Shoreham Cement Works Area Action Plan
Shoreham Road, Upper Beeding

Foul Water Drainage Strategy

South Downs National Park Authority

motion

Document Control Sheet

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This document has been issued and amended as follows:

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17.12.2021	DRAFT	JM	NJ
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Appendices

1.0 INTRODUCTION

1.1 This Foul Water Drainage Strategy has been prepared on behalf of the South Downs National Park Authority (SDNPA) in support of providing a programme of works for drainage investigations to support the four development scenarios being considered for the Shoreham Cement Works site in West Sussex. The report will inform the preparation of the Shoreham Cement Works Area Action Plan (AAP) currently being prepared by the SDNPA.

1.2 Motion have been appointed to assess existing drainage information from the landowner and details regarding working cesspit and foul sewers, provide a drainage strategy for each of the four areas of the site (detailed on the drawings in **Appendix A**), and to provide indicative costs for site development and as part of this work will undertake the following.

- Foul water drainage strategy for site's A, B, C & D
- Obtaining sewer records and other available information on the existing foul water drawing, including obtaining landowner's drainage plans.
- Developing preliminary foul water drainage strategy for the 4 sites.
- Assessing preliminary foul flows from the mixed-use development based on details on floor areas, scale and number of units provided by the client.
- Obtaining preliminary details of a sewage treatment works for the site.
- Production of foul drainage strategy drawings and section in the overall report.
- Produce a budget cost estimate for the main foul drainage infrastructure required to service the proposed development sites (sites A, B, C & D).

Motion presents conclusions and recommendations based upon these assessments within this report.

Limitations

1.3 The purpose of this report is to contribute to the Area Action Plan and enable the SDNPA to make informed decisions regarding future planning applications. It does not constitute a design, and the calculations and information produced cannot be used for design purposes.

Sources of Information

- JBA Consulting - Shoreham Cement Works Area Action Plan - Evidence Base Studies - Preliminary Geotechnical and Geo-Environmental Assessment (2018)
- CGL site walkover survey on 19th November 2021.
- AVER Decommissioning & Environmental Ltd - HAZARDOUS MATERIALS (CHEMICAL) and DEMOLITION COSTINGS SURVEY At SHOREHAM CEMENT WORKS UPPER BEDDING WEST SUSSEX BN44 3TX ISSUE: ONE REFERENCE: REP202-1 Rev 0.0 PROJECT NO: D202 DATE OF ISSUE: 22 NOVEMBER 2021.
- CGL SHOREHAM CEMENT WORKS. Programme of Works Report for Land Contamination, Removal of Existing Buildings and Drainage Investigations.
- Waterwise A review of Water Neutrality in the UK, funded by Anglian Water, Southern Water, Thames Water and Scottish Water – January 2021
- Sussex North Water Resource Zone – Source: West Sussex County Council.

- Drainage and Wastewater Management Plan (DWMP) Adur and Ouse River Catchment -DRAFT report from Southern Water.
- Natural England's Position Statement for Applications within the Sussex North Water Supply Zone September 2021 – Interim Approach.
- Southern Water New Connections Services Charging Arrangements 2021-22 –January 2021 v2.
- Ofwat New Appointments and Variations Website. https://www.ofwat.gov.uk/regulated-companies/markets/nav-market/nav-publications/
- Environment Agency General Binding Rules for Sewage Discharge to Surface Water. Gov.uk Website. https://www.gov.uk/guidance/general-binding-rules-small-sewage-discharge-to-a-surface-water
- Southern Water Drainage and Wastewater Management Plan (DWMP) Adur and Ouse River Catchment -DRAFT report https://www.southernwater.co.uk/media/3855/adur-and-ouse-dwmp-strategic-context.pdf
- British Water Code of Practice Flows and Loads – 4 Sizing Criteria, Treatment Capacity for Sewage Treatment Systems.

2.0 SITE DESCRIPTION

2.1 The site is located at Shoreham Cement Works, Steyning Road, Upper Beeding, BN44 3TX. The National Grid reference for the approximate centre of the site is TQ 20215 08715. The site is bounded to the west by the River Adur.

2.2 The site occupies an area of approximately 44 ha. This section will describe the Shoreham cement works site summarising information from the previous reports by JBA Consulting[1] and a combined LiDAR and topographic survey from 2017 as well as observations made during a site walkover survey by CGL. This will include information on the topography, geology, and land-use.

2.3 Shoreham Cement Works is a 44-hectare site that includes an inactive chalk quarry and semi-derelict works. The site is located about 5km to the north of Shoreham and 2km south of Upper Beeding village, on each side of the A283. It is bounded to the west by the River Adur and farmland in the floodplain, to the north by chalk grassland, and to the south and east by farmland. Immediately to the north on the A283 are 40 Edwardian terraced houses (Dacre Gardens) which were built to house workers at the cement works, together with an infill development of 10 flats.

2.4 The Shoreham Cement works site is located in West Sussex, 2.1km north of Shoreham by Sea and 1.2km to the south of upper beeding, adjacent to the River Adur. The site is split across the A283, Steyning Road, and the land use comprises a former cement works and associated chalk quarries which are currently not in operation.

2.5 The site is split into 4 sub-areas named A-D as follows. A plan showing the development areas is included in **Appendix A**.

- **Area A** – is located east of the A283, alongside the River Adur. This section is triangular in shape and approximately 7 hectares. In the northern and western portion of area A, there are hardstanding and buildings, whereas the south-eastern portion is occupied by an earth mound (understood to have been deposited as part of the A283 construction). It is understood that the southern buildings are the former workshops associated with the railway sidings and cements works, and that a buried fuel tank is located adjacent to these buildings. It is understood the earth mound was created from the A283 realignment works, with the original route of the A283 still evident in this area.

- **Area B –** is the first area to the east of the A283 and comprised of much of the old cement works buildings, kilns and processing areas, within a former chalk quarry. The quarry walls are present to the north and south of the main buildings, at approximately 25 to 35m in height. The yard area to the north of the buildings is currently used for storage purposes by the Client. Chalk spines form the eastern boundary of Area B which are remnants of a former quarry wall penetrated by cement processing buildings, and provide access into Area C.

- **Area C** - Area C is formed by a large, roughly circular chalk quarry. Within this circular area the floor level is variable having been infilled with material. There are also several mounds of material some associated with the current land use as an inert waste recycling facility, others appearing to be historical in nature. This area can be accessed between the chalk spines along the western boundary that also has some old processing plant and gantries connecting to the main works in Area B. The ground levels adjacent to the chalk spines are around 13.0mOD. The lowest floor levels are in the north-eastern corner at around 11mOD. The highest floor levels are in the north-western corner at around 25mOD. Chalk quarry walls of varying height form the southern and eastern boundaries, from 30m to 85mOD. There are three main quarry benches along the northern and north-eastern boundaries, elevations of each bench are approximately 26mOD, 38mOD and 48mOD with the quarry

[1] JBA Consulting - Shoreham Cement Works Area Action Plan - Evidence Base Studies - Preliminary Geotechnical and Geo-Environmental Assessment (2018)

edge at approximately 65mOD on the northern area boundary. The quarry edge ascends in an easterly direction and descends in a westerly direction. These benches were formerly used, via switchbacks, as a haul route connecting to Area D to the east.

- **Area D** - is a rectangular quarry area located in the eastern portion of the site. Ground levels rise from approximately 44mOD at the western edge, ascending in a series of slopes and benches to approximately 73mOD adjacent to the eastern most quarry wall. Quarry edge levels are approximately 113mOD at the north-east corner, reducing to approximately 105mOD at the south-east corner and 82.5mOD at the south-west corner of this area. Quarry walls in this area are approximately 30 to 40m in height.

Site Areas and Topography

2.6 The ground elevation across Area A ranges from approximately 4 m Above Ordnance Datum (mOD) to 9mOD east to west, 5mOD to 12mOD east to west across Area B, 11mOD to 65mOD in Area C, and 44mOD to 113mOD in the far east across Area D. To the east of the A283 the site is within a hollow surrounded by the steep quarry sides to the north, south and east. A ridge of Chalk up to approximately 40mOD extends from the north and south quarry walls to the east of the cements works buildings in Area B and forms a partial enclosure of Area B moving through to Area C.

2.7 Prior to Chalk extraction, the site would have formed a ridge of high ground, falling in a westerly direction towards the river, separating dry valley features to the north and south.

Table 2.1: Site areas and topography

Site Area	High Point (mAOD)	Low Point (mAOD)	Area (ha).
A	24.10	4.75	5.45
B	15.00	7.50	5.75
C	12.00	44.00	18.95
D	116.00	43.79	11.82

2.8 The topographic survey and Lidar levels can be found on the drawings included in **Appendix A.**

3.0 EXISTING SITE DRAINAGE

3.1 There are historic as-built drawings for the Cement Works dating back to 1952, which shows that the Cement Works has or had an existing foul and surface water drainage infrastructure. This infrastructure is located in the development Areas A and B, and in the proximity of the Cement Works buildings and this was / is the foul and surface water system for the existing buildings and offices. The existing drainage infrastructure is shown on the existing drainage drawing included in **Appendix B**, and includes the following.

- Separate foul and surface water drainage systems of pipes and manholes.
- 3 No. surface water and 1 No. foul water piped crossing of the A283 Shoreham Road. 2 No. surface water crossing are likely to run through a tunnel that runs below the A283.
- A Pumping station
- A surface water outfall to the River Adur via a headwall in Area A.
- Primary foul treatment in the form of a settling tank and filter bed.
- 1 No. outfall to the River Adur for the treated effluent (small sewage discharges) to surface water.
- Secondary foul water treatment in the form of a Septic Tank which is connected to a soakaway for the small group of building in Area A.

3.2 The CGL report[2], states that the are a number of discharge consents nearby related to Dacre Gardens to the north and it was noted from historic as-built records **(Appendix C)**, that there is a possible discharge to the river from the sewage treatment plant in the northern part of Area A.

3.3 The historic as-built records indicate that the site benefits from an existing permit to discharge of treated effluent to the River Adur, which is subject to the Environment Agency general binding rules for small sewage discharge to surface water. The existing foul system serves the existing buildings and offices is classed as a small sewage discharge of less than 5,000 litres a day, and this could feasibly be used to drain a small portion of site, however this would be a small percentage of the post development total flows, which is measured in 100,000's (see Chapter 6 for development foul loadings). This existing discharge could not be used for the whole development site as the EA binding rules state that an increase to more than 5,000 litres a day requires a new discharge consent and a bespoke permit; however the fact that there is an existing discharge could be a factor should the EA receive an application for new discharge to the River Adur.

3.4 A drawing of the existing drainage for the Shoreham Cement Works site is included in **Appendix B**, which is based on the information from the historic as-built records source materials provided by the site owner, which are included in **Appendix C**.

[2] CGL SHOREHAM CEMENT WORKS. Programme of Works Report for Land Contamination, Removal of Existing Buildings and Drainage Investigations.

