	SAMPLING TO (m)	SAMPLING TYPE
	Grass onto brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)	0.20												
	Soft greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded brick and siltstone. (MADE GROUND)	0.40										0.30		ES
	Stiff brown mottled grey slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded siltstone, sandstone and quartzite. (DEVENSIAN TILL)					S 1.00	(7) 19			PP 1.00	PP 100			
						S 2.00	(9) 27			PP 2.00	PP 129	2.00		D
										PP 2.50	PP 146			
	...at 3m depth, becoming firm.					S 3.00	(8) 22			PP 3.00	PP 88			
						S 4.00	(6) 21			PP 4.00	PP 88			
										PP 4.50	PP 79			
						S 5.00	(9) 23			PP 5.00	PP 84	4.90		D
	BOREHOLE TERMINATED AT 5.45m	5.45												

Notes

Inspection pit excavated to 1.2m depth. Borehole terminated at scheduled depth.

Groundwater observations

Strike (m)	5mins	10mins	15mins	20mins	Comments
2.50				2.5	No significant rise

Recovery details

Range (m)	% Recv
1.20 - 2.00	75
2.00 - 3.00	80
3.00 - 4.00	95
4.00 - 5.00	10

Title
Dynamic windowless sampling record

Date(s)
25/11/2025

Method
Windowless Sampling

Plant used
Dando Terrier

Sheet number
Sheet 1 of 1

Level (m OD)
-

Logged by
OH

Revision
A

Co-ordinates
Not surveyed

Status
FINAL

WLS03

Brian Holden Memorial Playing Field, Longridge

STX7134

soiltechnics

environmental ▪ geotechnical ▪ building fabric

INSTALL	STRATA DESCRIPTION	DEPTH (m)	REDUCED LVL (mOD)	LEGEND	WATER STRIKES	SPT TESTING TYPE / DEPTH (m)	SPT TESTING RESULT	SPT TESTING CASING DEPTH (m)	SPT TESTING WATER LEVEL (m)	OTHER IN SITU TESTING TYPE / DEPTH (m)	OTHER IN SITU TESTING RESULT	SAMPLING FROM (m)	SAMPLING TO (m)	SAMPLING TYPE
	Grass onto brown slightly sandy CLAY with frequent rootlets. (TOPSOIL)											0.10		ES
		0.20										0.30		ES
	Soft greyish brown slightly sandy slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded brick and siltstone. (MADE GROUND)	0.40												
	Stiff brown mottled grey slightly gravelly CLAY. Gravel is fine to coarse angular to subrounded siltstone, quartzite and sandstone. (DEVENSIAN TILL)					S 1.00	(7) 21			PP 1.00	PP 121	1.10		D
						S 2.00	(7) 24			PP 2.00	PP 154			
										PP 2.50	PP 146	2.50		D
	...at 2.6m depth, becoming firm.					S 3.00	(9) 27			PP 3.00	PP 79			
						S 4.00	(10) 27			PP 4.00	PP 84			
						S 5.00	(8) 21			PP 5.00	PP 100			
	BOREHOLE TERMINATED AT 5.45m	5.45												

Notes

Inspection pit excavated to 1.1m depth. Borehole terminated at scheduled depth.

