



Flood Risk Assessment and Drainage Strategy

Land Between Botley Road, Castle Lane &
Misselbrook Lane, SO52 9LY

Presented
to: **Boom Developments Ltd**

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Report Details

Client	Boom Developments Ltd
Report Title	Flood Risk Assessment and Drainage Strategy
Site Address	Land Between Botley Road, Castle Lane & Misselbrook Lane, SO52 9LY
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Reference of Terms

Canal Failure

Canal failure can include a breach or overtopping of a canal system due to the effects of a high intensity rainfall event or structural failure that is not associated with a rainfall event. Such failure can be very dangerous as it can involve the rapid release of large volumes of water at high velocity, however, it is typically limited to reaches of canal that are raised above the surrounding ground level on one or both side and where watercourses or other structures pass beneath the canal. The size and nature of canals themselves can also have a hydraulic control on the mechanisms of flooding associated with a failure, resulting in a rapid peak in flow followed by a gradual reduction as the flow becomes restricted by the capacity of the canal itself to rapidly pass flow to the breach or failure point.

Fluvial Flooding

Fluvial flooding typically occurs when a river's capacity is exceeded, and the excess water overtops the river banks. It can also occur when the watercourse has a high level downstream, perhaps due to structures or blockage, thus limiting conveyance. This creates a back-up of water which can overtop the banks. Typical flooding issues occur when the natural floodplain has been urbanised and the river has been confined.

Groundwater Flooding

Groundwater flooding is caused by the emergence of water from beneath the ground at either point or diffuse locations when the natural level of the water table rises above ground level. This can result in deep and long-lasting flooding of low-lying or below-ground infrastructure such as underpasses and basements. Groundwater flooding can cause significant damage to property, especially in urban areas, and can pose further risks to the environment and ground stability.

Reservoirs Failure

Reservoir failure can be a particularly dangerous form of flooding as it results in the sudden release of large volumes of water that can travel at high velocity. This can result in deep and widespread flooding, potentially resulting in significant damage. The likelihood of reservoir flooding occurring is generally extremely low given that all large reservoirs are managed in accordance with the Reservoirs Act 1975. Under the Reservoirs Act 1975, a large, raised reservoir is defined as one that holds over 25,000 cubic metres of water above the level of the surrounding land. The EA's online reservoir inundation map illustrates the maximum flood extents that could potentially occur in the event of a reservoir failure.

Sewer Flooding

Flooding from sewers primarily occurs when flow entering a system exceeds available capacity or if the network capacity has been reduced through blockage or collapse. In the case of surface water sewers that discharge to watercourses, the same effect can be caused as a result of high water levels in the receiving watercourse. As a result, water can begin to surcharge the sewer network, emerging at ground level through gullies and manholes and potentially causing flooding to highways and properties. If this occurs flooding can represent a significant hazard to human health due to the potential for contaminants in flood water.

Surface Water Runoff

Surface water runoff is defined as water flowing over the ground that has not yet entered a drainage channel or similar. It usually occurs as a result of an intense period of rainfall which exceeds the infiltration capacity of the ground. Typically, runoff occurs on sloping land or where the ground surface is relatively impermeable. The ground can be impermeable either naturally due to the soil type or geology, or due to development which places impervious material over the ground surface (e.g. paving and roads).

Tidal Flooding

Tidal flooding is caused by high tides coinciding with a low-pressure storm system which raises sea and tidal water levels, overwhelming coastal and river defences. This may be made worse by gale force winds blowing the raised body of water up tidal river basins some distance from the coast, due to floodwater being forced up the tidal reaches of rivers and estuaries. Such flooding may become more frequent in future years due to rising sea levels.

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1.0 Introduction

1.1 Appointment

- 1.1.1 Delta-Simons Limited ("Delta-Simons") was instructed by Lighthouse Development Consulting on behalf of Boom Developments Ltd (the "Client") to carry out a Flood Risk Assessment (FRA) and Drainage Strategy (DS) to support the planning application for the proposed battery storage facility at Land Between Botley Road, Castle Lane & Misselbrook Lane, SO52 9LY (the "Site").
- 1.1.2 The assessment considers potential flood risks from all sources and provides options for managing any Site-specific flood risks identified, assuming the continued current commercial use of the Site.

1.2 Project Understanding

- 1.2.1 The Site is shown to be located within Flood Zone 1 (Low Probability) on the EA Flood Map for Planning however, due to the size of the Site (i.e. greater than 1 hectare), a FRA is required to determine the level of risk from all sources, along with suitable mitigation measures to provide an informative report in line with the National Planning Policy Framework (NPPF) and associated planning guidance to support a planning application.
- 1.2.2 In addition, a DS with appropriate consideration for Sustainable Drainage Systems (SuDS) in line with CIRIA SuDS (C753) Guidance will be required to ensure that surface water flood risk is not exacerbated off-site as a result of the proposed development.
- 1.2.3 Hampshire County Council as Lead Local Flood Authority (LLFA) is a statutory consultee for major planning applications in relation to surface water drainage, requiring that all planning applications are accompanied by a Sustainable Drainage Strategy. The aim of the Sustainable Drainage Strategy is to identify water management measures, including Sustainable Drainage Systems (SuDS), to provide surface water runoff reduction and treatment.

1.3 Scope of Works

- 1.3.1 The scope of works has been as follows for this FRA:
- Assess flood risk from all sources using best available information including review of EA data and mapping, topography and historical records;
 - Assess previous relevant studies, local authority plans or strategies;
 - Advise on flood mitigation measures and residual risks;
 - Assess evacuation routes;
 - Advise on availability of flood warnings;
 - Identify the requirement for a Sequential Test;
 - Assess/conduct flood compensatory storage requirements; and
 - Prepare FRA report.
- 1.3.2 The scope of works for the DS has been as follows:
- Review existing conditions including sewer plans, British Geological Survey information and topographical information;
 - Review Lead Local Flood Authority (LLFA) drainage policies;
 - Analyse existing and proposed impermeable areas;
 - Calculate existing runoff rates (excluding existing drainage system modelling);
 - Assess method of surface water runoff disposal (soakaway/watercourse/sewer);

- Establish surface water discharge rate in consultation with the LLFA/sewerage provider;
- Estimate required attenuation volume using MicroDrainage or similar;
- Assess and advise on suitable forms of SuDS;
- Advise on drainage system maintenance measures;
- Advise on surface water treatment methods;
- Establish method of foul water drainage;
- Prepare concept drainage sketch (where development plan is available as dwg. format); and
- Prepare DS report.

1.3.3 This report takes into account the following national and local policies:

- National Planning Policy Framework (NPPF) (2021)¹;
- National Planning Practice Guidance (NPPG) (2014)²;
- CIRIA Guidance: The SuDS Manual (C753) (2017)³; and
- Test Valley Borough Council Local Development and Planning Policies.

1.4 Sources of Information

1.4.1 The following sources of information have been reviewed and assessed for the purpose of this FRA:

- EA online flood maps⁴;
- British Geological Society (BGS) Interactive Map⁵;
- MAGIC Interactive Map⁶;
- Hampshire County Council Preliminary Flood Risk Assessment (2011 PFRA);
- Hampshire County Council Groundwater Management Plan (2013 GWMP);
- Partnership for Urban South Hampshire - Strategic Flood Risk Assessment update (2016 SFRA);
- Hampshire County Council Local Flood and Water Management Strategy (2020 LFWMS); and
- Monk's Brook Catchment Management Plan (2022 CMP).