4.0 SEWER AUTHORITY

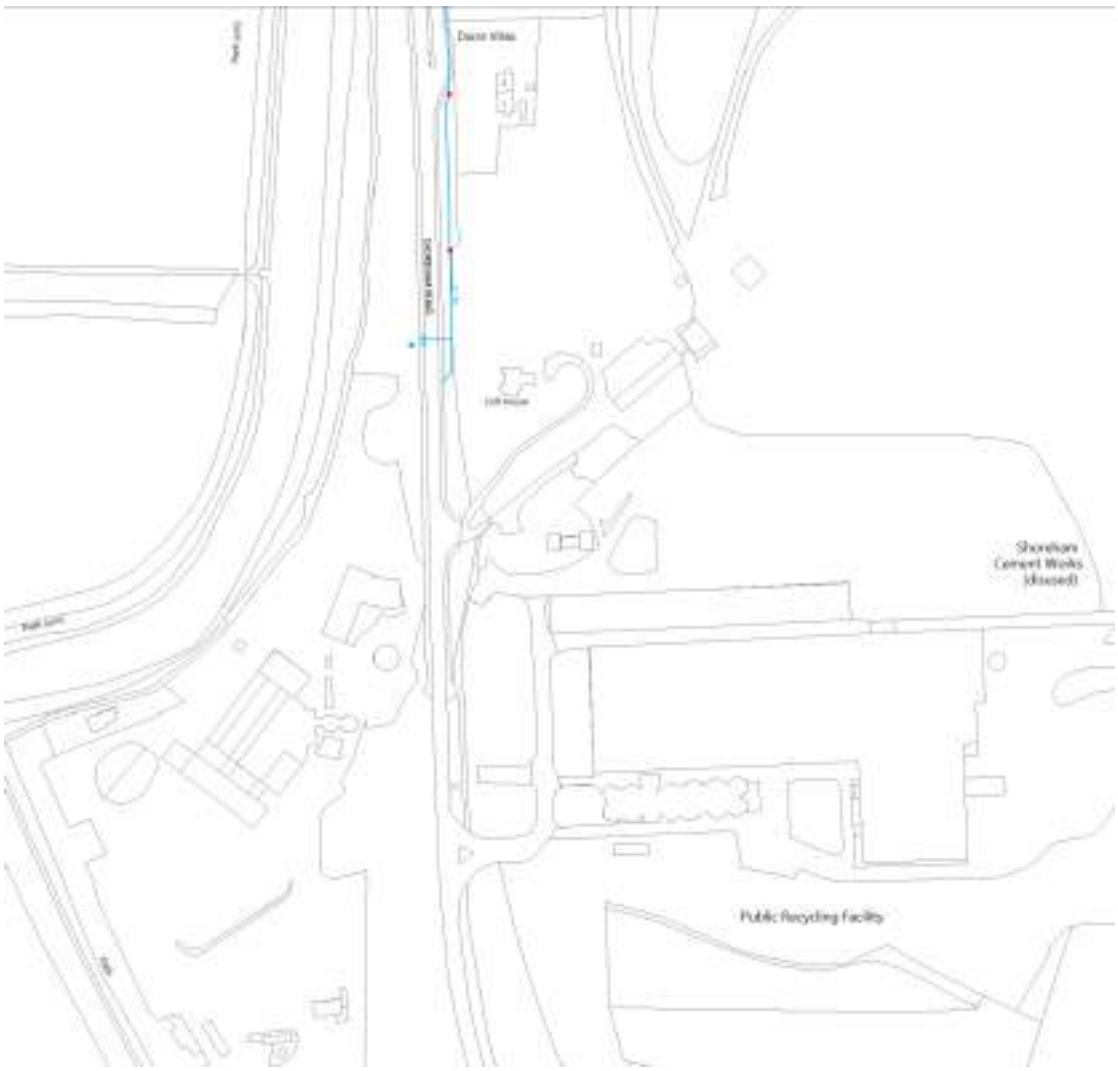
4.1 The water authority for this area is Southern Water and the clean water and sewer records have been obtained for the site and the surrounding areas.

Clean Water

4.2 The clean water records show that there are no water authority clean water mains that serve the Shoreham Cement Works site. There are no water mains running in Shoreham Road or Steyning Road immediately adjacent to the Cement Works. The nearest water main to the site is in Shoreham Road to the north of the site at the neighbouring property cliff house, which appears to be part of the water supply network that services Dacre Villas and properties to the north towards Upper Beeding. The water supply for the cement works is likely to be obtained from a water abstraction point (as discussed in the CGL report[3]).

[3] CGL SHOREHAM CEMENT WORKS. Programme of Works Report for Land Contamination, Removal of Existing Buildings and Drainage Investigations.

Figure 4.1: Southern Water clean water records extract



Wastewater

4.3 The wastewater records shows that there are no Southern Water adopted foul or surface water sewer that serve the Site. There are no adopted sewers running in Shoreham Road or Steyning Road in close proximity to the Site.

4.4 The Site is located in the Adur foul water catchment area and the management of wastewater in the catchment area is cover by Drainage and Wastewater Management Plan (DWMP) Adur and Ouse River Catchment -DRAFT report from Southern Water[4]. Figure 2 in this report is a map of the Adur and Ouse Catchment, which shows that the site lies between the catchment areas for the Shoreham Wastewater Treatment Works (WTWs) and the Steyning wastewater treatment works.

[4] Southern Water Drainage and Wastewater Management Plan (DWMP) Adur and Ouse River Catchment -DRAFT report https://www.southernwater.co.uk/media/3855/adur-and-ouse-dwmp-strategic-context.pdf

Figure 4.2: Map extract of Adur and Ouse Catchment showing sewer catchment areas (in blue) and locations of WTWs *(Source: Drainage and Wastewater Management Plan (DWMP) Adur and Ouse River Catchment -DRAFT report from Southern Water Figure 2[5])*

4.5 The Shoreham WTW catchment (ref. Port) which includes Brighton and Hove, and Shoreham by Sea serves a much larger area and population than the smaller Steyning WTW catchment (ref. Stey).

Table 4.3: Sewerage Catchments *(Source: Drainage and Wastewater Management Plan (DWMP) Adur and Ouse River Catchment -DRAFT report from Southern Water Table 1)*

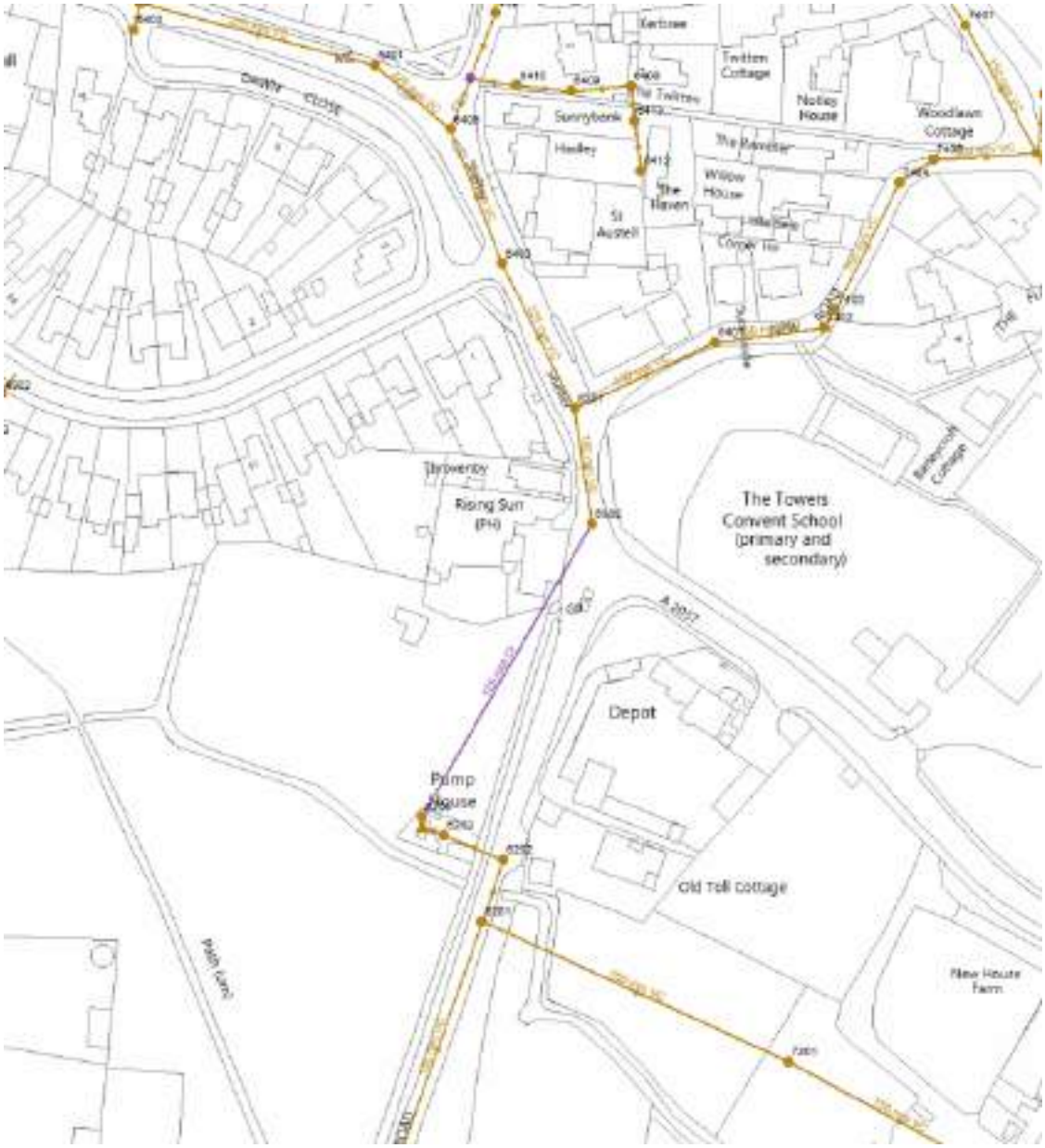
Sewer Catchment Ref	Sewer Catchment Name	Communities Served	Population Equivalent Served	Length of sewer (km)
PORT	Shoreham	Brighton, Portslade, Shoreham by Sea, Southwick, Hove, Lancing, Fishergate	54,577	408.670
STEY	Steyning	Steyning, Bramber, Upper Beeding, Ashford	9,223	76.796

4.6 The nearest existing adopted foul drain to the site is located in the village of Upper Beeding to the north where there is a network or 150mm diameter foul sewer connected to a foul pumping station.

[5] Southern Water Drainage and Wastewater Management Plan (DWMP) Adur and Ouse River Catchment -DRAFT report https://www.southernwater.co.uk/media/3855/adur-and-ouse-dwmp-strategic-context.pdf

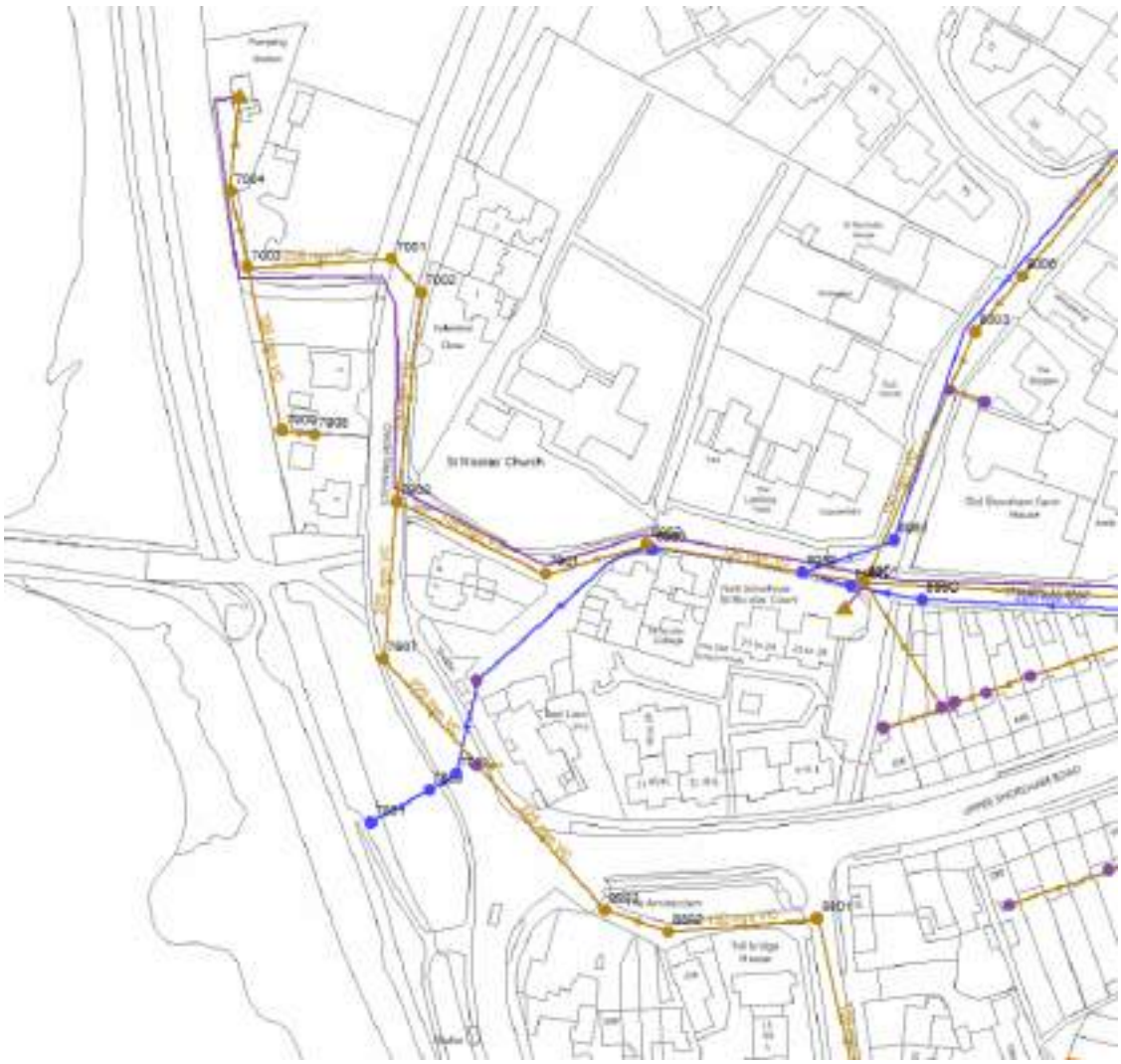
Approximately 1.9 km from the site there is an existing 225mm dia. Sewer located in the High Street (A2037) by Towers Convent School (primary and secondary) at MH ref. 6301 CL: 5.82 and IL: 3.95.