Groundwater observations

Strike (m)	5mins	10mins	15mins	20mins	Comments
No groundwater strike recorded					

Recovery details

Range (m)	% Recv
1.10 - 2.00	100
2.00 - 3.00	30
3.00 - 4.00	100
4.00 - 5.00	100

Title
Dynamic windowless sampling record

Date(s)
25/11/2025

Method
Windowless Sampling

Plant used
Dando Terrier

Sheet number
Sheet 1 of 1

Level (m OD)
-

Logged by
OH

Revision
A

Co-ordinates
Not surveyed

Status
FINAL

WLS04

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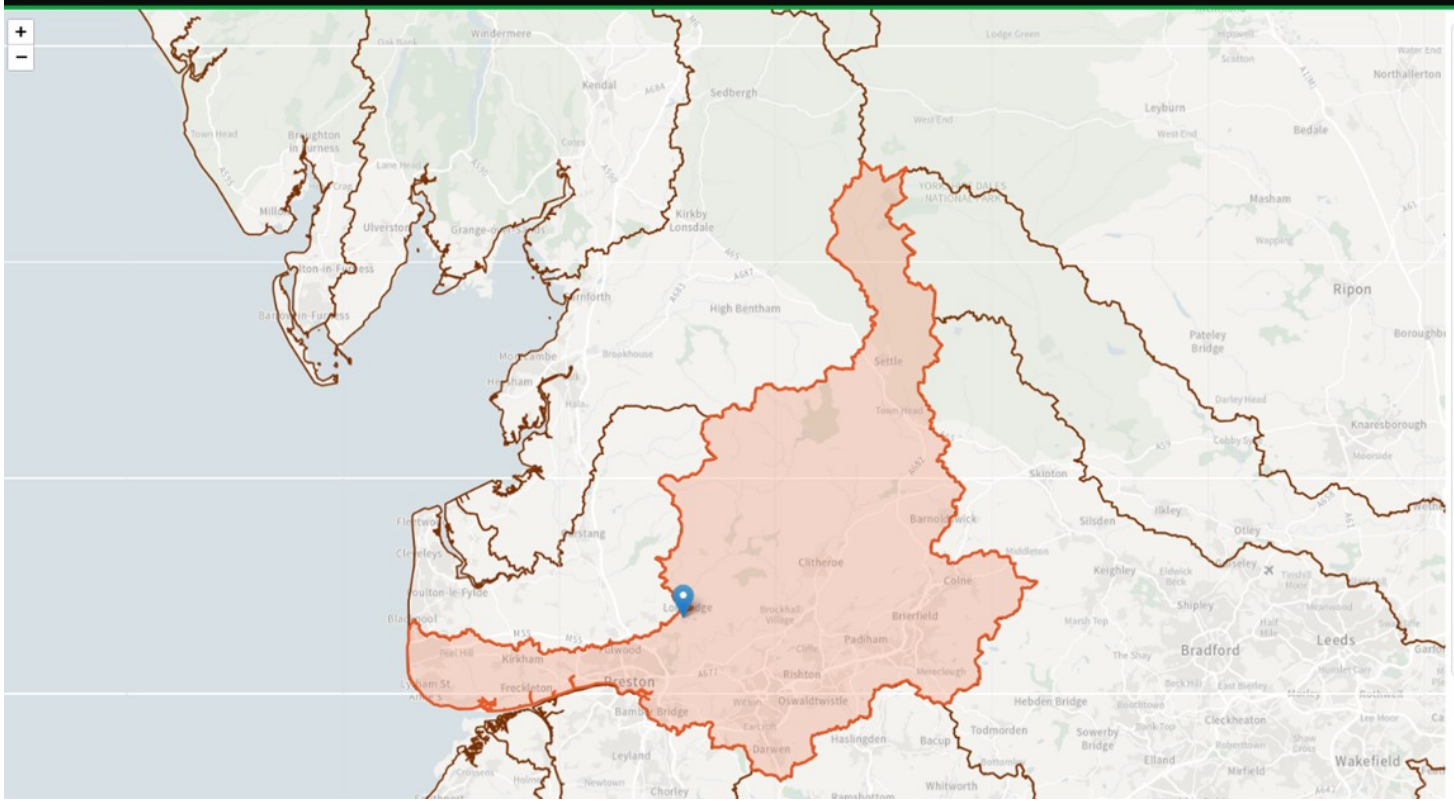
Client	Labosport
Project	New Artificial Grass Pitch, Brian Holden Memorial Field
Title	Surface Water Strategy

Appendix D

Environment Agency Climate Change Allowances



Ribble Management Catchment peak rainfall allowances

3.3% annual exceedance rainfall event

Epoch

	Central allowance	Upper end allowance
2050s	25%	35%
2070s	30%	40%

1% annual exceedance rainfall event

Epoch

	Central allowance	Upper end allowance
2050s	25%	40%
2070s	35%	50%

*Use '2050s' for development with a lifetime up 2060 and use the 2070s epoch for development with a lifetime between 2061 and 2125.

