



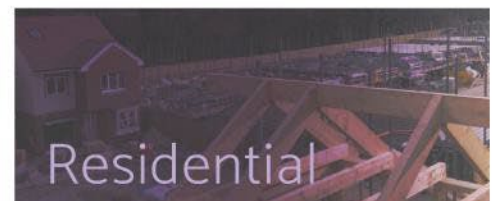
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Land off Chapel Lane, Witherley, Atherstone

JMS Project Reference: CO21/294/07

SuDS Strategy Report



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Revisions and Additional Material

Document History and Status

Revision	Date	Purpose/Status
-	13.10.2021	First Issue
REV A	02.12.2021	Second Issue

Document Details

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Preamble

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The conclusions and recommendations made in this report are limited to those that can be made based on the research carried out. The results of the research should be viewed in the context of the work that has been carried out and no liability can be accepted for matters outside of the stated scope of the research. Any comments made based on information obtained from third parties are given in good faith on the assumption that the information is accurate. No independent validation of third-party information has been made by JMS Consulting Engineers Ltd.

1 Introduction

- 1.1 JMS Engineers have been appointed to prepare a drainage strategy and SuDS report to satisfy the requirements of the Hinckley and Bosworth Borough Council for the erection of 5 new dwellings with associated garages, gardens, and car parking spaces.
- 1.2 This report will include a surface water drainage strategy and will consider the use of SuDS wherever possible.

2 Location & Existing Conditions

- 2.0.1 The application site is a greenfield site with some areas of hard standing ground located south of Chapel Lane in Witherley. There are existing residential dwellings located west of the site and areas of greenfield east of site. A topographical survey has been conducted for this site which can be found in Appendix A.
- 2.0.2 In the absence of intrusive testing, the British Geological Survey (BGS) data has been consulted to obtain information of the soil properties within the vicinity of the site. Borehole information indicates that at a depth of 2m, the soil properties are silty CLAY with a band of 'moderately strong green MUDSTONE' at a further depth of 0.1m. This suggests that the ground conditions contain cohesive clay properties which will be unlikely for infiltration, please see borehole report in Appendix B.

2.1 Existing Sewer Assets

- 2.1.1 Severn Trent Water sewer records, as per Appendix C, indicates that there are no surface water assets on Chapel Lane. However, there is an existing 150mm diameter combined sewer pipe which runs west of Chapel Lane and towards Atterton Lane.

2.2 Site Proposals

- 2.2.1 The development proposals include the erection of 5 new dwellings with associated driveways, gardens, and car parking spaces.

3 SuDS Considerations

3.0.1 Consideration of SuDS is a planning requirement for new developments. SuDS are designed to replicate the natural course of drainage as closely as possible with a view to reducing the impact of flooding, removing pollutants at source and combining water management with green space.

Developments should utilise SuDS where possible and ensure that surface water run-off is managed as close to its source as possible in line with the following hierarchy:

1. Into ground (infiltration).
2. To a surface water body.
3. To a surface water sewer.
4. To a combined sewer.

3.0.2 Sustainable Drainage Systems should be included in the design in order to manage surface water flood risk. SuDS should be inspired by natural drainage processes and manage water as close to its source as possible whilst offering pollution control and landscape benefits.

3.1 SuDS Incorporation

3.1.1 Site investigation information suggests that disposal of surface water via infiltration is unlikely owing to the cohesive clay soil found within the ground strata.

Design Criteria									
Component Type	Description	Collection Mechanism	Water Quantity (Chapter 3)			Water Quality (Chapter 4)	Amenity (Chapter 5)	Biodiversity (Chapter 6)	Further information (Chapter Ref)
			Peak Runoff Rate	Runoff Volumes					
				Small Events (Interceptions)	Large Events				
Rainwater Harvesting Systems	Systems that collect runoff from the roof of a building or other paved surface for use	P		●	●		●		11
Green roofs	Planted soil layers on the roof of buildings that slow and store runoff	S	○	●		●	●	●	12
Infiltration systems	Systems that collect and store runoff, allowing it to infiltrate into the ground	P	●	●	●	●	●	●	13
Proprietary treatment systems	Subsurface structures design to provide treatment to runoff	P				●			14