Figure 4.4: Southern Water adopted foul sewer network in Upper Beeding.



4.7 To the south of The Site in Shoreham and within the Shoreham foul catchment area there is existing foul sewer network located on the western edge of the Shoreham built up residential area. There is a 225mm diameter sewer network that drains to a pumping station. The pumping station pumps wastewater along Upper Shoreham Road where it is connected to a 300mm dia. gravity sewer which connects to the wider Shoreham by Sea sewer system and to a trunk sewer. The existing pumping station is located off Steyning Road at MH ref. 7004 CL: 3.250 IL: 1.350 and is located approximately 2.96 km from the Shoreham Cement Works site.

Figure 4.5: Southern Water adopted sewer network in Shoreham by Sea.



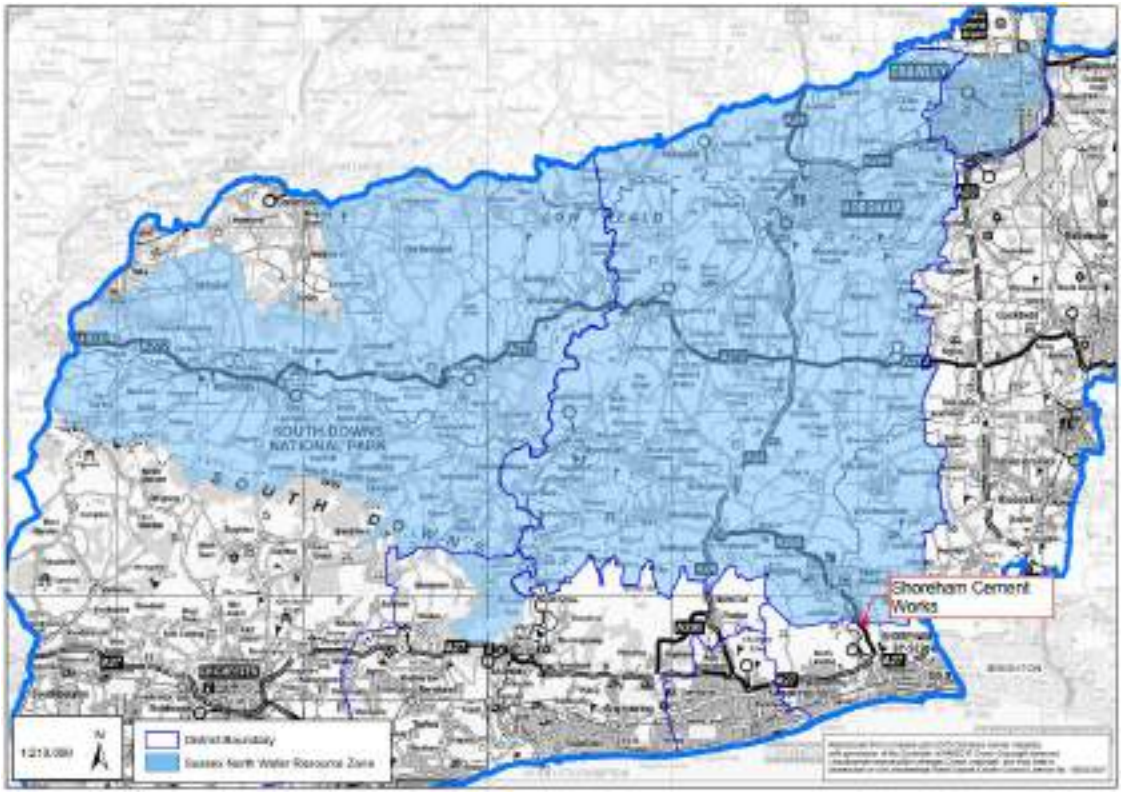
4.8 The Southern Water wastewater and clean water records are included in **Appendix D**.

5.0 WATER NEUTRALITY

5.1 Natural England has published a position statement for development applications within the Sussex North Water Supply Zone[6] where increased demand on the groundwater abstraction may have a negative impact on Special Area Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites in the Arun Valley Area. Applications within the Sussex North Water Supply Zone must demonstrate that they do not add to this impact and one way of achieving this is to demonstrate water neutrality.

5.2 Figure 5.1 below is a plan of Sussex North Water Supply Zone.

Figure 5.1: Sussex North Water Supply Zone



5.3 The Shoreham Cement Work site lies partly within Adur District and Horsham District. This site appears to lie on the boundary of the Sussex North Water Supply Zone (SNWSZ) and therefore as it currently stands it is not clear if the site will not need to demonstrate water neutrality. This is due to the fluidity as to where the precise boundary of SNWSZ lies in relation to the site, as this depend on where you obtain the water supply from and if the water source is located in within SNWSZ.

5.4 There are financial, reputational, environmental and social benefits of water neutrality that could be consider as part of any future application. Water Neutrality and the benefits are considered in more detail in Waterwise A review of Water Neutrality in the UK Chapter 4[7].

[6] Natural England's Position Statement for Applications within the Sussex North Water Supply Zone September 2021 – Interim Approach.

[7] Waterwise A review of Water Neutrality in the UK, funded by Anglian Water, Southern Water, Thames Water and Scottish Water – January 2021

6.0 FOUL WATER DRAINAGE STRATEGY

6.1 Four development scenarios are currently being considered with varying development mixes of residential, employment, education, retail, sports and recreation and consumption food and drink. The foul loadings for each of the four development scenarios have been assessed based on typical site population figures derived using British Water Code of Practice Flows and Loads – 4[8]. Where Flows and Loads do not provide the information, for example such as the proposed population for Employment, the flows have been estimated based on a rate of 300 litre per day per 100 sq.m of commercial premises.

Table 5.1: Foul loadings for the 4 development scenarios.

	Scenario 1		Scenario 2		Scenario 3		Scenario 4	
Description	**Quantity**	**Foul Flows (l/day)**	**Quantity**	**Foul Flows (l/day)**	**Quantity**	**Foul Flows (l/day)**	**Quantity**	**Foul Flows (l/day)**
Dwellings (No.)	400	180,000	240	108,000	200	90,000	84	37,800
Employment (Sq.m)	68,200	204,600	68,200	204,600	32,000	96,000	38,500	115,500
Hotel (Sq.m)	7,500 (130 beds)	65,000	7500 (130 beds)	65,000	7500 (130 beds)	65,000	7500 (130 beds)	65,000
Learning / non-residential institution (Sq.m)	2,000	3,003	2,000	3,003	10,000	15,015		
Retail (Sq.m)	280	540	280	540	280	540		
Indoor sports / recreation / fitness (Sq.m)					18,500	10,000		
Consumption food / drink (Sq.m)					1,500	1,500		
TOTAL FOUL LOADING (l/day)		**453,143**		**381,143**		**278,055**		**218,300**
TOTAL FOUL LOADING (l/year)		165.4 megalitres		139.1 megalitres		101.5 megalitres		37.5 megalitres

Assumptions and Clarifications

1. Foul loadings are based on British Water Code of Practice Flows and Loads - 4.
2. Residential dwelling loading is based on a population of 3P per dwelling house.
3. Hotel loading is based on 250 l/guest/day and two guests per room.
4. Learning non-residential is based on 33.3 sq.m per pupil based on Annex B site areas for 5 to 11 primary school, Building Bulletin 103 June 2014 Area guidelines for mainstream schools.
5. Indoor fitness and recreation is based on a population of 200 and 50 litres / person / day.
6. Retail is based on 6 full time staff and 90 litres/person/day.
7. Consumption food / drink is based on 100 covers and 15 litres/person/day
8. Foul loadings to be confirmed when more details of the development is know, including the number of bedrooms per dwelling.

6.2 It is not currently known how the development scenarios and development numbers will be split between the areas of the site, however the basic principles of the foul drainage strategy of the site will be predominantly the same whichever development scenario or development area is selected.

6.3 The foul water drainage strategy for the site for all 4 development scenarios is that wastewater would drain by gravity from the high point in Area D, through areas C and B to the low point of the site in Area A by the River Adur. Then depending on which option is viable for the site, the site would either be connected to the existing sewer network by a new pumping station located on the site and a rising main,

[8] British Water Code of Practice Flows and Loads – 4 Sizing Criteria, Treatment Capacity for Sewage Treatment Systems.

or a new WTW would be constructed on the site that would treat effluent and discharge the treated effluent to the River Adur. These two options and considered further in Section 7.0 of this report.

6.4 The nearest adopted foul sewer networks to the site are located in Upper Beeding to the north in the Steyning Catchment area and at the western extent of the Shoreham on Sea built up area by Steyning Road in the Shoreham Catchment area. The Upper Beeding foul sewer network is located approximately 1.9 km from The Site and the Shoreham foul sewer network is located approximately 2.96 km from the site.

Figure 5.2: Nearby public foul water sewers to Shoreham Cement Works.

Environment Agency

6.5 The Shoreham Cement Works site has existing small sewage discharge to surface water and to ground water that is regulated by the Environment Agency (EA) and for which the site will have an existing

consent and discharge permit. This will be subject to the EA General Binding Rules for the discharge of waste to a watercourse or to the ground[9].

6.6 An option has been considered in the foul drainage strategy to look at the viability of locating a new wastewater treatment works (WTW) on the site which would treat the wastewater discharge on site, and which would require a new discharge to the River Adur.

6.7 For small sewage discharges to surface water the EA would expect compliance with their general binding rules, which states that if you discharge more than 5 cubic metres a day you must connect to the public sewer when it's reasonable in terms of distance to do so. The EA advice states that reasonable distance from the site to the nearest public sewer is calculated as follows.

- Multiply the number of houses by 30m.
- If some or all of the discharges is from non-domestic properties, divide the maximum volume in cubic metres that you want to discharge from those other premises by 0.75 and then multiply the result by 30, which will give the result in metres.
- Scenario 4 has the smallest total discharge of 218.3 cubic metres (Table 5.1).
- 218.3 x 0.75 x 30 = 4.91 km.

6.8 The site cannot meet the EA general binding rules as the boundary of the Site is less than 4.91 km from a public foul sewer.

6.9 The EA binding rules (17) states that a discharge point cannot be in or within 500 metres of any of the following:

- SSSI
- Special protection areas
- Special areas of conservation
- Ramsar wetland sites
- Designated bathing water
- Protected shellfish water
- Freshwater mussel population
- 200 metres of an aquatic local nature reserve
- 50 metres of a chalk river or aquatic local wildlife site

6.10 The Shoreham Cement Works site lies within 500m of the Beeding Hill to Newtimber SSSI.

6.11 Any discharge of treated effluent will require a bespoke permit and consent from the EA. There could be Environmental reasons why the EA may not favour a new WTW on the site, particular as the site lies close to a SSSI. As the site lies in close proximity to the public foul water sewer network relative to the size of the development, the EA's binding rules state that a connection should be made to the existing public foul sewer, however it is recommended that a pre-app consultation with the EA is undertaken to determine their requirements.

