gta Civils & Transport

Drainage Impact Assessment

Lake Lane, Barnham, Bognor Regis, PO22 0AJ

Client

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Introduction

1.1 The following document was prepared by GTA Civils & Transport Ltd., as instructed by Property Spheres Limited, to set out the drainage impact on the site at Lake Lane, Barnham, Bognor Regis, PO22 0AJ. Arun District Council state the need for these Assessments for proposed development in the Lidsey Catchment area.

1.2 This assessment is to be read in conjunction with the Flood Risk Assessment (FRA) produced by GTA Civils & Transport Ltd. No responsibility is accepted to any third party for all or part of this study in connection with this or any other development.

1.3 The application site lies north of Lake Lane in Barnham, which is administered by Arun District Council (ADC). It comprises approximately 0.5ha of vacant land, accessed from Lake Lane between St. Annes Cottage and Lynton. The proposed scheme is to build seven new detached dwellings plus amenity landscaping and access.

Drainage Impact Assessment

1.4 Arun Local Plan Policy W DM1 requires a Drainage Impact Assessment (DIA) for major developments within the Lidsey Wastewater Treatment Works (WTW) catchment area. The Lidsey WTW is located 900m southwest of Barnham. The proposed development will connect to Southern Water's foul network to the south of the site within Lake Lane. The foul sewer network in Barnham then drains to the Lidsey WTW via 350mm and 375mm gravity sewers. A DIA is therefore required for the development.

1.5 Communities within the Lidsey WTW catchment area have experienced foul water flooding which has led to the pollution of watercourses. This is assumed to be caused by the sewerage system being overloaded due to groundwater infiltration and surface water inundation. The Local Plan document explains that development within the Lidsey WTW catchment area is required to take account and contribute to the improvement of the existing sewage and drainage network.

1.6 The Lidsey Surface Water Management Plan (SWMP) identifies Local Flood Risk Zones (LFRZ) for further analysis. The site at Barnham is within LFRZ_07 (Park Road, Barnham) – refer to the mapped risk area in Appendix A.

1.7 The surface water flood mechanism is stated as being due to capacity/unmaintained ditch network. There are records of groundwater flooding due to a spring behind properties on the east side of Park Road and sewer flooding from the foul assets along Park Road.

1.8 As discussed in Section 4 'Proposed SuDS and Foul Strategy' of the associated FRA, by GTA Civils & Transport, the proposed development will discharge surface water runoff to the local ditch network at the

greenfield Qbar rate. This strategy will ensure no adverse impact on surface water flood risk downstream of the site.

1.9 A list of preferred interventions for LFRZ_007 is provided within the SWMP – refer to Appendix A. In line with these interventions, the on-site foul sewers will be constructed in accordance with current best practice to prevent groundwater infiltration and surface water ingress and ensure no adverse impact on sewer flood risk downstream of the site. This will include measures as follows:

- No surface water connections permitted to the wastewater system.
- Use of joint sealant or mass concrete chamber surrounds to prevent infiltration.
- Use of bolt down sealed chamber covers in areas of potential surface water inundation.

1.10 In addition, water butts will be installed on rainwater downpipes to reduce the volumes of runoff generated at the site. This will have a greater impact during lower intensity and more frequently occurring storm events. The householders will need to be made fully aware of the purpose of implementation and use of the water butts to reduce flood risk – refer to the Draft Drainage Maintenance and Management Plan in Appendix B. This will ensure the water butts are used in a manner which ensures they are regularly emptied to allow for attenuation of roof runoff.

1.11 As discussed in section 4 - 'Proposed SuDS and Foul Strategy' of the associated FRA, the proposed development will discharge surface water runoff to the local ditch network at the greenfield Qbar rate. This strategy will ensure no adverse impact on surface water flood risk downstream of the site.

