

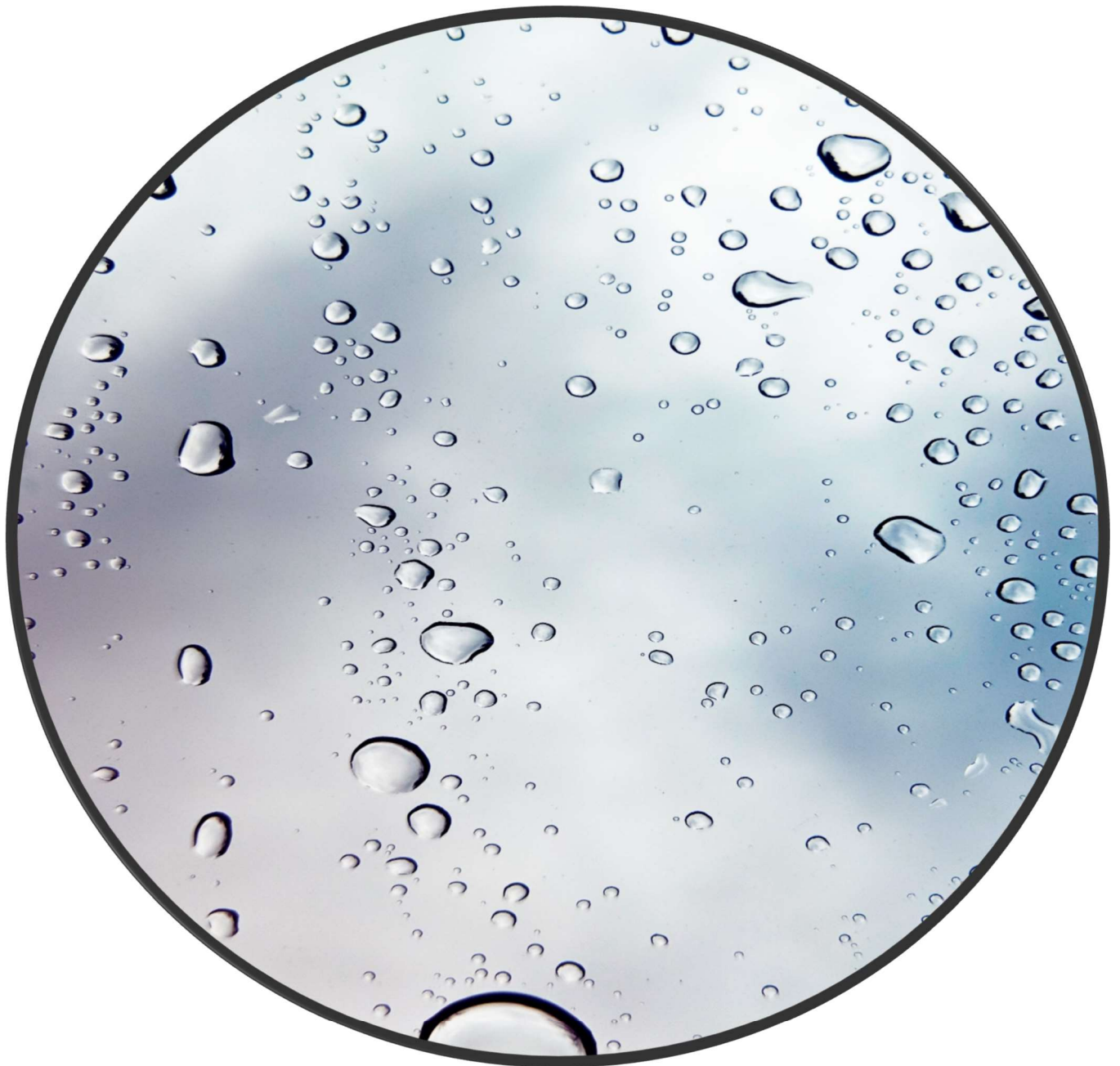


## **DRAINAGE STRATEGY REPORT**

FORMER FRIENDS SCHOOL FIELDS, MOUNT PLEASANT  
ROAD, SAFFRON WALDEN, ESSEX  
ON BEHALF OF CHASE NEW HOMES LIMITED

JUNE 2024

IDL/1162/DS/001



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# **DRAINAGE STRATEGY REPORT**

