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Drainage Strategy for Proposed Retail Development at land off Market Street, Hoyland

Client: Litton Properties Limited



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**Drainage Strategy for proposed Retail Development at land off Market Street,
Hoyland**

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Executive Summary

Introduction	BSP Consulting has been commissioned by Litton Properties Limited to prepare a Drainage Strategy for the proposed Retail Development at land off Market Street, Hoyland. A separate Flood Risk Assessment has been prepared by Stroma Technology
Site Location Description and Details	The site fronts onto Market Street to the west and Wombwell Road to the north. The site was previously occupied by school buildings and attendant external hard surfaced areas. The school buildings have been demolished. There is a <i>significant</i> fall across the site, in excess of 16 metres, broadly from west to east
Predevelopment Surface Water Runoff	Examination of the topographical survey indicates that there is a 300mm connection to the existing public surface water sewer. It is not clear what impermeable areas connect to this pipe and further work will need to be undertaken to examine the routing and sizes of existing drainage systems within the site.
Proposed Developed Site Surface Water Strategy	It is proposed that the impermeable areas of the buildings, roads and car parking are to be positively drained to the public surface water sewer that crosses the site. Permissible flow rates and outfall location are to be confirmed with Yorkshire Water.
Pre Development Foul Water Regime	It is likely that foul flows generated by the previous site usage discharged to the adopted sewer network.
Proposed Developed Site Foul Water Strategy	The foul water flows to be generated by the proposed development should be accommodated within the public sewer network, as confirmed by Yorkshire Water in their Developer Enquiry response.
Recommendations	The following recommendations are made to promote a sustainable and practicable drainage strategy at the proposed development: • Further work should be undertaken to examine the routing and sizes of existing drainage systems within the site. • Connections to public sewers should be made via gravity pipework. • A permitted rate of surface water discharge should be confirmed with Yorkshire Water. • Further work should be undertaken to ascertain if a public foul water sewer diversion, or protective works, will be necessary. • Final design proposals should be verified by Building Control and Yorkshire Water, as necessary.

1.0 INTRODUCTION**1.1 Terms Of Reference**

- 1.1.1 BSP Consulting has been commissioned by Litton Properties Limited to prepare a Drainage Strategy for the proposed Retail Development at land off Market Street, Hoyland.
- 1.1.2 In the preparation of this report a Yorkshire Water Developer Enquiry has been obtained to better understand the constraints affecting this site.
- 1.1.3 A separate Flood Risk Assessment has been prepared by Stroma Technology. This is referred to in later text as ‘the FRA for the site’
- 1.1.4 This Drainage Strategy has been prepared in accordance with current guidance and best practice.
- 1.1.5 This report has been produced on behalf of the Client, Litton Properties Limited, and no responsibility is accepted to any third party for all or any part. This report should not be relied upon or transferred to any other parties without the express written authorisation of BSP Consulting. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care or skill.

2.0 BACKGROUND INFORMATION

2.1 Site Location, Description and Details

2.1.1 Figure 2.1 below indicates the location of the site, for identification purposes only;



Fig 2.1 Land at Market Street, Hoyland – Site Location Plan for identification purposes only

2.1.2 The site fronts onto Market Street to the west and Wombwell Road to the north. The site was previously occupied by school buildings and attendant external hard surfaced areas. The school buildings have been demolished.

2.1.3 A topographical survey of the site area has been carried out and a copy of this is included within Appendix A. This indicates the following existing levels within the site:

- Junction of Market Street and Wombwell Road – approximately 137.6 metres A.O.D.
- Existing site entrance off Wombwell Road – approximately 134.1 metres A.O.D.
- Junction of Wombwell Road and rear of houses off Kingswood Crescent – approximately 133.4 metres A.O.D.
- Junction of Market Street and southern site boundary – approximately 135.1 metres A.O.D.
- Junction of southern site boundary and Cumberland Close – approximately 121.0 metres A.O.D.

2.1.6 There is a significant fall across the site, in excess of 16 metres, broadly from west to east.

2.2 Main Drainage Catchment Context and Local Watercourse Classifications

Watercourses

The FRA for the site indicates that the closest fluvial or tidal watercourse is located approximately 1.5 km northwest of the proposed development.

In addition e-mail correspondence with Barnsley MBC states that *'The only local watercourse close to this site is some 120 metres to the north east but this is not considered to be a viable option for sw disposal due to levels and the need to cross the adjacent housing estate'*.