[9]Environment Agency General Binding Rules for Sewage Discharge to Surface Water. Gov.uk Website. https://www.gov.uk/guidance/general-binding-rules-small-sewage-discharge-to-a-surface-water

7.0 COSTINGS

7.1 A ballpark budget cost estimate has been prepared for the foul drainage infrastructure that will be required to serve the site. Two options have been considered.

- **Option 1** is a costing based on a pumping station and rising that is connected to the existing public foul sewer network located in Shoreham by Sea. A connection to Upper Beeding would be slightly shorter, however due to the size of catchment area and extent of the existing infrastructure we considered that a connection to the Shoreham catchment would be the more likely based on the available information. However, the point of connection will need to be confirmed by Southern Water. Should a connection to upper Beeding be feasible then the cost estimate can be adjusted accordingly.
- **Option 2** is a costing based on a Waste Water Treatment Works (WTW) located on the site, that would discharge treated effluent to the River Adur.

Option 1: Pump Station and Rising Main and Connection to Shoreham Public Sewer.

7.2 This will require a pumping station compound to be located on the site. A typical size of the compound is approximately 10m x 15m. There would need to be a 20m off-set distance from the pumping station to the nearest building or dwelling. A possible location on the site for the pumping station is shown on the foul drainage strategy drawing included in **Appendix A**. The location of the foul pumping station has been selected on the basis of site levels and this is close to the low point of the site and the proximity to the connection point to the existing foul sewer network in Shoreham. Foul pumping stations are defined by the National Planning Policy Framework (NPPF) as water-compatible development that is appropriate to be located in FZ1, FZ2 & FZ3.

7.3 A budget cost estimate based on Option 1 pumping station and a rising main connection to Shoreham by Sea has been undertaken for the 4 development scenarios. The costings are based on Southern Water New Connections Services Charging Arrangements 2021-22 – January 2021 v2[10].

[10] Southern Water New Connections Services Charging Arrangements 2021-22 –January 2021 v2.

Table 7.1: Option 1 - Budget cost estimate for 4 development scenarios.

SDNPA		JOB NAME:	**Shoreham Cement Works**	
BALL PARK COST ESTIMATE		PROJECT NUMBER:	sdsho2111035	
WASTEWATER INFRASTRUCTURE CHARGES		CALCS BY:	KL	
		DATE:	12/02/2022	
Foul Drainage Infrastructure Civils Works		FROM DRG:		
DESCRIPTION	QUANTITY	UNIT	RATE	£
Connecting pipework Main Road [>150-300mmø up to 2.5 - 3.5m depth]	8	M	1,316.00	£10,528.00
New gravity sewer [Unmade 150-300ø at 1.5m - 2.5m depth]	4294	M	512.00	£2,198,528.00
New Manhole [Unmade Ground 1200mm 1.5 - 2.5m depth]	76	Per Manhole	6,413.00	£487,388.00
New Rising Main [Main Road 180 - 255mmø at 1.5m depth]	2960	M	699.00	£2,069,040.00
Road closure charge	10	Per Closure	1570.00	£15,700.00
Traffic management	16	Weekly Charge	1,258.00	£20,128.00
Extra-over TM charges for works on A283	1	Item	150,000.00	£150,000.00
Over-pumping the receiving sewer	1	Per connection	2,829.00	£2,829.00
Specialist de-watering	1	Per connection	13,170.00	£13,170.00
Specialist ground support	1	Per connection	2,780.00	£2,780.00
Estimated capital costs for pumping stations	1	Per Unit	277,000.00	£277,000.00
		10%	Minor Items	£524,709.10
			Total	£5,771,800.10

Administration Charges

DESCRIPTION	QUANTITY	UNIT	RATE	£
Section 106/107 application and administration charges				
S106/107 Application / Administration fee – Connection to existing sewer / manhole	1	Per Application	230.83	£230.83
S106/107 Application / Administration fee – New manhole construction	1	Per Application	295.83	£295.83
Section 104 /102 application and administration charges				
S102 - Application Fee (including initial administration)	1	Per Application	321.67	£321.67
S104 - Application Fee (including initial administration)	1	Per Application	515.00	£515.00
S102 / S104 - Technical / Inspection Fee (including Final administration)	£5,771,800.10	2.5% of Construction Value	0.025	£144,295.00
S102/S104 Legal Fee	1	Per Application	400.00	£400.00
S104 - Security	£5,771,800.10	10% of construction value	0.10	£577,180.01
Section 98 requisition application charges				
S98 Application fee (incuding initial administration)	0	Per Application	3,894.00	£0.00
S98 - Design fee	0	10% of construction value	0.10	£0.00
S98 - Point of connection enquiry	0	Per Application	110	£0.00
			Total	£723,238.34

Wastewater Infrastructure Charges

DESCRIPTION	QUANTITY	UNIT	RATE	£
New Infrastructure Charge - Scenario 1	417	Per Property	574.00	£239,358.00
New Infrastructure Charge - Scenario 2	257	Per Property	574.00	£147,518.00
New Infrastructure Charge - Scenario 3	212	Per Property	574.00	£121,688.00
New Infrastructure Charge - Scenario 4	93	Per Property	574.00	£53,382.00

Income Offset Discount

DESCRIPTION	QUANTITY	UNIT	RATE	£
Scenario 1				
2 bedroom property	400	Per Property	-128.00	-£51,200.00
Income offset for commercial property (rate TBC)	17	Per Property	-128.00	-£2,176.00
			Total	-£51,200.00
Scenario 2				
2 bedroom property	240	Per Property	-128.00	-£30,720.00
Income offset for commercial property (rate TBC)	14	Per Property	-128.00	-£1,792.00
			Total	-£30,720.00
Scenario 3				
2 bedroom property	200	Per Property	-128.00	-£25,600.00
Income offset for commercial property (rate TBC)	7	Per Property	-128.00	-£896.00
			Total	-£25,600.00
Scenario 4				
2 bedroom property	84	Per Property	-128.00	-£10,752.00
Income offset for commercial property (rate TBC)	8	Per Property	-128.00	-£1,024.00
			Total	-£10,752.00

Cost Summary for the 4 Development Scenarios				
DESCRIPTION	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Foul Drainage Infrastructure Civils Works	£5,771,800.10	£5,771,800.10	£5,771,800.10	£5,771,800.10
Administration Charges	£723,238.34	£713,238.34	£723,238.34	£723,238.34
Wastewater Infrastructure Charges	£239,358.00	£147,518.00	£121,688.00	£53,382.00
Income Offset Discount	-£51,200.00	-£30,720.00	-£25,600.00	-£10,752.00
38% Contingency	£2,004,358.93	£1,983,550.93	£1,977,337.93	£1,961,300.53
TOTAL	£8,688,155.38	£8,595,387.38	£8,568,464.38	£8,498,968.98

	Clarifications and Exclusions
1	All rate estimated from Southern Water charging arrangements 2019-20 document (January 2019) unless marked with *
2	Rates marked with * estimated from Environment Agency Cost Estimated for Control Assets
3	The cost estimate is based on fixed charges levied by Southern Water and does not take into account projects where the techncial complexity is high.
4	For exceptions to fixed charges refer to the Southern Watert New Connections Services Charging Arrangements 2019-20 (January 2019).
5	Standard traffic management charges have been allowed for, including an uplift for TM for works on the A283.
6	The above cost estimate is based on laying a rising main to the foul public sewer system in Shoreham.
7	The point of connection to the public sewer system is to be confirmed following consulation with Southern Water.
8	The cost estimate makes no allowance for reinforcement works to the existing foul public sewer network.
9	It has been assumed that any reinforcement work to the public sewer system will be financed by the infrastructure charges levied by Southern Water.
10	There is no allowance for statutory undertaker diversion works that may be required as a result of the construction of the new foul water infrastructure.
11	The cost does not allow for additional highway improvement works required by the highway authority.
12	Additional highway works would include any works over and above normal highway reinstatement works following the construction of pipes and manholes.
13	There is no allowance for any works to existing structures.
14	There is no allowance on the costs for dealing with contamination or settlement associated with the made ground present on the site.
15	No allowance has been made for piling drainage runs as a result of possible settlement issues.
16	Method of calculating the incoming offset for commercial property is to be confirmed by Southern Water.
17	An allowance has been made for incoming offset for commercial property based on the income offset for residential.
18	The method of calculating the wastewater infrastructure charges is not know and therefore has been calculated based on an assessment of the number of commercial premises and by applying the residential charge, however this will be subject to confirmation of final costs from Southern Water.
19	The budge cost estimate includes a 30% contingency uplift.

Option 2: Waste Water Treatment Works (WWTW)

7.4 This will require a compound to be located on the site for the WWTW. We have based the size of the compound on approximation that will need to be confirmed through consultation with the WWTW supplier. For the purpose of this report we have allowed for an areas of approximately 30m x 50m, or 1,500m2, that has been that has been recommended by the Plantworks Systems. There would need to be a 40m off-set distance from the pumping station to the nearest building or dwelling. A possible location on the site for the WWTW is shown on the foul drainage strategy drawing included in **Appendix A**. The location of the WWTW has been selected on the basis of site levels and the proximity of the river Adur as the WWTW will need to outfall to the river. WWTW are defined by the National Planning Policy Framework (NPPF) as being less vulnerable development that is appropriate in FZ1, FZ2.

7.5 A budget cost estimate based on Option 2 WWTW has been undertaken for the 4 development scenarios. The costings are based on Southern Water New Connections Services Charging Arrangements 2021-22 – January 2021 v2[11].

[11] Southern Water New Connections Services Charging Arrangements 2021-22 –January 2021 v2.

Table 7.2: Option 2 - Budget cost estimate for 4 development scenarios.

SDNPA		JOB NAME:	Shoreham Cement Works	
BALL PARK COST ESTIMATE		PROJECT NUMBER:	sdsho2111030	
WASTEWATER INFRASTRUCTURE CHARGES		CALCS BY:	KL	
Option 2: Wastewater Treatment Works (WTW)		DATE:	16/12/2021	
Foul Drainage Infrastructure Civils Works		FROM ORG:		
DESCRIPTION	QUANTITY	UNIT	RATE	£
Connecting pipework Main Road [>150-300mmø up to 2.5 - 3.5m depth]	8	M	1,316.00	£10,528.00
New gravity sewer [Unmade 150-300ø at 1.5m - 2.5m depth]	4294	M	512.00	£2,198,528.00
New Manhole [Unmade Ground 1200mm 1.5 - 2.5m depth]	76	Per Manhole	6,413.00	£487,388.00
New Rising Main [Main Road 180 - 255mmø at 1.5m depth]	0	M	899.00	£0.00
Road closure charge	0	Per Closure	1570.00	£0.00
Traffic management	0	Weekly Charge	1,258.00	£0.00
Extra-over TM charges for works on A283	0	Item	150,000.00	£0.00
Over-pumping the receiving sewer	0	Per connection	2,829.00	£0.00
Specialist de-watering	0	Per connection	13,170.00	£0.00
Specialist ground support	0	Per connection	2,780.00	£0.00
Estimated capital costs for WTW*	1	Per Unit	1,000,000.00	£1,000,000.00
		10%	Minor Items	£369,644.40
			Total	£4,066,088.40

Administration Charges

DESCRIPTION	QUANTITY	UNIT	RATE	£
Section 106/107 application and administration charges				
S106/107 Application / Administration fee – Connection to existing sewer / manhole	0	Per Application	230.83	£0.00
S106/107 Application / Administration fee – New manhole construction	0	Per Application	295.83	£0.00
Section 104 /102 application and administration charges				
S102 - Application Fee (including initial administration)	0	Per Application	321.67	£0.00
S104 - Application Fee (including initial administration)	1	Per Application	515.00	£515.00
S102 / S104 - Technical / Inspection Fee (including Final administration)	£4,066,088.40	2.5% of Construction Value	0.025	£101,652.21
S102/S104 Legal Fee	1	Per Application	400.00	£400.00
S104 - Security	£4,066,088.40	10% of construction value	0.10	£406,608.84
Section 98 requisition application charges				
S98 Application fee (incuding initial administration)	0	Per Application	3,894.00	£0.00
S98 - Design fee	0	10% of construction value	0.10	£0.00
S98 - Point of connection enquiry	0	Per Application	110	£0.00
			Total	£509,176.05