**IDL/1162/DS/001**

## **REPORT ISSUE**

Revision	Date	Notes
P01	19/06/2024	Preliminary Issue

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June 2024

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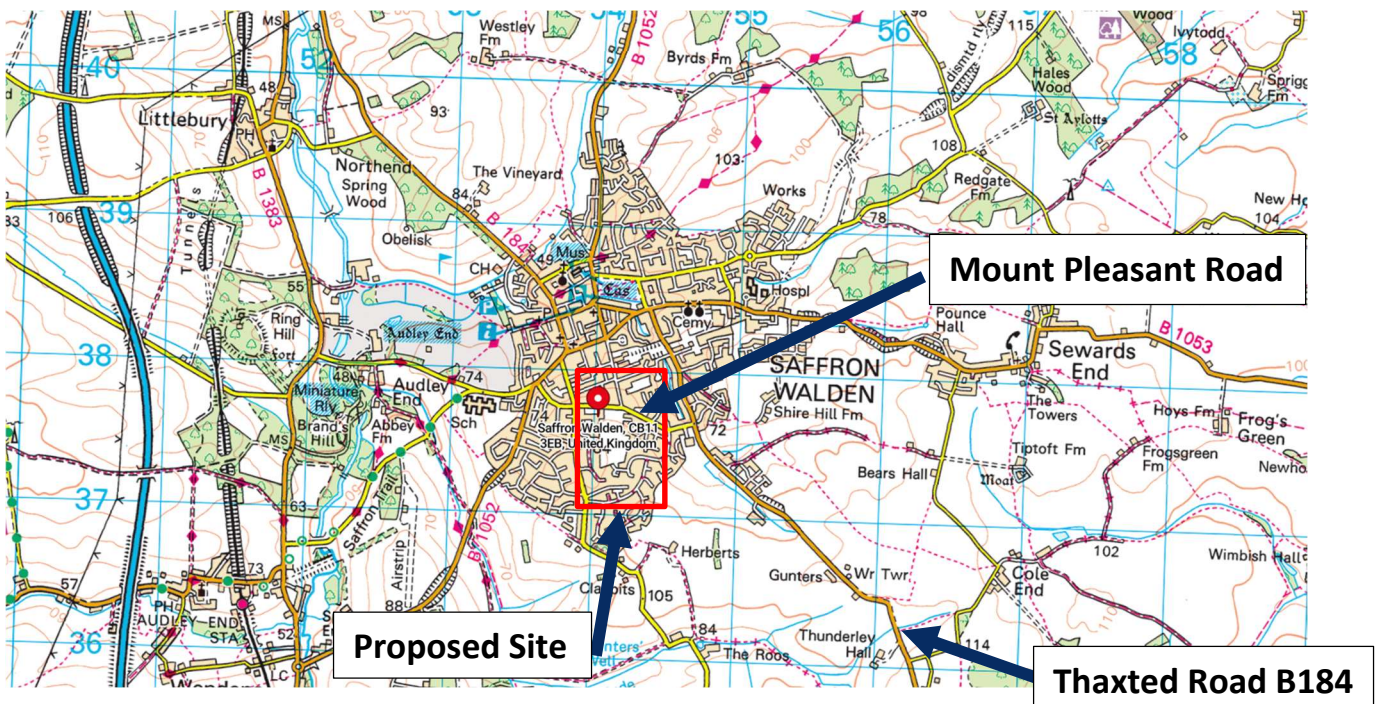
**APPENDIX D – SURFACE WATER DRAINAGE CALCULATION**

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## 1 INTRODUCTION

- 1.1 Chase New Homes Limited has appointed Infrastructure Design Ltd (IDL) to prepare this Drainage Strategy Summary Report to support their planning application for their proposed residential development site.
- 1.2 This report has been prepared in accordance with both national and local planning policy and takes guidance from CIRIA 753, The SuDS Manual and The Building Regulations, Approved Document Part H.
- 1.3 The site is situated off Mount Pleasant Road, Saffron Walden, in the Uttlesford District. The National Grid Reference for the site is TL 54136 37688.