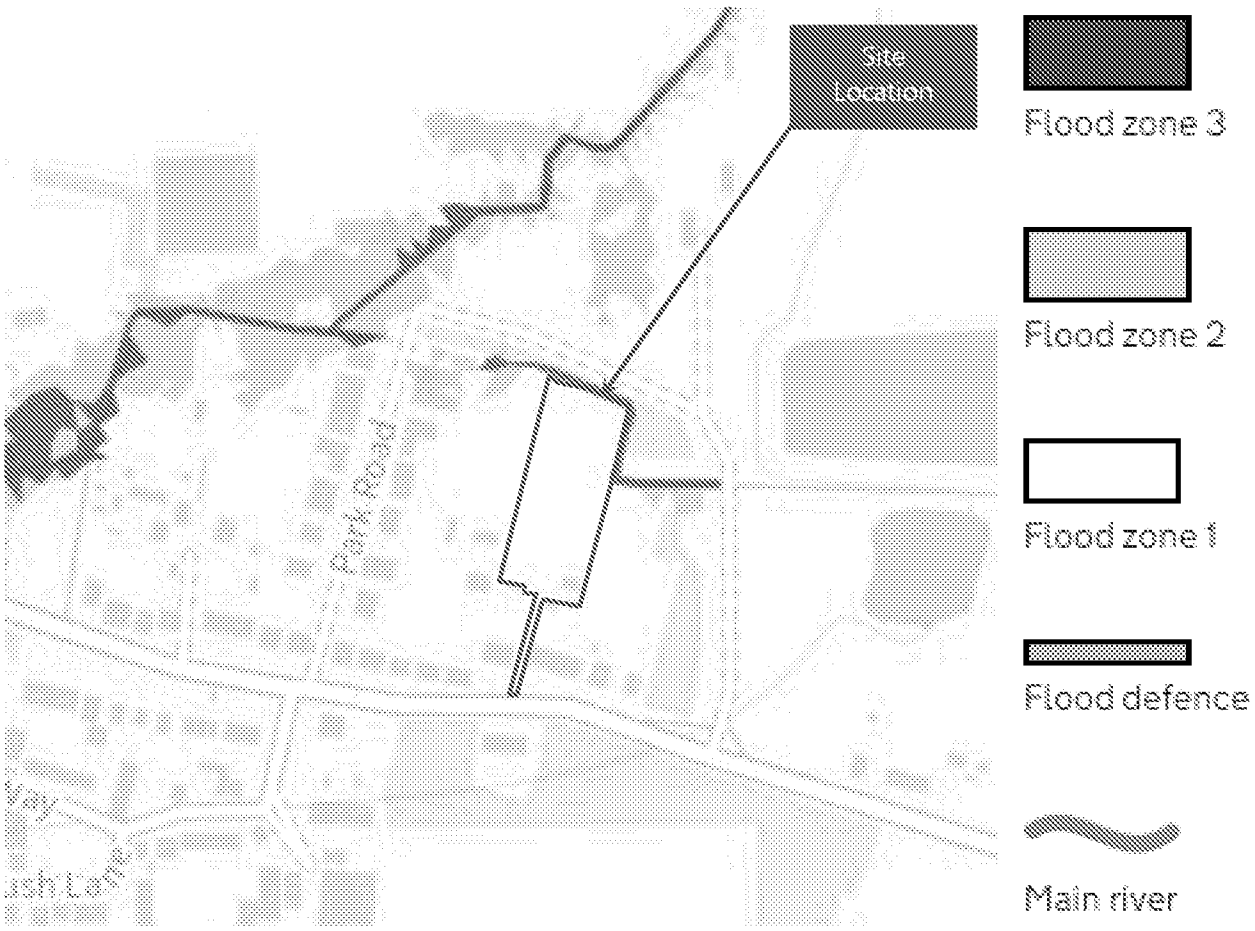
1.12 Capacity improvements within Southern Water's sewerage network (including at Lidsey WTW) are managed and funded by Southern Water using its Infrastructure Charges Scheme under Section 143 of the Water Industry Act 1991. All developers pay these Charges upon new connections. Investment needs are identified by Southern Water within its Drainage and Wastewater Management Plan (DWMP) for the Arun and Western Streams River Basin Catchment. These needs are reviewed with Ofwat for each business plan period. No mechanism exists whereby a developer can contribute towards off-site upgrades.

