CHESWICK GREEN PRIMARY SCHOOL

FLOOD RISK ASSESSMENT & SURFACE WATER DRAINAGE STRATEGY

Solihull Building Design Studio

CGR-WSP-XX-XX-RP-0500 RV2
APRIL 2021

PUBLIC

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Solihull Building Design Studio

REPORT (RV2) PUBLIC

PROJECT NO. 70078885

OUR REF. NO. CGR-WSP-XX-XX-RP-0500 RV2

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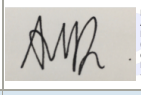
Signature		 Digitally signed by Durkin, Aimee (UKAMD008) DN: cn=Durkin, Aimee (UKAMD008), ou=Active, email=Aimee.Durkin@wsp.com Date: 2021.04.22 15:28:50 +01'00'		
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EXECUTIVE SUMMARY

This Flood Risk Assessment has been undertaken to accompany the full planning application for the proposed development at Cheswick Green Primary School in accordance with the guidelines set out in the National Planning Policy Framework (NPPF) published in February 2019 along with other relevant local and national guidance including CIRIA C624 Development and Flood Risk.

Item	Overview
Site Location	The site is located at the existing Cheswick Green Primary School. Address: Cheswick Way, Shirley, Cheswick Green, Solihull, B90 4HG.
Development Proposals	Development of 5 additional class bases and an additional reception class base with changes to the external landscape for play areas and a multi-use gym area. Additional staff car parking will also be developed and future provision of site access and additional parking on land to the east of the School.
Environment Agency Flood Zone(s)	The site has been identified to lie wholly within Flood Zone 1.
Vulnerability Classification(s)	'More Vulnerable' – Educational Establishment
Fluvial Flood Risk	Due to the sites location within Flood Zone 1 there is assumed to be low risk of fluvial flooding.
Tidal Flood Risk	Very Low risk of tidal flooding due to the inland location of the site.
Surface Water Flood Risk	Low risk of surface water flooding.
Groundwater Flood Risk	Low risk of groundwater flooding.
Sewer Flood Risk	Low risk of sewer flooding.
Artificial Flood Risk	Low risk of flooding from artificial sources.
Storm Drainage	Surface water will be managed through a network of a shallow swale and a shallow basin before discharging into the existing surface water infrastructure on site or existing Severn Trent Water surface water sewers in Cheswick Way.

1. INTRODUCTION

1.1. BACKGROUND

1.1.1. WSP has been appointed by Solihull Building Design Studio to prepare this Flood Risk Assessment (FRA) and Surface Water Drainage Strategy to support the planning application at Cheswick Green Primary School (Post Code: B90 4HG).

1.1.2. The objective of the study is to demonstrate that the site can be developed safely, without exposing the development to an unacceptable degree of flood risk or increasing the flood risk to third parties. The objectives are to:

- Identify the likely potential sources of flooding which may affect the site;
- Undertake an appraisal of the flood risk posed to the site and potential impact of the development on flood risk elsewhere; and,
- Provide an indicative surface water drainage strategy to demonstrate that surface water from the proposed development may be sustainably managed.

1.2. LIMITATIONS

1.2.1. WSP has prepared this report in accordance with the instructions of their client, Solihull Metropolitan Borough Council, for their sole and specific use. Any person who uses any information contained herein do so at their own risk.

1.2.2. The conclusions and recommendations contained herein are limited by the availability of background information and the planned use for the site.

1.2.3. Third party information has been used in the preparation of this report, which WSP UK Ltd, by necessity assumes is correct at the time of writing. Whilst all reasonable checks have been made on data sources and the accuracy of the data, WSP UK Ltd accepts no liability for same.

1.3. CONSTRUCTION (DESIGN AND MANAGEMENT) REGULATIONS 2015

1.3.1. The revised Construction (Design and Management) Regulations 2015 (CDM Regulations) came into force on April 2015 to update certain duties on all parties involved in a construction project, including those promoting the development. One of the designer's responsibilities under clause 9 (1) is to ensure that the client organisation, in this instance Solihull Metropolitan Borough Council, is made aware of their duties under the CDM Regulations.

1.4. SCOPE OF ASSESSMENT

1.4.1. The assessment has been undertaken in accordance with the overarching national requirements for Flood Risk Assessments for proposed developments including, but not limited to, the following:

- National Planning Policy Framework (NPPF)
- Development and Flood Risk (C624)
- The SuDS Manual (CIRIA C753)
- Flood Risk Assessments: Climate Change Allowances
- DEFRA R&D Technical Report W5-074/A/TR/1 Revision D

- Rainfall Runoff Management for Developments Report – SC030219

1.4.2. The flood risk assessment is solely to be used for the educational development at Cheswick Green Primary School.

1.5. CONSULTATION

1.5.1. Ahead of production of this report, initial pre-application consultation requests were issued to the relevant stakeholders with the following responses, summarised in Table 1, received.

Table 1 - Stakeholder Consultation Summary

Stakeholder	Date Received	Comments
Solihull Metropolitan Borough Council, Lead Local Flood Authority (LLFA)	18.11.2020	The LLFA highlighted the requirements for the drainage to contain the 1 in 30 year and 1 in 100 year events including climate change.
Environment Agency (EA)	11.11.2020	The Environment Agency stated that they did not hold any records for the information that we requested.
Severn Trent Water	06.11.2020	Initial consultation has been undertaken but no response has been received at this stage.
Solihull Metropolitan Borough Council, Lead Local Flood Authority (LPA)	10.03.2021	The LPA provided Pre-Application Advice that set out requirements and suggestions for the development including drainage: They expect any application to use a range of SuDS features, with a minimum two stage treatment train incorporated into the design with provision for above ground storage and conveyance made in order to maximise water quality and biodiversity benefits. The LLFA will not readily accept underground attenuation tanks as part of the strategy. Discharge rates must be limited by way of an appropriate control device to the site specific greenfield rate runoff and the drainage hierarchy for discharge location followed with preference given to infiltration where ground conditions prove appropriate.
Meeting with Solihull Metropolitan Borough Council, Lead Local Flood Authority (LLFA)	08.04.2021	A meeting with the LLFA determined that above ground SuDS features are the preferred approach to drainage strategies as opposed to underground storage and that 5l/s is a suitable discharge rate.

1.5.2. The full consultation responses are contained in Appendix C and have been thereafter used, where relevant within the report.

2. SITE SETTING

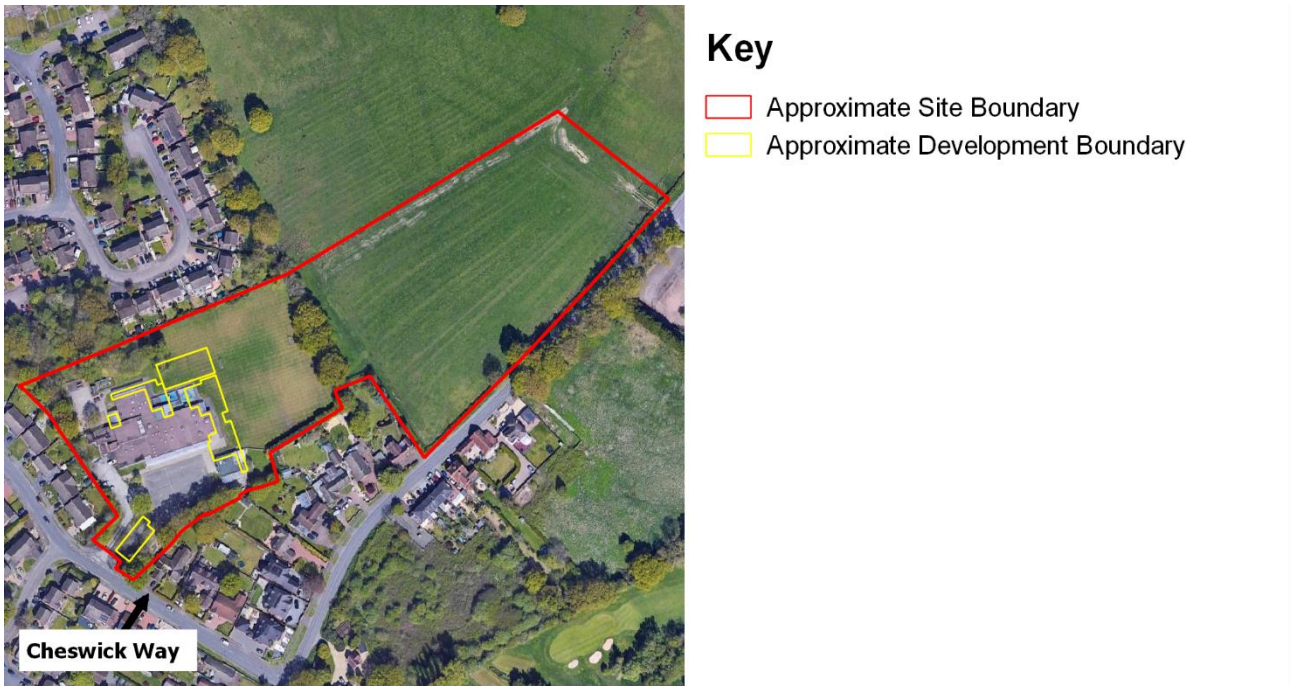
2.1. LOCATION

2.1.1. The development site is located on the existing Cheswick Green Primary School site which encompasses approximately 1.6ha, located in Cheswick Green, Solihull. The proposed development comprises 0.15ha inside the site boundary.

2.1.2. The site is bound to the south, north and west by existing residential properties; and to the east by greenfield, agricultural land. Access to the site is located to the south west from Cheswick Way, the postcode for the site is B90 4HG.

2.1.3. The site location plan is shown in Figure 1 and is also included in Appendix A.

Figure 1 – Site Location



2.2. DEVELOPMENT PROPOSALS

2.2.1. The development proposals comprise "*an additional 1 form entry to the existing school, this will consist of 5 additional class bases and an additional reception class base, single storey in height and in keeping with existing school. The external landscape for play areas will be amended to suit the expansion with the intention of introducing a multi-use gym area within the school play area. Additional staff car parking will be provided within the school parking area and future provision of site access and additional parking on land to the East of the School*".

2.3. EXISTING TOPOGRAPHY & DRAINAGE REGIME

2.3.1. A detailed topographic survey was undertaken by Global Surveys in November 2020. This identifies the site to be generally flat with levels falling from a high point of approximately 140.1mAOD along the northern boundary to a low point of approximately 138.8mAOD in the drainage channel at the south west corner of the tarmac play area.

2.4. EXISTING DRAINAGE NETWORK

2.4.1. Severn Trent Water asset mapping dated 14th November 2020 has been made available and is included within Appendix C. This identifies that there is an existing surface water sewer located underneath Cheswick Way, to the south west of the Site.

2.4.2. The baseline drainage features described above are shown indicatively in Figure 2 and drawing CGR-WSP-XX-XX-DR-CV-0500 contained in Appendix A.

Figure 2 – Baseline Drainage Features

2.5. GEOLOGICAL AND HYDROGEOLOGICAL CONTEXT

Geology

2.5.1. Reference to the British Geological Survey (BGS) published mapping identifies the site to be underlain by bedrock of Mercia Mudstone Group - Mudstone, with overlying superficial deposits of Till, Mid Pleistocene - Diamicton. An extract of the BGS map showing the underlying bedrock and superficial deposits is shown in Figure 3 and Figure 4 respectively.

Figure 3 – BGS Bedrock Map Extract

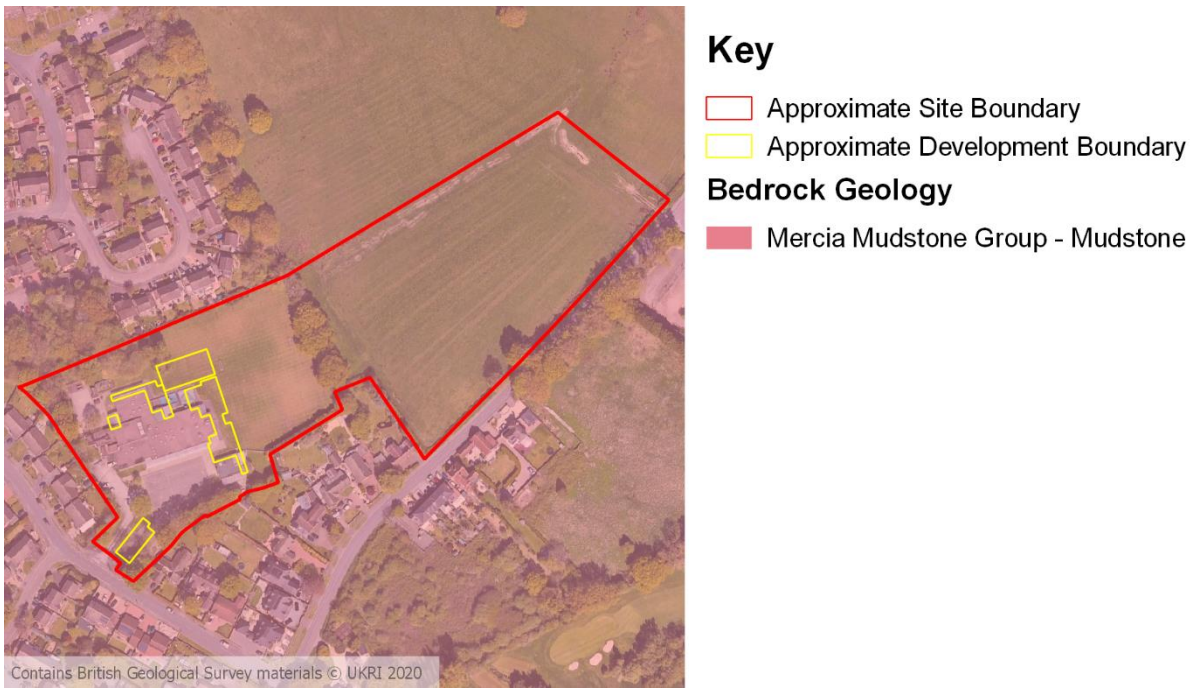
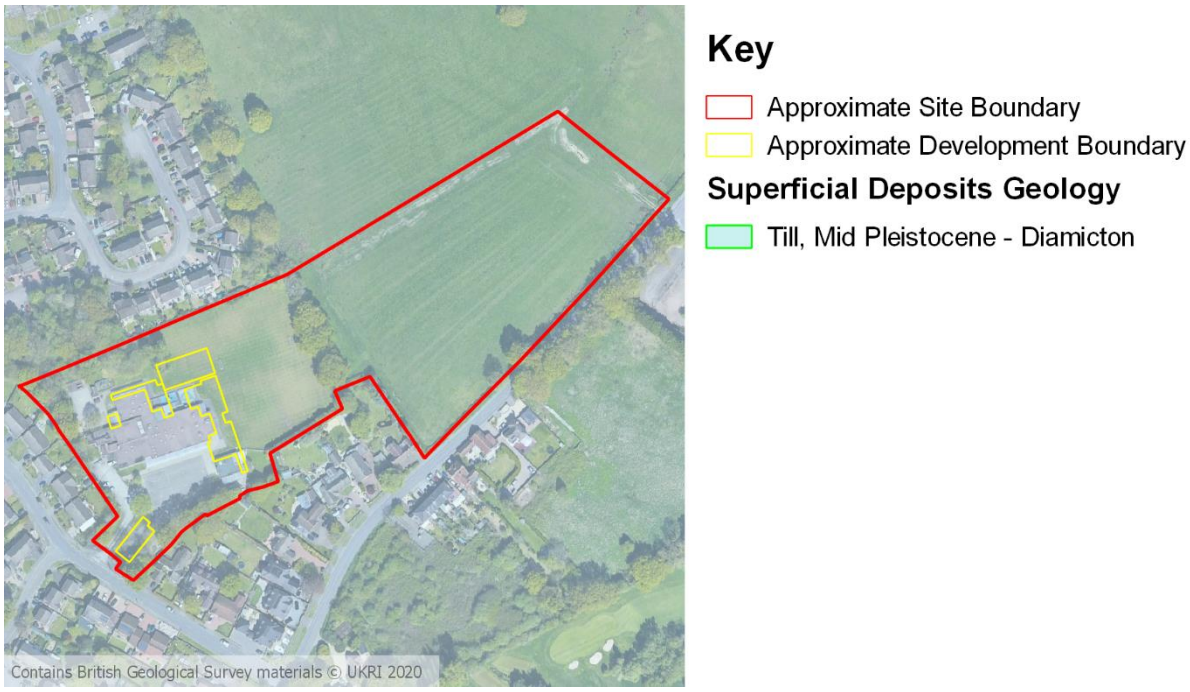