Adopted Main Sewers

Surface Water:

Yorkshire Water's sewer records indicate that a 300mm/375mm/675mm public surface water sewer crosses the site. This sewer is located close to the north east site boundary at the rear of the properties off Kingswood Crescent.

Foul Water:

There is a 300mm diameter public foul sewer that crosses the site.

The locations of the above public sewers are indicated on the Yorkshire Water sewer records included in Appendix C.

2.3 Approach to the Strategy

- 2.3.1 This assessment seeks to consider the strategy by which the proposed development can be drained to comply with Part H of The Building Regulations and current best practice. This requires assessment of the development constraints of the site and the opportunities offered by the existing infrastructure and natural environment in order to propose a strategy by which the site can be developed both economically and sustainably. This assessment draws upon our investigations and experience within the local area.
- 2.3.2 The aspect of flood risk is dealt with separately in the FRA for the site referred to in 1.1.3 above.

3.0 DRAINAGE STRATEGY

3.1 Development Description and Planning Context

- 3.1.1 The development proposals are for the removal of existing buildings and hardstandings and for the construction of a new foodstore as outlined on the Proposed Site Layout included in Appendix B.
- 3.1.2 A cut and fill earthworks operation will be undertaken to provide the falls required in a foodstore car park. The building slab level will be set at 131.285m A.O.D. or thereabouts.

3.3 Pre Development Surface Water Runoff

- 3.3.1 Examination of the topographical survey indicates that there is a 300mm connection to the existing public surface water sewer. It is not clear what impermeable areas connect to this pipe and further work will need to be undertaken to examine the routing and sizes of existing drainage systems within the site.
- 3.3.2 No evidence has been found to suggest that soakaways have been successfully used to drain surface water from any of the original buildings or hardstandings.

3.4 Proposed Developed Site Surface Water Strategy

- 3.4.1 As set out in Requirement H3 of The Building Regulations ‘rainwater from a system.....shall discharge to one of the following, listed in order of priority:
(a) an adequate soakaway or infiltration system, or where that is not reasonably practicable,
(b) a watercourse, or where that is not reasonably practicable,
(c) a sewer
- 3.4.2 The preliminary ground investigation undertaken at the site stated that ‘The use of soakaways is not recommended due to the relatively impermeable nature of the Natural Strata (i.e. the predominant presence of clay/mudstone soils’. Compliance with Requirement H3 (a) of The Building Regulations (see 3.4.1 above) is deemed to be not reasonably practicable.
- 3.4.3 Based upon the information set out in 2.2 above it will not be reasonably practicable to drain the site to a watercourse. Compliance with Requirement H3 (b) of The Building Regulations (see 3.4.1 above) is deemed to be not reasonably practicable.
- 3.4.4 It is proposed that the impermeable areas of the buildings, roads and car parking are to be positively drained to the public surface water sewer that crosses the site. The outfall location is to be confirmed with Yorkshire Water.
- 3.4.5 In accordance with best practice it would be preferable to reduce the rate and volume of surface water flows to the adopted sewer in line with the requirements set out by Yorkshire Water in their Developer Enquiry response included as

Appendix C, which states the following; ‘*Discharge to the public sewer must take into account a 30% reduction in existing discharge and climate change.*’

The above approach is also adopted in the FRA for the site.

- 3.4.6 Options such as permeable paving could be considered as primary treatment features for private areas, where viable, considering other site constraints.
- 3.4.7 It is recommended that final design proposals should be verified by Building Control and Yorkshire Water, as necessary.

3.5 Design Considerations for Exceedance

- 3.5.1 The proposed surface water drainage system should be designed to accommodate the 1 in 30 year rainfall event without any surface water flooding and should be capable of retaining the 1 in 100 year plus climate change storm event on site without flooding any buildings.

3.6 Pre Development Foul Water Regime

- 3.6.1 It is likely that foul flows generated by the previous site usage discharged to the adopted sewer network.
- 3.6.2 Further work will need to be undertaken to examine the routing and sizes of existing drainage systems within the site.

3.7 Proposed Developed Site Foul Water Strategy

- 3.7.1 As set out in Requirement H1 of The Building Regulations ‘*An adequate system of drainage shall be provided to carry foul water from appliances within the building to one of the following, listed in order of priority:*
(a) a public sewer, or where that is not reasonably practicable,
- 3.7.2 The foul water flows to be generated by the proposed development should be accommodated within the public sewer network, as confirmed by Yorkshire Water in their Developer Enquiry response included as Appendix C.
- 3.7.3 The existing public foul water sewer, that crosses the site, appears to pass quite close to the proposed building location. As part of the further work recommended in 3.6.2 this should also be investigated further to ascertain if a sewer diversion, or protective works, will be necessary.
- 3.7.4 It is recommended that final design proposals should be verified by Building Control and Yorkshire Water, as necessary.

