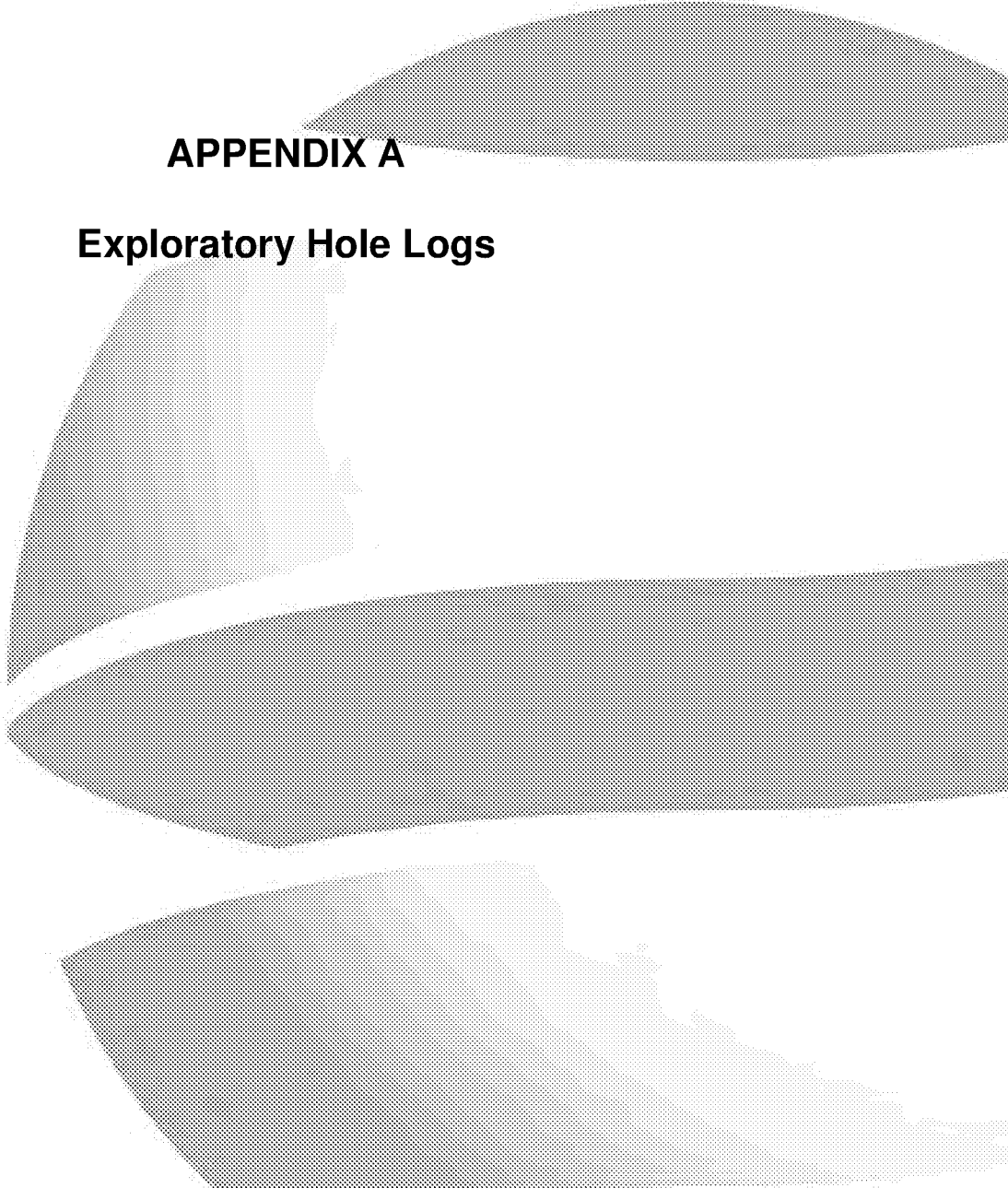
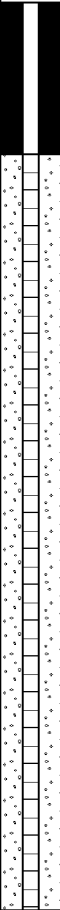
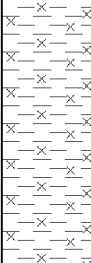
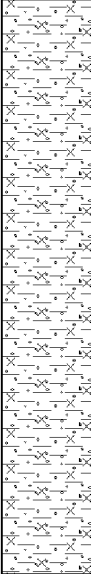


A decorative background element consisting of several overlapping, wavy, horizontal bands with a fine, grid-like texture, resembling a stylized landscape or abstract pattern.

APPENDIX A

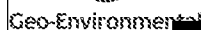
Exploratory Hole Logs

 Geo-Environmental		Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log			Borehole No. WS1 Sheet 1 of 1	
Project Name: Land West of Yapton Road		Project No. GE16054		Co-ords: 497636E - 106265N		Hole Type WLS		
Location: Walberton				Level:		Scale 1:25		
Client: Wates Developments				Dates: 30/01/2017		Logged By CA		

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.15		 Grass over dark brown slightly sandy clay with occasional rootlets. TOPSOIL		
					1.10		 Firm dark orangish brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
					3.00		 Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
End of Borehole at 3.00m									

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater not encountered.





Borehole Log

WS2

Sheet 1 of 1

Project No.	GE16054
-------------	---------

Co-ords: 497571E - 106216N

Hole Type
WLS

Location: Walberton

Level:

Scale
1:25

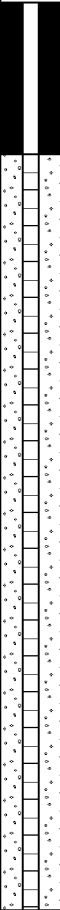
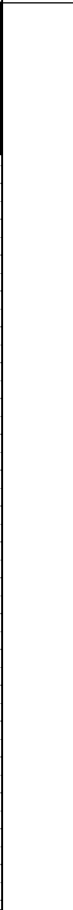
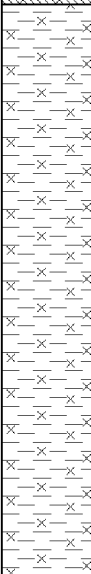
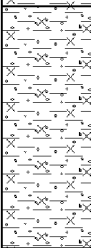
Client: Wates Developments

Dates: 30/01/2017

Logged By
CA



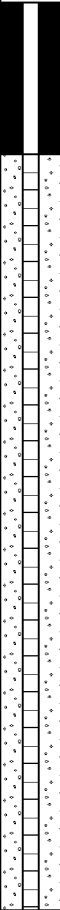
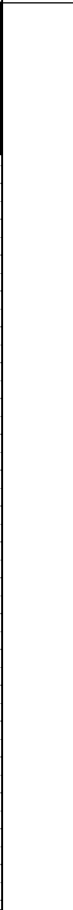
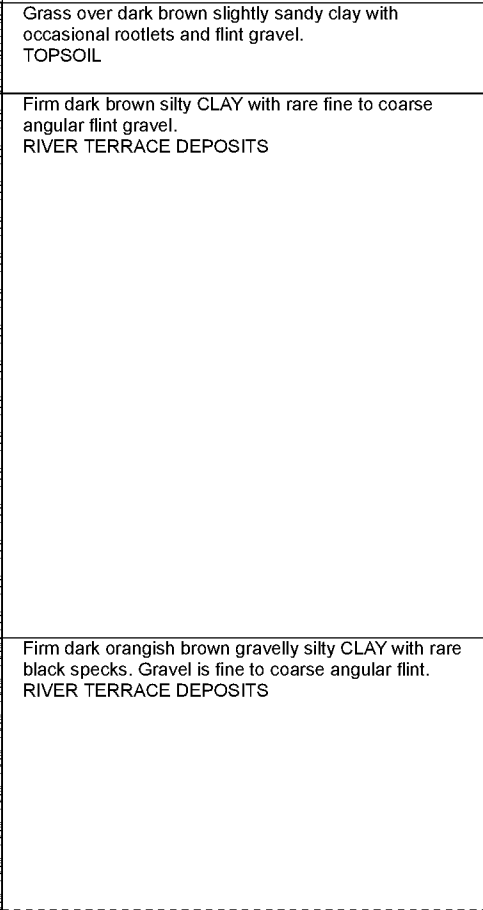
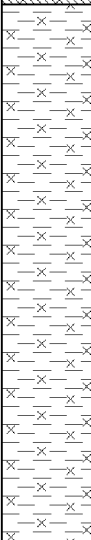
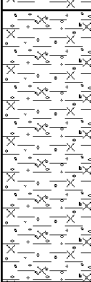
 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log				Borehole No. WS3 Sheet 1 of 1	
Project Name: Land West of Yapton Road		Project No. GE16054		Co-ords: 497493E - 106072N		Hole Type WLS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments				Dates: 30/01/2017		Logged By	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30		 Grass over dark brown slightly sandy clay with occasional rootlets. TOPSOIL		
							 Firm dark brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
					2.20		 Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
					3.00		End of Borehole at 3.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater not encountered.



 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log				Borehole No. WS4 Sheet 1 of 1	
Project Name: Land West of Yapton Road		Project No. GE16054		Co-ords: 497351E - 106182N		Hole Type WLS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments				Dates: 30/01/2017		Logged By CA	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.30		 Grass over dark brown slightly sandy clay with occasional rootlets and flint gravel. TOPSOIL		
					2.10		 Firm dark brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
					3.00		 Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
End of Borehole at 3.00m									

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater not encountered.

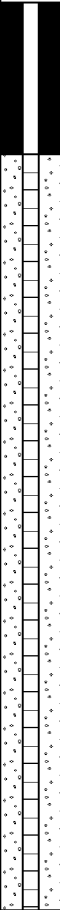
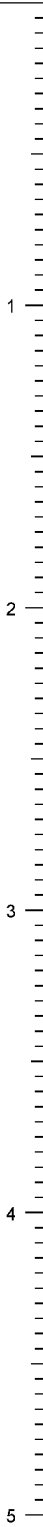
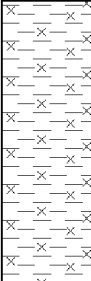
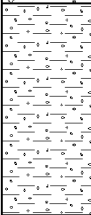


		Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log				Borehole No. WS5 Sheet 1 of 1	
Project Name: Land West of Yapton Road		Project No. GE16054		Co-ords: 497268E - 106264N		Hole Type WLS			
Location: Walberton				Level:		Scale 1:25			
Client: Wates Developments				Dates: 30/01/2017		Logged By CA			

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25		Grass over dark brown slightly sandy clay with occasional rootlets and flint gravel. TOPSOIL		
							Firm dark brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
					0.80		Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
							Groundwater encountered at 1.06m likely to be perched water.		
					2.60		Firm dark orangish brown very gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
					3.00		End of Borehole at 3.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater encountered at 1.06m (probably perched water).

 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log				Borehole No. WS6 Sheet 1 of 1	
Project Name: Land West of Yapton Road		Project No. GE16054		Co-ords: 497187E - 106209N		Hole Type WLS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments				Dates: 30/01/2017		Logged By CA	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25		 Grass over dark brown slightly sandy clay with occasional rootlets and flint gravel. TOPSOIL		
							 Firm dark brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
					1.20		 Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
					2.30		 Firm dark orangish brown very gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
					3.00		End of Borehole at 3.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater not encountered.





Geo-Environmental

Unit 7, Danworth Farm
Hurstpierpoint
BN6 9GL

Borehole Log

Borehole No.

WS7

Sheet 1 of 1

Project Name: Land West of Yapton Road

Project No.
GE16054

Co-ords: 497082E - 106184N

Hole Type
WLS

Location: Walberton

Level:

Scale
1:25

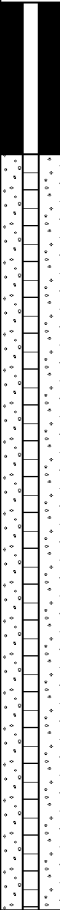
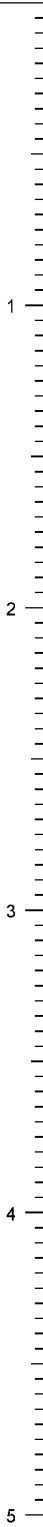
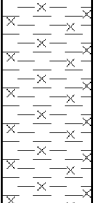
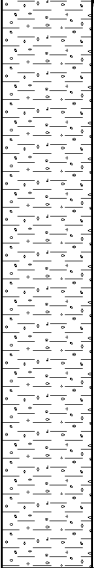
Client: Wates Developments

Dates: 30/01/2017

Logged By
CA

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.25		Grass over dark brown slightly sandy clay with occasional rootlets and flint gravel. TOPSOIL		
							Firm dark brown silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS		
					0.90		Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
					1.50		Firm dark orangish brown very gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS		
					3.00		End of Borehole at 3.00m		
Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks Groundwater not encountered.			
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to				

 Unit 7, Danworth Farm Hurstpierpoint BN6 9GL		Borehole Log				Borehole No. WS8 Sheet 1 of 1	
Project Name: Land West of Yapton Road		Project No. GE16054		Co-ords: 497104E - 106341N		Hole Type WLS	
Location: Walberton				Level:		Scale 1:25	
Client: Wates Developments				Dates: 30/01/2017		Logged By CA	

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.20		 Grass over dark brown slightly sandy clay with occasional rootlets and flint gravel. TOPSOIL		
						 Firm dark brown orangish silty CLAY with rare fine to coarse angular flint gravel. RIVER TERRACE DEPOSITS			
					0.90	 Firm dark orangish brown gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS			
					1.10	 Firm dark orangish brown very gravelly silty CLAY with rare black specks. Gravel is fine to coarse angular flint. RIVER TERRACE DEPOSITS <i>Groundwater encountered at 0.95m likely to be perched water.</i>			
					3.00		End of Borehole at 3.00m		

Casing		Water Strikes (mbgl)		Chiselling (mbgl)		Remarks
Diameter	Depth (m)	Depth Strike	Rose to	Depth from	Depth to	
						Groundwater encountered at 0.95m (probably perched water).



Appendix E – SuDS Operation and Maintenance Activities

1.0 INTRODUCTION

- 1.1 The development at Land East of Tye Lane, Walberton includes a number of Sustainable Drainage Systems (SuDS) as part of the surface water drainage system including permeable paving, infiltration basins, wetlands, filter drain, soakaway and swales. This Technical Note sets out an outline management plan for the aforementioned SuDS components.
- 1.2 The proposed SuDS components, in addition to addressing climate change, will bring a number of benefits in terms of water quality, environmental, and social amenity.
- 1.3 The maintenance of all SuDS components will be in accordance with the best practices and CIRIA document C753 "The SuDS Manual". Typical maintenance activities for the proposed SuDS components have been reproduced from Table 32.1 of "The SuDS Manual" and it is shown in Table 1 below. A private management company will be set up to maintain the surface water drainage network, including on-site SuDS. The management company will be financed by a yearly maintenance fee chargeable to the residential and rentable development. The name of the Management Company to be advised.

Table 1. Typical key SuDS components operation and maintenance activities.

Operation and maintenance activity	SuDS component					
	Detention basin	Wetland	Permeable paving	Filter drain	Soakaway	Swale / bioretention / trees
Regular maintenance						
Inspection	■	■	■	■	■	■
Litter and debris removal	■	■	■	■	□	■
Grass cutting	■	■	□	■	□	■

SuDS Management & Maintenance Strategy

Weed and invasive plant control	☐	☐	☐	☐		
Shrub management	☐	☐	☐			☐
Shoreline vegetation	☐	■				
Aquatic vegetation management	☐	■				
Occasional maintenance						
Sediment management	■	■	■	■	■	■
Vegetation replacement	☐	☐				☐
Vacuum sweeping and brushing			■			
Remedial maintenance						
Structure rehabilitation / repair	☐	☐	☐	☐	☐	☐
Infiltration surface reconditioning	☐		☐		☐	☐
■ will be required □ may be required						

2.0 SuDS MANAGEMENT PLAN

2.1 This long-term Management Plan for the Sustainable Drainage System (SuDS) should be implemented at the Site to ensure that the drainage network functions as designed. Maintenance and cleaning of gullies, surface water manholes, and SuDS components will ensure adequate hydraulic performance.

2.2 This plan is intended to cover all on-site drainage structures. The Site Management Team should oversee and implement the SuDS Management Plan and designate a qualified person who will be responsible for the proper operation and maintenance of the surface water drainage structures.

Water Quality Management

2.3 The surface drainage network has been designed to protect and enhance the quality of surface water runoff through the removal of sediment and pollutants, in accordance with guidance presented in CIRIA C753 'The

SuDS Management & Maintenance Strategy

SuDS Manual'. Swales, wetland within the infiltration basins and silt trapped gullies will reduce the amount of pollutants entering the system. Preventive maintenance of the system will include a comprehensive source reduction program of regular sweeping and litter removal, prohibitions on the use of pesticides and maintenance of bin areas.

Maintenance Program

- 2.4 The Site Management Team will conduct the SuDS Management Plan set out in this document. The Site Management Team will ensure that inspections and record keeping are timely and accurate. Inspection & Maintenance Log Forms (attached) should include the date and physical conditions of the structures, depth of sediment in structures, evidence of overtopping or debris blockage and maintenance required of each structure. Records of maintenance will be kept on file on-site and copies of Inspection & Maintenance Log sheets indicating all work and inspections will be available to the Council upon request.

The maintenance programme for each of proposed SuDS features is included in tables below.

Table 2. Maintenance programme for soakaways.