Figure 4 – BGS Superficial Deposits Map Extract



2.5.2. There are no boreholes registered within the site boundary. The closest borehole where records are publicly available is found approximately 250m east of the site, at the TSB Management College with 14 boreholes on the site. The deepest available borehole at this site has a maximum depth of 10m and may provide some indication of soil at the site as shown below.

Table 2 - BGS Borehole Summary

Description	Approximate Depth [mBGL]
Topsoil.	0 - 0.3
Soft to firm light brown, yellow brown and grey silty slightly sandy CLAY with occasional sand pockets.	0.3 - 1.7
Stiff, becoming very stiff red brown, occasional grey green silty slightly sandy CLAY with occasional fine to course gravel.	1.7 - 5.1
Medium dense brown very sandy fine to coarse GRAVEL with cobbles. Clayey in upper horizons.	5.1 - 8.6
Very stiff to hard very friable red brown and grey green very silty CLAY with lithorelicts.	8.6 - 10

Hydrogeology

2.5.3. According to the Source Protection Zone map provided by the Environment Agency, the site does not lie within any Source Protection Zone.

2.5.4. The online DEFRA MAGIC aquifer mapping (Superficial Deposits Designation) indicates that the site is underlined by a 'Secondary (undifferentiated)' aquifer. This aquifer has *"not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type."*.

2.5.5. The online DEFRA MAGIC aquifer mapping (Bedrock Designation) indicates that the site comprises stratum that is considered a 'Secondary B' aquifer. That is *"predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers."*

2.5.6. Given the above likely geology for the site, infiltration is assumed to be unlikely due to the clay and mudstone identified. Given this, infiltration testing may be undertaken prior to the next design stage to confirm this.

3. POLICY CONTEXT

3.1. NATIONAL PLANNING POLICY FRAMEWORK 2019

3.1.1. The Updated National Planning Policy Framework (NPPF), published in February 2019, sets out the Government's national policies for flood risk management in a land use planning context within England.

3.1.2. Paragraph 155 of the NPPF states "*Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere."*

3.1.3. The guidance further states that local planning authorities should *"ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment."*

3.1.4. Allocation and planning of development must therefore be considered against a risk-based search sequence as provided by the guidance.

3.2. LOCAL PLANNING POLICY

Solihull Metropolitan Borough Council Strategic Flood Risk Assessment, April 2017

3.2.1. The Strategic Flood Risk Assessment (SFRA) was produced on behalf of Solihull Metropolitan Borough Council by JBA Consulting in April 2017 which replaces the Level 1 Strategic Flood Risk Assessment produced in January 2008.

3.2.2. The SFRA assess the impact of climate change in Solihull Metropolitan Borough and indicates where areas currently shown to be in Flood Zone 1, may be affected by climate change within the climate change modelling. One of the areas determined to be affected is "*Residential and commercial areas around the vicinity of Cheswick Way and Willow Drive in Cheswick Green, near the Mount Brook and River Blythe".*

3.2.3. The report does not mention the site specifically, however the SFRA mentions that a "*main historical fluvial flood event took place in July 2007 where over 20 houses were flooded in Nethercote Gardens and Cheswick Green*" it is not mentioned the extent of the flooding, or what area of Cheswick Green was flooded.

3.2.4. The report does not mention the site specifically, however the SFRA mentions that Solihull has experienced a number of historic surface water drainage related flood events caused by a number of mechanisms such as culvert blockages.

3.2.5. To combat the flood risk the SFRA suggests providing Green infrastructure, *"for recreation, amenity and environmental purposes, allowing the preservation of flow routes and flood storage, and at the same time providing valuable social and environmental benefits contributing to other sustainability objectives".*

3.2.6. The SFRA also indicates the requirements for the use of SuDS in developments and defines the various SuDS that can be used. It recommends that re-development of land should seek opportunities to reduce overall level of flood risk at the site by reducing volume and rate of runoff through the use of SuDS and creating space for flooding.

3.2.7. The proposed surface water drainage strategy aims to utilise as many SuDS systems as feasible within the space of the development to improve water quality and attenuate surface water runoff. The surface water drainage proposed aims to attenuate surface water flooding within the site and discharge to the existing drainage network at greenfield rates.

Solihull Local Plan: Shaping a Sustainable Future, December 2013

3.2.8. The Solihull Local Plan produced by Solihull Metropolitan Borough Council in December 2013, provides guidelines on Policy P11, Water Management, which is as following:

"*Developers shall undertake thorough risk assessments of the impact of proposals on surface and groundwater systems and incorporate appropriate mitigation measures where necessary. The Council will expect developers to demonstrate that all proposed development will be served by appropriate sewerage infrastructure and that there is sufficient sewage treatment capacity to ensure that there is no deterioration of water quality, or that the delivery of any development will not be delayed by the need for additional water treatment provision.*

All new development shall incorporate sustainable drainage systems, unless it is shown to be impractical to do so. Developers shall ensure that adequate space is made for water within the design layout of all new developments to support the full use of sustainable drainage systems and shall demonstrate that improvements to the water environment will be maximised through consideration of a range of techniques. Wherever possible, sustainable drainage systems will be expected to contribute towards wider sustainability considerations, including amenity, recreation, conservation of biodiversity and landscape character, as well as flood alleviation and water quality control.

Developers shall explore opportunities to contribute towards the objectives of relevant Catchment Flood Management Plans. Wherever possible, development should promote the reduction of flood risk by seeking to reinstate the natural floodplain, the de-culverting of watercourses and the limiting of surface water runoff to green field rates via the use of sustainable drainage techniques. On all development sites larger than 1 hectare, surface water discharge rates shall be limited to the equivalent site-specific Greenfield run off rate. Developers will be expected to demonstrate that the layout and design of a development takes account of the surface water flows in extreme events so as to avoid flooding of properties, both within and outside the site. Applications for new development where there is a flood risk issue should be accompanied by a site flood risk assessment. Developers are encouraged to secure reduction of flood risk by the provision or enhancement of green infrastructure, wherever possible."

3.2.9. The proposed surface water drainage strategy will limit the discharge rate to greenfield runoff rates and ensure any existing flooding is managed on site.

Solihull Local Plan – Draft Submission Plan, October 2020

3.2.10. Policy P11 of the Solihull Local Plan has been updated within the Draft Submission Plan published October 2020, in which it states that

- "*<u>All development must include the use of above ground sustainable drainage systems</u>, in order to contribute towards wider sustainability considerations, including amenity, recreation, conservation of biodiversity and landscape character, as well as flood alleviation and water quality control.*
- *At an early stage, developers must ensure that adequate space is made for the above ground storage of surface water within the design layout of all new developments to support the full use of sustainable drainage systems (SuDS) and must demonstrate that improvements to water*

quality will be maximised through consideration of a range of techniques. All developments must explore opportunities to provide betterment in terms of water quality and quantity to the wider area and provide evidence as to the potential for cumulative benefits to be delivered through the implementation of a strategic approach to risk reduction."

Preliminary Flood Risk Assessment Report Solihull Metropolitan Borough Council - May 2011

3.2.11. The production of the Preliminary Flood Risk Assessment was undertaken to identify flood risk areas and provide guidance to be used to support the development of local flood risk management strategies.

3.2.12. Within the PFRA there is a summary of historic flooding within Solihull Borough which states that:

- "*There are no confirmed records of groundwater flooding within the borough*
- *There are a number of canals and impounded water bodies within the Solihull area. There is only one record of flooding from an artificial course*."

A Guide to SuDS and Drainage in Solihull, 2015

3.2.13. The Developer's Guide produced by Solihull Metropolitan Borough Council provides guidelines on how to design SuDS within the development. It quotes policies from the Solihull Local Plan and Strategic Flood Risk Assessment.

3.2.14. The proposed surface water drainage strategy will aim to use SuDS to enhance the site and improve the water quality and aim to reduce the use of underground pipework through the incorporation of swales in the surface water drainage design.

4. ASSESSMENT OF FLOOD RISK

4.1. OVERVIEW

4.1.1. Having completed desk-based assessments, the possible flooding mechanisms at the site are summarised below:

Table 3 - Flood Risk Overview

Mechanism	Risk	Comment
Fluvial	Low	Due to the location of the site within Flood Zone 1 it can be considered to be at low risk of fluvial flooding.
Tidal	Very Low	Due to the inland location of the site, tidal flooding is considered to be very low.
Surface Water	Low	A small area to the south of the site is considered to be at risk of surface water flooding however this is an isolated area and does not pose a risk to the site hence the surface water flood risk is considered low.
Ground Water	Low	Given the underlying geology and nearby borehole record data, groundwater flood risk is considered low.
Sewers	Low	No sewers are identified within the site hence the risk of sewer flooding is considered low.
Artificial Sources	Low	The site is not located within any area of influence of reservoir flooding or within close proximity of any canals, as such risk of flooding from artificial sources may be considered to be low.

4.2. HISTORIC FLOODING

4.2.1. It is understood from the Solihull MBC Level 1 SFRA, historic flooding occurred within Cheswick Green in July 2007 with that flood event estimated as a 1 in 75 year return period event. It is also understood a number of other historic flood events have occurred, primarily as a combination of surface water flooding and fluvial flooding from the River Blythe.

4.2.2. Notwithstanding, Solihull MBC LLFA have stated in correspondence (provided in Appendix C) *"In terms of flooding we are not aware of any properties within or surrounding the site that have suffered from flooding."*

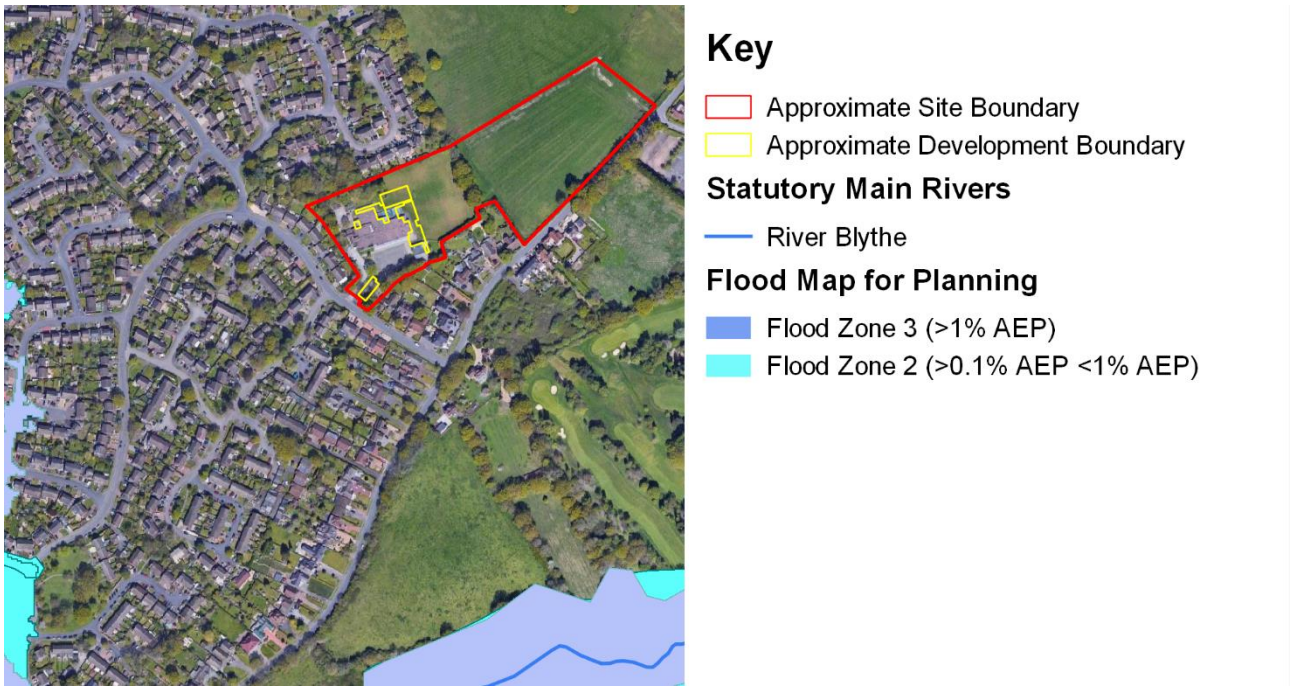
4.3. FLUVIAL FLOOD RISK

4.3.1. Reference to the publicly available Flood Map for Planning confirms that the site currently lies wholly within Flood Zone 1, outside of both the Flood Zone 3 (1 in 100 year) and Flood Zone 2 (1 in 1,000 annual probability of river flooding).