4.0 RECOMMENDATIONS

4.1 The following recommendations are made to promote a sustainable and practicable drainage strategy at the proposed development:

- Further work should be undertaken to examine the routing and sizes of existing drainage systems within the site.
- Connections to public sewers should be made via gravity pipework.
- A permitted rate of surface water discharge should be confirmed with Yorkshire Water.
- Further work should be undertaken to ascertain if a public foul water sewer diversion, or protective works, will be necessary.
- Final design proposals should be verified by Building Control and Yorkshire Water, as necessary.

Disclaimer

We would note that all comments made in this report are based on the sources stated in Section 1.1. This report and its recommendations are intended for the use of Litton Properties Limited for the above site only.

Appendix A
Topographical Survey



Appendix B

Proposed Site Layout (for identification purposes only)

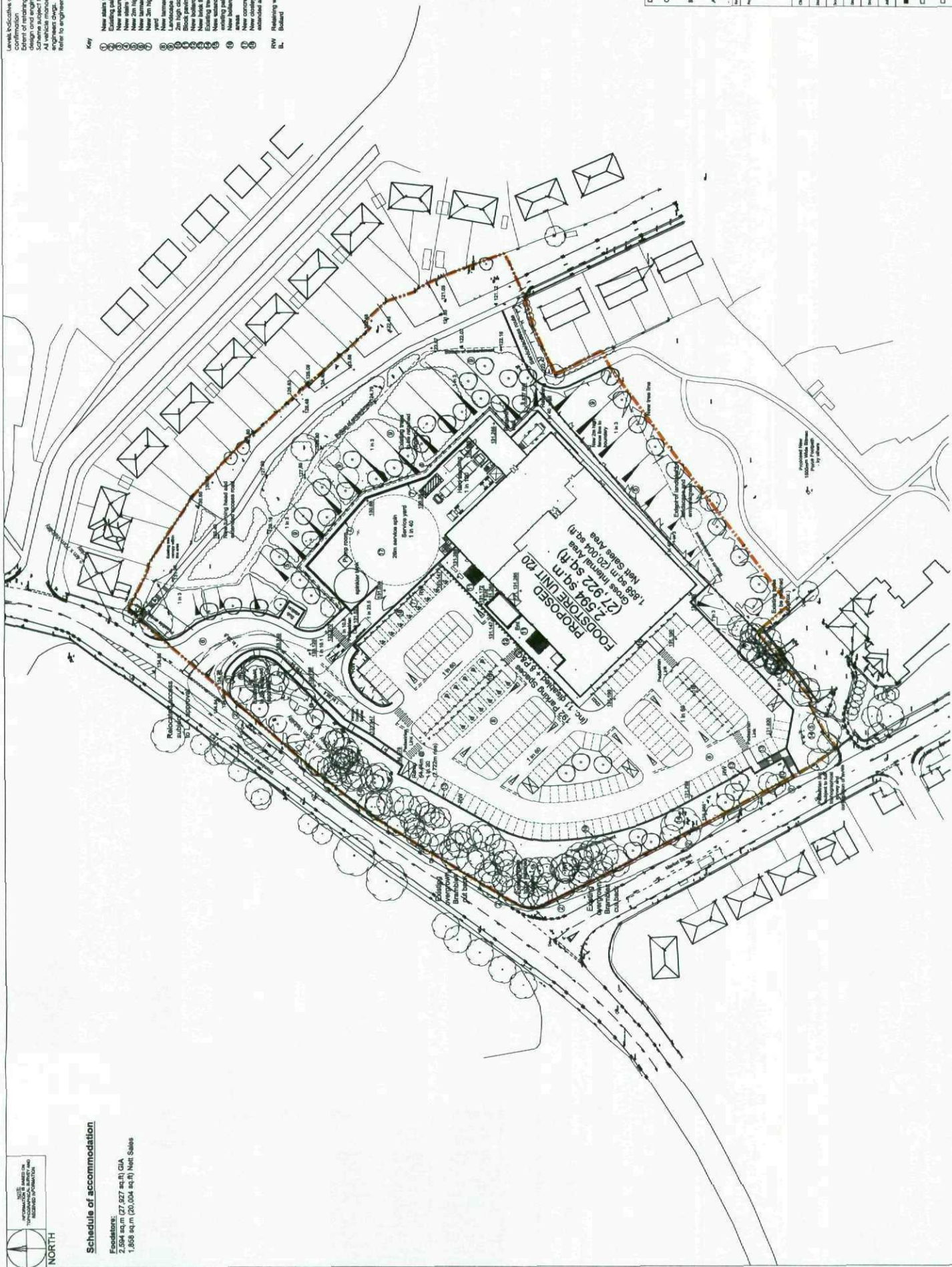


Schedule of accommodation

Foodstore:
2,594 sq.m (27,927 sq.ft) GIA
1,858 sq.m (20,004 sq.ft) Nett Sales

A level indicative only subject to survey, detail design and engineer confirmation
B extent of retaining walls indicative only subject to survey, detail design and engineer confirmation
C scheme subject to C&I to C&L to C&E with LA
D vehicle manufacturers by highway engineers refer to highway engineers' drawings.
E refer to engineers drawings for levels.

- [illegible]

[illegible]

Appendix C

Yorkshire Water Developer Enquiry and Sewer Records



YorkshireWater

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12 Oxford Street
Nottingham
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FAO Martin Breakwell

BSP Limited			
Project Number:			
Review:			
08 JUL 2010			
		File	

Yorkshire Water
Developer Services Team
Western House
Halifax Road
PO Box 500
Bradford
BD6 2SZ

Tel: 0845 120 8482
Fax: (01274) 372 834

Email:

Planning.Sewerage@yorkshirewater.co.uk

Your Ref: MTB/10086
Our Ref: L004217

For telephone enquiries ring:

Kashif Khan on (0845)120 8482

5th July 2010

Dear Sir,

Land off Market Street/Wombwell Road, Hoyland - Pre Planning Sewerage Enquiry

Thank you for your letter received 16th June 2010 and remittance. Please find enclosed our official VAT receipt number 002806 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:

There is a 300 mm diameter public foul sewer and a 300/375/675 mm diameter public surface water sewer recorded crossing the site. No buildings are to be erected within 3 (three) metres, nor trees planted within 5 (five) metres of these public sewers. It may not be acceptable to raise or lower ground levels over the sewers, nor to restrict access to the manholes on the sewers. If you wish to have these sewers diverted under Section 185 of the Water Industry Act 1991 an application should be made in writing. To discuss this matter, please telephone 0845 120 84 82.

