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PROPOSED SCHOOL DEVELOPMENT

PITT STREET, WOMBWELL

BARNSLEY

DRAINAGE IMPACT ASSESSMENT

Ref:4538/JSF/001/01

Checked and approved by [redacted] ..... Date 24/07/07

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PROPOSED SCHOOL DEVELOPMENT, PITT STREET, WOMBWELL, BARNSLEY

DRAINAGE IMPACT ASSESSMENT

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1 Introduction

1.1 Sanderson Associates (CE) Ltd have been appointed by Barnsley Metropolitan Borough Council to undertake a Drainage Impact Assessment for a proposed Secondary School site off Pitt Street, Wombwell, Barnsley.

1.2 This assessment describes the drainage of the current site together with a preliminary assessment of the possible drainage requirements and restrictions for the proposed development.

2 Existing Site

2.1 The site is a greenfield site with an area of approximately 12.5Ha. The site consists of an area of woodland on the western half and open fields on the eastern half. The open field is surrounded by less dense woodland areas to the north, east and south.

2.2 In addition to the main site, there will be an access road serving the development with an area of approximately 0.4Ha

2.3 An existing site layout plan is shown on drawing number 4538/001 contained in Appendix A.

2.4 The northern site boundary runs along Pitt Street, beyond the southern boundary is the River Dove.

2.5 A residential estate (Bramham Croft) lies to the east of the site, and is accessed off George Street. There is no access to the estate within the immediate vicinity of the site.

2.6 The western boundary follows the line of two areas of woodland between Pitt Street and north of the River Dove.

2.7 The site has no formal drainage at present and it is assumed to naturally drain towards the River Dove on the southern boundary.

2.8 The existing site area is approximately 12.5Ha. Assuming a Greenfield run off rate of 5 l/s/Ha, as confirmed with the Environment Agency, the

estimated existing drainage run off from the whole site is 62.5 l/s, say 62 l/s.

2.9 Yorkshire Water sewer records indicate that there are no public sewers within the site boundary.

2.10 There is a 150mm public combined sewer in Pitt Street of which the head of the system is adjacent to the north eastern corner of the site.

2.11 There are both foul and surface water sewers serving the residential estate to the east of the site. The surface water sewer in Bramham Croft is 525mm in diameter and outfalls into the River Dove. The foul sewer is 150mm in diameter and connects into the 225mm combined sewer in Millmoor Road. There is a sewerage treatment works some 470m downstream of this connection. The treatment works lies approximately 370m from the southwest corner of the site.

2.12 There is a 600mm public combined sewer in land adjoining Bulling Dike, However, this is segregated from the site by the River Dove, which makes any proposed connection complex.

3 Proposed Development and Drainage Impact

3.1 The proposals are to develop the site into a secondary school to replace the existing Foulstone School and Wombwell High School.

3.2 Barnsley Metropolitan Borough Council Drawing No ED 1942, contained in Appendix A, shows the preliminary layout of the proposed development.

3.3 Areas of assumed impermeable ground are shown on drawing 4538/002 contained in Appendix A. The drawing shows that the proposed areas of impermeable ground (built development, car parks) shall total approximately 2.6 Ha.

3.4 There is also of impermeable ground associated with the proposed access road which will serve the site from the recently constructed Wombwell Bypass. This has an approximate area of 0.4Ha.

3.5 The estimated extra area of impermeable ground due to the development is 2.6 Ha, which will allow an estimated outfall rate of approximately 13 l/s, (based on the estimated greenfield run off rate of 5 l/s/Ha as confirmed by the environment agency) for the impermeable area so as not to increase the overall surface water discharge from the site.

3.6 The estimated extra area of impermeable ground due to the construction of the access road will be 0.4 Ha, which will allow an estimated outfall rate 2 l/s (based on the estimated greenfield run off rate of 5 l/s/Ha as confirmed by the environment agency) for the impermeable area so as not to increase the overall surface water discharge from the access road.

3.7 The methods of dealing with storm water run off from the development have yet to be considered in detail and, at this stage, investigations to determine the suitability of the site for sustainable drainage techniques have not been undertaken as there is no ground investigation available at the time of writing.

3.8 Yorkshire Water have stated in their initial response that the preferred hierarchy for surface water disposal shall be in accordance with Requirement H3 of the Building Regulations 2000. Consideration should firstly be given to discharge into a soakaway, infiltration system and watercourse in that priority order.

3.9 There are both foul and surface water sewers in the recently constructed residential estate on Bramham Close. These sewers are currently private but it is understood that these private sewers are contained in a sewer adoption agreement made with Yorkshire Water under the provisions of Section 104 of the Water Industry Act 1991. These sewers may or may not have spare capacity available and the consent of the original developer should be sought if these sewers are to be utilised as part of a drainage design. However, to avoid prejudicing any prospective adoption of these sewers, Yorkshire Water's approval to the use of these sewers should also be sought.

3.10 Yorkshire Water have advised that the existing 150mm combined sewer in Pitt Street has no spare capacity to accept surface water run off.

3.11 There are no public surface water sewers within the immediate vicinity of the site and it is unlikely that the surface water sewers in Bramham Close will have been designed to accommodate any more surface water run off than that of the development. It is therefore concluded that piped discharge of the proposed development into the public sewer network is not feasible for this site.

3.12 Requirement H3 of the Building Regulations 2000 states that first consideration should be given to soakaways, then infiltration systems, as a method to dispose surface water. Subject to soil infiltration tests on site, it may be possible to implement a Sustainable Drainage System (SUDS). It is recommended that these tests are undertaken and results analysed before any detailed design of the site drainage is undertaken.

3.13 From the preliminary site plan contained in Appendix A, there are areas of proposed car parking which, as part of a sustainable drainage system could be designed as porous pavements subject to planning approval. Any areas of car parking should pass through an oil interceptor before out falling into any soakaway or infiltration system.

3.14 The car parking areas could also be designed to drain by means of a trapped gully and carrier drain system out falling through an oil interceptor to a suitably designed soakaway.

