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Proposed Artificial Grass Pitch (AGP) Resurfacing
Greyfriars Catholic School
Cricket Road
Oxford

Flood Risk Assessment and Drainage Strategy

Revision 0: April 2024
R-FRA-28212-01-0

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Revision	Date	Description	Prepared	Reviewed
0	23rd April 2024	First Issue	Thomas Kirk	Katherine Rose

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1.0 Introduction

1.1 Background

1.1.1 This report is a Flood Risk Assessment and Drainage Strategy which has been prepared by JPP Consulting Limited on behalf of The Pope Fancies Catholic Multi Academy Company for the resurfacing of an existing Artificial Grass Pitch (AGP). The benefit of this report is to our instructing Client.

1.1.2 The existing AGP is located within the grounds of Greyfriars Catholic School, which is located off Cricket Road, Oxford, OX4 3DR, as shown in Figure 1.1 below, and on the plan enclosed in **Appendix A**. The National Grid Reference for the site is E453360 N204670. The existing AGP has a total area of 0.653ha (including adjacent spectator areas).

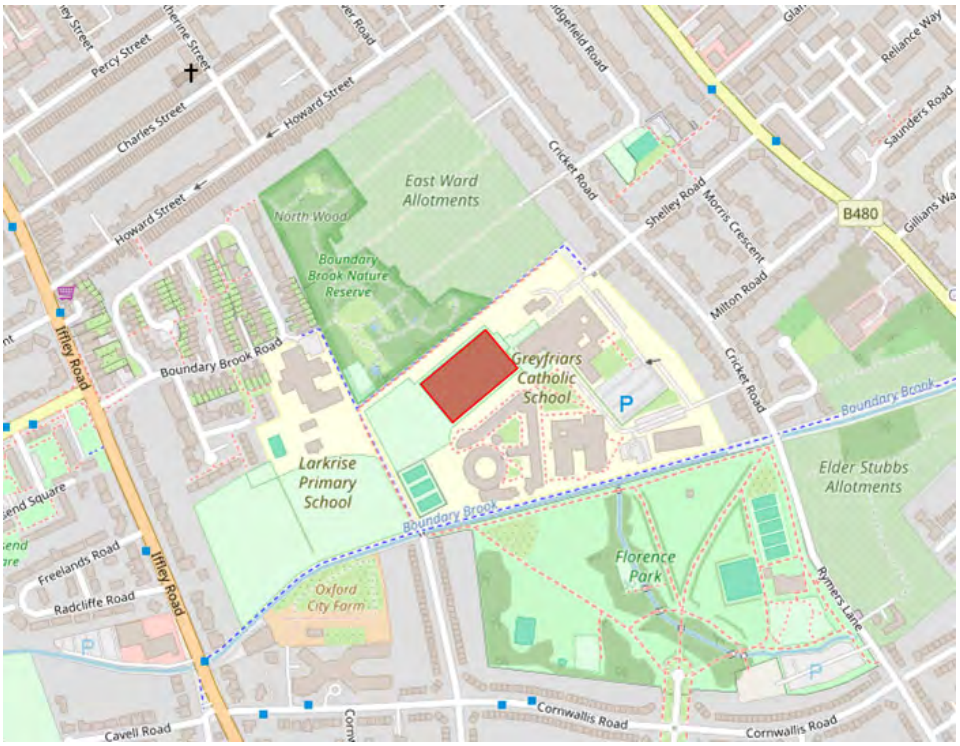


Figure 1.1 Site Location Plan
Source: Open Street Maps
Obtained: 18/04/2024

1.2 Project history

1.2.1 JPP Consulting have previously prepared a Flood Risk Assessment with Drainage Strategy (reference R-FRA-20566-01-0 dated February 2020), which was prepared in association with a prior proposal at the site. The previous proposal included the refurbishment and extension of the same pitch, for St Gregory the Great Catholic School which occupied the site at the time.

1.2.2 Planning permission was granted for the proposed development by Oxford City Council on 3rd July 2020, under planning reference 20/00862/FUL. The application was supported by the 2020 FRA/DS report by JPP.

1.2.3 We understand that the above planning permission has since expired.

1.2.4 The latest proposals are to resurface the existing pitch, retaining the existing footprint and not including an extension to the pitch as previously approved.

1.3 Objectives

1.3.1 The objective of this report is to advise interested parties regarding the potential risk of flooding and the management of surface water run-off arising from the proposals.

1.3.2 This report has been prepared to support a new detailed planning application, associated with the latest development proposals.

1.3.3 This report has been prepared based on the principles established as part of the 2020 FRA/DS report, which supported the planning application that received approval in July 2020. The information within this report reflects the latest development proposals.

1.4 Reference documents

1.4.1 This report has been prepared with reference to the following publications:-

- Ministry of Housing, Communities and Local Government (March 2012, updated December 2023), National Planning Policy Framework
- Ministry of Housing, Communities and Local Government (March 2014, updated August 2022), Planning Practice Guidance 'Flood Risk and Coastal Change'
- Department for Environment, Food and Rural Affairs (March 2015), Non-statutory technical standards for sustainable drainage systems
- Environment Agency (September 2013), Climate Change Allowances for Planners: Guidance to support the National Planning Policy Framework
- Environment Agency (October 2013), Delivering benefits through evidence: Rainfall runoff management for developments
- HM Government (2010), The Building Regulations (2010), Drainage and Waste Disposal, Approved Document H, The NBS, Newcastle Upon Tyne
- Wilson, Bray, Cooper (2004), Sustainable drainage systems: Hydraulic, structural and water quality advise, C609, CIRIA, London
- Woods-Ballard et al (2015), The SUDS Manual, C753, CIRIA, London
- CIRIA Report C624 Development and flood risk
- National SUDS Working Group (2004), Interim Code of Practice for Sustainable Drainage Systems,
- Institute of Hydrology (1999), Flood Estimation Handbook, Institute of Hydrology, Wallingford
- BS EN 752:2008 Drain and sewer systems outside buildings. Hydraulic design and environmental considerations
- BS 8533:2011 Assessing and managing flood risk in development – Code of Practice
- CIRIA Report C635 Designing for exceedance in urban drainage – good practice
- Oxford City Council Level 1 Strategic Flood Risk Assessment (SFRA) – November 2017
- Oxford City Council Level 1 (SFRA) for Oxford City (March 2011)
- Oxford City Council Level 2 SFRA (February 2012)
- Oxfordshire County Council Local Flood Risk Management Strategy
- Oxfordshire County Council Preliminary Flood Risk Assessment (PFRA) Preliminary Assessment report (June 2011)

2.0 Description and history of the site and development proposals

2.1 Location and description of the site

2.1.1 The existing AGP is located within the grounds of Greyfriars Catholic School, which is located off Cricket Road, Oxford, OX4 3DR, as shown in Figure 1.1 above and on the plan enclosed in **Appendix A.**

2.1.2 The site is bound by a small wooded area to the north with allotments beyond, school buildings to the south and east and playing fields to the west.

2.2 History of the site

2.2.1 The site is currently an Artificial Grass Pitch.

2.2.2 Aerial imagery dating back to December 2004 shows the site prior to the introduction of the Artificial Grass Pitch, see Figure 2.1 below.

Figure 2.1 Historical Imagery (December 2004)
Source: Google Earth Pro
Obtained: 18/04/2024

2.2.3 The Artificial Grass Pitch can be seen in aerial imagery dated December 2006, where construction works to the south-west can also be identified. See Figure 2.3 below.

Figure 2.2 Historical Imagery (December 2006)
Source: Google Earth Pro
Obtained: 18/04/2024

2.2.4 Latest available imagery, as dated April 2022, is provided in Figure 2.3 below.

Figure 2.3 Historical Imagery (April 2022)
Source: Google Earth Pro
Obtained: 18/04/2024

2.3 Proposed development

2.3.1 The proposals comprise a refurbishment of the existing Artificial Grass Pitch (AGP). The proposed pitch layout is shown on the plan enclosed in **Appendix B**.

2.4 Site topography

2.4.1 The topographical survey indicates that site levels fall from north-east (at approximately 58.3m) towards the south-west (lowest point of approximately 57.6m).

2.5 Existing drainage infrastructure

2.5.1 A review of the topographical survey identifies that there is an existing private surface water drainage system associated with the wider school site, including the existing AGP.

2.6 Geology of the site and ground investigation data

2.6.1 JPP Geotechnical & Environmental Ltd. completed a site investigation (report reference R-SI-20060-01-01 dated January 2020), see extracts enclosed in **Appendix C**.

2.6.2 The site investigation report states the following:

> *BGS (British Geological Survey) mapping indicates the site geology to comprise superficial Head deposits in the central and northern areas of the site with Northmoor Sand and Gravel Member in the south west of the site overlying West Walton Formation in the central and northern areas of the site and Weymouth Member in the south west of the site.*

2.6.3 The initial phase of site investigations were carried out on the 12th and 13th September 2019 and comprised the following activities:

- 20 No. Hand dug trial pits to a maximum depth of 1.2m (15 were located within the existing artificial pitch, and 5 around the perimeter);
- 3 No. infiltration tests targeting the subbase, subgrade and made ground outside of the existing pitch; and
- 13 No. TRL Dynamic Cone Penetration (DCP) tests to measure in-situ CBR, targeting the existing pitch subbase and subgrade and made ground outside of the pitch.

2.6.4 Additional site investigations were completed on the 4th December 2019 and comprised the following activities:

- 5 No. Windowless sampler boreholes to a maximum depth of 4.0m bgl; and
- 1 No. borehole infiltration test.

2.6.5 Within the pitch, below the artificial surface and textile shock pad, was coarse limestone gravel to depths of 0.3m and 0.35m where a geotextile membrane was present above a subgrade of silty and clayey gravelly sand across all but the south western end where subgrade comprised a firm brown gravelly clay made ground.

2.6.6 Around the pitch, topsoil was encountered in each position to depths of between 0.1m and 0.4m onto Made Ground to depths of between 0.9m to 1.4m in all positions (except in WS04 located centrally along the north western edge of the pitch where no Made Ground was encountered).

2.6.7 Head deposits were encountered to depths of between 1.8m and 2.6m, typically comprising gravelly clays in all but the south western comer of the pitch where granular deposits of probably Northmoor Sand and Gravel Member were encountered to 2.7m depth. Beneath the Head and Northmoor Sand and Gravel Member were silty slightly sandy clays of the West Walton Formation to depths exceeding 4.45m.

2.6.8 No groundwater was encountered during the original intrusive hand pitting investigation. Groundwater was encountered within three borehole positions in the south west and west of the site at 1.30m, 1.40m and 2.00m bgl. The variable depth and inconsistent presence of groundwater between positions suggests that this is perched / confined water rather than a continuous groundwater level.

2.6.9 Within the existing pitch base, testing indicates the limestone gravel subbase is permeable. The subgrade and the made ground encountered surrounding the pitch are effectively impermeable.

2.7 Development proposals and flood risk vulnerability

2.7.1 With reference to Annex 3 of the Flood Risk and Coastal Change Planning Practice Guidance (PPG) to the National Planning Policy Framework (NPPF), the proposed AGP would be classed as Water Compatible development.

2.7.2 An extract from Annex 3 of the PPG for Flood Risk and Coastal Change is replicated below in Table 2.1 with the proposed development type highlighted.

Flood Risk Vulnerability Classification	
Vulnerability	**Development Types**
Water-Compatible Development	Flood control infrastructure.
	Water transmission infrastructure and pumping stations.
	Sewage transmission infrastructure and pumping stations.
	Sand and gravel working.
	Docks, marinas and wharves.
	Navigation facilities.
	Ministry of Defence defence installations.
	Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
	Water-based recreation (excluding sleeping accommodation).
	Lifeguard and coastguard stations
	Amenity open space, nature conservation and biodiversity, **outdoor sports and recreation** and essential facilities such as changing rooms.
	Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.
Source: National Planning Policy Framework - 2012	

Table 2.1 Flood Risk Vulnerability Classification

3.0 Flood risk

3.1 Fluvial / Tidal flooding

3.1.1 An extract of the Environment Agency's Flood Map for Planning (Rivers and Sea) is provided in Figure 3.1 below. The flood map was extracted from the GOV.UK website on 18/04/2024. The approximate application site boundary is shown in red. A small area of the site to the north-east is located within Flood Zone 1 (Low Probability). The northern area of the pitch is shown to be located within Flood Zone 2 (Medium Probability), whilst the southern area of the pitch is located within Flood Zone 3 (High Probability).

3.1.2 The area of floodplain is associated with the Boundary Brook watercourse located c.100m to the south of the existing pitch.

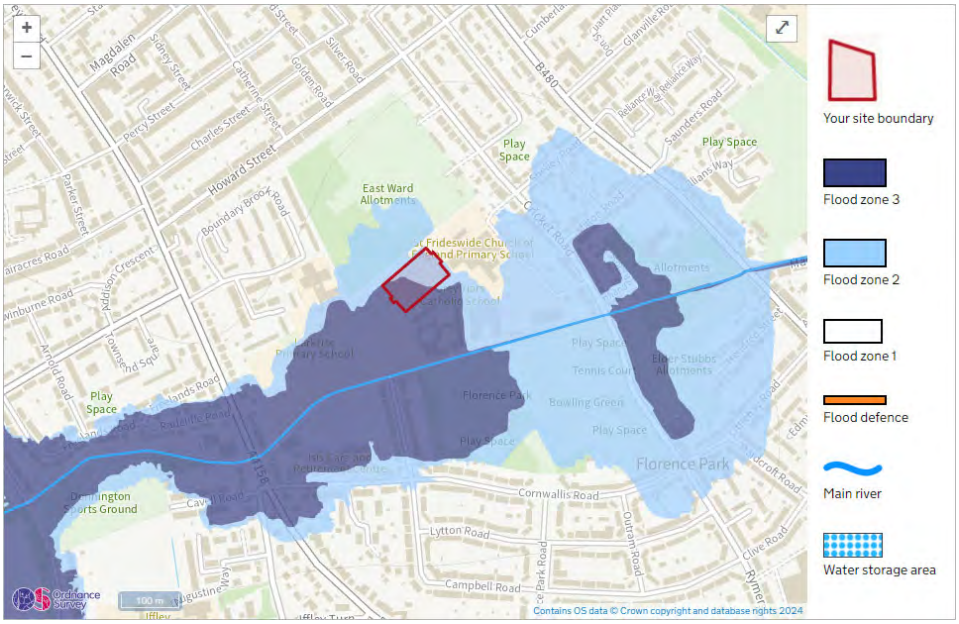


Figure 3.1 Flood Maps for Planning (Rivers and Sea)
Source: GOV.UK website
Obtained: 18/04/2024

3.1.3 Flood level information has been obtained from the Environment Agency (EA) dated 14th January 2020, see **Appendix D**. This information was obtained to support the previous planning application, which was granted permission in July 2020.

3.1.4 The most relevant node for the site is 06115_MN_1034 and the modelled flood levels for this node are summarised in Table 3.1 below.

Flood Levels (Boundary Brook model 2010)				
Annual Exceedance Probability Maximum Water Levels (mODN)				
Node	**1 in 20 year (5% AEP)**	**1 in 100 year (1% AEP)**	**1 in 100 year + 20% CC (1% AEP + 20% inc. in flows)**	**1 in 1000 year (0.1% AEP)**
06115_MN_1034	57.80	57.71	58.03	58.25
Source: Environment Agency Product 4 data (14th January 2020)				

Table 3.1 Environment Agency Product 4 data

3.1.5 As noted above, ground levels across the existing pitch range from c.58.3mAOD to c.57.6mAOD. Although the EA flood level data confirms that an area within the southern part of the pitch lies within the 100 year floodplain, flood depths are relatively shallow (c.0.1-0.2m). Flood depths are inevitably greater during extreme flood conditions (1,000 year), but this is not considered to constitute a constraint given the water-compatible nature of the land-use.

3.1.6 Table 3.2 below is a copy of Table 1 from Planning Practice Guidance for *'Flood Risk and Coastal Change'* to the National Planning Policy Framework which defines Flood Zones. The proposed development, which is located within Flood Zones 1, 2 and 3, is defined as having a 1 in 100 or greater annual probability of river flooding in any year.

Flood Zone Definitions	
Flood Zone	**Definition**
Zone 1: Low Probability	**Land having a less than 1 in 1,000 annual probability of river or sea flooding.**
Zone 2: Medium Probability	**Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or** **Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.**
Zone 3a: High Probability	**Land having a 1 in 100 or greater annual probability of river flooding; or** **Land having a 1 in 200 or greater annual probability of sea flooding.**
Zone 3b: The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency.
Source: Planning Practice Guidance - 2014	

Table 3.2 Flood Zone Definitions

3.2 Flooding from surface water

3.2.1 An extract of the Environment Agency map 'Risk of Flooding from Surface Water' is provided in Figure 3.2 below. The approximate application site boundary is shown in red. The majority of the site is shown to be located in an area of very low (less than 1 in 1000) risk of surface water flooding in a given year.

3.2.2 The southern area of the site is shown to be located in an area of low (1 in 100 to 1 in 1000) risk, with a very localised zone within an area at medium (1 in 30 to 1 in 100) risk of surface water flooding in a given year.

3.2.3 As the proposed development is categorised to be Water Compatible, we believe that this level of flood risk is acceptable for the proposed use of this site.