This map contains information generated by Met Office Hadley Centre (2019): UKCP Local Projections on a 5km grid over the UK for 1980-2080. Centre for Environmental Data Analysis, 2022

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Client	Labosport
Project	New Artificial Grass Pitch, Brian Holden Memorial Field
Title	Surface Water Strategy

Appendix E

Proposed Drained Areas
SEA Drawing 00338/E01

GENERAL

Do not scale from this drawing.

All dimensions are in millimetres unless noted otherwise.

All setting out to architects drawings.

Drawing to be read in conjunction with all other SEA drawings and architects drawings.

This scheme has been designed using the survey information provided by others. It shall be the responsibility of the contractor to verify levels, boundaries etc prior to commencing any works on site. SEA Consulting Engineers Ltd. shall not accept any responsibility for errors resulting from the survey.

All setting to be in accordance with the Architect's drawings, the Contractor is to check all dimensions and levels prior to commencement of work and report any discrepancies to the Engineer, including any encountered during construction works.

All dimensions should be checked on site prior to construction. Please notify the Engineer of any discrepancies before commencing or continuing any work.

HEALTH, SAFETY & THE ENVIRONMENT

In accordance with the Health and Safety at Work etc Act 1973 and the Construction (Design and Management) Regulations 2015, designs and details on this drawing have been the subject of a Designers Risk Assessment, to identify risks in construction, use, or demolition of the scheme.

It is not considered necessary for Designers to highlight obvious and/or common risks (such as deep excavations, manual handling and working around heavy plant) which Contractors should be familiar with.

So as far as is reasonably practicable, risks inherent in the design have been eliminated. Where it has been considered that elimination of a risk (or part of a risk) is not reasonably practicable, it has been reduced.

Significant unusual residual risks are identified below, beside the measures which have been adopted to eliminate and/or reduce them:

None identified.

DRAWING KEY:

Proposed drained area = 6,440m²

Rev.	Date	By	Description

SEA
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PROJECT
PROPOSED NEW AGP
BRIAN HOLDEN MEMORIAL
FIELD

DRAWING
PROPOSED DRAINED AREA

SCALE: 1:250@A1	DATE: 19.02.2026
DRAWN BY: WRA	REV: -

STATUS: FOR APPROVAL

DWG No: 00338/E01 -

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Client	Labosport
Project	New Artificial Grass Pitch, Brian Holden Memorial Field
Title	Surface Water Strategy

Appendix F

Greenfield Runoff Calculations

Greenfield runoff rate estimation tool

www.uksuds.com | Greenfield runoff rate estimation tool (https://www.uksuds.com/)