- End of Assessment -

Issue	Issue date	Compiled	Checked
Preliminary/First Issue	14 January 2025	JP	MR

Appendix A

Flood Maps – Environment Agency and WSCC



EA's Online Flood Map for Planning (Rivers and Seas)

The site is located in Flood Zone 1 (FZ1)

EA's Online Surface Water Flood Depth Map in a 'Low Risk Scenario'
(1 in 1000 years storm event)

Areas in the northwest and on the eastern boundary are liable to surface water flooding up to 300mm

Surface water flood risk: water velocity in a low risk scenario

Flood velocity (metres/second)

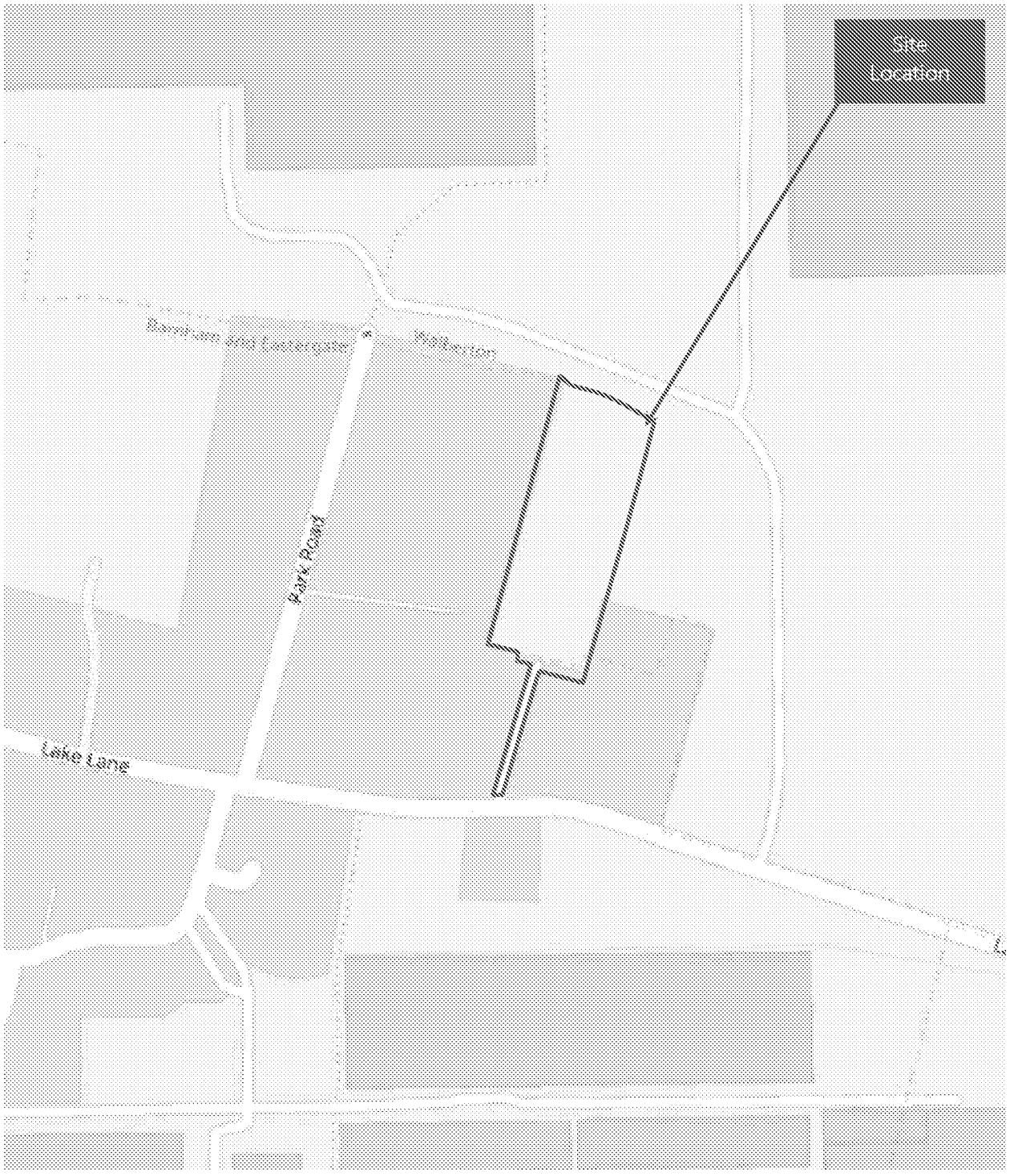
Over 0.25 m/s Less than 0.25 m/s Direction of water flow

