CONSULTING ENGINEERS

[CONSULTING CIVIL & STRUCTURAL ENGINEERS]

New Playzone Pitch
Unity Primary School
Manchester

Surface Water Design

R - 00227 – 001 – SWD – A
July 2025

Report Originator(s)

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Revision Record

Revision	Date	Description	Written	Approved
0	02.12.24	First Issue	WRA	WRA
A	18.07.25	Updated following site visit	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 playzone artificial pitch at Unity Primary School, Manchester

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 Unity Primary School, approximately 2.4km north of Manchester City Centre. The approximate national grid reference is 383620E, 400570N and a site location plan is presented in Appendix A.

1.3 Current Land Use

1.3.1 The site is currently part of the school playing fields.

1.4 Proposed Development

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

2.0 Surface Water Drainage

2.1 Existing Surface water drainage

2.1.1 The site is not served by any formal surface water drainage. There is an existing 375mm United Utilities (UU) combined sewer within the grounds of the school, to the south of the main building. A copy of the asset plan is presented in Appendix C.

2.1.2 A site visit was carried out by the client, who confirmed that there is an existing surface water chamber (currently picking up a RWP) adjacent to the existing building, which then drains south through the school and most likely connects to the existing UU combined sewer.

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. They have concluded that the use of soakaways at this site is not viable. This is further backed up by the fact that no existing soakaway features are present on site. Extracts from the ground investigation are presented in Appendix D.

To a surface water body

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

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

2.2.5 As noted above there is an existing surface water chamber adjacent to the existing building. This chamber offers a viable outfall for the new pitches drainage.

2.3 Proposed Surface Water Drainage Strategy

2.3.1 Proposals are to drain the new playzone pitch to existing surface water chamber adjacent to the building.

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 the increase in storm intensities up to 45%. 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 E. The site's drained areas are presented in Appendix F and equates to a total area of 730m^2.

2.3.3 Proposals are to restrict the pitches surface water to as close to greenfield runoff 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 G which calculates that the Qbar value is less than 0.1l/s. Flows at this rate are not considered practical therefore we will restrict the surface water to 1.0l/s.

2.3.4 The new artificial grass pitch will consist of 20mm sand-dressed synthetic turf, 15mm porous shockpad along with a 50mm porous macadam 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 an orifice flow control device with attenuation provided within the pitches makeup. The Pitch will be laid with a 1:250 fall.

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 H and shows that Pitch build-up provides adequate attenuation for all storm events up to and including the 1in100 year + 45% event.

2.3.6 A Drainage layout for the scheme is presented in Appendix I.

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.

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 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 suing 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 month 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

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.

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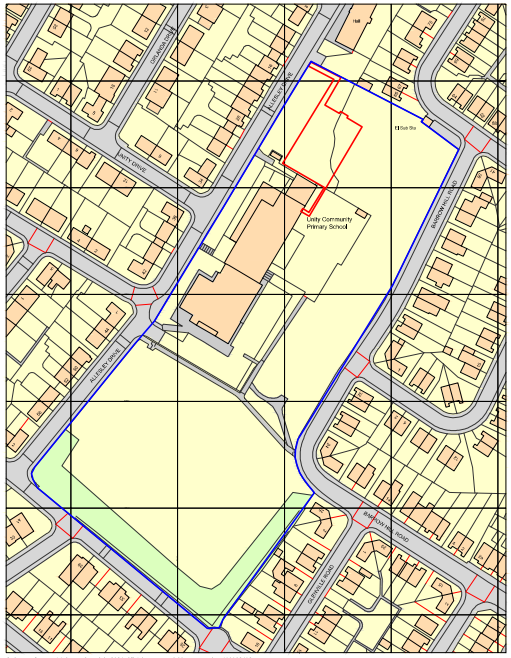
Client	Labosport
Project	New Playzone Pitch, Unity Primary School
Title	Surface Water Design – REV A