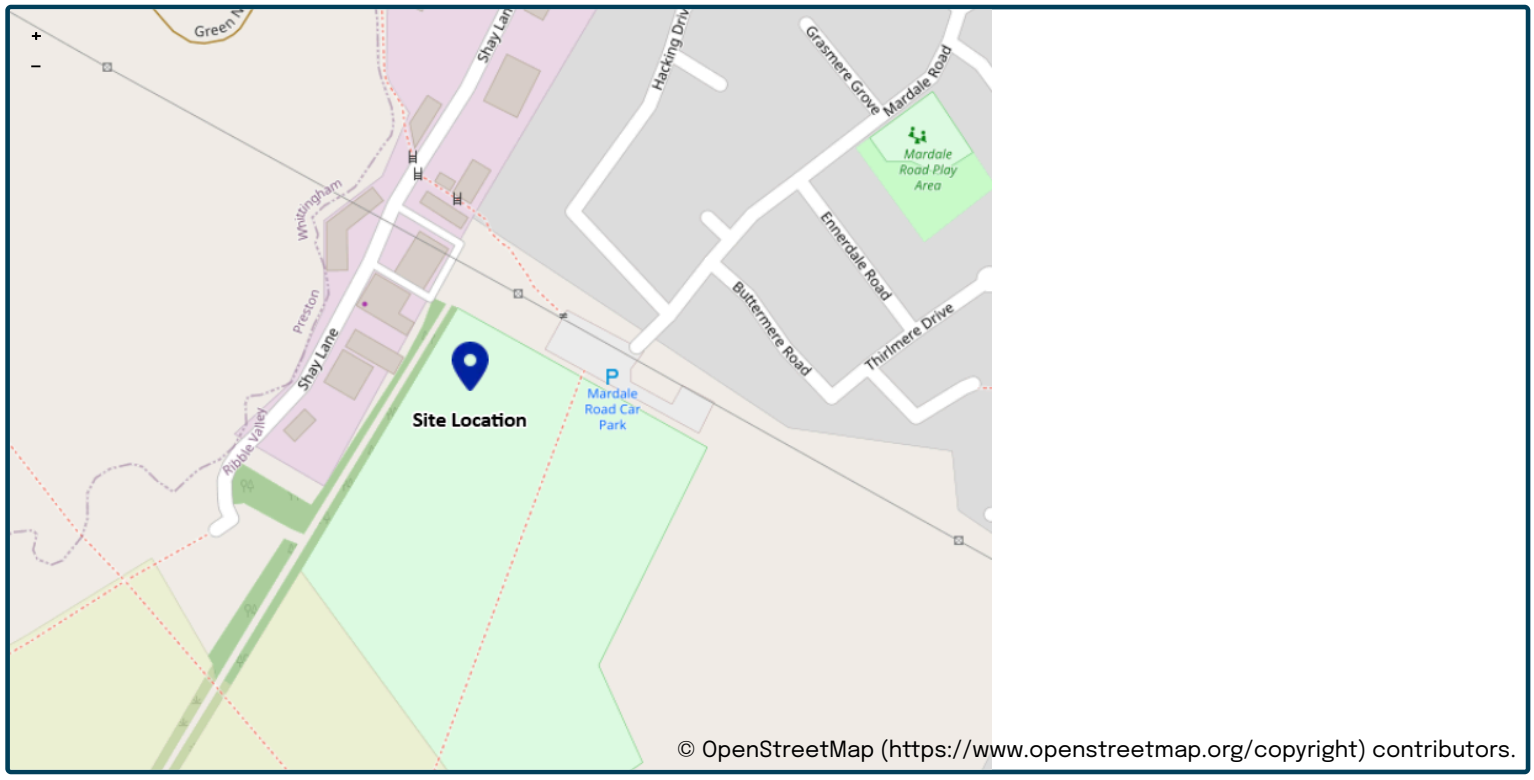
This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015).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

Project details

Date	19/02/2026
Calculated by	Warren Allsopp
Reference	00338
Model version	2.2.2

Location

Site name	New AGP
Site location	Brian Holden Memorial



Site easting (British National Grid)	359645
Site northing (British National Grid)	436120

Site details

Total site area (ha)	0.644 ha

Greenfield runoff

Method

Method	FEH statistical (2025)

FEH statistical (2025)

	My value		Map value
SAAR9120 (mm)	1165 mm		
BFIHOST19scaled	0.361		
QMed-QBar conversion	1.075		1.075
QMed (l/s)	7.1 l/s		
QBar (FEH statistical 2025) (l/s)	7.6 l/s		

Growth curve factors

	My value		Map value
Hydrological region	10		10
1 year growth factor	0.87		
2 year growth factor	0.93		
10 year growth factor	1.38		
30 year growth factor	1.7		
100 year growth factor	2.08		
200 year growth factor	2.37		