4.3.2. The nearest Main River to the site, with associated flood extents, is the River Blythe which runs approximately 450m to the south of the site.

An extract of the Flood Map for Planning is available as Figure 5.

Figure 5 - Environment Agency Flood Map for Planning



Vulnerability Classification

4.3.3. The development is classified as "*More Vulnerable*" under the NPPF which is defined as follows:

"More Vulnerable

- *Hospitals*
- *Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.*
- *Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.*
- ***Non–residential uses for** health services, nurseries and **educational establishments**.*
- *Landfill* and sites used for waste management facilities for hazardous waste.*
- *Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan."*

4.3.4. Given that the site is located wholly within Flood Zone 1, in accordance with current national guidance, the site is not required to undertake the Sequential and Exception Tests and is considered to be in an appropriate location for development.

Table 4 - Flood Vulnerability and Flood Zone Compatibility (PPG Table 3)

Flood Risk Vulnerability Classification		Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Fluvial Flood Zone	Zone 1	✓	✓	✓	✓	✓
	Zone 2	✓	✓	Exception Test Required	✓	✓
	Zone 3a	Exception Test Required	✓	×	Exception Test Required	✓
	Zone 3b	Exception Test Required	✓	×	×	×

4.3.5. Given the proposed location of the of the proposed development site is wholly within Flood Zone 1, fluvial flood risk is considered low.

Identified Fluvial Flood Risk: Low

4.4. TIDAL FLOOD RISK

4.4.1. Due to its inland location, tidal flooding is not considered a risk to this site.

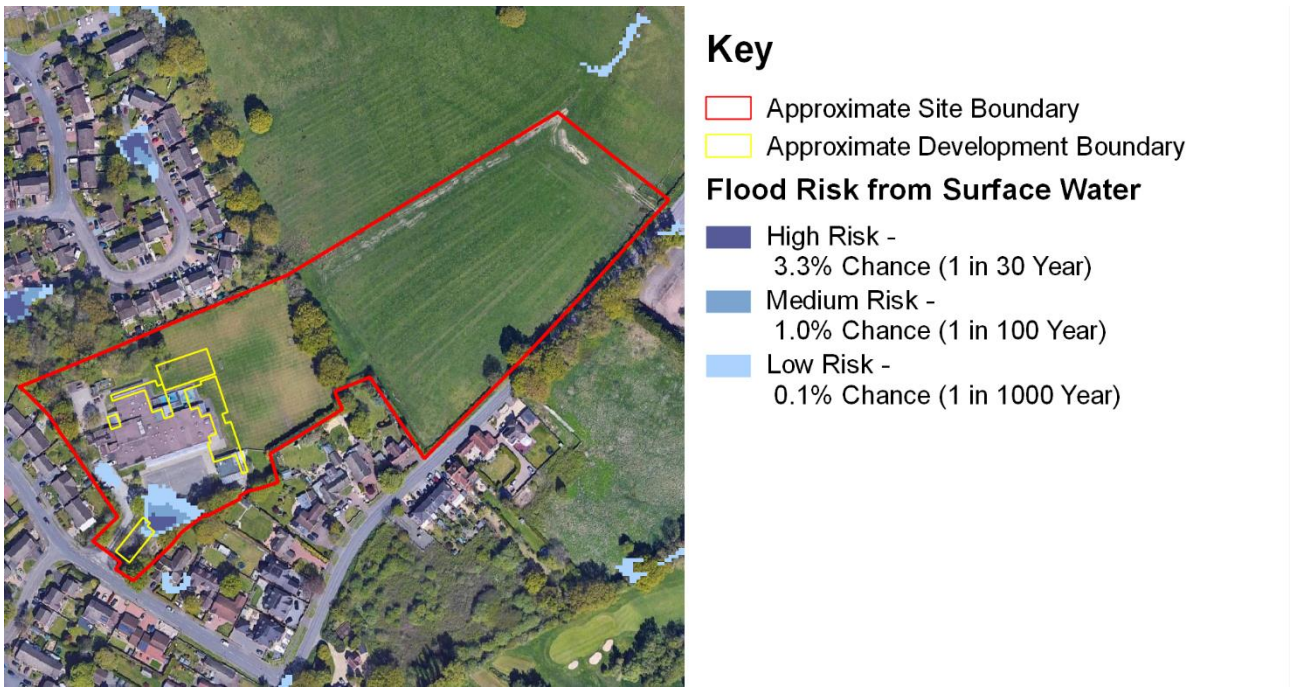
Identified Tidal Flood Risk: Low

4.5. SURFACE WATER FLOOD RISK

4.5.1. The publicly available 'Long Term Flood Risk Information,' in particular relating to the 'Flood Risk from Surface Water,' has been reviewed and identifies the majority of the site to be at very low risk of flooding from surface water.

4.5.2. An Extract of the 'Long Term Flood Risk Information,' in particular relating to the 'Flood Risk from Surface Water,' mapping is available below as Figure 6.

Figure 6 – Surface Water Flood Risk Map



4.5.3. The production of this mapping has been undertaken at a national scale to provide the first publicly available generation of surface water flood risk mapping. The two previous generations were primarily developed for regulator use as the approach and risk was refined. For example, the first did not include any allowance for sewers, whilst the second incorporated a national loss coefficient.

4.5.4. Although this generation incorporates local estimates of the sewer infiltration loss, generally at an LLFA level along with various other refinements in runoff estimation, it does not allow for local improvements to the underlying Digital Terrain Model (DTM). This means that local features such as the adjoining highways are represented as determined from the LiDAR without any consideration to drainage features such as culverts or small watercourses which typically provide the associated surface water drainage.

4.5.5. A 'Low Risk to High Risk' area of surface water ponding is identified to the south of the site. Solihull MBC LLFA have also confirmed that they are aware of the surface water flood risks within the site and recommend appropriate assessments be undertaken to ensure that the risk of flooding from surface water is not exacerbated in the future.

4.5.6. The proposed extension and changes to the school is along the northern and eastern sides of the existing school building with minimal changes envisaged within the area at flood risk and as such the development may not be considered to affect the existing surface water flood risk.

4.5.7. Given the above, the proposed development is considered to be at predominantly low risk of surface water flooding. As part of the final site design, to ensure that there is no increase to the flood risk to the development or third-party land, appropriate additional measures such as amending site gradients will be implemented in accordance with best practice guidance to ensure any surface water is directed away from the existing and proposed properties.

Identified Surface Water Flood Risk: Low

4.6. GROUND WATER FLOOD RISK

4.6.1. Solihull Metropolitan Council were consulted as the Lead Local Flood Authority throughout the production of this report and did not identify any groundwater flood risk concerns with the site.

4.6.2. Review of the publicly available, online MAGIC mapping has identified the site to be at 'Medium-Low' vulnerability from groundwater. Given this, consultation of the publicly available borehole data located 250m east of the site was undertaken in which no groundwater was identified to be present within a 10m borehole.

4.6.3. Given the above, flood risk from groundwater may be considered low.

Identified Groundwater Flood Risk: Low

4.7. SEWER FLOOD RISK

4.7.1. Sewer flooding occurs as a result of a number of influencing factors. It is most likely to occur during storms, when large volumes of rainwater enter the sewers. However, it can also occur when pipes become blocked or damaged.

4.7.2. A 300mm Severn Trent Water, surface water sewer has been identified to run underneath Cheswick Way to the south of the site, and any sewer pipes within the site are manged privately. Given the management of the site by Solihull MBC issues are rectified quickly and should failure of the drainage system occur, this will be managed through exceedance flow routes.

4.7.3. As such, the risk of sewer flooding may be considered low.

Identified Sewer Flood Risk: Low

4.8. ARTIFICIAL SOURCE FLOOD RISK

Reservoirs

4.8.1. The 'Long Term Flood Risk Information,' in particular relating to the 'Flood Risk from Reservoirs', that the site lies outside of the zone of influence for the nearby reservoirs. Therefore, it may be considered that the site is at low risk of flooding from reservoirs.

Identified Flood Risk from Reservoirs: Low

Canals

4.8.2. Canal flooding is generally rare and the canal network is designed in such a way so as to direct all additional water beyond the navigation capacity to impounding areas or surrounding watercourses to be conveyed downstream. The risk from canal flooding becomes more of a concern where the structure is elevated on an earth embankment and if there is a rare instance of a catastrophic breach, leading to a sudden drain-down of the pound and resultant overland flow flood risk to development immediately downstream.

4.8.3. The nearest canal system to the site is the North Stratford Canal which is located approximately 1.4km south-west of the site boundary.

4.8.4. Given the distance from the site to the nearest canal system, flood risk from canals may be considered to be low.

Identified Flood Risk from Canals: Low

4.9. DEVELOPMENT EXCEEDANCE FLOWS

4.9.1. Careful regard has to be made in respect of potential exceedance flows, being events that are more extreme than current design criteria. Various national guidance has been published on the matter of exceedance flows and measures that should be incorporated into a development to ensure the safety of occupiers and those using the infrastructure.

4.9.2. Published guidance in the form of Sewerage Sector Guidance and the Environment Agency document "Improving the Flood Performance of New Buildings: Flood Resilient Construction" advocate the design of developments that implement infrastructure routes that will safely convey flood waters resulting from sewer flooding or overland flows away from buildings and along defined corridors.

4.9.3. The principal aim is to direct exceedance flows away from properties and along defined corridors. At a local level, this may mean water being conveyed along a length of highway, as long as the predicted flow depths and velocities are acceptable. More strategically, the implementation of conveyance corridors are important in avoiding deep and high velocity flows that present a high risk.

4.9.4. At the property level, this includes measures such as ensuring finished floor levels are elevated 150mm above adjacent external ground levels. Or where this is not possible, such as the need to provide flush entrances, ground levels should fall way from any entrances to ensure surface water exceedance is not directed towards properties.

4.9.5. Whilst many of the measures for dealing with exceedance flows must be dealt with at detailed design stage, the strategic layout for the site provides a framework that can effectively deal with any future exceedance flows.

4.9.6. Given the baseline site characteristics and further mitigation measures to be implemented, the risk of flooding from exceedance flows is considered low.

Identified Flood Risk from Exceedance Flows: Low

5. SURFACE WATER DRAINAGE STRATEGY

Discharge Location

5.1.1. In order to determine the most appropriate receptor for storm water discharges from the proposed development, the new PPG guidance provides the following order of priority, supported by the Environment Agency and Local Authority:

Table 5 - SuDS Drainage Hierarchy

	Discharge Location	Availability	Comments
Search Sequence	**Re-Use**	×	Space for re-use may be further considered at a later design stage.
	Infiltration	×	Infiltration testing may be undertaken prior to detailed design to determine the sites potential for an infiltration-led surface water drainage strategy.
	Watercourse	×	There are no watercourses located within close proximity to the site, therefore discharging into a watercourse is not considered to be possible for the site.
	Surface Water Sewer	✓	There is a 300mm diameter existing surface water sewer running underneath Cheswick Way in proximity of the southern border of the site. This is considered to be the most suitable sewer connection in proximity of the site. Currently the location of existing sewers serving the primary school is unknown, however upon the receipt of the location and condition of these assets, to be investigated at the detailed design stage, it may be feasible to make a connection into this system.
	Combined Sewer	-	
	Foul Sewer	-	

5.1.2. In accordance with the above search sequence, it is proposed to discharge surface water flows to the existing surrounding surface water sewers.

SuDS Proposals

5.1.3. Current guidance requires that all new developments implement Sustainable Drainage Systems (SuDS) as the primary means of controlling surface water run-off in order to maintain flow rates and volumes discharged to the identified receptor post development. Alongside this, emerging Solihull Local Plan policy P11 expects all SuDS features to be above-ground.

5.1.4. In addition to the water control benefits, The SuDS Manual (CIRIA C753) states that “SuDS can treat and clean surface water runoff from urban areas so that the receiving environment is protected, while at the same time conveying, storing and infiltrating surface water to protect flood risk, river morphology and water resources, and delivering amenity and biodiversity value for the development.”

5.1.5. At the proposed site, a drainage strategy has been prepared in conjunction with the site-plan thus making space for multi-function SuDS within the site boundary. Table 6 below provides a summary of

the SuDS selection process and confirms the features that are proposed as part of the site drainage strategy.

Table 6 - Summary of SuDS Selection

Feature	Description	Selection
Green Roofs	Green roofs are systems which cover a building's roof with vegetation. They are laid over a drainage layer, with other layers providing protection, waterproofing and insulation.	✓ / × Green roofs may be considered at the next stage of design.
Pervious Surfaces	Pervious surfaces allow rainwater to infiltrate through the surface into an underlying storage layer, where water is stored before infiltration to the ground, reuse, or release to surface water.	✓ Permeable paving for the additional parking area.
Swales	Swales are broad, shallow channels covered by grass or other suitable vegetation. They are designed to convey and/or store runoff and can infiltrate the water into the ground (if ground conditions allow).	✓ A shallow swale has been proposed as part of the surface water drainage strategy to attenuate flow and convey surface water into the shallow basin.
Infiltration Basins	Infiltration basins are depressions in the surface that are designed to store runoff and infiltrate the water to the ground. They may also be landscaped to provide aesthetic and amenity value.	✓ / × Infiltration basins are not proposed within the surface water drainage strategy. Subject to infiltration testing conducted in accordance with BRE digest 365 Soakaway Guidance, discharging via infiltration may be further considered at the next stage of design.
Wet Ponds	Wet ponds are basins that have a permanent pool of water for water quality treatment. They provide temporary storage for additional storm runoff above the permanent water level. Wet ponds may provide amenity and wildlife benefits.	× Due to the location of the drainage system within a primary school it is not considered appropriate to have ponds with permanently wet areas.
Detention Basins	Detention basins are normally dry, though they may have small permanent pools at the inlet and outlet. They are designed to detain a certain volume of runoff as well as providing water quality treatment.	✓ Attenuation basins are proposed within the surface water drainage strategy. The basin proposed is shallow, circa 600mm deep with slack gradients of 1 in 6 for easy egress by children.
Geocellular Storage	Geocellular storage structures are below-ground attenuation features. These are typically formed using crates which provide a high void space for attenuation and water quantity control.	× Geocellular storage is not currently proposed for use within the site as the drainage strategy prioritises above ground sustainable drainage systems.