Filter strips	Grass strips that promote sedimentation and filtration as runoff is conveyed over the surface	L		●		●	○	○	15
Filter drains	Shallow stone-filled trenches that provide attenuation, conveyance and treatment of runoff	L	●	○		●	○	○	16
Swales	Shallow landscaped depressions that allow runoff to pond temporarily on the surface, before filtering through vegetation and underlying soils	L	●	●	●	●	●	●	17
Bioretention systems	Trees with soil-filled tree pits, tree planters or structural soils used to collect, store and treat runoff	P	●	●	●	●	●	●	18
Trees	Structural paving through which runoff can soak and subsequently be stored in the sub-base beneath, and/or allowed to infiltrate into the ground below	P	●	●		●	●	●	19
Pervious pavements	Structural paving through which runoff can soak and subsequently be stored in the sub-base beneath, and/or allowed to infiltrate into the ground below	S	●	●	●	●	○	○	20
Attenuation storage tanks	Large, below-ground voided spaces used to temporarily store runoff before infiltration-controlled release or use	P	●						21
Detention basins	Vegetated depressions that store and treat runoff	P	●	●		●	●	●	22
Ponds and wetlands	Permanent pools of water used to facilitate treatment of runoff – runoff can also be stored in an attenuation zone above the pool	P	●			●	●	●	23
P-Point L-Lateral S-Surface ● – likely valuable contribution to delivery of design criterion ○ - some potential contribution to delivery of design criterion, if specifically included in the design									

Figure 1 CIRIA Table 7.1 SuDS Components

- 3.1.2 The above table gives examples of various SuDS components, which may offer source control in accordance with the requirements.
- 3.1.3 The proposed car parking bays offers an opportunity to apply permeable surfacing which can be considered a method of managing surface water at source. In the conventional sense, permeable surfacing would be used as a method of infiltration should soil conditions allow. In the case of this site, infiltration is unlikely but permeable surfacing can still be adopted as it can provide additional SuDS benefits. As per table 7.1 (Figure 1), surface water is slowed at source by soaking through the surfacing before discharging to the drainage network. Permeable surfacing offers the added benefit of filtering the runoff as it drains through, hence improving the quality. Furthermore, the sub-base can be used to attenuate surface water when used in conjunction with controlled discharge rates. Figure 2 below shows a typical cross section.
- 3.1.4 In accordance with Table 26.2 of CIRIA Report C753, the pollution hazard level can be classified as 'Low'. Using table 26.3 of the same document, the mitigation indices values for permeable paving exceed the pollution hazard values taken from the previous table. This ensures that proposals offer enough pollution risk mitigation.

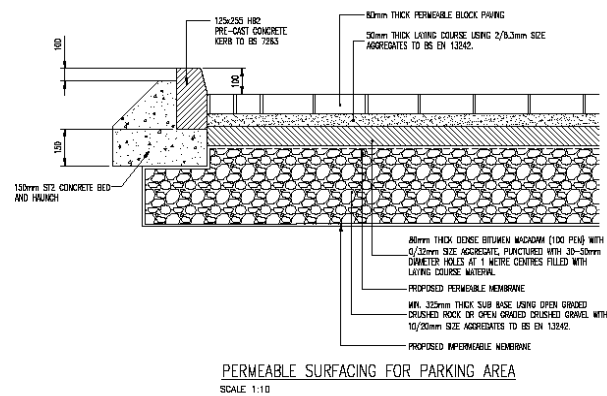


Figure 2 Typical car park permeable paving

3.15 The above proposals ensure that an ‘at source’ SuDS measure is applied, and betterment is provided in terms of surface water runoff velocity and quality. Pollution indices from different land types can be found per as per table 26.15 CIRIA SuDS Manual 2015, below.

Land use surface type (Lust)	Impermeability (IMP_{REF})	Total suspended solids pollution index (PI_{TSS})	Organic pollution index (PI_{ORG})	Hydrocarbon pollution index (PI_{HCD})	Metals Pollution index (PI)
Roofs					
• Industrial / Commercial	1.0	0.3	0.3-0.4	0.2	0.4-0.8
• Residential	0.9	0.4-0.5	0.6-0.7	0.1	0.2-0.5
Highways	0.8-0.9	0.9	0.7	0.9	0.8
• Motorways	0.7-0.8	0.8	0.7	0.8	0.8
• Major arterial highways	0.6-0.7	0.7-0.8	0.5	0.8	0.7
• Urban distributor roads	0.4-0.6	0.4	0.6	0.6	0.6
• Residential Street	0.5-0.6	0.4	0.6	0.3	0.3
• Pavements					
Car Parks / Hardstanding					
• Industrial/Commercial	0.6-0.8	0.6-0.7	0.6-0.7	0.7	0.4-0.5
• Driveways (Residential)	0.5	0.5	0.6	0.4	0.3

