STEVENSON ASSOCIATES

WILLOWGARTH SCHOOL, GRIMETHORPE,

INITIAL DRAINAGE ASSESSMENT

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WILLOWGARTH SCHOOL, BRIERLEY ROAD, GRIMETHORPE, BARNSLEY S72 7AJ

INTRODUCTION

1 Planning Permission is sought to redevelop Willowgarth School in Grimethorpe with residential properties and this report has been commissioned to determine how the site will be drained and whether the site will be affected by flooding or if the development will cause others to flood.

2 This report should be read in conjunction with the topographical survey prepared by Survey and Site Services and Layout drawings prepared by DLP Consultants.

EXISTING TOPOGRAPHY

3 The site is on the northern edge of Grimethorpe approximately 800 metres from the village centre at National Grid Reference SK 412 102. The site is bordered by fields to the north, residential properties to the south and fields and woodland (Tom Bank Wood) to the east. Access is from Brierley Road, which runs along the western boundary and there are open fields beyond that.

4 The site has a total area of about 12 hectares including playing fields that occupy a large area in the north of the site and some other grassed areas between the school buildings and southern boundary. The school buildings and playground facilities are situated in the southern half and the area between the school buildings and Brierley Road has access roads and car parks for staff and visitors.

5 The school is laid out with numerous blocks and extensions wings and is constructed over different levels with terracing between various units and hard-standing areas. Due to the amount of cut and fill it is difficult to appreciate the natural contours of the site.

6 However, along a line west to east through the school: the main access road entrance on Brierley Road is at a level of 89.5m and the school's reception / entrance is at a level of 87.0m producing a nominal drive gradient of 1.6% (1/62). The playground at the rear steps down a metre to 86.0m and continues to fall towards the eastern boundary at a level of 83.6m (nominally at 3.5%). Overall, from Brierley Road to the eastern boundary there is an approximate difference in level of 6.0 metres, which would produce an average gradient of around 2%.

7 Along a north – south line through the school: ground levels around the sports area / changing rooms are at an approximate level of 90.3m and a minor drive entrance on the southern boundary is at a level of 88.5m. This produces a nominal gradient of 1% falling north to south.

8 Playing fields on the north of the site are perched at a higher level than the main entrance drive giving the appearance that this area has been filled and levelled at some stage to produce a uniform playing surface. However, this area will be outside the area proposed for development and will not be affected by the proposals.

9 The smaller field on the south of the site is higher than the main school area rising to over 96 metres in the south west corner and probably being the highest point in the locality. This and surrounding land is identified as 'Windmill Hill' on Ordnance Survey maps and gives its name to the adjacent residential road – Windmill Avenue.

EXISTING DRAINAGE

10 The school has been developed over a period of about fifty years with extensions and new classroom blocks having been constructed around the original core. It is apparent that the drainage system has also developed over that period and many drains are now combined (foul and surface water); it is common in these situations to see that the nearest drain has been utilised to drain subsequent development.

11 Combined drains collect near to the eastern boundary of the site from where effluent drains to a public 300mm combined sewer some 110 metres east of the site in 'Addey Bottoms'.

12 Although some of the original drainage might have been combined, there are still a few pure surface water drains on site. Due to some blind connections (rainwater downpipes draining directly into the ground / no inspection chambers) it is not certain where they all drain. However, some rainwater pipes drain to soakaways: those on the sports-hall / changing rooms drain to soakaways in the adjacent playing field and there are others around the school.

13 There are also numerous dilapidated gutters and absent downpipes where rainwater discharges onto the adjacent ground. Water then runs off onto surrounding grassed areas where it soaks into the ground – apparently it does not cause flooding or ponding in these areas and is believed to drain quickly away.

14 There is a surface water drain beneath the main entrance road between the car park and school reception entrance. This drain has a blockage (possible because of collapse) and as

such gullies on the road surcharge causing floodwater to drain overland towards the school buildings.

15 In conclusion, the existing drainage system appears to have been built and modified little by little over the years and allowed to deteriorate through lack of maintenance. It is probably not satisfactory for its current use.

FLOODING

16 The Environment Agency's Indicative Flood Zone Map shows the site to be within Flood Zone 1 and not at risk from flooding. Local enquiries also confirm that the site and adjacent areas do not flood.

17 There is a watercourse running through Tom Bank Wood some 150 metres to the east of the school known as Addey Bottoms Stream. The stream flows south and crosses beneath Brierley Road in the centre of Grimethorpe. The Flood Zone Map shows small areas of flooding in this location and local enquiries suggest this to be correct.