Greenfield Run-Off

5.1.6. National policy dictates that new developments control the peak discharge of storm water from a site to the baseline, undeveloped site conditions. Over very large development areas, the baseline rate of run-off is normally estimated using the Flood Estimation Handbook (FEH) methodologies. However, Paragraph 3.1.2 of the FEH guidance states:

"The frequency estimation procedures can be used on any catchment, gauged or ungauged, that drains an area of at least 0.5km². The flood estimation procedure can be applied on smaller catchments only where the catchment is gauged and offers simple flood peak or flood event data"

5.1.7. On undeveloped and ungauged catchments of less than 0.5km in area, the accepted methodology is to complete baseline site discharge assessments using the nationally accepted IoH124 methodology for small rural catchments in a manner set out by the Environment Agency document SC030219 Rainfall Runoff Management for Developments.

5.1.8. This methodology requires that, for catchments of less than 50ha, the IoH assessment is completed for a 50ha area with the results linearly interpolated to determine the flow rate value based on the ratio of the development to 50ha.

5.1.9. The overall application boundary is below the 50ha threshold, thus the online UKSuDS greenfield runoff tool is considered the most appropriate for appraising the baseline run-off from the development. The site specific run-off rates are shown on Table 7 below and Contained in **Appendix B.**

Table 7 - Greenfield Run-Off Rates

Event	Proposed development area: 0.15ha (l/s)
1 Year	0.6
QBar	0.73
100 Year	1.87

5.1.10. Due to the fact that the proposed development comprises a small area, a total discharge rate of 5l/s has been used within the drainage strategy to mitigate the risk of blockage

Development Run-Off & Attenuation

5.1.11. The surface water drainage strategy is available on drawing CGR-WSP-XX-XX-DR-CV-0501 in **Appendix A** indicates the site catchments of the proposed school extension and separate additional car parking area.

5.1.12. Where long term storage is not proposed, in order to mitigate for the increased volume of run-off associated with built development, peak flows in the 1 in 100 year event must be attenuated to the mean annual flow (QBar).

5.1.13. However, in accordance with SC030219 produced by the Environment Agency and DEFRA; “A practicable minimum limit on the discharge rate from a flow attenuation device is often a compromise between attenuating to a satisfactory low flow rate whilst keeping the risk of blockage to an acceptable level. It is suggested that this is 5 litres per second”. Given the site runoff falls below this value, a site-total peak discharge rate of 5l/s has been utilised.

5.1.14. Assessments have thereafter been completed to determine the characteristics of the SuDS features required. The Micro Drainage Source Control module has been utilised to provide routing calculations for the 1 in 100 year flood event to identify the size and nature of storage required.

5.1.15. A summary of the nature of SuDS proposed is contained in Table 8, whilst the surface water drainage strategy is shown on CGR-WSP-XX-XX-DR-CV-0501 in **Appendix A** and Micro Drainage summary calculations are contained in **Appendix B.**

Table 8 - Site Attenuation Requirements

Catchment	Proposed Discharge Rate (l/s)	Storage Volume Required (m^3)	SuDS Controls
School Extension	4.5l/s	66.7	Shallow Swale and Shallow Basin
Additional Car Parking	0.5l/s	10.6	Permeable paving

5.1.16. In accordance with legislative requirements, the detention proposals have also been assessed for the potential effects of climate change. The 1 in 100 year (1% AEP) return events have been modelled for 40% climate change (including peak rainfall intensity). Calculations are also contained in the Appendix B.

5.1.17. Climate change assessments show each attenuation feature to perform adequately by retaining the additional flows within the system without overflow or unacceptable consequences.

5.1.18. Through preliminary correspondence and meeting with Solihull Metropolitan Borough Council, it is understood that above ground SuDS features are the preferred approach to drainage strategies within the Solihull area, as opposed to underground storage. This stance on above ground SuDS is supported by Policy P11 within the emerging Solihull Local Plan.

5.1.19. These comments were evaluated in line with the context of the site as a primary school and the safety of the children that would be present within the vicinity of the features. Additionally, the *Mayor of London - Reimagining Rainwater in Schools* guidance was also reviewed, to understand appropriate SuDS features and evaluations of the use of SuDS in a primary school environment.

5.1.20. With the comments from Solihull Metropolitan Borough Council and examples from the Reimagining Rainwater in Schools report in mind, the finalised strategy comprises a network of a broad, shallow swale and shallow basin.

5.1.21. These features have been designed to a depth of 300mm within the swale and slack 1 in 10 side slopes along with a 600mm deep basin and slack 1 in 6 side slopes. These may be considered appropriate for a Primary School setting. Additionally, these features are only designed to fill up in worst case storm events and for the majority of their life will remain dry. The maximum water levels in the network in each storm scenario are detailed below in Table 10.

Table 9 – Maximum Water Levels in SuDS Features

Storm Event	Depth in Pond	Depth in swale
1 in 2 year event	103mm	"Dry" – used for conveyance
1 in 30 year event	213mm	"Dry" – used for conveyance
1 in 100 year event	287mm	"Dry" – used for conveyance
1 in 100 year + 40% climate change event	385mm	85mm

5.1.22. Given the shallow nature of the swale / basin attenuation, this has been designed with a smaller 150mm freeboard. It should be noted however, given the size of the basin this freeboard provides a volume of circa 72.2m^3 which is greater than the maximum attenuation during the 1 in 100 year +40% climate change event and is therefore considered resilient.

5.1.23. A system of interlinked, above ground SuDS features has been put forward in line with Policy 11 of the Solihull Local Plan - Draft Submission Plan, October 2020, and guidance within the Pre-Application Advice letter from the Local Planning Authority to maximise water quality and biodiversity amenities within the site.

5.1.24. At the detailed design stage, it is envisaged the building drainage will be connected directly into the swale / basin feature

5.1.25. The drainage strategy is based upon the site masterplanning details at the time of production. Changes to the site development profile, impermeable areas across the site or other such aspects of the scheme will result in the need to revise the calculations.

Development Creep

5.1.26. Due to the location and nature of the proposals within the existing Cheswick Green Primary School development creep is not considered to pose a significant risk to the site and has therefore not been considered.

Climate Change

5.1.27. The purpose of the proposed drainage strategy is to ensure that the proposed scheme does not exacerbate any existing flood risks upstream or downstream of the site, in accordance with the principles set out within the NPPF.

5.1.28. SuDS will be implemented throughout this development scheme. The conceptual SuDS strategy for the proposed development has been devised using the principles outlined within the current published guidance in the form of the NPPF, PPG and CIRIA amongst others.

5.1.29. The impact of climate change is a key factor when determining a drainage strategy. The NPPF and PPG guidance advocate a "development lifespan" approach for dealing with climate change allowances.

5.1.30. In light of this and in accordance with local requirements, an increase of 40% in peak rainfall intensity has been used as the allowance for climate change within the proposed drainage design to determine the performance of the drainage system.

5.1.31. Climate change assessments show each attenuation feature to perform adequately by retaining the additional flows within the system without overflow or unacceptable consequences. Calculations for the climate change scenarios are also contained in the Appendix B.

SuDS Management Train / Index Approach

5.1.32. The SuDS Manual (CIRIA C753) states the SuDS Management Train is a central design concept for SuDS. SuDS should not be thought of as an individual component, but as an interconnected system designed to manage, treat and make best use of surface water, from where it falls as rain to the point at which it is discharged into the receiving environment beyond the boundaries of the site.

5.1.33. There are six specific functions provided by SuDS components (rainwater harvesting, pervious surface systems, infiltration systems, conveyance systems, storage systems and treatment systems), which are not independent with one component being able to provide two or more functions.

5.1.34. There are many types of SuDS components which means that SuDS can be delivered anywhere, tailored to individual local contexts. Wherever possible, runoff should be managed at source with residual flows then conveyed downstream to further storage or treatment components.

5.1.35. Treatment design should implement SuDS components that use a range of treatment processes to reduce contaminant level in runoff to acceptable levels. This can be facilitated by the SuDS management train of a number of components in series that provide a range of treatment processes, delivering gradual improvement in water quality and providing an environmental buffer for accidental spills or unexpected high pollutant loadings from the site

5.1.36. The above has been considered in applying SuDS into the proposed development to help provide; prevention in terms of pollution, source control and site controls.

5.1.37. The proposed development will utilise a shallow swale to provide biodiversity and surface water runoff treatment amenities which will convey runoff into a shallow basin that provides storage of surface water runoff. Flows will be limited, via a flow control device (e.g. Hydrobrake) to ensure that maximum peak discharge rates do not exceed 5l/s for any event up to and including the 1 in 100 year plus 40% climate change event.

Health and Safety

5.1.38. The proposed layout of the SuDS features will be designed in accordance with the best practice SuDS guidance documents and national standards, supplemented, where appropriate, with Solihull Metropolitan Borough Council guidance and the requirements of the water company and maintenance company to ensure the features are effective not only in terms of their hydraulic design but also from a safety perspective during construction, operation and maintenance.

5.1.39. Detailed health and safety risk assessments should be completed for the individual drainage features proposed as part of the final site design, setting out the risks and incorporating proposals for how these are to be managed.

5.1.40. As outlined above, the safety of the end users has been considered in the design of the attenuation with shallow features and slack side slopes to allow suitable egress by children. Further safety measures will be considered at the detailed design stage.

6. OPERATION AND MAINTENANCE

6.1. SURFACE WATER FEATURES

6.1.1. The proposed on-site surface water and foul drainage sewerage networks will be designed to the current version of Sewers for Adoption and will be offered for adoption by Severn Trent Water.

6.1.2. With regards to SuDS, in view of the central government decision not to create SAB's, some uncertainty remains regarding by whom and how these features will be adopted and maintained. With the above in mind, it is likely that, should the SuDS be offered to the council for adoption and maintenance, commuted sums will be required for all adoptable SuDS processes.

6.1.3. As an alternative, it is becoming increasingly common for SuDS features to be operated and maintained by a third-party private maintenance company. Should this be necessary, a third-party management company would be established to maintain the features in perpetuity. An adoption agreement between the final site developer and Maintenance Company would be based upon the CIRIA ICoP MA2 SuDS Maintenance Framework Agreement.

6.1.4. In addition, Sewerage Sector Guidance has come into force during 2020. This gives the ability for sewerage undertakers to adopt SuDS features under certain conditions such as conveying flows. There may therefore be the potential for SuDS features to be adopted by Severn Trent Water.

6.1.5. A typical maintenance schedule of the attenuation and flow control devices proposed on site are shown in tables below.

Flow Control (e.g Hydrobrake) Indicative Maintenance Schedule

Frequency	Action
Monthly	▪ Inspect and identify any areas that are not operating correctly. If required, take remedial action (for three months following installation)
Six Monthly	▪ Inspect and identify any areas that are not operating correctly. If required, take remedial action. ▪ Remove sediment from pre-treatment structures
Annually	▪ N/A
Following all significant storm events	▪ Inspect and carry out essential recovery works to return the feature to full working order.

Swale Indicative Maintenance Schedule

Frequency	Action
Monthly	▪ Litter and debris removal. ▪ Mow grasses (where required to promote lateral runoff inflow) and remove resultant clippings (during growing season only).

	▪ Remove nuisance and invasive vegetation (for 12 months following installation). ▪ Inspect/check all inlets, outlets, surface and overflows (where required) to ensure that they are in good condition, free from blockages and operating as designed. Take action where required.
Six Monthly	▪ Remove nuisance and invasive vegetation.
Annually	▪ Check for poor vegetation growth due to lack of sunlight or dropping of leaf litter, and cut back adjacent vegetation where required. ▪ Re-seed areas of poor vegetation growth. Alter plant types to better suit conditions, where required. ▪ Inspect and document the presence of wildlife.
As-Required	▪ Repair erosion or other damage by re-turfing, reseeding or replacing filter material. ▪ Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface where required. (typically, every 60 month period). ▪ Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip, where required. ▪ Remove and dispose of oils or petrol residues using safe standard practices.
Following all significant storm events	▪ Inspect and carry out essential recovery works to return the feature to full working order.

Permeable Paving Indicative Maintenance Schedule

Frequency	Action
Monthly	▪ Refer to manufacturer specifications ▪ For sealed systems, inspections of outfalls should be undertaken
Six Monthly	▪ Brushing and vacuuming to manufacturer requirements. Re-grit where necessary
Annually	▪ N/A
As Required	▪ Inspect/check all inlets, outlets, inspection chambers, surface and overflows (where required) to ensure that they are in good condition, free from blockages and operating as designed. Take action where required (for 3 months following installation)
Following all significant	▪ Inspect and carry out essential recovery works to return feature to full working order.

storm events	

Attenuation Basin Indicative Maintenance Schedule

Frequency	Action
Monthly	▪ Litter and debris removal. ▪ Mow grasses (where required to promote lateral runoff inflow) and remove resultant clippings (during growing season only). ▪ Remove nuisance and invasive vegetation (for 12 months following installation). ▪ Inspect/check all inlets, outlets, surface and overflows (where required) to ensure that they are in good condition, free from blockages and operating as designed. Take action where required.
Six Monthly	▪ Remove nuisance and invasive vegetation.
Annually	▪ Remove all dead growth prior to the start of growing season. ▪ Re-seed areas of poor vegetation growth. Alter plant types to better suit conditions, where required. ▪ Inspect and document the presence of wildlife. ▪ Remove sediment from inlets, outlet and forebay ▪ Manage wetland plants, where required
As-Required	▪ Prune and trim trees and remove cuttings. ▪ Remove sediment from forebay, when 50% full and from micropools if volume reduced by more than 25% ▪ Repair erosion or other damage by re-turfing or reseeding ▪ Re-level uneven surfaces and reinstate design levels (typically once every 60 month period) ▪ Remove and dispose of oils or petrol residues using safe standard practices
Following all significant storm events	▪ Inspect and carry out essential recovery works to return the feature to full working order.

6.1.6. The proposed maintenance regimes for the devices should be in accordance with The SuDS Manual (CIRIA C753) and other best practice guidelines and in accordance with manufacturer's recommendations. This will ensure the design performance, structural integrity and where applicable-appearance of each feature is maintained throughout its lifetime.

6.1.7. The details of the party responsible for maintenance of each feature will be confirmed prior to occupation of the proposed development. Until such times as this may be determined.

7. CONCLUSIONS

7.1.1. The risk of flooding to and from the proposed development has been assessed in accordance with the NPPF February 2019.

7.1.2. This assessment demonstrates that the site lies within an appropriate location for the proposed land uses in accordance with the vulnerability classifications of the NPPF and supported by the Local Planning Authority and the Environment Agency.

7.1.3. Management of extreme event flood risk can be achieved through ensuring the finished floor levels of the proposed building are set at a minimum of 150mm above adjacent roads and open space levels in areas where designated overland flood routes are identified.