Open Areas					
• Gardens (All types)	0.1	0.3	0.2-0.3	0	0.01
• Parks/Golf Courses	0.2	0.2-0.3	0.2	0	0.02
• Grassed Areas (including verges, all types)	0.1	0.2-0.3	0.2-0.3	0.05	0.05
Note					
1	Pollution index values are based on reported land use type EMC distributions and impact potential thresholds from House et al (1991), Luker and Montague (1994), Butler and Clark (1995), D'Arcy et al (2000), Mitchell (2005) and Moy et al (2003)				

Figure 3 Impermeability and pollution indices for different land use types¹

- 3.1.6 Discharge rates should be managed as close as possible to the required standard by adopting a suitable flow control measure.
- 3.1.7 Where flow controls are applied attenuation volume is required to provide temporary storage during varying storm events. As mentioned above, when using permeable paving storage volume is available within the voids of the sub-base.
- 3.1.8 The above proposals ensure that SuDS measures are applied, and betterment is provided in terms of surface water runoff velocity, volume and quality.

3.2 Surface Water Drainage Maintenance Schedule

3.2.1 This section of the report gives guidance on the maintenance of the drainage system and outlines who will be responsible for this. The proposed development comprises of site clearance, landscaping, parking, and drainage. By necessity the available SuDS systems will control outfall flow, store, and slow down rainwater.

3.2.2 Maintenance of permeable paving will be the responsibility of the Developer/Management Company, see Table 1 below.

Table 1 System storage operation and maintenance requirements (permeable paving)

Maintenance Schedule	Required Action	Recommended Frequency
Regular Maintenance	Sweeping. [NOTE: Any jointing material between the blocks that is lost or displaced as a result of sweeping must be replaced. New jointing material must be the same type as that removed or a suitable replacement]	3 no. times a year: - - At the end of Winter; - Mid-summer; and - After autumn leaf fall. Also as required based on site specific observations
Occasional Maintenance	Stabilise and mow contributing and adjacent areas to prevent excess sediment being washed into the paving	As required
Remedial actions	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users	As required
	Rehabilitation of surface and underlying sand a geo-textile	As required (if local distortion or settlement occurs as a result of wash out of bedding)
Monitoring	Inspect for evidence for weed growth or deposits affecting run off. If required, take remedial action	Monthly for 3 no. months after installation, then during regular maintenance visits

- 3.2.3 The rainwater from the roofs is collected via rainwater pipes and will be carried to the attenuation. The maintenance of the collection system is the responsibility of the Developer/Management Company, see Table 2

Table 2 System storage operation and maintenance requirements (rainwater pipes and chambers)

Maintenance Schedule	Required Action	Recommended Frequency
Regular Maintenance	Inspection of silt trap chamber and removal of debris when necessary	Quarterly or as required following monitoring
Remedial Actions	Check for blockages in manholes and pipes. Rodding and jetting of pipes to be carried out. CCTV survey can be carried out to inspect condition of pipework.	Quarterly or as required following monitoring
Monitoring	Inspect collection apparatus for debris and litter. Remove where necessary to prevent blockages in the system.	Monthly or after periods of heavy rainfall

- 3.2.4 Flow Control – Maintenance of the system will be the responsibility of the developer/Management Company see Table 3 below.

Table 3 System operation and maintenance requirements (Flow Control)

Maintenance Schedule	Required Action	Recommended Frequency
Regular Maintenance	Remove litter and debris and grass cuttings from upstream to prevent being washed into the flow control. Inspection of the flow control chamber and the removal of any sediment/debris when required.	Quarterly or as required following monitoring
Remedial Actions	Check flow control is functional	Quarterly or as required following monitoring
Monitoring	Inspect flow control and check flows are not impeded	Monthly or after periods of heavy rainfall

- 3.2.5 Storage and Attenuation - Maintenance of below ground cellular storage tank will be the responsibility of the developer/Management Company see Table 4.

Table 4 (Cellular Storage O&M)

Maintenance Schedule	Required Action	Recommended Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for three months, then annually.
	Remove debris from the catchment surface (where it may cause risk to performance).	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface or filter for blockage by sediment, algae, etc. Remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/ or internal forebays.	Annually or as required.
Remedial Actions	Repair/rehabilitate inlets, outlets, overflows and vents.	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed.	Annually
	Survey inside of tank for sediment build-up and remove if necessary.	Every 5 years or as required.

- 3.2.6 The design life of the development is likely to exceed the design life of each of the SuDS components listed above. During the routine inspections of any drainage components, it may become apparent that they have reached the end of their functional lifetime. In the interest of sustainability, repairs should be the first-choice solution where practicable. If this is not the case, then it will be necessary for the property owners to undertake complete replacement of the component in question.