Wastewater Infrastructure Charges

DESCRIPTION	QUANTITY	UNIT	RATE	£
New Infrastructure Charge - Scenario 1	417	Per Property	574.00	£239,358.00
New Infrastructure Charge - Scenario 2	257	Per Property	574.00	£147,518.00
New Infrastructure Charge - Scenario 3	212	Per Property	574.00	£121,688.00
New Infrastructure Charge - Scenario 4	93	Per Property	574.00	£53,382.00

Income Offset Discount

DESCRIPTION	QUANTITY	UNIT	RATE	£
Scenario 1				
2 bedroom property	400	Per Property	-128.00	-£51,200.00
Income offset for commercial property (rate TBC)	17	Per Property	-128.00	-£2,176.00
			Total	-£51,200.00
Scenario 2				
2 bedroom property	240	Per Property	-128.00	-£30,720.00
Income offset for commercial property (rate TBC)	14	Per Property	-128.00	-£1,792.00
			Total	-£30,720.00
Scenario 3				
2 bedroom property	200	Per Property	-128.00	-£25,600.00
Income offset for commercial property (rate TBC)	7	Per Property	-128.00	-£896.00
			Total	-£25,600.00
Scenario 4				
2 bedroom property	84	Per Property	-128.00	-£10,752.00
Income offset for commercial property (rate TBC)	8	Per Property	-128.00	-£1,024.00
			Total	-£10,752.00

Cost Summary for the 4 Development Scenarios

DESCRIPTION	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Foul Drainage Infrastructure Civils Works	£4,066,088.40	£4,066,088.40	£4,066,088.40	£4,066,088.40
Administration Charges	£509,176.05	£509,176.05	£509,176.05	£509,176.05
Wastewater Infrastructure Charges	£239,356.00	£147,518.00	£121,688.00	£53,382.00
Income Offset Discount	-£51,200.00	-£30,720.00	-£25,600.00	-£10,752.00
30% Contingency	£1,429,026.74	£1,407,618.74	£1,401,405.74	£1,385,368.34
TOTAL	£6,192,445.19	£6,099,681.19	£6,072,758.19	£6,003,262.79

Clarifications and Exclusions

1. All rate estimated from Southern Water charging arrangements 2021-22 document (January 2021 v2) unless marked with *
2. Rates marked with * is a budget cost estimate for a WTW provided by Plantwork Systems which includes design costs.
3. The cost estimate is based on fixed charges levied by Southern Water and does not take into account projects where the technical complexity is high.
4. For exceptions to fixed charges refer to the Southern Water New Connections Services Charging Arrangements 2019-20.
5. The calculation of infrastructure charges assumes that the system will be adopted by Southern Water.
6. There is no allowance for statutory undertaker diversion works that may be required as a result of the construction of the new foul water infrastructure.
7. There is no allowance for any works to existing structures.
8. There is no allowance on the costs for dealing with contamination or settlement associated with the made ground present on the site.
9. No allowance has been made for piling drainage runs as a result of possible settlement issues.
10. Method of calculating the incoming offset for commercial property is to be confirmed by Southern Water.
11. An allowance has been made for incoming offset for commercial property based on the income offset for residential.
12. The method of calculating the wastewater infrastructure charges is not know and therefore has been calculated based on an assessment of the number of commercial premises and by applying the residential charge, however this will be subject to confirmation of final costs from Southern Water.
13. The budget cost estimate includes a 30% contingency uplift.

Pros and Cons of Option 1 and Option 2.

7.6 The pros and cons of Option 1 and Option 2 are considered in Table 7.3.

Table 7.3: Pros and Cons of Option 1 and Option 2

Option 1: Pump Station and Rising Main and Connection to Shoreham Public Sewer.	
Pros	Cons
The distance from the existing foul public sewer network meets the Environment Agency criteria of a reasonable distance for a connection to the public sewer.	Cost of the works to construct a 3km rising main connection to the existing public sewer network located in Shoreham.
Any reinforcement of the existing foul sewer network should be financed by Southern Water's infrastructure charges.	Drainage works along the A283 single carriageway road and across the A27 roundabout junction. Traffic management on public highway and disruption for members of the public, including one way work on A283 single carriageway road and traffic signals control.
Standardised and detailed costings are available based on Southern Water New Connections Services Charging Arrangements.	Environmental and sustainability impacts of having to provide more infrastructure, including constructing the 3km link to Shoreham foul public sewer network.
Southern Water can use their Statutory Powers to undertake any works within private land or highway land to deliver the works.	
Does not require a new sewage discharge to the River Adur near a SSSI and avoids environmental impacts of having a new discharge to surface water.	

Option 2: Waste Water Treatment Works (WTW)	
Pros	Cons
The Cost of WWTW is less than Option 1.	Requires a new sewage discharge to the River Adur near a SSSI and could result in environmental impacts. Bespoke permitting would be required and may meet opposition from the regulators.
Environmental and sustainability benefits of having to provide less infrastructure, including avoiding having to construct the 3km link to Shoreham foul public sewer network.	This site is located within a reasonable distance of an existing foul sewer network in accordance with the EA's standard criteria and therefore a new connection to the River Adur may meet resistance from the EA / regulators.
Less disruption to the highway network and for member of the public by avoiding having to construct the 3km link to Shoreham foul public sewer network.	The land required for a WWTW (1,500m2) would be larger than for a pump station, which would be a constraint on development.
	Typical stand-off distance from WTW to nearest dwelling is 40m, which would be a constraint on development.

New Appointments and Variations (NAV)

7.8 New appointment and variations (NAV) are limited companies which provide a water and/or sewerage service to customers in an area which was previously provided by the incumbent monopoly provider[12]. A new appointment is made when a limited company is appointed by Ofwat to provide water and/or sewerage services for a specific geographical area. A new appointee has the same duties and responsibilities as the previous statutory water company.

7.9 NAVs are a form of competition that allows some customers, under certain criteria, to choose a different supplier of services. As a result, they can deliver a number of potential benefits to customers, including:

- Lower prices
- Improve service
- A better range of product and services
- Environmental benefits; and
- Customer choice.

7.10 A full-service NAV is a NAV that provides a complete end-to-end service on a site. For wastewater this incorporates collection, treatment and sludge treatment and disposal.

7.11 In order to be eligible for NAV to meet water supply and sewerage requirements, the development site needs to comply with one of the following criteria.

[12] Ofwat New Appointments and Variations Website. https://www.ofwat.gov.uk/regulated-companies/markets/nav-market/nav-publications/

- Unserved criterion: The area does not contain any premises that receive services from an appointed water or sewage company.
- Consent criterion: The existing appointed company agrees to transfer the site or premises to another company.
- The large user criterion: the site uses at least 50 megalitres of water a year.

7.12 The development site is not currently served by Southern Water for water supply and sewerage. Also, for 3 of the 4 development scenarios water usage is estimated to exceed 50 megalitres, therefore the site meets the criteria to be eligible for NAV under the Ofwat guidance.

8.0 SUMMARY AND CONCLUSIONS

8.1 This Foul Water Drainage Strategy has been prepared on behalf of the South Downs National Park Authority (SDNPA) in support of providing a programme of works for drainage investigations to support the four development scenarios being considered for the Shoreham Cement Works site in West Sussex.

8.2 Shoreham Cement Works is not connected to the Southern Water clean water mains or wastewater sewerage network. There is an existing private system of foul and surface water drains, including outfalls to the River Adur and two existing discharges of treated effluent to the ground and surface water.

8.3 Four development scenarios (Scenario 1, 2, 3 and 4) are currently being considered with varying development mixes of residential, employment, education, retail, sports and recreation and consumption food and drink. Scenario 1 has the highest quantity of development and results in the highest flows, the quantity of the development and flows reduces to Scenario 4 which has the lowest.

8.4 The foul water drainage strategy for the site for all 4 development scenarios is that wastewater would drain by gravity from the high point in Area D, through areas C and B to the low point of the site in Area A by the River Adur. Then depending on which option is selected and is viable for the site, the site will either be connected to the existing sewer network by a new pumping station located on the site and a rising main, or a new Wastewater Treatment Works (WTW) would be constructed on the site that would discharge the treated effluent to the River Adur.

8.5 A new WTW and discharge would require a consent and bespoke permit from the Environment Agency (EA). The site lies in close proximity to the public foul water sewer network relative to the size of the development, the EA's binding rules state that a connection should be made to the existing public foul sewer. The Shoreham Cement Works site also lies within 500m of the Beeding Hill to Newtimber SSSI There could also be Environmental reasons why regulators may not favour a new WTW on the site. However, it is recommended that a consultation is undertaken with the EA to determine their requirements.

8.6 The nearest adopted foul sewer networks to the site are located in Upper Beeding to the north in the Steyning Catchment area and at the western extent of the Shoreham on Sea built up area by Steyning Road in the Shoreham Catchment area. The Upper Beeding foul sewer network is located approximately 1.9 km from The Site and the Shoreham foul sewer network is located approximately 2.96 km from the site.

8.7 Ballpark budget cost estimates have been prepared for the foul drainage infrastructure that would be required to serve the site, based on the two foul water drainage strategies for the four development scenarios being considered.

Table 8.1: Option 1 - Cost summary for the 4 development scenarios

Cost Summary for the 4 Development Scenarios				
DESCRIPTION	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Foul Drainage Infrastructure Civils Works	£5,771,800.10	£5,771,800.10	£5,771,800.10	£5,771,800.10
Administration Charges	£723,238.34	£713,238.34	£723,238.34	£723,238.34
Wastewater Infrastructure Charges	£239,358.00	£147,518.00	£121,688.00	£53,382.00
Income Offset Discount	-£51,200.00	-£30,720.00	-£25,600.00	-£10,752.00
38% Contingency	£2,004,958.93	£1,983,550.93	£1,977,337.93	£1,961,300.53
TOTAL	£8,688,155.38	£8,595,387.38	£8,568,464.38	£8,498,968.98

Table 8.2: Option 2 - Cost summary for the 4 development scenarios

Cost Summary for the 4 Development Scenarios				
DESCRIPTION	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Foul Drainage Infrastructure Civils Works	£4,066,088.40	£4,066,088.40	£4,066,088.40	£4,066,088.40
Administration Charges	£509,176.05	£509,176.05	£509,176.05	£509,176.05
Wastewater Infrastructure Charges	£239,368.00	£147,518.00	£121,688.00	£53,382.00
Income Offset Discount	-£51,200.00	-£30,720.00	-£25,600.00	-£10,752.00
30% Contingency	£1,429,026.74	£1,407,618.74	£1,401,405.74	£1,385,368.34
TOTAL	£6,192,445.19	£6,099,681.19	£6,072,758.19	£6,003,262.79

8.8 The cost estimates are based on a network of foul sewers constructed on the site as shown on the foul water drainage strategy drawing in **Appendix A**. The foul sewer network covers the whole site for the 4 development scenarios and as such does not take into account possible reductions in total length of foul sewers and number of manholes as the size of the development areas reduces from Scenario 1 to Scenario 4. The lack of site layout therefore impacts on the accuracy of the costings at this stage and may have resulted in an inflating cost for the on-site foul sewer infrastructure, in particularly for Development Scenarios 2, 3 and 4.

Recommendations for further work.

8.9 Consult with Southern Water to determine a suitable point of connection to the foul public sewer network and to confirm adoption process and costings.

8.10 Undertake consultation with the EA to determine their requirements in relation to the development and to determine their requirement in relation to a WWTW to be located on the site with a discharge to the river Adur.