EA's Online Surface Water Flood Velocity Map in a 'Low Risk Scenario'
(1 in 1000 years storm event)

The surface water flooding originates within the site

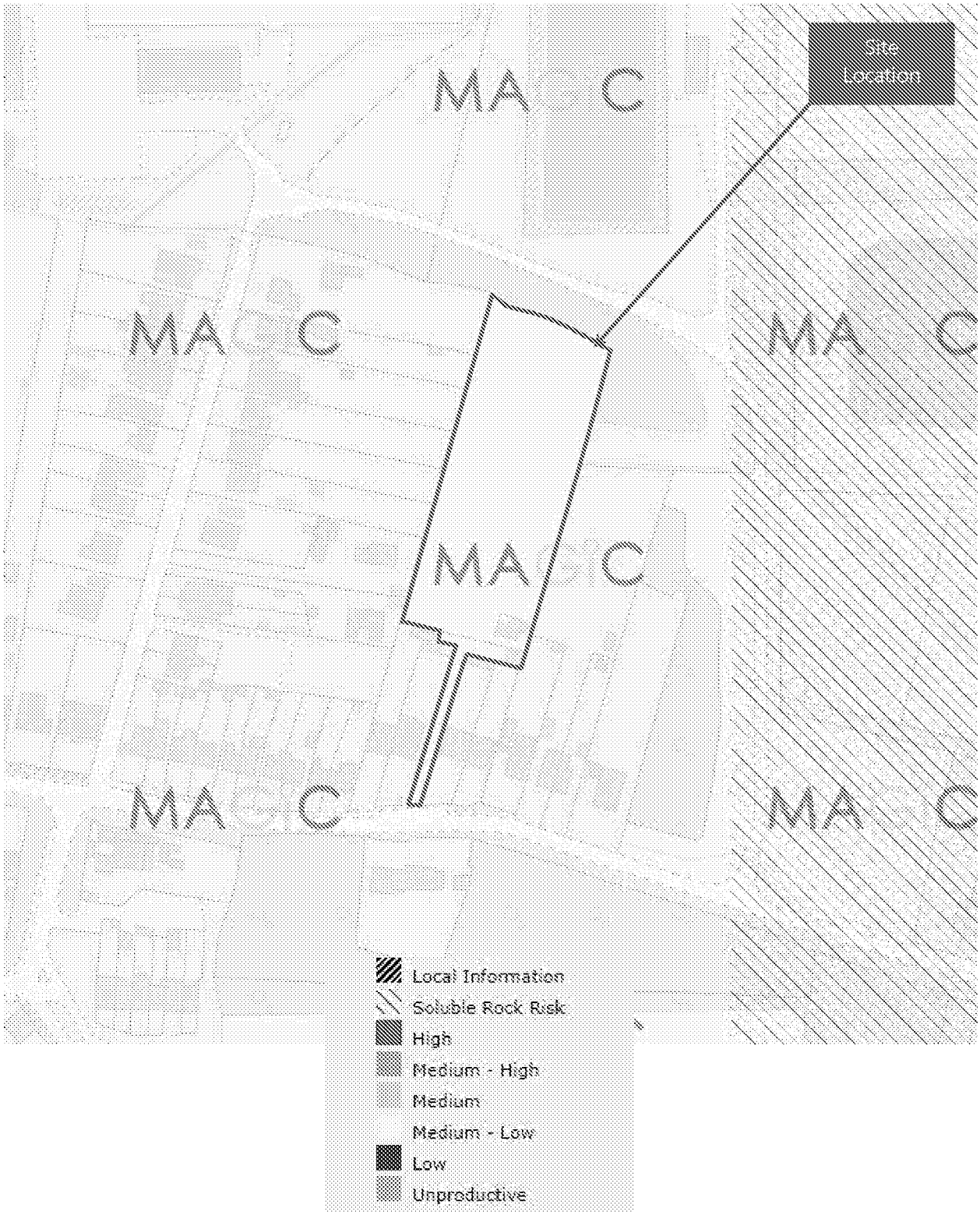
EA's Online Risk of Flooding from Reservoirs' Map