1.5 Project Limitations

1.5.1 The wider Delta-Simons limitations are contained within Appendix A.

1 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1004408/NPPF_JULY_2021.pdf

2 <http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/>

3 https://www.ciria.org/Resources/Free_publications/SuDS_manual_C753.aspx

4 <https://flood-map-for-planning.service.gov.uk/>

5 <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>

6 <http://www.magic.gov.uk/>

2.0 Site Description

2.1.1 The aim of this section of the report is to outline key environmental information associated with the baseline environment.

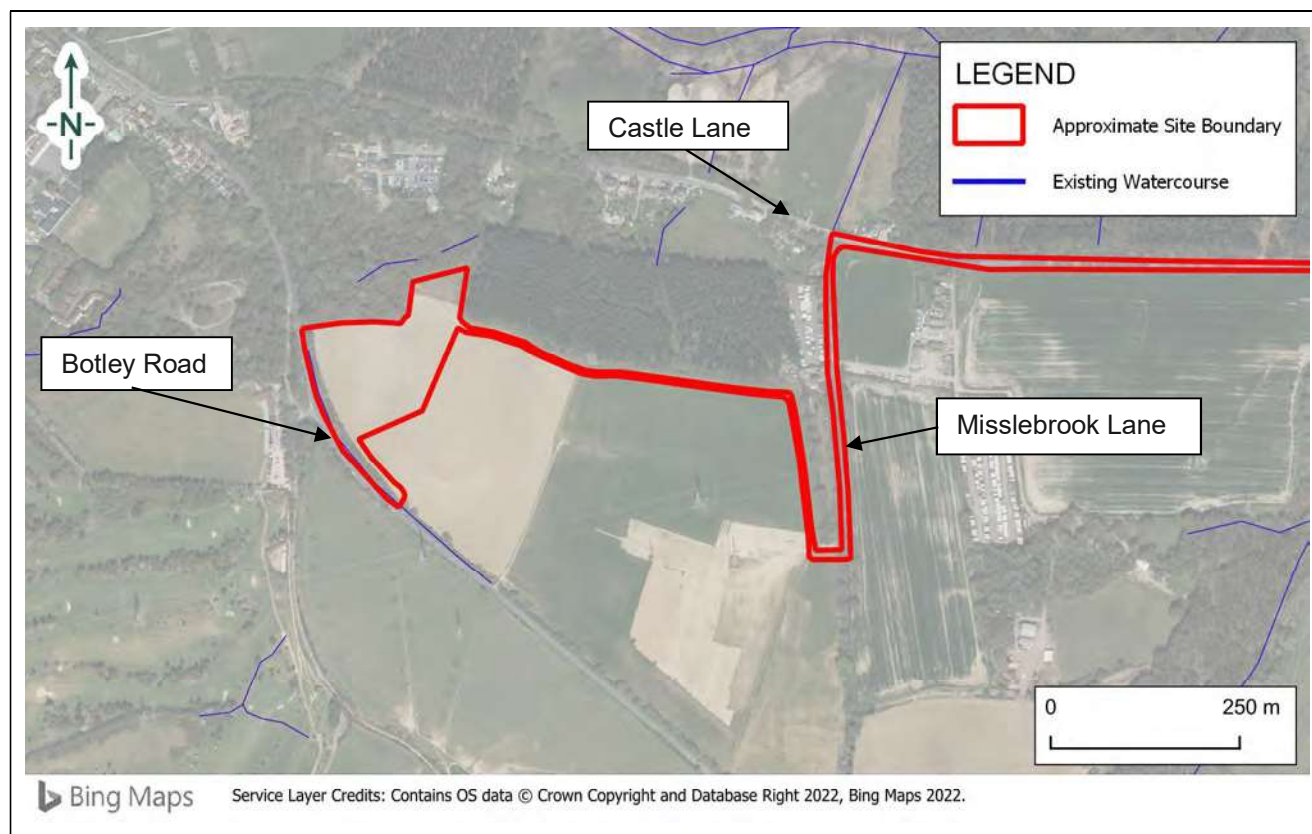


Figure 1: Site Location Plan

Co-ordinates	Centred approximately at National Grid Reference (NGR) 440090,119470	Area (approx.)	6.84 ha
Site Location	The Site is located approximately 7.2 km northeast of Southampton central train station and approximately 1.4 km east of the centre of North Baddesley Village Centre.		
Existing Site Conditions	The Site currently comprises a parcel of grassed land bordering Botley Road (to the south and west), Castle Lane (to the north) and Misslebrook Lane (to the east). The Site boundary also incorporates Misslebrook Lane and Castle Lane towards Templars Way and Bournemouth Road towards the existing Bournemouth Road sub-station. Access to the Site is provided to the south via Botley road to the south and Misslebrook Lane to the east.		
Proposed Site Conditions	The proposed development comprises a battery storage compound in the north western corner of the Site. Battery storage will be provided in the form of containerised units that will be mounted on footings above a permeable gravel base. The containers will be raised 300 m above surrounding ground levels with a void space below. Proposed development plans are included as Appendix B. Access to the battery storage will be provided by an access track and internal service road extended from Botley Road. The proposed access track and internal service road will be formed by a permeable surface.		

	The proposed development includes an underground cable that will connect to an existing sub-station located on Bournemouth Road approximately 2.2 km east of the Site. The proposed development will result in an overall hardstanding area of approximately 0.09 ha associated with the containerised battery units.
Topography	A Topographic Survey of the Site is included within the Proposed Development Plan included at Appendix B. The Topographic Survey indicates that ground levels across the Site generally range between 58 – 43 m AOD. Ground levels across the proposed Battery Storage compound range between approximately 49 m AOD in the south western corner and 46 m AOD in the north eastern corner.
Hydrology	A review of Ordnance Survey mapping/online imagery indicates the following watercourse within the vicinity of the Site: • A drain located along the western boundary of the Site adjacent to Botley Road flowing in a generally northerly direction; • A drain located approximately 50 m north of the north western corner of the Site. This drain is shown to flow in a generally north easterly direction towards a series of drains located to the north of Castle Lane; • A ditch flowing in a northerly direction along Misselbrook Lane; • Monks Brook located approximately 575 m northeast of the north western corner of the Site; • Tanners Brook located approximately 1.2 km southwest of the Site.
Geology	Reference to the British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the majority of the Site is underlain by bedrock deposits from the London Clay Formation which is described as comprising clay, silt and sand. The northeast and northwest corners of the Site are shown to be underlain by bedrock deposits from the Wittering Formation which is described as comprising sand, silt and clay. No superficial deposits are recorded beneath the Site. The geological mapping is available at a scale of 1:50,000 and as such may not be accurate on a Site-specific basis. A review of BGS borehole records indicates there are no BGS boreholes within the Site.
Hydrogeology	According to the EA's Aquifer Designation data, obtained from MAGIC Map's online mapping [accessed 15/12/2022], the underlying London Clay Formation is classified as an Unproductive Strata. These are defined as 'rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow'. The Wittering Formation deposits in the northeast and northwest corners of the Site are classified as a Secondary A Aquifer. These are described as 'permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers'. The EA's 'Source Protection Zones' data, obtained from MAGIC Map's online mapping [accessed 15/12/2022], indicates that the Site is not located within a Groundwater Source Protection Zone.

	The Soilscales mapping obtained from MAGIC Map's online mapping [accessed 15-12-2022] shows that the majority of the Site is located in 'Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils'. A small area within the south-eastern extent of the Site is located within 'Naturally wet very acid sandy and loamy soils'.
Local Drainage	Public sewer records have been obtained from Southern Water and are included in Appendix C. The public sewer records show that there are no recorded sewer networks located on Site. The following sewers are identified in the vicinity of the Site: • A 150 mm diameter public foul sewer located within Misslebrook Lane. The sewer is shown to originate at manhole ref 7401 and flows in northerly direction before discharging into a 225 mm diameter foul sewer located to the north of Castle Lane; and • A 150 mm diameter public foul sewer located within Botley Road approximately 700 m to the southeast of the Site. The sewer drains in a north westerly direction before turning south at manhole ref 6801.

