



New Playzone Pitch Stoneyfield Park Rochdale

Surface Water Strategy

R - 00228 – 001 – SDS – 0
December 2024

Report Originator(s)

Warren Allsopp, BEng (Hons)

Director for SEA Consulting Engineers Ltd.

warren@seace.co.uk

07976 310054

Revision Record

Revision	Date	Description	Written	Approved
0	06.12.24	First Issue	WRA	WRA



CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

T: 07976 310054

E:warren@seace.co.uk

Client

Labosport

Project

New Playzone Pitch, Stoneyfield Park

Title

Surface Water Strategy

Page no. 2

Project ref 00228

Date December 2024

Contents

1.0	Introduction.....	3
1.1	Design Brief.....	3
1.2	Site Location	3
1.3	Current Land Use	3
1.4	Proposed Development.....	3
2.0	Surface Water Drainage	4
2.1	Existing Surface water drainage	4
2.2	Proposed Storm Drainage Discharge.....	4
2.3	Proposed Surface Water Drainage Strategy.....	5
2.4	SUDS	6
2.5	Maintenance.....	7
3.0	Conclusion	8

Appendices

Appendix A

Site Location Plan

Appendix B

Proposed Site Plan

Appendix C

Existing Drained Area

SEA Drawing 00228/E01

Appendix D

United Utilities Asset Plan

Appendix E

Ground Investigation Extracts

Appendix F

Proposed Drained Areas

SEA Drawing 00228/E02

Appendix G

Proposed Drainage Layout

SEA Drawing 00228/E03



CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

T: 07976 310054

E:warren@seace.co.uk

Client

Labosport

Project

New Playzone Pitch, Stoneyfield Park

Title

Surface Water Strategy

Page no. 3

Project ref 00228

Date December 2024

1.0 Introduction

1.1 Design Brief

- 1.1.1 The client, Labosport, requires a surface water drainage design for the installation of a playzone artificial pitch at Stoneyfield Park, Rochdale.
- 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. The benefit is limited to our instructing client, Labosport.

1.2 Site Location

- 1.2.1 The site is located within the grounds of Stoneyfield Park, approximately 1.2km to the southwest of Rochdale town centre. The approximate national grid reference is 389535E, 412225N and a site location plan is presented in Appendix A.

1.3 Current Land Use

- 1.3.1 The site is currently a multi-use games area.

1.4 Proposed Development

The proposed development will comprise the construction of a new playzone sports pitch. A proposed site layout is presented in Appendix B.

2.0 Surface Water Drainage

2.1 Existing Surface water drainage

- 2.1.1 The existing site is positively drained via 3 gullies located at the low points of the existing play area. The site's existing drained area is 485m², this drained area is presented in Appendix C.
- 2.1.2 At this stage it is assumed that the gullies connect to private surface drains which outfalls into the existing United Utilities (UU) sewers surrounding the site. A copy of the UU asset plan is presented in Appendix D.

2.2 Proposed Storm Drainage Discharge

- 2.2.1 Paragraph 80 of the Planning Practice Guidance for 'Flood Risk and Coastal Change' defines the hierarchy of drainage options. Where reasonably practicable the aim should be to discharge stormwater as high up the following hierarchy of storm drainage options;

- Into the Ground (infiltration);
- To a surface water body;
- To a surface water sewer, highway drain or another drainage system, and
- To combined sewer

- 2.2.2 Each of these is consider separately below;

Into the ground

- 2.2.3 A ground investigation has been undertaken by Soiltechnics Ltd, with infiltration testing carried out. The site is underlaid by a layer of made ground and then natural Glaciofluvial Deposits.
- 2.2.4 Infiltration testing was carried out in the made ground which proved some permeability but any soakaway within made ground is not recommended due to potential contamination issues. A test was also carried out in the natural Glaciofluvial Deposits and the rate of infiltration is deemed too slow for an effective outfall. It is therefore considered that soakaways are not viable.
- 2.2.5 Extracts of the ground investigation are presented in Appendix E.

To a surface water body

- 2.2.6 There are no existing watercourses or bodies within the vicinity of the site.

To a surface water sewer, highway drain or another drainage system

- 2.2.7 There are existing gullies serving the site which are assumed to outfall to an existing private surface water drain. It is proposed to outfall the proposed site to this drain.



CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

T: 07976 310054

E:warren@seace.co.uk

Client

Labosport

Project

New Playzone Pitch, Stoneyfield Park

Title

Surface Water Strategy

Page no. 5

Project ref 00228

Date December 2024

2.3 Proposed Surface Water Drainage Strategy

- 2.3.1 Proposals are to drain the new playzone pitch to the existing surface water drain serving the site via the existing gullies.
- 2.3.2 The proposed drained areas are presented on SEA drawing E02 which is presented in Appendix F. This drawing shows that the proposed drained area is 670m² and represents a small increase in the drained area of 185m².
- 2.3.3 The playzone will consist of a 25mm porous macadam surfacing along with a 40mm porous macadam base and a 250mm permeable type 3 subbase, which will allow water to infiltration through the pitch make up to a series of new lateral drains which will collect surface water before out falling into the existing surface water drainage.
- 2.3.4 Given the small increase in the drained area and the fact that the pitch make-up will naturally slow surface water through its make-up is not considered necessary to provide a flow restriction, the small increase in the drained area will not increase flood risk downstream.
- 2.3.5 A Drainage layout for the scheme is presented in Appendix G.

2.4 SUDS

- 2.4.1 The use of SUDS and pollution control measures have 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' is considered to be the most appropriate category, due to the minimal pollution hazard associated with the proposed Hockey Pitch , which will have no vehicle movements within its extent.
- 2.4.3 Surface water from the area will pass through the permeable subbase. Therefore acting 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 sites 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.

Playzone 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 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 glyphosphate 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 hazard 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, 48hrs after large storms for the first 6 months
	Establish slit accumulation rates and establish appropriate brushing frequencies.	Annually
	Monitor Inspection chambers	Annually



CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

T: 07976 310054

E: warren@seace.co.uk

Client

Labosport

Project

New Playzone Pitch, Stoneyfield Park

Title

Surface Water Strategy

Page no. 8

Project ref 00228

Date December 2024

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 satisfying the requirements of the National Planning Policies Framework.

3.1.2 References

- Department for Communities and Local Government (July 2021) - 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.



CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

T: 07976 310054

E: warren@seace.co.uk

Client

Labosport

Project

New Playzone Pitch, Unity Primary School

Title

Surface Water Strategy

Appendix A

Site Location Plan

LOCATION PLAN

CHECK ALL DIMENSIONS PRIOR TO COMMENCEMENT OF WORK

NO GUARANTEE CAN BE GIVEN THAT ALL SERVICES HAVE BEEN SHOWN ON THE DRAWING

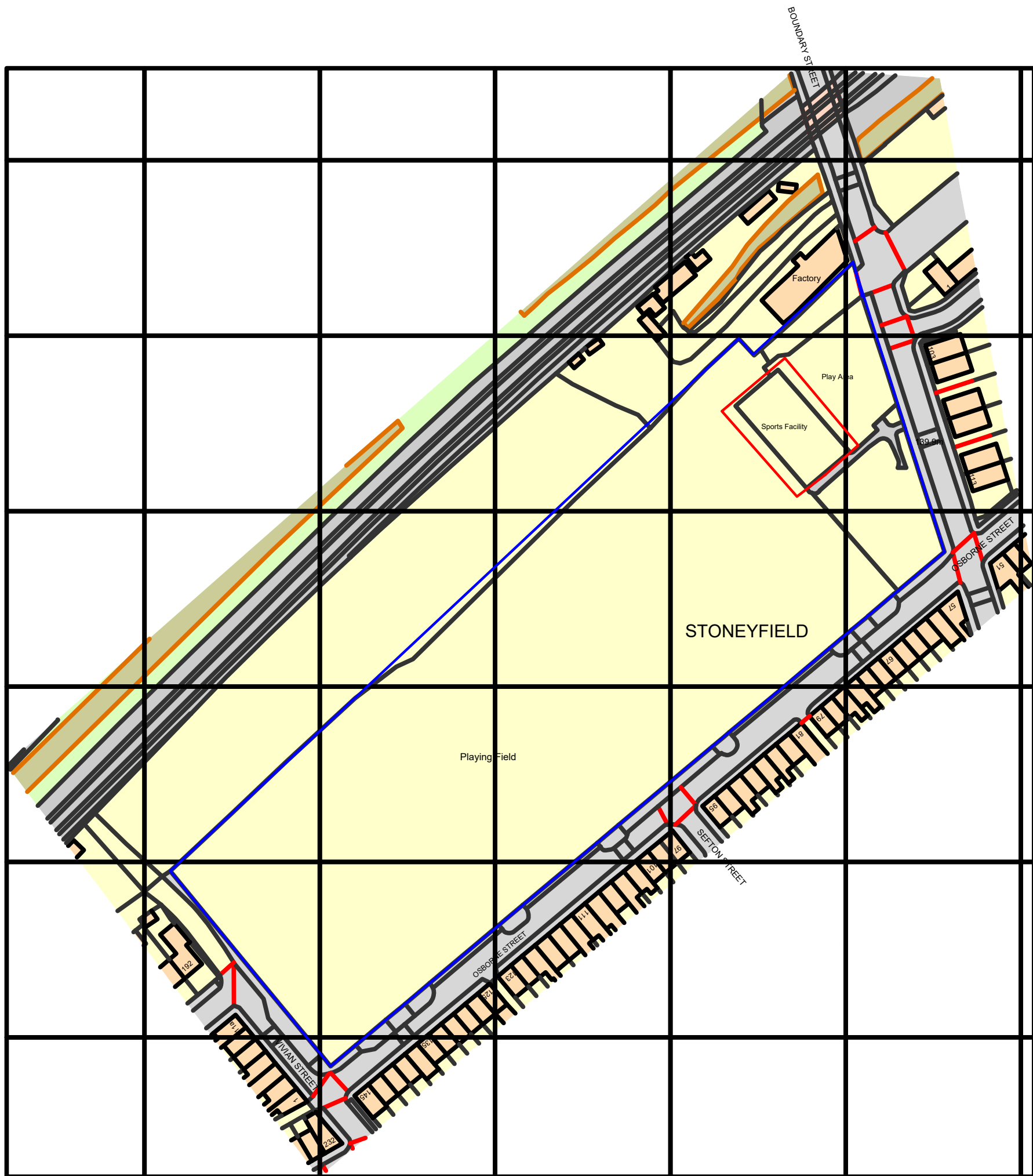
NO GUARANTEE CAN BE GIVEN TO THE ACCURACY AND COMPLETENESS OF ANY SERVICE PROVIDER RECORD INFORMATION SHOWN IN THIS DRAWING AND NO LIABILITY WILL BE ACCEPTED FOR ANY LOSSES THAT ARISE DUE TO A LACK OF ACCURACY IN ANY SERVICE PROVIDERS RECORD INFORMATION

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

THIS DRAWING IS COPYRIGHT TO LABOSPORT LTD

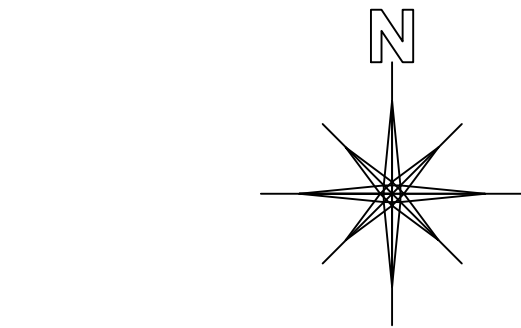
- APPLICATION SITE AREA
REQUIRED
- LAND AREA UNDER
OWNERSHIP OF CLIENT



Ordnance Survey, (c) Crown Copyright 2024. All rights reserved. Licence number 100022432



Ordnance Survey, (c) Crown Copyright 2024. All rights reserved. Licence number 100022432



LEGEND / KEY

Labosport Ltd
Unit 3, Aerial Way, Hucknall, Nottinghamshire, NG15 6DW
+44 (0)115 968 1998
www.labosport.com
info@labosport.co.uk