DRAINAGE PROPOSALS

18 The existing drainage systems on site will not be suitable for any future development and should be removed (or fly-ash grouted) during the demolition process.

19 The development should be drained via separate foul and surface water drainage systems.

20 Foul water should drain to the combined public sewer east of the site. It is likely that the existing off-site drain will be suitable for use but its condition should be checked by camera (CCTV survey). Yorkshire Water will need to be consulted on this aspect and if the drain is to be adopted as a public sewer and it is likely that Yorkshire Water will also need to view the inspection video. The removal of surface water from the combined system will more than adequately compensate for the proposed foul water flows from the new development.

21 Surface water Requirement H3 of the Building Regulations 2000 specifies a hierarchy for the disposal of surface water. In brief, this states that consideration should first be given to soakaways, infiltration systems and other Sustainable Drainage Systems (SUDS).

22 A Phase 1 Report prepared by Eastwood and Partners, Consulting Engineers indicates that the majority of the ground on site is anticipated to be cobbly sandy clay with sandstone

beneath and as such may be suitable for soakaways. The use of existing soakaways on site and local knowledge from school caretakers confirms the suitability.

23 Although numerous soakaways serving individual or small groups of properties is an option, this site benefits by having a large area of land that will not be developed – existing playing fields in the north of the site – and where possible this area should be utilised for soakaways. It is accepted however, due to ground levels, that it would be impractical to drain all properties to this area and indeed some smaller units will be required.

24 It should be noted that the soakaways should be sized to accommodate storms of 1 in 30-years when adjusted for climate change and not 10-years. Other standard drainage requirements will also apply: the sewerage system must accommodate a 1:30 year storm with no surface flooding, along with no internal flooding of buildings or surface run-off from the site during a 1:100 year storm (adjusted for climate change). Whereas on tight developments, additional storage has to be provided within the system below ground (larger soakaways tanks / pipes etc) it is likely on this site that excess water from the larger storms could be contained above ground in swales over the proposed soakaways.

25 For the avoidance of doubt, it should be noted that surface water from the development should not drain directly to the watercourse east of the site in Addey Bottoms. If it is found necessary to drain any surface water to the watercourse, such drainage would need to be attenuated so as not to exacerbate flooding problems downstream.

SUMMARY AND EFFECTS OF PROPOSALS

26 It is proposed to develop Willowgarth School in Grimethorpe with residential properties.

27 The site currently has drainage systems but due to expansion of the school over its lifetime and with it a build up of combined sewers, these drains are generally unsuitable for further use.

28 Combined (foul and surface water) effluent drains from the school to a public sewer east of the site and, subject to CCTV inspection, it is likely that the off-site sewer connection would be suitable for reuse to drain away foul water.

29 Surface water should drain to soakaway systems in line with current recommendations and practices.

30 The site has the benefit of being above and naturally falling towards a valley with a watercourse. As such there will be a natural Flood Route Path for any unforeseen flooding etc. There are no other properties between the site and Addey Bottoms.

31 The site lies within Flood Zones 1 [outside flood risk areas] as identified on the Environment Agency's Indicative Flood Zone Maps and is not known to flood.