**Figure 1 – Site Location Plan**



### 1.4 Reference Documents:-

- Card Geotechnics Limited Soakaway Test results.
- Anglian Water Utilities Report
- Proposed site layout Plan from Coles Architects.
- Datum Surveys Services Ltd Topographical Survey (Sheets 1 and 2)
- Amazi Flood Risk Assessment report dated 24<sup>th</sup> June 2024.

- 1.5 The site is an open playing field classified as greenfield open space, covering approximately 6.96 ha. The levels range from approximately 92.59m AOD at the site's eastern boundary to 85m AOD at the northwestern boundary lowest point near Mount Pleasant Road. On the west of the playing field is a former school site, which is currently under development to provide 96 residential units.
- 1.6 The proposed development of the playing field site will comprise 91 new dwellings (houses and apartments), a new sports facility (comprising marked out football and cricket pitches and a new clubhouse), access roads, shared and private drives, POS and communal landscaping.

The proposed main access to the development site will be from the former Walden School Access Road to the west and will remain private (constructed to standards acceptable to Essex Highways).

- 1.7 There are no foul or surface water sewers located within the playing field site, however, adopted foul water sewers do exist to the north in Mount Pleasant Road, and to the southwest in The Avenue.

The former school site (located west of the playing field site) discharged to a number of soakaways, and infiltration techniques are being implemented as part of the redevelopment of this site.

Furthermore, the former school site discharges foul water drainage to both the adopted in Mount Pleasant Road and, in part, to a foul sewer in Avenue Road to the south.

Refer to Appendix B for the Anglian Water sewer record map and the Datum topographical survey plans.

- 1.8 BGS data shows the site is underlain with Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated), which suggests potential for soakaway drainage.
- 1.9 Card Geotechnics Limited carried out soakage testing in April 2024, fully in accordance with BRE Digest 365.
- 1.10 The test results indicated infiltration rates between  $7.4 \times 10^{-5}$  m/s and  $4.5 \times 10^{-6}$  m/s.
- 1.11 No groundwater was observed during the infiltration testing and is expected to exist at considerable depth within the chalk strata.

**Figure 2–Summary of Soakaway test results**

Trial Pit No:	Infiltration rate	Infiltration m/s	m/hr	Lowest results
SA01-1	8.2X10-5	8.20E-05	0.2952	
SA01-2	7.4X10-5	7.40E-05	0.2664	0.252
SA01-3	7.0X10-5	7.00E-05	0.252	
SA02-1	3.6X10-5	3.60E-05	0.1296	
SA02-2	7.0X10-5	3.10E-05	0.1116	
SA02-3	7.0X10-9	1.80E-05	0.0648	0.0648
SA03-1	7.6X10-6	7.60E-06	0.02736	
SA03-2	4.5X10-6	4.50E-06	0.0162	0.0162
SA03-3	5.7X10-6	5.70E-06	0.02052	

SA04-1	1.9X10-5	1.90E-05	0.0684	
SA04-2	6.5X10-6	6.50E-06	0.0234	0.0234
SA04-3	1.9X10-5	1.90E-05	0.0684	
SA05-1	4.3X10-5	4.30E-05	0.1548	
SA05-2	2.9X10-5	2.90E-05	0.1044	0.1044
SA05-3	1.3X10-4	1.30E-04	0.468	

- 1.12 The north part of the site is within groundwater source protection zone 3 (SPZ3), and the south part of the site is located within groundwater source protection zone 2 (SPZ2).
- 1.13 The site is located within flood zone 1 and is not considered to be at risk of surface water or groundwater flooding. Refer to the Amazi Flood Risk Assessment report dated 24<sup>th</sup> June 2024.