4 Surface Water Strategy

The surface water strategy is based upon the SuDS implementation as outlined above along with the hierarchy for surface water disposal as follows:

A. Use infiltration techniques, such as porous surfaces:

Ground conditions do not appear to support the use of infiltration techniques.

B. Attenuate rainwater in ponds or open water features for gradual release:

The proposed site layout does not provide sufficient area for open water features.

C. Attenuate rainwater by storing in tanks or sealed water features for gradual release:

Not applicable.

D. Direct rainwater direct to the watercourse:

The proposals include for a flow control using a hydrobrake manhole to restrict surface water flow at a reduced rate before discharge in accordance with the above.

Permeable paving has been considered for areas of treatment and storage purposes within the car parking spaces in the driveways using a minimum sub-base depth of 450mm. Additional to this, underground cellular storage tanks have been considered in this drainage design and is located within the driveway areas of each plot with storage provided within the crate system.

The Microdrainage control calculations in Appendix G show sufficient volume is provided to accommodate the worst-case storm event of the 1 in 100-year + 40% climate change storm event inclusive of climate change.

Consideration has been applied to the exceedance flow routes through the site as a result of the development. The levels indicate that the exceedance flows from the garden areas (for each plot) runs towards the south of the site, thus preventing flooding on third party land. For the driveways and car parking areas, the exceedance flow route will direct north into Chapel Lane.

E. Discharge rainwater to a surface water sewer/drain:

Not applicable.

F. Discharge rainwater to combined sewer:

Not applicable.

G. Discharge rainwater to foul sewer:

Not applicable.

Severn Trent Water Developer's Enquiry Response:

Foul Water Drainage

'The sewer records indicate that the nearest foul sewer available is the 150mm combined water sewer on Chapel Lane. The best point of connection would be into manhole SP32978601 (circled purple), from the datum provided there should be sufficient fall, of approximately 2m, from the ground level of the site to the invert level of the manhole. Anticipated foul flows from the proposed development (Approx 0.1l/s @ 2 DWF) should have no adverse hydraulic impact on the system. As such a gravity connection (direct or indirect) to the sewer at any convenient point is acceptable subject to a formal S.106 sewer connection approval (see later).'

Surface Water Drainage

'We would suggest that you explore the option to discharge the surface water flows to the ditch course off Chapel Lane, located on the opposite side of the road from your site.'

4.1 Surface Water Management During Construction

- 4.1.1 Consideration for surface water needs to be taken during the construction process, and how it is managed, including flood risk and pollution control.
- 4.1.2 Generally, there are three options for managing surface water during construction
- Build, use and remediate permanent surface water drainage system
 - Install, use and remove a temporary surface water drainage system
 - Utilise existing drainage system with pollution control measures (brownfield sites only)
- 4.1.3 For this brownfield site, it is recommended to build, use, and remediate the permanent surface water drainage system where possible.
- 4.1.4 Consideration for the following legislation and guidance should be made:

Legislation and Guidance
The Water Environment (England and Wales) Regulation 2009
Land Drainage Act 1991
SEPA Engineering in the Water Environment Good Practice Guide Temporary Construction Methods
Control of Water Pollution from Construction Sites – Guide to Good Practice (SP156)
Control of Water Pollution from Construction Sites – Guidance for Consultants and Contractors (C532)
Control of Water Pollution from Linear Construction Projects – Technical Guidance (C648)
Control of Water Pollution from Linear Construction Projects – Site Guide (C649)
Environmental Good Practice – Site Guide (C650)
Site Handbook for the Construction of SUDS (C698)
The SUDS Manual (C753)
BS 8582:2013 Code of Practice for Surface Water Management for Development Sites

Figure 4 Legislation and Guidance for Surface Water Construction Management

5 Summary and Conclusions

- 5.1 The application site is a greenfield site with some areas of hard standing spaces which is situated north of Chapel Lane Road with residential dwellings located west of the site.
- 5.2 The proposal includes for the construction of 5 new dwellings with associated garages, gardens, and car parking spaces.
- 5.3 Surface water disposal via infiltration is not considered feasible owing to the clayey nature of the soil conditions.
- 5.4 The surface water strategy proposes to restrict the surface water runoff.