SIS PITCHES UK

STONEYFIELD PARK
PLAYZONE FACILITY DEVELOPMENT

LOCATION PLAN

DRAWING			01
PLANNING	MD	15/10/2024	
STATUS	LSUK 24-0572	15/10/2024	
PROJECT	A1	SCALE	1:1250
PAPER SIZE	A1	SCALE	1:1250

24-0572 01P



CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

T: 07976 310054

E:warren@seace.co.uk

Client

Labosport

Project

New Playzone Pitch, Unity Primary School

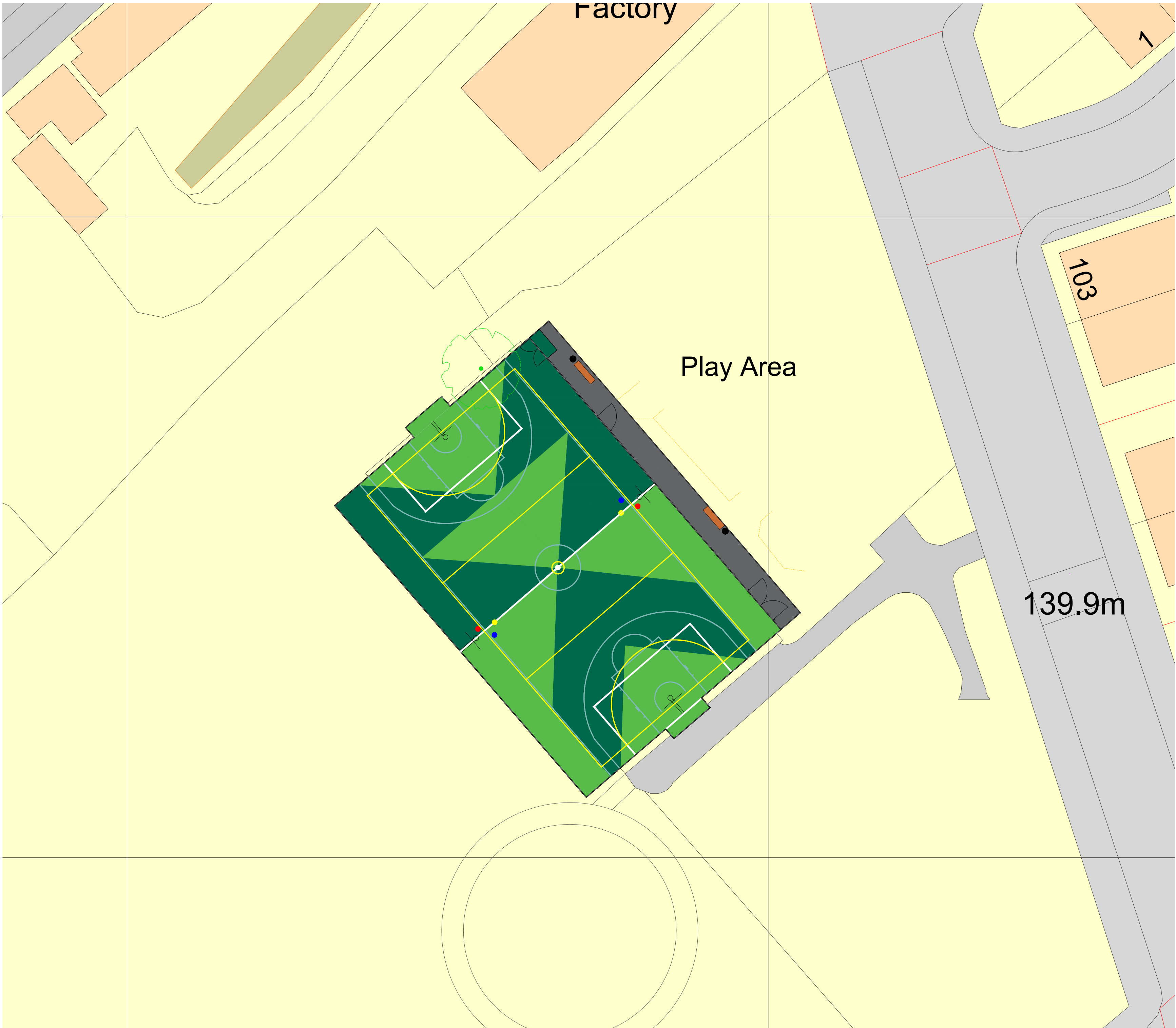
Title

Surface Water Strategy

Appendix B

Proposed Site Plan

PROPOSED LAYOUT



FACILITY TYPE
FOOTBALL, BASKETBALL & NETBALL
PAINTED POROUS ASPHALT (MACADAM) SURFACE
PLAYZONE WITH PERIMETER FENCING, FLOODLIGHTING,
HARD-STANDING AREA AND EQUIPMENT

CONSTRUCTION
IN ALL REFURBISHED AREAS, DUE TO FALL OF THE
EXISTING FACILITY, IT IS PROPOSED THE EXISTING
MACADAM SURFACING LAYER IS REMOVED, TO ALLOW
FOR RE-GRADING, LEVELING AND TOP UP OF THE STONE
SUB-BASE LAYER
(EXTENSIONS AREAS TO HAVE 200MM STONE SUB-BASE
LAYER INSTALLED)
NEW 40MM THICK POROUS ASPHALT (MACADAM) BASE
LAYER
NEW 25MM THICK POROUS ASPHALT (MACADAM)
SURFACE LAYER - PAINTED, WITH SLIP RESISTANCE AS
PER ENGLAND BASKETBALL & ENGLAND NETBALL
REQUIREMENTS (>75)

DIMENSIONS
FENCE TO FENCE = 30 X 20M
2NR GOAL RECESSES = 3.66 X 1M
HARD STANDING AREA = 20 X 2M
ACCESS ROUTE = LINKED TO EXISTING PATHWAYS TO
THE NORTH

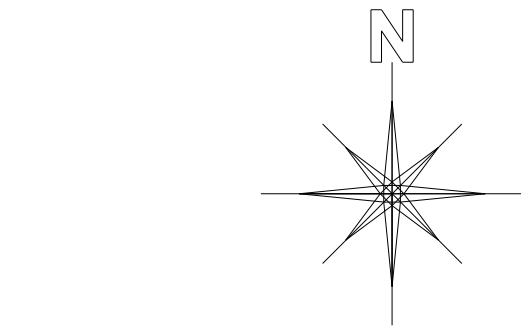
LINE MARKING
GOAL BOXES = 10.0 X 5.0M
GOAL LINE = 3.66LM
BASKETBALL MARKINGS AS PER BELOW (ADJUSTED FOR
30X20M AREA)
<https://www.basketballengland.co.uk/media/13895/full-court-5v5-basketball-line-markings.pdf>
NETBALL MARKINGS = 28.0 X 15.25M