3.15 The proposed roof drainage should also be designed to drain into soakaways within the site boundary to provide a sustainable drainage solution if feasible.

3.16 Should the existing ground conditions allow for a sustainable drainage system to be designed to accommodate the proposed increase impermeable area due to the proposals, then the overall drainage impact will be negligible as the site will drain in the same way as the existing scenario.

3.17 The surface water drainage systems local to the site outfall into the River Dove and Yorkshire Water have confirmed that this is the obvious place for surface water disposal. If, from on site soil infiltration tests, it is concluded that SUDS are not an acceptable or feasible form of draining the site, then the surface water should outfall into the River Dove subject to consent from the Environment Agency and/or relevant Internal Drainage Authority.

3.18 The Environment Agency have advised that the on site drainage system should be able to accommodate a 1 in 30 year storm event without flooding and that all additional run off in a 1 in 100 year storm event should be contained within the site boundary.

3.19 If the surface water from the proposed development is to outfall into the River Dove, drainage from impermeable areas should be restricted to 13 l/s (the equivalent greenfield run off rate). Other drainage from playing fields etc. should not exceed 49 l/s giving a total of 62 l/s which is comparable to the existing greenfield site.

3.20 The surface water run off from the access road should be restricted to 2l/s which is comparable to the existing situation. However, restricting the

flows to such a rate will result in the flow control device being utilised being a maintenance liability due to its small size.

3.21 It is therefore proposed to restrict the flows from the access road to 5 l/s. The excess flow of 3 l/s from the access road will be deducted from the flows from the site, i.e. the site flows will be restricted to 10 l/s down from 13 l/s, therefore balancing the impact of the development and access road.

3.22 Any flooding that occurs in a storm event more intense than a 1 in 30 year event will need to be contained within the site. Whilst a balancing pond is an option to accommodate the additional run off up to a 1 in 100 year storm event, it is a non-preferred option due to the hazards it may create for pupils as the site is a school.

3.23 Detailed proposals for the site layout are not available at this stage. However, the preliminary layout plan indicates that a large proportion of the site will consist of playing fields. It may be possible to design part of the playing fields as a dry-basin. This would require an over flow facility being designed into the main system, possibly by means of a weir wall. The overflow system would need to be set at a level such as that it would only be required for storms greater than a 1 in 30 year event.

3.24 Flows entering the over flow system would surcharge into the dry basin via and overflow pipe. The flows would then re-enter the system via the same pipe once the storm had abeited. Alternatively, should the existing ground conditions permit the water could soak into the ground.

3.25 Utilising the WinDES source control software, the estimated storm water attenuation required for the development during a 1 in 30 year storm event may be in between 841m^3 and 1174m^3 based on restricting the surface water outfall to the 10 l/s as derived in paragraph 3.21.

3.26 The estimated storm water attenuation required for the development for a 1:100 year storm event may be between 1165m^3 and 1575m^3. The remainder of the site (permeable areas, including sports pitches) could drain through an infiltration system or soakaways.

3.27 The estimated storm water attenuation required for the access road during a 1:30 year storm event may be between 90m^3 and 130m^3 based on restricting the surface water outfall to 5 l/s as derived in paragraph 3.21.

3.28 The estimated storm water attenuation required for the access road for a 1:100 year storm event may be between 128m^3 and 180m^3.

3.29 The estimated storage is a guide only and should not be used for design purposes. The amount of on site storm water storage may be reduced by the introduction of SUDS as described earlier in this report.

3.30 The storm water attenuation on site could take the form of either a balancing pond (a non preferred option), dry basin, on line storage by means of oversized pipes, or an off line balancing tank. The method of any attenuation would be considered in more detail as part of any detailed design.

3.31 Yorkshire Water have advised that foul water should discharge into the 600mm combined sewer the runs adjacent to Bulling Dike. However, this sewer is segregated from the development site by the River Dove which would make a connection over the River Dove difficult due top the complexities of constructing a sewer above or beneath the river.

3.32 The preliminary proposals indicate that a new river crossing will be constructed to connect the school site with the Wombwell Bypass. It may be possible to integrate the construction of a sewer over the River Dove with this structure.

3.33 There is a 150mm combined sewer in Pitt Street to the east of the site. However, Yorkshire Water have advised that there isn't any spare capacity in this sewer at present. In order for a connection to be made from the site to this sewer, it will need to be upgraded to a 225mm sewer for a length of some 175m to Hope Street where the existing sewer increases in size. It is expected that foul water will drain by gravity to this sewer due to the level difference of the site to Pitt Street.

3.34 There may be capacity in the foul sewers serving Bramham Close. Although these sewers are currently private it is understood that these sewers contained in a sewer adoption agreement made with Yorkshire Water under the provisions of Section 104 of the Water Industry Act 1991.

3.35 The sewers are currently in third party land. However, should these sewers subsequently become adopted by Yorkshire Water it may be possible to requisition the construction of a new sewer into the site

boundary under Section 98 of the Water Industry Act 1991. Under this agreement the local drainage authority will be obliged, as the statutory, to construct a new sewer from the site to the public sewer network should there be no alternative outfall.

4 Conclusions & Recommendations

4.1 The current proposals to develop the site into a secondary school results in an increase in the area of impermeable surface on the site and a corresponding increase in the likely storm water run-off.

4.2 Yorkshire Water have stated in their initial response that the preferred hierarchy for the surface water disposal is in accordance with Requirement H3 of the Building Regulations 2000, firstly consideration should be given to discharge by soakaway, infiltration system and watercourse in that priority order.

4.3 There are no public surface water sewers within the immediate vicinity of the site. There are private sewers situated in the residential development on Bramham Croft which are believed to be contained in a sewer adoption agreement made with Yorkshire Water under the provisions of Section 104 of the Water Industry Act 1991. However, these are unlikely to have sufficient spare capacity to accept surface water run off from the site.