The site is not liable to flood from this source



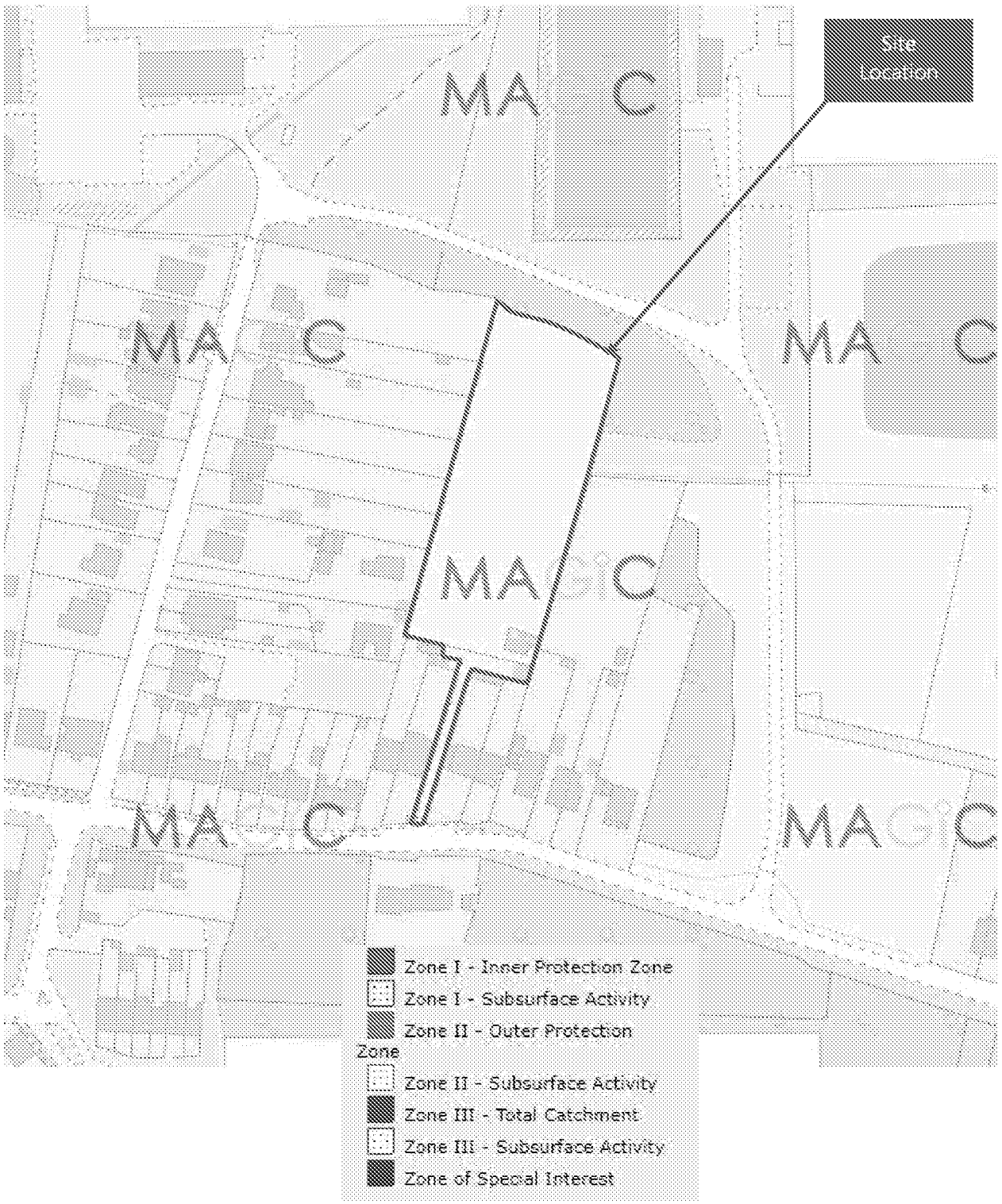
Environment Agency's Online Historic(al) Flood Map