3.0 Relevant Planning Policy and Guidance

3.1 Introduction

- 3.1.1 The aim of this section of the report is to discuss the main aspects of the local and national planning policies that are relevant to any proposed development on the Site and relevant guidance and legislation.

3.2 Assessment of Flood Risk

- 3.2.1 The flood risk from fluvial (Main Rivers) and coastal flooding is assessed through the use of the EA Flood Maps (flood risk from rivers or the sea). This map defines three zones of different flood risk, the third of which is subdivided into two categories:

- Zone 1 "Low probability of flooding" - This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%);
- Zone 2 "Medium probability of flooding" - This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% - 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% - 0.1%) in any year;
- Zone 3a "High probability of flooding" - This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year; and
- Zone 3b "Functional floodplain" - A sub-part of Zone 3, this zone comprises land where water has to flow or be stored in times of flood. This zone is not normally included within the national Flood Map for Planning and is calculated where necessary using detailed hydraulic modelling.

3.3 National Planning Policy Framework

- 3.3.1 Flood risk in England is normally considered through the planning process in the NPPF (2021), produced by Ministry of Housing, Communities and Local Government.

- 3.3.2 The principal aim of the NPPF assessment of flood risk is that:

"Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere".

- 3.3.3 The NPPF requires a FRA to be produced where development Sites are:

- Greater than one hectare in size;
- All proposals for new development (including minor development and change of use) in Flood Zones 2 and 3;
- Or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the EA); and
- Where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding.

- 3.3.4 The NPPF requires that developers consider not just the flood risk to the development but also the impact that the development might have on flood risk elsewhere. As well as Main Rivers and the sea, it is also necessary to consider flood risk from other sources, including surface water, groundwater, Ordinary Watercourses, artificial drainage systems, canals and reservoirs.

Sequential Test

- 3.3.5 A key part of the NPPF is that a proposed development must first pass a “Sequential Test” to demonstrate that the overall development proposal is appropriate in terms of flood risk. It ensures that a sequential approach is followed to guide new development to areas with the lowest probability of flooding.

Exception Test

- 3.3.6 The Exception Test determines whether the benefits of the proposed development will outweigh the potential flood risk.

Vulnerability Classification

- 3.3.7 The proposed development is classified as Essential Infrastructure in accordance Annex 3: ‘Flood risk vulnerability classification’ included within the NPPF.
- 3.3.8 In accordance with Table 2 of the NPPG (reproduced as Table 1 below), Essential Infrastructure is considered acceptable within Flood Zone 1.

Table 1: Flood Risk Vulnerability and zone ‘incompatibility’

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water-Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required	✗	Exception Test required	✓	✓
Zone 3b	Exception Test required	✗	✗	✗	✓

✓ development is permitted

✗ development is not permitted

3.4 Local Policy

The Test Valley Borough Revised Local Plan Document (DPD) 2011 – 2029 – adopted January 2016, contains the following policies in relation to flood risk and drainage:

Policy E7: Water Management

Development will be permitted provided that:

a) it does not result in the deterioration of and, where possible, assists in improving water quality and be planned to support the attainment of the requirements of the Water Framework Directive;

b) it complies with national policy and guidance in relation to flood risk;

c) it does not result in a risk to the quality of groundwater within a principal aquifer, including Groundwater Source Protection Zones and there is no risk to public water supplies;

d) all new homes (including replacement dwellings) achieve a water consumption standard of no more than 110 litres per person per day; and

e) all new non-residential development of 500sqm or more achieve the BREEAM107 'excellent' credit required for water consumption (reference Wat 1).

Criteria d) – e) need to be satisfied unless it can be demonstrated that it is not financially viable.

3.5 Consultation

Environment Agency

- 3.5.1 The Site is located within Flood Zone 1 according to the EA online Flood Map for Planning. Based on the nature of flood risk within the Site, consultation has not been undertaken with the EA as it is anticipated that they are unlikely to raise concerns in relation to flood risk due to the Site being located within Flood Zone 1.

Lead Local Flood Authority

- 3.5.2 A consultation request was submitted to the LLFA in November 2022 in relation to surface water drainage, however, a response is yet to be received.

Water Authority

- 3.5.3 Consultation has been undertaken with Southern Water to obtain public sewer records.

4.0 Assessment of Flood Risk

4.1 Tidal Flood Risk

- 4.1.1 The Site is situated at a minimum of 43 m AOD and is significantly above sea level. Furthermore, the Site is located wholly within Flood Zone 1. Therefore, the risk to the proposed development from tidal flooding is considered to be **Negligible**.

4.2 Fluvial Flood Risk

- 4.2.1 According to the EA online Flood Map for Planning (Figure 2), the Site is predominantly located within Flood Zone 1 whereby the land is classified as having a less than 0.1% annual probability of fluvial flooding.