7.1.4. The responsibility for the operation and maintenance of each SuDS feature will remain the responsibility of the school and by association, Solihull MBC. The SuDS used on site will be maintained in accordance with manufacturer's recommendations and current best practice and guidelines to ensure routine operation.

7.1.5. In addition to the NPPF, the proposed drainage strategy complies with local policy and site-specific requirements.

7.1.6. The proposed drainage strategy aims to mimic the behaviour of the site pre-development (greenfield), through the utilisation of pervious pavements, attenuation storage, and flow control devices (e.g. hydrobrake). The maximum peak rate of discharge from the site will be 5l/s and the total storage volume required is circa 74m³ for the critical 1 in 100 year event plus climate change.

7.1.7. Safe access and egress will be available to and from the site for events up to and including the 1 in 100 year plus climate change (40%) rainfall events.

7.1.8. This report demonstrates that the proposed development can be undertaken in a sustainable manner without increasing the flood risk either at the site or to any third-party land in line with NPPF requirements.

Appendix A

DRAWINGS

413000

276000

KEY:

- Approximate Site Boundary
- Approximate Development Boundary

REV	DATE	DRW	DESCRIPTION	CHK	APP
P02	22/04/2021	AD	UPDATED FROM LATEST SITE BOUNDARY	CSB	GD
P01	16/04/2021	AD	FIRST ISSUE	CSB	GD

STATUS: FOR INFORMATION ONLY

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CLIENT: SOLIHULL METROPOLITAN BOROUGH COUNCIL

ARCHITECT: SOLIHULL BUILDING DESIGN STUDIO

PROJECT: CHESWICK GREEN PRIMARY SCHOOL

TITLE: SITE LOCATION PLAN

DRAWN:	CHECKED:	APPROVED:
AD	CSB	GD

QGIS FILE:	SCALE @A3:	DATE:
CGR-WSP-XX-XX-DR-CV-0100	1:1,500	22/04/21

PROJECT No:	DRAWING No:	REV:
70078885	CGR-WSP-XX-XX-DR-CV-0100	P02

DO NOT SCALE

KEY

- APPROXIMATE SITE BOUNDARY
- EXISTING PUBLIC SURFACE WATER SEWER
- EXISTING PUBLIC SURFACE WATER MANHOLE
- EXISTING PUBLIC FOUL WATER SEWER
- EXISTING PUBLIC FOUL WATER MANHOLE
- CONTOURS (1m INTERVALS)
- EXISTING SURFACE WATER FLOW ROUTE

NOTES

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6. INDICATIVE SURFACE WATER DRAINAGE STRATEGY BASED ON:
   - 6.1. SEWER RECORDS PROVIDED ON 19.11.2020, PRODUCED BY SEVERN TRENT WATER.
   - 6.2. CONTOURS EXTRACTED FROM PUBLICLY AVAILABLE LIDAR TAKEN FROM DEFRA ON 24/11/2020.
7. CHESWICK GREEN PRIMARY SCHOOL IS RELATIVELY FLAT, HENCE THERE ARE NO DEFINITIVE SURFACE WATER FLOW DIRECTION ARROWS WITHIN THE SITE.

UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES OR STATUTORY BODIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR AND / OR EMPLOYER COMMENCE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT THEIR OWN RISK

REV	DATE	BY	DESCRIPTION	CHK	APP
P02	22/04/2021	AD	UPDATED FROM LATEST SITE BOUNDARY	CSB	GD
P01	16/04/2021	AD	FIRST ISSUE	CSB	GD

DRAWING STATUS: S2 - FOR INFORMATION

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CLIENT: SOLIHULL METROPOLITAN BOROUGH COUNCIL

ARCHITECT: SOLIHULL BUILDING DESIGN STUDIO

SITE/PROJECT: CHESWICK GREEN PRIMARY SCHOOL

TITLE: BASELINE DRAINAGE FEATURES PLAN

SCALE @ A1:	CHECKED:		APPROVED:
1:500	CSB		GD
PROJECT NO:	DESIGNED:	DRAWN:	DATE:
70078885	AD	AD	April 21

DRAWING No: CGR-WSP-XX-XX-DR-CV-0500 REV: P01

SHALLOW GRASSED SWALE EXAMPLE IMAGE
REFER TO MAYOR OF LONDON REIMAGINING RAINWATER IN SCHOOLS REPORT

DO NOT SCALE

KEY

- APPROXIMATE SITE BOUNDARY
- EXISTING PUBLIC SURFACE WATER SEWER
- EXISTING PUBLIC SURFACE WATER MANHOLE
- EXISTING PUBLIC FOUL WATER SEWER
- EXISTING PUBLIC FOUL WATER MANHOLE
- PROPOSED AREAS OF NEW DEVELOPMENT
- PROPOSED SHALLOW SWALE
- PROPOSED SHALLOW ATTENUATION BASIN
- PROPOSED FLOW CONTROL DEVICE
- PROPOSED SURFACE WATER SEWER
- PROPOSED MANHOLE
- PROPOSED PERMEABLE PAVING
- PROPOSED FILTER DRAIN

NOTES

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6. INDICATIVE SURFACE WATER DRAINAGE STRATEGY BASED ON:
   - 6.1. SEWER RECORDS PROVIDED ON 19/11/2020, PRODUCED BY SEVERN TRENT WATER.
   - 6.2. CONTOURS EXTRACTED FROM PUBLICLY AVAILABLE LIDAR TAKEN FROM DEFRA ON 24/11/2020.
   - 6.3. TOPOGRAPHY SURVEY 20479-TOPO-2D PROVIDED BY SOLIHULL METROPOLITAN BOROUGH COUNCIL ON 17/11/2020.
   - 6.4. SITE PLANS PROVIDED BY SOLIHULL METROPOLITAN BOROUGH COUNCIL ON 08/04/2021.
7. DRAINAGE STRATEGY BASED ON CALCULATIONS USING MICRODRAINAGE SOURCE CONTROL MODULE, SUBJECT TO DETAIL DESIGN AND FURTHER REFINEMENT.
8. DESIGN ASSUMPTIONS INCLUDE:
   - 8.1. PROPOSED 100% IMPERMEABLE AREA WITHIN THE PROPOSED DEVELOPMENT AREAS.
   - 8.2. FEH RAINFALL DATA UTILISED AT THIS STAGE.
   - 8.3. ASSUMED 150mm FREEBOARD ABOVE THE 1 IN 100 YEAR + 40% CLIMATE CHANGE STORM EVENT, ASSUMED 200mm FREEBOARD ABOVE THE 1 IN 100 YEAR STORM EVENT.

UNTIL TECHNICAL APPROVAL HAS BEEN OBTAINED FROM THE RELEVANT LOCAL AUTHORITIES OR STATUTORY BODIES, IT SHOULD BE UNDERSTOOD THAT ALL DRAWINGS ARE ISSUED AS PRELIMINARY AND NOT FOR CONSTRUCTION. SHOULD THE CONTRACTOR AND / OR EMPLOYER COMMENCE WORK PRIOR TO APPROVAL BEING GIVEN, IT IS ENTIRELY AT THEIR OWN RISK

REV	DATE	BY	DESCRIPTION	CHK	APP
P03	22/04/2021	AD	UPDATED FROM LATEST SITE BOUNDARY	CSB	GD
P02	16/04/2021	AD	SECOND ISSUE	CSB	GD
P01	14/04/2021	AD	FIRST ISSUE	CSB	GD

DRAWING STATUS: S2 - FOR INFORMATION

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CLIENT: SOLIHULL METROPOLITAN BOROUGH COUNCIL

ARCHITECT: SOLIHULL BUILDING DESIGN STUDIO

SITE/PROJECT: CHESWICK GREEN PRIMARY SCHOOL

TITLE: INDICATIVE SURFACE WATER DRAINAGE STRATEGY

SCALE @ A1: 1:500	CHECKED: CSB	APPROVED: GD
PROJECT NO: 70078885	DESIGNED: AD / DRAWN: AD	DATE: April 21

DRAWING No: CGR-WSP-XX-XX-DR-CV-0501 | REV: P03

Appendix B

CALCULATIONS

Appendix B.1

GREENFIELD RUN-OFF

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Aimee Durkin
Site name:	Cheswick Green Primary School
Site location:	B90 4HG

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

Site Details

Latitude:	52.38200° N
Longitude:	1.80931° W
Reference:	1449388161
Date:	Apr 08 2021 12:14

Runoff estimation approach

IH124

Site characteristics

Total site area (ha): 0.14591

Methodology

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

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	720	720
Hydrological region:	4	4
Growth curve factor 1 year:	0.83	0.83
Growth curve factor 30 years:	2	2
Growth curve factor 100 years:	2.57	2.57
Growth curve factor 200 years:	3.04	3.04

Notes

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

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

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

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

(3) Is SPR/SPRHOST ≤ 0.3?

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

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	0.73	0.73
1 in 1 year (l/s):	0.6	0.6
1 in 30 years (l/s):	1.46	1.46
1 in 100 year (l/s):	1.87	1.87
1 in 200 years (l/s):	2.21	2.21

Appendix B.2

1 IN 100 YEAR + CLIMATE CHANGE

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

Half Drain Time : 117 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	138.253	0.253	0.0	4.5	4.5	33.9	O K
30 min Summer	138.307	0.307	0.0	4.5	4.5	44.0	O K
60 min Summer	138.343	0.343	0.0	4.5	4.5	52.0	O K
120 min Summer	138.353	0.353	0.0	4.5	4.5	54.5	O K
180 min Summer	138.350	0.350	0.0	4.5	4.5	53.7	O K
240 min Summer	138.343	0.343	0.0	4.5	4.5	52.1	O K
360 min Summer	138.324	0.324	0.0	4.5	4.5	47.8	O K
480 min Summer	138.303	0.303	0.0	4.5	4.5	43.3	O K
600 min Summer	138.280	0.280	0.0	4.5	4.5	38.9	O K
720 min Summer	138.258	0.258	0.0	4.5	4.5	34.8	O K
960 min Summer	138.216	0.216	0.0	4.5	4.5	27.6	O K
1440 min Summer	138.151	0.151	0.0	4.5	4.5	17.8	O K
2160 min Summer	138.108	0.108	0.0	4.0	4.0	12.1	O K
2880 min Summer	138.092	0.092	0.0	3.3	3.3	10.0	O K
4320 min Summer	138.074	0.074	0.0	2.5	2.5	7.9	O K
5760 min Summer	138.065	0.065	0.0	2.0	2.0	6.8	O K
7200 min Summer	138.059	0.059	0.0	1.7	1.7	6.1	O K
8640 min Summer	138.054	0.054	0.0	1.5	1.5	5.6	O K
10080 min Summer	138.051	0.051	0.0	1.3	1.3	5.3	O K
15 min Winter	138.278	0.278	0.0	4.5	4.5	38.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	138.186	0.0	38.7	27
30 min Summer	90.933	0.0	50.9	40
60 min Summer	56.807	0.0	63.8	66
120 min Summer	34.060	0.0	76.5	116
180 min Summer	25.126	0.0	84.7	146
240 min Summer	20.193	0.0	90.8	178
360 min Summer	14.769	0.0	99.6	246
480 min Summer	11.811	0.0	106.2	312
600 min Summer	9.921	0.0	111.5	376
720 min Summer	8.598	0.0	115.9	440
960 min Summer	6.849	0.0	123.1	560
1440 min Summer	4.969	0.0	134.0	784
2160 min Summer	3.591	0.0	145.4	1120
2880 min Summer	2.850	0.0	153.8	1476
4320 min Summer	2.059	0.0	166.6	2208
5760 min Summer	1.640	0.0	177.1	2936
7200 min Summer	1.384	0.0	186.8	3672
8640 min Summer	1.208	0.0	195.7	4400
10080 min Summer	1.080	0.0	204.0	5144
15 min Winter	138.186	0.0	43.3	28

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	138.334	0.334	0.0	4.5	4.5	50.0	O K
60 min Winter	138.372	0.372	0.0	4.5	4.5	59.2	O K
120 min Winter	138.385	0.385	0.0	4.5	4.5	62.7	O K
180 min Winter	138.380	0.380	0.0	4.5	4.5	61.4	O K
240 min Winter	138.372	0.372	0.0	4.5	4.5	59.3	O K
360 min Winter	138.349	0.349	0.0	4.5	4.5	53.3	O K
480 min Winter	138.317	0.317	0.0	4.5	4.5	46.2	O K
600 min Winter	138.282	0.282	0.0	4.5	4.5	39.2	O K
720 min Winter	138.247	0.247	0.0	4.5	4.5	32.9	O K
960 min Winter	138.183	0.183	0.0	4.5	4.5	22.4	O K
1440 min Winter	138.113	0.113	0.0	4.2	4.2	12.7	O K
2160 min Winter	138.087	0.087	0.0	3.1	3.1	9.4	O K
2880 min Winter	138.075	0.075	0.0	2.5	2.5	7.9	O K
4320 min Winter	138.061	0.061	0.0	1.8	1.8	6.4	O K
5760 min Winter	138.054	0.054	0.0	1.5	1.5	5.5	O K
7200 min Winter	138.049	0.049	0.0	1.2	1.2	5.0	O K
8640 min Winter	138.045	0.045	0.0	1.1	1.1	4.6	O K
10080 min Winter	138.043	0.043	0.0	1.0	1.0	4.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	90.933	0.0	57.1	41
60 min Winter	56.807	0.0	71.5	66
120 min Winter	34.060	0.0	85.7	120
180 min Winter	25.126	0.0	94.9	154
240 min Winter	20.193	0.0	101.7	192
360 min Winter	14.769	0.0	111.5	268
480 min Winter	11.811	0.0	118.9	338
600 min Winter	9.921	0.0	124.9	404
720 min Winter	8.598	0.0	129.9	468
960 min Winter	6.849	0.0	137.9	580
1440 min Winter	4.969	0.0	150.1	772
2160 min Winter	3.591	0.0	162.8	1120
2880 min Winter	2.850	0.0	172.3	1476
4320 min Winter	2.059	0.0	186.6	2208
5760 min Winter	1.640	0.0	198.4	2936
7200 min Winter	1.384	0.0	209.2	3680
8640 min Winter	1.208	0.0	219.2	4408
10080 min Winter	1.080	0.0	228.5	5128

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 413085 276004 SP 13085 76004
Data Type	Point
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) 0.150

Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)	Time (mins) From:	To:	Area (ha)
0	4	0.037	4	8	0.037	8	12	0.038	12	16	0.038

