



Former PACSO Site
Hook Lane
Aldingbourne

**FOUL DRAINAGE
IMPACT ASSESSMENT**
(Planning Reference: AL/79/20/OUT)

On behalf of
Genesis Town Planning

MT/5399/FDIA.1
January 2021

Experience and expertise working together

QUALITY MANAGEMENT

Report Issue No.	Status	Date	Author	Authorised
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1.0 INTRODUCTION

1.1 Bellamy Roberts LLP has been instructed by Genesis Town Planning to prepare a Foul Drainage Impact Assessment to address the consultation comments received from the Drainage Authority (dated 1st December 2020, copy attached at **Appendix 1**), to ensure the proposed scheme is in accordance with Policy W DM1 of the adopted Arun Local Plan.

1.2 Criterion 3 of Policy W DM1 is most relevant to address the request of the Drainage Authority, and this is set out below:

“3. Lidsey Wastewater Treatment Works Catchment Area

Major development within this area must also be accompanied by a full Drainage Impact Assessment which must take account of surface water disposal and foul water disposal.

Although minor developments are unlikely to raise significant flood risk due to the cumulative impact all development within this area must also be accompanied by a Drainage Impact Assessment that must take account of both the individual and cumulative impact on foul water disposal; flood storage capacity and surface water drainage or flood flows within the Lidsey Wastewater Treatment Works Catchment Area”.

Site Location

1.3 The Ordnance Survey National Grid Reference (NGR) for the centre of the site is 493389, 104597. For clarity, the location of the site has been shown in Figure 1, on the following page.



Figure 1: Site Location Plan

2.0 SURFACE AND FOUL WATER DRAINAGE

- 2.1 The site is currently undeveloped and therefore there are no formal surface or foul water drainage provisions for the site. Nevertheless, there is an existing watercourse located to the west of the application site which flows on a north-south alignment and it is proposed that all surface water run-off be attenuated within an on-site storage tank, before being discharged into the existing watercourse to the west of the application site which will be controlled via a series of hydro-brakes, with discharge limited to a rate no greater than the existing greenfield run-off rates. In terms of foul water, it is proposed that the site will connect to the existing Southern Water foul sewer located in Hook Lane. A plan showing the existing Southern Water foul sewer is provided at **Appendix 2**.
- 2.2 The site is within the Lidsey foul water drainage treatment catchment area, an extract of which is shown at Figure 2, and the full catchment area is shown at **Appendix 3**.

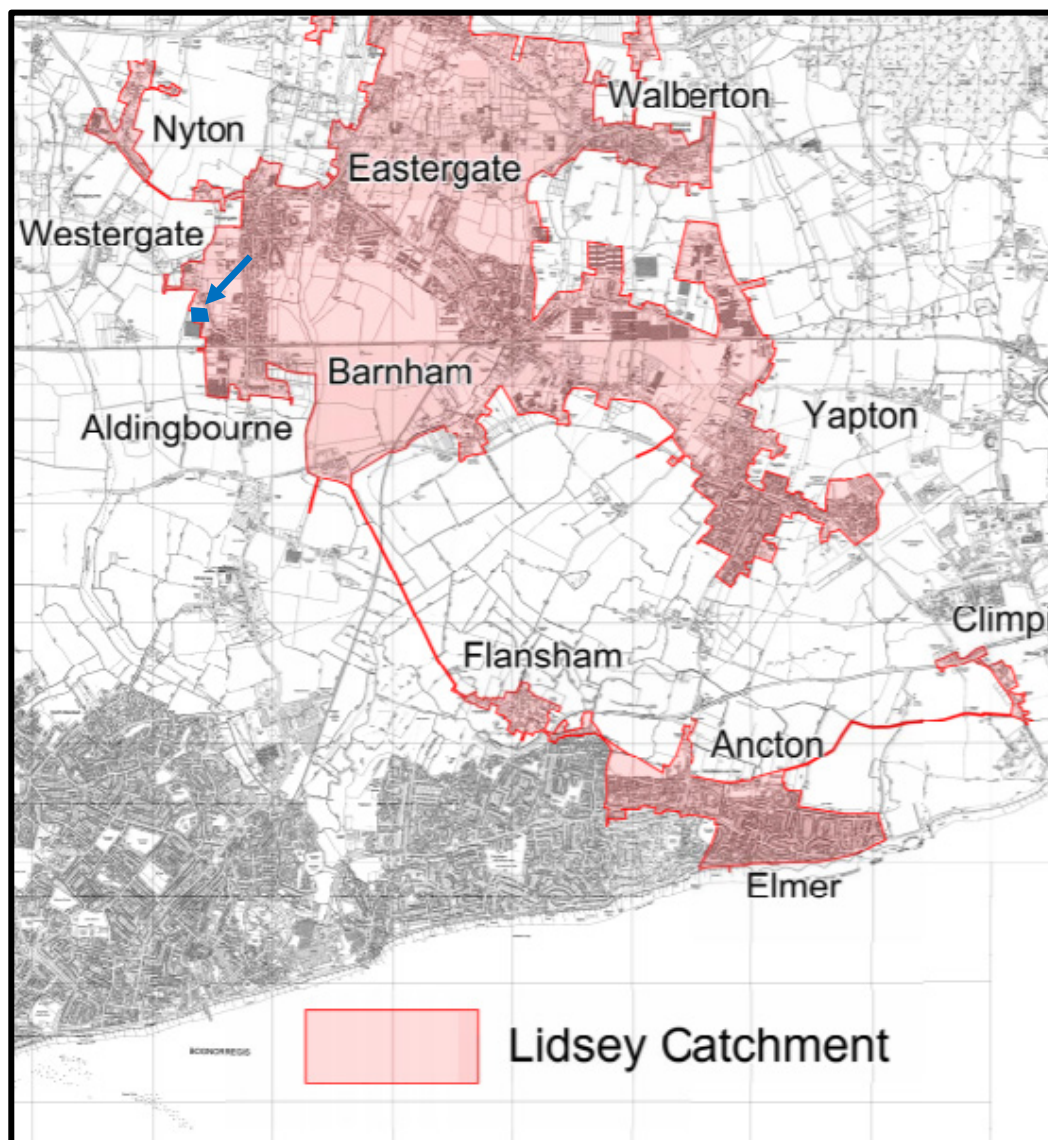


Figure 2: Lidsey Catchment Area Plan

3.0 PROPOSED DEVELOPMENT

- 3.1 The proposed development will provide 10 residential units on land to the west of Hook Lane, Aldingbourne. The proposed housing schedule is set out in Table 1.