6 Appendices

Appendix A – Topographical Survey

TRIAL PIT RECORD

Project PROPOSED HOUSING DEVELOPMENT

Client PERSIMMON HOMES

Trial Pit 7

Location J11, Lifford, NR. Atherstone

Engineer

Project No. 87-5674

Location Plan

Trial Pit Plan

Bearing S

Date 20.11.87

t e

Plant JCB 3CII

•De

Shoring None

Stability Water inflow and running sand from L. Orm

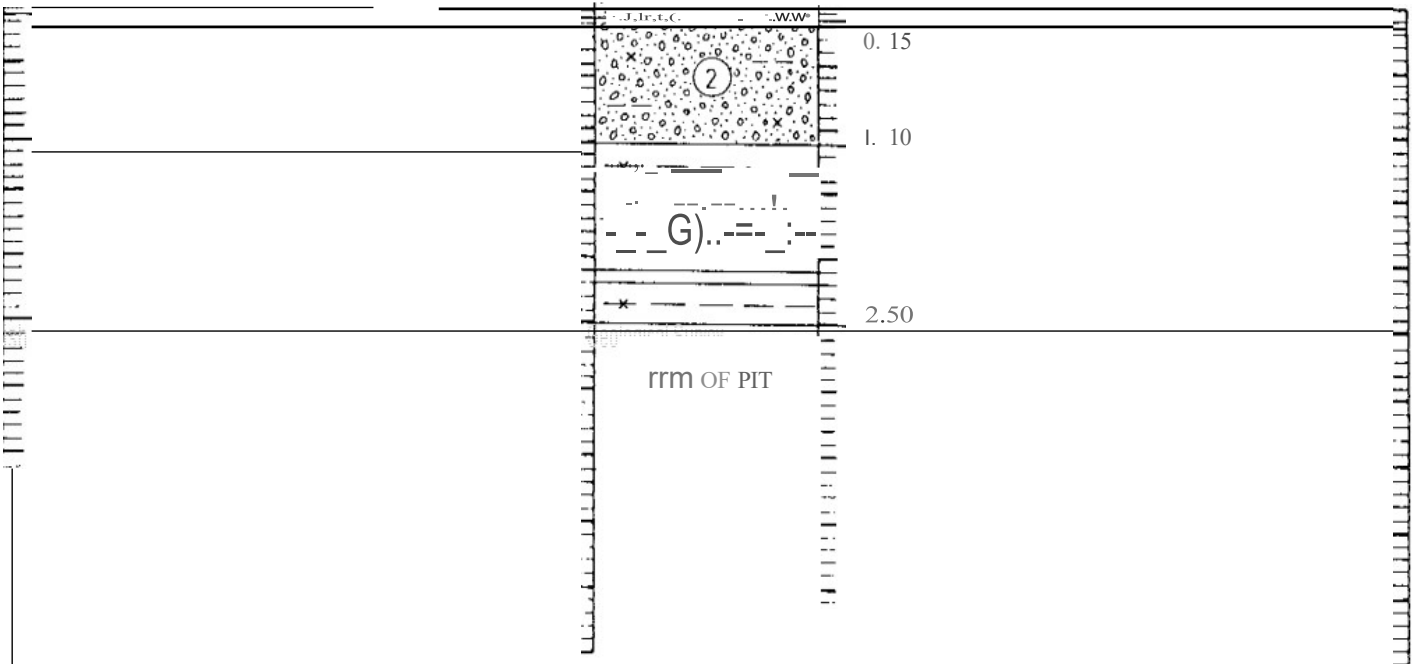
Water 0.1m of standing water after 10 minutes.