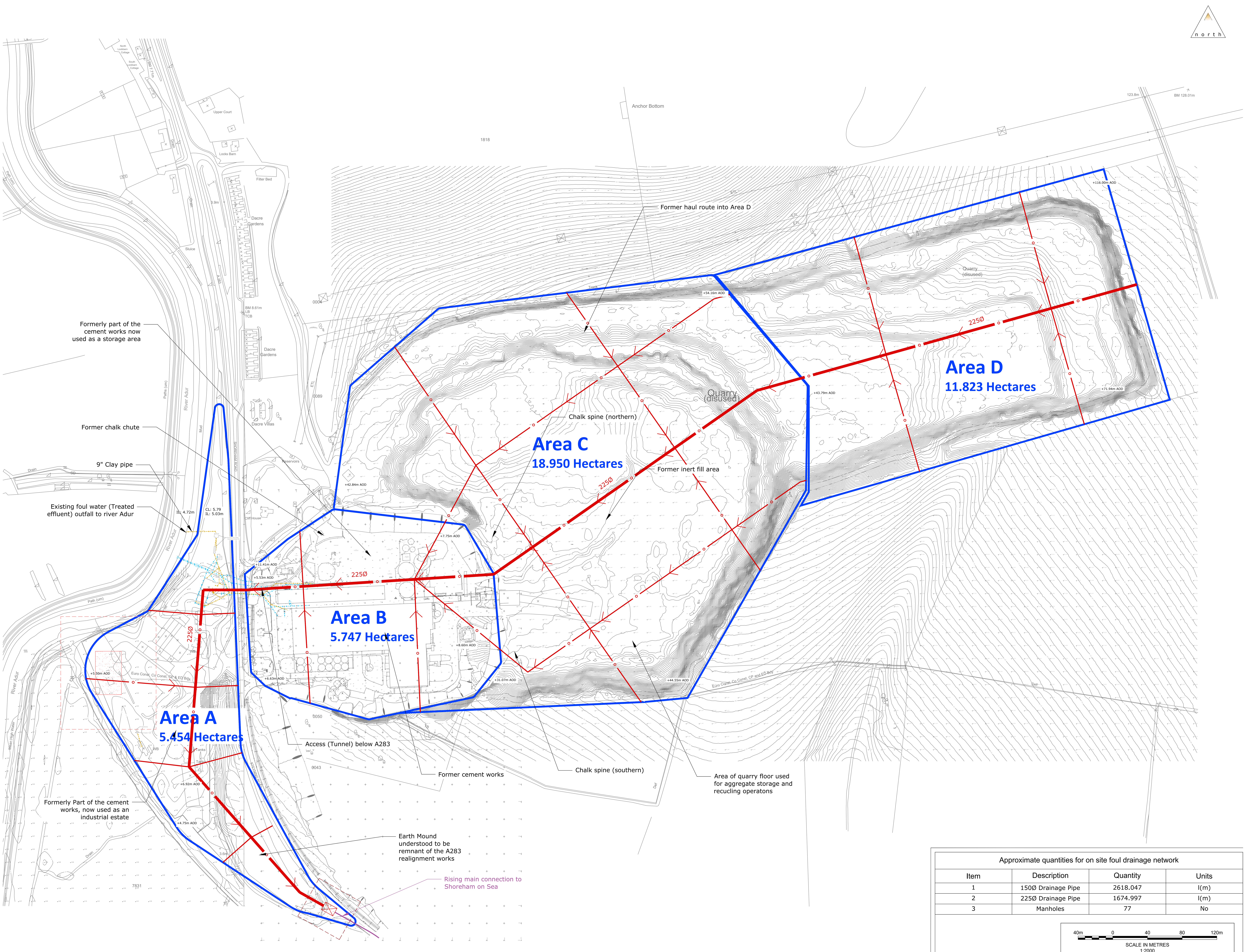
8.11 Determine if there is an option to obtain a full-service New appointment and variations (NAV) that will provide a complete end-to-end service incorporates collection, treatment and sludge treatment and disposal.

8.12 Update costs when site layouts are available for the 4 development scenarios.

Appendicies

Appendix A

Development Area and Proposed Foul Drainage Strategy



Notes

1. All dimensions are in metres unless stated otherwise.
2. This drawing has been based upon survey information supplied by South Downs National Park Authority and Motion cannot guarantee the accuracy of the data provided.
3. Cover and Invert Levels were obtained from historial records and converted from Feet to Metres.
4. The WTW will require a minimum offset distance from development areas

Legend

- Site Boundary
- Proposed Foul Drainage Network
- Pumping Station Area (10x15m) With a 20m Offset
- WWTW Area Based On 30x50m Footprint With a 40m Offset

Approximate quantities for on site foul drainage network

Item	Description	Quantity	Units
1	150Ø Drainage Pipe	2618.047	l(m)
2	225Ø Drainage Pipe	1674.997	l(m)
3	Manholes	77	No

40m 0 40 80 120m
SCALE IN METRES
1:2000

Rev	Revision Notes	Drn	Chk	App	Date
B	WWTW Pumping Station Locations Added	KL	JM	JM	11/03/2022
A	First Issue	KL	JM	JM	14-12-2021

Drawing Status:
DRAFT
NOT FOR CONSTRUCTION

motion

84 North Street
Guildford
Surrey
GU1 4AU
01483 531300

9 Greyfriars Road
Reading
Berkshire
RG1 1NU
0118 206 2930

Golden Cross House
8 Duncannon Street
London
WC2N 4JF
020 7031 8141

www.motion.co.uk

Client: South Downs National Park Authority

Project: Shoreham Cement Works

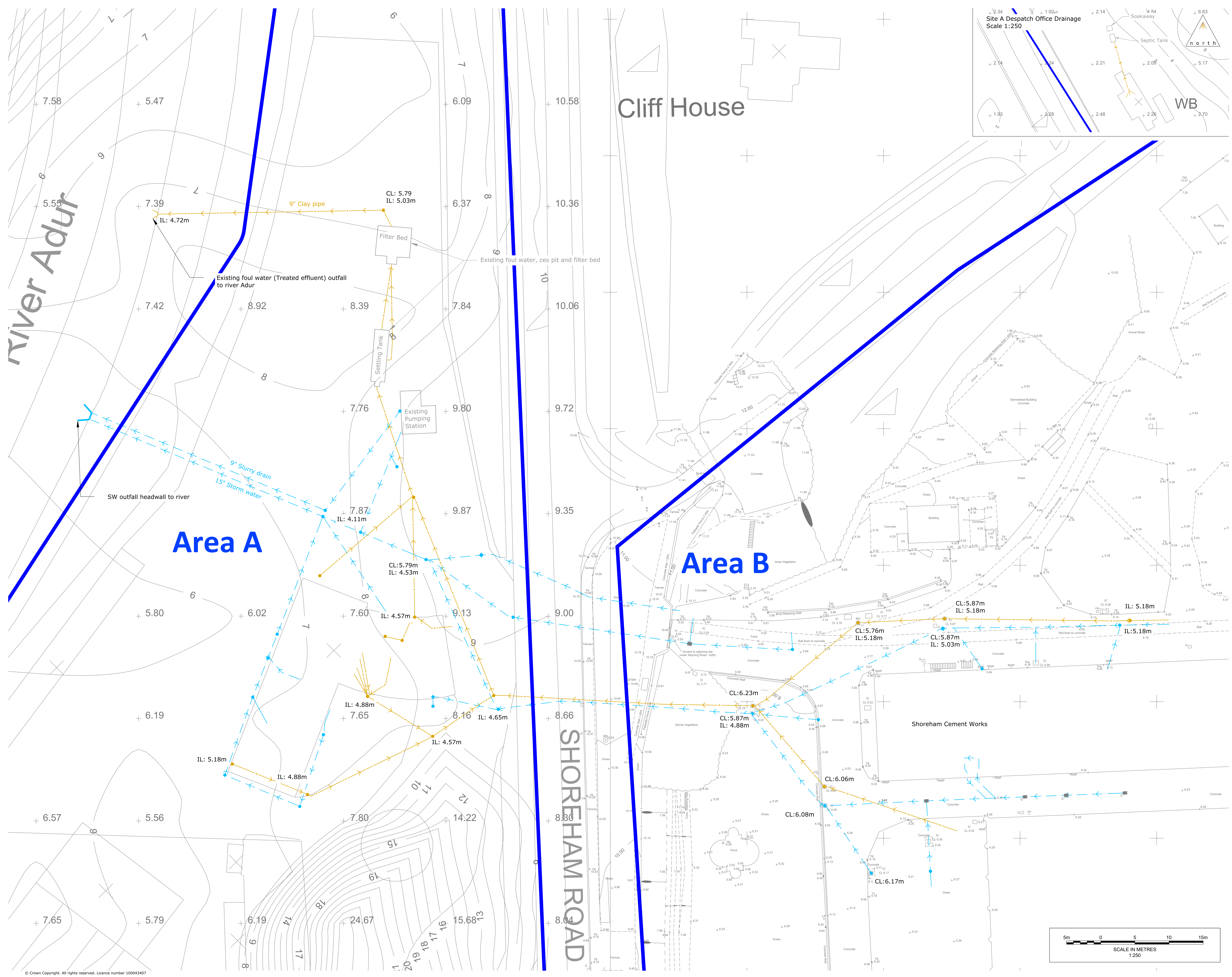
Title: Development Areas and Proposed Foul Drainage Strategy

Scale: 1:2000 | Size: A1 | Project No: 2111035

Drawing: 2111035-0500-02 | Revision: B

Appendix B

Existing Drainage.



Notes

1. All dimensions are in metres unless stated otherwise.
2. This drawing has been based upon survey information supplied by South Downs National Park Authority and Motion cannot guarantee the accuracy of the data provided.
3. Cover and Invert Levels were obtained from historial records and converted from Feet to Metres.

Legend

- Development Boundaries
- Existing Foul Water Drain
- Existing Surface Water Drain

Revision	Revision Notes	Drn	Chk	App	Date
A	First Issue	KL	JM	JM	14-12-2021

Drawing Status:

DRAFT
NOT FOR CONSTRUCTION

motion

84 North Street, Guildford, Surrey, GU1 4AU, 01483 531300
9 Greyfriars Road, Reading, Berkshire, RG1 1NU, 0118 206 2930
Golden Cross House, 8 Duncannon Street, London, WC2N 4JF, 020 7031 8141
www.motion.co.uk

Client: South Downs National Park Authority

Project: Shoreham Cement Works

Title: Existing Drainage

Scale: 1:250 | Size: A1 | Project No: 2111035

Drawing: 2111035-0500-01 | Revision: A

Appendix C

Historic as-built records of Shoreham Cement Work existing drainage.