Table 1: Schedule of Accommodation Proposed

Dwelling Type	Number of Dwellings
2 bed house	2
3 bed house	3
4 bed house	5
Total	10

- 3.2 According to the Office for National Statistics (ONS), the average UK household comprises 2.4 persons. The British Water document entitled 'Flows and Loads – 4' (copy provided at **Appendix 4**), provides a wastewater figure 150 litres per person for standards residential uses. This reveals the development could be expected to generate approximately 3,600 litres of wastewater per day, which equates to approximately 0.04 litres per second.

4.0 SOUTHERN WATER

- 4.1 Southern Water has been consulted on the scheme and provided their consultation comments on 26th October 2020, a copy of which is attached at **Appendix 5**. In summary, Southern Water raised no objection to the scheme, but stated that a formal application for a connection to the public sewer be made. Southern Water has a duty to provide network capacity from the point of practical connection, which is funded by the New Infrastructure Charge.
- 4.2 The Southern Water charging arrangements for 2020/21 sets out a 'new infrastructure charge' of £790 per property. Based on the development proposal for 10 units, the total infrastructure charge would be £7,900.

APPENDICES

APPENDIX 1



From: Laura Gibbons <Laura.Gibbons@arun.gov.uk>

Sent: 01 December 2020 14:40

To: Planning.Responses <Planning.Responses@arun.gov.uk>

Cc: Simon Davis <Simon.Davis@arun.gov.uk>

Subject: AL/79/20/OUT- Land to the West of Hook Lane Hook Lane Westergate PO20 3TE

Engineers Comments Regarding Surface Water Drainage

The FRA submitted details that infiltration testing will be completed but that it is anticipated that attenuated discharge to watercourse will be required. The hierarchy for sustainable drainage must be followed and it may be found that a hybrid system (infiltration with high level overflow to watercourse) is adequate.

Surface water drainage design must be informed by on site winter groundwater monitoring and winter infiltration testing. Should the applicant not want to wait until the winter of 21/22 we would recommend that they commence monitoring as soon as possible.

The drainage strategy submitted relies upon a connection to the watercourse being available, however it does not appear that the red line boundary of this application extends to the watercourse. We are therefore unclear on how this will be achieved. The attenuation crates are also proposed to be 1.2m deep with a long length of pipe downstream of this to connect to the ditch, we have little confidence that this can be achieved by gravity means and suspect a larger footprint of drainage features will be required. The applicant must note that pumping of surface water is not acceptable.

The attenuation strategy also does not provide any means of surface water treatment prior to discharge, any design must provide adequate pollution mitigation indices. We would advocate the use of a treatment train with the first stages being provided at or close to source, i.e. permeable paving, swales.

Surface water drainage features should also be designed in a manner that positively affects the amenity of the site. We would like to remind the developer that, open features, such as swales, basins and ponds, when designed

correctly, can satisfy all the above aspirations in addition to; being easier to maintain, having longer lifespans and offering ecological advantages over subterranean features such as “plastic crate systems”.

It should also be noted that attenuation features should not be counted within useable public open space provision.

If you are minded to approve the application please apply the following conditions to ensure that the development is adequately drained and does not increase flood risk elsewhere.

PCENG D2

“Development shall not commence, other than works of site survey and investigation, until full details of the proposed surface water drainage scheme have been submitted to and approved in writing by the Local Planning Authority. The design should follow the hierarchy of preference for different types of surface water drainage disposal systems as set out in Approved Document H of the Building Regulations, and the recommendations of the SuDS Manual produced by CIRIA. Winter groundwater monitoring to establish highest annual ground water levels and winter Percolation testing to BRE 365, or similar approved, will be required to support the design of any Infiltration drainage. No building / No part of the extended building shall be occupied until the complete surface water drainage system serving the property has been implemented in accordance with the agreed details and the details so agreed shall be maintained in good working order in perpetuity.”

Reason: To ensure that the proposed development is satisfactorily drained in accordance with policies W SP1, W DM1, W DM2 and W DM3 of the Arun Local Plan. This is required to be a pre-commencement condition because it is necessary to implement the surface water drainage system prior to commencing any building works.

And the accompanying informative:

INFORM D

“Infiltration rates for soakage structures are to be based on percolation tests undertaken in the winter period and at the location and depth of the proposed structures. The percolation tests must be carried out in accordance with BRE365, CIRIA R156 or a similar approved method and cater for the 1 in 10 year storm between the invert of the entry pipe to the soakaway, and the base of the structure. It must also have provision to ensure that there is capacity in the system to contain below ground level the 1 in 100 year event plus 40% on stored volumes, as an allowance for climate change. Adequate freeboard must be provided between the base of the soakaway structure and the highest recorded annual groundwater level identified in that location. Any SuDS or soakaway design must include adequate groundwater monitoring data to determine the highest winter groundwater table in support of the design. The applicant is advised to discuss the extent of groundwater monitoring with the Council's Engineers.

Supplementary guidance notes regarding surface water drainage are located here

<https://www.arun.gov.uk/surfacewater> on Arun District Councils website. A surface water drainage checklist is available on Arun District Councils website, this should be submitted with a Discharge of Conditions Application.”