PERIMETER FENCING
3.0M HIGH TWIN BAR PANEL FENCING (RAL 6005 - DARK
GREEN)
AND 4.0M HIGH TWIN BAR PANEL FENCING (RAL 9016 -
WHITE
OR SIMILAR)
2NR DOUBLE GATE(S)
1NR SINGLE GATE(S)

LED FLOODLIGHTING
AVERAGE LUX = 120LUX
UNIFORMITY = 0.65

EQUIPMENT
2NR GOALS (INTEGRAL TO FENCING)
2NR BENCHES
2NR WASTE BINS
1NR STORAGE CONTAINER
4NR BASKETBALL HOOP SYSTEMS

CHECK ALL DIMENSIONS PRIOR TO COMMENCEMENT OF WORK
NO GUARANTEE CAN BE GIVEN THAT ALL SERVICES HAVE BEEN SHOWN ON THE
DRAWING
NO GUARANTEE CAN BE GIVEN TO THE ACCURACY AND COMPLETENESS OF ANY
SERVICE PROVIDER RECORD INFORMATION SHOWN IN THIS DRAWING AND NO
LIABILITY WILL BE ACCEPTED FOR ANY LOSSES THAT ARISE DUE TO A LACK OF
ACCURACY IN ANY SERVICE PROVIDERS RECORD INFORMATION
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
THIS DRAWING IS COPYRIGHT TO LABOSPORT LTD



LEGEND / KEY



Labosport Ltd
Unit 3, Aerial Way, Hucknall, Nottinghamshire, NG15 6DW
+44 (0)115 968 1998
www.labosport.com
info@labosport.co.uk

AUTHOR

THE FOOTBALL FOUNDATION

CLIENT

PLAYZONE FACILITY DEVELOPMENT

PROJECT

PROPOSED LAYOUT

DRAWING		REVISION	
DESIGN	MD	06/09/2024	02
STATUS	LSUK 24-0572	06/09/2024	
PROJECT	A1	SCALE	1:200
PAPER SIZE	A1	SCALE	1:200
			23-0572 01



CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

T: 07976 310054

E: warren@seace.co.uk

Client

Labosport

Project

New Playzone Pitch, Unity Primary School

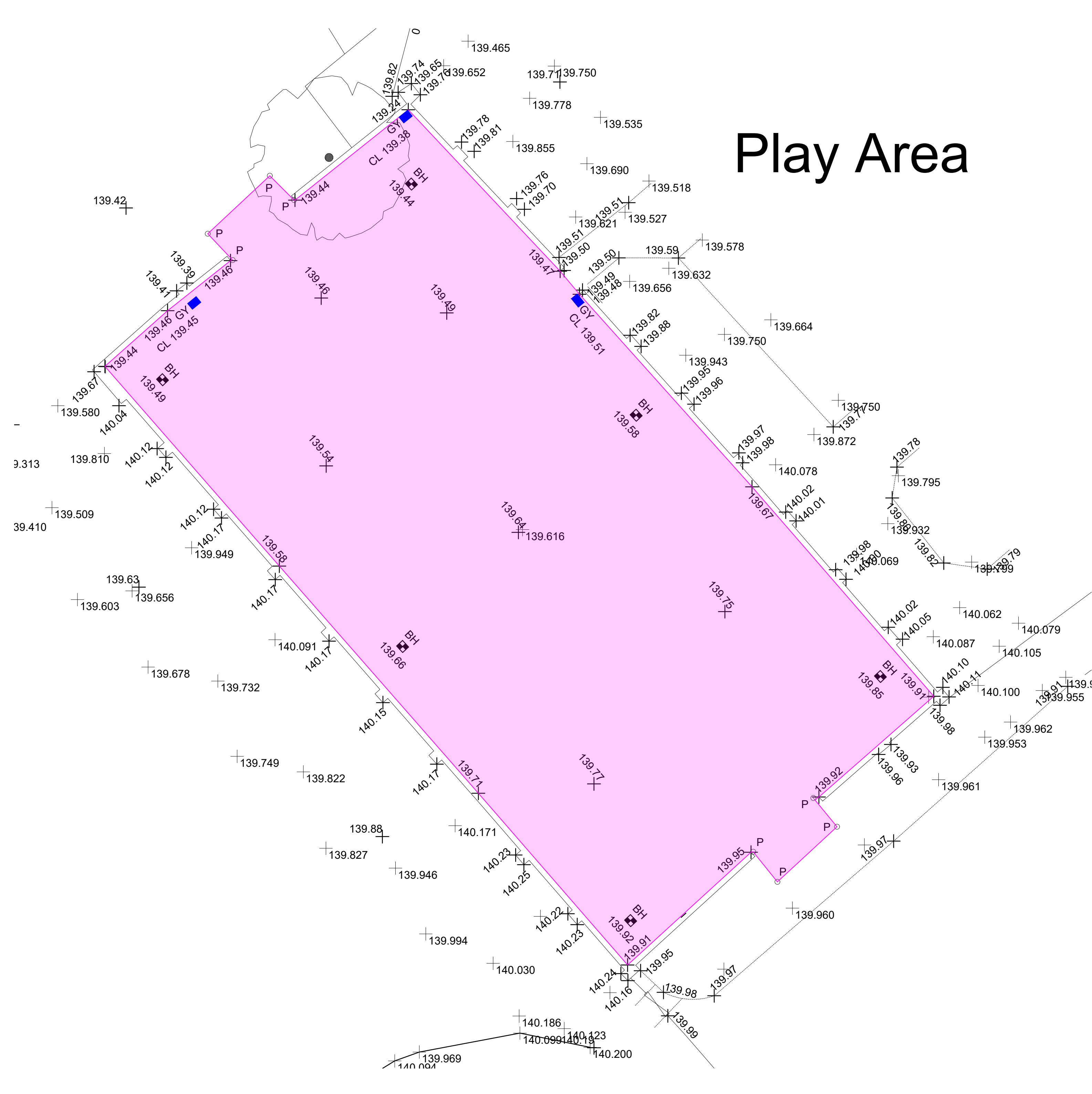
Title

Surface Water Strategy

Appendix C

Existing Drained Area

SEA Drawing 00228/E01



Play Area

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 out 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:

Existing Drained Area = 485m²

Existing Gullies

Rev.	Date	By	Description
SEA CONSULTING ENGINEERS [CONSULTING CIVIL & STRUCTURAL ENGINEERS] E: warren@seace.co.uk T: 07976310054			
PROJECT			
NEW PLAYZONE PITCH STONEFIELD PARK ROCHDALE			
DRAWING			
EXISTING DRAINED AREAS			
SCALE: 1:100@A2		DATE: 06.12.2024	
DRAWN BY: WRA		REV: -	
STATUS: FOR APPROVAL			
DWG No: 00228/E01			-



CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

T: 07976 310054

E:warren@seace.co.uk

Client

Labosport

Project

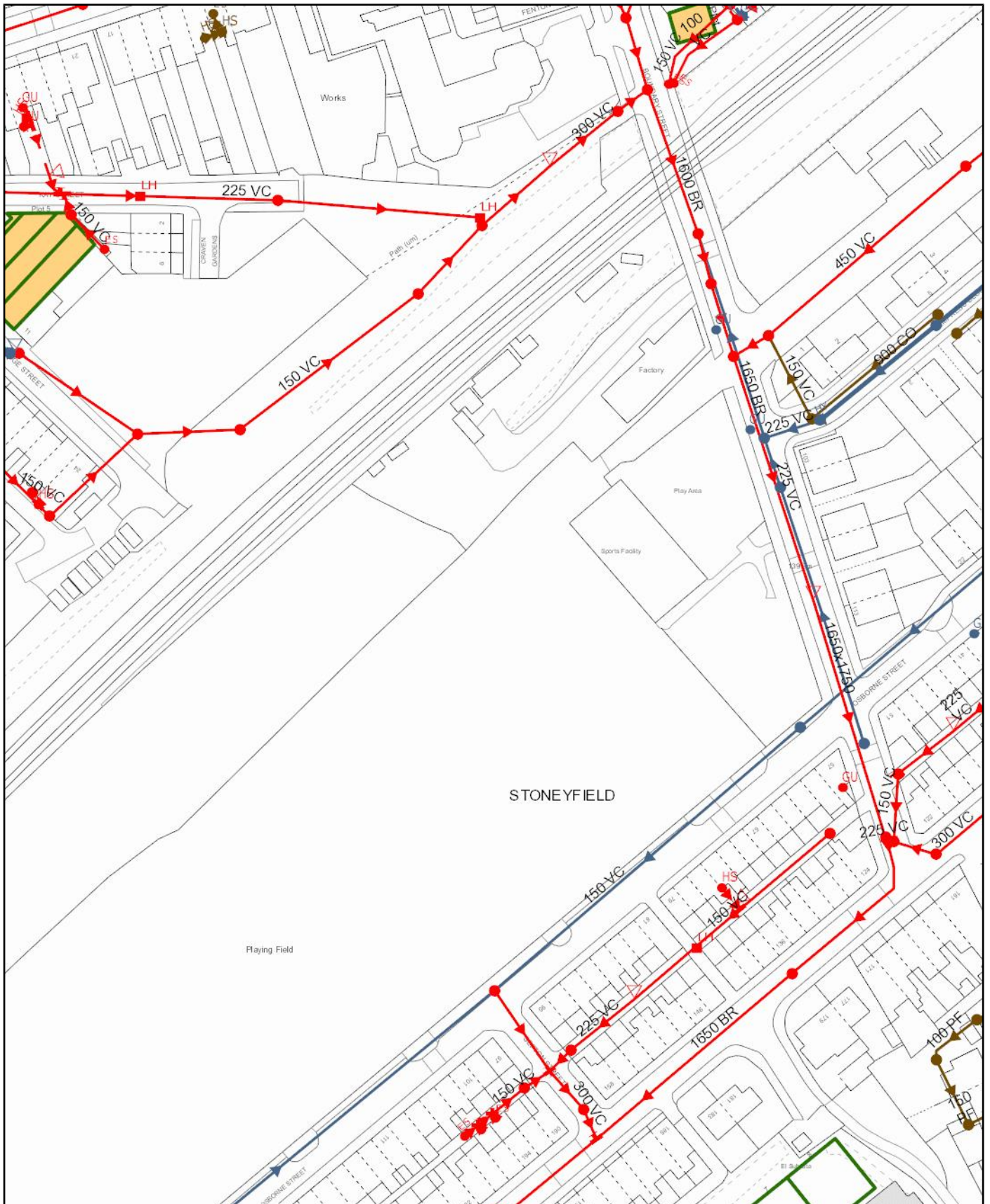
New Playzone Pitch, Unity Primary School

Title

Surface Water Strategy

Appendix D

United Utilities Asset Plan



Scale: 1:1250
Date: 24/01/2024

SEWER RECORDS



Water for the North West

Address or Site Reference: Stoneyfield
Printed by: Property Searches

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

Crown copyright and database rights 2023 Ordnance Survey 100022432. Unauthorised reproduction will infringe these copyrights.



CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

T: 07976 310054

E: warren@seace.co.uk

Client

Labosport

Project

New Playzone Pitch, Unity Primary School

Title

Surface Water Strategy

Appendix E

Ground Investigation Extracts

- 7.3.2 CBR value has been determined for the proposed PlayZone pitch 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.
- 7.3.3 Based on the anticipated founding depth and DCP results, a CBR design value of 20% can be adopted for both the existing subbase (if left insitu) and the underlying Glaciofluvial Deposits.
- 7.3.4 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.