SUDS Element	Soakaways	
Maintenance Period	Maintenance Task	Frequency
Regular Maintenance	Inspect for sediment and debris in pre-treatment components and flood of inspection tube or chamber and inside of concrete manhole rings	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)

SuDS Management & Maintenance Strategy

Occasional Maintenance	Remove sediment and debris from pre-treatment components and flood of inspection tube or chamber and insider concrete manhole rings	As required, based on inspections
Remedial Actions	Reconstruct soakaway and/or replace or clean void fill if performance deteriorates or failure occurs	As required
	Replacement of clogged geotextile(will require reconstruction of soakaway)	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually
	Check soakaway to ensure emptying is occurring	Annually

Table 3. Maintenance programme for filter drains.

SuDS Element	Filter Drains	
Maintenance Period	Maintenance Task	Frequency
Regular Maintenance	Remove litter (including leaf litter) and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
	Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly
	Inspect pre-treatment systems, inlets and perforated pipework for	Six Monthly

SuDS Management & Maintenance Strategy

	silt accumulation, and establish appropriate silt removal frequencies	
	Remove sediment from pre-treatment devices	Six Monthly or as required
Occasional Maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg. NJUG, 2007 or BS 3998:2010)	As required
	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly, or as required
	Clear perforate pipework of blockages	As required

Table 4. Maintenance programme for swales.

SuDS Element	Swales	
Maintenance Period	Maintenance Task	Frequency
Regular Maintenance	Remove litter and debris	Monthly, or as required
	Cut the grass – to retain grass height within specified design range	Monthly (during growing season) or as required
	Manage other vegetation and remove nuisance plants	Monthly at start, then as required
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect infiltration surfaces for ponding, compaction, silt	Monthly, or when required

SuDS Management & Maintenance Strategy

	accumulation, record areas where water is ponding for > 48 hours	
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect inlets and facility surface for silt accumulation, establish appropriate silt removal frequencies	Half yearly
Occasional Maintenance	Reseed areas of poor vegetation growth; alter plant types to better suit conditions, if required	As required or if bare soil is exposed over > 10% of the filter strip area
Remedial Actions	Repair erosion or other damage by re-turfing or reseed	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

SuDS Management & Maintenance Strategy

Table 5. Maintenance programme for detention basins.

SUDS Element	Detention Basin	
Maintenance Period	Maintenance Task	Frequency
Regular Maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass – for spillways and access routes	Monthly (during growing season), or as required
	Cut grass - meadow grass in and around basin	Half yearly (spring, before nesting season, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets, outlets, and overflows for blockages, and clear is required	Monthly
	Inspect banksides, structures, pipework etc. for evidence of physical damage	Monthly
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies	Monthly (for first year), then annually or as required
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before start of growing season	Annually
	Remove sediment from inlets, outlets and forebays	Annually (or as required)
	Manage wetland plants in outlet pool- where provided	Annually

SuDS Management & Maintenance Strategy

Occasional Maintenance	Reseed areas of poor vegetation growth	As required
	Prune and trim any trees and remove cuttings	Every 2 years, or as required
	Remove sediment from inlets, outlets, forebay and main basin when required	Every 5 years, or as required (likely to be minimal requirements where effective upstream source control is provided)
Remedial Actions	Repair erosion or other damage by reseedling or returfing	As required
	Realignment of rip-rap	As required
	Repair/rehabilitation of inlets, outlets and overflows	As required
	Relevel uneven levels and reinstate design levels	As required

SuDS Management & Maintenance Strategy

Table 6. Maintenance programme for wetlands.

SUDS Element	Ponds and Wetlands	
Maintenance Period	Maintenance Task	Frequency
Regular Maintenance	Remove litter and debris	Monthly (or as required)
	Cut the grass – public areas	Monthly (during growing season)
	Cut the meadow grass	Half yearly (spring, before nesting season, and autumn)
	Inspect marginal and bankside vegetation and remove nuisance plants (for first 3 years)	Monthly (at start, then as required)
	Inspect inlets, outlets, banksides, structures, pipework etc. for evidence of blockage and/or physical damage	Monthly
	Inspect water body for signs of poor water quality	Monthly (May-October)
	Inspect silt accumulation rates in any forebay and in main body of the pond and establish appropriate removal frequencies; undertake contamination testing once some build-up has occurred, to inform management and disposal options	Half yearly
	Check any mechanical devices eg. penstocks	Half yearly
	Hand cut submerged and emergent aquatic plants (at minimum of	Annually

SuDS Management & Maintenance Strategy

	0.1m above pond base; include max 25% of pond surface)	
	Remove 25% bank vegetation from water's edge to a minimum of 1m above water level	Annually
	Tidy all dead growth (scrub clearance) before the start of the growing season (Note: tree maintenance is usually part of the overall landscape management contract)	Annually
	Remove sediment from any forebay	Every 1-5 years, or as required
	Remove sediment and planting from one quadrant of main body of ponds without sediment forebay	Every 5 years, or as required
Occasional Maintenance	Remove sediment from the main body of big ponds when pool volume is reduced by 20%	With effective pre-treatment this will only be required rarely, eg every 25-50 years
Remedial Actions	Repair erosion or other damage	As required
	Replant, where necessary	As required
	Aerate pond when signs of eutrophication are detected	As required
	Realign rip-rap or repair other damage	As required
	Repair/rehabilitate inlets, outlets and overflows	As required

SuDS Management & Maintenance Strategy

Regular maintenance should include:

- Inspect channel and gully inlet grates and remove any debris every 6 months or as determined to be reasonable based on experience with the installed systems to ensure that the gullies are working in their intended fashion and that they are free of debris.
- Inspect gully sumps and bottom of drain manholes quarterly; if depth of sediment in sumps exceeds 50% capacity, sediment must be removed. Excessive sediment shall be removed and properly disposed by a licensed drainage cleaning company.
- All litter shall be picked up and removed from the parking areas, external bin store, and soft landscaping.
- Inspect all vegetated areas. Replant bare areas or areas with sparse growth. Trim vegetation every quarter to prevent over-growth and potential blockages of gullies and inlets.
- Inspect external bin stores for spillage and scattered litter must be performed on a regular basis to prevent the spread of pollutants into the surface water drainage network.
- Inspect permeable paving areas for oil spillage on a regular basis to ensure no excessive pollution is entering the subbase and surface water drainage network.
- The inlets, outlet and vents and overflows of SuDS components should be checked annually and after large storms to ensure that they are in good condition and operating as designed. Regular maintenance includes inspection and identification of any areas that are not operating correctly monthly for the first 3 months and then every 6 months after.

SuDS Management & Maintenance Strategy

Winter Maintenance Program

- 2.5 Ensure that drainage structures are not blocked by ice, snow, debris or rubbish during winter months. Inspections and maintenance should be carried out on a more regular basis due to likely adverse weather conditions.

Fertiliser Use

- 2.6 Only slow-release organic low-phosphorous fertilisers will be used in any landscaped areas in order to limit the amount of nutrients that could enter the surface water drainage system.

Operation and Maintenance requirements

- 2.7 Recommendations for the operation and maintenance including typical frequencies are included in **Table 7** below.

SuDS Management & Maintenance Strategy

Table 7: SuDS Operation and Maintenance Requirements

Maintenance Task	Description	Frequency
Regular Maintenance		
Litter management	Pick up all litter in SuDS and hard/soft landscape areas and remove from site.	Monthly.
Grass maintenance	Mow all grass verges, paths and amenity areas at 35-50mm with 75mm max. leaving grass in situ.	As required or monthly.
	Wildflower areas strimmed to 50mm on 3 year rotation (30% each year)	Annually.
Inlets and outlets	Inspect monthly to ensure good conditions and operation. Remove silt from slab aprons and debris. Strim 1m round for access	Monthly and after severe storms.
	Remove manhole covers and ensure water is flowing freely and that exit route is clear. Remove debris and silt.	Annually.
Hard surfaces	Sweep all paving regularly. Sweep and suction brush permeable paving annually in autumn after leaf fall.	Monthly and after severe storms.
	Inspect for evidence of poor operation and silt accumulation.	Quarterly and 48 hours after large storms in first six months
Occasional tasks		
Inspection and control chambers	Annual inspection, remove silt and check free flow	Annually.
Hard surfaces	Stabilise and mow contributing adjacent areas	As required.
	Removal of weeds using glyphosphate applied directly into to the weeds. Use an applicator rather than a spray	Quarterly and after severe storms.
Silt Management	Excavate silt, stack and dry within 10m of the SuDS feature, but outside the design profile where water flows, spread, rake and overseed.	As required.

SuDS Management & Maintenance Strategy

Remedial work		
General inspection	Inspect SuDS system regularly to check for damage or failure. Undertake remedial work as required.	As required.
Hard surfaces	Specialist sweeping, water jetting and vacuuming with oscillating rotating brushes to restore surface infiltration rate.	As required. Every 10 years as a minimum.
	Remedial works to any depressions, rutting or cracked and broken paving elements considered detrimental to the structural performance or a hazard to users. Replace lost jointing material	As required.
Inlets, Outlets, Chambers, Overflows and Vents	Repair damaged components associated with SuDS and pre-treatment structures as required. Damage should be noted during the monitoring regime.	As required.
	Repair physical damage and surrounding stone. Repair and repack stone to design detail as necessary.	As required.

Spillages – Emergency Action

- 2.8 Small spillages of oil and/or waste material should be removed using soak mats, or similar, as recommended by the Environment Agency.
- 2.9 Serious spillages, either by volume or substance (i.e. toxic) should be isolated with the use of soil, turf or fabric. Outlet pipes should be blocked downstream of the spillage using bung(s) made by wrapping soil and/or turf in a plastic sheet or close woven fabric. The Environment Agency should be contacted immediately.

SuDS Management & Maintenance Strategy

Hydrobrakes / Flow Control Devices

- 2.10 Flow control devices have been specified for the surface water outfalls from the Site. As these are situated downstream of the proposed SuDS features it is necessary for these to also be maintained. Hydro-International have been consulted who have provided the following information on the required maintenance regime.
- 2.11 A response was received from Hydro International on 29th March 2018 and is included in **Appendix B**. In summary, the document provided in the response notes the following with regards to maintenance of the system;
- If blockage of the inlet occurs, a pivoting bypass door allows the manhole chamber to be drained
 - Smaller units are supplied with rodding facilities or suppressor pipes as standard
 - All extraneous building materials should be removed from the unit and chamber immediately after construction
 - Once operational, all units should be inspected monthly for the first three months and thereafter six monthly
 - Hose down units to clear, as required

Exclusions

- 2.12 This SuDS Management and Maintenance Strategy does not allow for the maintenance of roof drainage and downpipes or any pump chambers.

Additional Support

- 2.13 In the event of concern or failure of a SuDS feature, the relevant manufacturer should be contacted. Manufacturer details can be found in the Construction Operations and Maintenance (O&M) Manual.

Appendix F - Surface Water Hydraulic Calculations

Ardent Consulting Engineers		Page 1
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	100	PIMP (%)	100
M5-60 (mm)	19.900	Add Flow / Climate Change (%)	0
Ratio R	0.327	Minimum Backdrop Height (m)	1.000
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm at outfall (pipe 1.008)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.000	8-12	0.000	16-20	0.278	24-28	0.718	32-36	0.202	40-44	0.060
4-8	0.000	12-16	0.000	20-24	1.157	28-32	0.785	36-40	0.170		

Total Area Contributing (ha) = 3.370

Total Pipe Volume (m³) = 1016.656

Time Area Diagram at outfall (pipe 9.010)

Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.000	4-8	0.000	8-12	0.000	12-16	0.938	16-20	1.078	20-24	0.245
										24-28	0.065

Total Area Contributing (ha) = 2.327

Total Pipe Volume (m³) = 436.740

Time Area Diagram at outfall (pipe 16.002)

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	0.045	4-8	0.030

Total Area Contributing (ha) = 0.075

Total Pipe Volume (m³) = 1.976

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length	Fall	Slope	I.Area	T.E.	Base	k	n	HYD	DIA	Section	Type	Auto
(m)	(m)	(1:X)	(ha)	(mins)	Flow	(l/s)	(mm)		SECT	(mm)			Design

Ardent Consulting Engineers		Page 2
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Network Design Table for Storm

Network Results Table

PN	Rain	T.C.	US/IL	Σ I	Area	Σ Base	Foul	Add Flow	Vel	Cap	Flow
	(mm/hr)	(mins)	(m)		(ha)	Flow (l/s)	(l/s)	(l/s)	(m/s)	(l/s)	(l/s)

Ardent Consulting Engineers		Page 3
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	34.279	0.424	80.8	0.051	5.00	0.0	0.600		o	225	Pipe/Conduit	
2.000	9.361	0.468	20.0	0.114	3.00	0.0	0.600		o	225	Pipe/Conduit	
1.001	14.933	0.110	135.8	0.044	0.00	0.0	0.600		o	300	Pipe/Conduit	
1.002	45.410	0.297	152.9	0.061	0.00	0.0	0.600		o	300	Pipe/Conduit	
3.000	14.855	0.823	18.0	0.208	8.00	0.0	0.600		o	150	Pipe/Conduit	
1.003	31.888	0.222	143.6	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
1.004	20.445	0.093	219.8	0.119	0.00	0.0	0.600		o	450	Pipe/Conduit	
4.000	23.281	0.233	99.9	0.080	5.00	0.0	0.600		o	225	Pipe/Conduit	
4.001	21.844	0.450	48.5	0.041	0.00	0.0	0.600		o	225	Pipe/Conduit	
5.000	11.176	0.808	13.8	0.180	3.00	0.0	0.600		o	150	Pipe/Conduit	
4.002	37.315	1.388	26.9	0.203	0.00	0.0	0.600		o	225	Pipe/Conduit	
1.005	63.039	0.421	149.7	0.212	0.00	0.0	0.600		o	525	Pipe/Conduit	
6.000	49.722	1.100	45.2	0.088	5.00	0.0		0.045	3 \=/	300	1:3 Swale	
6.001	14.156	0.200	70.8	0.000	0.00	0.0		0.045	3 \=/	300	1:3 Swale	
6.002	51.749	0.200	258.7	0.000	0.00	0.0		0.045	3 \=/	300	1:3 Swale	
6.003	79.428	2.842	27.9	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	50.00	5.39	16.850	0.051	0.0	0.0	0.0	1.46	57.9	6.9
2.000	50.00	8.05	17.275	0.114	0.0	0.0	0.0	2.94	116.9	15.4
1.001	50.00	8.24	16.351	0.209	0.0	0.0	0.0	1.35	95.3	28.3
1.002	50.00	8.83	16.241	0.270	0.0	0.0	0.0	1.27	89.7	36.6
3.000	50.00	8.10	16.842	0.208	0.0	0.0	0.0	2.38	42.1	28.2
1.003	50.00	9.24	15.944	0.478	0.0	0.0	0.0	1.31	92.6	64.7
1.004	50.00	9.49	15.572	0.597	0.0	0.0	0.0	1.37	217.4	80.8
4.000	50.00	5.30	17.700	0.080	0.0	0.0	0.0	1.31	52.0	10.8
4.001	50.00	5.49	17.467	0.121	0.0	0.0	0.0	1.88	74.8	16.4
5.000	50.00	8.07	17.900	0.180	0.0	0.0	0.0	2.72	48.1	24.4
4.002	50.00	8.31	17.017	0.504	0.0	0.0	0.0	2.53	100.7	68.2
1.005	50.00	10.06	15.404	1.313	0.0	0.0	0.0	1.83	395.8	177.8
6.000	50.00	6.25	19.700	0.088	0.0	0.0	0.0	0.56	74.7	11.9
6.001	50.00	6.69	18.600	0.088	0.0	0.0	0.0	0.53	59.7	11.9
6.002	50.00	9.80	18.400	0.088	0.0	0.0	0.0	0.28	31.2	11.9
6.003	50.00	10.24	18.050	0.088	0.0	0.0	0.0	2.99	211.0	11.9

Ardent Consulting Engineers		Page 4
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section	Type	Auto Design
1.006	36.697	0.242	151.6	0.125	0.00	0.0	0.600		o	525	Pipe/Conduit		
1.007	19.760	0.350	56.5	0.000	0.00	0.0	0.600		o	525	Pipe/Conduit		
7.000	56.144	0.146	384.5	0.149	5.00	0.0		0.045	3 \=/	300	1:3	Swale	
7.001	26.603	0.177	150.3	0.177	0.00	0.0		0.045	o	225	Pipe/Conduit		
7.002	59.778	0.153	390.7	0.807	0.00	0.0		0.045	3 \=/	300	1:3	Swale	
8.000	50.372	0.175	287.8	0.096	5.00	0.0		0.045	3 \=/	300	1:3	Swale	
8.001	13.113	0.044	300.0	0.106	0.00	0.0		0.045	3 \=/	300	1:3	Swale	
8.002	51.797	0.172	301.1	0.027	0.00	0.0		0.045	3 \=/	300	1:3	Swale	
8.003	11.976	0.040	299.4	0.035	0.00	0.0		0.045	o	300	Pipe/Conduit		
8.004	14.660	0.049	299.2	0.013	0.00	0.0		0.045	o	300	Pipe/Conduit		
8.005	61.950	0.207	299.3	0.057	0.00	0.0		0.045	o	300	Pipe/Conduit		
8.006	11.035	0.037	298.2	0.035	0.00	0.0		0.045	o	300	Pipe/Conduit		
8.007	43.608	0.720	60.6	0.057	0.00	0.0		0.045	3 \=/	300	1:3	Swale	
7.003	18.457	0.062	297.7	0.000	0.00	0.0		0.045	3 \=/	300	1:3	Swale	
7.004	44.142	0.147	300.3	0.000	0.00	0.0		0.045	3 \=/	300	1:3	Swale	
1.008	29.531	0.006	4921.8	0.285	0.00	0.0		0.045	o	100	Pipe/Conduit		
9.000	5.813	0.058	100.2	0.071	8.00	0.0		0.045	o	225	Pipe/Conduit		
9.001	32.904	0.411	80.1	0.108	0.00	0.0	0.600		o	225	Pipe/Conduit		
9.002	26.513	0.265	100.0	0.141	0.00	0.0	0.600		o	300	Pipe/Conduit		