Results

Method	FEH statistical (2025)
Flow rate 1 year (l/s)	6.6 l/s
Flow rate 2 year (l/s)	7.1 l/s
Flow rate 10 years (l/s)	10.5 l/s
Flow rate 30 years (l/s)	12.9 l/s
Flow rate 100 years (l/s)	15.8 l/s
Flow rate 200 years (l/s)	18.0 l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent 'zero' figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

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Client	Labosport
Project	New Artificial Grass Pitch, Brian Holden Memorial Field
Title	Surface Water Strategy

Appendix G

Surface Water Calculations

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)	Depth (m)	Invert Level (m)
1	0.644	100.000	1200	0.400	99.600

Simulation Settings

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

Storm Durations

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

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
100	50	0	0

Node 1 Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	x	Sump Available	✓
Invert Level (m)	98.800	Product Number	CTL-SHE-0125-7600-1200-7600
Design Depth (m)	1.200	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	7.6	Min Node Diameter (mm)	1200

Node 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	99.600	Slope (1:X)	230.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.300
Safety Factor	2.0	Width (m)	61.000	Inf Depth (m)	
Porosity	0.30	Length (m)	97.000		

Node 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	99.900	Slope (1:X)	230.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	0.100
Safety Factor	2.0	Width (m)	61.000	Inf Depth (m)	
Porosity	0.15	Length (m)	97.000		

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.88%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	132	99.735	0.135	19.7	31.8035	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
180 minute winter	1	Hydro-Brake®	7.4	85.3

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.31%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	176	99.912	0.312	53.0	156.4593	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
180 minute winter	1	Hydro-Brake®	7.4	174.8

Results for 100 year +50% CC Critical Storm Duration. Lowest mass balance: 99.54%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
240 minute winter	1	144	100.000	0.400	80.0	255.3964	103.4874	FLOOD

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
240 minute winter	1	Hydro-Brake®	7.6	207.9

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Client	Labosport
Project	New Artificial Grass Pitch, Brian Holden Memorial Field
Title	Surface Water Strategy

Appendix H

Proposed Drainage Layout
SEA Drawing 00338/E02

GENERAL

Do not scale from this drawing.

All dimensions are in millimetres unless noted otherwise.

All setting out to architects drawings.

Drawing to be read in conjunction with all other SEA drawings and architects drawings.

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Significant unusual residual risks are identified below, beside the measures which have been adopted to eliminate and/or reduce them:

None identified.

DRAWING KEY:

- Existing Ditch
- New lateral pitch drainage to be confirmed by pitch contractor
- Proposed surface water drainage
- Proposed permeable type 3 subase extent beneath car park and access
- Proposed permeable type 3 subase extent beneath pitch, depth 300mm providing attenuation for the 1 in 30 year storm event.
- Proposed minimum extent of edging/kerb with a 125mm upstand to contain flooded water within pitch extent in the 1in100 + 40% storm event, total volume 103.5m³.
- Maximum Extent of 1in100 year + 40% flooded water, maximum depth 125mm.
- 1:100 Minimum pitch gradients
- Overland Flows in the event of system failure

Type 3 subbase depth = 300mm

1:230

Type 3 subbase depth = 300mm

1:230

Type 3 subbase depth = 300mm

1:230

Proprietary Flow Control Chamber
HydroBrake Chamber or similar approved
Design Head 1.2m
Restricting flows to 7.6/s
Hydrobrake Ref. SHE-0125-7600-1200-7600

150mm Laid at minimum 1:150

150mm Laid at minimum 1:150

Existing Ditch

Outfall to existing ditch
via a General Purposed Headwall
Assume ditch depth = 0.3m to be confirmed prior to construction

Rev.	Date	By	Description

SEA
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PROJECT
PROPOSED NEW AGP
BRIAN HOLDEN MEMORIAL FIELD

DRAWING
PROPOSED DRAINAGE LAYOUT

SCALE: 1:250@A1	DATE: 19.02.2026
DRAWN BY: WRA	REV: -

STATUS: FOR APPROVAL

DWG No: 00338/E02 -