7.3.1 The Glaciofluvial Deposits soils are unlikely to be considered frost susceptible.

7.4 Drainage

- 7.4.1 Infiltration testing has been undertaken at the site in accordance with BRE 365: Soakaway Design (2016).
- 7.4.2 The Glaciofluvial Deposit soils were encountered as a granular material. The Made Ground soils were also encountered as a granular material. Indicative infiltration testing was undertaken in HP02 in the Glaciofluvial Deposits and in HP06 in the Made Ground material.
- 7.4.3 Within the Glaciofluvial Deposits test, no significant fall in water was observed, with data extrapolated to determine a soil infiltration rate of 4.84×10^{-6} m/s.
- 7.4.4 Made Ground soils exhibited a good degree of permeability, with infiltration rates of 1.93×10^{-3} m/s to 3.18×10^{-3} m/s.
- 7.4.5 The results are presented in Appendix D and summarised below:

Exploratory hole ID	Stratum tested	Cycle	Infiltration rate (m/s)
HP02	Glaciofluvial Deposits	1	4.84×10^{-6}
		1	1.93×10^{-3}
HP06	Made Ground	2	3.18×10^{-3}
		3	1.19×10^{-3}

Table 7-B: Summary of infiltration test results undertaken in accordance with BRE 365

- 7.4.6 It should be noted that infiltration testing in hand pits uses notably less water than tests undertaken within machine excavated soakaway trial pits. Accordingly, results should be considered as an indication of the potential viability of soakaways. It is recommended that full soakaway tests within machine excavated trial pits should be undertaken at the site in accordance with BRE 365, to facilitate detailed drainage design given the granular nature of the natural soils beneath the site.
- 7.4.7 As an alternative, it is possible that the PlayZone drainage could key into the existing surface water drainage system currently used by the existing MUGA. Gully pots were noted within the pitch, recorded on the topographical survey for the site. 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 PlayZone Pitch.



Key:

-  Proposed Playzone
-  Hand Pit
-  DCPs
-  Soakaways

Notes

1) Base image provided by Google.

2) All drawn features are approximate.

Contains OS data © Crown copyright [and database right] [2023]
Map data © 2023 Google

A	July 2024	First issue
REV	DATE	COMMENT ON VARIATION



environmental • geotechnical • building fabric

PROJECT
Stoneyfield Park, Rochdale
TITLE
Exploratory Hole Location Plan
DRAWING No.
STW6382-D01-A

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Black ASPHALT (ASPHALT)	0.04								
Red ASPHALT (ASPHALT)	0.08								
Dark grey mottled red and black sandy fine to coarse subangular to angular GRAVEL of sandstone and quartzite. (MADE GROUND - SUBBASE)	0.16								
[Medium dense] grey sandy fine to coarse subrounded to angular GRAVEL of sandstone. (MADE GROUND)									
									
									
									
									
									
									
[Medium dense] orangish brown gravelly fine to coarse SAND with low cobble content of subrounded sandstone. Gravel is fine to coarse rounded to subangular sandstone. (GLACIOFLUVIAL DEPOSITS)	0.51						0.55		D
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Black ASPHALT (ASPHALT)	0.04								
Red ASPHALT (ASPHALT)	0.08								
Dark grey mottled red and black sandy fine to coarse subangular to angular GRAVEL of sandstone and quartzite. (MADE GROUND - SUBBASE)	0.18								
[Medium dense] grey sandy fine to coarse subangular to angular GRAVEL of sandstone and quartzite. (MADE GROUND)	0.40								
[Medium dense] dark brown slightly clayey gravelly fine to coarse SAND with low cobble content of subrounded sandstone. Gravel is fine to coarse subrounded to angular sandstone. (GLACIOFLUVIAL DEPOSITS)	0.65								
[Medium dense] brown slightly clayey slightly gravelly fine to coarse SAND with low cobble content of subrounded to rounded sandstone. Gravel is fine to coarse subrounded to subangular sandstone. (GLACIOFLUVIAL DEPOSITS)	1.07						0.90		B
TRIAL PIT TERMINATED AT 1.07m									

Notes Terminated due to cobble at the base of the pit. Trial pit remained upright and stable upon completion. Infiltration testing performed.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.29m	Date(s) 18/03/2024
	Method Hand excavated	Logged by TT	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by AM	Revision A
	Co-ordinates -	Checked by DH	HP02

[illegible]

Notes Terminated at scheduled depth. Trial pit remained upright and stable upon completion.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 18/03/2024
	Method Hand excavated	Logged by TT	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by AM	Revision A
	Co-ordinates -	Checked by DH	HP03

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Black ASPHALT (ASPHALT)	0.04								
Red ASPHALT (ASPHALT)	0.08								
[Medium dense] dark grey mottled black and red fine to coarse GRAVEL of sandstone. (MADE GROUND - SUBBASE)	0.15								
[Medium dense] grey sandy fine to coarse subrounded to angular GRAVEL of sandstone. (MADE GROUND)	0.26								
[Medium dense] brown mottled orange gravelly fine to coarse SAND with low cobble content of subrounded sandstone. Gravel is fine to coarse rounded to subangular sandstone. (GLACIOFLUVIAL DEPOSITS)	0.45						0.40		B
TRIAL PIT TERMINATED AT 0.45m									

Notes Terminated at scheduled depth. Trial pit remained upright and stable upon completion.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 18/03/2024
	Method Hand excavated	Logged by TT	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by AM	Revision A
	Co-ordinates -	Checked by DH	HP04

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Black ASPHALT (ASPHALT)	0.04								
Red ASPHALT (ASPHALT)	0.08								
Black mottled grey and red fine to medium subangular to angular GRAVEL of sandstone. (MADE GROUND - SUBBASE)	0.11								
[Medium dense] grey sandy fine to coarse subrounded to angular GRAVEL of sandstone. (MADE GROUND)									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Black ASPHALT (ASPHALT)	0.04								
Red ASPHALT (ASPHALT)	0.07								
Black mottled red and grey fine to coarse subangular to angular GRAVEL of sandstone. (MADE GROUND - SUBBASE)	0.11								
Grey sandy fine to coarse subangular to angular GRAVEL of sandstone. (MADE GROUND)									
									
									
[Medium dense] brown sandy fine to coarse rounded to subangular GRAVEL of sandstone with low cobble content of rounded sandstone. (GLACIOFLUVIAL DEPOSITS)	0.35						0.45		B
									
									
TRIAL PIT TERMINATED AT 0.55m	0.55								
									
									
									
									
									
									
									
									