Appendix A

Site Location Plan

LOCATION PLAN


Derby Road
Derby Road
Derby Road

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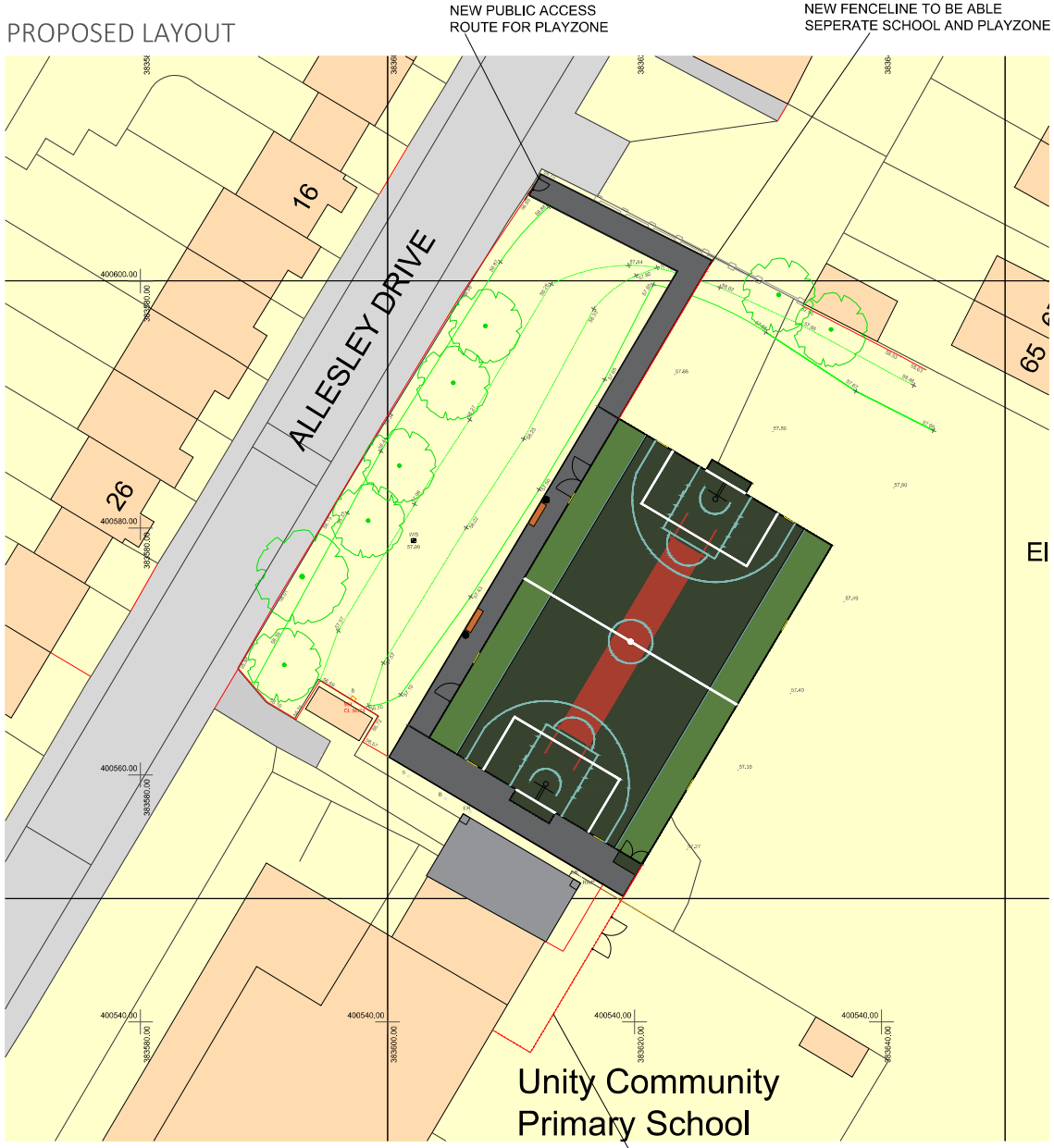
Appendix B

Proposed Site Plan

PROPOSED LAYOUT



KEY SPORTS IDENTIFIED TO DICTATE PLAYZONE DESIGN
FOOTBALL / CRICKET / BASKETBALL

PLAYZONE DESIGN
2G SAND DRESSED SYNTHETIC TURF SURFACED PLAYZONE WITH PERIMETER FENCING, FLOODLIGHTING, HARD-STANDING AREA AND EQUIPMENT

CONSTRUCTION
250MM SUB BASE
50MM POROUS ASPHALT (MACADAM) LAYER
15MM IN-SITU SHOCKPAD
20MM SAND DRESSED SYNTHETIC TURF

DIMENSIONS
FENCE TO FENCE = 30 X 20M
2NR GOAL RECESSES = 3.66 X 1M
HARD STANDING SPECTATOR AREA = 30 X 2M
ACCESS ROUTES =
NEW PATHWAY CREATED TO NORTH FOR PUBLIC ACCESS
NEW PATHWAY AROUND SOUTH END TO ALLOW TOILET ACCESS AND SCHOOL ACCESS ROUTE