THE ASSOCIATED PORTLAND CEM
MANUFACTURERS LTD.
SHOREHAM WORKS.
RECONSTRUCTION
LAYOUT OF SOIL & S.W. MAINS I
RELATION TO OFFICE BL
ISSUED BY:
SOUTHERN
REGIONAL OFFICE
SHOREHAM WORKS
BEEDING STEYNING
SUSSEX
SCALE: 1/8" TO 1 FOOT
S.D. 8 2 54
3" WATER MAIN
OFFICE BLOCK SUPPLY.
ELECTRIC CABLES.
S.W. M.H. 15·25 I.L.
SOIL M.H. 14·25 I.L.
2. 4" DOULTON 4 WAY DUCTS.
9" SOIL DRAIN.
9" MAIN SOIL DRAIN.
15" STORM WATER DRAIN.
4" STORM WATER DRAIN.
4" STORM WATER
DRAIN.
8" SLURRY LINE TO
MIXER S.G. 17·50 I.L.
4" WATER MAIN 17·50 I.L.
SENIOR STAFF GARAGE
RACKS
MOTOR CYCLE GARAGE
G.P.O.
SOIL M.H. 16·00 I.L.
S.W. M.H. 16·00 I.L.
SHOWER
BATHS.
BATHS
3/4" STAND PIPE
IN MANHOLE.
6" SOIL DRAIN.
FIRE HYDRANT.
R.W.P.
SOIL PIPE FROM
TOILETS
SOIL M.H. 16·00 I.L.
LOCKER ROOM.
WASHROOM
4" SOIL DRAIN.
6" SOIL DRAIN.
S.W.M.H. 14·85 I.L.
6" SOIL DRAIN.
6" STORM WATER
DRAIN.
4" DOULTON
SINGLE WAY.
SOIL M.H. 16·00 I.L.
MENS
LAVATORY.
4" SOIL
DRAINS.
RETAINING
CAR PA
RETAINING
WALL
6 CORE PILOT CABLE
TO HORTON CLAY PLANT.
S.W.M.H. 15·25 I.L.
R.W.P.
4" R.W.P. INTO T.G.
SOIL M.H. 16·00 I.L.
BASE LINE.
SOIL M.H. 13·40 I.L.
G.L. 19·00 O.D.
R.W.P.
TO T.G.
HOIST
3" WATER MAIN
UNDER BEAMS
AT 14·50 I.L.
CHEMICAL
LABORATORY.
CHEMIST.
VALVE HOUSE.
4" WATER MAKE UP
TO SUMP-BALL
FLOAT CONTROL.
TIME OFFICE
CHEMICAL
STORE
BALANCE
ROOM
OFFICE BLOCK.
14·60 I.L.
13·50 I.L.
6" SOIL DRAIN.
15" STORM WATER DRAIN.
SUMP
FIRST AID ROOM.
BOILER
ROOM.
CUBE
ROOM.
PHYSICAL
LABORATORY.
BENCH
WITH
SINK.
SIEVING
ROOM.
SUB-STAT
PHY'S
STORE.
G.L. 18·75 O
M.H. 14·67 I.L.
9" SOIL DRAIN FALLS TO
LEVEL OF SEWAGE DISPOSAL
PLANT AT 12·75 I.L.
9" S.G. SLURRY DRAIN.
BOILER FUEL
T.G. WITH
GRID.
4" G.E. WASHOUT PIPE
AT APPROX. 17·00 O.D.
SEWAGE DISPOSAL PLANT
SEE DRG. SY. 8727
S.W. M.H. 14·50 I.L.
9" STORM WATER DRAIN.
S.W.M.H. 15·50 I.L.
6" S.W.D.
SOIL M.H. 17·00 I.L.
14·00 I.L.
SETTLING TANK.
PUMP WELL
PUMP CHAMBER
AIR VENT.
9" S.G. SLURRY DRAIN
HORTON PIPELINE
WASHOUT.
15" STORM WATER DRAIN.
2. 4" DOULTON 4 WAY DUCTS.
4" DOULTON 2 WAY D
ENDS HERE
ELECTRIC CABLE TO
VALVE HOUSE
17·00 O.D. APPROX.
DRAIN TO FALL
12" IN 100'-0"
FALL TO 14·00 I.L.
AT RIVER.
1. 4" DOULTON 4 WAY DUCT.
ELECTRIC CABLE.
4" DRAIN FROM FILTER PRESSES
1. 4" DOULTON 2 WAY DUCT.
BASE LINE.
FOR DETAILS SEE

ELECTRIC LAMP STANDARD.

OUTLET TO RIVER I.L. 15·50 O.D.

9" SALT GLAZED.

M.H. 11. 16·50 O.D. G.L. 19·00 O.D.

6" STONE WARE.

FILTER BED.

2- 8' DIA. CLAY SLURRY LINES FROM HORTON.

4" STONE WARE.

ELECTRIC LAMP STANDARD.

SETTLING TANK.

3" PULSOMETER PUMP DRIVEN BY 15 H.P. 1420 R.P.M. CROMPTON PARKINSON MOTOR.

VALVE HOUSE.

8" S.G. SLURRY DRAIN.

BAGGED CONCRETE.

15" STORM WATER.

FALL TO 14·00 O.D. I.L. AT RIVER.

6 CORE PILOT CABLE TO HORTON.

RIVER ADUR

EARTHING PITS.

4" WATER MAIN.

8" CLAY SLURRY PIPE TO MIXER &c.

FIRE HYDRANT.

6" SOIL DRAIN.

G.L. 19·00 O.D.

S.W. M.H. I.L. 14·65 O.D.

4" DOULTON 4 WAY DUCT.

4" DOULTON 4 WAY DUCT.

6" SOIL DRAIN.

SOIL M.H. I.L. 15·00 O.D.

BASE LINE.

ELECTRIC LAMP STANDARD.

4" DOULTON 4 WAY DUCT.

WASHROOM.

9" SOIL DRAIN.

LOCKER ROOM.

¾" STAND PIPE IN MANHOLE.

PRINT ROOM.

BOILER ROOM.

PHYSICAL LABORATORY.

CHEMICAL LABORATORY.

CLOCK CHARGE.

SOIL M.H. I.L. 16·00 O.D.

6" SOIL DRAIN.

SOIL M.H. I.L. 15·00 O.D.

SOIL M.H. I.L. 17·00 O.D.

4" DOULTON 2 WAY DUCT.

4" DOULTON 4 WAY DUCT.

SOIL M.H. I.L. 16·00 O.D.

2-6 SQ. MANHOLE FOR ELECT. CABLES AT 14·25 O.D.

I.L. 16·00 O.D. G.L. 19·00 O.D.

TRANSFORMER COMPOUND G.L. 18·75 O.D.

6 PAIR CABLE & CONDUIT.

SWITCHGEAR HOUSE.

4" STORM WATER DRAIN.

4" STORM WATER.

6" STORM WATER DRAIN.

CAR PARK.

G.L. 23·00 O.D.

4" DOULTON 2 WAY DUCT.

6" SOIL DRAIN.

S.W.M.H. I.L. 15·25 O.D.

15" STORM WATER.

SOIL M.H. I.L. 15·00 O.D.

TO BEEDING

BASE LINE.

2/33 K.V. INCOMING CABLES FROM SUPPLY COMPANY.

FENCE.

3" WATER SERVICE.

SOUTH EASTERN ELECTRICITY BOARD SUB-STATION & TRANSFORMER COMPOUNDS.

TRANSFORMER COMPOUND.

TRANSFORMER COMPOUND.

SUB-STATION.

ROAD.

4" DOULTON 6 WAY DUCT.

4" DOULTON 6 WAY DUCT.

POINT 'D' MAIN SETTING OUT POINT OF BASE LINES FOR WORKS.

INVERT 17·00 O.D.

INVERT 17·00 O.D.

INVERT 17·00 O.D.

INVERT 17·00 O.D.

8" CLAY SLURRY PIPE LINE.

6" WATER RING MAIN.

6" SOIL DRAIN.

9" STORM WATER.

FIRE HYDRANT.

STORM WATER I.L. 17·00 O.D.

4" DOULTON 6 WAY DUCT.

ROAD LEVEL 20·70 O.D.

R.W.P.

ROAD LEVEL 19·90 O.D.

9" STORM WATER.

4" STORM WATER.

G.L. 19·25 O.D.

6" SOIL DRAIN.

G.P.O. INCOMING CABLE.

G.P.O. TELEPHONE CABLE

ROAD LEVEL APPROX 20·00 O.D.

8" WATER MAIN.

9" SOIL DRAIN.

STORM WATER I.L. 16·00 O.D.

4" SOIL DRAIN.

15" STORM WATER.

BOILER HOUSE.

MAIN SUB-STATION.

CARPENTERS SHOP.

2-4" DOULTON 6 WAY DUCTS.

15" STORM WATER.

ELECTRIC LAMP STANDARD.

LIGHTING CABLE.

ELECTRIC CABLES UNDER CONCRETE SLABS INVERT 17·25 O.D.

CABLE TRENCH COVERED WITH CONCRETE SLABS

G.P.O. CABLE & CONDUIT

THE ASSOCIATED PORTLAND CEMENT MANUFACTURERS LTD.

SHOREHAM WORKS. RECONSTRUCTION. PLAN OF N.W. SECTION

SHOWING WATER SERVICES, FOUL MAINS, STORM WATER PIPES, ELECTRIC CABLES & DUCTS, CONCRETE ROADS & AREAS.

ORIGINAL DRAWING	DRAWN J.P.K.	A	MOD B.T.B.
	TRACED		TRCD. A.H.O.
	APPRVD.		APPRVD.
	DATE 8-8-49		DATE 20-3-52
COMPLETELY RE-DRAWN			

REFERENCE DRAWINGS.

PLAN OF NORTH WESTERN SECTION	S.D. 8265.
" EASTERN "	S.D. 6262
" SOUTH WESTERN "	S.D. 8374
" EASTERN "	S.D. 8264
[illegible] SECTION	S.D. 8267

ISSUED BY:- SOUTHERN REGIONAL OFFICE. SHOREHAM WKS. BEEDING. STEYNING

S.D.C. 63.


THE ASSOCIATED PORTLAND CE[MENT]
MANUFACTURERS LTD.
SHOREHAM WORKS
RECONSTRUCTION
PLAN OF
SOUTH-WESTERN SECTION
ISSUED BY-
SOUTHERN
REGIONAL OFFICE
SHOREHAM WORKS
BEEDING,
STEYNING,
SUSSEX.
PLAN OF NORTH WESTERN SECTION SD. 8263
EASTERN SD. 8262
SOUTH WESTERN SD. 8374
EASTERN SD. 8264
NORTHERN SECTION SD. 8267
WESTERN SD. 8261
SOUTHERN SD. 8266
ORIGINAL ISSUE
COMPLETELY RE-DRAWN MODS. A TO K NOW OBSOLETE.
DATE 7.7.49
L
DATE 14-10-53
NEW CHIMNEY SITED IN PLACE OF 30FT DIA. SLURRY TANK.
M
DATE 22-4-54
ROAD BULK LOADING BUILDING ADDED.
N
DATE 16-7-56
8374
CONTROL HOUSE
WAGON TIPPLER HOUSE
RIVER ADUR
Nº 1 TRANSFER TOWER
CAPSTAN
12 DRAIN
SNOWCEM STORE
RAIL LOADING BAY
LORRY LOADING BAY
EDGE OF CONCRETE
OFFICE BLOCK
RETAINING WALL
4" DOULTON SINGLE WAY
4" DOULTON 2 WAY DUCT ENDS HERE
4" DOULTON 4 WAY DUCT ENDS HERE
4"-2 WAY CABLE DUCT
2'-5" SQ. MANHOLE FOR ELECT. CABLES AT 14-25 O.D.
PACKING PLANT
SILO
COMPRESSOR HOUSE
ROAD BULK LOADING
LEVEL 24-60 O.D.
Nº 2 TRANSFER TOWER
Nº 3 TRANSFER TOWER
MAIN ROAD TO BEEDING
MAIN ROAD TO SHOREHAM
A 283
DOWN
APPROX. POSITION OF SLURRY PIPE LINE
6" SLURRY PIPE
6" STORM WATER
50'-0" DIA. SUN & PLANET MIXER
I.D. FAN HOUSE
OLD KILN HOUSE
Nº 3 KILN
NOTE
Nº 1 BOREHOLE & PUMP HOUSE UNDERGROUND
4" DOULTON 2 WAY DUCT TO PREVENT DAMAGE TO CABLES DURING DEMOLITION OF OLD PLANT
℄ SILOS
℄ KILN HOUSE
144'-0" TO BASE-LINE
BASE LINE
LIGHTING CABLE AT APPROX. 19-00 O.D.
20'-0" WIDE ROAD
CONCRETE PATHWAY NO KERBS
4" DOULTON 2 WAY DUCT
4" DOULTON 4 WAY DUCT
1" WATER MAIN
9" STORM WATER
12" STORM WATER
6" WATER RING MAIN
STORM WATER M.H. I.L. 19-00 O.D. G.L. 21-25 O.D.
¾" W.I. WATER SERVICE