PCENG D3

“The development shall not proceed until details have been submitted to and approved in writing by the Local Planning Authority for any proposals: to discharge flows to watercourses; or for the culverting, diversion, infilling or obstruction of any watercourse on or adjacent to the site. Any discharge to a watercourse must be at a rate no greater than the pre-development run-off values. No construction is permitted, which will restrict current and future land owners from undertaking their riparian maintenance responsibilities in respect to any watercourse or culvert on or adjacent to the site. “

Reason: To ensure that the proposed development is satisfactorily drained in accordance with policies W DM1, W DM2 and W DM3 of the Arun Local Plan. And to ensure that the duties and responsibilities, as required under the Land Drainage Act 1991, and amended by the Flood and Water Management Act 2010, can be fulfilled without additional impediment following the development completion. It is considered necessary for this to be a pre-commencement condition to protect existing watercourses prior to the construction commencing.

And the accompanying informative:

INFORM D2

"Under Section 23 of the Land Drainage Act 1991 Land Drainage Consent must be sought from the Lead Local Flood Authority (West Sussex County Council), or its agent (Arun District Council land.drainage@arun.gov.uk), prior to starting any works (temporary or permanent) that affect the flow of water in an ordinary watercourse. Such works may include culverting, channel diversion, discharge of flows, connections, headwalls and the installation of trash screens.

The development layout must take account of any existing watercourses (open or culverted) to ensure that future access for maintenance is not restricted. No development is permitted within 3m of the bank of an ordinary watercourse, or 3m of a culverted ordinary watercourse."

PCENG4

"Development shall not commence until full details of the maintenance and management of the surface water drainage system is set out in a site-specific maintenance manual and submitted to, and approved in writing, by the Local Planning Authority. The manual is to include details of financial management and arrangements for the replacement of major components at the end of the manufacturer's recommended design life. Upon completed construction of the surface water drainage system, the owner or management company shall strictly adhere to and implement the recommendations contained within the manual."

Reason: To ensure that the proposed development is satisfactorily drained in accordance with policies W DM1, W DM2 and W DM3 of the Arun Local Plan. It is considered necessary for this to be a pre-commencement condition to ensure that the future maintenance and funding arrangements for the surface water disposal scheme are agreed before construction commences.

ENG1

"Immediately following implementation of the approved surface water drainage system and prior to occupation of any part of the development, the developer/applicant shall provide the local planning authority with as-built drawings of the implemented scheme together with a completion report prepared by an independent engineer that confirms that the scheme was built in accordance with the approved drawing/s and is fit for purpose. The scheme shall thereafter be maintained in perpetuity."

Reason : To ensure that the proposed development is satisfactorily drained in accordance with policies W SP1, W DM1, W DM2 and W DM3 of the Arun Local Plan.

Kind regards,

Laura Gibbons

Drainage Engineer

Engineering Services

Please note that I work Tuesdays 08:00-16:00 for Arun only.

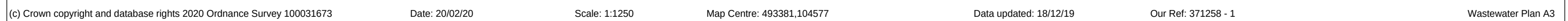


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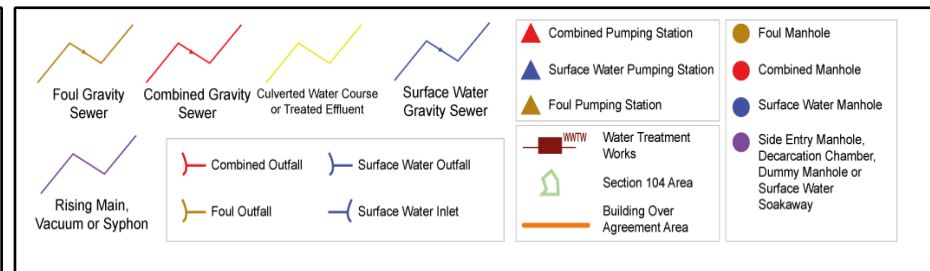
Arun District Council, Civic Centre, Maltravers Rd, Littlehampton, West Sussex, BN17 5LF