LINE MARKING
GOAL BOXES = 10.0 X 5.0M
GOAL LINE = 3.66LM
CRICKET PITCH TO BE SEPARATE COLOUR TO PLAYZONE
ADDITIONAL BASKETBALL MARKINGS TO BE INCLUDED AS THIRD SPORTING OPTION *(SUGGEST THESE ARE PAINTED TO CAUSE LESS SEAM JOINTS / POTENTIAL WEAK POINTS, ALTHOUGH ONGOING RE-PAINTING COST)*

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)
3NR DOUBLE GATE(S) *(ONE FOR PLAYZONE ACCESS,ONE FOR STORAGE AREA AND ONE FOR ACCESS BETWEEN SCHOOL AND PLAYZONE)*
2NR SINGLE ENTRANCE GATE(S)
ADDITIONAL FENCING REQUIRED TO SEPARATE NEW PLAYZONE FROM THE SCHOOL, TO ALLOW SUFFICIENT SAFEGUARDING FOR THE SCHOOL FROM EXTERNAL USERS OF THE FACILITY

LED FLOODLIGHTING
AVERAGE LUX = 200LUX UNIFORMITY = 0.65
LIKELY TO BE 4NR FENCE FIXED FLOODLIGHT SYSTEM, TBC BY HALLIDAY LIGHTING

EQUIPMENT
2NR GOALS (INTEGRAL TO FENCING)
2NR BENCHES
2NR WASTE BINS
1NR STORAGE CONTAINER
8NR ADDITIONAL CRICKET WICKET SIGNAGE INTEGRAL TO FENCING
2NR BASKETBALL HOOP SYSTEMS

CHECK ALL DIMENSIONS PRIOR TO COMMENCEMENT OF WORK

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

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

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LEGEND / KEY

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AUTHOR

CLIENT
SIS (UK) LTD

PROJECT
UNITY PRIMARY SCHOOL - PLAYZONE FACILITY DEVELOPMENT

DRAWING
PROPOSED LAYOUT

DESIGN	MD	02
LSUK 24-0479	23.08.2024	
A1	1:200	24-0479 01

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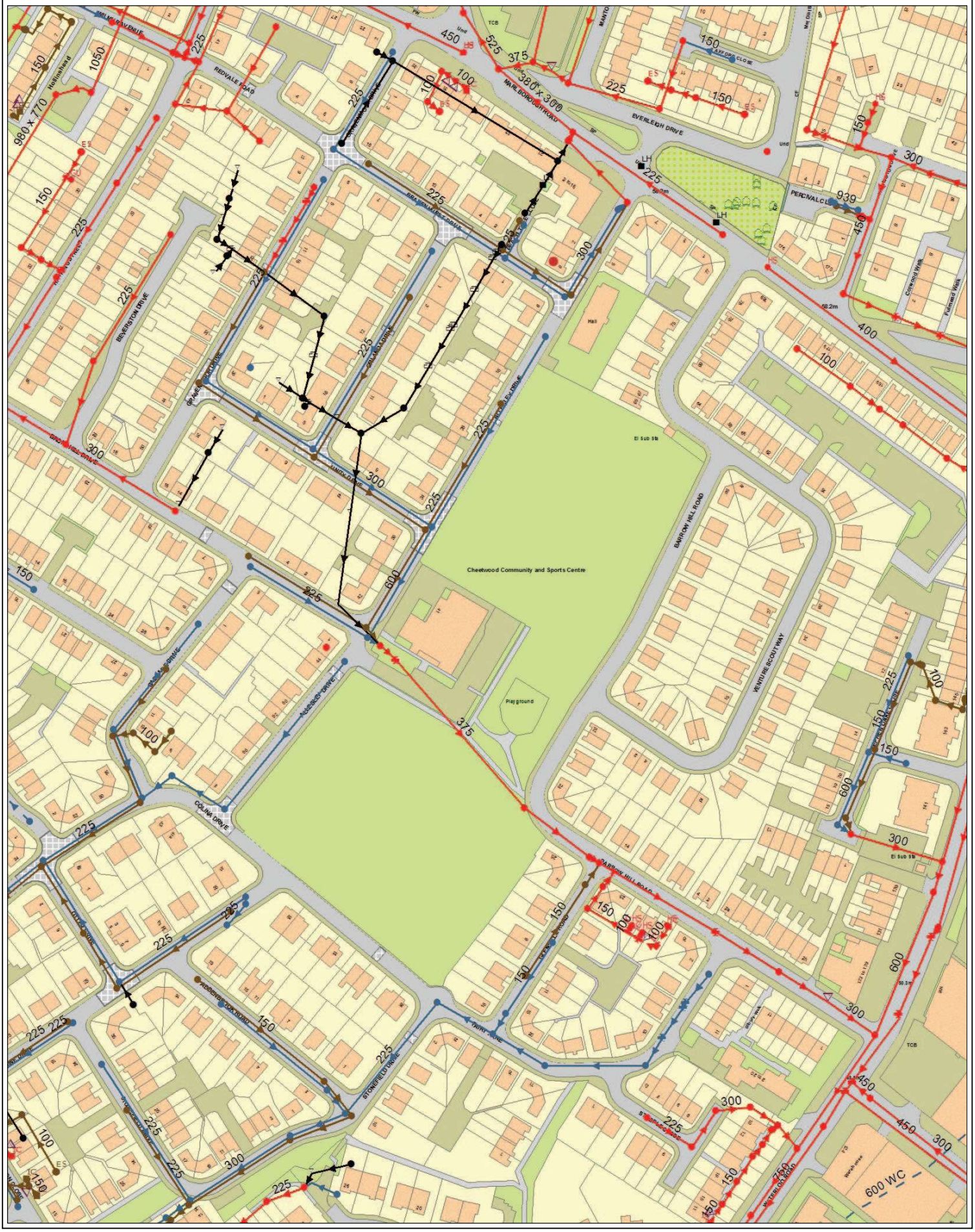
Title	Surface Water Design – REV A