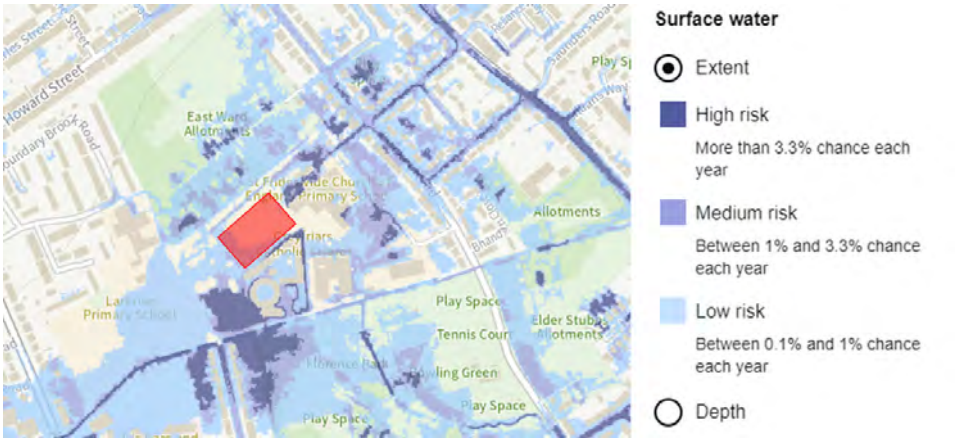


Figure 3.2 Risk of Surface Water Flooding
Source: GOV.UK
Obtained: 18/04/2024

3.2.4 It should be noted that this map is generated using a broad methodology applied at the national scale. The model utilises generalised information on infiltration, sewerage infrastructure, rainfall events and catchment topography to route rainfall over a ground surface model. As such, the analysis does not take account of site-scale factors / characteristics that may exert an influence upon surface water flood depths and extents. The map therefore only provides a guide regarding the areas that may be vulnerable to this source of flooding.

3.3 Flooding from groundwater

3.3.1 The Oxford City Council Level 1 SFRA (November 2017) states:

> *Groundwater flooding is an issue within the Thames Valley through parts of Oxfordshire. The floodplain is often characterised by buried gravels which act as underground storage reservoirs. When their capacity is exceeded, they can overspill into the floodplain. The majority of the sites at risk from groundwater flooding tend to be in the low lying areas, subject also to fluvial flood risk.*
>
> *For Oxford the groundwater register identifies 21 records of suspected ground water flooding. These occurred between 2000 and 2003 inclusive and 2007 and 2009 inclusive. 15 of the incidents occurred within the city, whereas 6 were located just outside the city's boundary.*

3.3.2 The Registered Groundwater Flooding Incidents map enclosed within the Oxford City Council Level 1 SFRA (March 2011), see **Appendix E**, identifies no groundwater flooding incidents within the vicinity of the site.

3.3.3 As noted in Section 2.5 above, a site investigation was undertaken by JPP Geotechnical and Environmental Ltd in September and December 2019. The report states:

> *No groundwater was encountered during original intrusive hand pitting. Groundwater was encountered within three borehole positions in the south west and west of the site from 1.3m - 2.0m bgl as fast inflows. The variable depth and inconsistent presence of groundwater between positions suggests that this is perched / confined water rather than a continuous groundwater level.*

3.3.4 The information available at the time of preparing this report, and the nature of the underlying geology, suggests that groundwater emergence at the surface is unlikely, such that groundwater flood risk does not constitute a constraint in this instance.

3.4 Flooding from sewers

3.4.1 The Oxford City Council Level 1 SFRA (November 2017) states:

> *The sewerage undertaker for Oxford is Thames Water. No new information regarding historical data was available since publication of the previous Level 1 SFRA. Therefore, this SFRA retains the assumption that the surface water flood risk from the surface water sewer network within the city, as reported by Thames Water, is low.*

3.4.2 Thames Water holds records of flooding issues relating to surface and foul water sewers and they were consulted as part of the SFRA. The Thames Water Sewer Flooding Incidents by Postcode area map enclosed within the Oxford City Council Level 2 SFRA (February 2012), see **Appendix F**, identifies the flood incidents on a postcode area basis during the last 10 year period. This data does not provide the specific location of each incident and is therefore of limited use for providing site-specific information. However, the map identifies that only 1 property flooded from an overloaded sewer in the last ten years in the postcode area (OX4 3) within which the site lies.

3.4.3 The Oxford City Council Level 2 SFRA states:

> *Of the 16 flood incidents recorded within the Thames Water data, 13 of these incidents were attributed to foul water flooding and therefore it is assumed that the surface water flood risk from the surface water sewer network, as reported by Thames Water, within the city is low.*

3.4.4 Based upon a review of the SFRAs and associated mapping outlined above, the risk of flooding from sewers is considered to be low.

3.5 Flooding from reservoirs, canals and other artificial sources

3.5.1 We are not aware of any canals or artificial water sources that may result in flooding of this site.

3.5.2 The EA provides maps (https://flood-warning-information.service.gov.uk/long-term-flood-risk/) showing the area that may be affected by flooding as a result of a breach of a large, raised reservoir (i.e. capable of storing over 25,000 cubic metres of water above the natural level of any part of the surrounding land).

3.5.3 An extract of the Environment Agency map 'Risk of Flooding from Reservoirs' is provided below in Figure 3.3. It can be seen that the proposed development site, shown in red, is not at a risk of flooding from reservoirs.

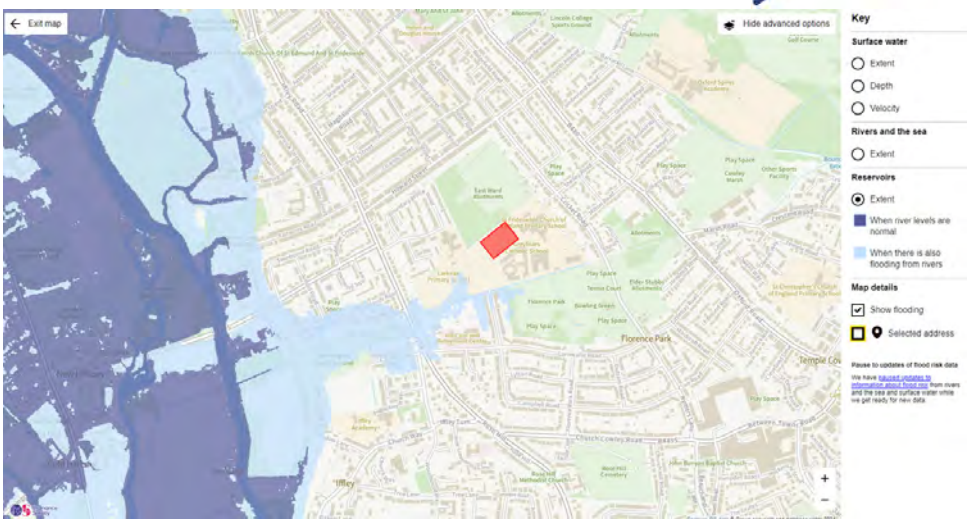


Figure 3.3 Risk of Flooding from Reservoirs
Source: GOV.UK
Obtained: 19/04/2024

3.5.4 It can therefore be concluded that the risk of flooding from reservoirs and other artificial sources is low.

3.6 Historic flooding

3.6.1 Shown below in is a historic flood map data set that has been collated by the Environment Agency. As demonstrated, this dataset identifies no recorded historic flooding events within or around the proposed site development area.

Figure 3.4 Historical Flooding Map
Source: QGIS data (Environment Agency)

3.6.2 The Oxford City Council Level 1 SFRA (November 2017) states:

> *In Oxford nine flood events have been recorded dating back to Spring 1947. Since 2000, there have been four events, with the most recent in 2014.*

3.6.3 The SFRA map 'Historic Flood Outline', enclosed in **Appendix G**, identifies that the site flooded during the 1993 and 1998 flood events.

3.7 Flood risk vulnerability and flood zone compatibility

3.7.1 Based on the above assessment of the site being located within Flood Zones 1, 2 and 3 and classified as a Water Compatible development, and with reference to Table 3.3 below (Planning Practice Guidance for 'Flood Risk and Coastal Change' to the National Planning Policy Framework, Table 2), the proposed development of this site would be considered "appropriate". A copy of Table 2 is presented below highlighting the above.

Table 2 – Flood Risk Vulnerability and Flood Zone Compatibility

Flood Risk Vulnerability Classification	Essential Infrastructure	Water Compatibility	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	✓	Exception test required	✓	✓
Zone 3a	Exception test required	✓	X	Exception test required	✓
Zone 3b	Exception test required	✓	X	X	X
✓ = Development is appropriate			X = Development should not be permitted		

Source: Planning Practice Guidance - 2014

Table 3.3 Flood Risk Vulnerability and Flood Zone Compatibility

3.7.2 We would note that the land use and flood risk vulnerability will remain as per existing as a result of the proposals to resurface the existing and established pitch that is located at the site.

3.7.3 Sequential Test

3.7.3.1 The aim of the sequential test is to steer development to areas with the lowest probability of flooding.

3.7.3.2 In this case, the proposals comprise the refurbishment of the existing AGP within the school grounds, as well as extension of the pitch to meet current standards in terms of the area of play. It is not therefore practical to consider alternative sites in an area at a lower risk of flooding and it should be noted that the pitch is categorised as Water Compatible development. The risk to users of the facility can be adequately managed through flood warnings.

3.8 Flood compensation

3.8.1 Flood compensation measures will not be required as ground levels will remain as per existing levels, thus ensuring there is no loss of floodplain storage.

3.9 Access and egress

3.9.1 Access and egress to and from the school will be via Cricket Road, located within Flood Zone 1.

4.0 Management of surface water

4.1 Current conditions

4.1.1 The site is an Artificial Grass Pitch (AGP) comprising synthetic turf, over a 20mm shock-pad, over a limestone gravel sub-base into which 80mm diameter perforated lateral drainage pipes are laid. Surface water run-off is conveyed to the southern corner of the pitch where it discharges to a private drainage system via a 150mm diameter pipe.

4.2 Surface water drainage outfalls

4.2.1 It is a requirement of The Building Regulations (2010), Drainage and Waste Disposal, Approved Document H, to dispose of surface water collected by a development in accordance with the following, listed in order of priority:-

1. Infiltration systems where ground condition permit
2. To watercourses
3. To sewers

4.2.2 Each of these is considered separately below:

4.2.3 Infiltration systems

4.2.3.1 Following site investigation, it has been concluded that infiltration techniques are not viable, as described in Section 2.5 above.

4.2.4 Watercourses / Main River

4.2.4.1 There are no watercourses located within or immediately adjacent to the boundary of the AGP.

4.2.5 Sewers

4.2.5.1 The pitch currently discharges surface water to an adjacent private surface water drainage system that is owned and operated by the school. The pitch will therefore retain a connection to this system. This system ultimately outfalls to the Boundary Brook located to the south of the pitch.

4.3 Surface water drainage strategy

4.3.1 As noted above, the pitch currently discharges to a private drainage system via a 150mm diameter pipe. This outfall pipe has a capacity of 14.3 l/s. Surface water discharge rates will therefore be restricted to this existing rate to ensure that the rate of surface water runoff from the site does not increase as a result of the refurbishment works.

4.3.2 The existing pitch comprises a granular limestone sub-base of between 0.3 and 0.35m depth that provides surface water storage. Whilst the pitch surface (synthetic turf and shock-pad) is being refurbished, the sub-base beneath the existing pitch will be retained as per the existing.

4.4 SUDS assessment

4.4.1 We have considered the suitability of SUDS for use on the development site. The review is set out in below Table 4.1.

SUDS Assessment		
SUDS Technique	**Suitability**	**Justification**
Rain Water Harvesting	No	Not applicable for the development type.
Green Roofs	No	Not applicable for the development type.
Infiltration	No	Underlying geology not suitable.
Filter Strips / Filter Drains	No	Underlying geology not suitable.
Swales	No	Not applicable for the development type.
Bioretention Systems	No	No open spaces
Trees	No	The development proposals simply comprise refurbishment of the AGP – no new trees will be planted adjacent to the pitch.
Pervious Pavements	Yes	Surface water attenuation will be provided within the sub-base of the existing pitch.
Attenuation Tanks	No	Surface water attenuation will be provided within the sub-base of both the existing pitch and the additional drained area.
Detention Basin	No	Surface water attenuation will be provided within the sub-base of both the existing pitch and the additional drained area.
Ponds and Wetlands	No	No open spaces.
Trapped Drainage	No	A sufficient level of water treatment will be provided through the use of the permeable sub-base of the AGP.

Table 4.1 SUDS Assessment

4.5 Surface water drainage design and management

4.5.1 Proposals are to design the surface water drainage system to accommodate storms up to the 1 in 100 year event plus an allowance of 40% for climate change. The Environment Agency's guidance 'Flood risk assessments: climate change allowances' to support the National Planning Policy Framework, which defines the climate change allowances. Table 4.2 below sets out the peak rainfall allowances for the Gloucestershire and the Vale Catchment which the site is located within.

Peak Rainfall Intensity Allowance: Gloucestershire and the Vale Catchment			
Rainfall Event	**Epoch**	**Central Allowance**	**Upper End Allowance**
3.3%	2050s	20%	35%
	2070s	25%	35%
1%	2050s	20%	40%
	2070s	25%	40%
Source: Environment Agency - 2016			

Table 4.2 Peak Rainfall Intensity Allowance

4.6 Pitch calculations

4.6.1 Surface water will discharge into the existing private water drainage system, which discharges into the Boundary Brook watercourse located to the south of the site. Surface water will be attenuated to the existing outfall capacity of 14.3 l/s. To achieve this, surface water will be attenuated within the permeable sub-base of the pitch.

4.6.2 The proposed impermeable area of the development is 0.656ha, as shown on the plan enclosed in **Appendix H**. Based on the proposed impermeable area and allowable discharge rate of 14.3 l/s, the storage requirement has been calculated utilising the following parameters.

Rainfall profile	= Flood Estimation Handbook
System	= Porous car park
Drained area	= 0.656ha
Pitch dimensions	= 95.4m x 57m
Fall across pitch (longitudinal)	= 1:283 (as per existing)
Depth of permeable sub-base	= 300mm
Porosity of permeable sub-base	= 30 % voids
Control	= Hydrobrake

4.6.3 Storage calculations for the 1 in 30 year event have been undertaken, with full calculations are enclosed in **Appendix I**. The results confirm that the 0.3m deep permeable sub-base of the pitch is sufficient to accommodate all the storage required for the 1 in 30 year event.

4.6.4 Storage calculations for the 1 in 100 year event have been undertaken, with full calculations are enclosed in **Appendix J**. The results confirm that the 0.3m deep permeable sub-base of the pitch is sufficient to accommodate all the storage required for the 1 in 100 year event.

4.6.5 Storage calculations for the 1 in 100 year plus 40% climate change event have been undertaken, with full calculations are enclosed in **Appendix K**. The results confirm that the 0.3m deep permeable sub-base of the pitch is not sufficient to accommodate all the storage required for the 1 in 100 year plus 40% climate change event. For conditions exceeding the 100 year event (i.e. allowing for the potential impacts of climate change upon peak rainfall intensity), surface water would accumulate on the surface of the pitch.

4.6.6 We would note that the results for the 1 in 100 year plus 40% climate change event will be equivalent to the existing and established scenario, as the proposals are limited to resurfacing of the existing AGP.

4.6.7 The indicative surface water drainage layout is shown on the plan enclosed in **Appendix L.**

4.7 Overland flows

4.7.1 Proposals are to design the surface water drainage to accommodate the 1 in 100 year storm event taking into account the predicted future effects of climate. Clearly there is a risk of this storm event being exceeded, albeit this risk is considered very low. In such an event the proposed drainage systems will become overwhelmed and overland flows could occur. Overland flows will be directed to follow the path that overland flows currently follow.

4.7.2 Predicted overland flow routes are shown on the plan enclosed in **Appendix M.**

5.0 Foul water drainage strategy

5.1 There is no foul water drainage associated with the proposals.

6.0 Maintenance

6.1 Surface water drainage maintenance

6.1.1 The surface water drainage infrastructure will continue to comprise a private SUDS system and will be maintained by the school as per the existing arrangement,

6.2 Foul water drainage maintenance

6.2.1 There is no foul water drainage associated with the proposal.

7.0 Summary and conclusions

7.1 The existing AGP is located within the grounds of Greyfriars Catholic School, which is located off Cricket Road, Oxford, OX4 3DR. The site is currently an Artificial Grass Pitch.

7.2 The proposals comprise a refurbishment of the existing Artificial Grass Pitch (AGP).

7.3 According to the Flood Map for Planning, the existing pitch is located within Flood Zones 1, 2 and 3. EA flood level data confirms that an area within the southern part of the pitch lies within the 100 year floodplain, although flood depths are relatively shallow (c.0.1-0.2m). Although the proposals involve works within the floodplain, ground levels will remain as per the existing, such that there will be no impact upon floodplain storage.

7.4 The site is shown to be at a low risk of flooding from surface water, groundwater, sewers and artificial sources such as reservoirs.

7.5 The existing pitch comprises a granular limestone sub-base of between 0.3 and 0.35m depth that provides surface water storage. The refurbished pitch will also comprise a granular limestone sub-base to the same depth (0.3-0.35m), as the proposals are limited to resurfacing of the existing AGP. Analysis using MicroDrainage estimates that the sub-base can accommodate a 1 in 100 year rainfall event without giving rise to above ground flooding.

7.6 For conditions exceeding the 100 year event (i.e. allowing for the potential impacts of climate change upon peak rainfall intensity), surface water would accumulate on the surface of the pitch at shallow depths.

7.7 Overland flows may occur following extreme/high intensity rainfall. However, surface water would be routed to the playing fields to the west and therefore away from the existing school buildings.

7.8 The surface water drainage infrastructure will continue to comprise a private SuDS system and will be maintained by the school as per the existing arrangement.