4.4 It is therefore concluded that piped discharge from the proposed development into the existing public sewer network is not feasible for this site.

4.5 Subject to on site soil infiltration tests, it may be possible to implement a Sustainable Drainage System (SUDS) as a means to dispose surface water. The infiltration tests should be carried out and analysed prior to undertaking any detailed drainage design.

4.6 Should the existing ground conditions allow for a sustainable drainage system to be designed to accommodate the proposed increase impermeable area due to the proposals, then the overall drainage impact will be negligible as the site will drain in the same way as the existing scenario.

4.7 Should on site soil infiltrations tests establish that SUDS isn't suitable for this site then the surface water run-off from the development should outfall into the River Dove.

4.8 If surface water is to outfall into the River Dove the outfall rate should be restricted to an estimated 62 l/s from the development and 2 l/s from the access road which would be comparable to the existing greenfield run off rate from the site (based on 5 l/s/ha as confirmed by The Environment Agency).

4.9 The estimated extra area of impermeable ground due to the development is 2.6 Ha, which will allow an estimated outfall rate of approximately 13 l/s, (based on 5 l/s/ha as confirmed by The Environment Agency), for the impermeable area so as not to increase the overall surface water discharge from the site.

4.10 The estimated extra area of impermeable ground due to the access road is 0.4 Ha, which will allow an estimated outfall rate of approximately 2 l/s, (based on 5 l/s/ha as confirmed by The Environment Agency), for the impermeable area so as not to increase the overall surface water discharge above the existing situation.

4.11 However, due to the practicalities of restricting flows to 2 l/s it is proposed to restrict the flows to 5 l/s from the access road and 10 l/s from the development, therefore balancing the impact of the two outfalls.

4.12 Any drainage from car parking areas should pass though an oil interceptor before out-falling into any soakaway, infiltration system or watercourse.

4.13 The estimated storm water attenuation required in the site for a 1:100 year storm event may be in the region of 1165m^3 and 1575m^3 based on restricting the surface water outfall to the estimated 10 l/s. The remainder of the site (permeable areas, including sports pitches) could drain through an infiltration system or soakaways.

4.14 The estimated on site storm water attenuation required during a 1 in 30 year storm event will be in the region of 841m^3 and 1174m^3.

4.15 In summary, the on site drainage system may need to store up to an estimated 1174 m^3 of storm water during a 1 in 30 year storm event, with a further estimated 401m^3 being contained within the site during a 1 in 100 year storm event.

4.16 The estimated storm water attenuation required in the access road during a 1:100 year storm event may be in the region of 128m^3 and 180m^3 based on restricting the surface water outfall to the estimated 5 l/s.

4.17 The estimated on storm water attenuation required for access road during a 1 in 30 year storm event will be in the region of 90m^3 and 130m^3, based on restricting the surface water outfall to the estimated 2 l/s.

4.18 The estimated on storm water attenuation required for the access road during a 1 in 100 year storm event will be in the region of 128m^3 and 180m^3.

4.19 In summary the access road drainage system may need to store up to an estimated 130m^3 of storm water during a 1 in 30 year storm event, with a further 50m^3 being contained within the boundary of the access road. In effect, the access road drainage system will need to store up to 180m^3 of storm water during a 1 in 100 year storm event.

4.20 Should the site be unsuitable for sustainable drainage techniques, any attenuation or storage features could be incorporated into a drainage system to restrict the flow from the proposed site to the estimated existing discharge rate or less if feasible.

4.21 In summary, the recommended and preferred method for draining surface water from the proposed development would be through sustainable drainage techniques as outlined in this report to restrict any outfall rate to that of the existing scenario.

4.22 Yorkshire Water have advised that foul water should discharge into the 600mm combined sewer adjacent Bulling Dike, however this is segregated from the site by the River Dove making any proposed connection complex.

4.23 It may be possible to integrate a river crossing with the proposed new vehicular crossing over the River Dove indicated on the preliminary

proposals. There is insufficient level information at this stage to determine whether or not a pumping station will be required to utilise this sewer.