Appendix C

United Utilities Asset Plan

UU Maps for Safe Dig

Centre :	X : 383589	Y : 400502	Date :	06/08/2015 12:58:05	Scale Approx :	1477.33976249754



Extract from maps of United Utilities' Underground Assets

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. The actual positions may be different from those shown on the plan and private service pipes may be shown by a blue broken line. United Utilities Water will not accept liability for any damage caused by the actual position being different from those shown.

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Appendix D

Ground Investigation Extracts

7.6.7 Soil mixing involves modifying the properties of weak soils to improve load carrying and permeability characteristics. The process uses a single or multi tool auger to break up the soil, which is then injected at low pressures with a specifically designed binder and mixed within the soils.

7.6.8 Should an alternative approach to foundation design be considered, it is recommended the advice of a specialist in the field of the above processes is sought ahead of design. It is also possible that further site investigation would be required to facilitate design of such specialist techniques.

7.7 Artificial Pitch Foundations

7.7.1 It is anticipated that the proposed PlayZone will be located at or about existing ground levels, with the formation located on Made Ground following removal of any Topsoil type material. Some of the existing embankment along the west of the site may require removal/relocation to facilitate construction of the pitch.

7.7.2 CBR value has been determined for the proposed PlayZone 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 C 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 10% can be adopted for soils that are likely to be representative of those which remain at or near pitch formation levels. It should be noted that values range from 7% to >100% within 0.5m depth below Topsoil.

7.7.4 The Made Ground materials are anticipated to exhibit a degree of variability and compaction 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 Alternatively, consideration should be given to excavating, sorting and compacting the initial 1m depth of Made Ground to achieve consistent levels of compaction across the proposed PlayZone and minimising the potential effects of differential settlement, in addition to the use of a geosynthetic reinforcement.

7.7.6 In addition, increasing and homogenising the density of the Made Ground through ground improvement techniques such as rolling dynamic compaction (RDC) or permeation grouting/lime & cement stabilisation could be undertaken. These are notably expensive and would require specialist input at the feasibility stage.

7.8 Drainage

7.8.1 In situ permeability testing has been undertaken at the site in accordance with BS EN ISO 22282 Geotechnical investigation and testing – Geohydraulic testing (2012).