APPENDIX 2



WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

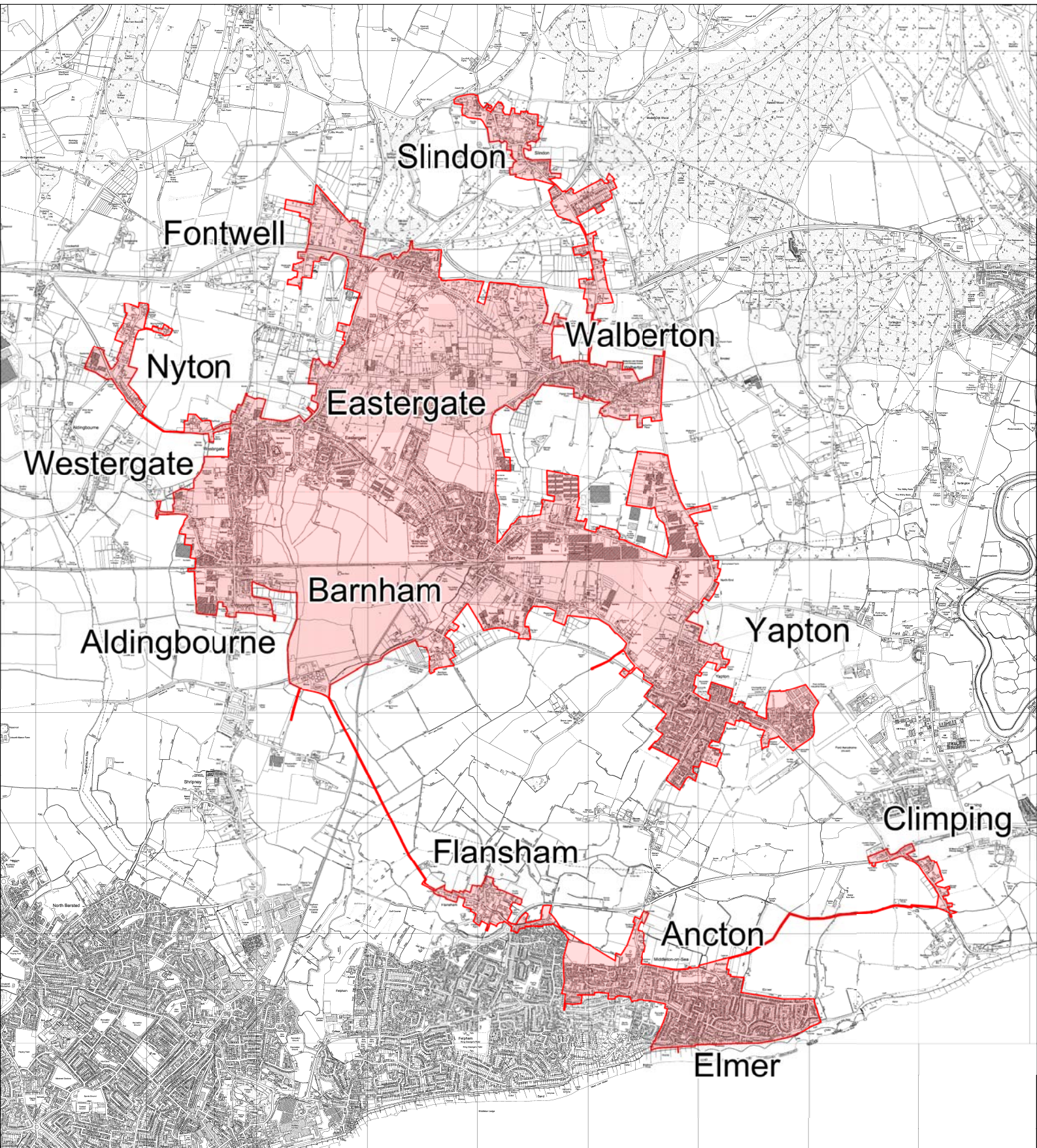
WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.



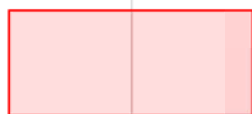
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APPENDIX 3



BOGNOR REGIS



Lidsey Catchment

APPENDIX 4



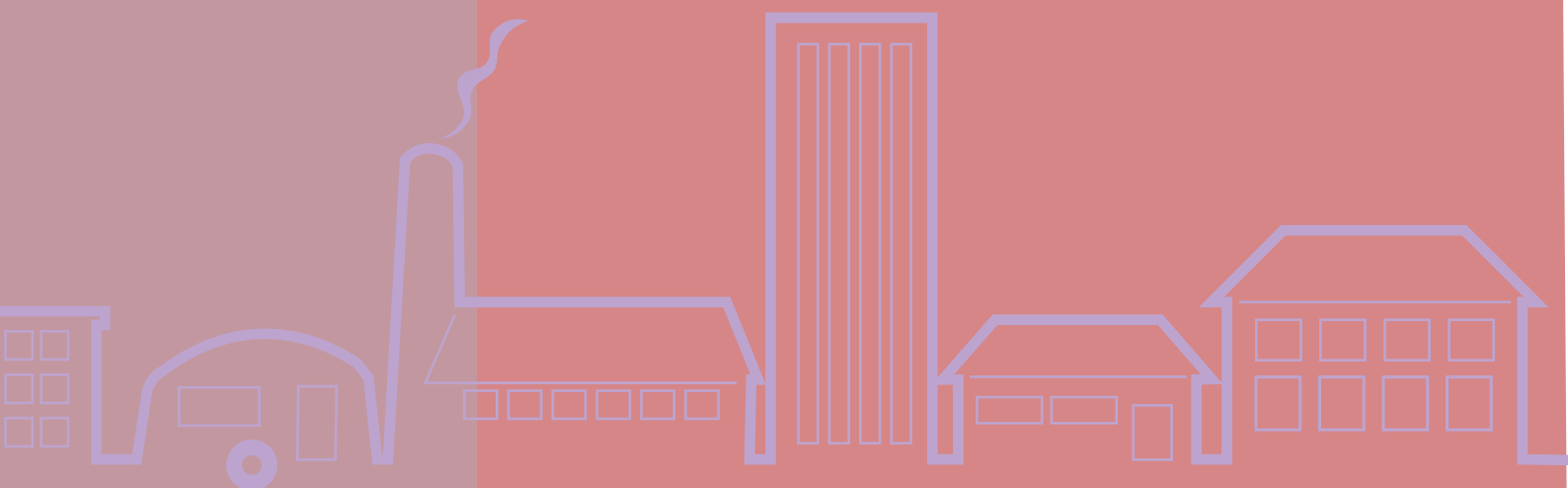
BRITISH WATER
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Code of Practice

Flows and Loads – 4

Sizing Criteria, Treatment Capacity for Sewage Treatment Systems



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Code of Practice

Flows and Loads – Sizing Criteria, Treatment Capacity for Sewage Treatment Systems

This code of practice was prepared by the British Water Package Sewage Treatment Plant Focus Group comprising manufacturers, suppliers and service companies of all types of small wastewater treatment systems.

The Environment Agency, the Northern Ireland Environment Agency and the Scottish Environment Protection Agency support the use of this code of practice, but the Agencies do not specifically endorse any particular manufacturer's product.

This code of practice provides a table of loadings which allows the total daily sewage load from properties to be calculated and it is recommended that all designers should use this table when sizing and designing non-mains sewage treatment systems. The flows and loads values given represent current best knowledge within the UK but may change with time in line with per capita water use.