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 300 mm diameter public foul sewer recorded crossing/within 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 6 (six) litres per second.

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.

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 they should contact our Developer Services Team on 0845 120 84 82.

The local public sewer network does not have capacity to accept any additional discharge of surface water from the proposal site. The developer is advised to contact the Environment Agency/local Land Drainage Authority with a view to establishing a suitable watercourse (if any nearby) for discharge.

Alternatively, curtilage surface water discharges to the public sewer will be restricted to the level of run-off - i.e. same rate of discharge - to that from the existing use of the site. To maintain the "status quo" in the public sewer network, any discharge of surface water from the site should take place with similar rates of flow and/or measured areas discharging to similar points of connection to that of the existing use of the site. You will need to demonstrate positive drainage to the public sewer to Yorkshire Water by means of investigation and calculation carried out at your expense. Discharges to the public sewer must take into account a 30% reduction in existing discharge and climate change.

To do this, Yorkshire Water requires to see existing and proposed drainage layouts with pipe sizes, gradients and connection points, measured impermeable areas of the present and proposed use of the site, along with the calculations that show the existing and proposed discharge rate from the site to the public sewer.

Failing this, curtilage surface water may discharge to the 675 mm diameter public surface water sewer recorded crossing/within the site.

The surface water discharge from the site to be restricted to not greater than 10 (ten) litres/second.

Please note further restrictions on surface water disposal from the site may be imposed by other parties. You are strongly advised to seek advice/comments from the Environment Agency/Land Drainage Authority/Internal Drainage Board, with regard to surface water disposal from the site.

Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the WRc publication "Sewers for Adoption - a design and construction guide for developers" 6th Edition as supplemented by Yorkshire Water's requirements, pursuant to an agreement under Section 104 of the Water Industry Act 1991. An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Developer Services Team (telephone 0845 120 84 82) for further information.

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. 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.

No land drainage to be connected/discharged to public sewer.