Ground Levels

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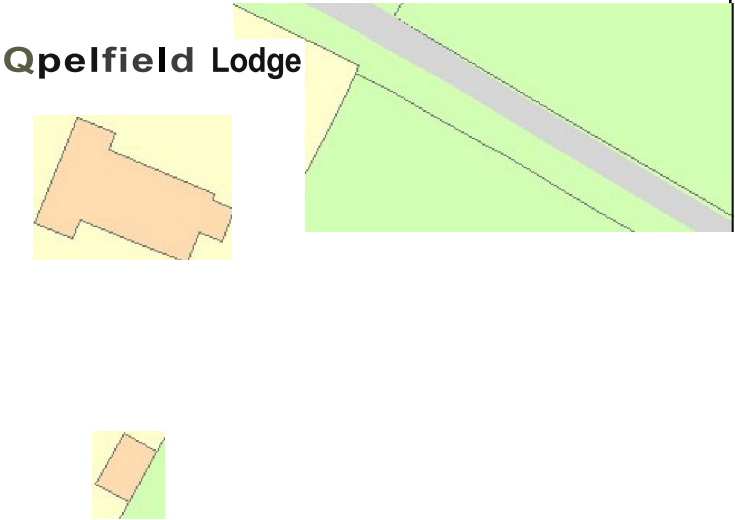
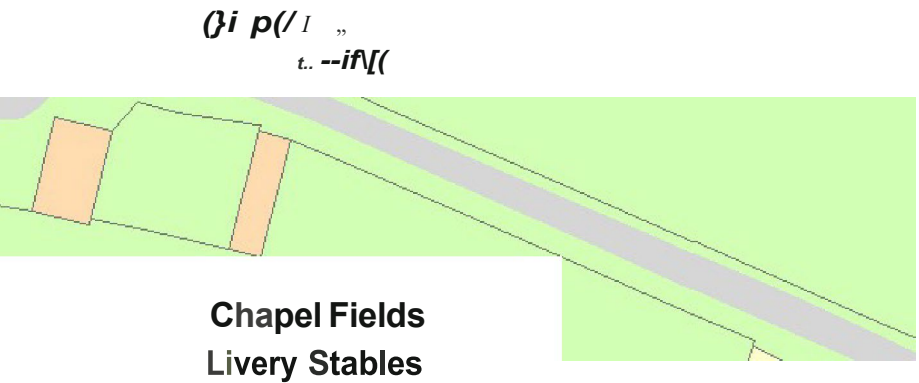
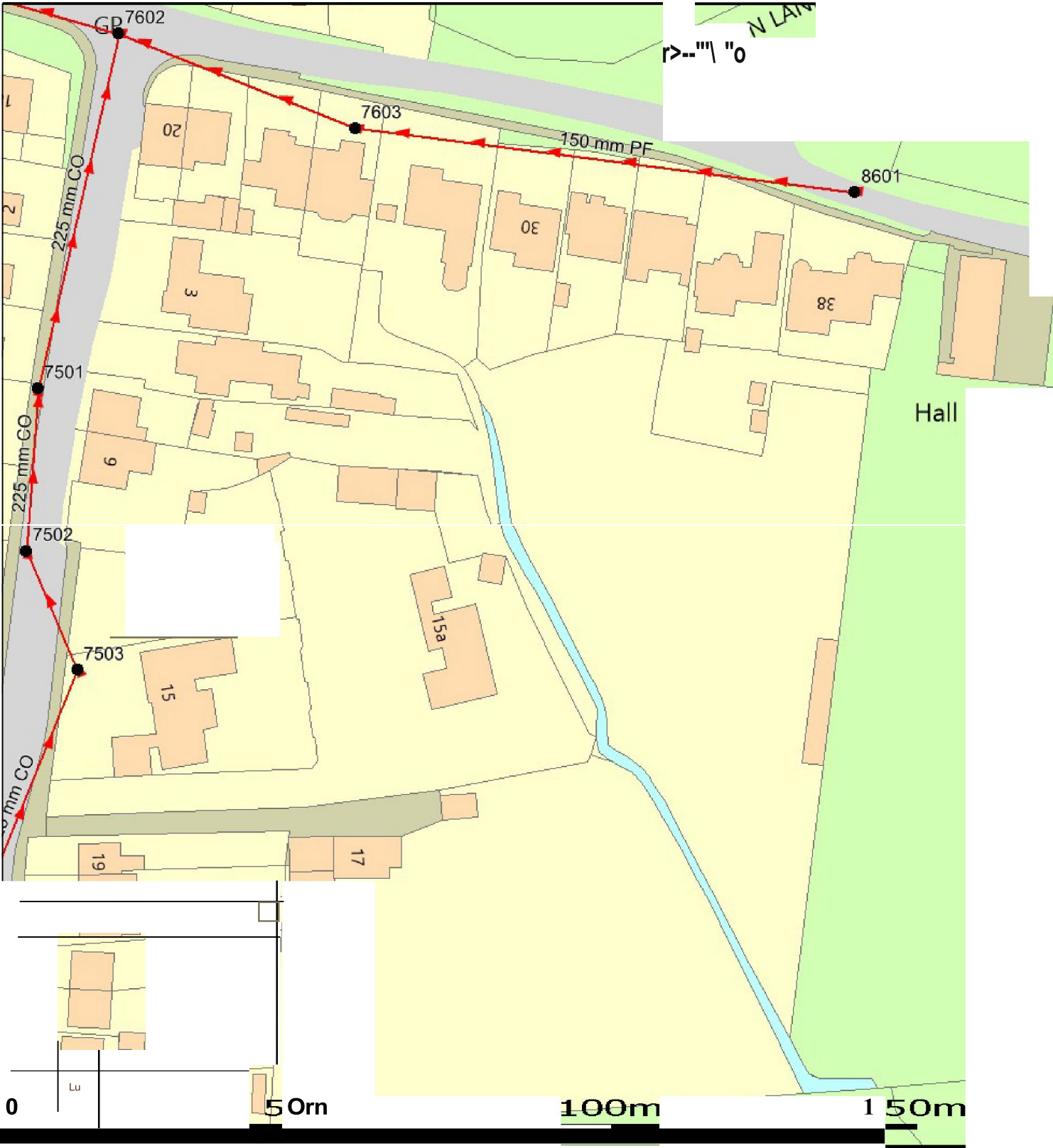
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Soils and Tests			Strata	
Depth (m)	Soil Type	Moisture (%)	Stratum	Description
0.10	HV	100	1	Sandy TOPSOIL.
1.20	HV	140	2	Loose varying to medium dense dull brown silty SAND and GRAVEL.
2.00	HP	200	3	Becomes clayey in parts with clay zones towards base. TERRACE OLPOSTTS.
				Firm to stiff reddish brown friable silty CLAY.
				Much grey green discolouration.
				Sometimes very stiff, frequent mudstone lithorelicts (1.5).
				Becomes hard at 1.80m.
				and of moderately strong green MUOSTONE at 2.1 ripple marked.
				difficult digging.
				MERCIA MUOSTONE.