## 2 FOUL WATER DRAINAGE

- 2.1 The proposed residential development's north and central parts of the development will discharge foul drainage via gravity to the existing Anglian Water foul sewer manhole located on Mount Pleasant Road manhole reference 2701. The southern part of the development will discharge via gravity to the Anglian Water foul sewer manhole located in The Avenue manhole reference 9504 via a newly formed lateral provided within the former school site and terminating at the western boundary of the playing fields site. Foul water drainage from the new clubhouse will discharge via a private package pump station to join the western outfall.
- 2.2 Prior to commencing any onsite drainage works, the exact location and levels of the existing sewer manhole will be recorded, and consent pursuant to Section 106 of The Water Industry Act will be obtained from Anglian Water.
- 2.3 The drainage strategy layout is included in Appendix C.

## 3 SURFACE WATER DRAINAGE & SUDS

- 3.1 The total site area extends to approximately 6.96 hectares.
- 3.2 The total proposed impermeable area for the site is 30580 m<sup>2</sup>(3.058Ha). The impermeable area layout is included in Appendix C.
- 3.3 A hierarchal approach has been taken to selecting SuDS for the surface water drainage system outfalls. In order of priority, the methods of surface water discharge considered are:
- i) via infiltration techniques
  - ii) to the nearest watercourse



iii) and to the nearest sewer.

3.4 As noted in sections 1.8-1.12, and with reference to Appendix A1, infiltration techniques are feasible options for discharging the proposed surface water runoff from the site.

3.5 Given the underlying chalk strata, the cellular soakaway systems are positioned at least 10m from the foundations of any existing or proposed structures.

3.6 Surface water from plot driveways, parking areas and access roads will discharge via porous paving into the ground (System A-full infiltration).

3.7 Any excess surface water runoff from the sports pitches generated during periods of heavy or prolonged rainfall, will be diverted via a land drain located alongside the western boundary of the sports pitches and discharging into the cellular soakaway.

3.8 To summarise, the following SuDs devices will be applied to the scheme;

**Permeable paving** - To access roads, car parking aisles and parking bays.

**Cellular Soakaway (Crate Storage)** - To accommodate the runoff from all storm events, including the peak 1 in 100 years, plus climate change storm events.

3.10 The permeable paving system incorporating a geotextile-lined subbase will be used to form the new parking areas, communal parking/access roads, and drives. This will serve to improve water quality prior to discharge to the ground. A minimum permeable stone layer of 350mm is required where the sub-base is laid level.

3.11 In all instances, there will be an absolute minimum of 1m of freeboard between the base of any infiltration device and the seasonally high groundwater level. (Note: Historically, groundwater levels in the chalk strata locally have been circa 45m+ BGL.)

3.12 Given the low risk of pollution that surface water runoff from residential roofs and trafficked areas (via permeable paving) poses to the underlying geology, the groundwater resource within the SPZ's (2 & 3) will remain protected from harm.

3.13 Appendix D provides the *Flow* software results summary for the 1 in 1, 1 in 30 (3.3%) (plus a 35% allowance for 'upper end' climate change) and 1 in 100 (1%) years (plus a 40% allowance for 'upper end' climate change) return period events for the cellular soakaway system.



#### **4 ENCLOSURES**

- 4.1 Appendix A1 includes the SuDS Hierarchy and Appendix A2 includes Simple Index Tools.
- 4.2 Appendix B includes a copy of the Topographical Site Survey and Infiltration test results.
- 4.3 Appendix C includes a copy of the Drainage Strategy Layouts.
- 4.4 Appendix D includes the Surface Water / SuDS calculations and simulation results.
- 4.5 Appendix E Management & Maintenance Regime.