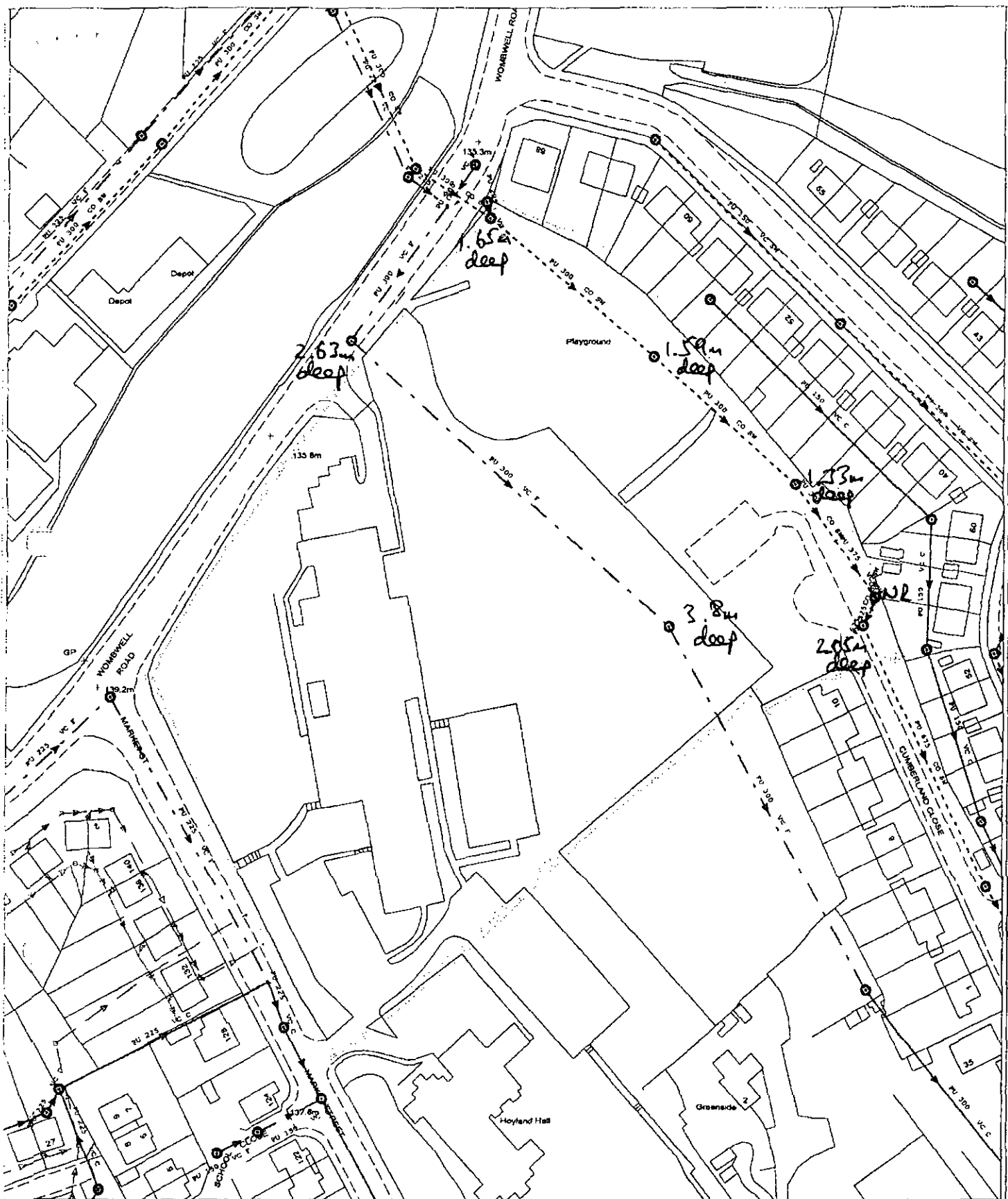
Any new connection to an existing public sewer will require the approval of Yorkshire Water. You may obtain an application form from our website (www.yorkshirewater.com) or by telephoning 0845 120 84 82.

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

A handwritten signature in black ink, appearing to be 'D. H.', written over the printed name 'Developer Services Team'.

Developer Services Team



436891 : 401078

Map Name : SE3601SE

Title

Notes

Partial Key

Foul Sewer = F

Combined Sewer = C

Surface Water Sewer = SW

Trade Sewer = TD

Partially Separate = PS

Date Req : 05/07/2010, 16:09:16

Source : Sewer Network Enquiry

This plan is furnished as a general guide only and no warranty as to its correctness is given or implied. This plan must not be relied upon in the event of excavations or other works made in the vicinity of public sewers. No house or property connections are shown.

Date Gen : 05/07/2010, 16:09:17



YorkshireWater

Yorkshire Water,
PO Box 500,
Halifax Road,
Bradford BD6 2LZ
Contact Name :
K KHAN
Contact Tel :

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