Where proposed alternative usage rates or methods of sizing might be more appropriate for a particular application this should be supported by the collection of data or additional site specific evidence to validate the proposal. Professional judgment is required and may be used to compare alternatives especially when assessing sewage strengths and treatability.

Guidance is provided to assist the user to identify the various sources of sewage, to consider the nature of the sewage to be treated and to make users aware of issues which may affect treatability and system performance. Each manufacturer is aware of the capabilities of their own systems with respect to different situations.

The table of loadings may be used to design all sizes of sewage treatment systems serving up to 1000 population.

Use of this code of practice by all UK manufacturers and system designers will:

- help to clearly define site activity and sewage sources
- promote a consistent approach to collecting accurate and complete loading information
- provide consistent information about problem effluents and treatability, and
- promote the design and installation of appropriate treatment systems and so reduce the problem of undersized systems causing environmental contamination.

The loadings in this code of practice are more comprehensive than in previously published guidance, they are generally higher and include values for ammonia.

1 Scope

The purpose of this code of practice is to provide an appropriate table of loadings (volumes and loads) to allow the total daily load entering a treatment system to be calculated.

2 Regulations

Early contact with the Regulator to discuss the proposed discharge of sewage effluent is advisable.

- Planning requirements, eg *DETR Circular 3/99, site survey, etc.*
- Building regulations, eg part H *DTLR England & Wales, part M Scotland, Water (Northern Ireland) Order 1999 and Northern Ireland building regulations.*
- A Permit, Authorisation or Consent to discharge will be required from the environmental regulators (the Agencies).
- Planning permission (Local Authority Planning Guidance).

3 Definitions of terms

- **Population (P)** – number of people the system will serve.
- **Biochemical oxygen demand (BOD₅)** – Mass concentration of dissolved oxygen consumed under specified conditions (5 days at 20° C with nitrification inhibition) by the biological oxidation of organic and/or inorganic matter in water.
- **Ammonia expressed as mg/l N** – Ammonia is NH₃, Ammonium is NH₄OH. In wastewater we frequently refer to and use the word/symbol, ammonia/NH₃. The term ammonia usually includes ammonium as well.

4 Selection considerations – all applications

- Values and conditions required by any regulatory permit or consent.
- Loading figures for each specified load are given for Flow, BOD and NH₃.
- The user/purchaser of the system must declare **ALL ACTIVITIES** to enable all loads entering the treatment system to be identified and evaluated. The user/purchaser should be made aware that there is a risk of poor performance from the equipment if loads are understated. The accuracy of the declared loads is of paramount importance.
- Guidance points given under each category suggest questions to enable the specifier to recognise variable or unusual loads,

particular to that site, to improve correct system selection and design.

- Total daily loadings are calculated based on the anticipated final maximum capacity of the site. New sites initially may have a reduced business level but the system suggested should reflect the full business potential, e.g. a system suggested for a hotel or caravan site or any other application, with an average 80% occupancy rate should be designed to handle 100% occupancy. The equipment selected by the specifier should reflect the maximum potential of the site. Where a specifier is instructed to use lower occupancy rates, this should be recorded. Flow balancing should be considered where appropriate
- Excess disinfectants, chemicals, etc can affect the biological processes as can specific toxic substances from site activities e.g. photographic chemicals, weed killers, motor oils. It is assumed that these substances are excluded from the wastes to be treated.
- Some water treatment equipment effluents eg softeners, chlorinated backwashes may not be acceptable; system designers should specifically accept or exclude their use. Many treatment system designs will accept regenerants into their units, however this must be checked and agreed.
- Water saving devices affect sewage strength, the impact of their installation should be identified.
- Laundries affect sewage strength and treatability; their proportion should be identified.
- Surface/storm water is not permitted as part of the wastewater stream and must be excluded.
- It is assumed, unless stated, that waste disposal units (WDU) are not in use.
- Undersizing of equipment is to be avoided as it is always better to have a plant slightly oversized, rather than on the limit or undersized.

■ **The owner of the treatment system holds the permit, consent or authorisation to discharge and should be aware that he is responsible for the effluent quality discharged. Thus all sources of discharge into the system must be declared. It is an offence if the effluent fails to comply with the regulators requirements.**

(continued on page 4)



Table of Loadings for Sewage Treatment Systems

Per person / activity / day (unless otherwise specified)	FLOW (Litres)	BOD (Grams)	Ammonia as N
DOMESTIC DWELLINGS (Grams)			
Standard residential	150	60	8
Mobile home type caravans with full services	150	60	8
INDUSTRIAL			
Office / Factory without canteen	50	25	5
Office / Factory with canteen	100	38	5
Open industrial site, e.g. construction, quarry, without canteen	60	25	5
*Full-time Day Staff	90	38	5
*Part-time Staff (4 hr shift)	45	25	3
SCHOOLS			
Non-residential with canteen cooking on site	90	38	5
Non-residential without a canteen	50	25	5
Boarding school (i) residents	175	60	8
(ii) day staff (inc. mid-day meal)	90	38	5
HOTELS, PUBS & CLUBS			
Hotel Guests (Prestige hotels)	300	105	12
Hotel Guests (3 rd & 4 th hotels)	250	94	10
Guests (Bedroom only – no meals)	80	50	6
Residential Training/Conference Guest (inclusive all meals)	350	150	15
Non residential Conference Guest	60	25	2.5
Drinkers	12	15	5
Holiday camp chalet resident	227	94	10
Resident Staff	180	75	10
Restaurants - Full Meals - luxury catering	30	38	4
- pre-prepared catering	25	30	2.5
- Snack Bars & bar meals	15	19	2.5
- Function Rooms including buffets	15	19	2.5
- Fast Food i.e. (roadside restaurants)	12	12	2.5
- Fast Food Meal (burger chain and similar)	12	15	4
Students (Accommodation only)	100	60	8
AMENITY SITES			
Toilet Blocks (per use)	10	12	2.5
Toilet (WC) (per use)	10	12	2.5
Toilet (Urinal) (per use)	5	12	2.5
Toilet Blocks in long stay car parks/lorry parks (per use)	10	19	4
Shower (per use)	40	19	2
Golf Club	20	19	5
Local community sports club, e.g. squash, rugby & football	40	25	6
Swimming (where a separate pool exists without an associated sports centre)	10	12	2.5
Health Club/Sports Centre	50	19	4
Tent sites	75	44	8
Caravan Sites - (i) Touring not serviced	100	44	8
(ii) Static not serviced	100	44	8
(iii) Static fully serviced	150	60	8
HOSPITALS & RESIDENTIAL CARE HOMES			
Residential old people / nursing	350	110	13
Small hospitals	450	140	Assess
Large hospitals	Assess individually		