Model Details

Storage is Online Cover Level (m) 138.600

Complex Structure

Tank or Pond

Invert Level (m) 138.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	96.0	0.600	326.0

Swale

Infiltration Coefficient Base (m/hr)	0.00000	Length (m)	19.7
Infiltration Coefficient Side (m/hr)	0.00000	Side Slope (1:X)	10.0
Safety Factor	2.0	Slope (1:X)	10000.0
Porosity	1.00	Cap Volume Depth (m)	0.000
Invert Level (m)	138.300	Cap Infiltration Depth (m)	0.000
Base Width (m)	0.4		

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0108-4500-0450-4500
Design Head (m)	0.450
Design Flow (l/s)	4.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	108
Invert Level (m)	138.000
Minimum Outlet Pipe Diameter (mm)	150
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.450	4.5	Kick-Flo®	0.339	4.0
Flush-Flo™	0.168	4.5	Mean Flow over Head Range	-	3.7

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	3.7	0.300	4.2	0.500	4.7	0.800	5.9
0.200	4.5	0.400	4.3	0.600	5.1	1.000	6.5

Hydro-Brake® Optimum Outflow Control

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
1.200	7.1	2.400	9.8	5.000	13.9	8.000	17.7
1.400	7.6	2.600	10.2	5.500	14.6	8.500	18.2
1.600	8.1	3.000	10.9	6.000	15.3	9.000	18.7
1.800	8.6	3.500	11.8	6.500	15.9	9.500	19.2
2.000	9.0	4.000	12.6	7.000	16.5		
2.200	9.4	4.500	13.3	7.500	17.1		

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

Half Drain Time : 224 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	139.067	0.067	0.0	0.4	0.4	4.7	O K
30 min Summer	139.091	0.091	0.0	0.4	0.4	6.5	O K
60 min Summer	139.112	0.112	0.0	0.4	0.4	7.9	O K
120 min Summer	139.124	0.124	0.0	0.4	0.4	8.8	O K
180 min Summer	139.126	0.126	0.0	0.4	0.4	9.0	O K
240 min Summer	139.125	0.125	0.0	0.4	0.4	8.9	O K
360 min Summer	139.119	0.119	0.0	0.4	0.4	8.5	O K
480 min Summer	139.113	0.113	0.0	0.4	0.4	8.1	O K
600 min Summer	139.107	0.107	0.0	0.4	0.4	7.6	O K
720 min Summer	139.101	0.101	0.0	0.4	0.4	7.2	O K
960 min Summer	139.090	0.090	0.0	0.4	0.4	6.4	O K
1440 min Summer	139.068	0.068	0.0	0.4	0.4	4.8	O K
2160 min Summer	139.042	0.042	0.0	0.4	0.4	2.9	O K
2880 min Summer	139.022	0.022	0.0	0.4	0.4	1.5	O K
4320 min Summer	139.003	0.003	0.0	0.4	0.4	0.1	O K
5760 min Summer	139.000	0.000	0.0	0.3	0.3	0.0	O K
7200 min Summer	139.000	0.000	0.0	0.3	0.3	0.0	O K
8640 min Summer	139.000	0.000	0.0	0.2	0.2	0.0	O K
10080 min Summer	139.000	0.000	0.0	0.2	0.2	0.0	O K
15 min Winter	139.077	0.077	0.0	0.4	0.4	5.5	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	138.186	0.0	5.0	18
30 min Summer	90.933	0.0	7.0	33
60 min Summer	56.807	0.0	9.0	62
120 min Summer	34.060	0.0	11.0	122
180 min Summer	25.126	0.0	12.3	178
240 min Summer	20.193	0.0	13.2	204
360 min Summer	14.769	0.0	14.6	266
480 min Summer	11.811	0.0	15.6	334
600 min Summer	9.921	0.0	16.4	402
720 min Summer	8.598	0.0	17.0	470
960 min Summer	6.849	0.0	18.1	606
1440 min Summer	4.969	0.0	19.5	866
2160 min Summer	3.591	0.0	21.0	1232
2880 min Summer	2.850	0.0	22.0	1584
4320 min Summer	2.059	0.0	23.3	2208
5760 min Summer	1.640	0.0	24.3	0
7200 min Summer	1.384	0.0	25.1	0
8640 min Summer	1.208	0.0	25.8	0
10080 min Summer	1.080	0.0	26.4	0
15 min Winter	138.186	0.0	5.7	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	139.104	0.104	0.0	0.4	0.4	7.4	O K
60 min Winter	139.128	0.128	0.0	0.4	0.4	9.1	O K
120 min Winter	139.144	0.144	0.0	0.4	0.4	10.3	O K
180 min Winter	139.148	0.148	0.0	0.4	0.4	10.6	O K
240 min Winter	139.147	0.147	0.0	0.4	0.4	10.5	O K
360 min Winter	139.140	0.140	0.0	0.4	0.4	10.0	O K
480 min Winter	139.132	0.132	0.0	0.4	0.4	9.4	O K
600 min Winter	139.123	0.123	0.0	0.4	0.4	8.8	O K
720 min Winter	139.114	0.114	0.0	0.4	0.4	8.1	O K
960 min Winter	139.097	0.097	0.0	0.4	0.4	6.9	O K
1440 min Winter	139.064	0.064	0.0	0.4	0.4	4.5	O K
2160 min Winter	139.026	0.026	0.0	0.4	0.4	1.8	O K
2880 min Winter	139.004	0.004	0.0	0.4	0.4	0.2	O K
4320 min Winter	139.000	0.000	0.0	0.3	0.3	0.0	O K
5760 min Winter	139.000	0.000	0.0	0.2	0.2	0.0	O K
7200 min Winter	139.000	0.000	0.0	0.2	0.2	0.0	O K
8640 min Winter	139.000	0.000	0.0	0.2	0.2	0.0	O K
10080 min Winter	139.000	0.000	0.0	0.1	0.1	0.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	90.933	0.0	7.9	32
60 min Winter	56.807	0.0	10.2	62
120 min Winter	34.060	0.0	12.5	118
180 min Winter	25.126	0.0	13.9	174
240 min Winter	20.193	0.0	15.0	228
360 min Winter	14.769	0.0	16.5	284
480 min Winter	11.811	0.0	17.6	362
600 min Winter	9.921	0.0	18.5	438
720 min Winter	8.598	0.0	19.2	512
960 min Winter	6.849	0.0	20.4	656
1440 min Winter	4.969	0.0	22.1	924
2160 min Winter	3.591	0.0	23.8	1276
2880 min Winter	2.850	0.0	25.0	1552
4320 min Winter	2.059	0.0	26.5	0
5760 min Winter	1.640	0.0	27.7	0
7200 min Winter	1.384	0.0	28.7	0
8640 min Winter	1.208	0.0	29.6	0
10080 min Winter	1.080	0.0	30.4	0

Rainfall Details

Rainfall Model	FEH
Return Period (years)	100
FEH Rainfall Version	2013
Site Location	GB 413085 276004 SP 13085 76004
Data Type	Point
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) 0.024

Time (mins) From:	To:	Area (ha)
0	4	0.024

Model Details

Storage is Online Cover Level (m) 139.500

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	9.6
Membrane Percolation (mm/hr)	1000	Length (m)	25.0
Max Percolation (l/s)	66.7	Slope (1:X)	10000.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	139.000	Membrane Depth (m)	0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0032-5000-1000-5000
Design Head (m)	1.000
Design Flow (l/s)	0.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	32
Invert Level (m)	138.500
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	0.5	Kick-Flo®	0.288	0.3
Flush-Flo™	0.143	0.3	Mean Flow over Head Range	-	0.4

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	0.3	1.200	0.5	3.000	0.8	7.000	1.2
0.200	0.3	1.400	0.6	3.500	0.9	7.500	1.2
0.300	0.3	1.600	0.6	4.000	0.9	8.000	1.3
0.400	0.3	1.800	0.6	4.500	1.0	8.500	1.3
0.500	0.4	2.000	0.7	5.000	1.0	9.000	1.3
0.600	0.4	2.200	0.7	5.500	1.1	9.500	1.4
0.800	0.5	2.400	0.7	6.000	1.1		
1.000	0.5	2.600	0.8	6.500	1.2		

Appendix C

CORRESPONDENCE

ECONOMY & INFRASTRUCTURE DIRECTORATE
Council House, Manor Square,
Solihull, West Midlands B91 3QB

Sandeep Magar
SMBC Building Design Studio
Council House
Manor Square
Solihull
B91 3QB

Date: 10th March 2021

APPLICATION NO.: PL/2021/00171/PREAPC
CASE OFFICER: Matt Preece
Tel: 0121 704 8640

Dear Sandeep,

PRE-APPLICATION ADVICE

Proposal. Pre-application advice regarding an additional 1 form entry to the existing school. This will consist of 5 additional class bases and an additional reception class base. Single storey in height and in keeping with existing school. The external landscape for play areas will be amended to suit the expansion with the intention of introducing a multi-use gym area within the school play area. Additional staff car parking will be provided within the school parking area and future provision of site access and additional parking on land to the East of the School.

Location. Cheswick Green Primary School, Cheswick Way, Cheswick Green, Solihull B90 4HG

Applicant. Laura Watson

I refer to your request for pre-application advice and have the following observations.

In providing this advice officers have had regard to the following plans and documentation:

Plans

- Existing Ground Floor Plan (17011 BDG ZZ 00 DR A 1001 S3)
- Option 1E Floor Plan (17011 BDG ZZ GF DR A 1007 S3 P08)
- Site Location Plan (17011 BDS ZZ XX DR A 0100 S0 P01)
- Layout Plan (17011 BDS ZZ XX DR A 0101 S0 P01)
- Cheswick Green Primary School: Additional 1FE Extension dated 6th November 2020

Documents

- Cheswick Green Primary School Additional 1 Form Entry Expansion Document dated 21st January 2021 (17011-BDG-XX-XX-RP-A-0008-S0-P02)
- Transport Assessment dated December 2020
- Pre-Application Form

The main issues in this case are considered to be:

- Principle of Development
- Green Belt
- The effect of the proposal on highway safety and the free flow of the road network
- Other Material Considerations
    - Character and Appearance
    - Living Conditions
    - Air Pollution
    - Landscape / Ecology
    - Drainage
    - Sports Pitches / Playing Fields
    - Heritage
    - Other Matters
- Validation Requirements
- Conclusion

Principle of Development

Paragraph 94 of the Framework establishes that it is important that a sufficient choice of school places are available to meet the needs of existing and new communities. Local planning authorities should take a proactive, positive and collaborative approach to meeting this requirement, and to development that will widen choice in education. They should:

> a) give great weight to the need to create, expand or alter schools through the preparation of plans and decisions on applications; and
> b) work with schools promoters, delivery partners and statutory bodies to identify and resolve key planning issues before applications are submitted.

Whilst there is no specific policy within the Local Plan relating to new or improved education facilities, Policy P5 (Provision of Land for Housing) sets out the likely infrastructure requirements for various allocated housing sites within the plan.

It is acknowledged that it is as a result of housing developments within the Borough that the Local Education Authority is faced with the additional education demand that this pre-application proposal seeks to address. The Local Planning Authority is committed to supporting the Local Education Authority to help identify and resolve key planning issues before the application is submitted.

Green Belt

Extensions

In terms of the extensions to the school, this area as edged red on the Site Location Plan is located within the built up area of the settlement of Cheswick Green. The settlement is in the Green Belt and is subject to Green Belt policies.

Policy P17 (Countryside and Green Belt) of the Local Plan addresses Green Belt issues and supports national policy and sets out additional provisions.

The Framework advises that local planning authority should regard the construction of new buildings as inappropriate in the Green Belt. Exceptions to this include:

- The extension or alteration of a building provided that it does not result in disproportionate additions over and above the size of the original building (paragraph145 c); and

- The partial or complete redevelopment of previously developed land, whether redundant or in continuing use (excluding temporary buildings), which would not have a greater impact on the openness of the Green Belt than the existing development (paragraph 145 e)

Drawing matters together, it is considered that there is scope for enabling the proposals in Green Belt terms, particularly in the context of the built-up nature of the settlement. However, any planning application coming forward will need to address the Green Belt policies detailed above.

Additional parking

Turning to the additional parking on land to the east of the School, this area as edged blue on the Site Location Plan is located outside the built-up area of the settlement of Cheswick Green in open countryside.

The additional parking can be regarded as an engineering operation. The Framework advises that engineering operations are not inappropriate in the Green Belt provided they preserve its openness and do not conflict with the purposes of including land within it (paragraph 146 b).

The essential characteristics of Green Belts are their openness and their permanence. Whilst there is no definition of openness, it is generally regarded as being free from inappropriate development and the counterpart of urban sprawl. It can comprise spatial and visual aspects.

The additional parking would introduce a substantial area of hardstanding and associated infrastructure such as a lighting and fencing on an area of land with is currently open countryside. There would also be transient activity in the form of vehicle movements and other activity. In this regard, there would be a substantial loss of openness to the Green Belt in a spatial sense and visual sense.

In terms of purposes of including land within Green Belts, the fundamental aim of Green Belt policy is to prevent urban sprawl by keeping land permanently open. One of the purposes of the Green Belt is to assist in safeguarding the countryside from encroachment. One of the objectives of the Local Plan is to maintain the Green Belt in Solihull. The additional parking would intensify both the

use of site and the amount of built development, and amount to substantial encroachment and urban sprawl into this part of the Green Belt.

In summary, the additional parking would have a greater impact on the openness of the Green Belt and therefore would fail to meet the exception test as set out paragraph 145 b of the Framework. The additional parking is therefore inappropriate development in the Green Belt and should not be approved except in very special circumstances.

The Framework confirms that 'very special circumstances' will not exist unless the potential harm to the Green Belt by reason of inappropriateness, and any other harm, is clearly outweighed by other considerations.

Drawing matters together, in addition to harm to the Green Belt, paragraph 141 of the Framework requires any other harm(s) identified to be weighed against the proposal in the overall planning balance. Officers consider it likely that the additional parking would also result in harm to the character and appearance of the countryside and amenity of the occupiers of the number 174 Creynolds Lane. On the basis of the information submitted, officers are unable to conclude whether there would be any other harm(s) above those identified.

In the event all non-Green Belt planning considerations were accorded neutral weight in the planning balance (which for the reasons outlined is not the case), and the local planning authority attached substantial weight to the collective benefits of the proposal (which remains to be demonstrated); these benefits must then be weighed against the substantial harm(s) to the Green Belt and other harm(s) identified. The benefits of the proposal do not clearly outweigh the identified harm(s) and the overall planning balance would not be in favour of the additional parking and cannot be supported.