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.006	50.00	10.58	14.983	1.526	0.0	0.0	0.0	1.82	393.3	206.6
1.007	50.00	10.69	14.741	1.526	0.0	0.0	0.0	2.99	646.3	206.6
7.000	50.00	9.11	16.800	0.149	0.0	0.0	0.0	0.23	25.6	20.2
7.001	50.00	10.77	16.654	0.326	0.0	0.0	0.0	0.27	10.6	44.1
7.002	50.00	15.18	16.477	1.133	0.0	0.0	0.0	0.23	25.4	153.4
8.000	50.00	8.19	17.875	0.096	0.0	0.0	0.0	0.26	29.6	13.0
8.001	50.00	9.04	17.700	0.202	0.0	0.0	0.0	0.26	29.0	27.4
8.002	50.00	12.39	17.656	0.229	0.0	0.0	0.0	0.26	29.0	31.0
8.003	50.00	13.27	17.484	0.264	0.0	0.0	0.0	0.23	16.1	35.7
8.004	50.00	14.33	17.444	0.277	0.0	0.0	0.0	0.23	16.2	37.5
8.005	50.00	18.85	17.395	0.334	0.0	0.0	0.0	0.23	16.1	45.2
8.006	50.00	19.66	17.188	0.369	0.0	0.0	0.0	0.23	16.2	50.0
8.007	50.00	20.92	17.151	0.426	0.0	0.0	0.0	0.57	64.6	57.7
7.003	50.00	22.11	16.324	1.559	0.0	0.0	0.0	0.26	29.1	211.1
7.004	50.00	24.97	16.262	1.559	0.0	0.0	0.0	0.26	29.0	211.1
1.008	50.00	30.00	14.241	3.370	0.0	0.0	0.0	0.03	0.2	456.3
9.000	50.00	8.30	16.500	0.071	0.0	0.0	0.0	0.33	13.0	9.6
9.001	50.00	8.67	16.442	0.179	0.0	0.0	0.0	1.46	58.2	24.2
9.002	50.00	8.95	15.956	0.320	0.0	0.0	0.0	1.57	111.1	43.3

Ardent Consulting Engineers		Page 5
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
9.003	25.515	0.255	100.1	0.094	0.00	0.0	0.600		o	300	Pipe/Conduit	
9.004	47.658	1.131	42.1	0.170	0.00	0.0	0.600		o	300	Pipe/Conduit	
10.000	7.979	0.804	9.9	0.268	8.00	0.0	0.600		o	225	Pipe/Conduit	
9.005	21.581	0.140	154.2	0.068	0.00	0.0	0.600		o	375	Pipe/Conduit	
11.000	33.362	0.985	33.9	0.136	5.00	0.0	0.600		o	225	Pipe/Conduit	
9.006	52.598	0.351	149.9	0.000	0.00	0.0	0.600		o	375	Pipe/Conduit	
9.007	14.345	0.143	100.3	0.052	0.00	0.0	0.600		o	375	Pipe/Conduit	
9.008	54.403	0.907	60.0	0.017	0.00	0.0	0.600		o	450	Pipe/Conduit	
12.000	13.929	0.139	100.2	0.089	8.00	0.0	0.600		o	225	Pipe/Conduit	
12.001	43.716	0.437	100.0	0.073	0.00	0.0	0.600		o	225	Pipe/Conduit	
12.002	14.860	0.224	66.3	0.000	0.00	0.0	0.600		o	300	Pipe/Conduit	
13.000	10.049	0.502	20.0	0.163	8.00	0.0	0.600		o	225	Pipe/Conduit	
12.003	10.887	0.109	99.9	0.043	0.00	0.0	0.600		o	300	Pipe/Conduit	
12.004	27.947	0.279	100.2	0.049	0.00	0.0	0.600		o	300	Pipe/Conduit	
12.005	13.507	0.136	99.3	0.075	0.00	0.0	0.600		o	300	Pipe/Conduit	
12.006	39.151	1.119	35.0	0.076	0.00	0.0	0.600		o	300	Pipe/Conduit	
9.009	34.779	0.529	65.7	0.141	0.00	0.0	0.600		o	450	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
9.003	50.00	9.22	15.691	0.414	0.0	0.0	0.0	1.57	111.1	56.1
9.004	50.00	9.55	15.436	0.584	0.0	0.0	0.0	2.43	171.7	79.1
10.000	50.00	8.03	15.259	0.268	0.0	0.0	0.0	4.18	166.1	36.3
9.005	50.00	9.80	14.305	0.920	0.0	0.0	0.0	1.46	160.9	124.6
11.000	50.00	5.25	15.300	0.136	0.0	0.0	0.0	2.26	89.7	18.4
9.006	50.00	10.39	14.165	1.056	0.0	0.0	0.0	1.48	163.2	143.0
9.007	50.00	10.52	13.814	1.108	0.0	0.0	0.0	1.81	199.8	150.0
9.008	50.00	10.87	13.596	1.125	0.0	0.0	0.0	2.63	418.1	152.3
12.000	50.00	8.18	15.800	0.089	0.0	0.0	0.0	1.31	51.9	12.1
12.001	50.00	8.74	15.661	0.162	0.0	0.0	0.0	1.31	52.0	21.9
12.002	50.00	8.86	15.149	0.162	0.0	0.0	0.0	1.93	136.7	21.9
13.000	50.00	8.06	15.502	0.163	0.0	0.0	0.0	2.94	116.8	22.1
12.003	50.00	8.98	14.925	0.368	0.0	0.0	0.0	1.57	111.2	49.8
12.004	50.00	9.28	14.816	0.417	0.0	0.0	0.0	1.57	111.0	56.5
12.005	50.00	9.42	14.537	0.492	0.0	0.0	0.0	1.58	111.5	66.6
12.006	50.00	9.66	14.401	0.568	0.0	0.0	0.0	2.67	188.5	76.9
9.009	50.00	11.10	12.689	1.834	0.0	0.0	0.0	2.51	399.3	248.3

Ardent Consulting Engineers		Page 6
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Network Design Table for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	n	HYD SECT	DIA (mm)	Section Type	Auto Design
14.000	77.115	0.370	208.4	0.135	5.00	0.0	0.045	3	\=/	600	1:3 Swale	
14.001	11.944	0.130	91.9	0.000	0.00	0.0	0.045	3	\=/	600	1:3 Swale	
14.002	55.856	0.700	79.8	0.068	0.00	0.0	0.045	3	\=/	600	1:3 Swale	
14.003	60.038	0.600	100.1	0.064	0.00	0.0	0.045	3	\=/	600	1:3 Swale	
14.004	28.071	0.400	70.2	0.000	0.00	0.0	0.045	3	\=/	600	1:3 Swale	
14.005	9.141	0.226	40.4	0.000	0.00	0.0	0.045	3	\=/	600	1:3 Swale	
15.000	40.405	0.500	80.8	0.076	5.00	0.0	0.045	3	\=/	300	1:3 Swale	
15.001	16.752	0.034	492.7	0.000	0.00	0.0	0.045	3	\=/	300	1:3 Swale	
9.010	18.167	0.003	6055.8	0.150	0.00	0.0	0.045		o	100	Pipe/Conduit	
16.000	28.529	0.475	60.1	0.036	5.00	0.0	0.045		o	225	Pipe/Conduit	
16.001	19.798	0.925	21.4	0.039	0.00	0.0	0.045		o	225	Pipe/Conduit	
16.002	6.933	0.166	41.8	0.000	0.00	0.0	0.045		o	100	Pipe/Conduit	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
14.000	50.00	8.83	16.600	0.135	0.0	0.0	0.0	0.34	52.8	18.3
14.001	50.00	9.23	16.230	0.135	0.0	0.0	0.0	0.51	79.6	18.3
14.002	50.00	10.94	16.100	0.203	0.0	0.0	0.0	0.54	85.4	27.5
14.003	50.00	13.01	15.400	0.267	0.0	0.0	0.0	0.48	76.2	36.2
14.004	50.00	13.82	14.800	0.267	0.0	0.0	0.0	0.58	91.0	36.2
14.005	50.00	14.02	14.400	0.267	0.0	0.0	0.0	0.76	119.9	36.2
15.000	50.00	6.36	14.600	0.076	0.0	0.0	0.0	0.50	55.9	10.3
15.001	50.00	7.74	14.100	0.076	0.0	0.0	0.0	0.20	22.6	10.3
9.010	50.00	26.42	12.010	2.327	0.0	0.0	0.0	0.02	0.2	315.1
16.000	50.00	6.13	18.400	0.036	0.0	0.0	0.0	0.42	16.7	4.9
16.001	50.00	6.60	17.925	0.075	0.0	0.0	0.0	0.71	28.0	10.2
16.002	50.00	6.99	17.000	0.075	0.0	0.0	0.0	0.29	2.3	10.2

Manhole Schedules for Storm											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
1.0	18.163	1.313	Open Manhole	1200	1.000	16.850	225				
2.0	18.654	1.379	Open Manhole	1200	2.000	17.275	225				
1.1	18.477	2.126	Open Manhole	1200	1.001	16.351	300	1.000	16.426	225	
								2.000	16.807	225	381
1.2	18.409	2.168	Open Manhole	1200	1.002	16.241	300	1.001	16.241	300	
3.0	18.750	1.918	Open Manhole	1200	3.000	16.842	150				
1.3	18.697	2.753	Open Manhole	1200	1.003	15.944	300	1.002	15.944	300	
								3.000	16.019	150	
1.4	18.581	3.009	Open Manhole	1350	1.004	15.572	450	1.003	15.722	300	
4.0	18.000	1.300	Open Manhole	1200	4.000	17.700	225				
4.1	18.079	1.612	Open Manhole	1200	4.001	17.467	225	4.000	17.467	225	
5.0	18.216	1.316	Open Manhole	1200	5.000	17.900	150				
4.2	18.161	2.144	Open Manhole	1200	4.002	17.017	225	4.001	17.017	225	
								5.000	17.092	150	
1.5	18.744	3.340	Open Manhole	1500	1.005	15.404	525	1.004	15.479	450	
								4.002	15.629	225	
W6.0	20.100	0.400	Junction		6.000	18.700	300				
W6.1	18.100	0.500	Junction		6.001	18.600	300	6.000	18.600	300	
W6.2	18.000	0.600	Junction		6.002	18.400	300	6.001	18.400	300	
W6.3	18.426	0.376	Junction	0	6.003	18.050	300	6.002	18.200	300	
1.6	17.981	2.998	Open Manhole	1500	1.006	14.983	525	1.005	14.983	525	
								6.003	15.208	300	
1.7	18.000	3.259	Open Manhole	1500	1.007	14.741	525	1.006	14.741	525	
W7.0	17.600	0.800	Junction		7.000	16.800	300				
W7.1	17.650	0.996	Junction		7.001	16.654	225	7.000	16.654	300	
W7.2	17.700	1.223	Junction		7.002	16.477	300	7.001	16.477	225	
W8.0	18.200	0.325	Junction		8.000	17.875	300				
W8.1	18.450	0.750	Junction		8.001	17.700	300	8.000	17.700	300	
W8.2a	18.450	0.794	Junction	0	8.002	17.656	300	8.001	17.656	300	
W8.2	18.400	0.916	Open Manhole	1200	8.003	17.484	300	8.002	17.484	300	
W8.3	18.500	1.056	Open Manhole	1200	8.004	17.444	300	8.003	17.444	300	
W8.4	18.750	1.355	Open Manhole	1200	8.005	17.395	300	8.004	17.395	300	
W8.5	18.000	0.812	Open Manhole		8.006	17.188	300	8.005	17.188	300	
W8.6	17.700	0.549	Junction		8.007	17.151	300	8.006	17.151	300	
W7.3	17.500	1.176	Junction		7.003	16.324	300	7.002	16.324	300	
								8.007	16.431	300	107
W7.4	17.300	1.038	Junction	0	7.004	16.262	300	7.003	16.262	300	
POND EAST	16.700	2.459	Open Manhole	10000	1.008	14.241	100	1.007	14.391	525	575
								7.004	16.115	300	1924
	16.700	2.465	Open Manhole	0		OUTFALL		1.008	14.235	100	
9.0	18.000	1.500	Open Manhole	1200	9.000	16.500	225				
9.1	17.798	1.356	Open Manhole	1200	9.001	16.442	225	9.000	16.442	225	
9.2	17.509	1.553	Open Manhole	1200	9.002	15.956	300	9.001	16.031	225	

Manhole Schedules for Storm											
MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam., L*W (mm)	PN	Pipe Out Invert Level (m)	Diameter (mm)	PN	Pipes In Invert Level (m)	Diameter (mm)	Backdrop (mm)
9.3	17.228	1.537	Open Manhole	1200	9.003	15.691	300	9.002	15.691	300	
9.4	17.000	1.564	Open Manhole	1200	9.004	15.436	300	9.003	15.436	300	
10.0	17.269	2.010	Open Manhole	1200	10.000	15.259	225				
9.5	17.100	2.795	Open Manhole	1500	9.005	14.305	375	9.004	14.305	300	
								10.000	14.455	225	
11.0	16.761	1.461	Open Manhole	1200	11.000	15.360	225				
9.6	16.845	2.680	Open Manhole	1500	9.006	14.165	375	9.005	14.165	375	
								11.000	14.315	225	
9.7	16.274	2.460	Open Manhole	1500	9.007	13.814	375	9.006	13.814	375	
9.8	16.100	2.504	Open Manhole	1500	9.008	13.596	450	9.007	13.671	375	
12.0	17.203	1.403	Open Manhole	1200	12.000	15.800	225				
12.1	16.863	1.202	Open Manhole	1200	12.001	15.661	225	12.000	15.661	225	
12.2	17.257	2.108	Open Manhole	1200	12.002	15.149	300	12.001	15.224	225	
13.0	17.360	1.858	Open Manhole	1200	13.000	15.502	225				
12.3	17.113	2.188	Open Manhole	1200	12.003	14.925	300	12.002	14.925	300	
								13.000	15.000	225	
12.4	16.366	2.150	Open Manhole	1200	12.004	14.816	300	12.003	14.816	300	
12.5	16.921	1.784	Open Manhole	1200	12.005	14.537	300	12.004	14.537	300	
12.6	16.027	1.626	Open Manhole	1200	12.006	14.401	300	12.005	14.401	300	
9.9	15.600	2.911	Open Manhole	1500	9.009	12.689	450	9.008	12.689	450	
								12.006	13.282	300	443
W14.0	17.100	0.500	Junction		14.000	16.600	600				
W14.1	16.860	0.630	Junction		14.001	16.230	600	14.000	16.230	600	
W14.2	16.700	0.600	Junction		14.002	16.100	600	14.001	16.100	600	
W14.3	16.000	0.600	Junction		14.003	15.400	600	14.002	15.400	600	
W14.4	15.400	0.600	Junction		14.004	14.800	600	14.003	14.800	600	
W14.5	15.000	0.600	Junction	0	14.005	14.400	600	14.004	14.400	600	
W15.0	15.200	0.600	Junction		15.000	14.600	300				
W15.1	14.700	0.600	Junction	0	15.001	14.100	300	15.000	14.100	300	
POND WEST	14.500	2.490	Open Manhole	1800	9.010	12.010	100	9.009	12.160	450	500
								14.005	14.174	600	2214
								15.001	14.066	300	2106
	19.300	7.293	Open Manhole	0		OUTFALL		9.010	12.007	100	
63	19.780	1.380	Open Manhole	1200	16.000	18.400	225				
64	19.300	1.375	Open Manhole	1200	16.001	17.925	225	16.000	17.925	225	
65	19.800	2.800	Open Manhole	1200	16.002	17.000	100	16.001	17.000	225	
	19.500	2.666	Open Manhole	0		OUTFALL		16.002	16.834	100	

Ardent Consulting Engineers		Page 9
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	o	225	1.0	18.163	16.850	1.088	Open Manhole	1200
2.000	o	225	2.0	18.654	17.275	1.154	Open Manhole	1200
1.001	o	300	1.1	18.477	16.351	1.826	Open Manhole	1200
1.002	o	300	1.2	18.409	16.241	1.868	Open Manhole	1200
3.000	o	150	3.0	18.760	16.842	1.768	Open Manhole	1200
1.003	o	300	1.3	18.697	15.944	2.453	Open Manhole	1200
1.004	o	450	1.4	18.581	15.572	2.559	Open Manhole	1350
4.000	o	225	4.0	19.000	17.700	1.075	Open Manhole	1200
4.001	o	225	4.1	19.079	17.467	1.387	Open Manhole	1200
5.000	o	150	5.0	19.216	17.900	1.166	Open Manhole	1200
4.002	o	225	4.2	19.161	17.017	1.919	Open Manhole	1200
1.005	o	525	1.5	18.744	15.404	2.815	Open Manhole	1500
6.000	3 \=/	300	W6.0	19.100	19.700	0.250	Junction	
6.001	3 \=/	300	W6.1	19.100	18.600	0.350	Junction	
6.002	3 \=/	300	W6.2	19.000	18.400	0.450	Junction	