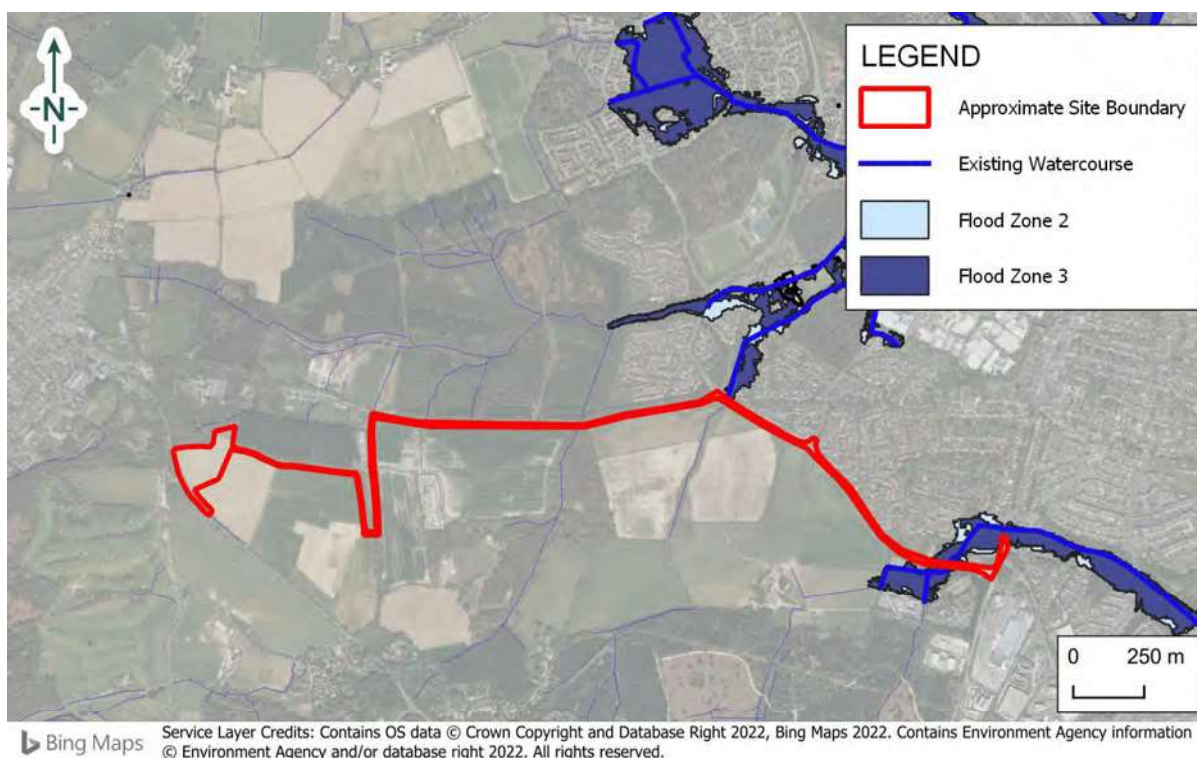


Figure 2: EA Flood Map for Planning

- 4.2.2 The proposed development will be situated within the north western area of the Site which is located within Flood Zone 1. The proposed cable route will predominantly be located within Flood Zone 1, however, parts of the route are shown to be located within Flood Zone 2 and 3. Notwithstanding, the cable will be located below ground and adequately waterproofed and thus is considered to be at a Low risk of fluvial flooding.
- 4.2.3 The EA 'Historical Flood Map' (Appendix D) indicates that there has been no recorded, historic fluvial flooding on Site or the immediate area.
- 4.2.4 Based on the above, the overall risk of fluvial flooding is considered to be **Low**.

4.3 Surface Water Flood Risk

- 4.3.1 The EA 'Flood Risk from Surface Water' map (Figure 3) indicates that the Site is predominantly at very low risk of surface water flooding, meaning it has a less than 0.1% annual probability of flooding.

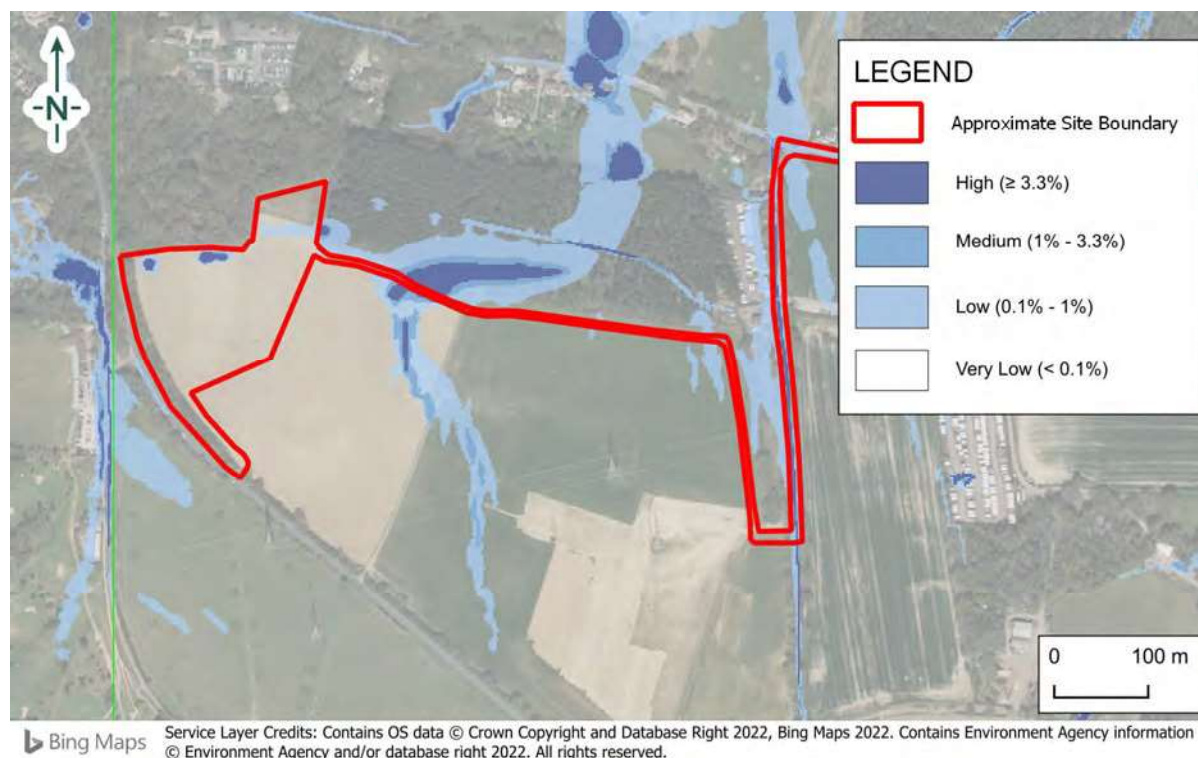


Figure 3: EA's Long-Term Flood Risk Map (Flood Risk from Surface Water)

- 4.3.2 Whilst the majority of the Site is shown to be at a Very Low risk of surface water flooding, an area of Low to High risk surface water flooding is shown to be located within the cable route nearby the centre of the Site. The extent of surface water flooding is due to an overland flow path draining in a south to north direction. In addition, small areas of High risk surface water flooding area identified in the north western corner of the Site.
- 4.3.3 The proposed battery storage compound will be situated within part of the Site at Very Low risk of surface water flooding. Notwithstanding, the battery storage units will be raised approximately 300 mm above surrounding ground levels over a permeable gravel sub-base thereby further reducing the potential for the ingress of surface water.
- 4.3.4 The EA Long Term Surface Water Flood Map indicates areas of Low to High risk of surface water flooding along Misselbrook Lane, Castle Lane, Templars Way and Bournemouth Road which form the proposed cable route. However, the cable will be located below the surface and is therefore considered to be at a low risk of surface water flooding.
- 4.3.5 A review of relevant third party reports indicates no evidence of Site specific surface water flood risk.

Based on the above the proposed development on the Site is considered to be at a **Low** risk of surface water flooding.

4.4 Groundwater Flood Risk

- 4.4.1 Reference to the British Geological Survey (BGS) online mapping (1:50,000 scale) indicates that the majority of the Site is directly underlain by bedrock deposits from the London Clay Formation which is described as comprising Clay, Silt and Sand. The north western and north eastern corners of the Site are shown to be underlain by bedrock deposits from the Wittering Formation which is described as comprising Sand, Silt and Clay. The Site is not shown to be underlain by any recorded superficial deposits.
- 4.4.2 Area's susceptible to groundwater flooding mapping contained within the 2013 GWMP indicates the Site is located within an area that is not shown to be at risk from groundwater flooding.

- 4.4.3 Based on the above, the overall risk of groundwater flooding is considered to be **Low**. The underground cable will be adequately waterproofed to prevent the ingress of water. Temporary dewatering of excavations may be required in the event groundwater is encountered during construction of the proposed development.

4.5 Artificial Sources Flood Risk

Sewer Flooding

- 4.5.1 Public records provided by Anglian Water (Appendix C) indicate there are no public sewers within the vicinity of the proposed battery storage compound. In the event of surcharging from sewers along the proposed cable route, it is anticipated that flooding would likely be confined to temporary shallow flooding of the road network. The cable will be located below ground and will be appropriately waterproofed to prevent the ingress of water.
- 4.5.2 Based on the above, the overall risk of sewer flooding is considered to be **Low**.

Reservoir Flooding

- 4.5.3 According to the EA Long Term Reservoir Flood Map, the Site is located within an area that is not at risk from flooding in the event of a reservoir breach. The risk of reservoir flooding is therefore considered to be **Negligible**.

Canal Flooding

- 4.5.4 There are no canals within the vicinity of the Site therefore the risk of canal flooding is considered to be **Negligible**.