The site has not been affected by flooding in the past



Environment Agency's Groundwater Vulnerability Zone Map

The site overlies a 'Medium - Low' Groundwater Vulnerability Zone



Environment Agency's Online Groundwater Source Protection Zones Map

The site lies outside of recorded Groundwater Protection Zones

Appendix B

Draft Drainage Maintenance Plan

Maintenance Responsibilities

It is the overarching responsibility of each **site owner** to ensure the Drainage Infrastructure is maintained in accordance with this Maintenance Plan.

The responsibility of maintenance, repair, renewal and replacement of the surface water drainage system will be conferred on to the property owners with all costs shared on an equal basis. These arrangements will be administered in the Transfer Document TP1 of each property at the point of sale with the same responsibilities transferring with each property to the successors in title.

Contamination or Dilution of Spillage

The Environment Agency would prefer all spillages on any highway to be contained to prevent any downstream contamination. However, this cannot always be achieved, depending on the nature of the spillage. In all circumstances involving the spillage of substances on the highway it is important that the Environment Agency are notified as soon as possible so that they can provide advice and take appropriate action.

Prompt action following a spillage can prevent or reduce its effects, whilst inappropriate action may cause or worsen the pollution effects. In the design of the drainage on this site, a number of measures have been put in place to prevent any pollution entering the groundwater such as Green roofs and permeable paving. The permeable paving sub-base is lined with a geotextile fabric.

In the event of a spillage on site it is the responsibility of the freeholders to clear up any spillage before it enters the drainage system. The primary method of dealing with any spillage of Hydrocarbons should be to use sand to soak up the leak and prevent any Hydrocarbons entering the drainage system. Once sand has been contaminated it should not be washed into the drainage system but disposed of by a Licensed Contractor.

Environment Agency – Emergency Contact Number

In the event of a spillage the Environment Agency should be contacted to notify the event and seek advice. The

Environment Agency's Incident Hotline is **0800 80 70 60** (Freephone 24hrs).

Health and Safety

All those responsible for and involved in the maintenance of the site drainage systems should be safety-conscious and comply with the relevant health and safety legislation. This includes:

- The Health and Safety at Work etc Act 1974
- The Management of Health and Safety at Work Regulations 1999
- The Workplace (Health, Safety and Welfare) Regulations 1992

Each freeholder is responsible for suitable risk assessment and management to ensure safe working conditions and practices. Measures to protect potential visitors also need to be considered.

Specialist contractors used should work to industry guidelines and be able to demonstrate safe working practices.

Employers have a duty to employees to inform them about the risks of their work environment and to decrease the risk as far as reasonably practicable. Appropriate personal protective equipment (PPE) should be provided and policies implemented based on risk assessment.

Operatives should be trained for working near water. Risks of contaminated water should be considered. Checking for open cuts and using nitrile gloves, waterproof plasters etc is advised.

Entry of pipes, chambers, tanks and culverts should be avoided wherever possible. Work should be carried out from the surface using appropriate equipment. In the event that entry cannot be avoided to perform a critical task, the required safety training, protection measures and precautions must be implemented prior to entry. Lone working should never be attempted.

For further information refer to Section 36 of The SuDS Manual (CIRIA C753).

Drains, Manholes, Gullies, Silt Catchpits

Regular inspection/maintenance is required to ensure the effective long-term operation of private drains, manholes, gullies & silt pits.

Check hydrobrake orifice is clear and retention tank door is closed. Check function of retention tank door and oil if necessary.