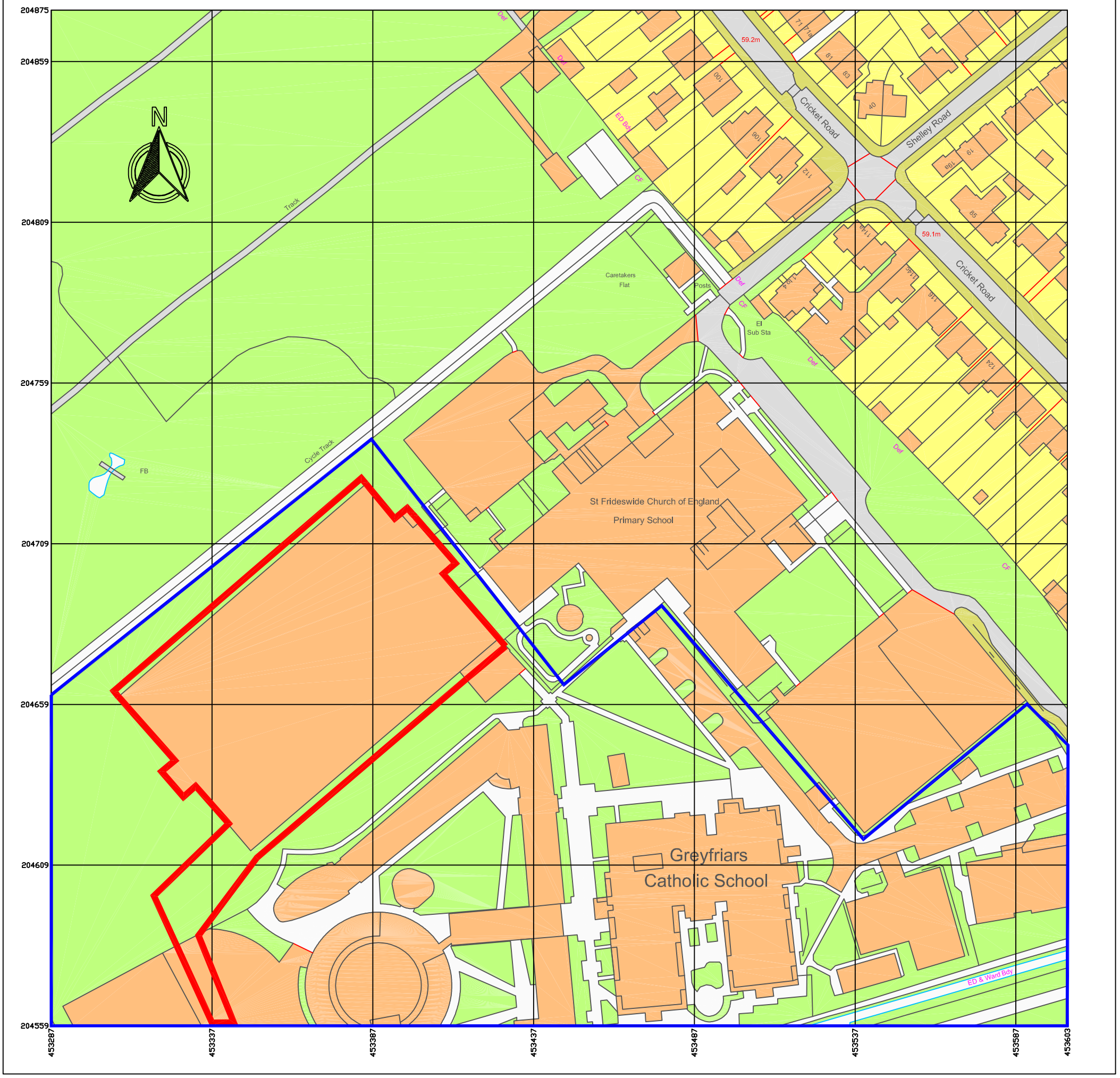
7.9 National, Regional and Local planning policy requires that:

- Development is directed to sites at the lowest probability of flooding;
- Development accommodates the potential impacts of climate change;
- Development should not be permitted if it would be at an unacceptable risk of flooding or create an unacceptable risk elsewhere; and
- New development should facilitate safe access and exit during flood conditions.

7.10 The proposals for the refurbishment of the AGP at Greyfriars Catholic School are therefore fully compliant with policy in respect of development and flood risk, such that flood risk considerations do not constitute a barrier to the granting of planning consent.

Appendix A
Site Location Plan

UK Planning Maps
01856 898 022
www.UKPlanningMaps.com



SCALE 1:1250 (A3)

10 0 10 20 30 40 50

Appendix B

Proposed Site Layout

PHD drawing no. GCS/01/02 and GCS/01/01r1

Cycle Track

FB

St Frideswide Church of England

Primary School

Greyfriars

Catholic School

0 10 20 30 40 50

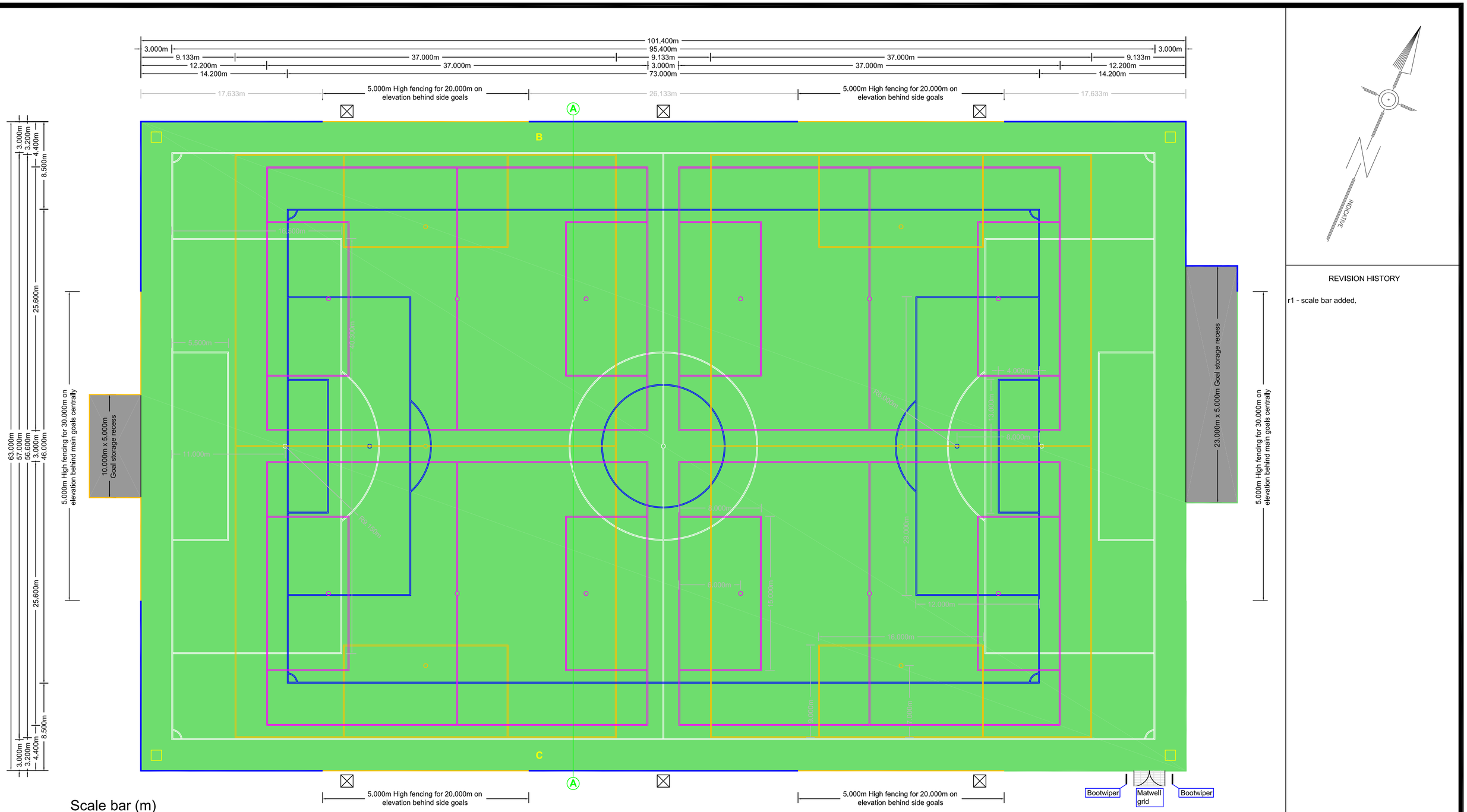
Scale bar (m)

N

NOVONIC

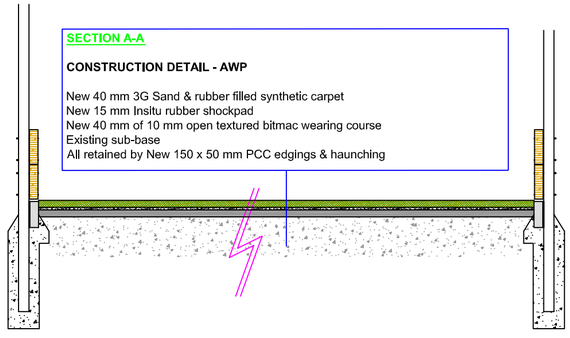
REVISION HISTORY

PHD	Paul Hawkins Development 365 Uppingham Road, Leicester LE5 4DF
GCS/01/02	Greyfriars Catholic School, Oxford Refurbished Artificial turf sports pitch Site Plan
05/03/24	© PAUL HAWKINS DEVELOPMENT 2024
Scale: 1:500(A2)	



Scale bar (m)

0 5 10 15 20



SECTION A-A

CONSTRUCTION DETAIL - AWP

New 40 mm 3G Sand & rubber filled synthetic carpet
New 15 mm Insitu rubber shockpad
New 40 mm of 10 mm open textured bitmac wearing course
Existing sub-base
All retained by New 150 x 50 mm PCC edgings & haunching

FENCING DETAIL

Fencing to be generally 3.000 m high galvanised & powder coated green or black 868 Twinbar fencing, Complete With 1.200 m high Super Rebound Panel. All fencing supported on rectangular hollow section line posts set in concrete at max. 2.525 m centres.

5.000 m High fencing behind goals denoted :-

Decontamination area at entrance to pitch (Double gate grid - 3.000 m x 1.500 m)

Infill mitigation 500 mm solid barrier to AGP fencing (2nr. boards stacked to fencing)

2nr. Boot wipers at AGP entrance (Either side of new decontamination grid)

ALL FENCING GALVANISED & POWDER COATED GREEN OR BLACK. GATE LOCATIONS TBC

LINEMARKING DETAIL

Football - Shown white - Constructed white (100 mm Inlaid lines)

9v9 (U11-U12) - Shown blue - Constructed blue (100 mm Painted lines)

7v7 (U9-U10) - Shown gold - Constructed yellow (100 mm Painted lines)

5v5 (U7-U8) - Shown magenta - Constructed red (100 mm Painted lines)

All linemarking colours, sizes and layout to be confirmed.

FLOODLIGHTING DETAIL

Existing Floodlighting system to be removed and replaced with 6nr. 15.000 m high raise and lower columns, providing a maintained average horizontal illuminance of 200 LUX (LED System)

REVISION HISTORY

r1 - scale bar added.

PHD	**Paul Hawkins Development** 365 Uppingham Road, Leicester LE5 4DP
GCS/01/01r1	Greyfriars Catholic School, Oxford Refurbished Artificial turf sports pitch Layout, dimensions and section
08/03/24	© PAUL HAWKINS DEVELOPMENT 2024
Scale: 1:250(A2)	

Appendix C

Extracts of Site Investigation Report
JPP G&E Ltd. Report ref. R-SI-20060-01-01

1.0 Executive Summary

1.1.1 The following is provided as an overview and should not be relied upon in isolation to the main report.

Summary overview	
Existing site	Site comprises an existing artificial pitch.
Proposals	Refurbish and extend the existing to artificial pitch.
History	At the time of first available mapping, the site comprised an agricultural field and became allotments in 1956. A school was present to east of the site by 1976 and an aerial photograph from 2003 indicates the site was school playing fields with the artificial pitch constructed by the 2006 photograph.
Geology	Superficial deposits of Head and the Northmoor Sand and Gravel Member over the West Walton Formation and Weymouth Member.
Fieldwork	Original works consisted of 15No. hand dug pits within the existing pitch area of depths of up to 0.7m and outside of the pitch area 5No hand pits up to 1.2m. Infiltration testing in 3 positions and TRL-DCP testing to determine insitu CBR in 13 positions. Additional works consisted of 5No. windowless sampler boreholes outside of the pitch area with 1No. infiltration testing
Ground conditions	Within the pitch, below the artificial surface and textile shock pad, was gravel of limestone to depths of 0.3m and 0.35m where a geotextile membrane was present onto a subgrade of silty and clayey gravelly sand across all but the south western end where subgrade comprised a firm brown gravelly clay made ground. Around the pitch, topsoil was encountered in each position to depth of between 0.1 to 0.4m onto Made Ground to depths of between 0.9 to 1.4m in all positions (except of WS04 located centrally along the north western edge of the pitch). Head deposits were encountered to depths of between 1.8 to 2.7m typically comprising gravelly clays in all but the south western comer of the pitch where granular deposits of possible Northmoor Sand and Gravel Member were encountered to 2.7m depth. Beneath the Head and Northmoor Sand and Gravel Member were firm grey silty slightly sandy clays of the West Walton Formation to depth.
Groundwater	No groundwater was encountered during original intrusive hand pitting. Groundwater was encountered within three borehole positions in the south west and west of the site from 1.3-2.0m bgl as fast inflows.
Floodlight Foundations	It is recommended that foundations should be formed into the natural firm grey clays of the West Walton Formation encountered between 1.8-2.7m below ground level, or in the south west corner, onto the Northmoor Sand and Gravel Member. However, shallow groundwater and instability of near surface soils may cause issues in excavating such foundations. The use of manhole rings infilled with concrete may be considered to maintain open foundation excavations. Alternatively, a piled foundation solution may be prudent.
Concrete Classification	Made ground DS-1 AC-1. Natural DS-4 AC-1
CBR	Insitu TRL-DCP testing within the existing pitch indicates a lower bound CBR of 23% for the subbase and 8% for the subgrade. A precautionary CBR of <2% is recommended for the pitch extension design on the basis it is made ground.
Soakaways	Within the existing pitch base, testing indicates the limestone gravel subbase is permeable. The subgrade and the made ground encountered surrounding the pitch are effectively impermeable.

Photograph 3.3.3: View along the north western boundary looking north east

Photograph 3.3.4: cut out through the pitch with hand pit excavation through subbase and subgrade

3.4 Geology

3.4.1 BGS (British Geological Survey) mapping indicates the site geology to comprise superficial Head deposits in the central and northern areas of the site with Northmoor Sand and Gravel Member in the south west of the site overlying West Walton Formation in the central and northern areas of the site and Weymouth Member in the south west of the site.

3.5 Site history

3.5.1 At the time of first available mapping of the late 1800's, the site comprised agricultural field. At the turn of the 20th Century, land immediately north of the site is denoted as Allotments, with land beyond having undergone residential development. The site was mapped as allotment gardens in 1956 and by 1976 a school building is mapped to the east of the site. The next available image (an aerial photograph) from 2003 shows the site is part of the school playing fields and by 2006 the existing artificial pitch is mapped on site with new school buildings constructed to the south of the site. No further alterations to the site or immediate surroundings are noted on subsequent aerial imagery.

3.6 Hydrology and Hydrogeology

3.6.1 The nearest surface water feature is a surface water drain located approximately 90m south of the site.

3.6.2 The superficial Head Deposit is classified as a Secondary (undifferentiated) aquifer, with the Northmoor Sand and Gravel in the south west of the site classified as a Secondary A aquifer. The bedrock geology of the site, West Walton Formation in the east and Weymouth Member in the west, is classified as unproductive.

3.6.3 The site is not within a Source Protection Zone.

3.7 Landfills

3.7.1 Based on available data, there are no landfills within 1km of the site.

3.8 Unexploded Ordnance

3.8.1 Based on the available data, hazard risk mapping records state that the site is classified as low risk and as such no further action is considered necessary.

3.9 Coal mining risk

3.9.1 The site is not located in a coal mining reporting area, therefore no further action is required.

4.0 Ground Investigation

4.1.1 The initial phase of site investigations were carried out on the 12th and 13th September 2019 and comprised the following activities:

- 20 No Hand dug trial pits to a maximum depth of 1.2m (15 were located within the existing artificial pitch, and 5 around the perimeter)
- 3 No infiltration tests targeting the subbase, subgrade and made ground outside of the existing pitch
- 13 No TRL Dynamic Cone Penetration (DCP) tests to measure insitu CBR, targeting the existing pitch subbase and subgrade and made ground outside of the pitch

4.1.2 Initially, the artificial grass turf was cut out at each trial pit position by a separately appointed contractor, Technical Surfaces, who also reinstated the surfacing at each position on completion and following our reinstatement. Each position was reinstated using hand compaction tools and mechanical powered tampering plate, where necessary, and finished with compacted cold lay blacktop to allow reinstatement of the artificial surfacing.

4.1.3 Additional site investigations were completed on the 4th December 2019 and comprised the following activities:

- 5 No Windowless sampler boreholes to a maximum depth of 4.0m bgl
- 1 No borehole infiltration test

4.1.4 Each position was scanned using a cable avoidance tool and genny prior to positioning and proceeding. Utilities searches were also obtained prior to the fieldwork to confirm the position of potential underground services (excluding private services). These are presented in Appendix E.