7.8.2 The results are presented in Appendix C and summarised below:

Exploratory hole ID	Stratum tested	Cycle	Infiltration rate (m/s)
WS03	Made Ground	1	N/A
WS04		1	7.24×10^{-7}

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

7.8.3 Due to insufficient infiltration over a test period of 90 minutes, permeability could not be determined within cohesive Made Ground soils within WS03. In addition, whilst a fall in water was noted in WS04, it is likely this water is draining into the more granular Made Ground above the clay soils of the Devensian Till, the latter considered to be effectively impermeable.

7.8.4 Discharge of stormwater collected by the proposed development into Made Ground deposits are not considered amenable. Water freely/directly discharged into the Made Ground could cause collapse of air voids contained in these deposits, which promotes compaction of the soils around the soakaway causing depression of the general area around the soakaway as well as potentially affecting pipe runs leading to the soakaway. In addition, soakaways would promote leaching of contaminants within the Made Ground soil.

7.8.5 On this basis, disposal of stormwater via a soakaway is not considered viable.

7.8.6 No existing soakaway features were observed on site during ground investigation works; however, a full drainage survey was not undertaken.

7.8.7 As an alternative, it is possible that the PlayZone drainage could key into the existing surface water drainage system currently used by the school to the southwest. A manhole cover was presnet to the southwest of the PlayZone area. 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 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 likely 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	Disturbed	DS-1	AC-1
Devensian Till	Disturbed	DS-1	AC-1s
	Undisturbed	DS-1	AC-1s

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

7.9.4 It should be noted that where concrete is in contact with more than one soil type then the most onerous DS and ACEC classification should be adopted.

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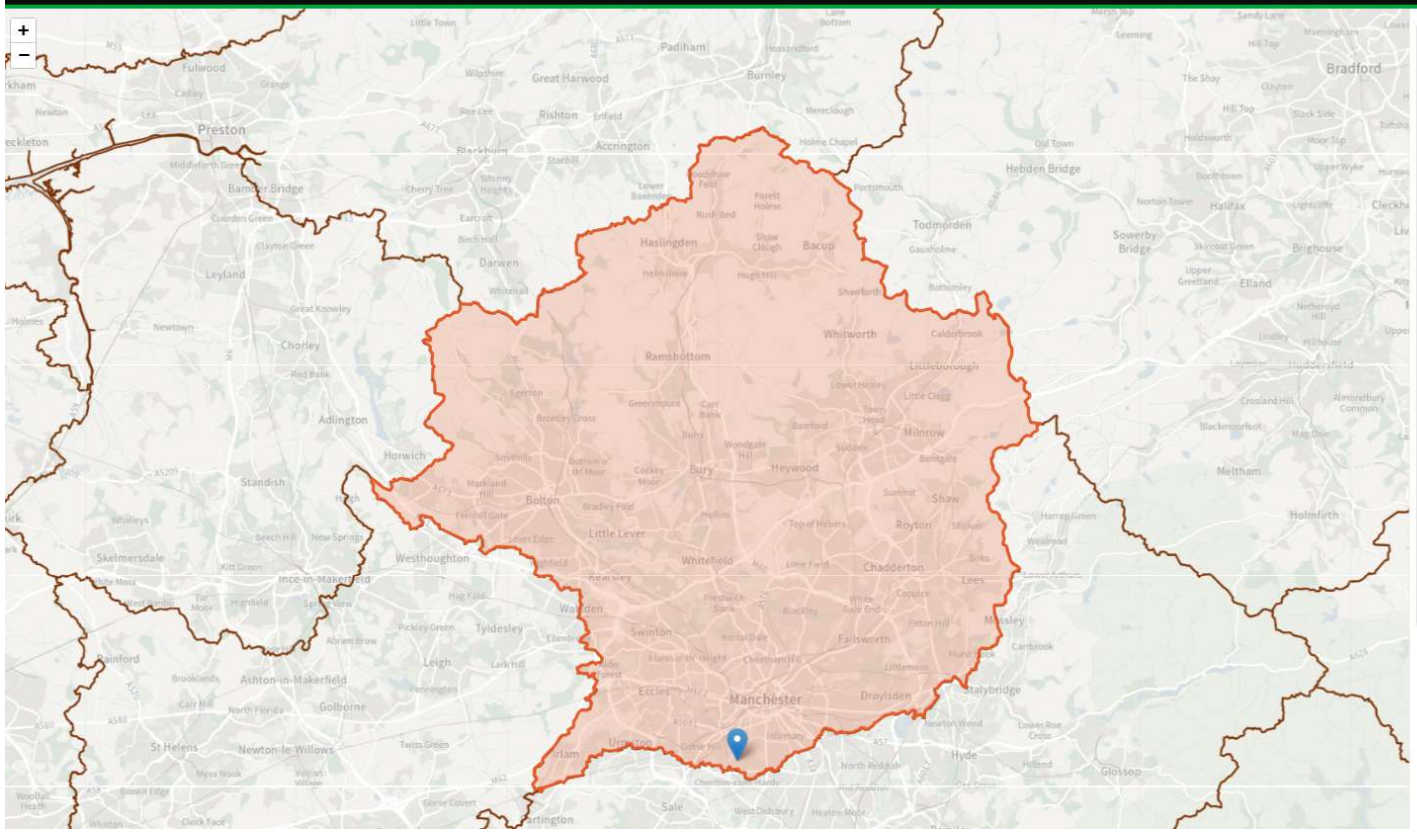
Title	Surface Water Design – REV A