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	34.279	80.8	1.1	18.477	16.426	1.826	Open Manhole	1200
2.000	9.361	20.0	1.1	18.477	16.807	1.445	Open Manhole	1200
1.001	14.933	135.8	1.2	18.409	16.241	1.868	Open Manhole	1200
1.002	45.410	152.9	1.3	18.697	15.944	2.453	Open Manhole	1200
3.000	14.855	18.0	1.3	18.697	16.019	2.528	Open Manhole	1200
1.003	31.888	143.6	1.4	18.581	15.722	2.559	Open Manhole	1350
1.004	20.445	219.8	1.5	18.744	15.479	2.815	Open Manhole	1500
4.000	23.281	99.9	4.1	19.079	17.467	1.387	Open Manhole	1200
4.001	21.844	48.5	4.2	19.161	17.017	1.919	Open Manhole	1200
5.000	11.176	13.8	4.2	19.161	17.092	1.919	Open Manhole	1200
4.002	37.315	26.9	1.5	18.744	15.629	2.890	Open Manhole	1500
1.005	63.039	149.7	1.6	17.981	14.983	2.473	Open Manhole	1500
6.000	49.722	45.2	W6.1	19.100	18.600	0.350	Junction	
6.001	14.156	70.8	W6.2	19.000	18.400	0.450	Junction	
6.002	51.749	258.7	W6.3	18.426	18.200	0.076	Junction	

Ardent Consulting Engineers		Page 10
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
6.003	o	300	W6.3	18.426	18.050	0.076	Junction	
1.006	o	525	1.6	17.981	14.983	2.473	Open Manhole	1500
1.007	o	525	1.7	18.000	14.741	2.734	Open Manhole	1500
7.000	3 \=/	300	W7.0	17.600	16.800	0.650	Junction	
7.001	o	225	W7.1	17.650	16.654	0.771	Junction	
7.002	3 \=/	300	W7.2	17.700	16.477	1.073	Junction	
8.000	3 \=/	300	W8.0	18.200	17.875	0.175	Junction	
8.001	3 \=/	300	W8.1	18.450	17.700	0.600	Junction	
8.002	3 \=/	300	W8.2a	18.450	17.656	0.644	Junction	
8.003	o	300	W8.2	18.400	17.484	0.616	Open Manhole	1200
8.004	o	300	W8.3	18.500	17.444	0.756	Open Manhole	1200
8.005	o	300	W8.4	18.750	17.395	1.055	Open Manhole	1200
8.006	o	300	W8.5	18.000	17.188	0.512	Open Manhole	1200
8.007	3 \=/	300	W8.6	17.700	17.151	0.399	Junction	
7.003	3 \=/	300	W7.3	17.500	16.324	1.026	Junction	
7.004	3 \=/	300	W7.4	17.300	16.262	0.888	Junction	
1.008	o	100	POND EAST	16.700	14.241	2.359	Open Manhole	10000
9.000	o	225	9.0	18.000	16.300	1.275	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
6.003	79.428	27.9	1.6	17.981	15.208	2.473	Open Manhole	1500
1.006	36.697	151.6	1.7	18.000	14.741	2.734	Open Manhole	1500
1.007	19.760	56.5	POND EAST	16.700	14.391	1.784	Open Manhole	10000
7.000	56.144	384.5	W7.1	17.600	16.654	0.846	Junction	
7.001	26.603	150.3	W7.2	17.700	16.477	0.399	Junction	
7.002	59.778	390.7	W7.3	17.500	16.324	1.026	Junction	
8.000	50.372	287.8	W8.1	18.450	17.700	0.600	Junction	
8.001	13.113	300.0	W8.2a	18.450	17.656	0.644	Junction	
8.002	51.797	301.1	W8.2	18.400	17.484	0.766	Open Manhole	1200
8.003	11.976	299.4	W8.3	18.500	17.444	0.756	Open Manhole	1200
8.004	14.660	299.2	W8.4	18.750	17.395	1.055	Open Manhole	1200
8.005	61.950	299.3	W8.5	18.000	17.188	0.512	Open Manhole	1200
8.006	11.035	298.2	W8.6	17.700	17.151	0.249	Junction	
8.007	43.608	60.6	W7.3	17.500	16.431	0.919	Junction	
7.003	18.457	297.7	W7.4	17.300	16.262	0.888	Junction	
7.004	44.142	300.3	POND EAST	16.700	16.115	0.435	Open Manhole	10000
1.008	29.531	4921.8		16.700	14.235	2.365	Open Manhole	0
9.000	5.813	100.2	9.1	17.795	16.442	1.131	Open Manhole	1200

Ardent Consulting Engineers		Page 11
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
9.001	o	225	9.1	17.798	16.442	1.131	Open Manhole	1200
9.002	o	300	9.2	17.509	15.956	1.253	Open Manhole	1200
9.003	o	300	9.3	17.228	15.691	1.237	Open Manhole	1200
9.004	o	300	9.4	17.000	15.436	1.264	Open Manhole	1200
10.000	o	225	10.0	17.269	15.259	1.785	Open Manhole	1200
9.005	o	375	9.5	17.100	14.305	2.420	Open Manhole	1500
11.000	o	225	11.0	16.761	15.300	1.236	Open Manhole	1200
9.006	o	375	9.6	16.845	14.165	2.305	Open Manhole	1500
9.007	o	375	9.7	16.274	13.814	2.085	Open Manhole	1500
9.008	o	450	9.8	16.100	13.596	2.054	Open Manhole	1500
12.000	o	225	12.0	17.203	15.300	1.178	Open Manhole	1200
12.001	o	225	12.1	16.863	15.661	0.977	Open Manhole	1200
12.002	o	300	12.2	17.257	15.149	1.808	Open Manhole	1200
13.000	o	225	13.0	17.360	15.502	1.633	Open Manhole	1200
12.003	o	300	12.3	17.113	14.925	1.888	Open Manhole	1200
12.004	o	300	12.4	16.966	14.816	1.850	Open Manhole	1200
12.005	o	300	12.5	16.321	14.537	1.484	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
9.001	32.904	80.1	9.2	17.509	16.031	1.253	Open Manhole	1200
9.002	26.513	100.0	9.3	17.228	15.691	1.237	Open Manhole	1200
9.003	25.515	100.1	9.4	17.000	15.436	1.264	Open Manhole	1200
9.004	47.658	42.1	9.5	17.100	14.305	2.435	Open Manhole	1500
10.000	7.979	9.9	9.5	17.100	14.455	2.420	Open Manhole	1500
9.005	21.581	154.2	9.6	16.845	14.165	2.305	Open Manhole	1500
11.000	33.362	33.9	9.6	16.845	14.315	2.305	Open Manhole	1500
9.006	52.598	149.9	9.7	16.274	13.814	2.085	Open Manhole	1500
9.007	14.345	100.3	9.8	16.100	13.671	2.054	Open Manhole	1500
9.008	54.403	60.0	9.9	15.600	12.689	2.461	Open Manhole	1500
12.000	13.929	100.2	12.1	16.863	15.661	0.977	Open Manhole	1200
12.001	43.716	100.0	12.2	17.257	15.224	1.808	Open Manhole	1200
12.002	14.860	66.3	12.3	17.113	14.925	1.888	Open Manhole	1200
13.000	10.049	20.0	12.3	17.113	15.000	1.888	Open Manhole	1200
12.003	10.887	99.9	12.4	16.966	14.816	1.850	Open Manhole	1200
12.004	27.947	100.2	12.5	16.321	14.537	1.484	Open Manhole	1200
12.005	13.507	99.3	12.6	16.027	14.401	1.326	Open Manhole	1200

Ardent Consulting Engineers		Page 12
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
12.006	o	300	12.6	16.027	14.401	1.326	Open Manhole	1200
9.009	o	450	9.9	15.600	12.689	2.461	Open Manhole	1500
14.000	3 \=/	600	W14.0	17.100	16.600	0.350	Junction	
14.001	3 \=/	600	W14.1	16.860	16.230	0.480	Junction	
14.002	3 \=/	600	W14.2	16.700	16.100	0.450	Junction	
14.003	3 \=/	600	W14.3	16.000	15.400	0.450	Junction	
14.004	3 \=/	600	W14.4	15.400	14.800	0.450	Junction	
14.005	3 \=/	600	W14.5	15.000	14.400	0.450	Junction	
15.000	3 \=/	300	W15.0	15.200	14.600	0.450	Junction	
15.001	3 \=/	300	W15.1	14.700	14.100	0.450	Junction	
9.010	o	100	POND WEST	14.500	12.010	2.390	Open Manhole	1800
16.000	o	225	63	19.780	18.400	1.155	Open Manhole	1200
16.001	o	225	64	19.300	17.925	1.150	Open Manhole	1200
16.002	o	100	65	19.800	17.000	2.700	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
12.006	39.151	35.0	9.9	15.600	13.282	2.018	Open Manhole	1500
9.009	34.779	65.7	POND WEST	14.500	12.160	1.890	Open Manhole	1800
14.000	77.115	208.4	W14.1	16.860	16.230	0.480	Junction	
14.001	11.944	91.9	W14.2	16.700	16.100	0.450	Junction	
14.002	55.856	79.8	W14.3	16.000	15.400	0.450	Junction	
14.003	60.038	100.1	W14.4	15.400	14.800	0.450	Junction	
14.004	28.071	70.2	W14.5	15.000	14.400	0.450	Junction	
14.005	9.141	40.4	POND WEST	14.500	14.174	0.176	Open Manhole	1800
15.000	40.405	80.8	W15.1	14.700	14.100	0.450	Junction	
15.001	16.752	492.7	POND WEST	14.500	14.066	0.284	Open Manhole	1800
9.010	18.167	6055.8		19.300	12.007	7.193	Open Manhole	0
16.000	28.529	60.1	64	19.300	17.925	1.150	Open Manhole	1200
16.001	19.798	21.4	65	19.800	17.000	2.575	Open Manhole	1200
16.002	6.933	41.8		19.500	16.834	2.566	Open Manhole	0

Ardent Consulting Engineers		Page 13
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	0.051	0.051	0.051
2.000	-	-	100	0.114	0.114	0.114
1.001	-	-	100	0.044	0.044	0.044
1.002	-	-	100	0.061	0.061	0.061
3.000	-	-	100	0.208	0.208	0.208
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.119	0.119	0.119
4.000	-	-	100	0.080	0.080	0.080
4.001	-	-	100	0.041	0.041	0.041
5.000	-	-	100	0.180	0.180	0.180
4.002	-	-	100	0.203	0.203	0.203
1.005	-	-	100	0.212	0.212	0.212
6.000	-	-	100	0.088	0.088	0.088
6.001	-	-	100	0.000	0.000	0.000
6.002	-	-	100	0.000	0.000	0.000
6.003	-	-	100	0.000	0.000	0.000
1.006	-	-	100	0.125	0.125	0.125
1.007	-	-	100	0.000	0.000	0.000
7.000	-	-	100	0.149	0.149	0.149
7.001	-	-	100	0.177	0.177	0.177
7.002	-	-	100	0.807	0.807	0.807
8.000	-	-	100	0.096	0.096	0.096
8.001	-	-	100	0.106	0.106	0.106
8.002	-	-	100	0.027	0.027	0.027
8.003	-	-	100	0.035	0.035	0.035
8.004	-	-	100	0.013	0.013	0.013
8.005	-	-	100	0.057	0.057	0.057
8.006	-	-	100	0.035	0.035	0.035
8.007	-	-	100	0.057	0.057	0.057
7.003	-	-	100	0.000	0.000	0.000
7.004	-	-	100	0.000	0.000	0.000
1.008	-	-	100	0.285	0.285	0.285
9.000	-	-	100	0.071	0.071	0.071
9.001	-	-	100	0.108	0.108	0.108
9.002	-	-	100	0.141	0.141	0.141
9.003	-	-	100	0.094	0.094	0.094
9.004	-	-	100	0.170	0.170	0.170
10.000	-	-	100	0.268	0.268	0.268
9.005	-	-	100	0.068	0.068	0.068
11.000	-	-	100	0.136	0.136	0.136
9.006	-	-	100	0.000	0.000	0.000
9.007	-	-	100	0.052	0.052	0.052
9.008	-	-	100	0.017	0.017	0.017
12.000	-	-	100	0.089	0.089	0.089
12.001	-	-	100	0.073	0.073	0.073
12.002	-	-	100	0.000	0.000	0.000
13.000	-	-	100	0.163	0.163	0.163
12.003	-	-	100	0.043	0.043	0.043
12.004	-	-	100	0.049	0.049	0.049
12.005	-	-	100	0.075	0.075	0.075
12.006	-	-	100	0.076	0.076	0.076
9.009	-	-	100	0.141	0.141	0.141
14.000	-	-	100	0.135	0.135	0.135
14.001	-	-	100	0.000	0.000	0.000
14.002	-	-	100	0.068	0.068	0.068
14.003	-	-	100	0.064	0.064	0.064
14.004	-	-	100	0.000	0.000	0.000

Ardent Consulting Engineers		Page 14
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
14.005	-	-	100	0.000	0.000	0.000
15.000	-	-	100	0.076	0.076	0.076
15.001	-	-	100	0.000	0.000	0.000
9.010	-	-	100	0.150	0.150	0.150
16.000	-	-	100	0.036	0.036	0.036
16.001	-	-	100	0.039	0.039	0.039
16.002	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				5.772	5.772	5.772

Ardent Consulting Engineers		Page 15
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
1.000	1.0	225	1.088	1.826	Unclassified	1200	0	1.088	Unclassified
2.000	2.0	225	1.154	1.445	Unclassified	1200	0	1.154	Unclassified
1.001	1.1	300	1.826	1.868	Unclassified	1200	0	1.826	Unclassified
1.002	1.2	300	1.868	2.453	Unclassified	1200	0	1.868	Unclassified
3.000	3.0	150	1.768	2.528	Unclassified	1200	0	1.768	Unclassified
1.003	1.3	300	2.453	2.559	Unclassified	1200	0	2.453	Unclassified
1.004	1.4	450	2.559	2.815	Unclassified	1350	0	2.559	Unclassified
4.000	4.0	225	1.075	1.387	Unclassified	1200	0	1.075	Unclassified
4.001	4.1	225	1.387	1.919	Unclassified	1200	0	1.387	Unclassified
5.000	5.0	150	1.166	1.919	Unclassified	1200	0	1.166	Unclassified
4.002	4.2	225	1.919	2.890	Unclassified	1200	0	1.919	Unclassified
1.005	1.5	525	2.473	2.815	Unclassified	1500	0	2.815	Unclassified
6.000	W6.0	300	0.250	0.350	Unclassified				Junction
6.001	W6.1	300	0.350	0.450	Unclassified				Junction
6.002	W6.2	300	0.076	0.450	Unclassified				Junction
6.003	W6.3	300	0.076	2.473	Unclassified				Junction
1.006	1.6	525	2.473	2.734	Unclassified	1500	0	2.473	Unclassified
1.007	1.7	525	1.784	2.734	Unclassified	1500	0	2.734	Unclassified
7.000	W7.0	300	0.650	0.846	Unclassified				Junction
7.001	W7.1	225	0.771	0.998	Unclassified				Junction
7.002	W7.2	300	1.026	1.073	Unclassified				Junction
8.000	W8.0	300	0.175	0.600	Unclassified				Junction
8.001	W8.1	300	0.600	0.644	Unclassified				Junction
8.002	W8.2a	300	0.644	0.766	Unclassified				Junction
8.003	W8.2	300	0.616	0.756	Unclassified	1200	0	0.616	Unclassified
8.004	W8.3	300	0.756	1.055	Unclassified	1200	0	0.756	Unclassified
8.005	W8.4	300	0.512	1.055	Unclassified	1200	0	1.055	Unclassified
8.006	W8.5	300	0.249	0.512	Unclassified	1200	0	0.512	Unclassified
8.007	W8.6	300	0.399	0.919	Unclassified				Junction
7.003	W7.3	300	0.888	1.026	Unclassified				Junction
7.004	W7.4	300	0.435	0.888	Unclassified				Junction
1.008	POND EAST	100	2.359	2.365	Unclassified	10000	0	2.359	Unclassified
9.000	9.0	225	1.131	1.275	Unclassified	1200	0	1.275	Unclassified
9.001	9.1	225	1.131	1.253	Unclassified	1200	0	1.131	Unclassified
9.002	9.2	300	1.237	1.253	Unclassified	1200	0	1.253	Unclassified
9.003	9.3	300	1.237	1.264	Unclassified	1200	0	1.237	Unclassified
9.004	9.4	300	1.264	2.495	Unclassified	1200	0	1.264	Unclassified
10.000	10.0	225	1.785	2.420	Unclassified	1200	0	1.785	Unclassified
9.005	9.5	375	2.305	2.420	Unclassified	1500	0	2.420	Unclassified
11.000	11.0	225	1.236	2.305	Unclassified	1200	0	1.236	Unclassified
9.006	9.6	375	2.085	2.305	Unclassified	1500	0	2.305	Unclassified
9.007	9.7	375	2.054	2.085	Unclassified	1500	0	2.085	Unclassified
9.008	9.8	450	2.054	2.461	Unclassified	1500	0	2.054	Unclassified
12.000	12.0	225	0.977	1.178	Unclassified	1200	0	1.178	Unclassified
12.001	12.1	225	0.977	1.808	Unclassified	1200	0	0.977	Unclassified
12.002	12.2	300	1.808	1.888	Unclassified	1200	0	1.808	Unclassified
13.000	13.0	225	1.633	1.888	Unclassified	1200	0	1.633	Unclassified
12.003	12.3	300	1.850	1.888	Unclassified	1200	0	1.888	Unclassified
12.004	12.4	300	1.484	1.850	Unclassified	1200	0	1.850	Unclassified
12.005	12.5	300	1.326	1.484	Unclassified	1200	0	1.484	Unclassified
12.006	12.6	300	1.326	2.018	Unclassified	1200	0	1.326	Unclassified
9.009	9.9	450	1.890	2.461	Unclassified	1500	0	2.461	Unclassified
14.000	W14.0	600	0.350	0.480	Unclassified				Junction
14.001	W14.1	600	0.450	0.480	Unclassified				Junction
14.002	W14.2	600	0.450	0.450	Unclassified				Junction