The effect of the proposal on highway safety and the free flow of the road network

The Highway Authority has attended a meeting with the appointed Transport Consultant, PJA, on Wednesday 27th January 2021 to review the Transport Assessment (TA) submitted in support of the proposals. The Highway Authority has also attended a meeting with the Council's Building Design Studio and the Local Planning Authority on Wednesday 03rd February 2021 and a follow-up meeting on Thursday 04th February 2021 to discuss the proposals. The following text provides commentary of the Highway Authority's review of the development proposals and information submitted in support of the proposals.

Overview

The proposals seek to construct to expand the existing primary school to provide an additional one-form entry expansion. The proposed expansion will increase the number of pupils at the primary school from 270 (including 30 pre-school pupils) to 510; an increase of 240 pupils. The proposals will also result in an additional 21 staff members being employed at the school. It is understood that the primary reason for the proposed expansion is to accommodate pupils from recent residential developments, including those within Cheswick Green but also the development at Blythe Valley Park (BVP).

Policy Framework

Chapter 2 (Policy Framework) of the TA submitted in support of the proposals provides details of relevant national and local planning policies. The TA makes reference to Paragraph 103 of the NPPF but does not make reference to Paragraphs 108 or 110. The Policy Framework should also make reference to Policy P7 of the Solihull Local Plan 2013, particularly section a) iii.

Baseline Conditions

Two site visits were undertaken to assist informing the existing baseline conditions. The surveys were carried out on Tuesday 10th November 2020 and Thursday 12th November 2020. During the survey periods, the school was operating staggered start and finish times and there was a reduced capacity at the nursery and pre-school. It is understood this was due to restrictions in place caused by the Covid-19 pandemic. It could therefore be argued that if staggered start and finish times are not retained as part of the proposals, the observations are not wholly representative of what would occur during the school's usual operations. The TA suggests that the nursery and pre-school were operating at a reduced capacity but it is unclear by how much, and what impact this could have in terms of traffic impact.

Impact of COVID-19

To understand the extent that the Covid-19 pandemic may have affected travel habits, an online survey was sent out to all parents/guardians at the existing school. The survey was answered by 64% of families however, the total number of families that were surveyed has not been provided to understand what 64% is.

Development Proposals

The proposals include the provision of 14 additional car parking spaces to be provided for the 21 additional staff members. There are currently 12 car parking spaces provided on-site for staff, visitors and disabled pupils and the TA makes reference to the parking area being at capacity which leads to staff parking on the local highway network. It is unclear whether the additional car parking proposed will be sufficient to serve the proposed additional staff and also address existing issues. It has been discussed separately that a tandem parking arrangement could be explored. The Highway Authority will require confirmation from the school that this would be acceptable and managed appropriately.

Travel Demand and Impact

Table 5-1 (Existing and Proposed Pupil Travel Demand) of the TA provides details of the method of travel to school for existing pupils. Paragraph 5.2.6 makes reference to the low percentage of pupils that travel by Car Share mode considering the number of families and siblings that attend the school, and that the low percentage could be due to a misunderstanding of the question due to the age of the pupils. The Highway Authority acknowledges that the Car Share percentage has not been altered however; the paragraph casts doubt on the validity of the survey and survey results. Paragraph 5.2.7 of the TA takes account of the number of pupils that attend before/after school wrap around care and after school clubs. This appears to be based on the higher number of pupils that can attend these facilities. For robustness, further details regarding the number of pupils that attend the facilities per day should be provided.

Future Mode Share – Sensitivity Test

To establish the mode of travel future pupils will use when travelling to/from the school, a sensitivity test has been undertaken as it has been recognised that future pupils may not travel via the same methods as existing pupils, due to the location of the future pupils being from outside of Cheswick Green.

It has been considered that none of the future pupils will walk or cycle to the school therefore, the 52.7% of pupils that currently walk or cycle to school has been split evenly between car and car share modes. No justification has been included to support the decision to split this evenly between car and car share modes. The suggest car share mode is 26.8% for new pupils compared to 0.5% for existing pupils but there has been no information submitted for such a significant increase in pupils travelling by car share mode.

It has also been suggested that 4.5% of future pupils will travel by public bus however; the current timetable would make this an unrealistic option.

The TA indicates that 93% of future pupils will travel by car, which could equate to an additional 167 vehicles in the AM peak, and 126 vehicles in the school PM peak. This is also based on the higher car share figure which has yet to be justified, so the proposals could actually generate a higher increase in the number of additional vehicles being generated at the school. This will be in addition to the 100 existing vehicles in the AM peak and 66 during the school's PM peak, having discounted the vehicles that travel outside of the normal peak periods.

Local Highway Capacity

Paragraph 5.3.5 indicates that the junction of Stratford Road (A34) and Creynolds Lane has recently been improved as part of the BVP development and assumes that the improvements should be suitable to accommodate the increase in traffic the proposals could generate. It does not appear that the TA for the BVP development has been reviewed to establish whether school traffic generated by BVP was taken into consideration when determining the impact at this junction. Paragraph 5.3.6 suggests that the majority of vehicular traffic generated by the school will travel via this junction.

The proposals could generate an additional 332 two-way vehicle trips during the AM peak period and approximately 252 two-way vehicle trips during the school's PM peak period. Again, this is based on the higher car share figures. A development generating such a significant increase in vehicle trips should be assessing its impact on junctions within the vicinity of the application site.

Survey Results

A parking beat survey was carried out within a 5-minute walk of the school to establish how much parking could be available on the public highway for existing and future pupils travelling by car. The survey was taken when the school was operating staggered start and finish times and the nursery and pre-school were not at capacity, it could therefore be argued that the survey may not be representative of a typical school day. The survey suggests that the local highway network has capacity for 592 parked vehicles.

The survey results essentially suggest that if people spread out further and make use of all the public highway that is available, there should be sufficient capacity to accommodate the increase in

vehicles travelling to the school. This is not considered to be reasonable or realistic, otherwise there wouldn't be existing issues that have been noted and observed earlier in the TA. It is also likely that the additional vehicles parking on the public highway would increase the amount of the public highway that is parked on and obstructing the width of the carriageway available, which could in turn result in more congestion and issues arising. It also does not appear that additional vehicles parking on the public highway carriageway and/or footway takes into account the proposals to encourage existing local pupils to walk and cycle to the school.

Mitigation Measures

The TA recommends a number of mitigation measures however; they appear to be individual measures rather than a combination of measures. It is unclear whether applying multiple measures will work effectively together.

Park & Stride

It is recommended that an off-site Park & Stride scheme is set up to reduce congestion around the school during peak periods. It is recommended that the Park & Stride scheme is located at the Cheswick Green Local Centre Car Park, which has approximately 51 car parking spaces. The Highway Authority notes that the car park has not been surveyed to establish how many spaces would typically be available for use. The Highway Authority also has concerns that the suggested site is located towards the south-western part of the Village, whereas the primary school is located towards the north-east. The suggested location therefore may not be the most suitable or appropriate as it would involve a large number of parents/guardians travelling in the opposite direction of the school or even passed the school to access the Park & Stride scheme. The Highway Authority also notes that only a minor number of parents/guardians surveyed indicated they would use the Park & Stride scheme every day.

Staggered Start / Finish Times

It has been proposed that the staggered start and finish times are continued to be used. It is unclear whether this would operate in the same way (i.e. siblings could be dropped off / collected at the same time). It is also unclear how this would operate in conjunction with other mitigation measures proposed, such as the Park & Stride scheme.

Pedestrian/Cycle Link to BVP

A pedestrian and cycle link between the primary school and BVP has been suggested however, no further information has been submitted to establish whether this is an achievable or viable option. Although this would provide a more direct and safer route compared to existing pedestrian and cycle routes, the distance may not encourage future pupils to use the route.

Dedicated School Bus

Although the TA does not make reference to a dedicated school bus, this was discussed as a possible option during meetings with the Council's Building Design Studio. No further information has been submitted to establish whether the provision of a dedicated school bus to collect / drop off pupils within BVP is achievable or viable. It is likely that the Highway Authority would support the provision of a dedicated school bus service as it should contribute towards reducing the impact of the proposals and encouraging sustainable modes of transport.

Other Matters / Points

The Highway Authority recommends that the location of the existing pupils is provided to establish how many existing pupils could be encouraged to make use of sustainable modes of travel. If there is an increase in the use of sustainable modes of travel, particularly in cycling, will an increase in cycle parking provision be proposed? It may be appropriate to contact the Council's Travel Plan team to establish what an appropriate reduction in car journeys for existing pupils could be over the coming years.

Conclusion

As it currently stands (without the provision of a dedicated school bus service), the proposals could result in at least an additional 167 vehicles being generated during the AM peak period, in addition to the existing 100 vehicles. As previously stated, the 167 additional vehicles is based on a much higher percentage being applied to the car share mode without justification. The Highway Authority has concerns that this significant increase would have a severe impact on the operation of the local highway network and potentially on public highway safety. The Highway Authority also has concerns that Policies P7 and P8 of the Solihull Local Plan 2013 have not been addressed in the TA. With regards to Policy P7, it has not been addressed to demonstrate that the site is in an accessible location and the intended future users of the school can access the site via sustainable modes of transport (i.e. walking, cycling, public transport).

Other Material Considerations

Character and Appearance

Policy P15 (Securing Design Quality) of the Local Plan requires all development to achieve good quality, inclusive and sustainable design, which conserves and enhances local character, distinctiveness and streetscape quality and ensures the scale, massing, density, layout, materials and landscape of the development respects the surrounding natural, built and historic environment. Developments will be expected to create a sense of place.

In terms of the physical scale of the proposed buildings and MUGA, on the basis of the information submitted, the proposed buildings and MUGA appear appropriately sited, appropriate in size, and appear to respect the proportions of the existing building and site. They would therefore not detract from the visual amenity of the application site or the character and appearance of the street scene.

With regard to design, any application coming forward will need to be supported by a robust Design and Access Statement which provides the rationale behind the design and demonstrates how the proposed development has addressed Policy P15 of the Local Plan.

Living Conditions

Policy P14 (Amenity) of the Local Plan seeks to protect the amenity of existing and potential occupiers of houses and businesses.

In terms of the physical scale of the proposed buildings and MUGA, on the basis of the information submitted, the proposed buildings and MUGA appear appropriately proportioned and sited so as not to have an adverse effect on the amenity of neighbours immediately adjacent to the site's boundary.

With regard to noise and disturbance, clearly the increase in pupil numbers would bring additional activity from children being dropped off along the boundary at drop off and pick up time. Thus, any application coming forward will need to be supported by information, including any mitigation measures, which demonstrates how the proposed development has addressed Policy P14 of the Local Plan.

There is also the potential for noise and disturbance as a result of the MUGA. The Council's Public Protection Officer has advised that it is difficult to comment on the MUGA as there is little information. Any application coming forward will need to be supported by

1. The proposed hours of operation of the MUGA.
2. Whether there will be any boundary treatment (i.e. chain fencing, kick boards etc).
3. Whether or not the MUGA will be hired out to external agencies.

The Council's Public Protection Officer has also requested manufacturer's details of any external plant/equipment that will be fitted as a result of the proposal including noise data.

Air Pollution

Air quality is a key Council priority. The Council has published its 'Solihull Clean Air Strategy 2019-2024', which is a document that outlines the Council's action plan on how it intends to tackle air quality in Solihull. It is notable that air quality in Solihull sits well below threshold levels that are considered dangerous, and therefore there are no designated Air Quality Management Areas in the borough.

Solihull's Clean Air Strategy focuses on actions led by Solihull Council to improve air quality across the borough, however in order to be truly effective, the action plans will be reliant on an integrated approach which encompasses behavioural, strategic and infrastructure changes, working alongside a range of partners. Air quality will also be influenced by the wider national and regional strategic context.

Much work has already commenced between the Council and key stakeholders such as schools to reduce air pollution within the borough. This includes education and behaviour change interventions for both pupils and parents. Encouraging primary school children to want to be sustainable travellers can contribute to whole families changing their travel habits.

Clearly the increase in pupil numbers would bring additional activity from children being dropped off along the boundary at drop off and pick up time. Thus, any application coming forward will need to be supported by information, including any mitigation measures, which demonstrates how the proposed development has addressed the 'Solihull Clean Air Strategy 2019-2024'.

Landscape / Ecology

Policy P10 (Natural Environment) of the Local Plan recognises the importance of a healthy natural environment in its own right. Policy P14 (Amenity) requires new development to safeguard important trees, hedgerows and woodlands.

Ecology

The Council's Ecologist has advised that a Preliminary Ecological Appraisal (PEA) or Ecological Impact Assessment (EcIA) should be submitted to fully inform the planning application process. This should include any information about potential protected species and how to avoid any impact or suggested appropriate mitigation.

It should also include a Biodiversity Impact Assessment (BIA). Policy P10 of the Local Plan and the Framework requires net gain in biodiversity overall and this should be achieved on site, demonstrated in the BIA. The WCC biodiversity calculator can be found at the following link: https://www.warwickshire.gov.uk/biodiversityoffsetting

Landscape

There is no tree survey or arboricultural information included with this pre-application submission and this is concerning as this should be informing the layout in terms of new buildings, hard surfacing, new car parking and pedestrian circulation. If this information has not yet been carried out, then is should be and the design and layout be reviewed based on the arboricultural constraints and recommendations. This is particularly pertinent with regard to 'The Mount'.

The position of the new expansion building does not appear to have any significant impact on landscape features such as trees, hedges etc. and utilises part of the playing field. There may be one small tree on the south-eastern extent of the new building which may need to be removed. The additional staff car parking will require tree removal; trees removed to facilitate development should be replaced as part of a detailed landscape scheme, this should be part of the full planning application.

The Mount: this is a more concerning proposal as this is an area covered with trees and enclosed by a hedge, it is also a heritage asset described as possibly the second oldest built structure in the borough. There is no survey information regarding this site. The site is within the ownership of Cheswick Green Parish Council – has there been discussion regarding potential access?

There are multiple issues with this access:

- Tree protection and avoidance of damage through construction of paths, fencing, gates etc. health and safety as trees may require works to enable access and will need continued management
- Ownership of the land for school use and maintenance
- Access control – a locked gate may be needed at the Chatsworth Close end to avoid anti-social behaviour. Gates will need to be controlled by the school at certain times only
- Lighting – will there be a need for this, this may impact trees given the need to install cabling, plus there may be an impact on biodiversity (also see Heritage section).