5.0 Ground Conditions

5.1 Soils

5.1.1 Artificial pitch

5.1.1.1 Within the existing artificial pitch, an approximately 30mm thick synthetic surface underlain by a textile shock pad was encountered, onto a subbase consisting of a light grey, cream fine to medium becoming fine to coarse limestone gravel to depths of 0.3m or 0.35m below surface level.

5.1.1.2 Subgrade was beneath a geotextile membrane and generally comprised brown silty sometimes clayey gravelly fine to coarse sand to depths of between 0.55m and 0.7m where they continued beyond the termination depth of the hand pit and to 0.35 and 0.45m depth in HP07 and HP12, located in the central south eastern edge and towards the south eastern corner. In hand pit positions HP13, HP14 and HP15 along the south western end of the pitch, the sand was absent and the limestone gravel subbase was located directly onto a firm dark grey gravelly clay with a geotextile membrane in-between. In HP07 and HP12, firm dark grey gravelly clay was encountered beneath a 100mm thick gravelly sand layer.

5.1.2 Surrounding the artificial pitch

5.1.2.1 Variable ground conditions were encountered across the area. A covering of topsoil was encountered in each of the positions around the existing pitch perimeter varying in thickness from 0.1 to 0.4m depth onto Made Ground in each position to depths of between 0.9 to 1.4m below ground level except in WS04 located centrally along the north western site boundary where no made ground was encountered.

Topsoil

5.1.2.2 Adjacent to the north western edge of the existing pitch topsoil was typically encountered as a silty sandy clay. Adjacent to the south eastern edge of the existing pitch topsoil was typically encountered as a clayey gravelly sand with gravel of flint and wood.

Made Ground

5.1.2.3 Adjacent to the north western edge of the existing pitch made ground comprising light brown silty gravelly fine to coarse sand, sandy gravelly clay, silty sandy gravel. Gravel included brick concrete, plastic, ash, clinker, slag and metal.

5.1.2.4 Adjacent to the south eastern edge of the existing pitch, made ground was encountered comprising light brown or dark brown silty gravelly fine to medium sand, sandy gravelly clay, gravelly sand with gravel of ash, clinker, sandstone, brick, flint and plastic.

Natural Superficial deposits

5.1.2.5 Directly beneath made ground, in all positions, but the south western most corner (WS02), deposits of Head were encountered to depths of between 1.8m-2.6m bgl comprising a variably sandy gravelly clay. Within WS02, what is probably Northmoor Sand and Gravel Member deposits were encountered to 2.70m bgl comprising a variably sandy gravelly clay and clayey gravelly sand with gravel of flint quartzite and shell fragments.

Natural Bedrock deposits

5.1.2.6 Across the site, beneath the Head deposits and Northmoor Sand and Gravel Member were deposits of West Walton Formation were encountered to depths exceeding 4.45m bgl comprising silty slightly sandy clay with occasional calcareous and shell.

5.2 Groundwater

5.2.1 No groundwater was encountered during the original intrusive hand pitting investigation.

5.2.2 Groundwater was encountered within three locations WS01, WS02 and WS03 at 1.30m, 1.40m and 2.00m bgl as fast inflows rising to 3.10m, 1.20m and 0.95m bgl respectively on removal of casing and borehole completion. The variable depth and inconsistent presence of groundwater between positions suggests that this is perched/confined water rather than a continuous groundwater level.

7.5.5 The results from within the existing pitch indicate a CBR for the subbase in the range of 23-79% and for the subgrade, 8-67%. This suggests a lower bound CBR for the subbase of 23% and for the subgrade of 8%.

7.5.6 Results from outside of the pitch indicate a CBR for the made ground in the range of 16-19%. This suggests a lower bound CBR for the subbase of 16% however due to the inherent potential variability, we suggest a precautionary CBR value of <2% is adopted for design purposes for the pitch extension and reassessed during construction.

7.6 Infiltration potential

7.6.1 **Hand pitting investigations**

7.6.1.1 Infiltration testing was carried out in three positions, two within the existing pitch targeting the subbase and subgrade and one outside of the pitch area.

7.6.1.2 Within the subbase, testing indicates the soils are permeable with an estimated infiltration rate of >1 x 10^{-3} m/s where the water was dispersing quicker than it could be added.

7.6.1.3 Infiltration testing within the subgrade in HP01 located in the north eastern corner fell by only 15mm in 210 minutes of monitoring. The sand at this position was clayey and is considered to be effectively impermeable.

7.6.1.4 Testing within the made ground outside of the pitch in HP17 showed no infiltration in 75 minutes of monitoring and therefore considered to be effectively impermeable.

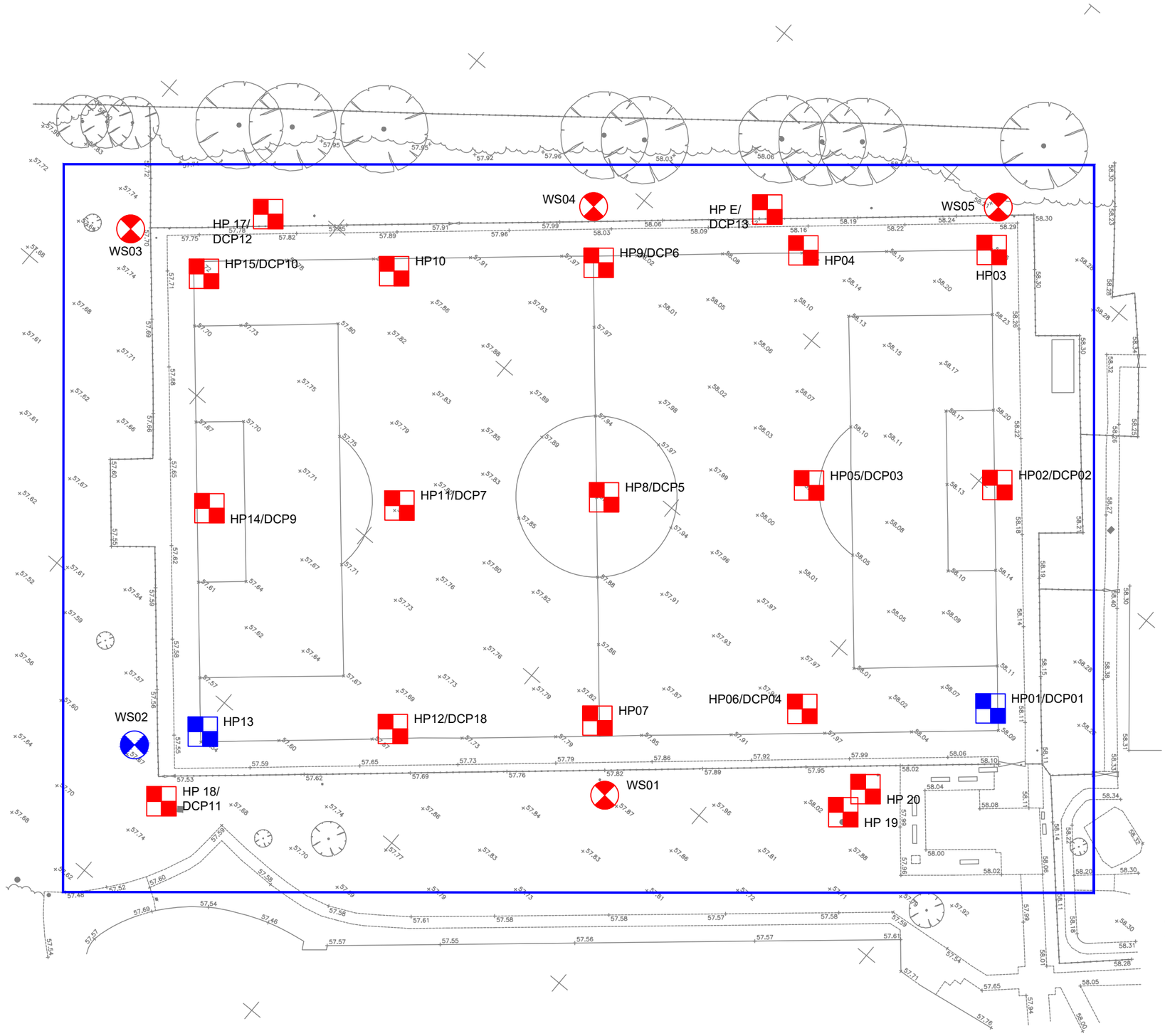
7.6.2 **Borehole investigations**

7.6.1.1 Infiltration down borehole testing was attempted to target the granular deposits encountered in the south western corner of the pitch (WS02) however the borehole collapsed and water encountered at 1.4m rose to 1.19m therefore the testing was essentially carried out within the made ground. The water level fell by just 31mm over 60 minutes but the test is not considered to be conclusive due to the high groundwater and being within the made ground. Based on the ground conditions (predominantly clays) encountered and groundwater inflows, we do not consider soakaways to be a likely viable solution at the site.

7.6.1.2 An existing manhole chamber is present off the south west corner of the pitch, close to the position of WS02, refer to following image. This chamber appears to be a soakaway with an invert of around 1.2m depth and an inlet pipe from the north (along the western end of the pitch) and outfall to the south towards the school.

Photograph 7.6 Inside manhole chamber located to south west of pitch

7.6.1.3 At this stage, it is suggested that the existing school drainage should be reviewed to assess potential solutions for the pitch drainage. The nearest public stormwater sewer to the site appears to be within the road to the south of the school. There were no obvious ditches or water courses observed within close proximity to the site.



Notes:
Base drawing - 'Topographical Survey' by JPP, 20060Y-01, 16.08.2019.

KEY:

	AGP investigation area
HP	Hand dug trial pit
HP/DCP	Hand dug trial pit with TRL - Dynamic cone penetration test
HP	Hand dug trial pit with infiltration testing
HP/DCP	Hand dug trial pit with infiltration testing and TRL - Dynamic cone penetration test
WS	Windowless sample borehole
WS	Windowless sample borehole with infiltration testing

Northampton
T: 01604 781811

Manchester
T:0161 6822927

Milton Keynes
T: 01908 889433

E: mail@jppuk.net
W: jppuk.net

- Infrastructure Design
- Structural Engineering
- Planning Services
- Geotechnical & Environmental
- Surveying
- Professional Advice

Drawn By:	JDR
Chkd By:	LC
Scale @A3:	1:500
Date:	December 2019
Status:	FOR INFORMATION
Project No.:	20060G

Client Labosport Uk Ltd.

Project St. Gregory The Great Catholic School

Title Investigation positions

Drawing No: 01 | Rev: 01

Key to Exploratory Hole Logs

General

Descriptions for soils and rocks generally following:

BS 5930:2015

BS EN ISO 14688-2:2004

BS EN ISO 14689-1:2003

Sampling

ES	Environmental Sample (taken in appropriate sampling container)
D	Disturbed Sample
B	Bulk Sample
C	Core Sample
U	Undisturbed Sample (number of blows indicated in results column)
UT	Thinwalled Undisturbed (number of blows indicated in results column)
W	Water Sample

Insitu Tests

SPT	Standard Penetration Test
SPT (C)	Cone Penetration Test
PID	Photo Ionisation Detector Results (ppm)
PP	Pocket Penetrometer reading converted to shear strength kPa
HV	Converted Shear Vane measurement kPa

Drilling Records

▼	Depth to standing water level
▽	Depth to water strike
TCR	Total Core Recovery (%)
SCR	Solid Core Recovery (%)
RQD	Rock Quality Designation (%)

Backfill Symbols

- Arisings
- Concrete
- Blacktop
- Bentonite Seal
- Gravel Filter
- Sand Filter

Pipe Symbols

- Plain Pipe
- Slotted Pipe
- Filter Tip

Principal Soil Types

- Topsoil
- Made Ground
- Clay
- Silt
- Sand
- Gravel
- Peat

Principal Rock Types

- Mudstone
- Siltstone
- Sandstone
- Limestone
- Chalk

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP01	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.03			Synthetic surface over textile shock pad
					0.07			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Light white grey sandy fine to coarse angular to subangular limestone GRAVEL (MADE GROUND)
					0.35			Brown clayey gravelly fine to coarse SAND. Gravel consists of fine to medium subangualr to subrounded flint and quartzite (MADE GROUND)
		0.40	ES					*Geotextile membrane*
					0.70			End of Trial Pit at 0.700m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP02	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.03			Synthetic surface over textile shock pad
					0.09			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Grey white fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.35			Brown slightly gravelly fine to coarse SAND. Gravel consits of fine to medium subangular to subrounded flint and limestone (MADE GROUND)
								Geotextile membrane
					0.55			End of Trial Pit at 0.550m

1

2

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP03	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.03			Synthetic surface over textile shock pad
					0.08			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Light grey fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.30			Brown slightly silty gravelly fine to coarse SAND. Gravel consists of fine to medium angular to rounded limestone and flint (MADE GROUND)
								Geotextile membrane
					0.55			End of Trial Pit at 0.550m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP04	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.03			Synthetic surface over textile shock pad
					0.08			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Light grey fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.35			Brown silty gravelly fine to coarse SAND. Gravel consists of fine to meidum angular to subrounded flint (MADE GROUND)
		0.40	D					*Geotextile membrane*
					0.55			End of Trial Pit at 0.550m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP05	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.03			Synthetic surface over textile shock pad
					0.08			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Light grey fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.30			Light grey gravelly fine to coarse SAND. Gravel consists of fine to medium angular to rounded flint and limestone (MADE GROUND)
								Geotextile membrane
					0.60			End of Trial Pit at 0.600m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP06	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.05	D		0.03			Synthetic surface over textile shock pad
					0.07			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Cream fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.30			Yellow brown slightly silty slightly gravelly fine to coarse SAND. Gravel consists of fine to medium angular to subrounded flint (MADE GROUND)
								Geotextile membrane
					0.55			End of Trial Pit at 0.550m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP07	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.03			Synthetic surface over textile shock pad
					0.08			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Light grey fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.35			Light brown gravelly fine to coarse SAND. Gravel consists of fine to medium subangular to subrounded flint (MADE GROUND)
					0.45			*Geotextile membrane*
		0.50	D					Firm low strength dark grey gravelly CLAY. Gravel consists of fine to medium angular to subrounded flint and glass (MADE GROUND)
		0.50	PP	81.00				
		0.60	HVP	83	0.60			End of Trial Pit at 0.600m

1

2

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP08	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.03			Synthetic surface over textile shock pad
					0.06			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Light grey fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.30			Light brown to light grey slightly silty gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to subrounded flint (MADE GROUND)
								Geotextile membrane
					0.55			End of Trial Pit at 0.550m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP09	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.03			Synthetic surface over textile shock pad
					0.08			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Cream fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.35			Light brown slightly silty gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to subrounded flint and occasional limestone (MADE GROUND)
								Geotextile membrane
					0.55			End of Trial Pit at 0.550m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP10	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.03			Synthetic surface over textile shock pad
					0.07			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Light grey fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.30			Light brown slightly silty gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to subrounded flint and occasional limestone (MADE GROUND)
								Geotextile membrane
					0.55			End of Trial Pit at 0.550m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP11	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.03			Synthetic surface over textile shock pad
					0.08			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
		0.15	D					Cream fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.30			Light brown slightly silty gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to subrounded flint and occasional limestone (MADE GROUND)
								Geotextile membrane
					0.50			End of Trial Pit at 0.500m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP12	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.03			Synthetic surface over textile shock pad
					0.09			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Light grey fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.35			Light brown slightly silty gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to subrounded flint and occasional limestone (MADE GROUND)
					0.45			*Geotextile membrane*
								Firm dark grey gravelly CLAY. Gravel consists of fine to medium angular to subrounded flint and glass (MADE GROUND)
					0.65			End of Trial Pit at 0.650m

1

2

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 13/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP13	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.03			Synthetic surface over textile shock pad
					0.08			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Light grey fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.30			Firm dark grey gravelly CLAY. Gravel consists of fine to medium angular to subrounded flint and glass (MADE GROUND)
								Geotextile membrane
		0.50	ES					
					0.55			End of Trial Pit at 0.550m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 13/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP14	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing: Depth (m)	Sample and In Situ Testing: Type	Sample and In Situ Testing: Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.03			Synthetic surface over textile shock pad
					0.08			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Cream fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.35			Firm dark grey gravelly CLAY. Gravel consists of fine to medium angular to subrounded flint and glass (MADE GROUND)
								Geotextile membrane
					0.55			End of Trial Pit at 0.550m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 13/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP15	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.03			Synthetic surface over textile shock pad
					0.09			Light grey fine to medium angular to subrounded limestone GRAVEL (MADE GROUND)
								Light grey fine to coarse angular to subrounded limestone GRAVEL (MADE GROUND)
					0.35			Firm dark grey gravelly CLAY. Gravel consists of fine to medium angular to subrounded flint and glass (MADE GROUND)
								Geotextile membrane
					0.60			End of Trial Pit at 0.600m

1

2

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 13/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP16	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Light brown silty gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to subrounded flint brick concrete plastic and metal (MADE GROUND)
					1.20			End of Trial Pit at 1.200m

1

2

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 13/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP17	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Light brown silty gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to subrounded flint brick concrete plastic and metal (MADE GROUND)
					1.20			End of Trial Pit at 1.200m

1

2

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 13/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP18	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.30	ES					Light brown silty gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to subrounded flint brick concrete plastic and metal (MADE GROUND)
					0.75			Firm dark brown slightly sandy gravelly CLAY. Gravel consists of fine to coarse angular to subrounded flint brick and plastic (MADE GROUND)
					1.20			End of Trial Pit at 1.200m