Ardent Consulting Engineers		Page 16
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
14.003	W14.3	600	0.450	0.450	Unclassified				Junction
14.004	W14.4	600	0.450	0.450	Unclassified				Junction
14.005	W14.5	600	0.176	0.450	Unclassified				Junction
15.000	W15.0	300	0.450	0.450	Unclassified				Junction
15.001	W15.1	300	0.284	0.450	Unclassified				Junction
9.010	POND WEST	100	2.390	7.193	Unclassified	1800	0	2.390	Unclassified
16.000	63	225	1.150	1.155	Unclassified	1200	0	1.155	Unclassified
16.001	64	225	1.150	2.575	Unclassified	1200	0	1.150	Unclassified
16.002	65	100	2.566	2.700	Unclassified	1200	0	2.700	Unclassified

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
------------------------	-----------------	-----------------	-----------------	------------------------	-------------	-----------

1.00816.70014.2350.00000

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
------------------------	-----------------	-----------------	-----------------	------------------------	-------------	-----------

9.01019.30012.0070.00000

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
------------------------	-----------------	-----------------	-----------------	------------------------	-------------	-----------

16.00219.50016.8340.00000

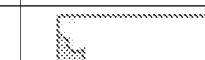
Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0Number of Offline Controls 0Number of Time/Area Diagrams 0
Number of Online Controls 3Number of Storage Structures 18Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.900	Storm Duration (mins)	30
Ratio R	0.327		

Ardent Consulting Engineers		Page 17
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Online Controls for Storm

Orifice Manhole: POND EAST, DS/PN: 1.008, Volume (m³): 334.9

Diameter (m) 0.001 Discharge Coefficient 0.600 Invert Level (m) 14.391

Orifice Manhole: POND WEST, DS/PN: 9.010, Volume (m³): 43.4

Diameter (m) 0.001 Discharge Coefficient 0.600 Invert Level (m) 12.010

Orifice Manhole: 65, DS/PN: 16.002, Volume (m³): 3.9

Diameter (m) 0.001 Discharge Coefficient 0.600 Invert Level (m) 17.000

Ardent Consulting Engineers		Page 18
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Storage Structures for Storm

Porous Car Park Manhole: 2.0, DS/PN: 2.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	40.0
Membrane Percolation (mm/hr)	1000	Length (m)	9.0
Max Percolation (l/s)	100.0	Slope (1:X)	80.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	18.040	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: 3.0, DS/PN: 3.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	7.5
Membrane Percolation (mm/hr)	1000	Length (m)	50.0
Max Percolation (l/s)	104.2	Slope (1:X)	80.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	18.190	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: 5.0, DS/PN: 5.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	9.5
Membrane Percolation (mm/hr)	1000	Length (m)	50.0
Max Percolation (l/s)	131.9	Slope (1:X)	80.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	18.640	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: 1.6, DS/PN: 1.006

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	10.0
Membrane Percolation (mm/hr)	1000	Length (m)	32.0
Max Percolation (l/s)	88.9	Slope (1:X)	80.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	17.440	Cap Volume Depth (m)	0.350

Dry Swale Manhole: W8.2, DS/PN: 8.003

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Trench Infiltration Side (m/hr)	0.00000
Infiltration Coefficient Side (m/hr)	0.00000	Trench Porosity	0.30
Safety Factor	2.0	Side Slope (1:X)	3.0
Porosity	1.00	Slope (1:X)	300.5
Invert Level (m)	17.414	Cap Volume Depth (m)	0.000
Trench Height (m)	0.400	Cap Infiltration Depth (m)	0.000
Trench Width (m)	0.3	Include Swale Volume	Yes
Trench Length (m)	50.0		

Dry Swale Manhole: W8.3, DS/PN: 8.004

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Safety Factor	2.0
Infiltration Coefficient Side (m/hr)	0.00000	Porosity	1.00

Ardent Consulting Engineers		Page 19
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Dry Swale Manhole: W8.3, DS/PN: 8.004

Invert Level (m)	17.186	Side Slope (1:X)	3.0
Trench Height (m)	0.700	Slope (1:X)	300.9
Trench Width (m)	0.3	Cap Volume Depth (m)	0.000
Trench Length (m)	12.0	Cap Infiltration Depth (m)	0.000
Trench Infiltration Side (m/hr)	0.00000	Include Swale Volume	Yes
Trench Porosity	0.30		

Dry Swale Manhole: W8.4, DS/PN: 8.005

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Trench Infiltration Side (m/hr)	0.00000
Infiltration Coefficient Side (m/hr)	0.00000	Trench Porosity	0.30
Safety Factor	2.0	Side Slope (1:X)	3.0
Porosity	1.00	Slope (1:X)	299.9
Invert Level (m)	17.328	Cap Volume Depth (m)	0.000
Trench Height (m)	0.800	Cap Infiltration Depth (m)	0.000
Trench Width (m)	0.3	Include Swale Volume	Yes
Trench Length (m)	12.0		

Dry Swale Manhole: W8.5, DS/PN: 8.006

Warning:- Volume should always be included unless the upstream pipe is being used for storage and/or as a carrier

Infiltration Coefficient Base (m/hr)	0.00000	Trench Infiltration Side (m/hr)	0.00000
Infiltration Coefficient Side (m/hr)	0.00000	Trench Porosity	0.30
Safety Factor	2.0	Side Slope (1:X)	3.0
Porosity	1.00	Slope (1:X)	298.3
Invert Level (m)	17.146	Cap Volume Depth (m)	0.000
Trench Height (m)	0.400	Cap Infiltration Depth (m)	0.000
Trench Width (m)	0.3	Include Swale Volume	Yes
Trench Length (m)	60.0		

Infiltration Basin Manhole: POND EAST, DS/PN: 1.008

Invert Level (m)	13.700	Safety Factor	13.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	1.00
Infiltration Coefficient Side (m/hr)	1.13400		

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	1167.0	3.000	2350.0

Porous Car Park Manhole: 9.0, DS/PN: 9.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	4.5
Membrane Percolation (mm/hr)	1000	Length (m)	80.0
Max Percolation (l/s)	100.0	Slope (1:X)	80.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	17.440	Cap Volume Depth (m)	0.350

Porous Car Park Manhole: 9.4, DS/PN: 9.004

Infiltration Coefficient Base (m/hr)	0.00000	Safety Factor	2.0
Membrane Percolation (mm/hr)	1000	Porosity	0.95
Max Percolation (l/s)	41.7	Invert Level (m)	15.980

Ardent Consulting Engineers		Page 20
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Porous Car Park Manhole: 9.4, DS/PN: 9.004

Width (m) 10.0 Depression Storage (mm) 5
Length (m) 15.0 Evaporation (mm/day) 3
Slope (1:X) 50.0 Cap Volume Depth (m) 0.375

Porous Car Park Manhole: 10.0, DS/PN: 10.000

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 9.0
Membrane Percolation (mm/hr) 1000 Length (m) 50.0
Max Percolation (l/s) 125.0 Slope (1:X) 40.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 16.840 Cap Volume Depth (m) 0.350

Porous Car Park Manhole: 12.0, DS/PN: 12.000

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 10.0
Membrane Percolation (mm/hr) 1000 Length (m) 22.0
Max Percolation (l/s) 61.1 Slope (1:X) 80.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 16.540 Cap Volume Depth (m) 0.350

Porous Car Park Manhole: 13.0, DS/PN: 13.000

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 7.5
Membrane Percolation (mm/hr) 1000 Length (m) 50.0
Max Percolation (l/s) 104.2 Slope (1:X) 40.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 16.840 Cap Volume Depth (m) 0.350

Porous Car Park Manhole: 12.6, DS/PN: 12.006

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 13.0
Membrane Percolation (mm/hr) 1000 Length (m) 45.0
Max Percolation (l/s) 162.5 Slope (1:X) 80.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 15.440 Cap Volume Depth (m) 0.350

Porous Car Park Manhole: 9.9, DS/PN: 9.009

Infiltration Coefficient Base (m/hr) 0.00000 Width (m) 10.0
Membrane Percolation (mm/hr) 1000 Length (m) 20.0
Max Percolation (l/s) 55.6 Slope (1:X) 80.0
Safety Factor 2.0 Depression Storage (mm) 5
Porosity 0.30 Evaporation (mm/day) 3
Invert Level (m) 15.040 Cap Volume Depth (m) 0.350

Infiltration Basin Manhole: POND WEST, DS/PN: 9.010

Invert Level (m) 12.010 Safety Factor 13.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00
Infiltration Coefficient Side (m/hr) 0.74500

Ardent Consulting Engineers		Page 21
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

Infiltration Basin Manhole: POND WEST, DS/PN: 9.010

Depth (m)	Area (m ²)	Depth (m)	Area (m ²)
0.000	516.0	2.459	1497.0

Cellular Storage Manhole: 65, DS/PN: 16.002

Invert Level (m) 17.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.40000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	100.0	0.0	0.800	100.0	0.0	0.801	0.0	0.0

Ardent Consulting Engineers		Page 22
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 3 Number of Storage Structures 18 Number of Real Time Controls 0

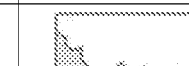
Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.700 Cv (Summer) 0.750
Region England and Wales Ratio R 0.319 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

US/MH		Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level	Surcharged Depth	Flooded Volume
PN	Name Storm							(m)	(m)	(m³)
1.000	1.0 15 Winter	1	+0%	100/15 Summer				16.902	-0.173	0.000
2.000	2.0 15 Winter	1	+0%	100/15 Summer				17.326	-0.174	0.000
1.001	1.1 15 Winter	1	+0%	100/15 Summer				16.459	-0.192	0.000
1.002	1.2 15 Winter	1	+0%	30/15 Winter				16.362	-0.179	0.000
3.000	3.0 15 Winter	1	+0%	30/15 Summer				16.920	-0.072	0.000
1.003	1.3 15 Winter	1	+0%	30/15 Summer				16.108	-0.136	0.000
1.004	1.4 15 Winter	1	+0%	100/15 Summer				15.755	-0.267	0.000
4.000	4.0 15 Winter	1	+0%	30/15 Summer	100/15 Summer			17.771	-0.154	0.000
4.001	4.1 15 Winter	1	+0%	30/15 Summer				17.538	-0.154	0.000
5.000	5.0 15 Winter	1	+0%	30/15 Summer				17.967	-0.083	0.000
4.002	4.2 15 Winter	1	+0%	30/15 Summer				17.139	-0.103	0.000
1.005	1.5 15 Winter	1	+0%	100/15 Summer				15.622	-0.307	0.000
6.000	W6.0 15 Winter	1	+0%					19.757	-0.343	0.000
6.001	W6.1 15 Winter	1	+0%					18.663	-0.437	0.000
6.002	W6.2 15 Winter	1	+0%					18.487	-0.513	0.000
6.003	W6.3 15 Winter	1	+0%					18.094	-0.256	0.000
1.006	1.6 15 Winter	1	+0%	100/15 Summer				15.228	-0.280	0.000
1.007	1.7 15 Winter	1	+0%	100/15 Summer				14.948	-0.318	0.000
7.000	W7.0 30 Winter	1	+0%					16.963	-0.637	0.000
7.001	W7.1 30 Winter	1	+0%	1/15 Summer				16.958	-0.073	0.000
7.002	W7.2 15 Winter	1	+0%					16.743	-0.957	0.000
8.000	W8.0 15 Winter	1	+0%					17.973	-0.227	0.000
8.001	W8.1 15 Winter	1	+0%					17.825	-0.625	0.000
8.002	W8.2a 30 Winter	1	+0%					17.792	-0.658	0.000
8.003	W8.2 30 Winter	1	+0%	30/15 Summer				17.723	-0.061	0.000
8.004	W8.3 30 Winter	1	+0%	30/15 Summer				17.688	-0.056	0.000
8.005	W8.4 30 Winter	1	+0%	30/15 Summer				17.644	-0.051	0.000
8.006	W8.5 60 Winter	1	+0%	30/15 Summer				17.447	-0.041	0.000
8.007	W8.6 60 Winter	1	+0%					17.230	-0.470	0.000
7.003	W7.3 15 Winter	1	+0%					16.575	-0.925	0.000

Ardent Consulting Engineers		Page 23
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Flow / Overflow		Pipe Flow	Status	Level
	Name	Cap.	(l/s)		Exceeded
1.000	1.0	0.12	6.4	OK	4
2.000	2.0	0.12	11.5	OK	
1.001	1.1	0.28	22.4	OK	
1.002	1.2	0.33	28.1	OK	
3.000	3.0	0.54	20.9	OK	
1.003	1.3	0.57	48.4	OK	
1.004	1.4	0.34	59.1	OK	
4.000	4.0	0.21	10.0	OK	
4.001	4.1	0.21	14.4	OK	
5.000	5.0	0.42	18.1	OK	
4.002	4.2	0.57	53.9	OK	
1.005	1.5	0.35	128.0	OK	
6.000	W6.0	0.02	10.9	OK	
6.001	W6.1	0.01	10.9	OK	
6.002	W6.2	0.01	10.8	OK	
6.003	W6.3	0.05	10.9	OK*	
1.006	1.6	0.44	149.8	OK	
1.007	1.7	0.33	148.6	OK	
7.000	W7.0	0.01	14.1	OK	
7.001	W7.1	1.22	12.9	SURCHARGED*	
7.002	W7.2	0.02	86.8	OK	
8.000	W8.0	0.07	11.2	FLOOD RISK*	
8.001	W8.1	0.01	19.3	OK	
8.002	W8.2a	0.01	18.8	OK	
8.003	W8.2	0.89	14.1	OK	
8.004	W8.3	0.92	14.6	OK	
8.005	W8.4	1.00	16.1	OK	
8.006	W8.5	1.00	15.9	OK	
8.007	W8.6	0.01	18.3	OK	
7.003	W7.3	0.02	95.0	OK	

Ardent Consulting Engineers		Page 24
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow Overflow	Overflow Act.	Water	Surcharged	Flooded
									Level (m)	Depth (m)	Volume (m³)
7.004	W7.4	15 Winter	1	+0%					16.512	-0.788	0.000
1.008	POND EAST	1440 Winter	1	+0%	30/120 Summer				14.320	-0.021	0.000
9.000	9.0	15 Winter	1	+0%	30/15 Summer				16.621	-0.104	0.000
9.001	9.1	15 Winter	1	+0%	30/15 Winter				16.528	-0.139	0.000
9.002	9.2	30 Winter	1	+0%	30/15 Summer				16.068	-0.188	0.000
9.003	9.3	30 Winter	1	+0%	30/15 Summer				15.820	-0.171	0.000
9.004	9.4	15 Winter	1	+0%	30/15 Summer				15.556	-0.180	0.000
10.000	10.0	15 Winter	1	+0%	30/15 Summer				15.329	-0.155	0.000
9.005	9.5	15 Winter	1	+0%	30/15 Summer				14.526	-0.154	0.000
11.000	11.0	15 Winter	1	+0%	100/15 Summer				15.369	-0.156	0.000
9.006	9.6	15 Winter	1	+0%	30/15 Summer				14.394	-0.146	0.000
9.007	9.7	15 Winter	1	+0%	30/15 Summer				14.052	-0.137	0.000
9.008	9.8	15 Winter	1	+0%	100/15 Summer				13.759	-0.287	0.000
12.000	12.0	15 Winter	1	+0%	100/15 Summer				15.868	-0.157	0.000
12.001	12.1	15 Winter	1	+0%	100/15 Summer				15.751	-0.135	0.000
12.002	12.2	15 Winter	1	+0%	100/15 Summer				15.224	-0.225	0.000
13.000	13.0	15 Winter	1	+0%	100/15 Summer				15.564	-0.163	0.000
12.003	12.3	15 Winter	1	+0%	30/15 Summer				15.066	-0.159	0.000
12.004	12.4	15 Winter	1	+0%	30/15 Summer				14.952	-0.164	0.000
12.005	12.5	15 Winter	1	+0%	30/15 Summer				14.695	-0.142	0.000
12.006	12.6	15 Winter	1	+0%	100/15 Summer				14.519	-0.182	0.000
9.009	9.9	15 Winter	1	+0%	30/15 Summer				12.913	-0.226	0.000
14.000	W14.0	15 Winter	1	+0%					16.682	-0.418	0.000
14.001	W14.1	15 Winter	1	+0%					16.294	-0.566	0.000
14.002	W14.2	15 Winter	1	+0%					16.173	-0.527	0.000
14.003	W14.3	15 Winter	1	+0%					15.486	-0.514	0.000
14.004	W14.4	15 Winter	1	+0%					14.877	-0.523	0.000
14.005	W14.5	15 Winter	1	+0%					14.467	-0.533	0.000
15.000	W15.0	15 Winter	1	+0%					14.663	-0.537	0.000
15.001	W15.1	15 Winter	1	+0%					14.195	-0.505	0.000
9.010	POND WEST	1440 Winter	1	+0%	1/15 Summer				12.838	0.728	0.000
16.000	63	15 Winter	1	+0%	100/15 Summer				18.480	-0.145	0.000
16.001	64	15 Winter	1	+0%	100/15 Summer				18.011	-0.139	0.000
16.002	65	1440 Winter	1	+0%	1/120 Winter				17.251	0.151	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe	Status	Level Exceeded
				Flow (l/s)		
7.004	W7.4	0.03		94.2	OK	
1.008	POND EAST	0.00		0.0	OK	
9.000	9.0	0.55		7.0	OK	
9.001	9.1	0.30		16.4	OK	
9.002	9.2	0.29		29.3	OK	
9.003	9.3	0.38		38.0	OK	
9.004	9.4	0.34		54.2	OK	
10.000	10.0	0.21		26.9	OK	
9.005	9.5	0.64		87.7	OK	
11.000	11.0	0.20		17.3	OK	
9.006	9.6	0.67		102.1	OK	
9.007	9.7	0.72		106.5	OK	
9.008	9.8	0.28		108.0	OK	
12.000	12.0	0.20		8.9	OK	
12.001	12.1	0.33		16.5	OK	