1



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Date: 16/07/21

Scale: 1:1250

Map Centre: 432914,297539

Data updated: 14/07/21

Our Ref: 600845 - 1

Wastewater Plan A4

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Public Foul Gravity/Lateral Drain	—●—●—●—●—●—	Highway Drain	—+—+—+—+—+—	Manhole Foul	—
Public Combined Gravity/Lateral Drain	—●—●—●—●—●—	Overflow Pipe	—●—●—●—●—●—	Manhole Surface	Q
Public Surface Water Gravity/Lateral Drain	—●—●—●—●—●—	Disposal Ptpe	—●—●—●—●—●—	Abandoned Ptpe	—
Pressure Foul	—	Culverted Water Course	—	Section 104 sewers are shown in green	
Pressure Combined	—	Pumping Station	●●●●●●●●●●	Private sewers are shown in magenta	
Pressure Surface Water	—	Fitting	■		

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CO21_294_07

GENERAL CONDITIONS AND PRECAUTIONS TO BE TAKEN WHEN CARRYING OUT WORK ADJACENT TO SEVERN TRENT WATER'S APPARATUS

Please ensure that a copy of these conditions is passed to your representative and/or your contractor on site. If any damage is caused to Severn Trent Water Limited (STW) apparatus (defined below), the person, contractor or subcontractor responsible must inform STW immediately on:

0800 783 4444 (24 hours)

- a) These general conditions and precautions apply to the public sewerage, water distribution and cables in ducts including (but not limited to) sewers which are the subject of an Agreement under Section 104 of the Water Industry Act 1991 (a legal agreement between a developer and STW, where a developer agrees to build sewers to an agreed standard, which STW will then adopt); mains installed in accordance with an agreement for the self-construction of water mains entered into with STW and the assets described at condition b) of these general conditions and precautions. Such apparatus is referred to as "STW Apparatus" in these general conditions and precautions.
- b) Please be aware that due to The Private Sewers Transfer Regulations June 2011, the number of public sewers has increased, but many of these are not shown on the public sewer record. However, some idea of their positions may be obtained from the position of inspection covers and their existence must be anticipated.
- c) On request, STW will issue a copy of the plan showing the approximate locations of STW Apparatus although in certain instances a charge will be made. The position of private drains, private sewers and water service pipes to properties are not normally shown but their presence must be anticipated. This plan and the information supplied with it is furnished as a general guide only and STW does not guarantee its accuracy.
- d) STW does not update these plans on a regular basis. Therefore the position and depth of STW Apparatus may change and this plan is issued subject to any such change. Before any works are carried out, you should confirm whether any changes to the plan have been made since it was issued.
- e) The plan must not be relied upon in the event of excavations or other works in the vicinity of STW Apparatus. It is your responsibility to ascertain the precise location of any STW Apparatus prior to undertaking any development or other works (including but not limited to excavations).
- f) No person or company shall be relieved from liability for loss and/or damage caused to STW Apparatus by reason of the actual position and/or depths of STW Apparatus being different from those shown on the plan.

In order to achieve safe working conditions adjacent to any STW Apparatus the following should be observed:

1. All STW Apparatus should be located by hand digging prior to the use of mechanical excavators.
2. All information set out in any plans received from us, or given by our staff at the site of the works, about the position and depth of the mains, is approximate. Every possible precaution should be taken to avoid damage to STW Apparatus. You or your contractor must ensure the safety of STW Apparatus and will be responsible for the cost of repairing any loss and/or damage caused (including without limitation replacement parts).
3. Water mains are normally laid at a depth of 900mm. No records are kept of customer service pipes which are normally laid at a depth of 750mm; but some idea of their positions may be obtained from the position of stop tap covers and their existence must be anticipated.