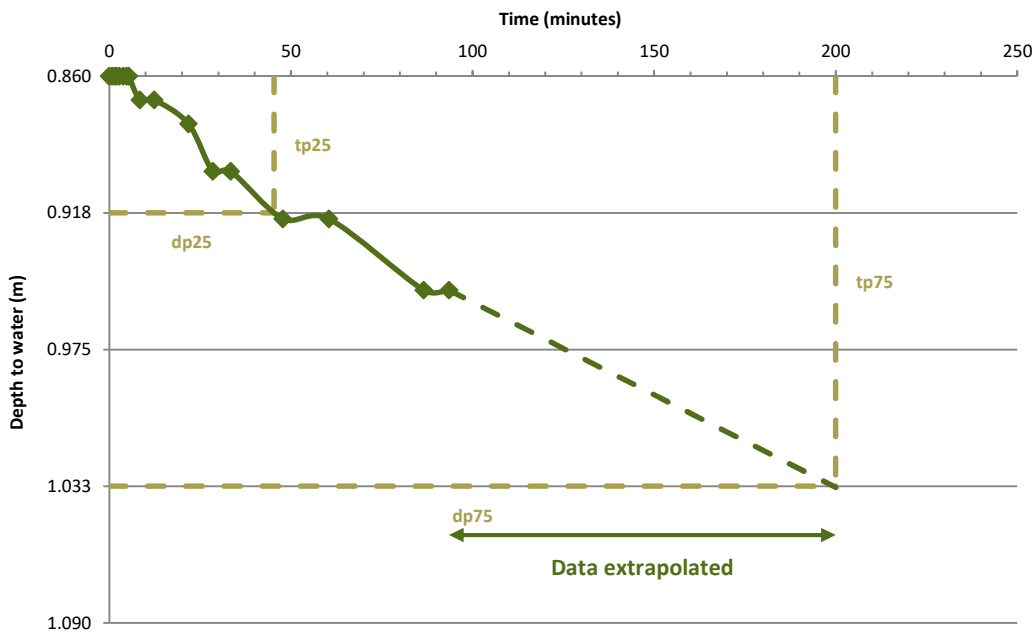
Notes Terminated at scheduled depth. Trial pit remained upright and stable upon completion. Infiltration testing performed.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.23m	Date(s) 18/03/2024
	Method Hand excavated	Logged by TT	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by AM	Revision A
	Co-ordinates -	Checked by DH	HP06

Soil infiltration test (following BRE Digest 365 2016)

Location	Cycle	Test date	Plan dimensions (m)
HP02	1	18/03/2024	0.29 x 0.30

Groundwater observations (at time of excavation)
None observed

Depth of pit at start (m)	Depth of pit at end (m)
1.09	1.09



$$f = \frac{V_{p75 - 25}}{a_{p50} \times t_{p75 - 25}}$$

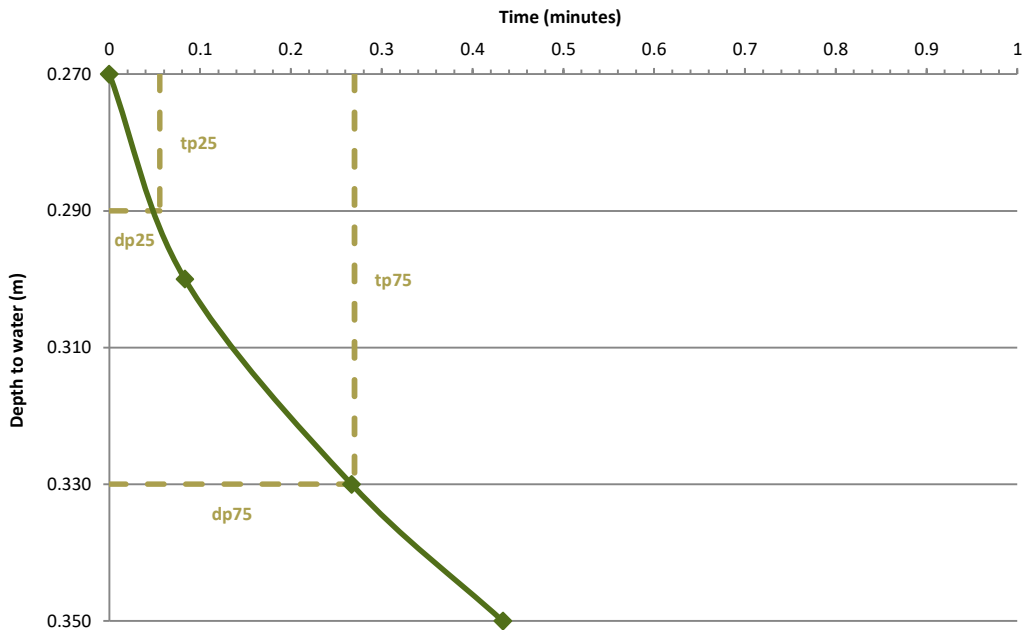
$V_{p75 - 25}$ Effective storage volume of water between 75% (dp75) and 25% (dp25) effective depth	0.01001	m ³
a_{p50} Internal surface area up to 50% effective depth and including the base	0	m ²
$t_{p75} - t_{p25}$ Time for the water level to fall from 75% to 25% effective depth	9280	s
f Soil infiltration rate	4.84E-06	m/s

Soil infiltration test (following BRE Digest 365 2016)

Location	Cycle	Test date	Plan dimensions (m)
HP06	1	18/03/2024	0.23 x 0.30

Groundwater observations (at time of excavation)
No Groundwater Observed

Depth of pit at start (m)	Depth of pit at end (m)
0.37	0.35



$$f = \frac{V_{p75 - 25}}{a_{p50} \times t_{p75 - 25}}$$

$V_{p75 - 25}$ Effective storage volume of water between 75% (dp75) and 25% (dp25) effective depth	0.00276	m ³
a_{p50} Internal surface area up to 50% effective depth and including the base	0	m ²
$t_{p75} - t_{p25}$ Time for the water level to fall from 75% to 25% effective depth	13	s
f Soil infiltration rate	1.93E-03	m/s