Ardent Consulting Engineers		Page 25
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
12.002	12.2	0.14	16.5	OK	
13.000	13.0	0.17	16.4	OK	
12.003	12.3	0.45	37.2	OK	
12.004	12.4	0.42	42.0	OK	
12.005	12.5	0.54	49.4	OK	
12.006	12.6	0.31	55.0	OK	
9.009	9.9	0.50	174.4	OK	
14.000	W14.0	0.02	15.9	OK	
14.001	W14.1	0.01	16.0	OK	
14.002	W14.2	0.01	22.0	OK	
14.003	W14.3	0.02	27.0	OK	
14.004	W14.4	0.01	27.0	OK	
14.005	W14.5	0.01	27.0	OK	
15.000	W15.0	0.01	9.5	OK	
15.001	W15.1	0.02	9.4	OK	
9.010	POND WEST	0.00	0.0	SURCHARGED	
16.000	63	0.27	4.5	OK	
16.001	64	0.31	8.6	OK	
16.002	65	0.00	0.0	SURCHARGED	

Ardent Consulting Engineers		Page 26
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
 Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
 Hot Start Level (mm) 0 Inlet Coefficient 0.800
 Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
 Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
 Number of Online Controls 3 Number of Storage Structures 18 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.700 Cv (Summer) 0.750
 Region England and Wales Ratio R 0.319 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
 Analysis Timestep Fine Inertia Status OFF
 DTS Status ON

Profile(s) Summer and Winter
 Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
 Return Period(s) (years) 1, 30, 100
 Climate Change (%) 0, 0, 40

US/MH		Return Period	Climate Change	First (X) Surchage	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level	Surcharged Depth	Flooded Volume
PN	Name							(m)	(m)	(m ³)
1.000	1.0 15 Winter	30	+0%	100/15 Summer				16.933	-0.142	0.000
2.000	2.0 15 Winter	30	+0%	100/15 Summer				17.358	-0.142	0.000
1.001	1.1 15 Winter	30	+0%	100/15 Summer				16.600	-0.051	0.000
1.002	1.2 15 Winter	30	+0%	30/15 Winter				16.552	0.011	0.000
3.000	3.0 15 Winter	30	+0%	30/15 Summer				17.537	0.545	0.000
1.003	1.3 15 Winter	30	+0%	30/15 Summer				16.377	0.133	0.000
1.004	1.4 15 Winter	30	+0%	100/15 Summer				15.875	-0.147	0.000
4.000	4.0 15 Winter	30	+0%	30/15 Summer	100/15 Summer			18.012	0.087	0.000
4.001	4.1 15 Winter	30	+0%	30/15 Summer				17.967	0.275	0.000
5.000	5.0 15 Winter	30	+0%	30/15 Summer				18.496	0.446	0.000
4.002	4.2 15 Winter	30	+0%	30/15 Summer				17.884	0.642	0.000
1.005	1.5 15 Winter	30	+0%	100/15 Summer				15.779	-0.150	0.000
6.000	W6.0 15 Winter	30	+0%					19.792	-0.308	0.000
6.001	W6.1 15 Winter	30	+0%					18.702	-0.398	0.000
6.002	W6.2 15 Winter	30	+0%					18.537	-0.463	0.000
6.003	W6.3 15 Winter	30	+0%					18.121	-0.229	0.000
1.006	1.6 15 Winter	30	+0%	100/15 Summer				15.465	-0.043	0.000
1.007	1.7 15 Winter	30	+0%	100/15 Summer				15.080	-0.186	0.000
7.000	W7.0 60 Winter	30	+0%					17.198	-0.402	0.000
7.001	W7.1 60 Winter	30	+0%	1/15 Summer				17.198	0.313	0.000
7.002	W7.2 15 Winter	30	+0%					16.864	-0.836	0.000
8.000	W8.0 15 Winter	30	+0%					18.026	-0.174	0.000
8.001	W8.1 60 Winter	30	+0%					17.930	-0.520	0.000
8.002	W8.2a 60 Winter	30	+0%					17.929	-0.521	0.000
8.003	W8.2 60 Winter	30	+0%	30/15 Summer				17.926	0.142	0.000
8.004	W8.3 60 Winter	30	+0%	30/15 Summer				17.886	0.142	0.000
8.005	W8.4 60 Winter	30	+0%	30/15 Summer				17.839	0.184	0.000
8.006	W8.5 60 Winter	30	+0%	30/15 Summer				17.519	0.031	0.000
8.007	W8.6 30 Winter	30	+0%					17.261	-0.439	0.000
7.003	W7.3 15 Winter	30	+0%					16.690	-0.810	0.000

Ardent Consulting Engineers		Page 27
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1.0	0.29		15.6	OK	
2.000	2.0	0.29		28.1	OK	
1.001	1.1	0.69		54.8	OK	
1.002	1.2	0.82		68.6	SURCHARGED	
1.003	1.3	1.19		46.2	SURCHARGED	
1.003	1.3	1.29		168.8	SURCHARGED	
1.004	1.4	0.77		132.4	OK	
4.000	4.0	0.46		21.9	SURCHARGED	4
4.001	4.1	0.49		33.5	SURCHARGED	
5.000	5.0	1.05		45.5	SURCHARGED	
4.002	4.2	1.20		114.5	SURCHARGED	
1.005	1.5	0.84		301.4	OK	
6.000	W6.0	0.04		26.7	OK	
6.001	W6.1	0.03		26.8	OK	
6.002	W6.2	0.03		26.3	OK	
6.003	W6.3	0.13		26.4	OK*	
1.006	1.6	1.00		338.4	OK	
1.007	1.7	0.75		338.4	OK	
7.000	W7.0	0.02		23.8	OK	
7.001	W7.1	1.67		17.7	SURCHARGED*	
7.002	W7.2	0.05		209.2	OK	
8.000	W8.0	0.16		27.9	FLOOD RISK*	
8.001	W8.1	0.02		30.2	OK	
8.002	W8.2a	0.02		31.8	OK	
8.003	W8.2	1.13		18.0	SURCHARGED	
8.004	W8.3	1.14		18.2	SURCHARGED	
8.005	W8.4	1.24		20.0	SURCHARGED	
8.006	W8.5	1.49		23.7	SURCHARGED	
8.007	W8.6	0.02		32.7	OK	
7.003	W7.3	0.06		224.6	OK	

Ardent Consulting Engineers		Page 28
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
7.004	W7.4	15 Winter	30	+0%					16.626	-0.674	0.000
1.008	POND EAST	1440 Winter	30	+0%	30/120 Summer				14.851	0.510	0.000
9.000	9.0	15 Winter	30	+0%	30/15 Summer				16.792	0.867	0.000
9.001	9.1	15 Winter	30	+0%	30/15 Winter				16.708	0.041	0.000
9.002	9.2	15 Winter	30	+0%	30/15 Summer				16.458	0.202	0.000
9.003	9.3	15 Winter	30	+0%	30/15 Summer				16.305	0.314	0.000
9.004	9.4	15 Winter	30	+0%	30/15 Summer				16.069	0.333	0.000
10.000	10.0	15 Winter	30	+0%	30/15 Summer				15.661	0.177	0.000
9.005	9.5	15 Winter	30	+0%	30/15 Summer				15.453	0.773	0.000
11.000	11.0	15 Winter	30	+0%	100/15 Summer				15.414	-0.111	0.000
9.006	9.6	15 Winter	30	+0%	30/15 Summer				15.169	0.629	0.000
9.007	9.7	15 Winter	30	+0%	30/15 Summer				14.388	0.199	0.000
9.008	9.8	15 Winter	30	+0%	100/15 Summer				13.853	-0.193	0.000
12.000	12.0	15 Winter	30	+0%	100/15 Summer				15.910	-0.115	0.000
12.001	12.1	15 Winter	30	+0%	100/15 Summer				15.830	-0.056	0.000
12.002	12.2	15 Winter	30	+0%	100/15 Summer				15.387	-0.062	0.000
13.000	13.0	15 Winter	30	+0%	100/15 Summer				15.602	-0.125	0.000
12.003	12.3	15 Winter	30	+0%	30/15 Summer				15.350	0.125	0.000
12.004	12.4	15 Winter	30	+0%	30/15 Summer				15.219	0.103	0.000
12.005	12.5	15 Winter	30	+0%	30/15 Summer				14.323	0.086	0.000
12.006	12.6	15 Winter	30	+0%	100/15 Summer				14.607	-0.094	0.000
9.009	9.9	1440 Winter	30	+0%	30/15 Summer				13.439	0.300	0.000
14.000	W14.0	15 Winter	30	+0%					16.733	-0.367	0.000
14.001	W14.1	15 Winter	30	+0%					16.329	-0.531	0.000
14.002	W14.2	15 Winter	30	+0%					16.221	-0.479	0.000
14.003	W14.3	15 Winter	30	+0%					15.543	-0.457	0.000
14.004	W14.4	15 Winter	30	+0%					14.928	-0.472	0.000
14.005	W14.5	15 Winter	30	+0%					14.510	-0.490	0.000
15.000	W15.0	15 Winter	30	+0%					14.697	-0.503	0.000
15.001	W15.1	15 Winter	30	+0%					14.248	-0.452	0.000
9.010	POND WEST	1440 Winter	30	+0%	1/15 Summer				13.436	1.326	0.000
16.000	63	15 Winter	30	+0%	100/15 Summer				18.536	-0.089	0.000
16.001	64	15 Winter	30	+0%	100/15 Summer				18.085	-0.065	0.000
16.002	65	1440 Winter	30	+0%	1/120 Winter				17.493	0.393	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
7.004	W7.4	0.08		223.4	OK	
1.008	POND EAST	0.00		0.0	SURCHARGED	
9.000	9.0	1.43		18.1	SURCHARGED	
9.001	9.1	0.89		48.4	SURCHARGED	
9.002	9.2	0.81		80.9	SURCHARGED	
9.003	9.3	0.97		96.4	SURCHARGED	
9.004	9.4	0.79		127.8	SURCHARGED	
10.000	10.0	0.51		64.7	SURCHARGED	
9.005	9.5	1.45		197.2	SURCHARGED	
11.000	11.0	0.50		42.3	OK	
9.006	9.6	1.48		225.0	SURCHARGED	
9.007	9.7	1.58		233.9	SURCHARGED	
9.008	9.8	0.62		236.5	OK	
12.000	12.0	0.48		21.9	OK	
12.001	12.1	0.88		43.7	OK	

Ardent Consulting Engineers		Page 29
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
12.002	12.2	0.37	42.0	OK	
13.000	13.0	0.41	40.1	OK	
12.003	12.3	1.11	91.8	SURCHARGED	
12.004	12.4	1.02	102.5	SURCHARGED	
12.005	12.5	1.80	113.9	SURCHARGED	
12.006	12.6	0.80	139.8	OK	
9.009	9.9	0.10	33.6	SURCHARGED	
14.000	W14.0	0.05	37.5	OK	
14.001	W14.1	0.02	37.8	OK	
14.002	W14.2	0.03	54.0	OK	
14.003	W14.3	0.04	67.6	OK	
14.004	W14.4	0.04	67.2	OK	
14.005	W14.5	0.03	67.3	OK	
15.000	W15.0	0.02	23.2	OK	
15.001	W15.1	0.05	22.8	OK	
9.010	POND WEST	0.01	0.0	SURCHARGED	
16.000	63	0.66	11.0	OK	
16.001	64	0.83	23.0	OK	
16.002	65	0.00	0.0	SURCHARGED	

Ardent Consulting Engineers		Page 30
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor 1.000 Additional Flow - % of Total Flow 0.000
Hot Start (mins) 0 MADD Factor * 10m³/ha Storage 2.000
Hot Start Level (mm) 0 Inlet Coefficient 0.800
Manhole Headloss Coeff (Global) 0.500 Flow per Person per Day (l/per/day) 0.000
Foul Sewage per hectare (l/s) 0.000

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 3 Number of Storage Structures 18 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model FSR M5-60 (mm) 19.700 Cv (Summer) 0.750
Region England and Wales Ratio R 0.319 Cv (Winter) 0.840

Margin for Flood Risk Warning (mm) 300.0 DVD Status OFF
Analysis Timestep Fine Inertia Status OFF
DTS Status ON

Profile(s) Summer and Winter
Duration(s) (mins) 15, 30, 60, 120, 240, 360, 480, 960, 1440
Return Period(s) (years) 1, 30, 100
Climate Change (%) 0, 0, 40

US/MH		Return Climate		First (X)		First (Y)		First (Z)		Water	Surcharged	Flooded
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Overflow	Act.	Level (m)	Depth (m)	Volume (m³)
1.000	1.0	15 Winter	100	+40%	100/15 Summer					17.804	0.729	0.000
2.000	2.0	15 Winter	100	+40%	100/15 Summer					17.859	0.359	0.000
1.001	1.1	15 Winter	100	+40%	100/15 Summer					17.745	1.094	0.000
1.002	1.2	15 Winter	100	+40%	30/15 Winter					17.625	1.084	0.000
3.000	3.0	15 Winter	100	+40%	30/15 Summer					18.531	1.539	0.000
1.003	1.3	15 Winter	100	+40%	30/15 Summer					17.169	0.925	0.000
1.004	1.4	15 Winter	100	+40%	100/15 Summer					16.530	0.508	0.000
4.000	4.0	15 Winter	100	+40%	30/15 Summer	100/15 Summer				19.006	1.081	5.556
4.001	4.1	15 Winter	100	+40%	30/15 Summer					19.025	1.333	0.000
5.000	5.0	15 Winter	100	+40%	30/15 Summer					19.076	1.026	0.000
4.002	4.2	15 Winter	100	+40%	30/15 Summer					18.993	1.741	0.000
1.005	1.5	15 Winter	100	+40%	100/15 Summer					16.407	0.478	0.000
6.000	W6.0	15 Winter	100	+40%						19.824	-0.276	0.000
6.001	W6.1	15 Winter	100	+40%						18.735	-0.365	0.000
6.002	W6.2	15 Winter	100	+40%						18.583	-0.417	0.000
6.003	W6.3	15 Winter	100	+40%						18.147	-0.203	0.000
1.006	1.6	15 Winter	100	+40%	100/15 Summer					15.852	0.344	0.000
1.007	1.7	1440 Winter	100	+40%	100/15 Summer					15.557	0.291	0.000
7.000	W7.0	60 Winter	100	+40%						17.460	-0.140	0.000
7.001	W7.1	60 Winter	100	+40%	1/15 Summer					17.459	0.580	0.000
7.002	W7.2	15 Winter	100	+40%						16.971	-0.729	0.000
8.000	W8.0	60 Winter	100	+40%						18.103	-0.097	0.000
8.001	W8.1	60 Winter	100	+40%						18.099	-0.351	0.000
8.002	W8.2a	60 Winter	100	+40%						18.098	-0.352	0.000
8.003	W8.2	60 Winter	100	+40%	30/15 Summer					18.097	0.313	0.000
8.004	W8.3	60 Winter	100	+40%	30/15 Summer					18.050	0.306	0.000
8.005	W8.4	60 Winter	100	+40%	30/15 Summer					18.003	0.308	0.000
8.006	W8.5	30 Winter	100	+40%	30/15 Summer					17.605	0.117	0.000
8.007	W8.6	30 Summer	100	+40%						17.295	-0.405	0.000
7.003	W7.3	15 Winter	100	+40%						16.791	-0.709	0.000