4.6 Summary of Flood Risk

- 4.6.1 Based on the above, it can be concluded that the Site is at a **Negligible to Low** risk of flooding from all sources and the area the development is located within the Site is at a Negligible risk. Notwithstanding, the proposed battery storage containers will be inherently raised 300 mm above surrounding ground levels thereby reducing the potential for the ingress of water. The proposed cable will be located below ground and will be adequately waterproofed to prevent the ingress of water.

5.0 Drainage Strategy

5.1 Introduction

- 5.1.1 The Site currently comprises agricultural greenfield which is not formally drained and is therefore considered to be 100% permeable. It is anticipated that rainfall within the Site generally infiltrates into the underlying ground with surface water runoff forming once the infiltration capacity of the ground is exceeded. Surface water overland flow generated within the Site in the area of the proposed development is likely to drain to the existing ditch adjacent to Botley Road.
- 5.1.2 The proposed development comprises the setting up of 60 shipping containers housing battery storage devices mounted on footings above a permeable gravel base within the compound.
- 5.1.3 The proposed development will result in an overall hardstanding area of approximately 0.09 ha associated with the introduction of the battery storage containers. The proposed access track and internal service road will be surfaced with a permeable surface and will therefore continue to drain as per the existing situation.

5.2 Preferred Drainage Scheme

- 5.2.1 The increase in hardstanding area associated with the battery storage containers will result in a negligible increase in surface water runoff. Notwithstanding, the battery storage containers will be raised above a permeable gravel sub-base which will seek to mimic the existing drainage regime by retaining water close to source stopping lateral flow, allowing it to infiltrate as existing and without increasing off-Site flood risk.
- 5.2.2 The inclusion of a permeable gravel sub-base will provide some surface water storage which will attenuate for the small increase in runoff associated with the battery storage containers. Based on an area of 3,840 m² and an assumed sub-grade depth of 0.3 m with a 30% porosity, the gravel base has the potential to provide up to 345.6 m³ of attenuation.
- 5.2.3 Based on the above, it can be concluded that there will be no increase in off-Site flood risk as a result of the proposed development.

6.0 Conclusions and Recommendations

6.1 Conclusions

- 6.1.1 According to the EA Flood Map for Planning, the proposed development is wholly located within Flood Zone 1 and is therefore considered to be at a **Low** risk of fluvial flooding. The Site is also considered to be at a **Negligible to Low** risk of flooding from all other sources.
- 6.1.2 The proposed battery storage containers will be inherently raised 300 mm above surrounding ground levels thereby reducing the potential for the ingress of water. The proposed cable will be located below ground and will be adequately waterproofed to prevent the ingress of water.
- 6.1.3 The Site currently comprises a greenfield parcel of land. It is anticipated that rainfall within the Site generally infiltrates into the underlying ground with surface water runoff forming once the infiltration capacity of the ground is exceeded. Surface water overland flow generated within the Site in the area of the proposed development is likely to drain to the existing ditch adjacent to Botley Road.
- 6.1.4 The proposed development will result in an overall hardstanding area of approximately 0.09 ha associated with the proposed battery storage containers. The provision of a permeable gravel base will ensure there is no increase in surface water runoff from the Site. Based on an area of 3,840 m² and an assumed sub-grade depth of 0.3 m with a 30% porosity, the gravel base has the potential to provide up to 345.6 m³ of attenuation. The proposed access road/internal service road will be constructed with a permeable surface and will not result in an increase in surface water runoff.

Appendix A - Limitations

Limitations

The recommendations contained in this Report represent Delta-Simons professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client and others. Delta-Simons conclusions, opinions and recommendations has been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

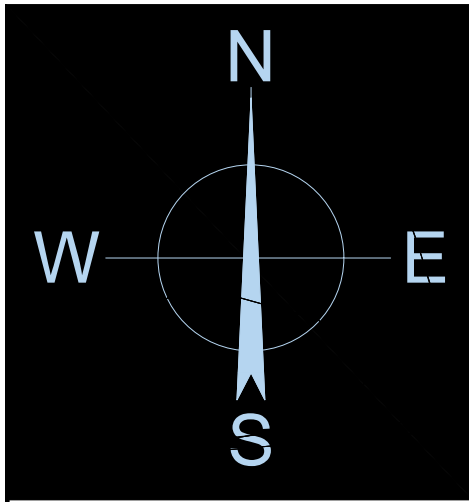
This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Appendix B – Proposed Development Plans