1

2

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP19	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Dark brown grey silty gravelly fine to medium SAND. Gravel consists of fine to coarse angular to rounded concrete brick flint and plastic (MADE GROUND)
					0.50			Light brown sandy fine to medium subangular to rounded flint GRAVEL (MADE GROUND)
					0.80			End of Trial Pit at 0.800m

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered.
Location terminated due to presence of clay pipe in pit.
HP20 excavated adjacent

Trial Pit Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 12/09/2019
Location: Cowley, Oxford	Contractor:	
Project No. : 20060	Crew Name:	Equipment: Hand Tools

Location Number	Location Type	Level	Logged By	Scale	Page Number
HP20	TP		JDR	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Dark brown grey silty gravelly fine to medium SAND. Gravel consists of fine to coarse angular to rounded concrete brick flint and plastic (MADE GROUND)
					0.40			Light brown silty gravelly fine to medium SAND. Gravel consists of subangular to rounded fine to medium flint (MADE GROUND)
					0.60			Dark brown silty gravelly fine to medium SAND. Gravel consists of fine to coarse angular to subrounded flint and brick (MADE GROUND)
					0.75			Soft to firm dark grey brown to green slightly sandy slightly gravelly CLAY. Gravel consists of fine to coarse angular to subrounded brick (MADE GROUND)
		0.90	PP	54.00				
		1.10	PP	65.00				
					1.20			End of Trial Pit at 1.200m

1

2

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
0.30	0.30	Stable					

Remarks

No groundwater encountered

Windowless Sampling Log

Project Name: St Gregory the Great Catholic School		Client: Labosport UK Ltd	Date: 04/12/2019
Location: Cowley, Oxford		Contractor: R.G.I Ltd	
Project No. : 20060		Crew Name:	Drilling Equipment: Premier 110

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS01	WLS		ST	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES		0.10			Brown clayey gravelly sandy TOPSOIL with roots and rootlets. Gravel consists of fine to medium sub angular to rounded flint wood and quartzite
		0.20	ES					
					0.30			Brown clayey gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to rounded brick glass quartzite clinker and rare ash (MADE GROUND)
		0.50	ES					Orange brown gravelly fine to medium SAND. Gravel consists of fine to medium subrounded to rounded flint and quartzite (MADE GROUND)
					0.60			Firm to stiff high strength dark brown and green brown mottled black sandy gravelly CLAY. Gravel consists of fine to coarse angular to subrounded brick clinker ash quartzite and carbonaceous mudstone (MADE GROUND)
		0.90	ES					
		0.90	PP	123.00				
		1.00	SPT	N=7 (1,1/1,2,2,2)				
	▽				1.30			Soft to firm medium strength grey brown and brown sandy gravelly CLAY. Gravel consists of fine to coarse angular to rounded flint quartzite and shell fragments (HEAD)
		1.50	D					
		1.60	PP	48.00				*damp from water in liners*
					1.80			Soft to firm low strength grey brown and brown sandy CLAY (HEAD)
		1.90	PP	25.00				
		2.00	SPT	N=5 (2,1/1,1,2,1)	2.00			Soft to firm medium strength grey brown and brown silty slightly gravelly CLAY. Gravel consists of fine to coarse angular to rounded flint quartzite and shell fragments (HEAD)
		2.50	D					
		2.60	PP	73.00	2.60			Firm medium to high strength blue grey silty CLAY with rare coarse gravel sized fossil fragments (WEST WALTON FORMATION)
		2.90	PP	71.00				
	▽	3.00	SPT	N=15 (3,4/3,4,4,4)				
		3.50	D					
		3.60	PP	75.00				
		3.90	PP	66.00				
		4.00	SPT	N=15 (2,2/3,4,4,4)				
					4.45			End of Borehole at 4.450m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		0.00									

Remarks

Water strike at 1.3m as fast inflow at 3.1m depth on completion

Windowless Sampling Log

Project Name: St Gregory the Great Catholic School		Client: Labosport UK Ltd	Date: 04/12/2019
Location: Cowley, Oxford		Contractor: R.G.I Ltd	
Project No. : 20060		Crew Name:	Drilling Equipment: Premier 110

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS02	WLS		ST	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.10	ES		0.20			Brown clayey gravelly sandy TOPSOIL with roots and rootlets. Gravel consists of fine to medium sub angular to rounded flint wood and quartzite
					0.30			Brown clayey gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to rounded brick glass quartzite clinker and rare ash (MADE GROUND)
		0.50	ES		0.45			Brown clayey gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to rounded brick glass quartzite clinker and rare ash with low cobble content of sub angular to subrounded flint and sandstone (MADE GROUND)
					0.70			Orange brown gravelly fine to medium SAND. Gravel consists of fine to medium subrounded to rounded flint and quartzite (MADE GROUND)
		0.90	PP	60.00				
		1.00	ES					
	▼	1.00	SPT	N=19 (1,2/4,4,5,6)				Firm to stiff medium strength dark brown sandy gravelly CLAY. Gravel consists of fine to coarse angular to subrounded glass ash clinker flint and carbonaceous mudstone (MADE GROUND)
					1.40			Soft orange brown and grey sandy gravelly CLAY. Gravel consists of fine to medium sub angular to subrounded flint and quartzite (NORTHMOOR SAND AND GRAVEL MEMBER)
		1.50	D		1.60			*damp from water in liners*
								Medium dense orange brown clayey gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to subrounded flint quartzite and shell fragments (NORTHMOOR SAND AND GRAVEL MEMBER)
		2.00	SPT	N=22 (2,1/6,5,6,5)				
					2.30			Soft orange brown and grey sandy gravelly CLAY. Gravel consists of fine to medium sub angular to subrounded flint and quartzite (NORTHMOOR SAND AND GRAVEL MEMBER)
		2.50	D		2.50			
					2.60			Orange brown clayey gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to subrounded flint quartzite and shell fragments (NORTHMOOR SAND AND GRAVEL MEMBER)
					2.70			
		2.90	PP	75.00				
		3.00	D					Soft orange brown and grey sandy gravelly CLAY. Gravel consists of fine to medium sub angular to subrounded flint and quartzite (NORTHMOOR SAND AND GRAVEL MEMBER)
		3.00	SPT	N=8 (1,2/1,2,2,3)				
								Firm medium strength grey silty slightly sandy gravelly CLAY. Gravel consists of fine to coarse angular to subrounded calcareous nodules and shell fragments with relict root staining (WEST WALTON FORMATION)
								limited collapse of granular material above
		3.90	PP	55.00				
		4.00	SPT	N=19 (2,3/4,4,5,6)				
					4.45			End of Borehole at 4.450m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		0.00									

Remarks

Water strike at 1.4m as fast inflow rose to 1.2m on borehole completion. Collapse to 1.7m on borehole completion

Windowless Sampling Log

Project Name: St Gregory the Great Catholic School		Client: Labosport UK Ltd	Date: 04/12/2019
Location: Cowley, Oxford		Contractor: R.G.I Ltd	
Project No. : 20060		Crew Name:	Drilling Equipment: Premier 110

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS03	WLS		ST	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20	ES					Brown clayey gravelly sandy TOPSOIL with roots and rootlets. Gravel consists of fine to medium sub angular to rounded flint wood and quartzite
					0.40			Brown clayey gravelly fine to coarse SAND. Gravel consists of fine to coarse angular to rounded brick glass quartzite clinker and rare ash (MADE GROUND)
					0.60			Soft to firm sandy gravelly CLAY. Gravel consists of fine to coarse angular to subrounded clinker coal ash flint quartzite and brick (MADE GROUND)
		0.80	ES					
	▼	0.90	PP	71.00	0.90			Firm to stiff medium strength brown sandy gravelly CLAY. Gravel consists of fine to coarse sub angular to subrounded flint and quartzite with rare black carbonaceous material (HEAD)
		1.00	SPT	N=9 (1,2/2,2,3,2)				
		1.50	D		1.50			Firm orange brown sandy gravelly CLAY. Gravel consists of fine to coarse sub angular to subrounded flint and quartzite (HEAD)
		1.60	PP	55.00	1.60			Soft to firm low strength orange brown sandy very gravelly CLAY. Gravel consists of fine to coarse sub angular to subrounded flint and quartzite (HEAD)
		1.90	PP	48.00				*damp from water in liners*
	▽	2.00	SPT	N=5 (4,3/2,1,1,1)	2.00			Loose orange brown clayey sandy fine to coarse subrounded to rounded flint and quartzite GRAVEL (HEAD)
					2.30			Soft to firm orange brown sandy very gravelly CLAY. Gravel consists of fine to coarse sub angular to subrounded flint and quartzite (HEAD)
		2.50	D					
					2.70			Firm medium strength blue grey mottled orange brown silty CLAY (WEST WALTON FORMATION)
		2.90	PP	55.00				
		3.00	SPT	N=9 (2,1/1,2,3,3)				*poor recovery and limited collapse of granular material above*
		3.90	PP	58.00				
		4.00	D					
		4.00	SPT	N=14 (2,2/3,4,3,4)				
					4.45			End of Borehole at 4.450m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		0.00									

Remarks

Water strike at 2.0m as fast inflow rose to 0.95m on borehole completion. Collapse to 3.1m on borehole completion

Windowless Sampling Log

Project Name: St Gregory the Great Catholic School		Client: Labosport UK Ltd	Date: 04/12/2019
Location: Cowley, Oxford		Contractor: R.G.I Ltd	
Project No. : 20060		Crew Name:	Drilling Equipment: Premier 110

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS04	WLS		ST	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Soft brown silty sandy clayey TOPSOIL with rootlets
		0.40 - 1.00	B		0.40			
								Orange brown clayey sandy fine to coarse angular to subrounded flint GRAVEL (HEAD)
		1.00	SPT	N=6 (1,1/1,2,1,2)	1.00			
								Soft medium strength green grey silty slightly sandy CLAY (HEAD)
		1.60	PP	50.00				
					1.80			
		1.90	PP	36.00				Soft to firm low to high strength grey and orange brown slightly sandy slightly gravelly CLAY. Gravel consists of fine to medium subrounded calcareous nodules and rare shell fragments (WEST WALTON FORMATION)
		2.00	D					
		2.00	SPT	N=9 (1,1/2,2,2,3)				
		2.60	PP	60.00				
		2.90	PP	48.00				*occasional white pockets of crystalline deposits and rare shell fragments*
		3.00	D					
		3.00	SPT	N=9 (1,2/1,2,3,3)				
		3.60	PP	63.00				
		3.90	PP	86.00				
		4.00	D					
		4.00	SPT	N=16 (2,3/3,4,4,5)				
					4.45			End of Borehole at 4.450m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		0.00									

Remarks

No groundwater encountered

Windowless Sampling Log

Project Name: St Gregory the Great Catholic School	Client: Labosport UK Ltd	Date: 04/12/2019
Location: Cowley, Oxford	Contractor: R.G.I Ltd	
Project No. : 20060	Crew Name:	Drilling Equipment: Premier 110

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS05	WLS		ST	1:25	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
								Soft brown silty sandy clayey TOPSOIL with rootlets
					0.30			Orange brown silty sandy fine to medium flint and quartzite GRAVEL (MADE GROUND)
					0.60			Firm dark brown sandy gravelly CLAY. Gravel consists of fine to coarse angular to subrounded ash clinker slag brick flint quartzite and carbonaceous mudstone (MADE GROUND)
		0.80	ES					
		0.90	PP	80.00				
		1.00	SPT	N=6 (1,1/1,2,1,2)				
					1.30			Firm low strength green grey silty slightly gravelly CLAY. Gravel consists of fine to medium subrounded flint and quartzite (HEAD)
		1.60	PP	38.00				
		1.90	PP	38.00				
		2.00	D		2.00			Firm medium to high strength blue grey mottled orange brown slightly silty sandy CLAY with rare pockets of crystalline deposits (WEST WALTON FORMATION)
		2.00	SPT	N=7 (1,1/1,2,2,2)				
		2.60	PP	63.00				
		2.90	PP	46.00				
		3.00	D					
		3.00	SPT	N=8 (1,1/2,1,3,2)				*rare shell fragments*
		3.60	PP	52.00				
		3.90	PP	80.00				
		4.00	D					
		4.00	SPT	N=17 (3,3/3,5,4,5)				
					4.45			End of Borehole at 4.450m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base	Diameter	Depth Base	Diameter	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation
		0.00									

Remarks

No groundwater encountered

Appendix D

Environment Agency (EA) Product 4 Flood Level Data

Product 4 (Detailed Flood Risk) for St Gregory the Great Catholic School, Cricket Road, Oxford
Our Ref: THM_155937

Product 4 is designed for developers where Flood Risk Standing Advice FRA (Flood Risk Assessment) Guidance Note 3 Applies. This is:

i) "all applications in Flood Zone 3, other than non-domestic extensions less than 250 sq metres; and all domestic extensions", and
ii) "all applications with a site area greater than 1 ha" in Flood Zone 2.

Product 4 includes the following information:

Ordnance Survey 1:25k colour raster base mapping;
Flood Zone 2 and Flood Zone 3;
Relevant model node locations and unique identifiers (for cross referencing to the water levels, depths and flows table);
Model extents showing *defended* scenarios;
FRA site boundary (where a suitable GIS layer is supplied);
Flood defence locations (where available/relevant) and unique identifiers; (supplied separately)
Flood Map areas benefiting from defences (where available/relevant);
Flood Map flood storage areas (where available/relevant);
Historic flood events outlines (where available/relevant, not the Historic Flood Map) and unique identifiers;
Statutory (Sealed) Main River (where available within map extents);

A table showing:

i) Model node X/Y coordinate locations, unique identifiers, and levels and flows for *defended* scenarios.
ii) Flood defence locations unique identifiers and attributes; (supplied seperately)
iii) Historic flood events outlines unique identifiers and attributes; and
iv) Local flood history data (where available/relevant).

Please note:

If you will be carrying out computer modelling as part of your Flood Risk Assessment, please request our guidance which sets out the requirements and best practice for computer river modelling.

This information is based on that currently available as of the date of this letter. You may feel it is appropriate to contact our office at regular intervals, to check whether any amendments/ improvements have been made. Should you re-contact us after a period of time, please quote the above reference in order to help us deal with your query.

This information is provided subject to the enclosed notice which you should read.

This letter is not a Flood Risk Assessment. The information supplied can be used to form part of your Flood Risk Assessment. Further advice and guidance regarding Flood Risk Assessments can be found on our website at:

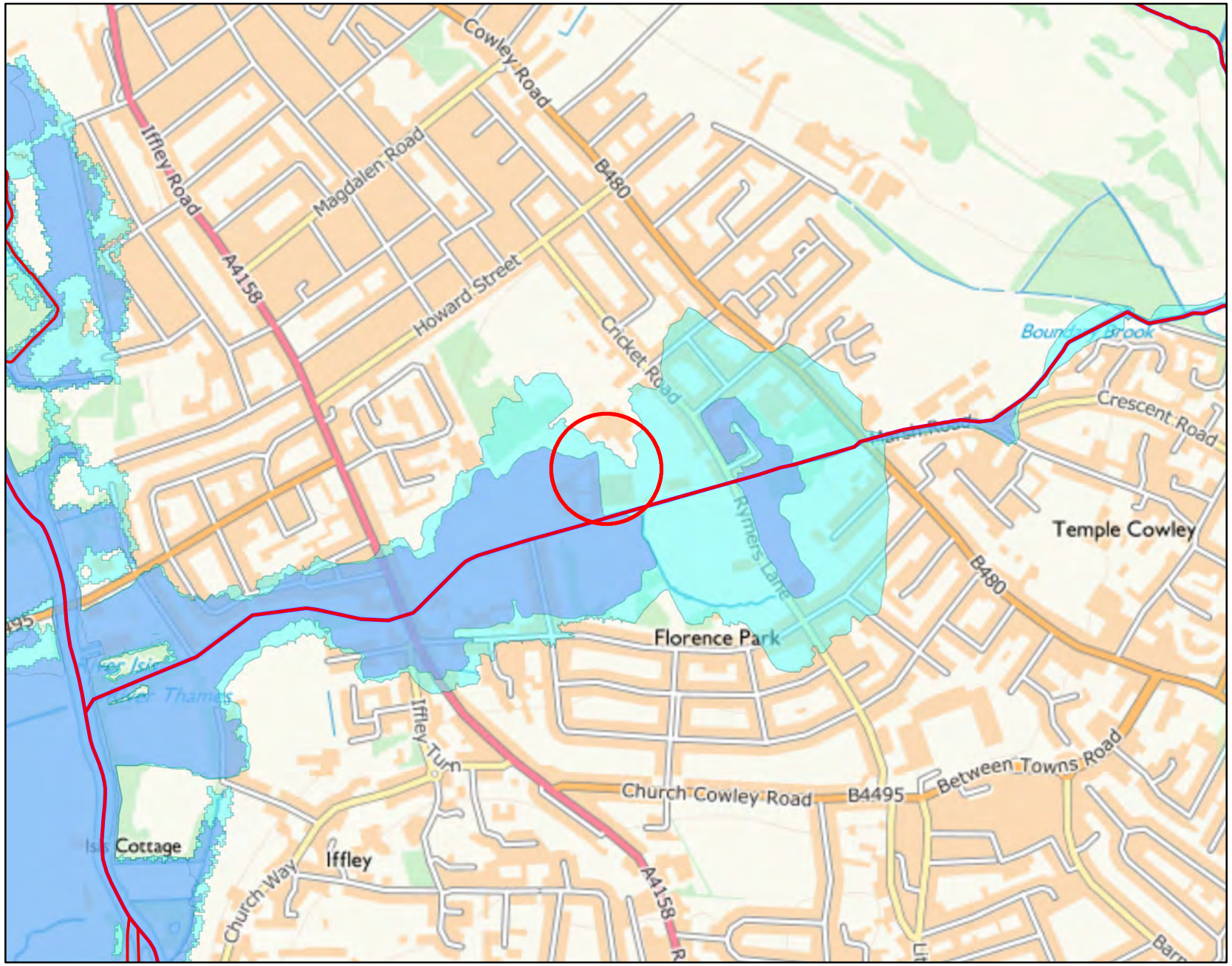
https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities

If you would like advice from us regarding your development proposals you can complete our pre application enquiry form which can be found at:

https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion

Red Kite House, Howbery Park, Wallingford, Oxon OX10 8BD
Customer services line: 08708 506 506
Email: WTenquiries@environment-agency.gov.uk

Flood Map for Planning centred on St Gregory the Great Catholic School
Created on 14/10/2020 REF: THM_155937



Environment Agency

Kilometres

0 0.25 0.5

Legend

- Main River
- Flooding from rivers or sea (FZ3)
- Extent of extreme flood (FZ2)

Flooding from rivers or sea without defences (Flood Zone 3) shows the area that could be affected by flooding:
- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

The Extent of an extreme flood (Flood Zone 2) shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Defence information

THM_155937

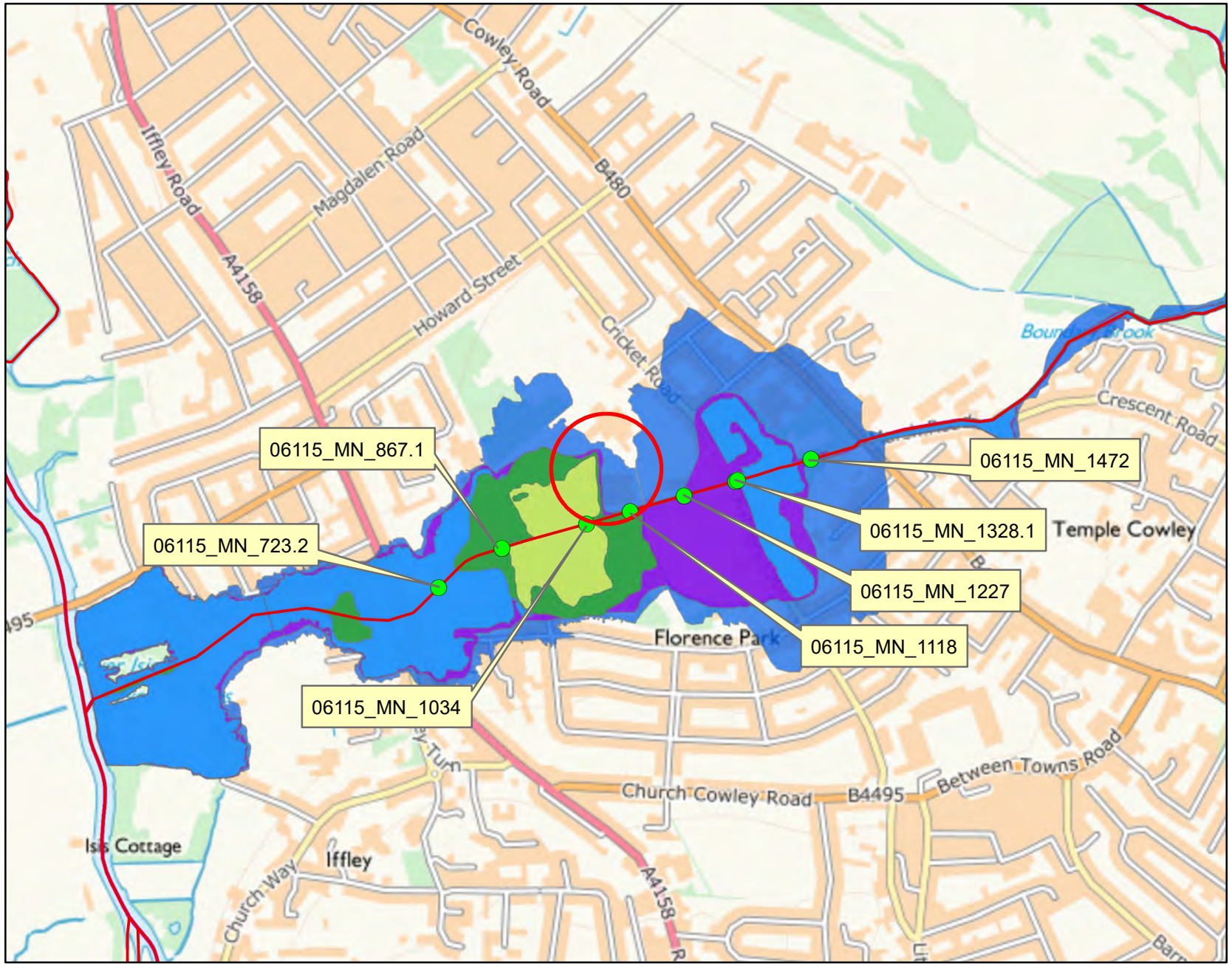
Defence Location:	No defences on Main River
Description:	This location is not currently protected by any formal defences and we do not currently have any flood alleviation works planned for the area. However we continue to maintain certain watercourses and the schedule of these can be found on our internet pages.

Model information

THM_155937

Model:	Boundary Brook 2010
Description:	The information provided is taken from the Boundary Brook Flood Risk Assessment completed in February 2010. The study was carried out using HEC-RAS modelling software. Model design runs: 1 in 5 / 20% Annual Exceedance Probability (AEP); 1 in 20 / 4% AEP; 1 in 100 / 1% AEP; 1 in 100+20% / 1% AEP plus 20% increase in flows and 1 in 1000 / 0.1% AEP Mapped Outputs: 1 in 5 / 20% AEP; 1 in 20 / 4% AEP; 1 in 100 / 1% AEP and 1 in 1000 / 0.1% AEP Model accuracy: Levels ± 250mm

FRA Map centred on St Gregory the Great Catholic School
Created on 14/10/2020 REF: THM_155937



Environment Agency

Kilometres

0 0.25 0.5

Legend

- Boundary Brook Model Node Data
- Main River
- 20% AEP Flood Outline
- 5% AEP Flood Outline
- 1% AEP Flood Outline
- 1%+20% AEP Flood Outline
- 0.1% AEP Flood Outline

AEP = Annual Exceedance Probability
The probability of a flood of a particular magnitude, or greater, occuring in any given year

Where available climate change extents have been calculated with an additional flow added to an AEP event. An example of how this is written is 1%+20% AEP.

Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

Modelled in-channel flood flows and levels

THM_155937

The modelled flood levels and flows for the closest most appropriate model node points for your site that are within the river channel are provided below:

				Flood Levels (mAOD)				
Node label	Model	Easting	Northing	20% AEP	5% AEP	1% AEP	1% AEP (+20% increase in flows)	0.1% AEP
06115_MN_1472	Boundary Brook 2010	453852	204652	59.40	59.61	59.70	59.65	59.96
06115_MN_1328.1	Boundary Brook 2010	453709	204610	58.63	58.87	59.42	59.79	59.79
06115_MN_1227	Boundary Brook 2010	453611	204583	58.00	58.16	58.40	58.50	58.71
06115_MN_1118	Boundary Brook 2010	453509	204553	57.69	57.78	57.99	57.95	58.24
06115_MN_1034	Boundary Brook 2010	453426	204529	57.47	57.80	57.71	58.03	58.25
06115_MN_867.1	Boundary Brook 2010	453265	204483	57.15	57.50	57.68	58.02	58.24
06115_MN_723.2	Boundary Brook 2010	453145	204408	56.82	56.93	57.66	58.02	58.24

				Flood Flows (m3/s)				
Node label	Model	Easting	Northing	20% AEP	5% AEP	1% AEP	1% AEP (+20% increase in flows)	0.1% AEP
06115_MN_1472	Boundary Brook 2010	453852	204652	2.80	4.00	5.90	7.08	12.80
06115_MN_1328.1	Boundary Brook 2010	453709	204610	2.80	4.00	5.90	7.08	12.80
06115_MN_1227	Boundary Brook 2010	453611	204583	2.80	4.00	5.90	7.08	12.80
06115_MN_1118	Boundary Brook 2010	453509	204553	3.10	4.42	6.50	7.80	13.90
06115_MN_1034	Boundary Brook 2010	453426	204529	3.10	4.42	6.50	7.80	13.90
06115_MN_867.1	Boundary Brook 2010	453265	204483	5.00	7.00	10.30	12.36	22.30
06115_MN_723.2	Boundary Brook 2010	453145	204408	5.00	7.00	10.30	12.36	22.30

Note:
Due to changes in guidance on the allowances for climate change, the 20% increase in river flows should no longer to be used for development design purposes. The data included in this Product can be used for interpolation of levels as part of an intermediate level assessment.

For further advice on the new allowances please visit
https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Historic flood data

THM_155937

Our records show that the area of your site has been affected by flooding.
Information on the floods that have affected your site is provided in the table below:

Flood Event Code	Flood Event Name	Start Date	End Date	Source of Flooding	Cause of Flooding
No Historic Data					

Please note the Environment Agency maps flooding to land not individual properties. Floodplain extents are an indication of the geographical extent of a historic flood. They do not provide information regarding levels of individual properties, nor do they imply that a property has flooded internally.

Start and End Dates shown above may represent a wider range where the exact dates are not available.

Appendix E

Registered Groundwater Flooding Incidents
Oxford City SFRA (March 2011) document ref. 5093353/62/DWG/002 – Appendix B

River Cherwell

River Thames

Seacourt Stream

Castle Mill Stream

Hinksey Stream

Marston Brook

Peasmoor Brook

Boundary Brook

Littlemore Brook

Northfield Brook

OXFORD

OXFORD DISTRICT

Legend

- River Centreline
- Study Boundary
- Strategic Development Sites
- Indicative Sites within the West End
- Ground Water Flooding Incidents (Labelled with call reference number)

SCALE: NTS

N

Project Title:

Oxford City SFRA - March 2011

Figure Title:

Registered Groundwater Flooding Incidents

Document Reference: **5093353/62/DWG/002**

Figure Number: **Appendix B**

OXFORD CITY COUNCIL

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Appendix F

Thames Water Sewer Flooding Incidents by Postcode Area

Oxford City SFRA Level 2 document ref. 5093353/62/DWG/001 – Appendix C

Total number Properties flooded from overloaded sewer in last ten years	1
Total number properties flooded by surface water from overloaded sewers in last ten years	0
Total number properties flooded by foul water from overloaded sewers in the last ten years	1
Total number properties flooded by Combined overloaded sewers in the last ten years	0

Total number Properties flooded from overloaded sewer in last ten years	3
Total number properties flooded by surface water from overloaded sewers in last ten years	0
Total number properties flooded by foul water from overloaded sewers in the last ten years	2
Total number properties flooded by Combined overloaded sewers in the last ten years	1

Total number Properties flooded from overloaded sewer in last ten years	1
Total number properties flooded by surface water from overloaded sewers in last ten years	1
Total number properties flooded by foul water from overloaded sewers in the last ten years	0
Total number properties flooded by Combined overloaded sewers in the last ten years	0

Total number Properties flooded from overloaded sewer in last ten years	7
Total number properties flooded by surface water from overloaded sewers in last ten years	1
Total number properties flooded by foul water from overloaded sewers in the last ten years	6
Total number properties flooded by Combined overloaded sewers in the last ten years	0

Total number Properties flooded from overloaded sewer in last ten years	1
Total number properties flooded by surface water from overloaded sewers in last ten years	0
Total number properties flooded by foul water from overloaded sewers in the last ten years	1
Total number properties flooded by Combined overloaded sewers in the last ten years	0

Total number Properties flooded from overloaded sewer in last ten years	1
Total number properties flooded by surface water from overloaded sewers in last ten years	0
Total number properties flooded by foul water from overloaded sewers in the last ten years	1
Total number properties flooded by Combined overloaded sewers in the last ten years	0

Total number Properties flooded from overloaded sewer in last ten years	1
Total number properties flooded by surface water from overloaded sewers in last ten years	0
Total number properties flooded by foul water from overloaded sewers in the last ten years	1
Total number properties flooded by Combined overloaded sewers in the last ten years	0

Total number Properties flooded from overloaded sewer in last ten years	1
Total number properties flooded by surface water from overloaded sewers in last ten years	0
Total number properties flooded by foul water from overloaded sewers in the last ten years	1
Total number properties flooded by Combined overloaded sewers in the last ten years	0

Legend

▨ Postcode Areas

SCALE: NTS

N

Project Title:

Oxford City SFRA Level 2

Figure Title:

Thames Water Sewer Flooding Incidents by Postcode Area

Document Reference:	Figure Number:
5093353/62/DWG/001	**Appendix C**

OXFORD CITY COUNCIL

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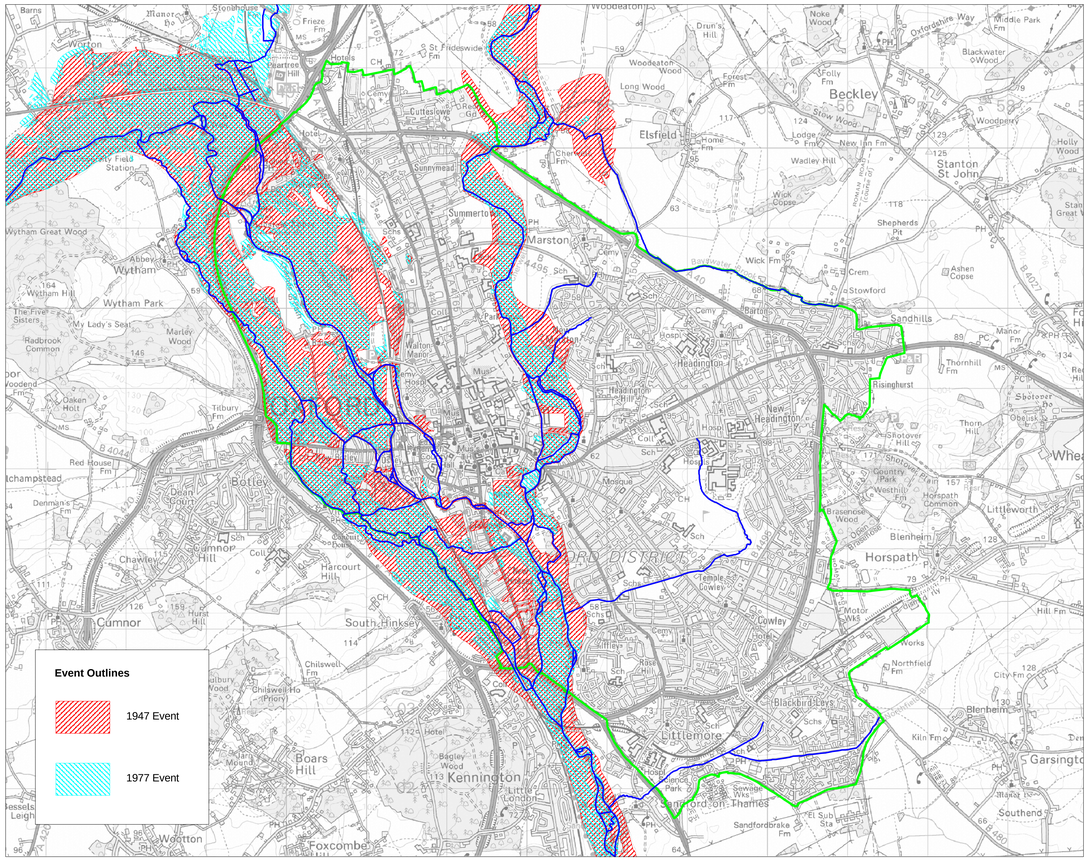
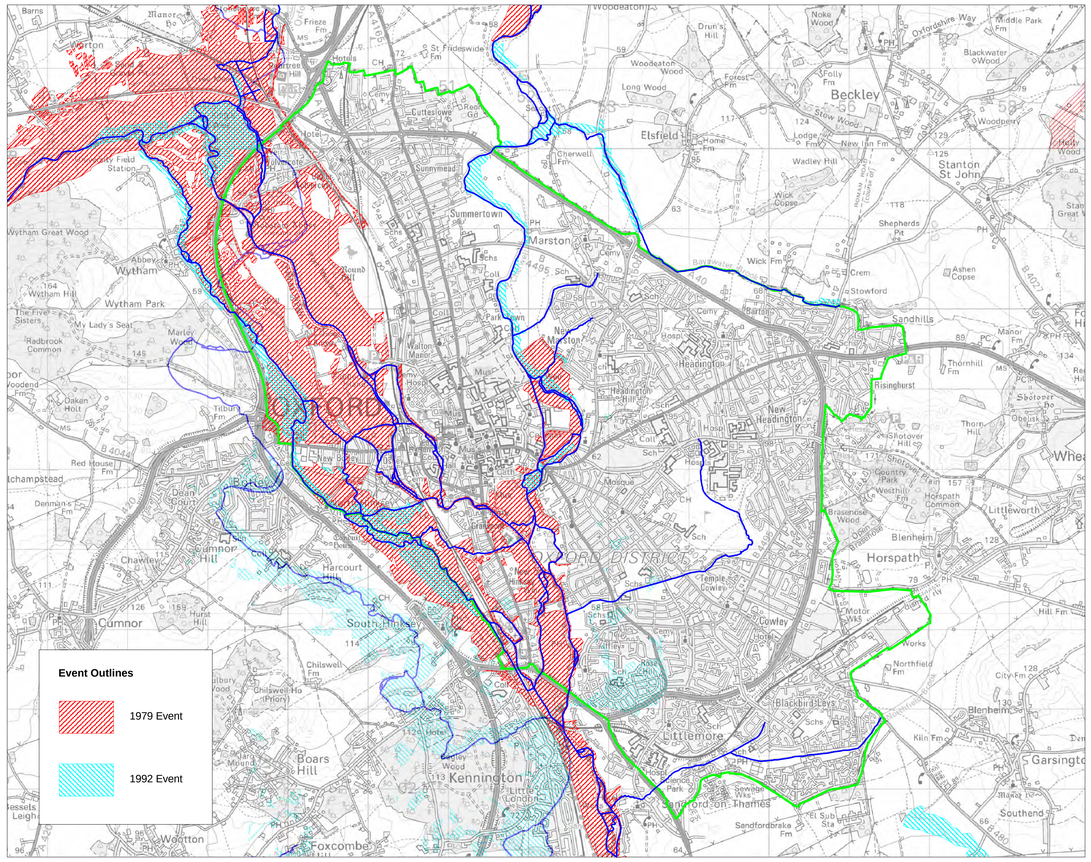
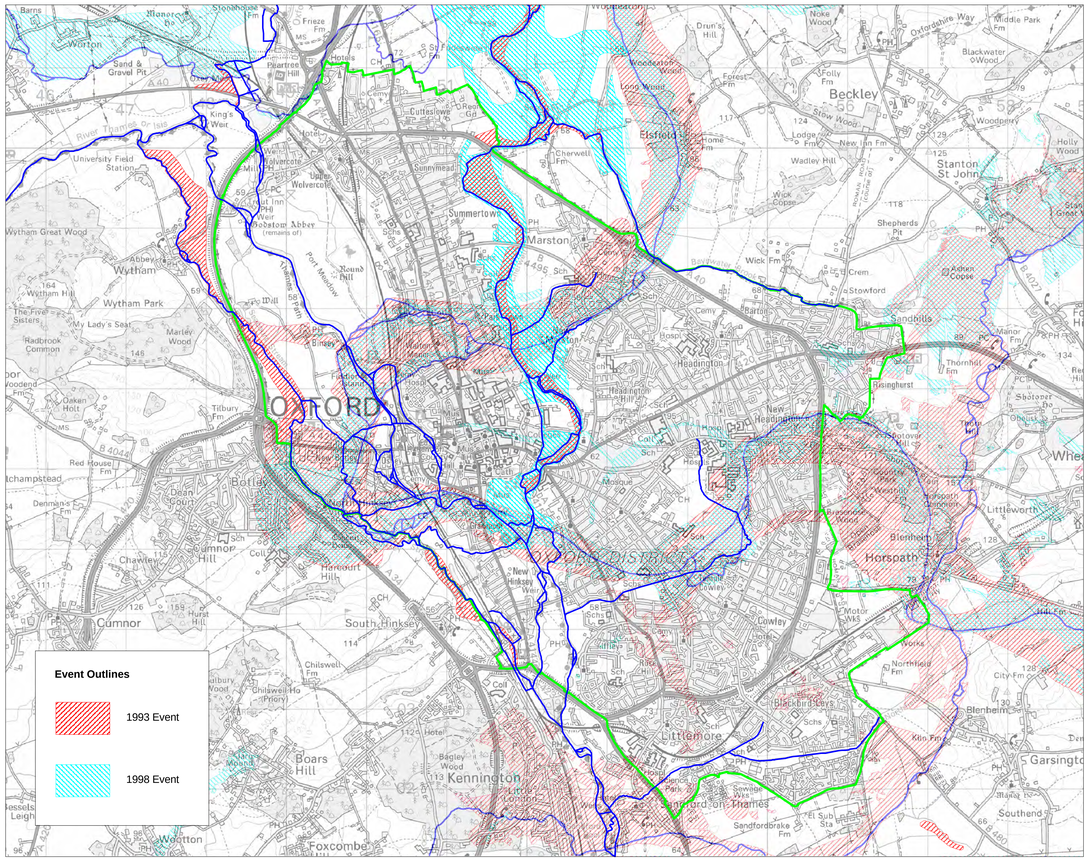
Appendix G