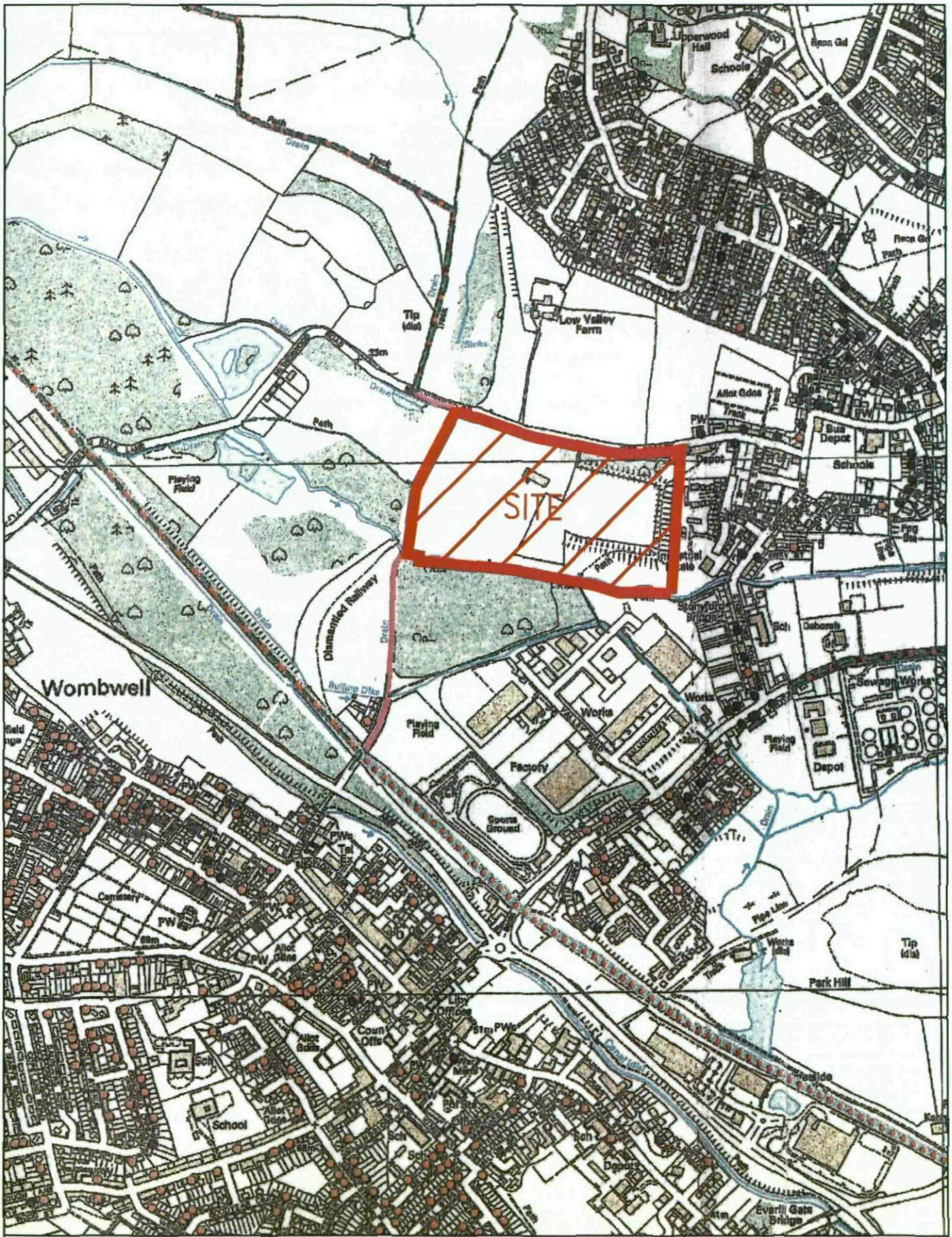
4.24 There is a 150mm combined sewer to the north east of the site. However, to utilise this sewer will require the upgrade of the existing 150mm pipe to a 225mm pipe up to the manhole in Hope Street where the existing sewer increases in size to 225mm.

4.25 There may be capacity in the foul sewers in Bramham Croft, though consultation should be sought with the original developer and/or Yorkshire Water.

4.26 It is recommended that costs are developed for the above options prior to undertaking the detailed design to ascertain the most practical means to dispose foul drainage.

APPENDIX A

DRAWINGS



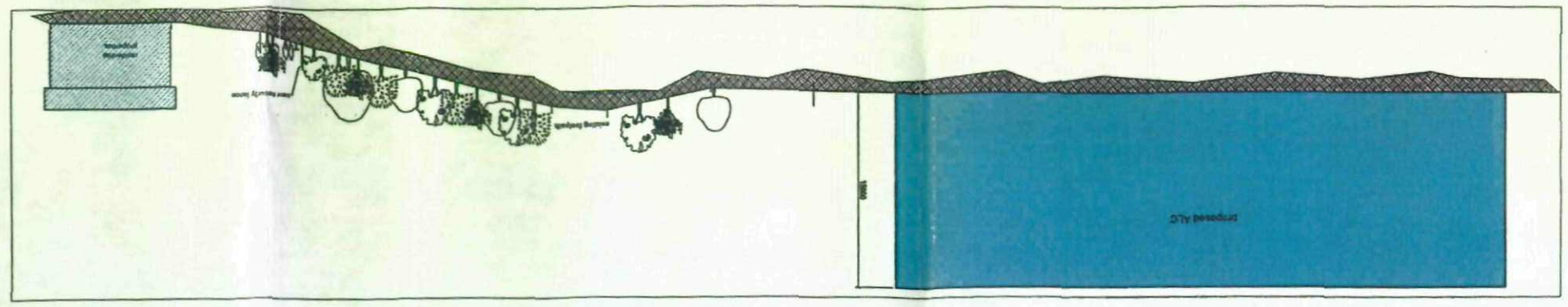
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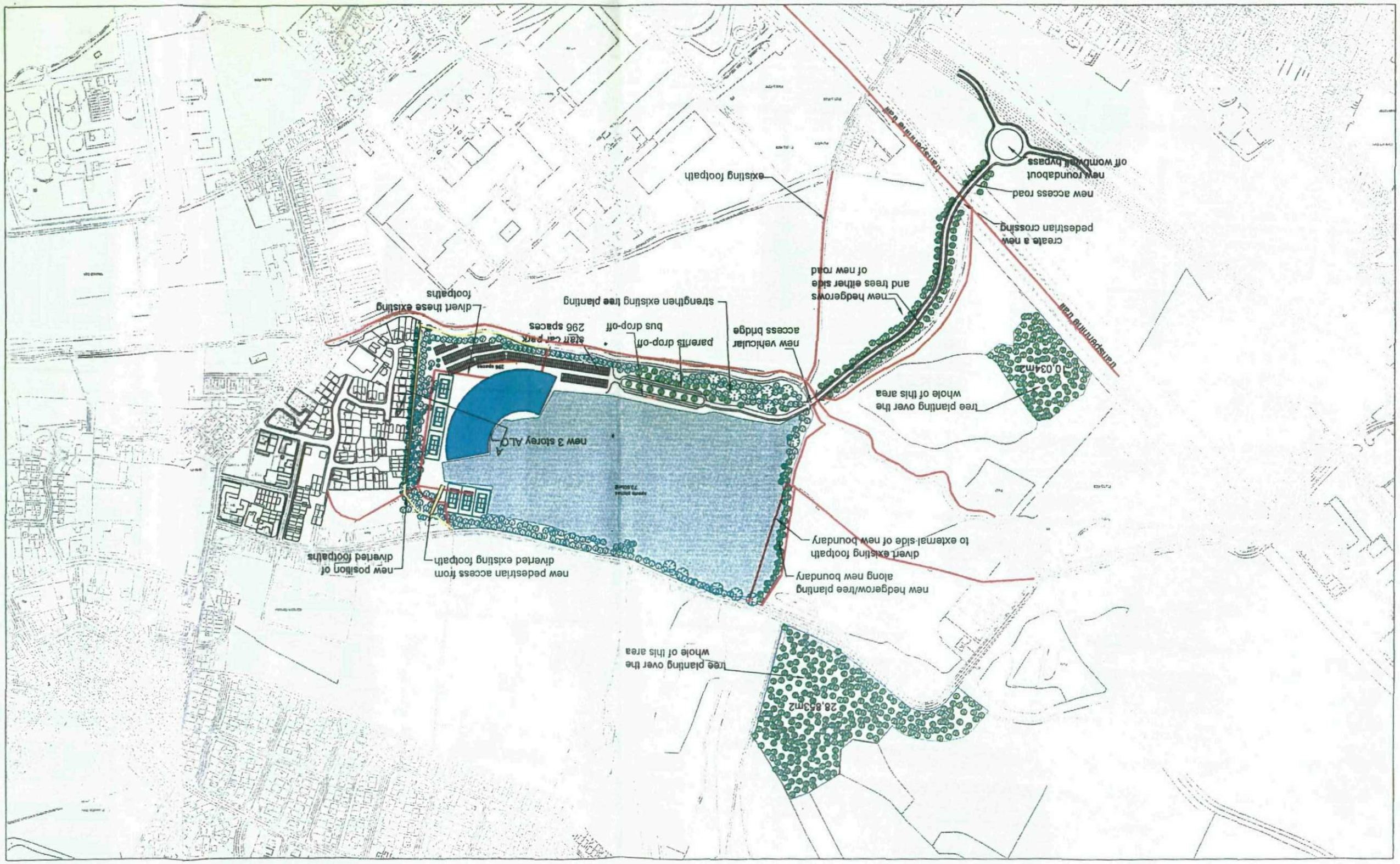
PROPOSED SCHOOL
PITT STREET, WOMBWELL

