Drainage Design Statement

21 Sunderland Road
JCC15-158

June 2015

Document Validation

Revision History

Revision Ref	Issue Date	Purpose of issue / description of revision
-	07/07/2015	Planning/Drainage Design Statement

Quality Assurance

	Purpose of issue / description of revision / version "Reason for Issue"		
	Prepared by	Checked by	Approved by
Name	Martin Thrumble	Tim Holland	Kris Haigh
Signature			

Contents

Executive Summary

James Christopher Consulting Ltd has been commissioned by Barrie and Hilary Sly to provide a drainage statement to supplement the planning submission for the redevelopment of 21 Sunderland Road.

The aim of this statement is to evaluate the current proposals with regard to historically surface water flooding issues and how we intend to deal with them as part of the drainage design for the development.

Existing Site

The development site is 21 Sunderland Road which is located within the Cleadon area of Sunderland.

The site currently contains a single bungalow with associated on curtilage parking.

The site is currently served by an adopted sewerage system, owned and maintained by Northumbrian Water Ltd within Sunderland Road.

Figure 1 – Google Map showing proposed site location

Risk to the Development

21 Sunderland Road has been subject to numerous flooding events in recent years with the most recent event being November 2013, this cause severe damage to the property. The path of proposed flood water can be seen via the environment agency surface water flood map (see below) which shows the site is in the direct route of surface water flooding from the fields to the north east of the development.

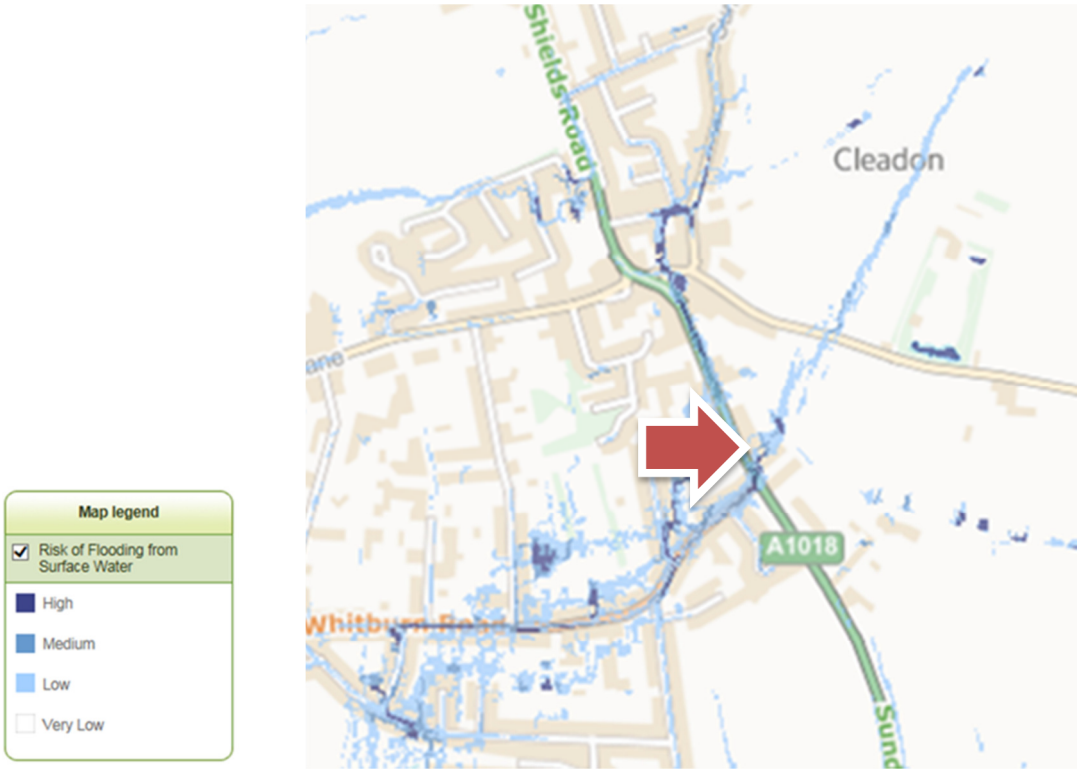

Figure 2 - Extract from EA Risk of Flooding from Surface Water

Surface water flooding happens when rainwater does not drain away through the normal drainage systems or soak into the ground, but lies on or flows over the ground instead.

The shading on the map shows the risk of flooding from surface water in this particular area as being *"an area that has A MEDIUM/HIGH risk of flooding from surface water."*

High means that each year, this area has a chance of flooding of greater than 1 in 30 (3.3%).
This takes into account the effect of any flood defences that may be in this area. Flood defences reduce, but do not completely stop the chance of flooding as they can be overtopped or fail.