*Staff figures also apply to other applications



- After installation, if the system is overloaded, due to activities that were not previously identified by the owner/ purchaser of the system, then the manufacturer may not be able to assist with meeting the legal obligations of the permit provided by the regulator. The regulator has the right to review permits and change them if necessary.
- All sewage treatment system should be maintained according to the manufacturer's instructions by a certified engineer trained in accordance with the British Water Maintenance and Service Code of Practice.

5 Domestic housing

- A treatment system for a single house with **up to and including 3 bedrooms** shall be designed for a minimum population (P) of 5 people.
- The size of a treatment system for a single house with more than 3 bedrooms shall be designed by **adding 1 P for each additional bedroom** to the **minimum single house value of 5 P**, eg:
 - house with 3 bedrooms = **minimum 5 P system**
 - house with 4 bedrooms = **minimum 6 P system (5+1)**
 - house with 6 bedrooms = **minimum 8 P system (5+3)**.
- For groups of small 1 and 2 bedroom houses or flats
 - flat with 1 bedroom = **allow 3 P**
 - flat with 2 bedrooms = **allow 4 P**
- A treatment system serving a group of houses shall be designed by adding together the P values for each house calculated independently, eg:
 - for a group of two houses (3 and 4 bedrooms, respectively) the system shall be for a minimum of 11 P (5+6)
- **If the calculated total P for a group of houses exceeds 12 P then some reduction may be made** to allow for the balancing effects on daily flow of a group of houses (round UP not down)
 - **Where the total is 13-25 P** multiply the total by 0.9 to give an adjusted P value, e.g. if there are four four-bedroom houses the total P will be 24 P (4 x 6) and the adjusted P will be 22 P (24 x 0.9 = 21.6)
 - **Where the total is 26-50 P** multiply the total by 0.8 to give an adjusted P value, e.g. if there are four three-bedroom houses and three four-bedroom houses the total P will be 38 P (4 x 5 and 3 x 6) and the adjusted P will be 31 P (38 x 0.8 = 30.4)
- Where there are larger groups of houses, the P should be estimated using both the expected total load and the flow, considering both peak and total flow
- These are minimum recommended population (P) loads, they should not be modified downwards, upward modification may be necessary because of particular characteristics of each property or groups of properties.
- The above assessments of population (P) should be used for both existing and new properties

- Larger luxurious houses tend to have greater loads and increased water consumption with variability.
- Holiday homes tend to have higher occupancies, with perhaps, lounges also acting as bedrooms. Holiday lets and second homes may be used intermittently
- Check for unusual water uses such as spa baths, home brewing or home photo processing.
- Waste disposal units increase biological load.
- Laundry chemicals and toxic substances will affect the performance. (See below) It is assumed that laundry is not brought in, i.e. Team strips.

6 Commercial Premises

- Identify **ALL** the sources of waste.
- Identify final maximum site usage/business expectations.
- The individual values provided for each function within the table assume that 100% of every application and load is quantified. **DO NOT** reduce values based on reduced expectations.
- All catering applications require the installation of adequately sized grease separators, removal or retention systems up-stream of the biological treatment equipment.

7 Catering premises

- Establish maximum (and minimum) daily load based on a 24 hour cycle.
- Check period of operation.
- Identify dates of maximum loads, e.g. Mothering Sunday, Easter, Bank holidays, Fridays etc.
- Identify load peaks, usually at lunch or evening.

- Flow balancing may provide an appropriate solution.
- Where WDU and potato peelers are to be used calculate/document the load.
- Identify the nature(s) of the catering in order to select the correct loading, eg

■ Bar snacks	- ploughmans, sandwiches, basket meals, etc.
■ Pre-prepared catering	- frozen and chilled meals (not prepared on site).
■ Home cooked meals	- fresh soups, fresh vegetables, casseroles, etc.
■ Luxury catering	- fully prepared on site with cream sauces, home made desserts.
■ Takeaways	- Indian, Chinese, fish and chips, etc.
■ Fast food	- roadside restaurants, burger chains, etc.
■ Function room catering	- Establish "normal" style, may be sandwiches, or full buffet, home cooked meals, conference, wedding banquets, etc.
- The biological unit must be protected from grease and fats. Modern cooking uses light oils, which may not separate. The collection and containment of all forms of grease prior to the biological equipment is vital. Operate any grease system in full accordance with the manufacturer's instructions.
- Individual kitchen practices affect loads, i.e. leftovers on plates may be scraped into bins, or wet rinsed into system, the former to be encouraged, the latter should be discouraged or factored into the treatment plant design.
- Premises serving beers may produce toxic caustic effluents due to the hygiene and cleaning regimes.
- The proportion of wastes from some sources can produce an effluent, which is difficult to treat, e.g. some Drive Through Fast Food establishments can have an effluent with a low organic content.

8 Hotels & Residential Centres

- Establish "style and type" of hotel e.g. Prestige (5^M), Bedroom only accommodation, Conference Centres, Resort Hotels with Sports and Spas, Treatment Centres, etc.
- Calculate total loading based on occupancy of at least 2 people per room.
- Some hotels regularly have 4 occupants per room.