SITE
LOCATION
PLAN

Drawn	Scale
AW	N.T.S
Checked	Date
JMCK	20/03/07
Approved	Drawing Number / Rev
JMCK	4538/001







BARNSLEY

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PROJECT

DRAWING

Drawn — Revision

Scale — Date

Project Code — Drawing No.

C.A.D File Name

Layer State

APPENDIX B

YORKSHIRE WATER CORRESPONDENCE

YorkshireWater

RECEIVED
12 APR 2007

Yorkshire Water
Waste Water - Sewerage
New Development Team
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For telephone enquiries ring:

Philip Hoffmann on (0113) 235 4148

11th April 2007

Sanderson Associates
Sanderson House
Jubilee Way
Grange Moor
HUDDERSFIELD
WF4 4TD

FAO Tim Conroy

Your Ref: 4538/TC/002
Our Ref: H003312 /sew/ndt/peh

Dear Sir,

Land at Pitt Street, Wombwell, Barnsley - Pre-Planning Sewerage Enquiry - School Development

Thank you for your letter of 22nd March 2007 and remittance. Please find enclosed our official VAT receipt number 007440 together with a complimentary extract from the Statutory Sewer Map. This indicates the recorded position of the public sewers. The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site:

Development of the site should take place with separate systems for foul and surface water drainage. The separate system should extend to the public sewer.

Foul water should discharge to the 600mm diameter public combined sewer recorded in land adjoining Bulling Dike, at a point approximately 100 metres to the south of the site. From the information supplied, it is not possible to determine if the whole site will drain by gravity to the public sewer network. If the site, or part of it, will not drain by gravity, then it is likely that a sewage pumping station will be required to facilitate connection to the public sewer network. If sewage pumping is required foul water discharge must not exceed 8 (eight) litres per second.

Private sewers - that may or may not have spare capacity available - are understood to be located in Hall Croft, near to the site. You should contact the original developer for consent if you wish to utilize these sewers. Please note, however, that these private sewers are believed to be contained in a sewer adoption agreement made with Yorkshire Water (or our predecessor/agent) under the provisions of Section 104 of the Water Industry Act 1991 (or similar earlier legislation that this has replaced). To avoid prejudicing any prospective adoption of these sewers, Yorkshire Water's approval to the use of such sewers should also be sought.

Foul water from kitchens and/or food preparation areas of any restaurants and/or canteens etc. must pass through a fat and grease trap of adequate design before any discharge to the public sewer network.

The developer's attention is drawn to Requirement H3 of the Building Regulations 2000. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

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Sustainable Drainage Systems (SUDS), for example the use of soakaways and/or permeable hardstanding etc., may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SUDS in this instance from the appropriate authorities.

Where appropriate, soakaways, swales and infiltration trenches (SUDS) may be adopted as part of the public sewer network. For general conditions for the adoption of SUDS please see the attached sheet. Further information may be seen in the DEFRA publication 'Interim Code of Practice for Sustainable Drainage Systems' (ISBN 0-86017-904-4). If the developer is considering adoption of SUDS he should contact our New Development Team at Sheffield on 0845 124 24 29.

The local public sewer network does not have capacity to accept any discharge of surface water from the proposal site. The developer is advised to contact the Environment Agency/Dearne and Dove Internal Drainage Board with a view to establishing a suitable watercourse for discharge. It is noted that a watercourse, River Dearne, is located to the south of the site. This appears to be the obvious place for surface water disposal.

Surface water run-off from communal parking (greater than 800 sq. metres or more than 50 car parking spaces) and hardstanding must pass through an oil, petrol and grit interceptor/separator of adequate design before any discharge. Roof water should not pass through the traditional 'stage' or full retention type of interceptor/separator. It is good drainage practice for any interceptor/separator to be located upstream of any on-site balancing, storage or other means of flow attenuation that may be required.