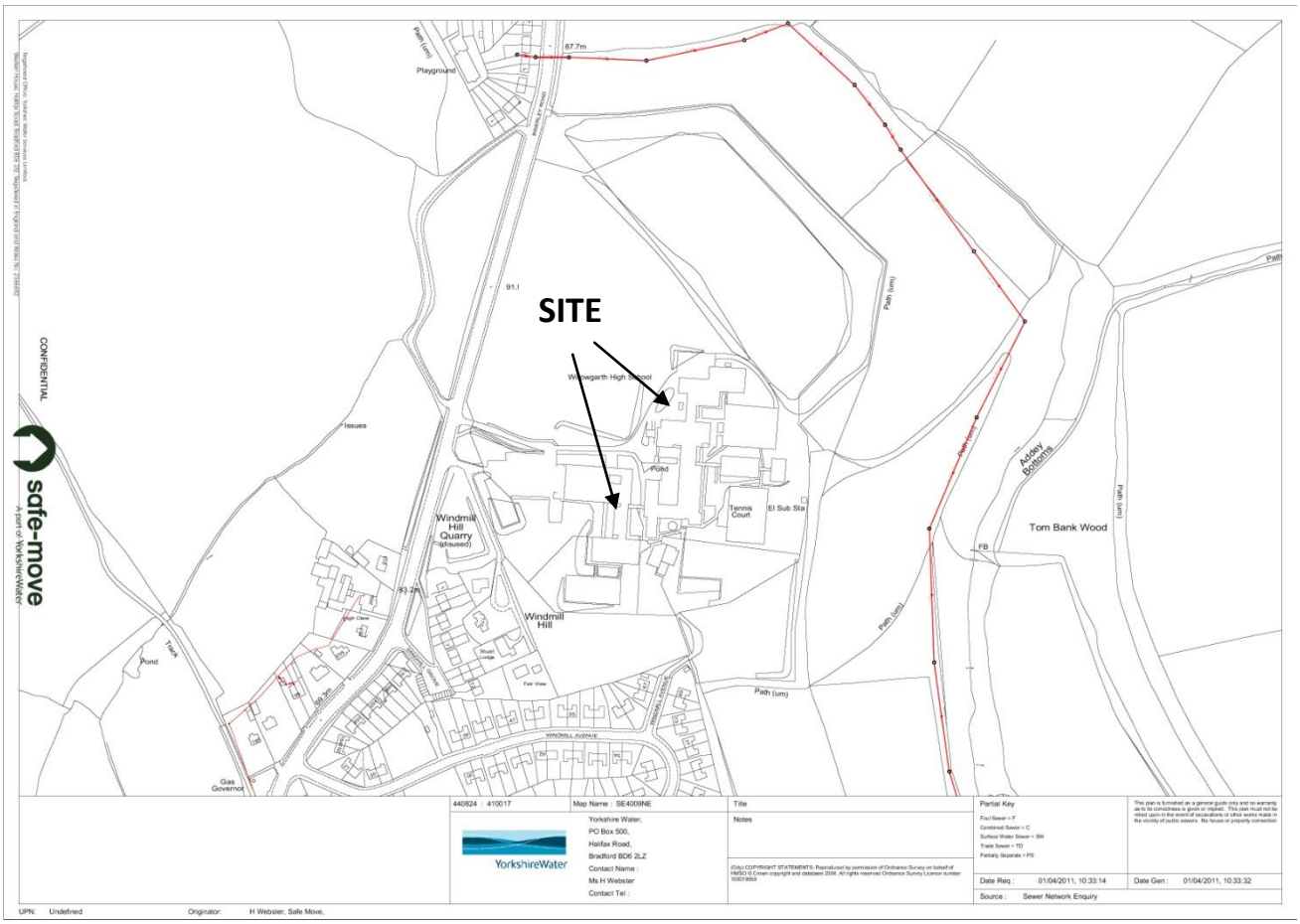
32 If these measures are taken, the proposed development should not be affected by flooding or cause other areas to flood.