Appendix E

Environment Agency Climate Change Allowances Extract



Irwell 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	30%	45%

*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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Appendix F

Proposed Drained Areas

SEA Drawing 00227/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:

Drained Area = 730m²

Rev.	Date	By	Description

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PROJECT

NEW PLAYZONE PITCH
UNITY COMMUNITY PRIMARY SCHOOL

DRAWING

PROPOSED DRAINED AREAS

SCALE: 1:100@A2	DATE: 12.11.2024
DRAWN BY: WRA	REV: -

STATUS: FOR APPROVAL

DWG No: 00227/E01 -

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Client	Labosport
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Title	Surface Water Design – REV A

Appendix G

Greenfield Runoff Calculations

hrwallingford

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Warren Allsopp
Site name:	New AGP
Site location:	Unity Primary School

Site Details

Latitude:	53.50142° N
Longitude:	2.24846° W
Reference:	896445262
Date:	Dec 02 2024 13:36

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.

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 0.1

Methodology

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

Soil characteristics

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

Hydrological characteristics

	Default	Edited
SAAR (mm):	911	911
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

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

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

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

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

(3) Is SPR/SPRHOST ≤ 0.3?

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

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	0.02	0.02
1 in 1 year (l/s):	0.02	0.02
1 in 30 years (l/s):	0.04	0.04
1 in 100 year (l/s):	0.05	0.05
1 in 200 years (l/s):	0.05	0.05

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

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Appendix H

Surface Water Calculations

Nodes

Name	Area (ha)	Cover Level (m)	Diameter (mm)	Depth (m)
1	0.073	57.300	450	0.335

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	1.000	Drain Down Time (mins)	240	Check Discharge Volume	x
Winter CV	1.000	Additional Storage (m³/ha)	0.0		

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	45	0	0

Node 1 Online Orifice Control

Flap Valve	x	Design Depth (m)	0.615	Discharge Coefficient	0.600
Replaces Downstream Link	✓	Design Flow (l/s)	1.0		
Invert Level (m)	56.600	Diameter (m)	0.024		

Node 1 Carpark Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Invert Level (m)	56.965	Slope (1:X)	250.0
Side Inf Coefficient (m/hr)	0.00000	Time to half empty (mins)		Depth (m)	
Safety Factor	2.0	Width (m)	20.000	Inf Depth (m)	
Porosity	0.30	Length (m)	30.000		

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Results for 1 year Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute summer	1	124	57.040	0.075	3.4	4.2375	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
180 minute summer	1	Orifice	0.8	10.2

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Results for 30 year Critical Storm Duration. Lowest mass balance: 97.28%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
180 minute winter	1	176	57.138	0.173	6.7	20.4621	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
180 minute winter	1	Orifice	0.9	20.4

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Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 98.51%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
360 minute winter	1	344	57.275	0.310	7.4	44.9819	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)	Discharge Vol (m³)
360 minute winter	1	Orifice	1.0	31.7