The public sewer network is for domestic sewage purposes. This generally means foul water for domestic purposes and, where a suitable surface water or combined sewer is available, surface water from the roofs of buildings together with surface water from paved areas of land appurtenant to those buildings. Land and highway drainage have no right of connection to the public sewer network. Land drainage, including sports pitch drainage, will not be allowed into a public sewer. Highway drainage, however, may be accepted under certain circumstances; for instance, if SUDS are not a viable option and there is no highway drain available and if capacity is available within the public sewer network. In this event, the developer will be required to enter into a formal agreement with Yorkshire Water Services under Section 115 Water Industry Act 1991 to discharge non-domestic flows into the public sewer network.

The site is within an area that may be affected by river flooding. We would advise you to contact the Environment Agency for details.

Any new connection to an existing public sewer will require the approval of Yorkshire Water. You may obtain an application form by telephoning 0845 124 24 29.

All the above comments are based upon the information and records available at the present time. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours faithfully,

P. C. Hepworth

New Development Team

YorkshireWater

Yorkshire Water
New Development Team
Blackburn Meadows WWTW
Alsing Road
Sheffield
S9 1HX

Tel: 0845 124 24 29
Fax:
For telephone enquiries ring:
James Wilson on 0845 124 24 29

10th July 2007

Sanderson Associates
Sanderson House
Jubilee Way
Grange Moor
HUDDERSFIELD
WF4 4TD

RECEIVED
12 JUL 2007

FAO James Fawcett

Your Ref: 4538/TC/002
Our Ref: H003312

Dear Sir/Madam,

Land at Pitt Street, Wombwell, Barnsley - Pre-Planning Sewerage Enquiry - School Development

I thank you for your letter of 25 July 2007 the comments there in are noted. We cannot give you any particular advice on construction of sewers across watercourses. You may wish to seek guidance from a contractor. I can think of no specific implications, other than the sewer should not impede flow (i.e be above or below). There is no spare capacity in the sewer in Pitt Lane. Should you wish to utilise this sewer (for the disposal of foul water only) it would have to be upsized to 225mm in its entirety.

Yours faithfully

James Wilson
For : New Development

cc:

APPENDIX C

ENVIRONMENT AGENCY CORRESPONDENCE

creating a better place

RECEIVED
11 APR 2007

Environment Agency

Tim Conroy
Sanderson Associates (C E) Ltd
Sanderson House
Jubilee Way
Grange Moor
Huddersfield
WF4 4TD

Our Ref : RFI/2007/1216
Your Ref :

Date : 10 April 2007

Dear Tim

Proposed Development Pitt Street, Barnsley

Thank you for your enquiry, which was received on 23 March 2007.

Development Control

The majority of this site is shown to be in Planning Policy statement 25 Development and Flood Risk (PPS25) zone 1 on the Agency's Flood Zone Maps. Only a relatively narrow strip adjacent to the watercourse is shown to be in zone 3 and a slightly larger area in zone 2.

We have no record of this site having suffered flooding.

We do not have any flood level modelling of the River Dove.

Under the terms of the Water Resources Act 1991 and the Land Drainage Byelaws, the prior written consent of the Agency is required for any proposed works or structures in, under, over or within 8 metres of the top of the bank of the River Dove, designated a 'main river'.

We require that a strip of land 6m wide adjacent the top of the bank of the River Dove should be left clear of development to allow access for maintenance and possible future improvement work. There should be no fences or other structures erected in this area and if the proposed development is for housing it should not be included in any garden areas.

Any proposal for the development of this site would be required to be accompanied by a Flood Risk Assessment (FRA) assessing the flood risk to the site, including an allowance for the possible effects of climate change, a topographical survey related

to Ordnance Datum, propose suitable floor levels and surface water drainage proposals.

If it is proposed to discharge surface water drainage from the site to a watercourse it would have to be attenuated to a maximum of 5 litres/second/hectare for the impermeable area, the balancing facility designed to accommodate a 1 in 30 year storm flow from the site and a 1 in 100 year flow retained within the site without causing flooding to property.

Flood Risk Management

The Flood Map

We recently published the Flood Map (see enclosed extract).

What is the Flood Map?

The Flood Map is a new multi-layered map, which provides information on flooding from rivers and the sea for England and Wales. The Flood Map also has information on flood defences and the areas benefiting from those flood defences.

The Flood Map consists of the following layers of information:

1. Flooding from rivers or sea without defences - the natural flood plain area that could be affected in the event of flooding from rivers and the sea - Flood Zone 3 on the enclosed map.
- For flooding from rivers the map indicates the extent of a flood with a 1% (1 in 100) chance of happening each year
- For flooding from the sea the map shows the extent of a flood with a 0.5% (1 in 200) chance of happening each year

2. Extent of extreme flood - the extent of a flood with a 0.1% (1 in 1000) chance of happening each year - Flood Zone 2 on the enclosed map.

3. Flood defences - flood defences built to a certain standard in the last five years.

4. Areas benefiting from flood defences - areas that benefit from the flood defences shown, in the event of a river flood with a 1% (1 in 100) chance of happening each year, or a flood from the sea with a 0.5% (1 in 200) chance of happening each year. If the defences were not there, these areas would flood.

Flood History

To the best of our knowledge there is no known flood history for this site. However, in close proximity to this location we do have some flood history available (see enclosed map).

Asset Drawings

Please find enclosed asset drawing(s) showing location of all (Agency and non Agency maintained) flood defences and channels.

Climate Change

See attached appendix B, from the department for Communities and Local Government's PPS 25 (Planning Policy Statement), for Development and Flood Risk.

Modelling Information

We do not have any modelling information at this location

The information provided is based on that currently available to the Agency. The Agency and its officers accept no liability whatsoever for any loss or damage arising from the interpretation or use of the information.

I can advise that the interpretation of the information is your own responsibility however, should you have any queries regarding this letter, please contact this office at the address given below.