M. Stevenson

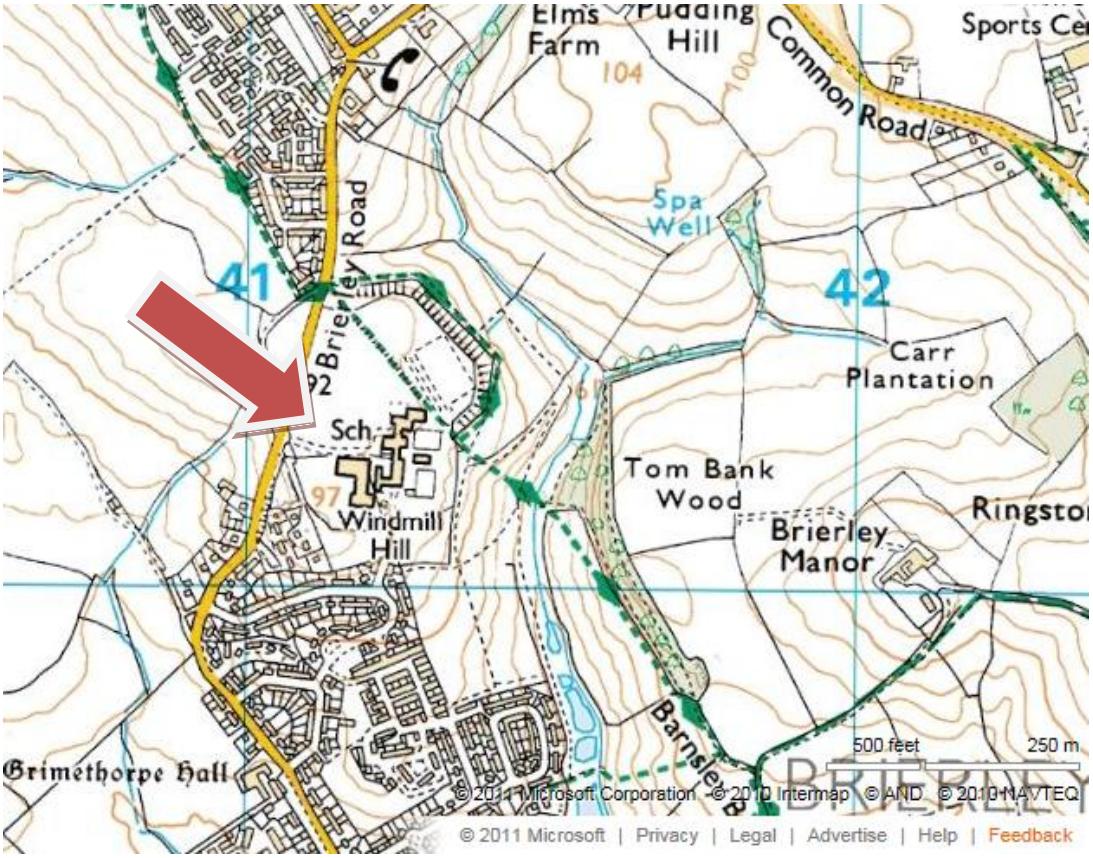
Michael Stevenson

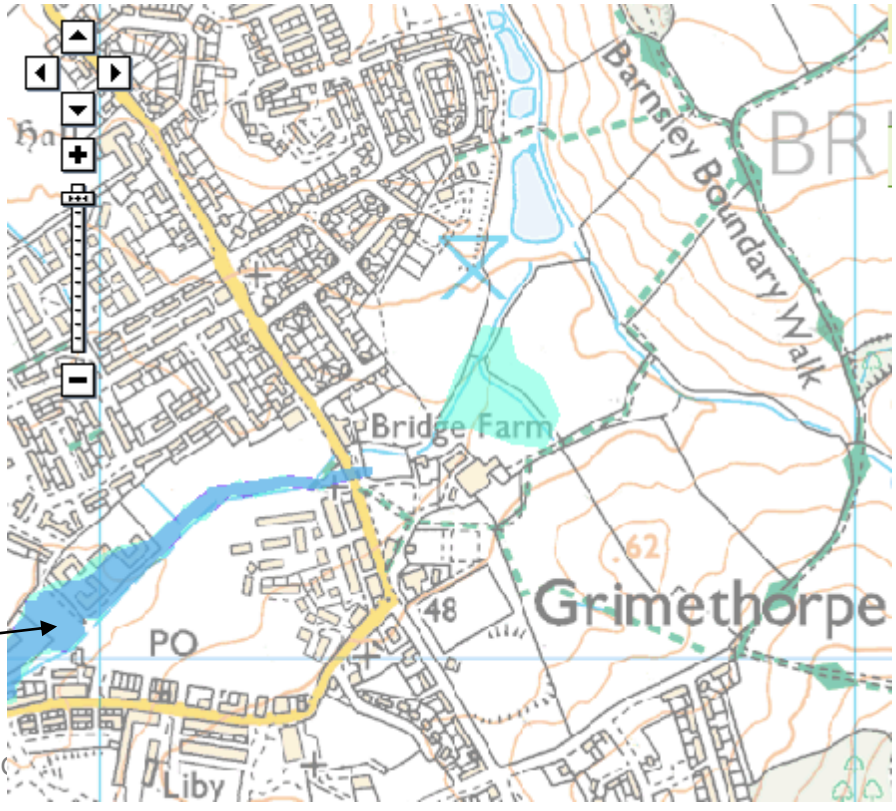
21st April 2011

APPENDIX 1 – LOCATION PLAN / EXISTING SEWERS



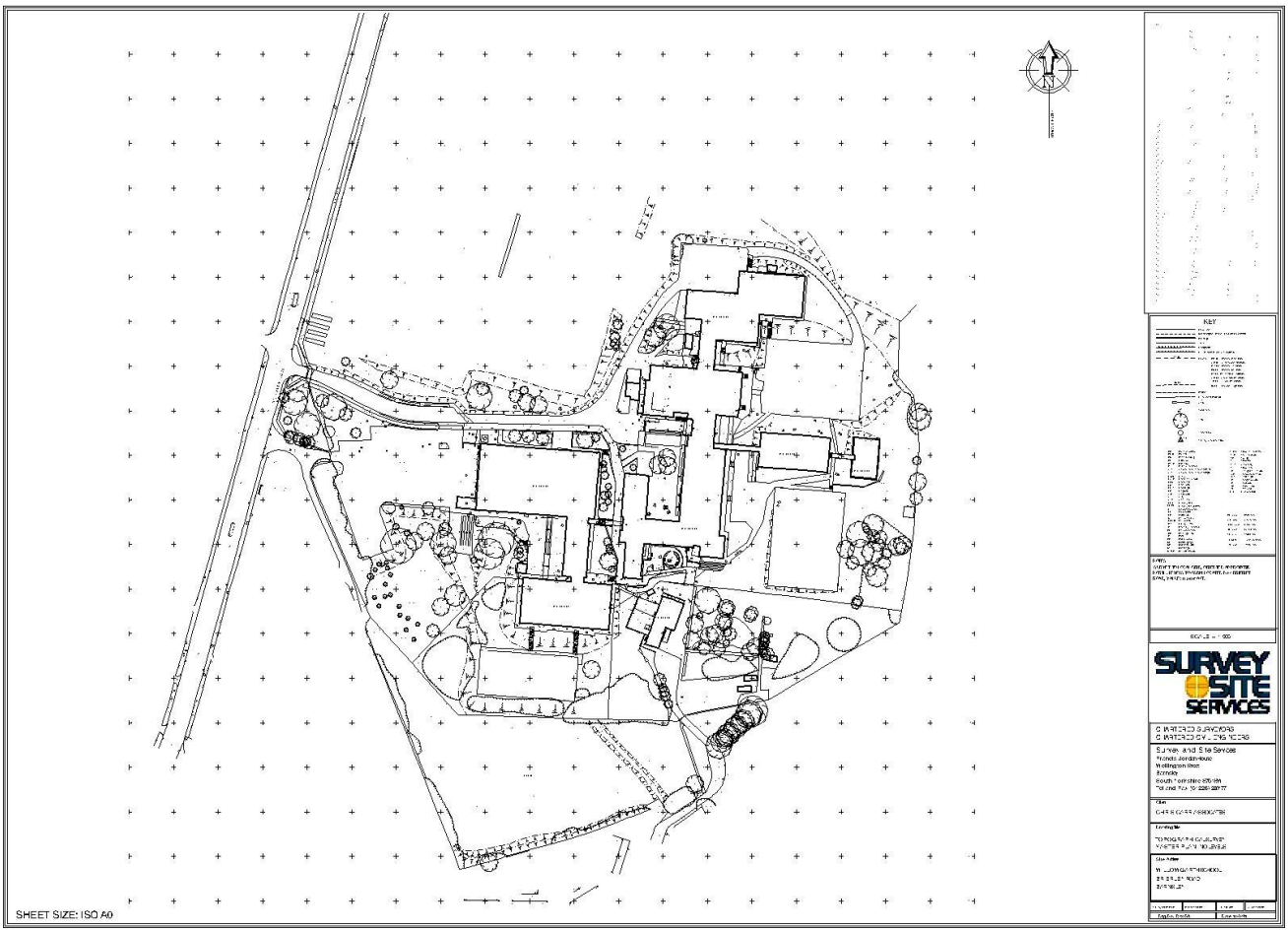
APPENDIX 2 – ENVIRONMENT AGENCY'S INDICATIVE FLOOD ZONE MAPS





Flooding downstream

APPENDIX 3 – SITE SURVEY



APPENDIX 4 – DRAFT LAYOUT

Health & Safety Notes -
Do not scale. Work from figured dimensions only.
Except where scaling for Town Planning purposes is a requirement.
All dimensions to be checked on site prior to commencement of work or manufacturing.

REV | REVISION DESCRIPTION LINE | dd mm yy
Issue | Description | Date

Status: PRELIMINARY
NOT TO BE USED FOR CONSTRUCTION

Scales: 1:500
Original Size: A1
North
Author: TJM
Checker:
Date: Apr 2011
Signatures

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100mm on Original

Client: NPS BARSLEY Ltd

Project: WILLOWGARTH SCHOOL BARNSLEY

Title: SKETCH LAYOUT

dlp design

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Project No. | Drawing No. | Issue
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