A

B

1



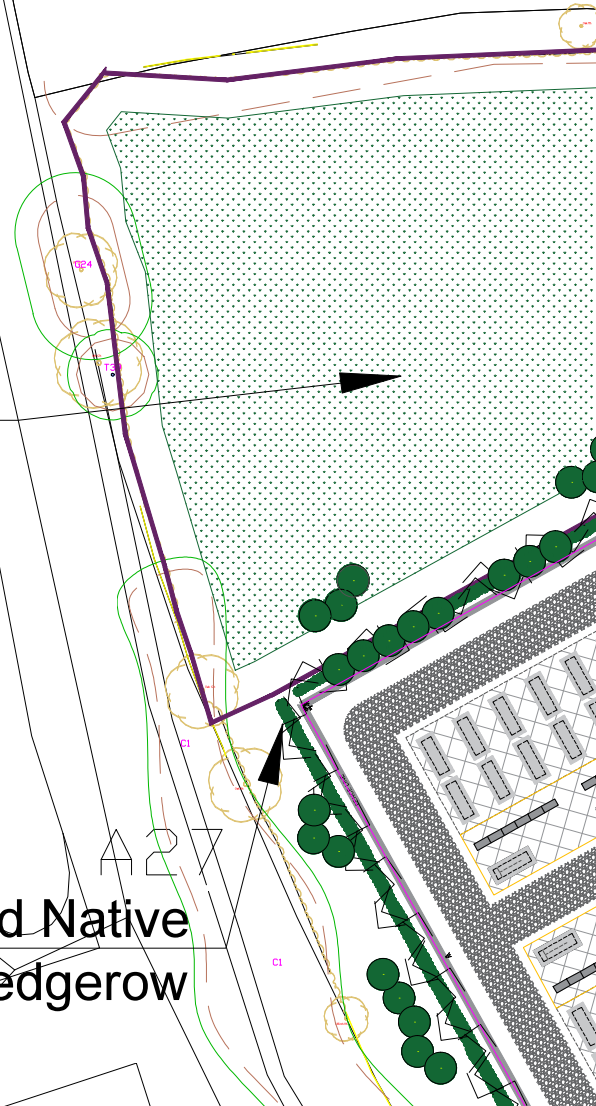
2

about 15

Stock Proof Fence

3

Proposed Wildflower
Grassland Area



Proposed Native
Hedgerow

A

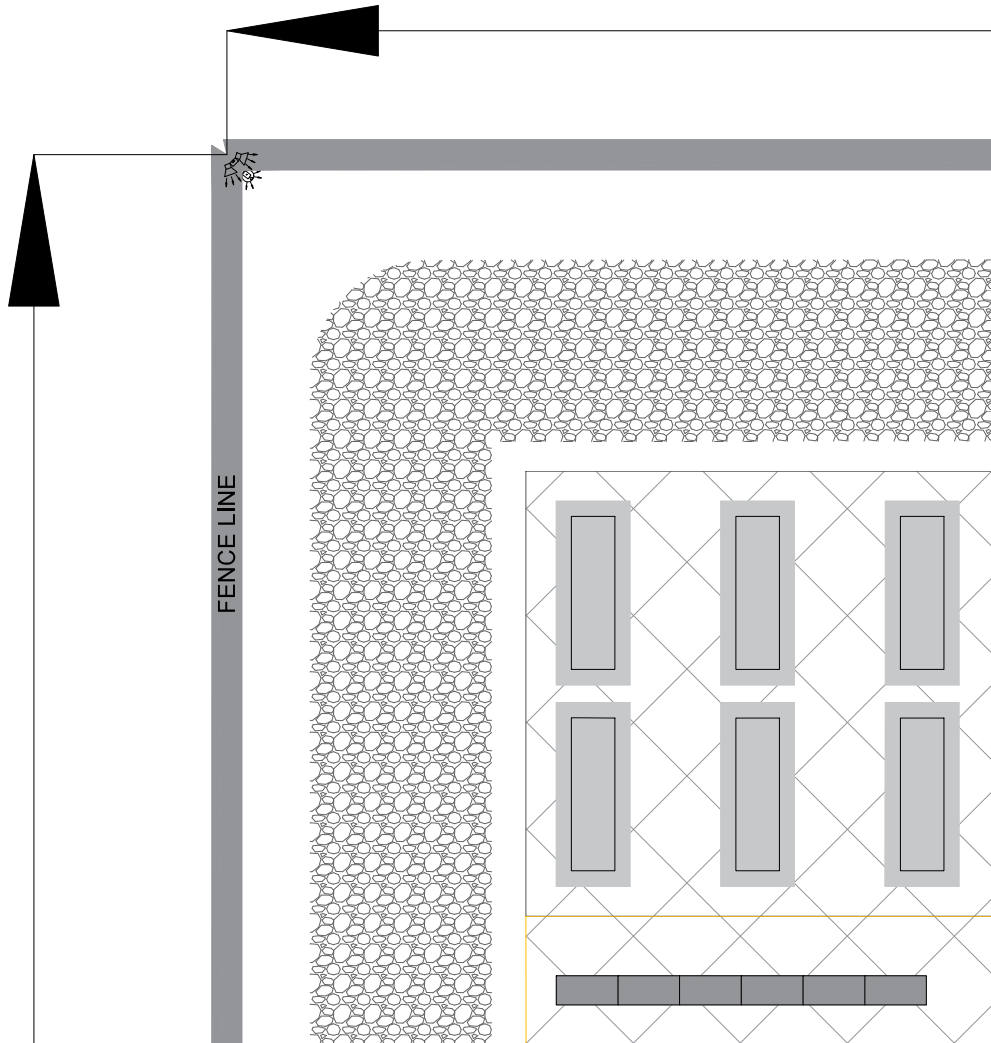
B

1

2

3

4



A

B

C

D

E

F

G

1

REAR VIEW

2

6.058m