External play/sports: there is no information regarding the amendments to the external landscape for play areas and a multi-use gym area within the school play area – this should be shown on a site plan and landscape plan. Is there any change to the playing field?

Drainage

Policy P11 (Water Management) of the Local Plan explains that all new developments shall in corporate sustainable drainage systems, unless it is shown to be impractical to do so.

The site is greater than 1ha and as such a Flood Risk Assessment (FRA) is required to support a planning application at this location in line with the requirements of the Framework.

According to mapping produced by the Environment Agency and held by the Council, the site is at risk of surface water flooding.

It should also be noted that the council holds a number of property and infrastructure flood records in the vicinity of the site.

The risks associated with the above will need to be covered within the FRA to demonstrate that the final location and layout is appropriate for development of this nature.

In addition, evidence must be provided to show that flood risk is not increased within adjacent land during extreme events. Details should also be provided to demonstrate flood resilient construction of the proposed buildings and how these will be managed for the lifetime of the development.

With regards to surface water drainage, the hierarchy for surface water discharge set out in the Framework must be followed and evidenced appropriately, including supporting BRE365 infiltration investigation data where appropriate.

The Leading Local Flood Authority (LLFA) is disappointed that the initial plan does not identify any space for water in above ground features and would note that this location has many opportunities for high quality SuDS that can link to the proposed land uses and adjacent areas. The implementation of above ground SuDS features in educational areas is well documented and these can be integrated into the proposed end use to provide additional benefits. We would expect any application to be supported by a sufficiently detailed strategy for the implementation of multiple and interlinked above ground SuDS and blue-green infrastructure along with a commitment to see these through to construction.

Discharge rates must be limited by way of an appropriate control device to the site specific greenfield rate runoff and the drainage hierarchy for discharge location followed with preference given to infiltration where ground conditions prove appropriate. Any discharge points into a watercourse must not become submerged during floods, with water from the watercourse backing up into the site's drainage system.

For surface water storage, the on-site system must contain the 1 in 30 year and 1 in 100 year events including climate change, which should be calculated using the climate change guidance published by the Environment Agency. This must be done using a range of SuDS features, as stated in Policy P11 of the Local Plan, with a minimum two stage treatment train incorporated into the design with provision for above ground storage and conveyance made in order to maximise water quality and biodiversity benefits.

It should be noted that the LLFA will not readily accept underground attenuation tanks as part of the strategy.

In terms of ownership and maintenance, the LLFA would expect the application to provide a detailed maintenance plan to support the application.

The LLFA would welcome early dialogue with the applicant prior to commencement or submission of any further application to confirm and agree principles. Early dialogue will allow opportunities and constraints to be understood and agreed and can result in an exemplar site being brought forward.

Recommended Documents

As a minimum, the following documents submitted with any planning application:

- Drawing showing overall concept drainage design principles
- Site layout plan, incorporating detailed drainage design, site ground levels, finished floor levels, any integration with landscaping etc
- Flood Risk Assessment including:
  - Assessment of current flood risk to the site
  - Actions to mitigate surface water flood risk and or provide flood alleviation to wider catchment (supported by robust calculations)
  - Extreme flood flow routing and proposed resilience measures that ensure the buildings and infrastructure are safe from flooding
  - Confirmation of site discharge rates (including supporting calculations)
  - Confirmation of proposed discharge location including site investigations where necessary.
  - Innovative and Multi-Functional SuDS Design that makes good use of the site space, supported by robust calculations and demonstrating full compliance with SMPC Policy P11 and DEFRA's Non-statutory technical standards for sustainable drainage systems to accommodate the difference between the allowable discharge rate/s and all rainfall events up to the 100 year plus climate change critical rain storm.
  - Surface Water Drainage adoption and maintenance strategy
- Any infiltration and groundwater test results (to BRE365 or CIRIA156)
- Supporting model files in electronic format.
- Temporary surface water plan (for during construction)

Sports Pitches / Playing Fields

Paragraph 97 of the Framework establishes that existing open space, sports and recreational buildings and land, including playing fields, should not be built on.

Policy P20 (Provision for Open Space, Children's Play, Sport, Recreation and Leisure) of the Local Plan confirms that the Council recognises the importance and multi-functional benefits of public open space, sports and recreational facilities within the Borough and will support the enhancement of existing facilities and open space. Loss of existing facilities through development will not be permitted where they are of value to the local community for recreation, visual amenity, nature conservation or make an important contribution to the quality of the environment or network of green infrastructure.

Any application coming forward will need to be supported by information, including any mitigation measures, which demonstrates that the proposal does not adversely affect existing sports and recreational buildings and land, including playing fields.

Heritage

Policy P16 (Conservation of Heritage Assets & Local Distinctiveness) of the Local Plan explains that the Council recognises the importance of the historic environment to the Borough's local character and distinctiveness, its cultural, social, environmental and economic benefits and the effect this has on civic pride.

The proposed development includes a new pedestrian way across 'The Mount' which is a local heritage asset. It is important that a new path does not cause greater access to 'The Mount' or play on it that results in actual damage. However, if done sympathetically, a new path would represent a way to increase appreciation of the heritage asset.

Other Matters

The Regulation 19 representation period for the Solihull Local Plan: Draft Submission Version has now closed. The representations received will be the focus of the independent examination, which is the next stage in the process, and is expected to take place this year. Once the Solihull Local Plan: Draft Submission Version has been submitted for examination, policies contained within the Plan will be afforded more weight in the decision-making process. It would therefore be advisable to review the proposed development against emerging policies within the Solihull Local Plan: Draft Submission Version. The Plan can be found at the following link: https://www.solihull.gov.uk/Planning-and-building-control/Local-Plan-Review

Validation Requirements

The Council adopted a new Local Validation Criteria in February 2020. Given the proposal is a major development, any formal submission would require the following information and assessments to be submitted:

- Completed Application Form
- Relevant fee
- Ownership certificates and notice(s)
- Location plan
- Block/Site Plan
- Existing and Proposed Elevations
- Existing and Proposed Floor Plans
- Existing and Proposed Site level drawings
- Design and Access Statement
- Ecological Assessment including Biodiversity Impact Assessment
- Flood Risk Assessment including drainage strategy
- Parking and Access Plan
- Planning Statement
- Transport Assessment
- Tree Survey

- Arboricultural Impact Assessment

All plans and documents should be provided in accordance with guidance set out in the Council's Local Validation Criteria which can be found at the following link: https://www.solihull.gov.uk/sites/default/files/migrated/Planning_Local_Validation_Criteria_Jan_2020.pdf

Conclusion

It is acknowledged that it is as a result of housing developments within the Borough that the Local Education Authority is faced with the additional education demand that this pre-application proposal seeks to address.

The Local Planning Authority is committed to supporting the Local Education Authority to help delivery the expansion of the borough's schools to meet this demand. However, while the principle of expansion is supported, planning law requires that applications for planning permission be determined in accordance with the adopted development plan (Local Plan), unless material considerations indicate otherwise.

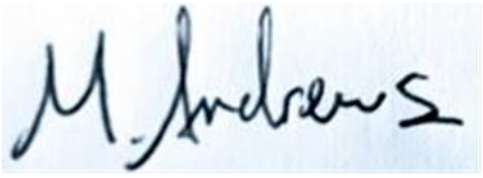
For the reasons outlined in this advice letter, while the proposal gains significant support from local plan policies and national guidance, there is currently conflict with a number of development plan policies and national guidance which needs to be addressed if planning permission is to be granted.

Therefore, whilst the proposal raises no policy objection to the principle of development (excluding the additional parking on land to the east of the School), there are a number of fundamental material considerations that consultee's have raised. These are set out in this advice letter and require further detailed consideration to ensure compliance with planning policy set out above.

You will appreciate that these views expressed herein are intended for your guidance, and are offered without prejudice to the determination of the application. They represent an officer opinion only and are not binding on the Authority. Any future planning application will be determined following public consultation, and may ultimately be decided by the Council's Planning Committee.

Please contact me on the direct line if you wish to discuss the matter further.

Signed



Mark Andrews
Head of Planning, Design and Engagement Services

Durkin, Aimee

From:	Enquiries_Westmids <Enquiries_Westmids@environment-agency.gov.uk>
Sent:	11 November 2020 09:47
To:	Grant, Jack
Subject:	Our Ref: 192768 - Cheswick Green Primary School - P4 Data Request

RE: Request for information under the Freedom of Information Act 2000 (FOIA) / Environmental Information Regulations 2004 (EIR)

We refer to your request for information Product 4 Cheswick Green Primary School

We have considered your request under the provisions of the Freedom of Information Act 2000 / Environmental Information Regulations 2004 (EIR). The Act requires that we respond to requests by advising you whether or not information is held, and if so by providing you with that information.

EIR Regulation 3(2) states that information is held if it is in our possession and has been produced or received by us, or it is held by another person on our behalf at the time the request is received.

Information not held
In this case, the information you have requested is not held by the Environment Agency, and we are therefore refusing your request on the grounds that there is no information we can provide.

Where a request is for environmental information, the Regulations allow us to refuse to disclose it if the exception at EIR Regulation 12(4)(a) applies. The regulation states that a public authority may refuse to disclose environmental information to the extent that it does not hold that information when an applicant's request is received.

It is not possible for us to conduct a public interest balancing test because the reason for non-disclosure is that the information is not held.

Rights of appeal
If you are not satisfied you can contact us within 2 calendar months to ask for our decision to be reviewed. We shall review our response to your request and give you our decision in writing within 40 working days.

If you are still not satisfied following this, you can raise a concern with the Information Commissioner, who is the statutory regulator for Freedom of Information and the Environmental Information Regulations. The contact details are:

Information Commissioner's Office
Wycliffe House
Water Lane
Wilmslow
Cheshire
SK9 5AF
Tel: 0303 123 1113
Website: http://ico.org.uk

The information on Flood Zones in the area relating to this address is as follows:

The property is in an area located within Flood Zone 1 shown on our Flood Map for Planning (Rivers and Sea).

Note - This information relates to the area that the above named property is in and is not specific to the property itself as it is influenced by factors such as the height of door steps, air bricks or the height of surrounding walls. We do not have access to this information and is not currently used in our flood modelling.

Flood Zone definitions can be found at www.gov.uk/guidance/flood-risk-and-coastal-change#Table-1-Flood-Zones

More information can be found on the website at: https://flood-map-for-planning.service.gov.uk/ You can draw your development extent and the service then provides details on what level of Flood Risk Assessment you would require and the reasons why.

Data Available Online
Many of our flood datasets are available online:

- Flood Map For Planning (Flood Zone 2, Flood Zone 3 ,Flood Storage Areas, Flood Defences, Areas Benefiting from Defences)
- Risk of Flooding from Rivers and Sea
- Historic Flood Map
- Current Flood Warnings

Further details about the Environment Agency information supplied can be found on the GOV.UK website:

https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather

If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency Information for Flood Risk Assessments.

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

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Yours sincerely

Diane Edwards
Customers & Engagement Officer
West Midlands

For further information please contact the Customers & Engagement team on
Tel. 02084 747856
Direct e-mail:- Enquiries_Westmids@environment-agency.gov.uk

Durkin, Aimee

From:	Savage, Harry (Managed Growth and Communities Directorate, Solihull MBC) <harry.savage@solihull.gov.uk>
Sent:	18 November 2020 09:52
To:	Grant, Jack
Subject:	RE: Cheswick Green Primary School - Data Request
Attachments:	Cheswick Green.docx
Follow Up Flag:	Follow up
Flag Status:	Completed

Hi Jack,

Please see attached information on surface water drainage requirements.

In terms of flooding we are not aware of any properties within or surrounding the site that have suffered from flooding.

Kind regards,

Harry

Harry Savage
Assistant Engineer | Highway Infrastructure | Economy & Infrastructure
Solihull Metropolitan Borough Council
T: 0121 704 6530
P: Council House | Manor Square | Solihull | B91 3QB

On any proposed development evidence must be provided to show that flood risk is not increased within adjacent land during extreme events. Details should also be provided to demonstrate flood resilient construction of the proposed buildings and how these will be managed for the lifetime of the development.

With regards to surface water drainage, the hierarchy for surface water discharge set out in the NPPF must be followed and evidenced appropriately, including supporting BRE365 infiltration investigation data where appropriate.

We would note that this location has many opportunities for high quality SuDS that can link to the proposed land uses and adjacent areas. The implementation of above ground SuDS features in residential/commercial/educational areas is well documented and these can be integrated into the proposed end use to provide additional benefits. We would expect any application to be supported by a sufficiently detailed strategy for the implementation of multiple and interlinked above ground SuDS and blue-green infrastructure along with a commitment to see these through to construction.

Discharge rates must be limited by way of an appropriate control device to the site specific greenfield rate runoff and the drainage hierarchy for discharge location followed with preference given to infiltration where ground conditions prove appropriate. Any discharge points into a watercourse must not become submerged during floods, with water from the watercourse backing up into the site's drainage system.

For surface water storage, the on-site system must contain the 1 in 30 year and 1 in 100 year events including climate change, which should be calculated using the climate change guidance published by the Environment Agency. This must be done using a range of SuDS features, as stated in P11 of the Solihull Local Plan, with a minimum two stage treatment train incorporated into the design with provision for above ground storage and conveyance made in order to maximise water quality and biodiversity benefits. It should be noted that we will not readily accept underground attenuation tanks as part of the strategy.

In terms of ownership and maintenance, we would expect the application to provide a detailed maintenance plan to support the application.

As a minimum, the following documents submitted with any planning application:

- Drawing showing overall concept design principles
- Site layout plan, incorporating detailed drainage design, site ground levels, finished floor levels, any integration with landscaping etc
- Flood Risk Assessment including:
    - Assessment of current flood risk to the site
    - Actions to mitigate surface water flood risk and or provide flood alleviation to wider catchment (supported by robust calculations)
    - Extreme flood flow routing and proposed resilience measures that ensure the buildings and infrastructure are safe from flooding
    - Confirmation of site discharge rates (including supporting calculations)
    - Confirmation of proposed discharge location including site investigations where necessary.
    - Innovative and Multi-Functional SuDS Design that makes good use of the site space, supported by robust calculations and demonstrating full compliance with SMPC Policy P11 and DEFRA's Non-statutory technical standards for sustainable drainage systems to accommodate the difference between the allowable discharge rate/s and all rainfall events up to the 100 year plus climate change critical rain storm.

    - Surface Water Drainage adoption and maintenance strategy
- Any infiltration and groundwater test results (to BRE365 or CIRIA156)
- Supporting model files in electronic format.
- Temporary surface water plan (for during construction)

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