Ardent Consulting Engineers		Page 31
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	1.0	0.43		23.3	SURCHARGED	
2.000	2.0	0.56		53.7	SURCHARGED	
1.001	1.1	1.07		85.6	SURCHARGED	
1.002	1.2	1.22		102.7	SURCHARGED	
3.000	3.0	1.58		61.3	FLOOD RISK	
1.003	1.3	1.85		155.3	SURCHARGED	
1.004	1.4	1.19		184.0	SURCHARGED	
4.000	4.0	1.07		51.1	FLOOD	4
4.001	4.1	0.87		59.4	FLOOD RISK	
5.000	5.0	1.46		63.1	FLOOD RISK	
4.002	4.2	1.40		133.2	FLOOD RISK	
1.005	1.5	1.16		418.9	SURCHARGED	
6.000	W6.0	0.07		48.4	FLOOD RISK*	
6.001	W6.1	0.05		48.5	OK	
6.002	W6.2	0.06		47.7	OK	
6.003	W6.3	0.23		47.9	FLOOD RISK*	
1.006	1.6	1.49		504.7	SURCHARGED	
1.007	1.7	0.11		49.3	SURCHARGED	
7.000	W7.0	0.03		44.2	FLOOD RISK*	
7.001	W7.1	2.06		21.8	FLOOD RISK*	
7.002	W7.2	0.10		372.4	OK	
8.000	W8.0	0.17		29.3	FLOOD RISK*	
8.001	W8.1	0.04		45.6	OK	
8.002	W8.2a	0.03		47.1	OK	
8.003	W8.2	1.35		21.4	SURCHARGED	
8.004	W8.3	1.39		22.1	SURCHARGED	
8.005	W8.4	1.45		23.4	SURCHARGED	
8.006	W8.5	2.13		33.8	SURCHARGED	
8.007	W8.6	0.04		58.2	OK	
7.003	W7.3	0.10		400.3	OK	

Ardent Consulting Engineers		Page 32
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
7.004	W7.4	15 Winter	100	+40%					16.727	-0.573	0.000
1.008	POND EAST	1440 Winter	100	+40%	30/120 Summer				15.555	1.214	0.000
9.000	9.0	15 Winter	100	+40%	30/15 Summer				17.761	1.036	0.000
9.001	9.1	15 Winter	100	+40%	30/15 Winter				17.729	1.062	0.000
9.002	9.2	15 Winter	100	+40%	30/15 Summer				17.408	1.152	0.000
9.003	9.3	15 Winter	100	+40%	30/15 Summer				17.038	1.047	0.000
9.004	9.4	30 Winter	100	+40%	30/15 Summer				16.562	0.825	0.000
10.000	10.0	15 Winter	100	+40%	30/15 Summer				16.847	1.363	0.000
9.005	9.5	15 Winter	100	+40%	30/15 Summer				16.196	1.516	0.000
11.000	11.0	15 Winter	100	+40%	100/15 Summer				16.405	0.880	0.000
9.006	9.6	15 Winter	100	+40%	30/15 Summer				15.883	1.243	0.000
9.007	9.7	15 Winter	100	+40%	30/15 Summer				14.835	0.646	0.000
9.008	9.8	15 Winter	100	+40%	100/15 Summer				14.324	0.278	0.000
12.000	12.0	15 Winter	100	+40%	100/15 Summer				16.735	0.710	0.000
12.001	12.1	15 Winter	100	+40%	100/15 Summer				16.692	0.806	0.000
12.002	12.2	15 Winter	100	+40%	100/15 Summer				16.447	0.998	0.000
13.000	13.0	15 Winter	100	+40%	100/15 Summer				16.676	0.949	0.000
12.003	12.3	15 Winter	100	+40%	30/15 Summer				16.413	1.188	0.000
12.004	12.4	15 Winter	100	+40%	30/15 Summer				16.174	1.058	0.000
12.005	12.5	15 Winter	100	+40%	30/15 Summer				15.662	0.825	0.000
12.006	12.6	15 Winter	100	+40%	100/15 Summer				15.225	0.524	0.000
9.009	9.9	1440 Winter	100	+40%	30/15 Summer				14.157	1.018	0.000
14.000	W14.0	15 Winter	100	+40%					16.780	-0.320	0.000
14.001	W14.1	15 Winter	100	+40%					16.366	-0.494	0.000
14.002	W14.2	15 Winter	100	+40%					16.260	-0.440	0.000
14.003	W14.3	15 Winter	100	+40%					15.591	-0.409	0.000
14.004	W14.4	15 Winter	100	+40%					14.971	-0.429	0.000
14.005	W14.5	15 Winter	100	+40%					14.547	-0.453	0.000
15.000	W15.0	15 Winter	100	+40%					14.731	-0.469	0.000
15.001	W15.1	15 Winter	100	+40%					14.296	-0.404	0.000
9.010	POND WEST	1440 Winter	100	+40%	1/15 Summer				14.152	2.042	0.000
16.000	63	1440 Winter	100	+40%	100/15 Summer				19.134	0.509	0.000
16.001	64	1440 Winter	100	+40%	100/15 Summer				19.134	0.984	0.000
16.002	65	1440 Winter	100	+40%	1/120 Winter				19.135	2.035	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
7.004	W7.4	0.14		398.3	OK	
1.008	POND EAST	0.00		0.0	SURCHARGED	
9.000	9.0	3.24		41.0	FLOOD RISK	
9.001	9.1	1.01		55.4	FLOOD RISK	
9.002	9.2	1.20		120.2	FLOOD RISK	
9.003	9.3	1.68		166.6	FLOOD RISK	
9.004	9.4	1.01		162.8	SURCHARGED	
10.000	10.0	0.91		114.9	SURCHARGED	
9.005	9.5	1.62		221.4	SURCHARGED	
11.000	11.0	0.73		61.9	SURCHARGED	
9.006	9.6	1.74		264.0	SURCHARGED	
9.007	9.7	1.89		273.5	SURCHARGED	
9.008	9.8	0.75		285.5	SURCHARGED	
12.000	12.0	1.20		54.4	SURCHARGED	
12.001	12.1	1.24		61.5	FLOOD RISK	

Ardent Consulting Engineers		Page 33
Third Floor, The Hallmark Building 52-56 Leadenhall Street London, EC3M5JE	Land East of Tye Lane Walberton West Sussex	
Date 17/08/2020 19:32 File SW NETWORK AUG 2020.MDX	Designed by James Massingham Checked by Gareth Hardwick	
Innovyze	Network 2017.1.2	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flow / Overflow Cap. (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
12.002	12.2	0.67	76.8	SURCHARGED	
13.000	13.0	0.76	74.2	SURCHARGED	
12.003	12.3	1.60	132.0	SURCHARGED	
12.004	12.4	1.44	144.2	SURCHARGED	
12.005	12.5	1.80	165.4	SURCHARGED	
12.006	12.6	1.11	194.8	SURCHARGED	
9.009	9.9	0.17	58.8	SURCHARGED	
14.000	W14.0	0.10	67.6	OK	
14.001	W14.1	0.04	67.3	OK	
14.002	W14.2	0.06	94.5	OK	
14.003	W14.3	0.08	119.6	OK	
14.004	W14.4	0.07	118.6	OK	
14.005	W14.5	0.05	119.0	OK	
15.000	W15.0	0.03	42.0	OK	
15.001	W15.1	0.09	41.8	OK	
9.010	POND WEST	0.01	0.0	SURCHARGED	
16.000	63	0.07	1.2	SURCHARGED	
16.001	64	0.09	2.4	FLOOD RISK	
16.002	65	0.00	0.0	SURCHARGED	

Appendix G – Outline Planning Decision Notice



Town & Country Planning Act 1990 (as amended)
Town & country Planning (Development Management
Procedure) (England) Order 2015 - Article 5
Application for Outline Consent
DECISION NOTICE

Application Ref: WA/44/17/OUT

1 To Addressee

McLaren Clark Group
 Unit 4 Park Farm
 Chichester Road
 Arundel
 West Sussex
 BN18 0AG

2 Site Address

Land East of Tye Lane
 Walberton

3 Description of Development

Outline application with some matters reserved for up to 175 dwellings, new vehicular access, together with associated car parking, landscaping & community facilities to include allotments, play space & community orchard. This application is a Departure from the Development Plan & may affect the character & appearance of the Walberton Village Conservation Area.

In pursuance of their powers under this Act and related Orders and Regulations the Council **PERMIT** this development to be carried out in accordance with the application and plans and subject to compliance with the following conditions and Section 106 Agreement.

- 1 Details of the appearance, landscaping and layout, (hereinafter called 'the reserved matters') shall be submitted to and approved in writing by the Local Planning Authority before any development begins and the development shall be carried out as approved.

Reason: To enable the Local Planning Authority to control the development in detail and to comply with Section 92 of the Town and Country Planning Act 1990 (as amended).

- 2 Application for approval of the reserved matters shall be made to the Local Planning Authority not later than five years from the date of this permission.

Reason: To enable the Local Planning Authority to control the development in detail and to comply with Section 92 of the Town and Country Planning Act 1990 (as amended).

- 3 The development hereby permitted shall begin not later than two years from the date of approval of the first of the reserved matters to be approved.

Reason: To enable the Local Planning Authority to control the development in detail and to comply with Section 92 of the town and Country Planning Act 1990 (as amended).

- 4 The planning permission relates to the following approved plans:

2507-A-1000- A Site Location Plan

2507-A-1100-A Parameters Plan

ITB11324-GA-001 Rev F Proposed Site Access to Yapton Lane

Reason: For the avoidance of doubt and in the interests of amenity and the environment in accordance with Policy GEN7 of the Arun District Local Plan.

- 5 The details referred to in condition 1 shall include details of the materials and external finishes of the buildings, surfaces for roads/footpaths, means of enclosure and the parking of vehicles, and the provision of samples of such materials and finishes as required. Development shall be carried out in accordance with the approved details unless otherwise agreed with the Local Planning Authority.

Reason: To enable to the Local Planning Authority to control the development in detail in the interests of amenity in accordance with Policy GEN7 of the Arun District Local Plan.

- 6 No development shall take place, including any works of demolition, until a Construction Management Plan has been submitted to, and approved in writing by, the Local Planning Authority. The approved Plan shall be adhered to throughout the construction period. The Plan shall provide for:
- a. An indicative programme for carrying out of the works
 - b. The arrangements for public consultation and liaison during the construction works
 - c. Measures to minimise the noise (including vibration) generated by the construction process to include hours of work, proposed method of piling for foundations, the careful selection of plant and machinery and use of noise mitigation barrier(s)
 - d. Details of any floodlighting, including location, height, type and direction of light sources and intensity of illumination
 - e. the parking of vehicles of site operatives and visitors
 - f. loading and unloading of plant and materials
 - g. storage of plant and materials used in constructing the development
 - h. the erection and maintenance of security hoarding including decorative displays and facilities for public viewing, where appropriate
 - i. the provision of effective wheel washing facilities and other works required to mitigate the impact of construction upon the public highway (including the provision of temporary Traffic Regulation Orders),
 - j. effective measures to control the emission of dust and dirt during construction
 - k. a scheme for recycling/disposing of waste resulting from demolition and construction works.
 - l. the traffic management to be used by construction vehicles to enter and exit the site;
 - m. building, engineering and other operations to be carried out only between the hours of 0800 and 1800 Monday to Friday, 0800 to 1300 Saturdays and shall not be carried out at any time on Sundays or Public Holidays;
 - n. noise and vibration controls.
- Development shall be carried out in accordance with the approved Construction Method Statement.

Reason: To enable to the Local Planning Authority to control the development in detail in the interests of amenity in accordance with Policy GEN7 of the Arun District Local Plan. It is considered necessary for this to be a pre-commencement condition because of the safety and amenity issues that need to be addressed.

- 7 Each home should have an Electric Vehicle charge point.

Reason: Petrol and diesel cars and vans will not be sold beyond 2040, and to mitigate against any potential adverse impact of the development on local air quality, in accordance with Policy GEN7 of the Arun District Local Plan.

- 8 The development hereby permitted shall not be carried out except in substantial accordance with the Design and Access Statement incorporating Design Guidance dated June 2017.

Reason: For the avoidance of doubt and in the interests of amenity and the environment in accordance with Policy GEN7 of the Arun District Local Plan.

9

The landscaping and layout particulars to be submitted in accordance with Condition 1 shall include:

- i. Details of all existing trees and hedgerows on the land, showing which are to be retained and which removed;
- ii. Details of the positions, height, design, materials and type of boundary treatment to be provided;
- iii. Details of any proposed alterations in existing ground levels, and of the position of any proposed excavation, within the crown spread of any retained tree.
- iv. The detailed landscape design for the development including the layout and design of the public realm within the development.
- v. Details of the play areas and public open spaces.
- vi. Details of the surfacing, lighting, and signage of all footpaths, cycle routes and a phasing plan for their provision;

No hedge or tree shall be felled, uprooted or otherwise removed before, during or after the construction period except where removal is indicated on a plan approved by the Local Planning Authority.

Reason: In the interests of amenity and of the environment of the development in accordance with Policy GEN7 of the Arun District Local Plan.

10

- a. Prior to the commencement of development or other operations likely to affect trees being undertaken on site a scheme for the protection of the retained trees produced in accordance with BS5837 (Trees in Relation to Construction 2005: Recommendations), which provides for the retention and protection of trees, shrubs and hedges growing on or adjacent to the site, shall be submitted to and approved in writing by the Local Planning Authority.

No development or other operations shall take place except in complete accordance with the approved protection scheme.

- b. No operations affecting trees shall be undertaken on site in connection with the development hereby approved (including any tree felling, tree pruning, demolition works, soil moving, temporary access construction and/or widening of any operations involving the use of motorised vehicles or construction machinery) until the protection works required by the approved protection scheme are in place.

- c. No excavations for services, storage of materials or machinery, parking of vehicles, deposit or excavation of soil or rubble, lighting of fires or disposal of liquids shall take place within any area designated as being fenced-off or otherwise protected in the approved scheme.

- d. Protective fencing shall be retained intact until completion of the development hereby approved and shall not be removed or re-positioned without the prior written approval of the Local Planning Authority.

Reason: In the interests of amenity and of the environment of the development in accordance with Policy GEN7 of the Arun District Local Plan.

- 11 No development above damp proof course (DPC) level shall take place until there has been submitted to, and approved by, the Local Planning Authority, a landscaping scheme including details of hard and soft landscaping and details of existing trees and hedgerows to be retained, together with measures for their protection during the course of the development. The approved details of the landscaping shall be carried out in the first planting and seeding season, following the occupation of the buildings or the completion of the development, whichever is the sooner, and any trees or plants which, within a period of five years from the completion of development, die, are removed or become seriously damaged or diseased, shall be replaced in the next planting season with others of similar size and species, unless the Local Planning Authority gives written consent to any variation.

Reason: In the interests of amenity and of the environment of the development in accordance with Policy GEN7 of the Arun District Local Plan.

- 12 Development shall not begin until further ecological surveys have been carried out and submitted to the Local Planning Authority. These surveys shall relate to water voles, bats, birds, invertebrates and reptiles.

Reason: In order to secure adequate habitat enhancement and mitigation of potential impacts of the development in accordance with Policy GEN7 of the Arun District Local Plan. It is considered necessary for this to be a pre-commencement condition because of the need to ensure measures are in place to protect wildlife and habitats on site prior to any disturbance.

- 13 Prior to the commencement of construction works or any preparatory works detailed Ecological Management and Mitigation Plan including a Schedule of Works shall be submitted to the LPA for approval and will be based on the recommendations within the supporting Preliminary Ecological Appraisal Report, and the Bat and Reptile Survey Report (September 2017) . All approved details shall then be implemented in full and in accordance with the agreed timings and details.

The Ecological Management and Mitigation Plan shall include but not be restricted to:

- timings for clearance of trees or scrub to avoid impacts on breeding birds
- two phased cutting of grassland along site boundaries to deter reptiles and amphibians
- details of compensatory and additional tree planting
- details of compensatory boundary habitat planting
- details and location of bird and bat boxes, log piles around the site boundaries
- creation of at least three wildlife ponds
- boundary features to measure at least 5m width for the majority of the site to allow for commuting badgers
- measures to minimise the disturbance of badgers

Should the detailed layout of the site require the removal of further trees which have the potential to support bats, a climbed tree inspection survey will be required.

Reason: This condition is necessary to ensure the protection of wildlife and supporting habitat and secure opportunities for the enhancement of the nature conservation value of the site in line with national guidance and Policy GEN23 and GEN29 of the Arun District Local Plan (2003). It is considered necessary for this to be a pre-commencement condition because of the need to ensure measures are in place to protect wildlife and habitats on site prior to any disturbance.

- 14 Prior to development, full details of the construction compound, including arrangements for turning delivery vehicles and areas set aside for construction staff parking, shall be submitted to and approved in writing by the Local Planning Authority. Development shall be carried out in accordance with the approved details.

Reason: In the interests of amenity in accordance with Arun District Local Plan Policy GEN7.

- 15 Prior to the commencement of development, details of the layout and specification of and construction programme for the roads, footpaths, cycleways and parking areas, including tracking details for refuse vehicles shall be submitted to and approved in writing by the Local Planning Authority. No dwelling shall be occupied until it is provided with access constructed in accordance with such approved details to the highway network.

Reason: In the interests of road safety and to accord with approved policy in accordance with Policy GEN7 of the Arun District Local Plan. It is considered necessary for this to be a pre-commencement condition because of the safety and amenity issues that need to be addressed..

- 16 No dwelling shall be occupied until refuse and recycling bins have been provided and space has been laid out for their storage in relation to that dwelling in accordance with details that shall have been submitted to and approved in writing by the Local Planning Authority. Thereafter these areas shall not be used for any purpose other than the storage of refuse and recycling bins.

Reason: In the interests of the amenity of occupiers of nearby properties in accordance with Arun District Local Plan Policy GEN7 and DEV26.