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

Please be advised that in line with the new Re-use of Public Sector Information Regulations, we have introduced a single integrated set of charges for all commercial re-use of our data and information. Re-use means more than what you are entitled to do under the Freedom of Information Act/Environmental Information Regulations (FoI) which in general terms is restricted to giving you the right to access and read information. For commercial requests received on or after 1 April 2007, in addition to the current cost recovery charge we apply under FoI, there will be a £10 re-use charge. This will give you extra rights to use our information commercially. These will be set out in our Standard Notice (Commercial) available from 1 April 2007.

Yours faithfully

CHERYL HOWE
EXTERNAL RELATIONS OFFICER

Notice for the supply of Environment Agency information (Standard Notice)

1. Nothing in this notice will in any way restrict your statutory or any other rights of access to the Data. If you wish to do anything in excess of those rights you may do so in accordance with the following paragraphs only if you agree to all the terms.
2. All intellectual property rights in the documents, data or information supplied to you (referred to as "the Data") whether owned by the Environment Agency (referred to as "Agency Data") or third parties (referred to as "Third Party Data") will continue to be owned by them.
3. The Data has not been prepared to meet your or anyone else's individual requirements so it is your responsibility to ensure that the Data meets your needs.
4. The Environment Agency cannot ensure and therefore gives no promise that the Data in its possession will always be accurate, complete, up to date or valid.
5. The Environment Agency will take reasonable precautions to ensure that we provide you with an accurate copy of the Data from our records.
6. If we have specified that you must pay us for supply of the Data you must pay us before we respond to your request. You will only be able to cancel and request your fee back up to the point when we start work on providing the requested information.
7. If you have asked for the Data to be supplied in an electronic format we cannot guarantee that either the disk or the data file is free of any defects and you should check it for viruses and other items that may affect your computer.
8. Third Party Data use, including copying, must be limited to statutory rights. This generally means that you will need to seek permission to copy. Third Party Data may include information from our public registers which has been supplied to us by a third party, for example the information provided in an application form.

Permitted Use Of Agency Data

9. You may use Agency Data for your own use provided that the use is not for or related to any commercial, business, professional or other income generating activity and provided that usage is not detrimental to the Environment Agency, its activities or the environment. This does not stop you from charging if you fall under the obligations of the Freedom of Information Act and you are applying an authorised charge in response to a request for information. For more detail on what we regard as commercial please see the Freedom of Information section of our website or contact us. As long as you comply with these restrictions you may:
    - take copies for use by yourself (non-commercial as-is internal use) or
    - give copies to others or publish copies (including putting them on a website or distributing multiple copies) provided you copy the Data exactly as it is (but this does not restrict re-sizing, typeface or file format). You must either attach a copy of this notice and tell recipients that they too must comply with this notice or you must acknowledge the Environment Agency's ownership of its Data by adding the words "© Environment Agency copyright and/or database right 20xx. All rights reserved" using the year you receive the data from us if we have not indicated what year to use (non-commercial as-is external use) or
    - include in another document for your own use: copies of photographs, tables, diagrams (other than text extracts) taken from the Data provided that the photograph etc is not changed or manipulated in any way other than resizing; and/or text extracts from Agency Data provided that the text extract is a complete piece of information in its own right. Use of such copies and extracts must not be out of context or in any other way misleading (non-commercial derivative internal use).
10. If you have paid us our standard charges for the costs of making the information available to you and our internal commercial usage charge, you may take copies of Agency Data (exactly as it is) for the internal purposes of your business provided that you ensure that all copies are attributed to the Environment Agency and you do not amend or alter the Data, or merge it with other data, or supply the Data or any data or information derived from or based on usage of the Data to others.(commercial as-is internal use).
11. If you have paid us our standard charge for the costs of making the information available to you and our internal commercial usage charge and you are a professional adviser you may give unamended and un-adapted copies of Agency Data to your client, and any other person who reasonably requires a copy in connection with the specific transaction or matter in respect of which you obtained the Data from the Environment Agency. You may do this provided that you make no charge for supplying the Data other than for your actual costs and time incurred. You must attach a copy of this Standard Notice and require all recipients to comply with it (professional use).

It is important that you also read any additional information or warning we give you about specific Data.

APPENDIX D

WINDES CALCULATIONS

Variables | Result | Design | Overview 2D | Overview 3D | Vt

Region: England & Wales

Return Period (years): 100

Map | M5-60 (mm): 20

Ratio R: 0.4

Cv (Summer): 0.750

Cv (Winter): 0.840

Impermeable Area (ha): 2.6

Maximum Allowable Discharge (l/s): 10

Infil Coefficient (m/hr):

Safety Factor: 2

Apply

Done

Help

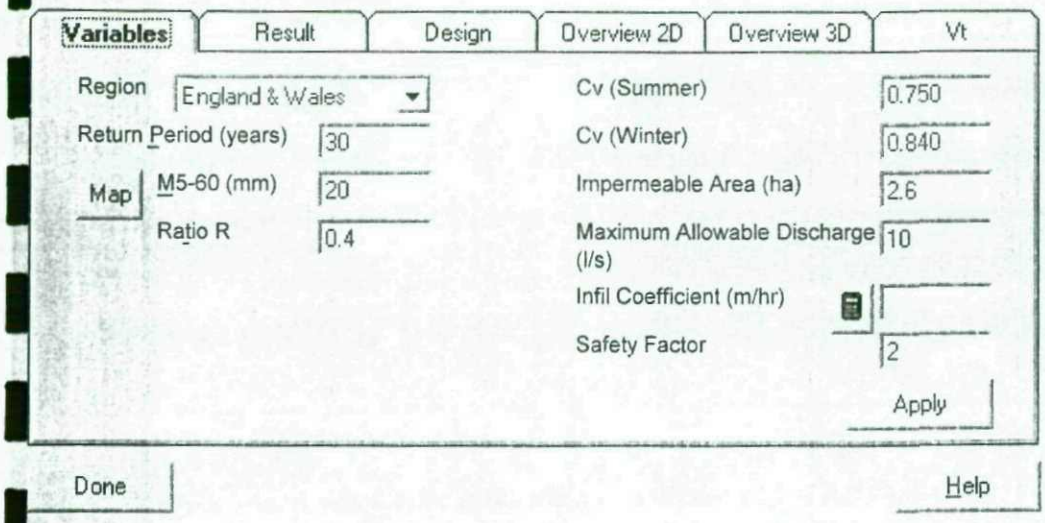
Variables | **Result** | Design | Overview 2D | Overview 3D | Vt

Global Variables require approximate storage of between 1165 m³ and 1575 m³.