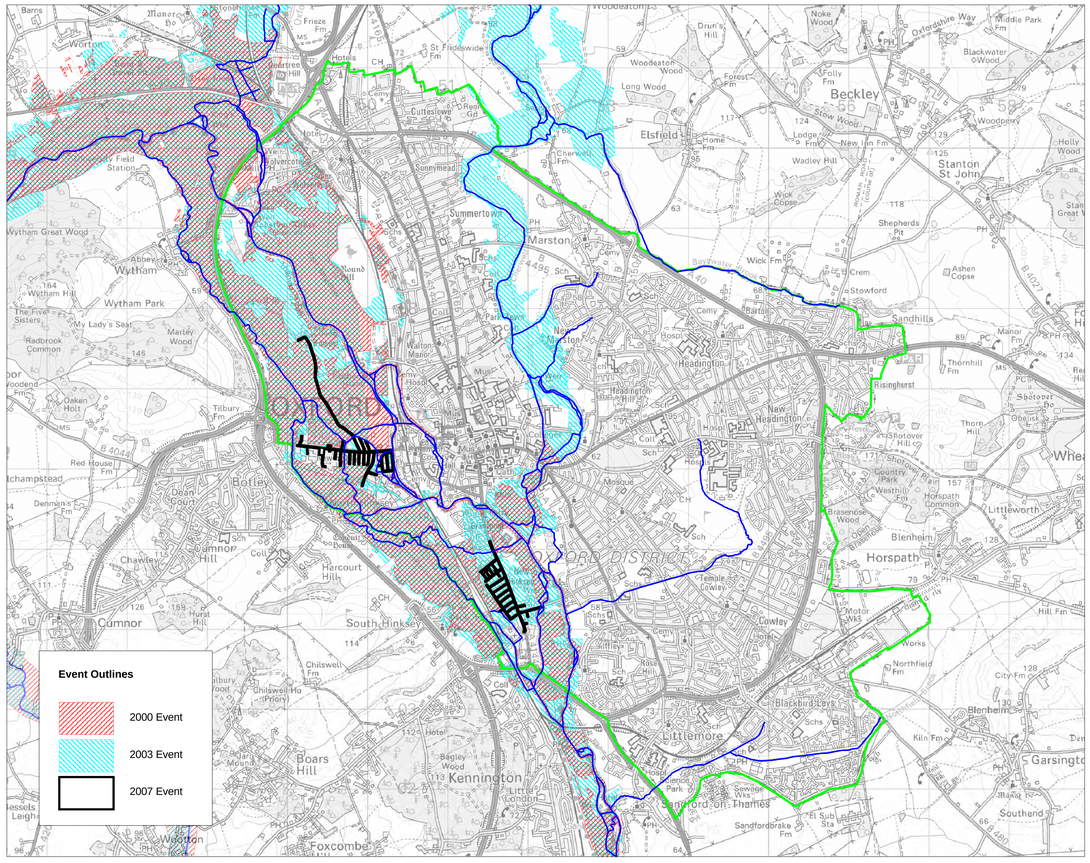
Historic Flood Outlines

Oxford City SFRA (March 2011) document ref. 5093353/62/DWG/003 – Appendix C









Legend

River Centreline

Study Boundary

SCALE: NTS

N

Project Title:

Oxford City SFRA - March 2011

Figure Title:

Historical Flood Outlines

Document Reference: **5093353/62/DWG/003**

Figure Number: **Appendix C**

OXFORD CITY COUNCIL

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Appendix H

Drained Area Plan

JPP Consulting drawing no. 28212-FRA02

General Notes

1. All dimensions are in metres unless otherwise stated.
2. All levels are in metres.
3. This drawing is to be read in conjunction with all relevant Engineers and Architect's drawings, Specifications, Reports and Engineering Details.
4. Do not scale from this drawing.
5. Based on Site Plan by Paul Hawkins Development, drawing number GCS/01/02 dated 05/03/2024.
6. Based on topographical information previously provided for the school.

Drawing Key

Total Drained Area
= 6,554m²

Drawing is not to be used for construction until status is CONSTRUCTION

jpp
- Infrastructure Design
- Structural Engineering
- Development Planning
- Professional Advice
- Geotechnical & Environmental
- Surveying

Northampton
Grand Union Works, Whilton Locks, Daventry
Northamptonshire, NN11 2NH
T: 01604 781811

Poole & Milton Keynes

E: mail@jppuk.net **W:** jppuk.net

Client	The Pope Francis Catholic Multi Academy Company
Project	Artificial Grass Pitch Resurfacing Greyfriars Catholic School, Cricket Road, Oxford
Title	Drained Area Plan

Scale at A2	Drawn by	Checked by	Date
1:500	TMK	KER	22/04/2024

Status	Project ref	Drawing no.	Revision
FOR PLANNING	28212	FRA02	0

Appendix I

Drainage Calculations: FEH 1 in 30 year

Summary of Results for 30 year Return Period

Half Drain Time : 86 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	99.173	0.173	0.0	12.6	12.6	72.7	O K
30 min Summer	99.190	0.190	0.0	13.3	13.3	87.7	O K
60 min Summer	99.204	0.204	0.0	13.5	13.5	100.2	O K
120 min Summer	99.212	0.212	0.0	13.6	13.6	108.5	O K
180 min Summer	99.215	0.215	0.0	13.6	13.6	111.6	O K
240 min Summer	99.215	0.215	0.0	13.6	13.6	111.9	O K
360 min Summer	99.212	0.212	0.0	13.6	13.6	108.3	O K
480 min Summer	99.206	0.206	0.0	13.5	13.5	102.2	O K
600 min Summer	99.199	0.199	0.0	13.4	13.4	95.4	O K
720 min Summer	99.191	0.191	0.0	13.3	13.3	88.6	O K
960 min Summer	99.178	0.178	0.0	12.9	12.9	76.4	O K
1440 min Summer	99.157	0.157	0.0	11.4	11.4	59.6	O K
2160 min Summer	99.136	0.136	0.0	9.6	9.6	44.6	O K
2880 min Summer	99.122	0.122	0.0	8.2	8.2	36.0	O K
4320 min Summer	99.102	0.102	0.0	6.2	6.2	24.9	O K
5760 min Summer	99.089	0.089	0.0	4.9	4.9	19.2	O K
7200 min Summer	99.080	0.080	0.0	4.1	4.1	15.6	O K
8640 min Summer	99.074	0.074	0.0	3.5	3.5	13.1	O K
10080 min Summer	99.068	0.068	0.0	3.1	3.1	11.2	O K
15 min Winter	99.187	0.187	0.0	13.2	13.2	85.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	86.613	0.0	79.2	18
30 min Summer	52.103	0.0	100.6	32
60 min Summer	31.343	0.0	126.3	60
120 min Summer	18.854	0.0	157.0	92
180 min Summer	14.006	0.0	177.5	126
240 min Summer	11.342	0.0	193.3	160
360 min Summer	8.425	0.0	217.4	228
480 min Summer	6.823	0.0	235.9	294
600 min Summer	5.793	0.0	251.0	358
720 min Summer	5.068	0.0	263.9	420
960 min Summer	4.077	0.0	282.9	540
1440 min Summer	3.001	0.0	310.8	780
2160 min Summer	2.208	0.0	339.5	1144
2880 min Summer	1.776	0.0	359.8	1500
4320 min Summer	1.259	0.0	369.9	2208
5760 min Summer	0.986	0.0	373.4	2944
7200 min Summer	0.816	0.0	373.0	3672
8640 min Summer	0.699	0.0	370.1	4408
10080 min Summer	0.613	0.0	365.5	5136
15 min Winter	86.613	0.0	91.9	18

Summary of Results for 30 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	99.206	0.206	0.0	13.5	13.5	102.6	O K
60 min Winter	99.221	0.221	0.0	13.7	13.7	117.7	O K
120 min Winter	99.228	0.228	0.0	13.7	13.7	125.4	O K
180 min Winter	99.229	0.229	0.0	13.7	13.7	126.9	O K
240 min Winter	99.227	0.227	0.0	13.7	13.7	124.9	O K
360 min Winter	99.219	0.219	0.0	13.6	13.6	116.1	O K
480 min Winter	99.208	0.208	0.0	13.5	13.5	105.0	O K
600 min Winter	99.197	0.197	0.0	13.4	13.4	93.9	O K
720 min Winter	99.186	0.186	0.0	13.2	13.2	83.8	O K
960 min Winter	99.168	0.168	0.0	12.2	12.2	68.3	O K
1440 min Winter	99.142	0.142	0.0	10.2	10.2	48.8	O K
2160 min Winter	99.119	0.119	0.0	7.9	7.9	34.3	O K
2880 min Winter	99.105	0.105	0.0	6.5	6.5	26.6	O K
4320 min Winter	99.086	0.086	0.0	4.6	4.6	17.8	O K
5760 min Winter	99.075	0.075	0.0	3.6	3.6	13.4	O K
7200 min Winter	99.067	0.067	0.0	3.0	3.0	10.8	O K
8640 min Winter	99.061	0.061	0.0	2.5	2.5	9.0	O K
10080 min Winter	99.057	0.057	0.0	2.2	2.2	7.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	52.103	0.0	116.0	32
60 min Winter	31.343	0.0	144.8	60
120 min Winter	18.854	0.0	179.2	98
180 min Winter	14.006	0.0	202.3	136
240 min Winter	11.342	0.0	220.1	174
360 min Winter	8.425	0.0	247.3	246
480 min Winter	6.823	0.0	268.2	316
600 min Winter	5.793	0.0	285.2	380
720 min Winter	5.068	0.0	299.8	442
960 min Winter	4.077	0.0	321.4	560
1440 min Winter	3.001	0.0	353.4	796
2160 min Winter	2.208	0.0	386.6	1148
2880 min Winter	1.776	0.0	410.4	1504
4320 min Winter	1.259	0.0	424.1	2244
5760 min Winter	0.986	0.0	430.3	2936
7200 min Winter	0.816	0.0	432.4	3672
8640 min Winter	0.699	0.0	431.7	4352
10080 min Winter	0.613	0.0	429.0	5080

Rainfall Details

Rainfall Model	FEH
Return Period (years)	30
FEH Rainfall Version	1999
Site Location	453350 204600 SP 53350 04600
C (1km)	-0.024
D1 (1km)	0.348
D2 (1km)	0.325
D3 (1km)	0.232
E (1km)	0.294
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.656

Time (mins) From:	To:	Area (ha)
0	4	0.656

Model Details

Storage is Online Cover Level (m) 100.000

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	57.0
Membrane Percolation (mm/hr)	1000	Length (m)	95.4
Max Percolation (l/s)	1510.5	Slope (1:X)	283.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	99.000	Membrane Depth (m)	300

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0168-1430-1200-1430
Design Head (m)	1.200
Design Flow (l/s)	14.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	168
Invert Level (m)	99.000
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	14.3
Flush-Flo™	0.365	14.2
Kick-Flo®	0.802	11.8
Mean Flow over Head Range	-	12.3

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.0	1.200	14.3	3.000	22.1	7.000	33.2
0.200	13.4	1.400	15.4	3.500	23.8	7.500	34.3
0.300	14.1	1.600	16.4	4.000	25.4	8.000	35.4
0.400	14.2	1.800	17.3	4.500	26.8	8.500	36.5
0.500	14.0	2.000	18.2	5.000	28.2	9.000	37.5
0.600	13.7	2.200	19.1	5.500	29.6	9.500	38.5
0.800	11.9	2.400	19.9	6.000	30.8		
1.000	13.1	2.600	20.6	6.500	32.0		

Appendix J

Drainage Calculations: FEH 1 in 100 year

Summary of Results for 100 year Return Period

Half Drain Time : 130 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	99.226	0.226	0.0	13.7	13.7	123.1	O K
30 min Summer	99.244	0.244	0.0	13.9	13.9	144.3	O K
60 min Summer	99.259	0.259	0.0	14.0	14.0	162.6	O K
120 min Summer	99.266	0.266	0.0	14.0	14.0	171.8	O K
180 min Summer	99.268	0.268	0.0	14.0	14.0	173.7	O K
240 min Summer	99.267	0.267	0.0	14.0	14.0	173.0	O K
360 min Summer	99.263	0.263	0.0	14.0	14.0	167.1	O K
480 min Summer	99.256	0.256	0.0	13.9	13.9	158.4	O K
600 min Summer	99.248	0.248	0.0	13.9	13.9	148.6	O K
720 min Summer	99.239	0.239	0.0	13.8	13.8	138.7	O K
960 min Summer	99.221	0.221	0.0	13.7	13.7	118.7	O K
1440 min Summer	99.191	0.191	0.0	13.3	13.3	87.9	O K
2160 min Summer	99.162	0.162	0.0	11.7	11.7	63.4	O K
2880 min Summer	99.143	0.143	0.0	10.2	10.2	49.5	O K
4320 min Summer	99.117	0.117	0.0	7.7	7.7	33.2	O K
5760 min Summer	99.102	0.102	0.0	6.2	6.2	25.1	O K
7200 min Summer	99.091	0.091	0.0	5.1	5.1	20.1	O K
8640 min Summer	99.083	0.083	0.0	4.4	4.4	16.8	O K
10080 min Summer	99.077	0.077	0.0	3.8	3.8	14.4	O K
15 min Winter	99.242	0.242	0.0	13.8	13.8	141.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	128.942	0.0	131.2	18
30 min Summer	76.013	0.0	159.4	32
60 min Summer	44.811	0.0	192.6	62
120 min Summer	26.416	0.0	231.4	106
180 min Summer	19.392	0.0	257.0	136
240 min Summer	15.573	0.0	276.6	170
360 min Summer	11.432	0.0	306.2	238
480 min Summer	9.180	0.0	328.7	306
600 min Summer	7.744	0.0	347.0	372
720 min Summer	6.739	0.0	362.5	436
960 min Summer	5.376	0.0	385.2	562
1440 min Summer	3.910	0.0	418.2	796
2160 min Summer	2.844	0.0	452.1	1148
2880 min Summer	2.269	0.0	476.0	1500
4320 min Summer	1.589	0.0	486.7	2208
5760 min Summer	1.234	0.0	490.5	2944
7200 min Summer	1.014	0.0	490.2	3672
8640 min Summer	0.864	0.0	487.3	4408
10080 min Summer	0.755	0.0	482.6	5136
15 min Winter	128.942	0.0	150.2	18