- 17 No dwelling shall be occupied until space for that dwelling has been laid out for the parking of cars, motorcycles and cycles in relation to that dwelling in accordance with a drawing and schedule to be submitted to and approved in writing by the Local Planning Authority. These areas shall thereafter not be used for any purpose other than the parking of cars, motorcycles and cycles.

Reason: In the interests of road safety and to accord with approved policy in accordance with Policy GEN7 of the Arun District Local Plan.

- 18 Garages provided on the site shall measure a minimum of 6 metres x 3 metres internally.

Reason: To ensure that adequate and satisfactory provision is made for the parking (and garaging) of vehicles clear of all highways in accordance with Policy GEN7 of the Arun District Local Plan.

- 19 No development hereby permitted shall be commenced until a scheme for the location and installation of fire hydrants has been submitted to and approved in writing by the Local Planning Authority. For the purposes of this condition the scheme shall be in accordance with the Guidance Note: The Provision of Fire Hydrants and an Adequate Water Supply for Fire Fighting as published by West Sussex Fire and Rescue Services (as amended from time to time). No building hereby permitted shall be occupied until the fire hydrant(s) required to serve that building have been installed in accordance with the approved scheme.

Reason: In order to provide adequate infrastructure for emergency services, in accordance with Policy GEN7 of the Arun District Local Plan. It is considered necessary for this to be a pre-commencement condition because of the need to ensure the safety of residents on the site.

- 20 At least 10% of the energy supply of the development shall be secured from decentralised and renewable or low carbon energy sources (as described in the glossary at Annex 2 of the National Planning Policy Framework, March 2012). Details and a timetable of how this is to be achieved for each phase or sub phase of development, including details of physical works on site, shall be submitted to and approved in writing by the Local Planning Authority before any development in that phase or sub phase begins. The development shall be implemented in accordance with the approved details and timetable and retained as operational thereafter, unless otherwise agreed in writing by the Local Planning Authority.

Reason: In order to secure on site renewable energy in accordance with national planning policy, in accordance with Policy GEN7 of the Arun District Local Plan.

- 21 Prior to the commencement of development, a strategy for the provision of the highest available headline speed of broadband provision to future occupants of the site shall be submitted to and approved in writing by the Local Planning Authority. The strategy shall take into account the timetable for the delivery of 'superfast broadband' (defined as having a headline access speed of 24Mb or more) in the vicinity of the site (to the extent that such information is available). The strategy shall seek to ensure that upon occupation of a dwelling, the provision of the highest available headline speed of broadband service to that dwelling from a site-wide network is in place and provided as part of the initial highway works and in the construction of frontage thresholds to dwellings that abut the highway. Unless evidence is put forward and agreed in writing by the Local Planning Authority that technological advances for the provision of a broadband service for the majority of potential customers will no longer necessitate below ground infrastructure, the development of the site shall be carried out in accordance with the approved strategy.

Reason: To safeguard the amenities of residents in accordance with Arun District Local Plan policies GEN7. It is considered necessary for this to be a pre-commencement condition because the provision of broadband needs to be incorporated into the design for the site.

- 22 If during development, contamination not previously identified, is found to be present at the site then no further development (unless otherwise agreed in writing with the Local Planning Authority) shall be carried out until the developer has submitted, and obtained written approval from the Local Planning Authority for, an amendment to the remediation strategy detailing how this unsuspected contamination shall be dealt with.

Reason: To ensure that the development complies with approved details in the interests of protection of the environment and prevention of harm to human health in accordance with Arun District Plan policy GEN7.

- 23 No development shall begin until an Air Quality Assessment and a Noise Impact Assessment have been submitted and approved in writing by the Local Planning Authority. Thereafter, the development shall be carried out in accordance with the approved schemes and any subsequent amendments shall be approved in writing by the Local Planning Authority.

Reason: To ensure that the development complies with approved details in the interests of protection of the environment and prevention of harm to human health in accordance with Arun District Plan policy GEN7. It is considered necessary for this to be a pre-commencement condition because of the need to protect the health of the residents.

- 24 Development shall not commence until a drainage strategy detailing the proposed means of foul disposal and implementation timetable has been submitted to and approved in writing by the Local Planning Authority in consultation with the sewerage undertaker. The development shall be carried out in accordance with the approved scheme and timetable.

Reason: To ensure that the proposed development is satisfactorily drained in accordance with policies GEN7 and GEN9 of the Arun District Council Local Plan. It is considered necessary for this to be a pre-commencement condition because the site needs to have adequate drainage.

- 25 Development shall not commence 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, the recommendations of the SuDS Manual produced by CIRIA.

Winter groundwater monitoring to establish highest annual ground water levels and Percolation testing to BRE 365, or similar approved, will be required to support the design of any Infiltration drainage.

Reason: To ensure that the proposed development is satisfactorily drained in accordance with policies GEN7 and GEN9 of the Arun District Council Local Plan. It is considered necessary for this to be a pre-commencement condition because the site needs to have adequate drainage.

- 26 Immediately following implementation of the approved SuDS scheme 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. There shall be no deviation to the approved scheme other than with the written consent of the Local Planning Authority. The scheme shall thereafter be maintained in perpetuity.

Reason: To ensure that the proposed development is satisfactorily drained in accordance with policies GEN7 and GEN9 of the Arun District Council Local Plan.

- 27 The development shall not proceed until formal consent has been approved in writing from the Lead Local Flood Authority (WSCC) or its agent (ADC) for the discharge of any flows to watercourses, or the culverting, diversion, infilling or obstruction of any watercourse on the site.

Any discharge to a watercourse must be at a rate no greater than the pre-development run off values.

Reason: To ensure that the proposed development is satisfactorily drained in accordance with policies GEN7 and GEN9 of the Arun District Council Local Plan.

- 28 Development shall not commence until full details of the maintenance and management of the SuDS 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 (a) details of financial management of the site including arrangements made in the event that the management company (or any subsequent management company) is no longer able to fulfil its duties; and (b) arrangements for the replacement of major components at the end of the manufacturers recommended design life.

Reason: To ensure the efficient maintenance and on-going operation of the SuDS system and to ensure the best practice in line with guidance set out in 'The SuDS Manual' CIRIA publication ref: C753 Chapter 32. It is considered necessary for this to be a pre-commencement condition because the site needs to have adequate drainage.

- 29 Upon completed construction of the SuDS System but prior to occupation of any part of the scheme, the owner or management company shall either provide the local planning authority with an updated copy of the management manual incorporating any changes as a result of construction/implementation or confirm in writing that no changes are required to the manual.

No further changes shall be made to the approved SuDS Maintenance & Management Plan/Regime including the management company responsible or the financial arrangements between the owners of the dwellings & the management company other than with the written consent of the Local Planning Authority.

The owner or management company shall thereafter strictly adhere to and implement the recommendations contained within the manual to ensure that the system is maintained in perpetuity.

Reason: To ensure the efficient maintenance and on-going operation of the SuDS system and to ensure the best practice in line with guidance set out in 'The SuDS Manual' CIRIA publication ref: C753 Chapter 32, in accordance with policies GEN7 and GEN9 of the Arun District Council Local Plan.

30 The development layout shall not be agreed until such time that arrangements for the future access and maintenance of any watercourse or culvert (piped watercourse) crossing or abutting the site has been submitted and approved in writing by the Local Planning Authority.

No construction is permitted, which will restrict current and future land owners from undertaking their riparian maintenance responsibilities of any watercourse on or adjacent to the site.

Reason: 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, in accordance with policies GEN7 and GEN9 of the Arun District Council Local Plan.

31 No development should take place within 5 metres of any ordinary watercourse and access of future maintenance must be considered during planning. If works are undertaken within, under, over or up to an Ordinary Watercourse, even if this is temporary, an Ordinary Watercourse Consent (OWC) may need to be applied for from the District or Borough Council.

Reason : To ensure that the proposed development is satisfactorily drained in accordance with policies GEN7 and GEN9 of the Arun District Council Local Plan.

32 Development should not commence until finalised detailed surface water drainage designs and calculations for the site, based on sustainable drainage principles, for the development have been submitted to and approved in writing by the Local Planning Authority. The drainage designs should demonstrate that the surface water run-off generated up to and including the 1 in 100 year, plus climate change, critical storm will not exceed the run-off from the current site following the corresponding rainfall event.

Reason : To ensure that the proposed development is satisfactorily drained in accordance with policies GEN7 and GEN9 of the Arun District Council Local Plan.

33 Development should not commence until full details of the maintenance and management of the SUDs system is set out in a site-specific maintenance manual and submitted to, and approved in writing, by the Local Planning Authority. The scheme shall subsequently be implemented in accordance with the approved designs.

Reason: To ensure that the proposed development is satisfactorily drained in accordance with policies GEN7 and GEN9 of the Arun District Council Local Plan. It is considered necessary for this to be a pre-commencement condition because the site needs to have adequate drainage.

- 34 No development shall take place within the area indicated until the applicant has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant and approved by the Planning Authority.

Reason: The site is of archaeological significance in accordance with Arun District Local Plan Policy GEN7. It is considered necessary for this to be a pre-commencement condition because archaeology can only be investigated before construction commences.

- 35 The Local Planning Authority shall be informed in writing immediately of any items of archaeological interest unearthed during the building operation and given a reasonable opportunity for an examination of the artefact and the site where it was found.

Reason: To enable items of archaeological interest to be recorded in accordance with Arun District Local Plan Policy GEN7.

36

The existing trees/bushes/hedges shall be/retained/protected in a manner to be agreed with the Local Planning Authority before the development commences for the duration of the development and shall not be damaged, destroyed, uprooted, felled, lopped or topped during that period without the previous written consent of the Local Planning Authority. Any trees removed without such consent or dying or being seriously damaged or becoming seriously diseased during that period shall be replaced in the following planting season with trees of such size and species as may be agreed with the Local Planning Authority.

No trees/or bushes/growing/and to be retained/on the site shall be damaged, uprooted, felled, topped or lopped without the prior written consent of the Local Planning Authority until 2 years after completion of the development hereby permitted. Any trees removed without such consent or being severely damaged or becoming seriously diseased or dying before the end of that period shall be replaced with trees of such size and species as may be agreed with the Local Planning Authority.

No development including site access, demolition or associated construction activities, shall take place on the site unless and until all the existing trees/bushes/hedges to be retained on the site have been protected by a fence in accordance with BS5837 (2012) and Section 9, to be approved by the Local Planning Authority for erection around each tree, group of trees and vegetation to a distance of 15m or to the Root Protection Area (RPA) as calculated in accordance with Table 2 of BS5837 (2012) to be agreed in writing by the Local Planning Authority. Within the areas so fenced off the existing ground must not be cultivated, nor must it be lowered or raised or added to by the importation and spreading of top soil unless agreed by the Local Planning authority. There must be no materials, temporary buildings, plant machinery or surplus soil shall be placed or stored thereon without prior written approval of the Local Planning Authority.

No trenching should occur within the protective fencing surrounding the Root Protection Area. If however there is no alternative but to locate the services then its encroachment into the Root Protection Area must be kept to a minimum and where the roots should be exposed using compressed air technology, such as the air spade to reduce damage caused by mechanical methods. If roots requiring severance to allow for the passage of services is necessary then an arboriculturist would be required to assess and determine whether the loss of the roots would be detrimental to the continued health and stability of the affected tree.

Reason: To ensure the retention of vegetation important to the visual amenity, /the ecological quality/and for the environment of the area in accordance with policy GEN7 of the Arun District Local Plan.

37

Any works to the trees or vegetation clearance on the site should only be undertaken outside of the bird breeding season which takes place between 1st March - 1st October. If works are required within this time an ecologist will need to check the site before any works take place (with 24 hours of any work).

Reason: In the interests of amenity in accordance with Arun District Local Plan policies GEN7 of the Arun District Local Plan. It is considered necessary for this to be a pre-commencement condition because the trees need to be protected during the construction works.

- 38 Prior to start on site a badger survey should be undertaken to ensure badgers are not using the site.
- Reason: For the avoidance of doubt and in the interests of amenity and the environment in accordance with Policy GEN7 of the Arun District Local Plan. It is considered necessary for this to be a pre-commencement condition because badgers are a protected species.
- 39 A Landscape Management Plan is submitted at Reserved Matters stage, which details the ongoing management and aftercare of the site once construction is complete. The Landscape Management Plan should include the following requirements:
- any trees removed should be replaced at a ratio of 2:1;
 - a wildflower meadow should be planted;
 - filling any gaps in tree lines or hedgerows with native species;
 - bat, bird and barn owl boxes installed on the site;
 - grassland areas managed to benefit reptiles;
 - log piles provided on-site.
- Reason: For the avoidance of doubt and in the interests of amenity and the environment in accordance with Policy GEN7 of the Arun District Local Plan.
- 40 No development shall commence until the vehicular access serving the development has been constructed in accordance with the approved planning drawing.
- Reason: In the interests of road safety in accordance with Policy GEN7 of the Arun District Local Plan. It is considered necessary for this to be a pre-commencement condition because the site needs to have safe access off the highway before construction commences.
- 41 No part of the development shall be first occupied until a revised Travel Plan has been submitted to and approved in writing by the Local Planning Authority. The Travel Plan once approved shall thereafter be implemented as specified within the approved document. The revised Travel Plan shall be completed in accordance with the latest guidance and good practice documentation as published by the Department for Transport or as advised by the Highway Authority.
- Reason: To encourage and promote sustainable transport in accordance with Policy GEN7 of the Arun District Local Plan.
- 42 No part of the development shall be first occupied until the car parking spaces have been constructed in accordance with plans and details submitted to and approved in writing by the Local Planning Authority. These spaces shall thereafter be retained at all times for their designated use.
- Reason: To provide car-parking space for the use in accordance with Policy GEN7 of the Arun District Local Plan.

43

No part of the development shall be first occupied until covered and secure cycle parking spaces have been provided in accordance with plans and details submitted to and approved by the Local Planning Authority.

Reason: To provide alternative travel options to the use of the car in accordance with current sustainable transport policies and in accordance with Policy GEN7 of the Arun District Local Plan.

INFORMATIVE: There may be a ditch / culvert on the western boundary of the site alongside Tye Lane, for which the landowner will have responsibility. If this ditch / culvert exists then the applicant is urged to discuss this with the Drainage Engineer(s) at Arun District Council.

INFORMATIVE: Section 278 Agreement of the 1980 Highways Act - Works within the Highway
The applicant is advised to enter into a legal agreement with West Sussex County Council, as Highway Authority, to cover the off-site highway works. The applicant is requested to contact The Implementation Team Leader (01243 642105) to commence this process. The applicant is advised that it is an offence to undertake any works within the highway prior to the agreement being in place.

INFORMATIVE: Traffic Regulation Order

The applicant is advised to contact the WSCC Traffic Regulation Order team (01243 642105) to obtain the necessary paperwork and commence the process associated with the proposed speed limit changes. The applicant would be responsible for meeting all costs associated with this process. The applicant should note that the outcome of this process cannot be guaranteed.

Case Officer: Michael Eastham

Date of Decision:

23 February 2018



Neil Crowther
Group Head of Planning

Arun District Council
The Arun Civic Centre
Maltravers Road
Littlehampton
West Sussex BN17 5LF

IT IS IMPORTANT THAT YOU READ THE NOTES ATTACHED TO THIS DOCUMENT

APPEALS TO THE SECRETARY OF STATE

If you are aggrieved by the decision of your local planning authority to refuse permission for the proposed development or to grant it subject to conditions, then you can appeal to the Secretary of State under section 78 of the Town and Country Planning Act 1990.

If this is a decision on a planning application relating to the same or substantially the same land and development as is already the subject of an enforcement notice, and you want to appeal against this planning application decision, then you must do so within 28 days of the date of this notice.

If an enforcement notice is served relating to the same or substantially the same land and development as in your application and you want to appeal against this planning application decision, then you must do so within 28 days of the date of service of the enforcement notice, or within 12 weeks of the date of this notice, whichever period expires earlier.

Otherwise, if you want to appeal against this decision then you must do so within 6 months of the date of this notice.

Appeals must be using a form which you can get from the Secretary of State at Temple Quay House, 2 The Square, Temple Quay, Bristol BS1 6PN (Tel: 0303 444 5000) or online at <http://acp.planninginspectorate.gov.uk>

The Secretary of State can allow a longer period for giving notice of an appeal but will not normally be prepared to use this power unless there are special circumstances which excuse the delay in giving notice of appeal.

The Secretary of State need not consider an appeal if it seems to the Secretary of State that the local planning authority could not have granted planning permission for the proposed development or could not have granted it without the conditions they imposed, having regard to the statutory requirements, to the provisions of any development order and to any directions given under a development order.

PURCHASE NOTICES

If either the local planning authority or the Secretary of State refused permission to develop land or grants it subject to conditions, the owner may claim that he can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances, the owner may serve a purchase notice on the Council (that is, where the land is situated in a National Park, the National Park authority for the Park, or in any other case the district council in whose area the land is situated). This notice will require the Council to purchase the owner's interest in the land in accordance with the provisions of Chapter 1 of Part VI of the Town & Country Planning Act 1990.

Please note that this decision notice only relates to matters under the Planning Acts and does not give consent under any other legislation that may apply to the development. You will need to carry out your own checks to determine whether any other consents or permissions are required. For example, the Building Regulations are likely to apply to most developments, and a Highways Licence may be required from West Sussex County Council for any development within the public highway (including the placing of skips on highway land).