Assessment of Impact: **HIGH**

Assessment of Probability: **HIGH**

Drainage Strategy, Proposed Development

Surface Water Runoff Disposal

The surface water strategy for the site will be developed on accordance with The Building Regulations Part H.

In accordance with Building Regulations and National Planning Policy Framework the disposal of surface water has been considered in the following order of priority;

- *An adequate soakaway or some other infiltration system; or, where not reasonably practicable,*
- *A watercourse, or where not reasonably practicable,*
- *A sewer*

Infiltration

Reference to the British Geoglocial Society free borehole logs from 33 Sunderland Road would suggest that the underlying soils are “Firm to Stiff brown sandy clays”

It is concluded that the underlying soil conditions are very unlikely to be favourable to acceptance of infiltration as an appropriate widespread method of surface water disposal.

Watercourse

The closest watercourse to the development is the River Don, which is significant distance away from the site. It is deemed impractical to connect the surface water runoff from the site directly to the River Don.

Sewer Connection

Due to the fact that it has been deemed impractical to dispose of the surface water runoff from the development by means of infiltration, or discharge directly to a watercourse, an application will be made to the local sewer network provider, Northumbrian Water (NWL), to consider discharge into their network.

Within the site boundary there is an operational sewer. Through the Pre Development Enquiry process, an application will be made to connect to the network.

Design Principal

It is proposed to discharge surface water flows from the proposed development into the local NWL system.

The discharge rate will be agreed with both Northumbrian Water and the Local Planning Authority.

A Pre Development Enquiry will be submitted to NWL to determine he available capacity within their local sewer network.

The surface water conveyance system will be designed to ensure no flooding during the 1 in 30 year event, ensuring no flooding from the 1 in 100 year, 6 Hour event leaves site.

An allowance for the impact of climate change will be included for within the design. The Environment Agency generally advises that a lifespan of 100 years should be used for residential developments. The Technical Guidance to the NPPF states that for the time period 2085 to 2115, peak rainfall should be increased by 30% to account for the possible impacts of climate change.

Careful design of on site features and levels will be necessary to ensure that no property is at risk of damage during these events.

Proposed Mitigation Measures

Following discussions with NWL and the Environment Agency it would seem that the only authority responsible for potential mitigation measures outside the site boundary would be Sunderland City Council. Therefore as well as the proposed on-site mitigation measures discussed below, we would open discussions with the council regarding any potential off-site measures which could reduce the risk of surface water flooding occurring on the site.

On-Site Mitigation Measures

One of the main proposed flood mitigation measures this property should adopt would be to raise the current floor level in order to minimise the impact of future flooding events. The ground floor should be designed to be resistant and resilient to flooding to reduce the impacts should water get in the building. This would include raising vulnerable equipment/power etc.

Access to the building, is through a single door to the front and two single doors to the rear. The installation of removable door flood panels and/or gates should be considered. These are relatively low cost protection measures which would help protect the ground floor of the property.

Figure 3 – Flood Gate

Figure 4 – Flood Panel

Discussions with Sunderland City Council Highways team would be undertaken; this would be to discuss the possibility of having a connection into the highway drainage which runs within Sunderland Road. As this property is directly affected by flood water it may be possible that due to the exception circumstances they will accept the field drainage from this property into their system. Discussions will also be required with the Environment Agency, as lead local flood authority they should have a knowledge of the area and the historical issues therefore may be able to offer some mitigation measures off-site.

Conclusions & Recommendations

In accordance with Building Regulations and National Planning Policy Framework the disposal of surface water has been considered in the following order of priority;

- *An adequate soakaway or some other infiltration system; or, where not reasonably practicable,*
- *A watercourse, or where not reasonably practicable,*
- *A sewer*

It has been determined that the only practicable outfall location for the surface water runoff from the proposed development is to the local sewer network. This is due to a) the anticipated unsuitability of the under lying soil conditions to accept information and b) the distance to the nearest local watercourse.

Historically the existing site has been served by the NWL sewer network. An application will be made to Northumbrian Water, through the Pre Development Enquiry process, to enquire on the capacity of the local sewer network to accommodate the proposed foul and surface water flows from the proposed development in due course.

With regards to the proposed mitigation measures, it would be advisable that discussions with all relative parties take place (NWL/SCC/EA). Outwith them discussions it would be advised that the floor level and associated vulnerable equipment such as power sockets etc. are raised above the previous flood level. Depending on the amount we can raise the floor level it maybe worth considering the implementation of flood gates/panel if the floor level cannot be raised above the previous flood levels due to planning issues.