Summary of Results for 100 year Return Period

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	99.262	0.262	0.0	14.0	14.0	166.2	O K
60 min Winter	99.279	0.279	0.0	14.1	14.1	187.9	O K
120 min Winter	99.288	0.288	0.0	14.1	14.1	200.1	O K
180 min Winter	99.287	0.287	0.0	14.1	14.1	199.4	O K
240 min Winter	99.285	0.285	0.0	14.1	14.1	196.8	O K
360 min Winter	99.277	0.277	0.0	14.1	14.1	185.6	O K
480 min Winter	99.266	0.266	0.0	14.0	14.0	170.9	O K
600 min Winter	99.253	0.253	0.0	13.9	13.9	155.2	O K
720 min Winter	99.240	0.240	0.0	13.8	13.8	139.7	O K
960 min Winter	99.214	0.214	0.0	13.6	13.6	110.4	O K
1440 min Winter	99.173	0.173	0.0	12.6	12.6	72.8	O K
2160 min Winter	99.141	0.141	0.0	10.1	10.1	48.3	O K
2880 min Winter	99.123	0.123	0.0	8.3	8.3	36.4	O K
4320 min Winter	99.099	0.099	0.0	5.9	5.9	23.6	O K
5760 min Winter	99.085	0.085	0.0	4.6	4.6	17.5	O K
7200 min Winter	99.076	0.076	0.0	3.7	3.7	14.0	O K
8640 min Winter	99.069	0.069	0.0	3.2	3.2	11.5	O K
10080 min Winter	99.064	0.064	0.0	2.8	2.8	9.9	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	76.013	0.0	181.9	32
60 min Winter	44.811	0.0	219.1	60
120 min Winter	26.416	0.0	262.6	116
180 min Winter	19.392	0.0	291.3	146
240 min Winter	15.573	0.0	313.3	184
360 min Winter	11.432	0.0	346.7	260
480 min Winter	9.180	0.0	372.1	332
600 min Winter	7.744	0.0	392.7	402
720 min Winter	6.739	0.0	410.3	470
960 min Winter	5.376	0.0	436.0	594
1440 min Winter	3.910	0.0	473.6	822
2160 min Winter	2.844	0.0	512.6	1168
2880 min Winter	2.269	0.0	540.5	1524
4320 min Winter	1.589	0.0	554.8	2244
5760 min Winter	1.234	0.0	561.3	2936
7200 min Winter	1.014	0.0	563.3	3680
8640 min Winter	0.864	0.0	562.5	4328
10080 min Winter	0.755	0.0	559.8	5136

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	453350 204600 SP 53350 04600
C (1km)	-0.024
D1 (1km)	0.348
D2 (1km)	0.325
D3 (1km)	0.232
E (1km)	0.294
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+0

Time Area Diagram

Total Area (ha) 0.656

Time (mins) From:	To:	Area (ha)
0	4	0.656

Model Details

Storage is Online Cover Level (m) 100.000

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	57.0
Membrane Percolation (mm/hr)	1000	Length (m)	95.4
Max Percolation (l/s)	1510.5	Slope (1:X)	283.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	99.000	Membrane Depth (m)	300

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0168-1430-1200-1430
Design Head (m)	1.200
Design Flow (l/s)	14.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	168
Invert Level (m)	99.000
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	14.3
Flush-Flo™	0.365	14.2
Kick-Flo®	0.802	11.8
Mean Flow over Head Range	-	12.3

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.0	1.200	14.3	3.000	22.1	7.000	33.2
0.200	13.4	1.400	15.4	3.500	23.8	7.500	34.3
0.300	14.1	1.600	16.4	4.000	25.4	8.000	35.4
0.400	14.2	1.800	17.3	4.500	26.8	8.500	36.5
0.500	14.0	2.000	18.2	5.000	28.2	9.000	37.5
0.600	13.7	2.200	19.1	5.500	29.6	9.500	38.5
0.800	11.9	2.400	19.9	6.000	30.8		
1.000	13.1	2.600	20.6	6.500	32.0		

Appendix K

Drainage Calculations: FEH 1 in 100 year + 40% climate change

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

Half Drain Time : 190 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	99.277	0.277	0.0	14.1	14.1	185.5	O K
30 min Summer	99.300	0.300	0.0	14.1	14.1	217.4	O K
60 min Summer	99.320	0.320	0.0	14.2	14.2	247.5	O K
120 min Summer	99.333	0.333	0.0	14.2	14.2	268.0	O K
180 min Summer	99.335	0.335	0.0	14.2	14.2	271.1	O K
240 min Summer	99.335	0.335	0.0	14.2	14.2	270.9	O K
360 min Summer	99.331	0.331	0.0	14.2	14.2	265.6	O K
480 min Summer	99.326	0.326	0.0	14.2	14.2	256.5	O K
600 min Summer	99.319	0.319	0.0	14.2	14.2	245.6	O K
720 min Summer	99.311	0.311	0.0	14.2	14.2	234.0	O K
960 min Summer	99.293	0.293	0.0	14.1	14.1	208.3	O K
1440 min Summer	99.260	0.260	0.0	14.0	14.0	163.2	O K
2160 min Summer	99.217	0.217	0.0	13.6	13.6	113.5	O K
2880 min Summer	99.184	0.184	0.0	13.2	13.2	82.4	O K
4320 min Summer	99.147	0.147	0.0	10.5	10.5	52.1	O K
5760 min Summer	99.126	0.126	0.0	8.6	8.6	38.4	O K
7200 min Summer	99.112	0.112	0.0	7.2	7.2	30.4	O K
8640 min Summer	99.102	0.102	0.0	6.2	6.2	25.2	O K
10080 min Summer	99.094	0.094	0.0	5.4	5.4	21.5	O K
15 min Winter	99.296	0.296	0.0	14.1	14.1	211.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	180.518	0.0	194.7	18
30 min Summer	106.418	0.0	234.2	33
60 min Summer	62.735	0.0	280.8	62
120 min Summer	36.983	0.0	335.4	120
180 min Summer	27.149	0.0	371.5	158
240 min Summer	21.802	0.0	399.2	190
360 min Summer	16.005	0.0	441.2	254
480 min Summer	12.853	0.0	473.2	322
600 min Summer	10.842	0.0	499.4	390
720 min Summer	9.435	0.0	521.7	458
960 min Summer	7.527	0.0	554.4	590
1440 min Summer	5.474	0.0	602.9	840
2160 min Summer	3.981	0.0	653.5	1192
2880 min Summer	3.176	0.0	690.3	1528
4320 min Summer	2.224	0.0	711.9	2244
5760 min Summer	1.728	0.0	723.6	2944
7200 min Summer	1.420	0.0	729.8	3672
8640 min Summer	1.210	0.0	732.3	4408
10080 min Summer	1.057	0.0	732.2	5136
15 min Winter	180.518	0.0	221.3	18

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

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	99.320	0.320	0.0	14.2	14.2	248.2	O K
60 min Winter	99.342	0.342	0.0	14.2	14.2	283.2	O K
120 min Winter	99.358	0.358	0.0	14.2	14.2	309.8	O K
180 min Winter	99.362	0.362	0.0	14.2	14.2	315.4	O K
240 min Winter	99.360	0.360	0.0	14.2	14.2	312.5	O K
360 min Winter	99.354	0.354	0.0	14.2	14.2	303.3	O K
480 min Winter	99.346	0.346	0.0	14.2	14.2	288.9	O K
600 min Winter	99.335	0.335	0.0	14.2	14.2	271.7	O K
720 min Winter	99.324	0.324	0.0	14.2	14.2	253.5	O K
960 min Winter	99.298	0.298	0.0	14.1	14.1	214.3	O K
1440 min Winter	99.247	0.247	0.0	13.9	13.9	147.6	O K
2160 min Winter	99.186	0.186	0.0	13.2	13.2	83.9	O K
2880 min Winter	99.157	0.157	0.0	11.4	11.4	59.5	O K
4320 min Winter	99.123	0.123	0.0	8.3	8.3	36.3	O K
5760 min Winter	99.104	0.104	0.0	6.4	6.4	26.4	O K
7200 min Winter	99.093	0.093	0.0	5.3	5.3	20.8	O K
8640 min Winter	99.084	0.084	0.0	4.5	4.5	17.2	O K
10080 min Winter	99.078	0.078	0.0	3.9	3.9	14.7	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	106.418	0.0	265.7	32
60 min Winter	62.735	0.0	317.8	62
120 min Winter	36.983	0.0	379.0	118
180 min Winter	27.149	0.0	419.6	172
240 min Winter	21.802	0.0	450.6	220
360 min Winter	16.005	0.0	497.9	276
480 min Winter	12.853	0.0	534.0	352
600 min Winter	10.842	0.0	563.4	426
720 min Winter	9.435	0.0	588.5	498
960 min Winter	7.527	0.0	625.5	636
1440 min Winter	5.474	0.0	680.4	892
2160 min Winter	3.981	0.0	738.1	1212
2880 min Winter	3.176	0.0	780.4	1556
4320 min Winter	2.224	0.0	806.8	2244
5760 min Winter	1.728	0.0	822.2	2952
7200 min Winter	1.420	0.0	831.4	3672
8640 min Winter	1.210	0.0	836.4	4408
10080 min Winter	1.057	0.0	838.6	5144

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	1999
Site Location	453350 204600 SP 53350 04600
C (1km)	-0.024
D1 (1km)	0.348
D2 (1km)	0.325
D3 (1km)	0.232
E (1km)	0.294
F (1km)	2.450
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.656

Time (mins) From:	To:	Area (ha)
0	4	0.656

Model Details

Storage is Online Cover Level (m) 100.000

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	57.0
Membrane Percolation (mm/hr)	1000	Length (m)	95.4
Max Percolation (l/s)	1510.5	Slope (1:X)	283.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	99.000	Membrane Depth (m)	300

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0168-1430-1200-1430
Design Head (m)	1.200
Design Flow (l/s)	14.3
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	168
Invert Level (m)	99.000
Minimum Outlet Pipe Diameter (mm)	225
Suggested Manhole Diameter (mm)	1500

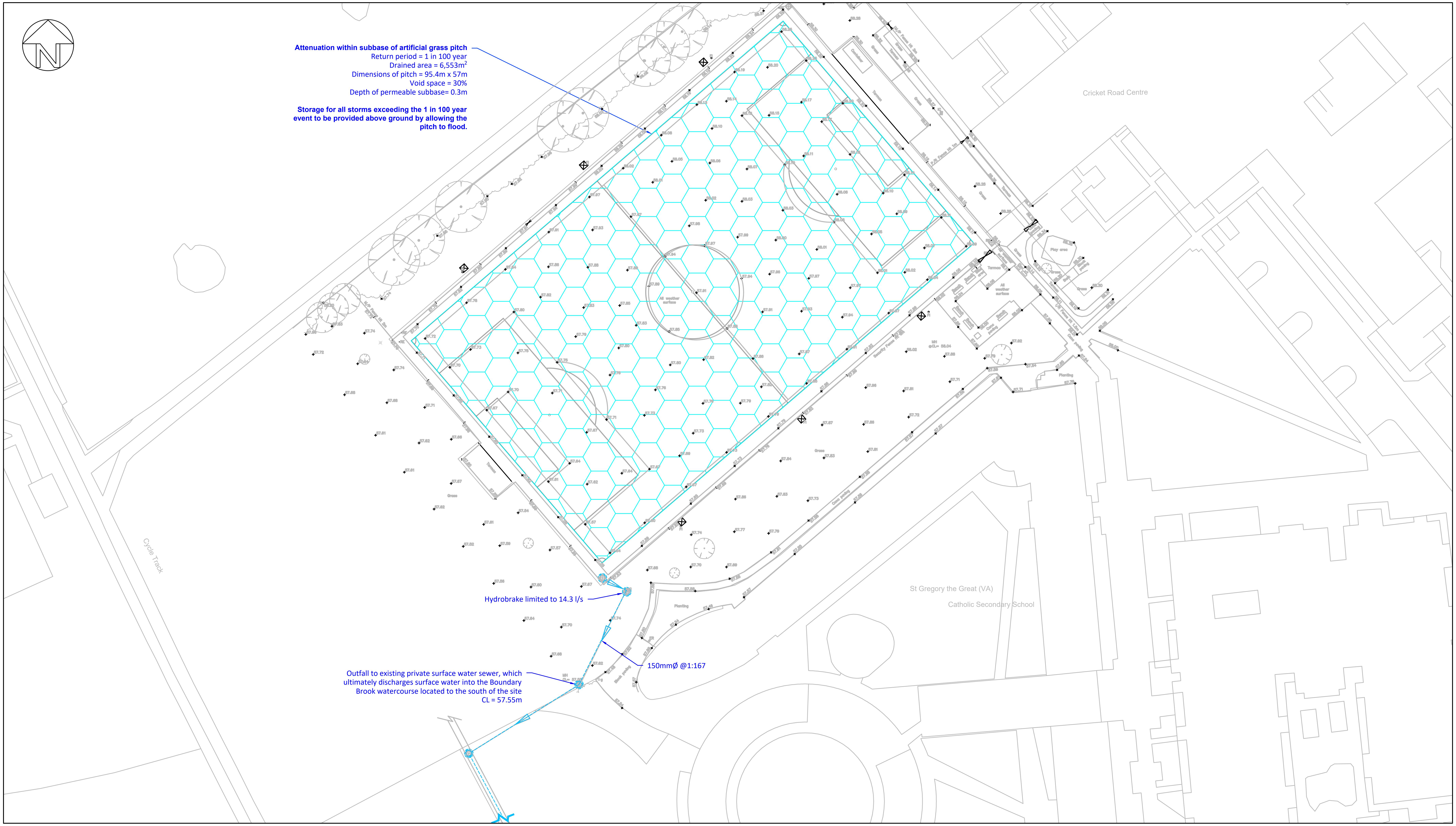
Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.200	14.3
Flush-Flo™	0.365	14.2
Kick-Flo®	0.802	11.8
Mean Flow over Head Range	-	12.3

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	6.0	1.200	14.3	3.000	22.1	7.000	33.2
0.200	13.4	1.400	15.4	3.500	23.8	7.500	34.3
0.300	14.1	1.600	16.4	4.000	25.4	8.000	35.4
0.400	14.2	1.800	17.3	4.500	26.8	8.500	36.5
0.500	14.0	2.000	18.2	5.000	28.2	9.000	37.5
0.600	13.7	2.200	19.1	5.500	29.6	9.500	38.5
0.800	11.9	2.400	19.9	6.000	30.8		
1.000	13.1	2.600	20.6	6.500	32.0		

Appendix L

Proposed Drainage Strategy
JPP Consulting drawing no. 28212-FRA03



General Notes

1. All dimensions are in metres unless otherwise stated.
2. All levels are in metres.
3. This drawing is to be read in conjunction with all relevant Engineers and Architect's drawings, Specifications, Reports and Engineering Details.
4. Do not scale from this drawing.
5. Based on Site Plan by Paul Hawkins Development, drawing number GCS/01/02 dated 05/03/2024.
6. Based on topographical information previously provided for the school.

Drawing Key

Existing Surface Water Drainage

Surface Water Attenuation within Sub base of Artificial Grass Pitch (AGP)

Drawing is not to be used for construction until status is CONSTRUCTION

jpp

- Infrastructure Design
- Structural Engineering
- Development Planning
- Professional Advice
- Geotechnical & Environmental
- Surveying

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Client	The Pope Francis Catholic Multi Academy Company
Project	Artificial Grass Pitch Resurfacing Greyfriars Catholic School, Cricket Road, Oxford
Title	Proposed Drainage Strategy

Scale at A2	Drawn by	Checked by	Date
1:500	TMK	KER	22/04/2024

Status	Project ref	Drawing no.	Revision
FOR PLANNING	28212	FRA03	0

Appendix M
Overland Flows
JPP Consulting drawing no. 28212-FRA04

General Notes

1. All dimensions are in metres unless otherwise stated.
2. All levels are in metres.
3. This drawing is to be read in conjunction with all relevant Engineers and Architect's drawings, Specifications, Reports and Engineering Details.
4. Do not scale from this drawing.
5. Based on Site Plan by Paul Hawkins Development, drawing number GCS/01/02 dated 05/03/2024.
6. Based on topographical information previously provided for the school.

Drawing Key

Overland Flows

Drawing is not to be used for construction until status is CONSTRUCTION

jpp
- Infrastructure Design
- Structural Engineering
- Development Planning
- Professional Advice
- Geotechnical & Environmental
- Surveying

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Client	The Pope Francis Catholic Multi Academy Company
Project	Artificial Grass Pitch Resurfacing Greyfriars Catholic School, Cricket Road, Oxford
Title	Overland Flows

Scale at A2	Drawn by	Checked by	Date
1:500	TMK	KER	22/04/2024

Status	Project ref	Drawing no.	Revision
FOR PLANNING	28212	FRA04	0