3

4

Ground Level

300m

5

6

FRONT VIEW

7

8

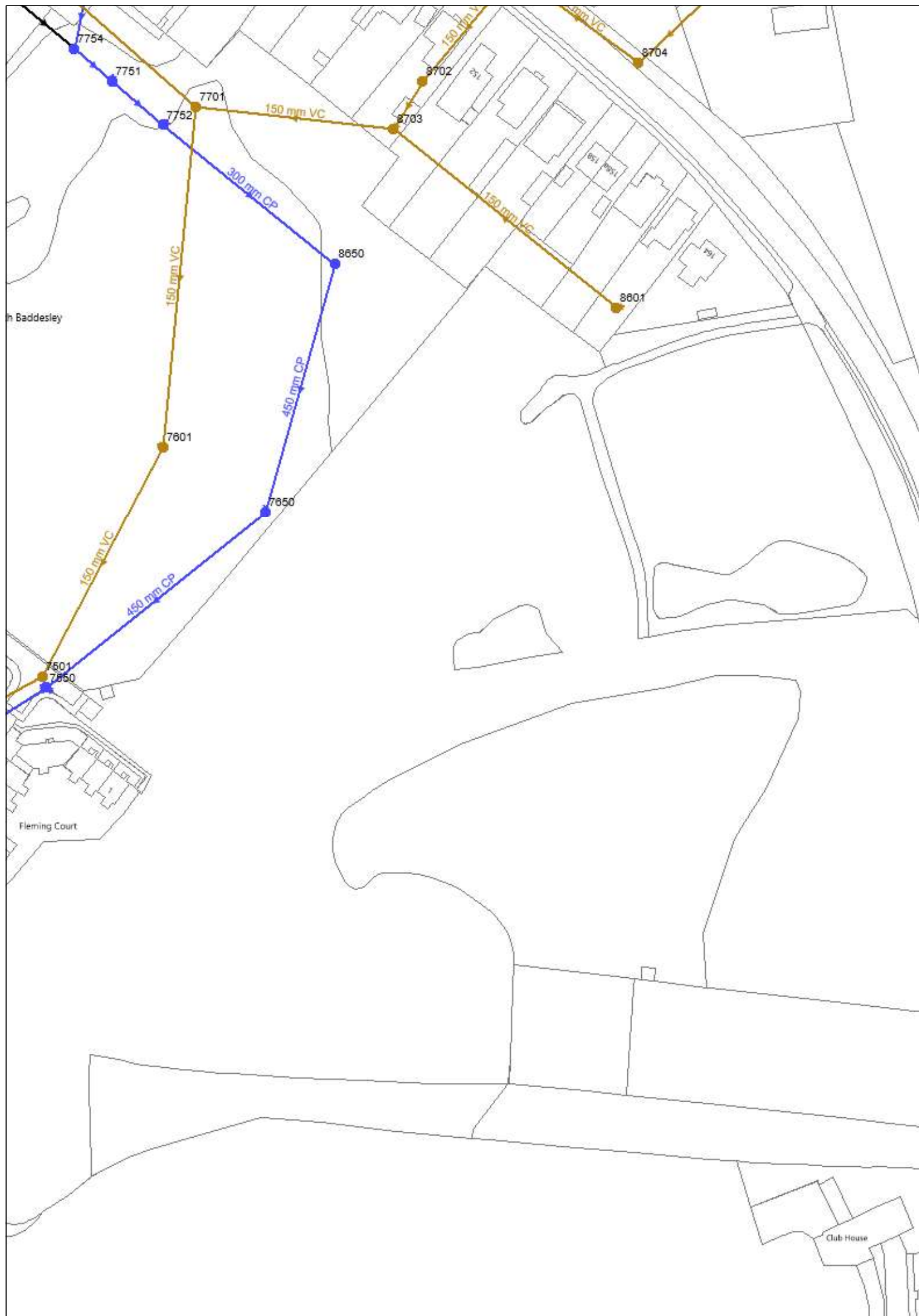
9

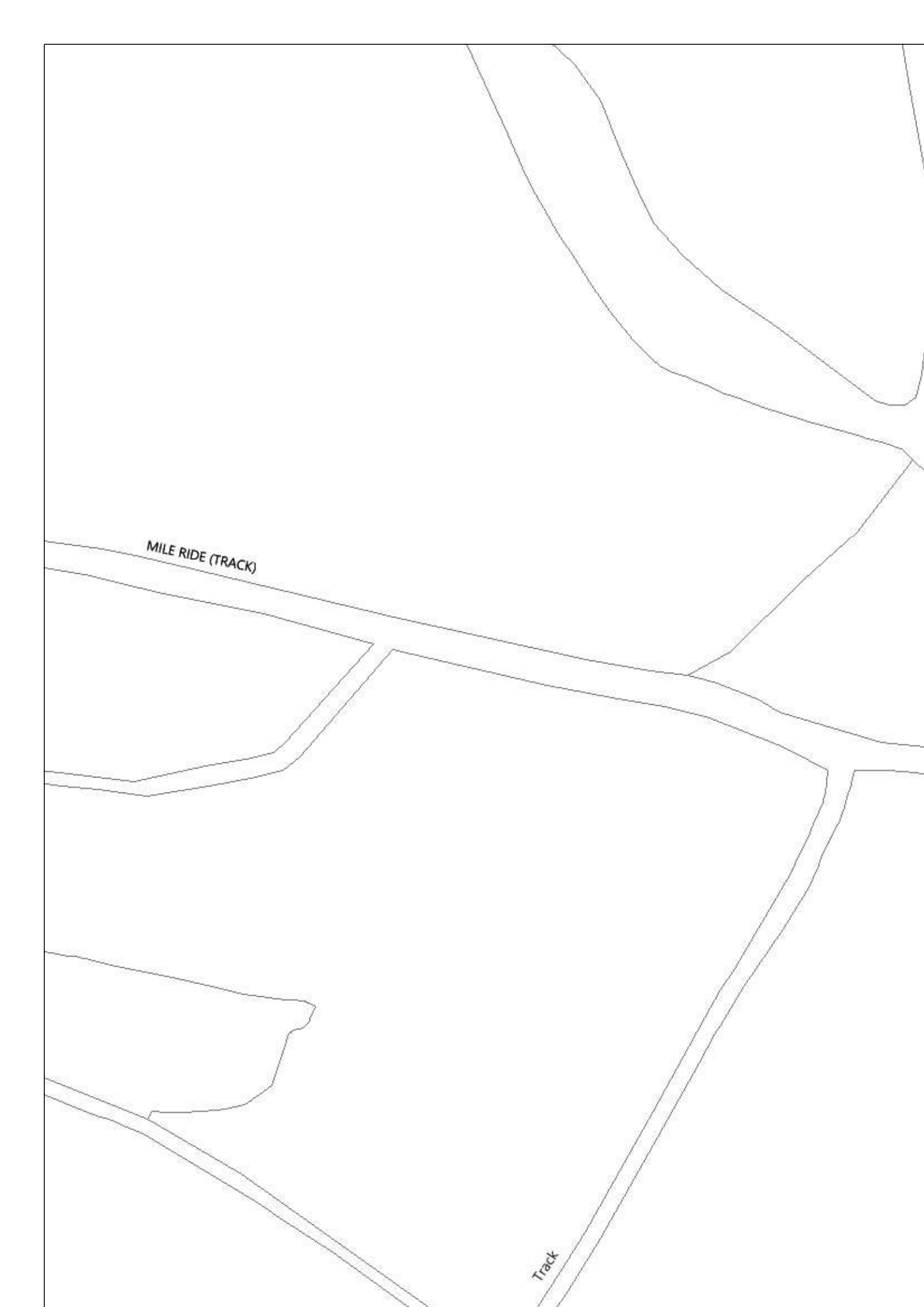
Ground Level

300m

10

Appendix C – Public Sewer Records



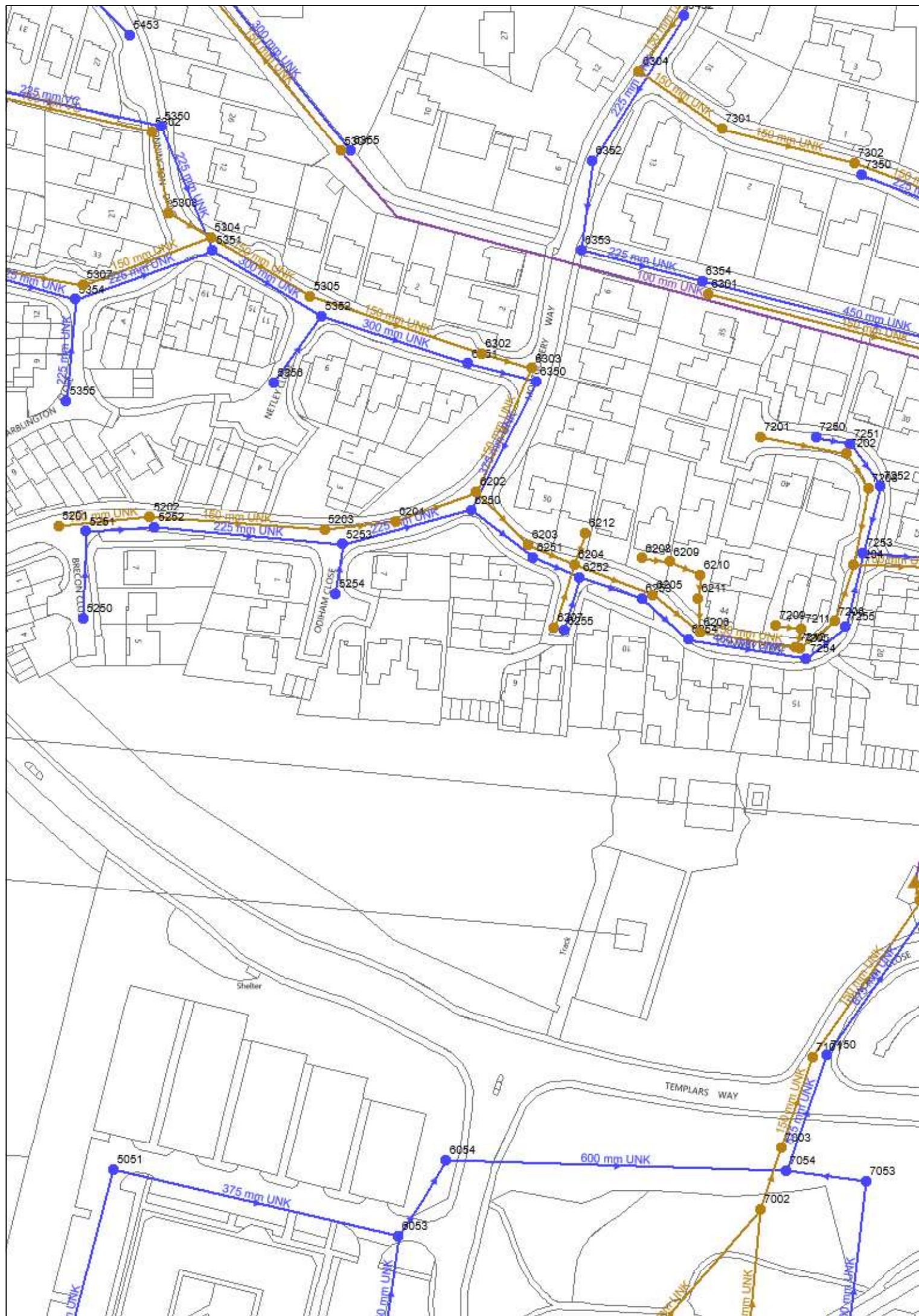


MILE RIDE (TRACK)