Operation and maintenance requirements for drains, gullies and silt pits are described in the following table, overleaf:

Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Six-monthly
	Debris removal from gullies & silt pits, channel drains (where may cause risks to performance).	Weekly
	Lift and inspect receiving manholes to check for any blockages. **Particular attention should be given to the control manhole containing the flow control device**	Six-monthly
Remedial Actions	Repair any damaged gully gratings or manhole covers	As required
	Replace / fix any loose channel drain covers	As required
Monitoring	Carry out full CCTV survey to confirm ongoing integrity of all drains. Inspect all gullies and silt pits & drainage channels during the survey	10-yearly intervals

Inspection of manholes and removal of silt from silt catchpits should be undertaken by a specialist contractor.

SDS Infiltration Tank

Recommended design life: Geolight has a service design life in excess of 50 years.

Exact timing of decommission should be identified via the ongoing maintenance and inspection regime. Once replacement need is identified, the complete tank will be removed and replaced depending on the new requirements. The decommissioned tank should be recycled as per manufacturer's guidelines.

The technologies and framework implemented now to design and build these assets could change significantly during the design life of the product. The decommissioning strategy should therefore be reviewed appropriately over time.

Inspection Frequency and Maintenance Requirements: as per the table below:

Schedule	Action	Frequency
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action. Remove sediment from pre-treatment structures and/ or internal forebays	Monthly for 3 months then annually Annually, or as required
Remedial Actions	Repair/rehabilitate inlets, outlet, overflows and vents. Reconstruct soakaway and/or replace or clean granular layers and infiltration blanket, if performance deteriorates or failure occurs	As required As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed. Survey inside of tank for sediment build-up and remove if necessary.	Annually Every 5 years or as required

To be inspected & checked for blockage **6 monthly** and jetted/cleared if necessary.

A CCTV Drainage Survey of the perforated pipe should be carried out every **5 Years** and any blockage/silt build up should be jet washed or removed.

Pond/swale

Inspection Frequency and Maintenance Requirements: as per table below:

Schedule	Action	Frequency
Regular Maintenance	Remove litter and debris	Monthly, or as required
	Cut grass	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants.	Monthly at start, then as required
	Inspect inlets, outlets & overflows for blockages and clear if required	Monthly
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect infiltration surfaces for ponding, compaction, silt accumulation, record where water is ponding for > 48 hours	Monthly, or when required
	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% or more of the swale treatment area
Remedial Actions	Repair erosion or other damage by re-turfing or reseeding	As required
	Relevel uneven surfaces and reinstate design levels	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

Water Butts

The householders will need to be made aware that the purpose of the water butts is principally to reduce flood risk.

For this reason, the water butts should be regularly emptied to allow for attenuation of roof runoff.

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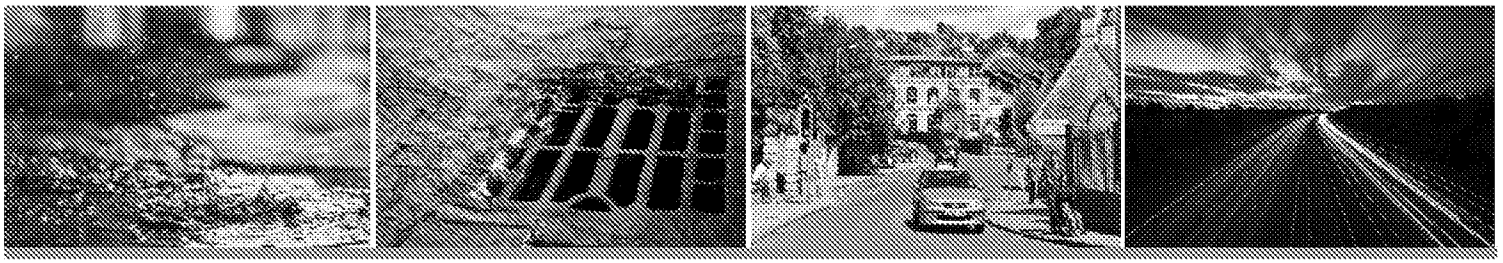

Civil Engineering · Transport Planning · Flood Risk

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