4. During construction work, where heavy plant will cross the line of STW Apparatus, specific crossing points must be agreed with STW and suitably reinforced where required. These crossing points should be clearly marked and crossing of the line of STW Apparatus at other locations must be prevented.
5. Where it is proposed to carry out piling or boring within 20 metres of any STW Apparatus, STW should be consulted to enable any affected STW Apparatus to be surveyed prior to the works commencing.
6. Where excavation of trenches adjacent to any STW Apparatus affects its support, the STW Apparatus must be supported to the satisfaction of STW. Water mains and some sewers are pressurised and can fail if excavation removes support to thrust blocks to bends and other fittings.
7. Where a trench is excavated crossing or parallel to the line of any STW Apparatus, the backfill should be adequately compacted to prevent any settlement which could subsequently cause damage to the STW Apparatus. In special cases, it may be necessary to provide permanent support to STW Apparatus which has been exposed over a length of the excavation before backfilling and reinstatement is carried out. There should be no concrete backfill in contact with the STW Apparatus.
8. No other apparatus should be laid along the line of STW Apparatus irrespective of clearance. Above ground apparatus must not be located within a minimum of 3 metres either side of the centre line of STW Apparatus for smaller sized pipes and 6 metres either side for larger sized pipes without prior approval. No manhole or chamber shall be built over or around any STW Apparatus.
9. A minimum radial clearance of 300 millimetres should be allowed between any plant or equipment being installed and existing STW Apparatus. We reserve the right to increase this distance where strategic assets are affected.
10. Where any STW Apparatus coated with a special wrapping is damaged, even to a minor extent, STW must be notified and the trench left open until the damage has been inspected and the necessary repairs have been carried out. In the case of any material damage to any STW Apparatus causing leakage, weakening of the mechanical strength of the pipe or corrosion-protection damage, the necessary remedial work will be recharged to you.
11. It may be necessary to adjust the finished level of any surface boxes which may fall within your proposed construction. Please ensure that these are not damaged, buried or otherwise rendered inaccessible as a result of the works and that all stop taps, valves, hydrants, etc. remain accessible and operable. Minor reduction in existing levels may result in conflict with STW Apparatus such as valve spindles or tops of hydrants housed under the surface boxes. Checks should be made during site investigations to ascertain the level of such STW Apparatus in order to determine any necessary alterations in advance of the works.
12. With regard to any proposed resurfacing works, you are required to contact STW on the number given above to arrange a site inspection to establish the condition of any STW Apparatus in the nature of surface boxes or manhole covers and frames affected by the works. STW will then advise on any measures to be taken, in the event of this a proportionate charge will be made.
13. You are advised that STW will not agree to either the erection of posts, directly over or within 1.0 metre of valves and hydrants,
14. No explosives are to be used in the vicinity of any STW Apparatus without prior consultation with STW.

TREE PLANTING RESTRICTIONS

There are many problems with the location of trees adjacent to sewers, water mains and other STW Apparatus and these can lead to the loss of trees and hence amenity to the area which many people may have become used to. It is best if the problem is not created in the first place. Set out below are the recommendations for tree planting in close proximity to public sewers, water mains and other STW Apparatus.

15. Please ensure that, in relation to STW Apparatus, the mature root systems and canopies of any tree planted do not and will not encroach within the recommended distances specified in the notes below.
16. Both Poplar and Willow trees have extensive root systems and should not be planted within 12 metres of a sewer, water main or other STW Apparatus.

17. The following trees and those of similar size, be they deciduous or evergreen, should not be planted within 6 metres of a sewer, water main or other STW Apparatus. E.g. Ash, Beech, Birch, most Conifers, Elm, Horse Chestnut, Lime, Oak, Sycamore, Apple and Pear. Asset Protection Statements Updated May2014

18. STW personnel require a clear path to conduct surveys etc. No shrubs or bushes should be planted within 2 metre of the centre line of a sewer, water main or other STW Apparatus.

19. In certain circumstances, both STW and landowners may wish to plant shrubs/bushes in close proximity to a sewer, water main of other STW Apparatus for screening purposes. The following are shallow rooting and are suitable for this purpose: Blackthorn, Broom, Cotoneaster, Elder, Hazel, Laurel, Privet, Quickthorn, Snowberry, and most ornamental flowering shrubs.