- Consider and add other hotel activities and waste functions.

The volume/BOD figures are based on an expectation that guests have an evening meal, drink and breakfast and that good kitchen practices are in place.

- Add all other loads, considering non-resident uses, ie Lunches, Functions, Visiting Drinkers, Diners, etc.
- Consider periodicity of loads.
- Ensure residential and training centre loadings reflect the complete meal plan, i.e. allow for lunch and afternoon tea, sports, etc.
- Special Events. Check provision of temporary facilities, e.g. summer marquees and allow for appropriate loading.
- Consider any loads from outside catering.

9 Laundries

- Excepting domestic premises, it is assumed that all laundry functions are additional.
- For each premises, identify which laundry items are done in house or sent off site.
- Calculate the laundry load on the basis of the number of machines and the period of use.
- Sites with laundries must fit and maintain lint filters.

The chemical load (detergents) inhibits biological treatment, the laundry waste percentage of the normal maximum Flow usually needs to be less than 30% of the total load.

Where the laundry percentage >30%, manufacturers select equipment on a different basis.

As a guide, where the hydraulic load from laundries is between 1-10%, system size increases by 10%, 11-20% increases by 20%, 21-30% increases by 30%.

Excess/surplus detergents (above the recommended quantities) can affect the biological process.

Discharge quality may be improved if operators use low/zero phosphate detergents.

10 Toilet Blocks

- Figures can also be assessed according to the sanitary equipment and control system installed.

Automatically flushed urinals use 10 litres per hour; a single flush should not use more than 1.5 litres.

Consider ladies and gents toilet facilities separately.

11 Sports Clubs

- Calculate loadings on 100% usage for the sporting facility. The figure provided includes showering and toilet use by the sports person.
- Consider also the non-sporting uses, i.e. spectators' toilet use.
- Add drinkers, social members and staff.
- Add values for catering facilities.
- Check normal and exceptional catering provisions.

- A swimming pool with no associated sports centre may be calculated using the number of swimmers, assume a toilet use per person, and by adding values for showers and spectators. Check duration of visits and modify for extended use.

Consider separate treatment or disposal of backwash waters from ancillary equipment, such as types of filtration and disinfectant removal in swimming pools.

12 Golf Clubs

- The values within the data table allow for light snacks and toilet use.
- Calculate additional allowances for showers.
- Add values for other catering facilities (if other than light snacks).

13 Hospitals

- The nature of the facility affects the design values. Some nursing homes have very high hydraulic loads as a result of the use of bedpans and their sanitation. Consider any disinfection equipment installed.
- With drugs and hygiene requirements of hospitals adjust the equipment size to compensate for treatability factors.

Disposal of unused/waste medicines is not permitted via the treatment facility.

14 Caravan Sites

- Establish nature of communal blocks, i.e. toilet, shower usage, laundry, etc.
- Where laundry equipment is installed, count the number of machines on site and period of use. Where possible, identify specific commercial machine details for volume and wash cycle duration.

Hydraulic loads of 100 litres per hour for 12 hours are not unusual.

- Loading figures quoted assume that wastes from chemical toilets do not enter the system as they must not be allowed to enter into the treatment plant.

A cesspool may be installed to receive chemical toilet waste for separate disposal.

15 Installation

The following may affect which equipment is offered.

- The site.
- Location of treatment plant within the site.
- Invert depth of installation (where possible, locate to permit gravity flow into and out of the system).
- Pumping equipment.
- Installation requirements.

Refer to manufacturer's specifications and installation manual.

- Access for maintenance and servicing.

Refer to manufacturer's specifications and maintenance instructions.

- The need for a sample chamber.
- Discharge point.
- Soil percolation area or other tertiary treatment.



16 Documentation

Records of the loads used to select and recommend the type and size of treatment systems should be maintained by the specifier and the customer. A typical example follows.

Treatment system enquiry sizing sheet

Our Ref. 123456 **Date** 10th August 2003 **Site** ABC Hotel 3* Hotel **Client** New Architects & Consultants

SOURCE OF WASTE				FLOW LITRE / DAY		BOD GRAMS / DAY		NH ₃	
Description	No of rooms	Occupancy	No	Per Head	TOTAL	Per Head	TOTAL	Per Head	TOTAL
Rooms	80	2	160	250	40000	94	15040	10	1600
Bar drinkers			120	12	1440	15	1800	5	600
Non resident luxury meals			150	30	4500	38	5700	4	600
Staff, full-time day staff			30	90	2700	38	1140	5	150
Staff, part-time			20	45	900	25	500	3	60
Laundry – all sent off site									
Domestic washing machine for tea towels only				800					
Total load(s)					50340		24180		3010
Effluent quality requested					20 mg/l BOD		30 mg/l SS		20 mg/l NH₃ N

Suggested type of plant: XYZ. **Invert:** 1.0m. **Power:** 3-phase. **Surface water:** all to be excluded from foul sewer. **Consent to discharge:** to be obtained from the Regulator. **Waste Disposal Units:** assumed that none are fitted.

Grease trap: required size "125".

Notes

Swimming pool – present, used for guests only, all backwash wastes to be excluded. No function rooms or catering

Further information and guidance can be obtained from the British Water website – www.britishwater.co.uk

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Company contact details are in the member list on the British Water website www.britishwater.co.uk



BALMORAL TANKS



APPENDIX 5



from
**Southern
Water**

Planning and Development Services
Arun District Council
Arun Civic Centre
Maltravers Road
Littlehampton
West Sussex
BN17 5LF

Your ref
AL/79/20/OUT

Our ref
PLAN-035787

Date
25/11/2020



Dear Sir/Madam,

Proposal: Outline planning application with some matters reserved (Layout, Scale, Appearance and Landscaping are to be determined as reserved matters) for the construction of 10 No. dwellings & the creation of a new vehicular & pedestrian access on to Hook Lane. This application is a Departure from the Development Plan.