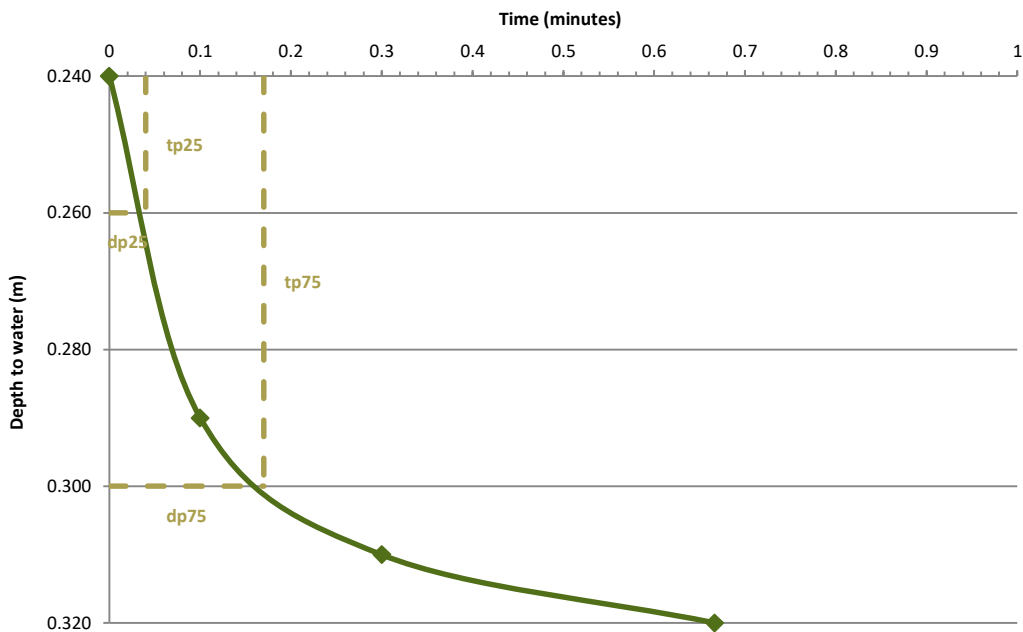
Soil infiltration test (following BRE Digest 365 2016)

Location	Cycle	Test date	Plan dimensions (m)
HP06	2	18/03/2024	0.23 x 0.30

Groundwater observations (at time of excavation)

No Groundwater Observed

Depth of pit at start (m)	Depth of pit at end (m)
0.35	0.32



$$f = \frac{V_{p75 - 25}}{a_{p50} \times t_{p75 - 25}}$$

$V_{p75 - 25}$	0.00276	m ³
Effective storage volume of water between 75% (dp75) and 25% (dp25) effective depth		
a_{p50}	0	m ²
Internal surface area up to 50% effective depth and including the base		
$t_{p75} - t_{p25}$	8	s
Time for the water level to fall from 75% to 25% effective depth		
f	3.18E-03	m/s
Soil infiltration rate		

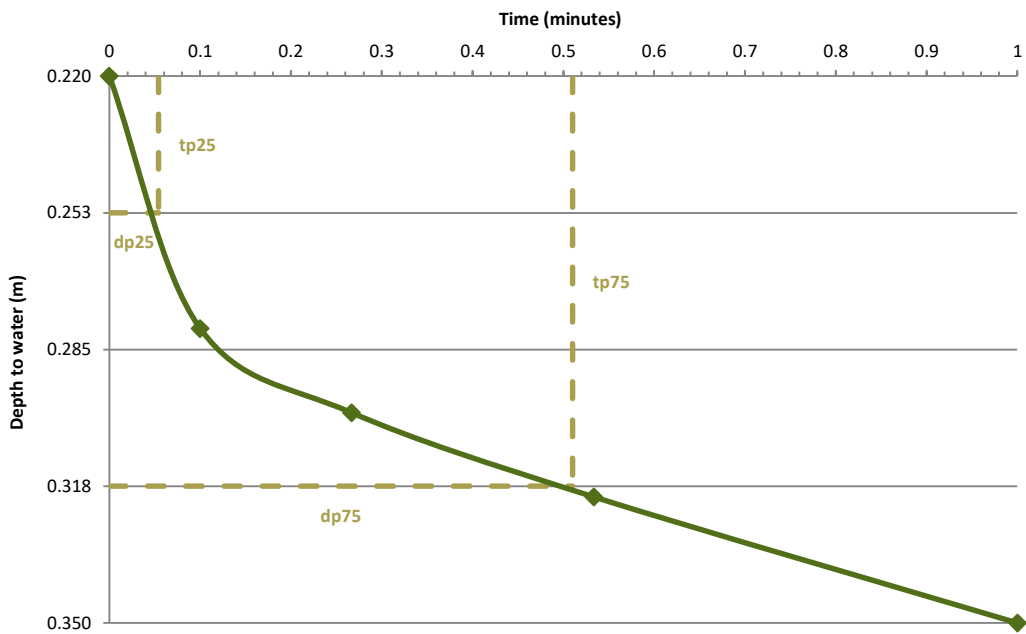
Soil infiltration test (following BRE Digest 365 2016)

Location	Cycle	Test date	Plan dimensions (m)
HP06	3	18/03/2024	0.23 x 0.30

Groundwater observations (at time of excavation)

No Groundwater Observed

Depth of pit at start (m)	Depth of pit at end (m)
0.35	0.35



$$f = \frac{V_{p75 - 25}}{a_{p50} \times t_{p75 - 25}}$$

$V_{p75 - 25}$ Effective storage volume of water between 75% (dp75) and 25% (dp25) effective depth	0.00449	m ³
a_{p50} Internal surface area up to 50% effective depth and including the base	0	m ²
$t_{p75} - t_{p25}$ Time for the water level to fall from 75% to 25% effective depth	27	s
f Soil infiltration rate	1.19E-03	m/s



CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

T: 07976 310054

E: warren@seace.co.uk

Client

Labosport

Project

New Playzone Pitch, Unity Primary School

Title

Surface Water Strategy

Appendix F

Proposed Drained Areas

SEA Drawing 00228/E02



Rev.	Date	By	Description
 SEA CONSULTING ENGINEERS [CONSULTING CIVIL & STRUCTURAL ENGINEERS] E: warren@seace.co.uk T: 07976310054			
<u>PROJECT</u> NEW PLAYZONE PITCH STONEFIELD PARK ROCHDALE			
<u>DRAWING</u> PROPOSED DRAINED AREAS			
SCALE: 1:100@A2		DATE: 06.12.2024	
DRAWN BY: WRA		REV: -	
STATUS: FOR APPROVAL			
DWG No: 00228/E02			-



CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

T: 07976 310054

E: warren@seace.co.uk

Client

Labosport

Project

New Playzone Pitch, Unity Primary School

Title

Surface Water Strategy

Appendix G

Proposed Drainage Layout

SEA Drawing 00228/E03



 Overland flow direction in case of system failure