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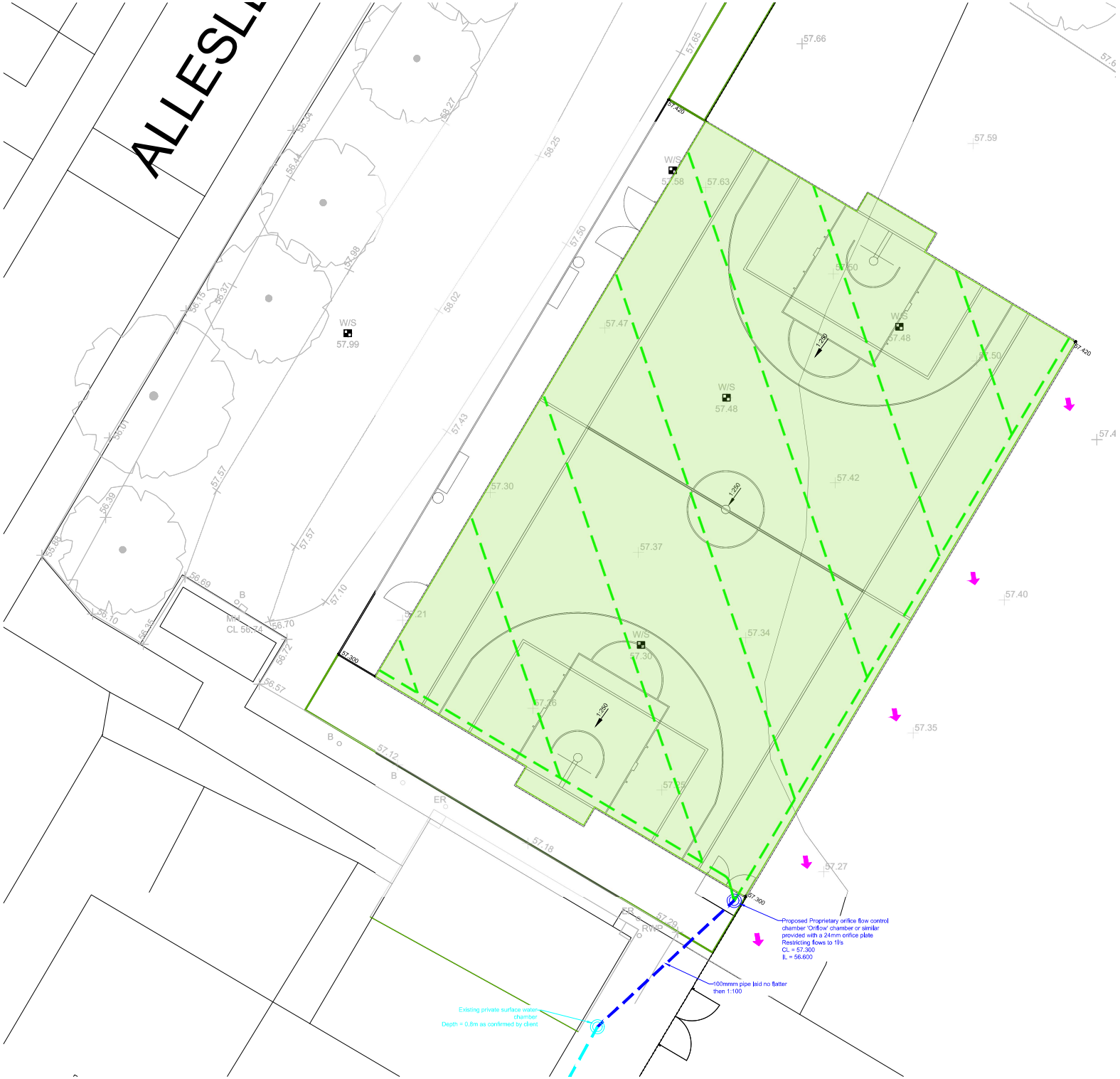
Client	Labosport
Project	New Playzone Pitch, Unity Primary School
Title	Surface Water Design – REV A

Appendix I

Proposed Drainage Layout
SEA Drawing 00227/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.

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:

- Existing Surface water drainage
- Proposed 80mm lateral drains beneath pitch.
- Proposed Surface water
- 28.400 — Proposed Pitch spot levels
- 1:500 — Proposed pitch gradients
- Proposed permeable type 3 subase extents beneath pitch, depth 250mm, providing attenuation for the 1 in 100 year + 45% event.
- Overland flow diection in case of system failure

Rev.	Date	By	Description
A	18.07.25	WRA	Updated to suit site visit

SEA
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PROJECT

NEW PLAYZONE PITCH
UNITY COMMUNITY PRIMARY SCHOOL

DRAWING

PROPOSED DRAINAGE LAYOUT

SCALE: 1:100@A2	DATE: 02.12.2024
DRAWN BY: WRA	REV: -

STATUS: FOR APPROVAL

DWG No: 00227/E02 | A