Site: AL/79/20/OUT: - Land to West of Hook Lane, Hook Lane, Westergate, PO20 3TE.

Thank you for your letter dated 26/10/2020.

Southern Water requires a formal application for a connection to the public foul sewer to be made by the applicant or developer.

To make an application visit: developerservices.southernwater.co.uk and please read our New Connections Services Charging Arrangements documents which are available on our website via the following link: southernwater.co.uk/developing-building/connection-charging-arrangements

The supporting documents make reference to drainage using Sustainable Drainage Systems (SuDS).

Under certain circumstances SuDS will be adopted by Southern Water should this be requested by the developer. Where SuDS form part of a continuous sewer system, and are not an isolated end of pipe SuDs component, adoption will be considered if such systems comply with the latest Design and Construction Guidance (Appendix C) and CIRIA guidance available here:

water.org.uk/sewerage-sector-guidance-approved-documents/

ciria.org/Memberships/The_SuDS_Manual_C753_Chapters.aspx

Southern Water, Southern House, Yeoman Road, Worthing, West Sussex, BN13 3NX
southernwater.co.uk

Southern Water Services Ltd, Registered Office: Southern House, Yeoman Road, Worthing, West Sussex, BN13 3NX Registered in England No. 2366670

Where SuDS rely upon facilities which are not adoptable by sewerage undertakers the applicant will need to ensure that arrangements exist for the long-term maintenance of the SuDS facilities. It is critical that the effectiveness of these systems is maintained in perpetuity. Good management will avoid flooding from the proposed surface water system, which may result in the inundation of the foul sewerage system.

Thus, where a SuDS scheme is to be implemented, the drainage details submitted to the Local Planning Authority should:

- Specify the responsibilities of each party for the implementation of the SuDS scheme.
- Specify a timetable for implementation.
- Provide a management and maintenance plan for the lifetime of the development.

This should include the arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime.

The Council's technical staff and the relevant authority for land drainage consent should comment on the adequacy of the proposals to discharge surface water to the local watercourse.

The Council's Building Control officers or technical staff should be asked to comment on the adequacy of soakaways to dispose of surface water from the proposed development.

It is possible that a sewer now deemed to be public could be crossing the development site. Therefore, should any sewer be found during construction works, an investigation of the sewer will be required to ascertain its ownership before any further works commence on site.

We request that should this planning application receive planning approval, the following informative is attached to the consent: Construction of the development shall not commence until details of the proposed means of foul sewerage and surface water disposal have been submitted to, and approved in writing by, the Local Planning Authority in consultation with Southern Water.

This initial assessment does not prejudice any future assessment or commit to any adoption agreements under Section 104 of the Water Industry Act 1991. Please note that non-compliance with the Design and Construction Guidance will preclude future adoption of the foul and surface water sewerage network on site. The design of drainage should ensure that no groundwater or land drainage is to enter public sewers.

Due to surface water inundation issues in the Lidsey Catchment the applicant is advised to adopt, where appropriate, the measures set out in the table "Practical measures to reduce the potential impacts of development". The developer should look to protect the public sewerage system from inundation and infiltration, which contribute to flooding in unfavourable conditions.

For further advice, please contact Southern Water, Southern House, Yeoman Road, Worthing, West Sussex, BN13 3NX [REDACTED]

Website: southernwater.co.uk or by email at: [REDACTED]

Yours faithfully,

[REDACTED]

Joff Edevane
Growth Planning Lead
Business Channels

Southern Water, Southern House, Yeoman Road, Worthing, West Sussex, BN13 3NX
southernwater.co.uk

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SOUTHERN WATER



The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site.

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O.S. REF: SU9304NW

Scale: 1:1250

Screen Print

WARNING: BAC pipes are constructed of Bonded Asbestos Cement

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement

ARUN DISTRICT COUNCIL AL79/20/OUT



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Date: 24-11-2020

Southern Water MapGuide Browser

Requested By:



Practical measures to reduce the potential adverse impacts of development

Reasons	Practical measures
Adequate and sustainable surface water drainage.	No surface water connections to the wastewater system. (See part H of the Building Regulations)
Guard against further groundwater infiltration into the foul drains or sewers serving the development.	The use of fusion jointed MDPE pipes can prevent groundwater infiltration and require a minimum of maintenance. The use of mass concrete surrounds to inspection chambers and manholes can prevent infiltration and require a minimum of maintenance
Guard against surface floodwaters entering the foul system serving the development.	Overland surface water flow routes should be provided for flows greater than those for which pipelines and culverts have been designed. Wherever possible, foul sewer routes, manhole covers, sink waste gullies, etc. should avoid overland surface water flow routes and any areas where surface water ponding may occur. Failing that they should be sealed against potential surface water inflows. Any sink waste gullies in areas of potential surface water inundation should be sealed or defended by raised brickwork or similar Bolt down sealed inspection chamber and manholes covers should be used in areas of potential surface water inundation. Raising the level of the development above the highways which serve it can protect buildings and their drainage systems from potential surface water inundation. However, care should be taken at local low spots in the highway where overland surface water flows may gather and overflow onto properties.

Protect the properties from foul flooding or unusable sanitation should the public sewerage system surcharge.	Part H of the Building Regulations contains suitable practical measures. However, the provision of an external gully is inappropriate where there is a risk of surface water flooding. In these circumstances, non-return valves are more appropriate. Dirgo or similar non-return air valves are now commonly fitted to soil vent pipes thereby allowing them to allow them to vent within the building. This practice can lead to problems with bubbling WCs, the blow out of U bend traps and odour within buildings when the sewerage system surcharges. The use of traditional external vent pipes without air valves can prevent this.
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