THE ASSOCIATED PORTLAND CEMENT
MANUFACTURERS LTD
SHOREHAM WORKS
PLAN OF SOUTHERN SECTION
SHOWING ROADS, WATER SERVICE, STORM WATER
PIPES, ELECTRIC CABLES ETC.
ISSUED BY
SHOREHAM WORKS
BEEDING
DRAWN: R.D.L.
DATE: 25/3/71
MOD: R.D.L.
DATE: 7-10-74
G
H
TO STEYNING
TO SHOREHAM
A283
ELECTRIC CABLE IN 6" STEEL PIPE
APPROX 4'-6" BELOW ROAD LEVEL.
VALVE & HYDRANT PIT
SIDE & BOTTOM OF DITCH CONCRETED
OIL STORAGE TANKS
DEFECAMAT SEWAGE TREATMENT PLANT
FUEL STORAGE TANK FOR HEATERS
ELECTRIC CABLE
G.P.O. CABLE & ¾" AIR LINE TO RAMPS
G.P.O. MANHOLE
WASTE OIL TANK (UNDERGROUND)
DIESEL PUMP
DIESEL OIL
PETROL PUMP
UNDERGROUND PETROL TANK, CAPACITY 500 GALLS
LORRY WASHDOWN
ULTRASONIC VEHICLE WASHER
OIL STORE
LORRY BRAKE TESTING BAY
TOILETS
LOCKER ROOM
MESS ROOM
STORES
FOREMAN
C.M.C. DRIVERS LOBBY
REPAIR PITS
PUMP PIT FOR WASHDOWN DRAINAGE
SEE SD 11436 FOR DETAILS
DRAINAGE TRENCH WITH H.D. GRATING
WATER FED INTO Ex. COLLECTION SYSTEM
AND THEN PUMPED TO HORTON CLAY PLANT.
G.P.O. MANHOLE
ELECTRIC CABLE
PIPE BLANKED OFF UNDER CONCRETE
G.L. 17.30.00
SEEB. 11000 VOLT ELECTRIC CABLE
TO ERRINGHAM FARM.
APPROX 2'-0" BELOW GROUND.
COMPRESSOR HOUSE
S.W. GULLY
S.W. MANHOLE
LORRY LOADING BAY
SEE SD 8111
RAMP UP.
DUMPERS STORE
3" WATER SUPPLY
FIRE HYDRANT
WATER SUPPLY
4 WAY G.P. DUCT
FOUL MAIN
SEPTIC TANK
SOAKAWAY
FOR DETAILS OF RAILWAY SIDINGS SEE SD 8124
3" BORE G.E. CONDUIT FOR G.P.O. CABLE
ELECTRIC & G.P.O. CABLES TO BE LAID IN SAME TRENCH
WATER PIPE LAID IN 5" DIA G.E. CONDUIT UNDER ROAD
4" 4 WAY DUCT FOR CABLES
G.P.O. CABLES IN CONDUIT ABOVE ELECTRIC CABLE
BASE LINE
OLD DUMPER REPAIR SHOP
NOW USED FOR PATTERN & PALLET STORE
D8265

Appendix D

Southern Water wastewater and clean water records

Date: 15/12/21

Scale: 1:1250

Map Centre: 519913,109598

Data updated: 23/11/21

Our Ref: 738711 - 3

Wastewater Plan A0

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. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2021 Ordnance Survey 100031673. This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

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

klu@motion.co.uk

SCW Page2

WATER for LIFE

from Southern Water.

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Date: 15/12/21

Scale: 1:1250

Map Centre: 519895,110482

Data updated: 23/11/21

Our Ref: 738852 - 1

Wastewater Plan A0

kllu@mcilon.co.uk

SCW Page2

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Date: 15/12/21

Scale: 1:1250

Map Centre: 520783,107003

Data updated: 23/11/21

Our Ref: 738711 - 2

Wastewater Plan A0

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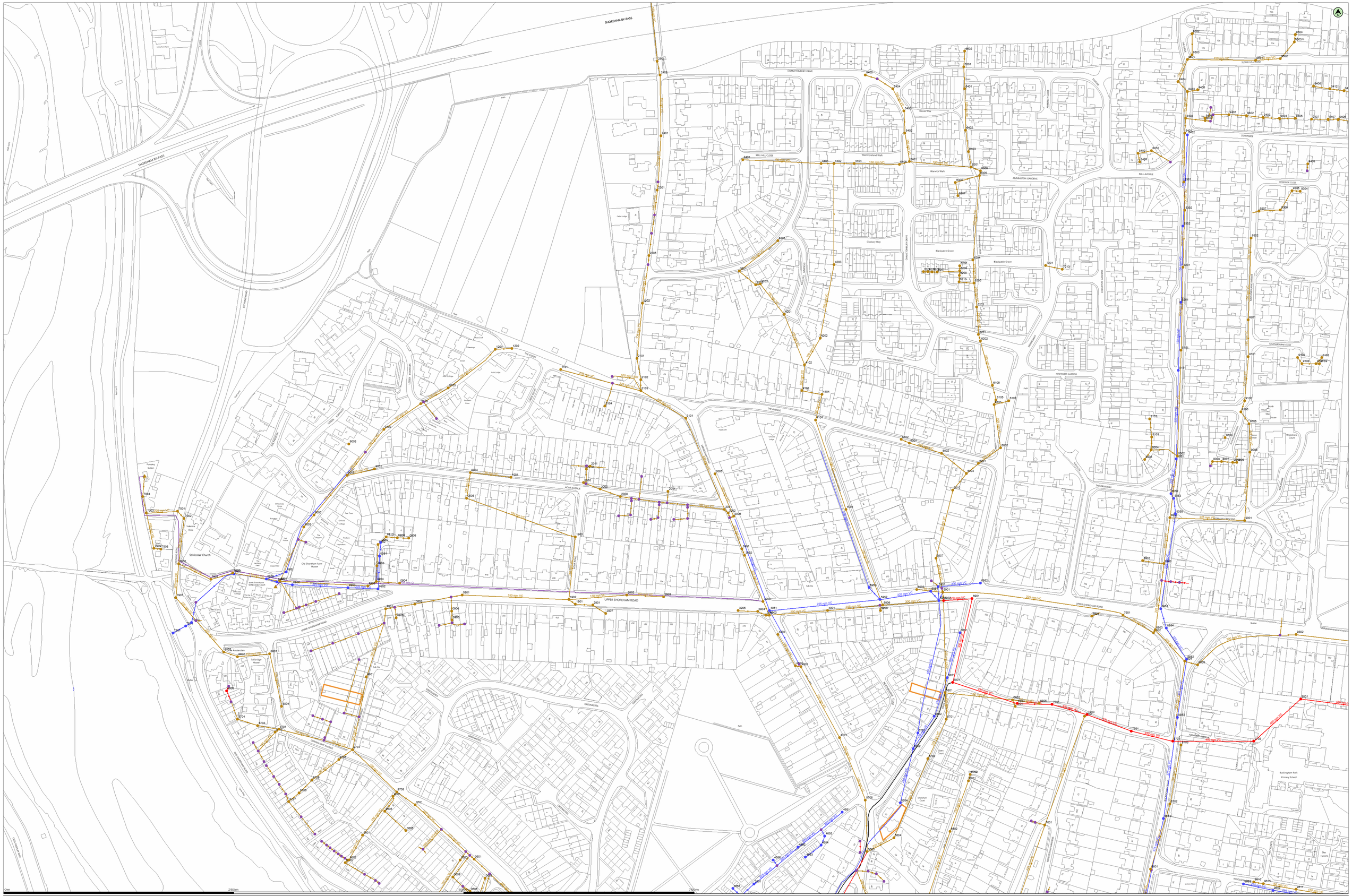
SCW Page1

WATER for LIFE

from Southern Water.



Date: 15/12/21

Scale: 1:1250

Map Centre: 521301,106093

Data updated: 23/11/21

Our Ref: 738852 - 2

Wastewater Plan A0

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

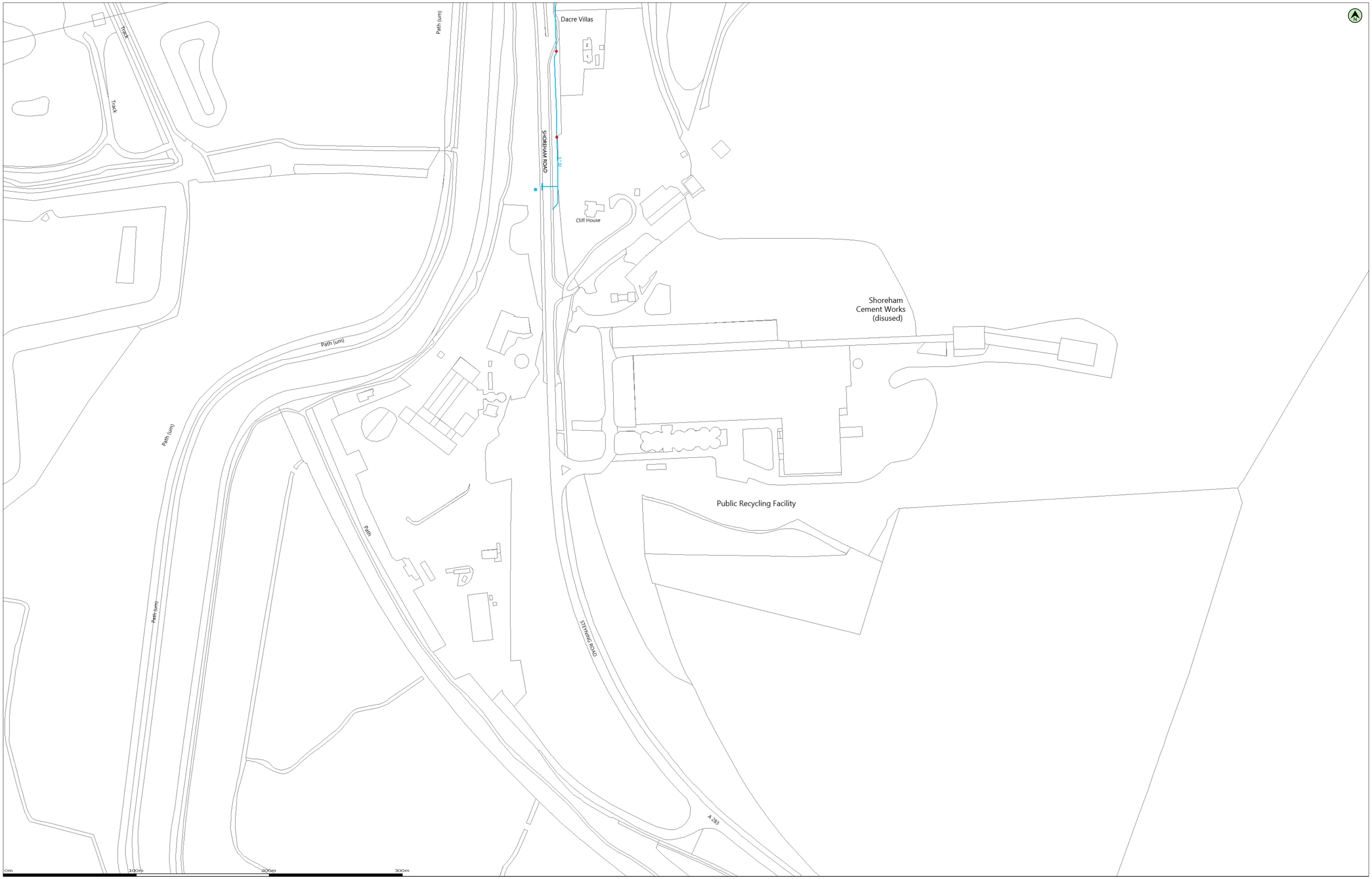
WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

Foul Gravity Sewer
Combined Gravity Sewer
Culverted Water Course or Treated Effluent
Surface Water Gravity Sewer
Rising Main, Vacuum or Syphon
Combined Outfall
Foul Outfall
Surface Water Outfall
Surface Water Inlet
Combined Pumping Station
Surface Water Pumping Station
Foul Pumping Station
Water Treatment Works
Section 104 Area
Building Over Agreement Area
Foul Manhole
Combined Manhole
Surface Water Manhole
Non Entry Manhole, Disconnection Chamber, Dummy Manhole or Surface Water Soakaway

kliu@motion.co.uk

SCW Page1

WATER for LIFE from Southern Water



(c) Crown copyright and database rights 2021 Ordnance Survey 100031673 | Date: 15/12/21 | Scale: 1:1250 | Map Centre: 519994,108580 | Data updated: 23/11/21 | Our Ref: 738711 - 1 | Clean Water Plan A1

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SCW Surface

WATER for LIFE from Southern Water.