These values are estimates only and should not be used for design purposes.

Done

Help


Variables
Result
Design
Overview 2D
Overview 3D
Vt
Region
England & Wales
Return Period (years)
30
Map
M5-60 (mm)
20
Ratio R
0.4
Cv (Summer)
0.750
Cv (Winter)
0.840
Impermeable Area (ha)
2.6
Maximum Allowable Discharge (l/s)
10
Infil Coefficient (m/hr)
Safety Factor
2
Apply
Done
Help

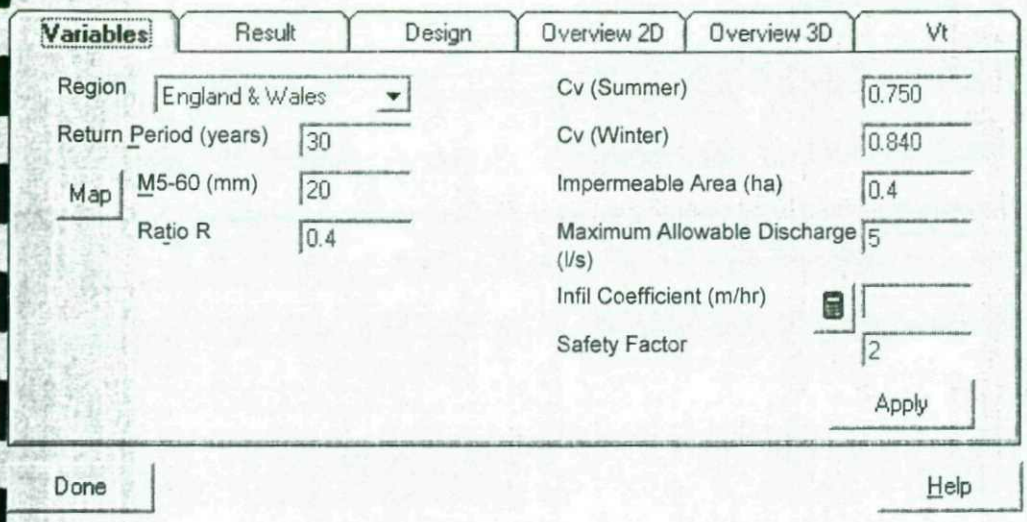
Variables | **Result** | Design | Overview 2D | Overview 3D | Vt

Global Variables require approximate storage of between 841 m³ and 1174 m³.

These values are estimates only and should not be used for design purposes.

Done

Help

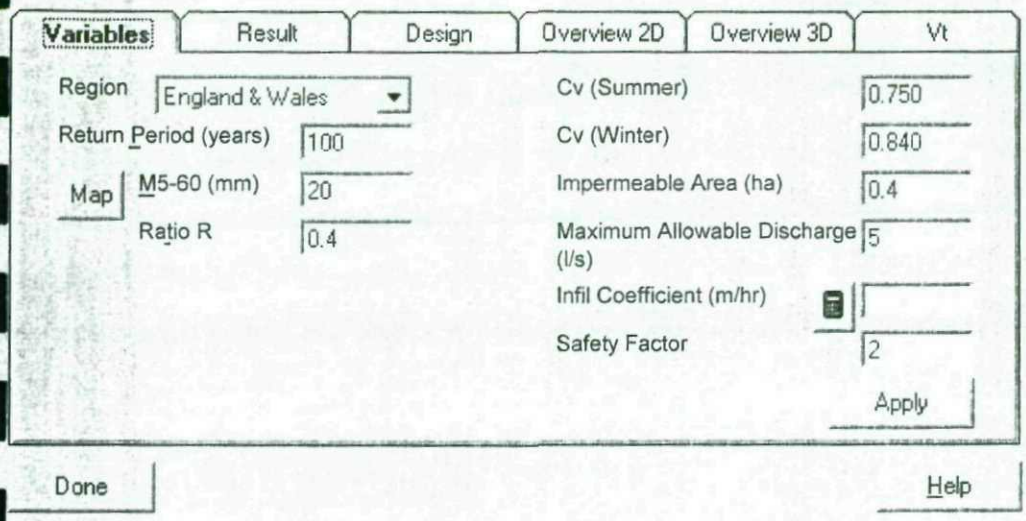

Variables
Result
Design
Overview 2D
Overview 3D
Vt
Region
England & Wales
Return Period (years)
30
Map
M5-60 (mm)
20
Ratio R
0.4
Cv (Summer)
0.750
Cv (Winter)
0.840
Impermeable Area (ha)
0.4
Maximum Allowable Discharge (l/s)
5
Infil Coefficient (m/hr)
Safety Factor
2
Apply
Done
Help

Variables | **Result** | Design | Overview 2D | Overview 3D | Vt

Global Variables require approximate storage of between 90 m³ and 130 m³.

These values are estimates only and should not be used for design purposes.

Done | Help


Variables
Result
Design
Overview 2D
Overview 3D
Vt
Region
England & Wales
Return Period (years)
100
Map
M5-60 (mm)
20
Ratio R
0.4
Cv (Summer)
0.750
Cv (Winter)
0.840
Impermeable Area (ha)
0.4
Maximum Allowable Discharge (l/s)
5
Infil Coefficient (m/hr)
Safety Factor
2
Apply
Done
Help

Variables | **Result** | Design | Overview 2D | Overview 3D | Vt

Global Variables require approximate storage of between 128 m³ and 180 m³.

These values are estimates only and should not be used for design purposes.

Done

Help