Track

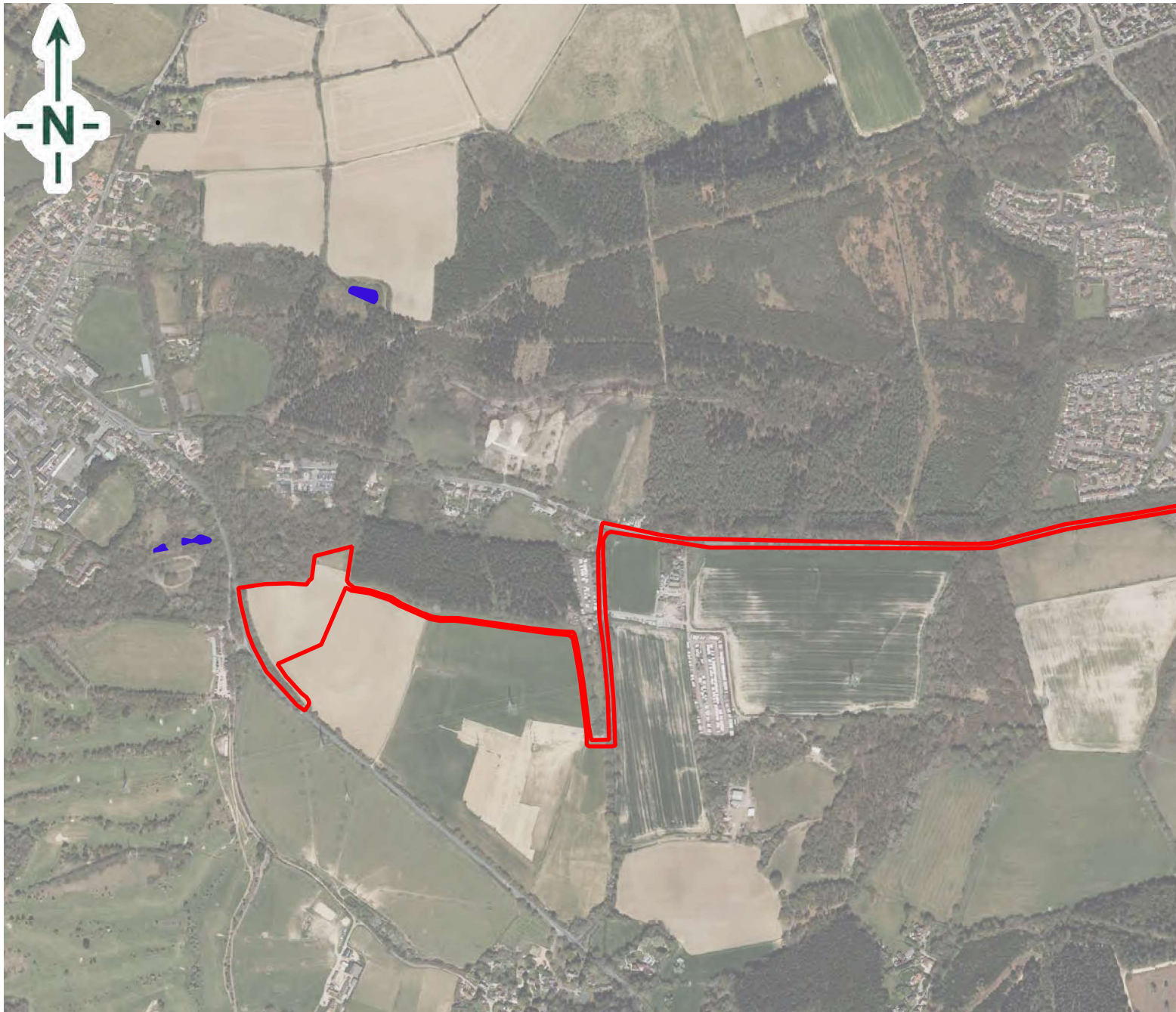
Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
0001	F	27.67	25.18	
0002	F	28.27	24.92	
0003	F	27.76	25.33	
0004	F	27.79	24.58	
0005	F	28.13	25.16	
0701	F	31.91	30.67	
0702	F	31.33	29.84	
0703	F	31.00	29.61	
0704	F	30.81	29.44	
0801	F	30.46	29.01	
0802	F	30.64	29.31	
0803	F	30.22	28.79	
0804	F	29.77	28.40	
0805	F	29.75	28.16	
0806	F	29.60	28.00	
0901	F	0.00	0.00	
0902	F	0.00	0.00	
0903	F	0.00	0.00	
1001	F	27.47	25.48	
1601	F	30.78	28.33	
1602	F	33.85	31.59	
1603	F	32.96	30.91	
1604	F	33.70	31.36	
1605	F	0.00	0.00	
1701	F	31.59	29.76	
1702	F	31.12	29.40	
1703	F	30.98	28.98	
1704	F	30.87	28.55	
1705	F	31.22	28.24	
1706	F	0.00	0.00	
1801	F	30.06	28.23	
1802	F	29.94	27.95	
1803	F	29.38	27.66	
1804	F	29.28	27.70	
1805	F	28.56	27.23	
1806	F	29.03	28.06	
1901	F	28.30	27.01	
1902	F	28.36	26.81	
2501	F	0.00	0.00	
2601	F	30.96	26.99	
2602	F	30.99	27.46	
2603	F	0.00	0.00	
2604	F	0.00	0.00	
2605	F	0.00	0.00	
2606	F	0.00	0.00	
2701	F	29.98	27.50	
2702	F	29.49	27.11	
2703	F	29.54	26.85	
2704	F	29.69	27.72	
2801	F	0.00	0.00	
2802	F	29.25	24.74	
3401	F	0.00	0.00	
3501	F	0.00	0.00	

Manhole Reference	Liquid Type
9001	F
9002	F
9003	F
9900	F
9901	F
9902	F
9903	F
9904	F
0051	S
0052	S
0053	S
0054	S
0055	S
0751	S
0752	S
0753	S
0754	S
0755	S
0851	S
0852	S
0853	S
0854	S
0855	S
0856	S
0857	S
0951	S
0952	S
1051	S
1650	S
1651	S
1652	S
1653	S
1751	S
1752	S
1753	S
1754	S
1755	S
1756	S
1851	S
1852	S
1853	S
1854	S
1855	S
1856	S
1951	S
2550	S
2651	S
2652	S
2653	S
2654	S
2655	S
2656	S
2751	S



Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
0001	F	38.19	37.06	
0101	F	30.77	28.16	
0102	F	29.70	28.59	
0103	F	29.45	27.86	
0104	F	28.78	27.58	
0201	F	33.43	32.48	
0202	F	33.16	32.06	
0203	F	31.68	29.83	
0204	F	31.88	29.68	
0301	F	0.00	0.00	
0302	F	0.00	0.00	
0303	F	0.00	0.00	
0304	F	0.00	0.00	
0903	F	38.39	37.20	
1001	F	36.63	34.97	
1002	F	34.67	32.79	
1003	F	31.52	29.55	
1004	F	36.62	34.77	
1005	F	36.63	34.84	
1101	F	0.00	0.00	
1102	F	27.93	26.82	
1103	F	28.38	26.35	
1104	F	28.15	25.17	
1105	F	28.92	27.67	
1106	F	28.58	23.43	
1201	F	29.23	28.00	
1202	F	0.00	0.00	
1203	F	0.00	0.00	
1204	F	0.00	0.00	
1205	F	0.00	0.00	
1206	F	0.00	0.00	
1207	F	0.00	0.00	
1208	F	0.00	0.00	
1903	F	0.00	0.00	
2101	F	27.18	0.00	
2201	F	0.00	0.00	
2202	F	0.00	0.00	
5201	F	39.28	37.08	
5202	F	38.24	36.04	
5203	F	36.79	34.77	
5301	F	35.78	33.89	
5302	F	36.43	35.08	
5303	F	36.74	34.66	
5304	F	36.65	34.37	
5305	F	36.08	33.76	
5307	F	38.20	36.22	
6001	F	34.46	31.56	
6201	F	36.16	33.51	
6202	F	35.48	32.24	
6203	F	35.12	32.04	
6204	F	34.88	31.87	
6205	F	34.45	31.62	
6206	F	34.65	31.61	
6207	F	34.65	31.61	
6208	F	34.65	31.61	
6209	F	34.65	31.61	
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6443	F	34.65	31.61	
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6446	F	34.65	31.61	
6447	F	34.65	31.61	

Appendix D - Environment Agency Product Data



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TITLE:
EA Historic Flood Map
Unit 5E Park Farm, Arundel