

BELLWAY HOMES LIMITED (STRATEGIC)

EIGHT ASH GREEN, COLCHESTER

TECHNICAL OVERVIEW

REPORT REF.
2301300-R01

December 2023

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Document Control Sheet

REV	ISSUE PURPOSE	AUTHOR	CHECKED	APPROVED	DATE
-	Issue	SR/TH	PR/EF <i>PR EF</i>	ATB <i>ATB</i>	04.12.23

Distribution

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1. Introduction

- 1.1. Ardent Consulting Engineers (ACE) has been instructed by Bellway Homes Limited (Strategic) to undertake an initial technical overview of a potential development in Eight Ash Green, Colchester. This Technical Overview presents a high-level desktop study of the likely transport / access and flood risk / drainage implications should the site be brought forward for residential development. Colchester City Council the Local Planning Authority, with Essex County Council (ECC) acting as the local highway authority.
- 1.2. Based on the details provided, it is understood that Bellway are looking at the land shown in the red line in **Plate 1.1** below, with **Drawing Number 2301300-D001A** showing the detailed red line boundary.



Plate 1.1: Site Location (Source: Google Earth)

- 1.3. The site measures approximately 6 hectares in area. For the purposes of this assessment, it has been assumed that up to circa 150 residential units can be accommodated at the site, with access achieved via Halstead Road.

- 1.4. The site currently comprises agricultural land and it is understood that the site itself has not been subject to any planning applications within the past ten years, nor is it allocated for development within the Local Plan. It should be noted that directly opposite the site a Local Wildlife Site is designated, running parallel to Turkey Cock Lane.
- 1.5. In addition, a site to the west was submitted for planning in 2017 (Ref:171529) and granted planning permission in October 2019. The consented development (Aspen Walk) comprised up to 150 dwellings. It appears that the development is under construction based on Google Street View. Access was proposed from two vehicular access points, with one priority-controlled junction located at Fiddlers Hill to the north of the site, and a further priority-controlled junction at being provided at Halstead Road (A1124) to the south of the site. ECC Highways considered these access arrangements acceptable.

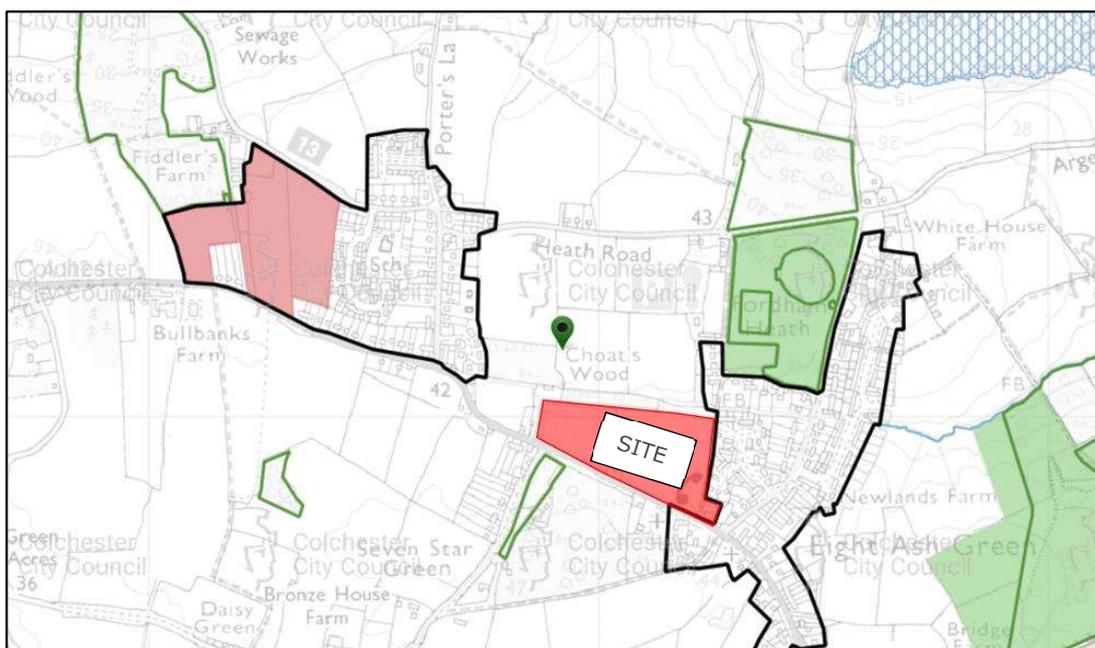


Figure 1.2: New Residential Allocations (CCC Local Plan, 2021)

- 1.6. From the above therefore, there is a precedent for a development of a similar scale and access may be likely to be deemed acceptable by ECC, however this is subject to pre application negotiations and further detailed assessment. These requirements should be considered with the submission for approval with this site.

2. Access and Highways

Access

Strategy

- 2.1. On initial inspection of the site, the clearest opportunity for access is via the A1124 Halstead Road to the south as there is significant frontage available. Furthermore, there are few trees affecting access and no apparent concerns achieving a suitable gradient. Precise details regarding the existing ditch present along the frontage of the site will be dependent on further confirmation and survey.
- 2.2. Based on previous experience, ECC may seek to resist access onto A-Roads where there is an alternative from a lower classification road. However, in this instance, there is no other opportunity for access so this should be acceptable. The fact a new access on the A1124 has been recently permitted further to the west also suggests the principle of a new access should be acceptable.
- 2.3. The access should be designed in line with a Type E 'Access' road as per the Essex Design Guide, which can accommodate 200 units in a cul-de-sac. This requires a 5.5m wide access with 2-metre-wide footways and minimum 6 metre kerb radii. The carriageway should be straight from the entrance for 15 metres. As shown in **Drawing Number 2301300-D002** it appears that a suitable access can be achieved from a geometric perspective taking into consideration the above elements.
- 2.4. The access has been designed in accordance with the above stipulations, however, has been designed to provide a 10m kerb radii in order to mitigate any overrun by vehicles egressing from the site on to the A Road.
- 2.5. Access is proposed at the eastern part of the site frontage on Halstead Road, located more than 50m from the existing junction with Jubilee Meadow (opposite) and more than 100m from the Spring Lane junction (same side) in accordance with the Essex Design Guidance standards. The access has been positioned (subject to topographical survey) away from the frontage of the residential dwelling opposite, to avoid any amenity issues relating to headlights shining into the front windows of this property. A lamppost may need to be relocated to achieve this access arrangement and a tree survey should be undertaken to confirm that the location is

suitable in relation to any existing trees and root protection areas. There is a ditch which runs along the edge of the footway/site boundary, which would need to be culverted.

- 2.6. As shown in **Drawing Number 2301300–D002**, it is considered that an access can be achieved within the 30mph speed limit on Halstead Road (A1124) with suitable visibility parameters achievable. 43 metres splays are shown taken from a 2.4 metres setback distance to the edge of the carriageway.

Pedestrian / Cycle Access

- 2.7. Pedestrian access is taken via two proposed 2m footways that tie into existing pedestrian infrastructure located on Halstead Road (A1124). A pedestrian crossing (informal island arrangement) is located to the east of the site on Halstead Road and is therefore accessible on foot from the site access.
- 2.8. Cycle access could potentially be facilitated to the north via the existing Public Right of Way (PRoW) 'Eight Ash Green 24' footpath running along the eastern boundary of the site. Any upgrades to this are subject to discussions with ECC but would recommend that this is incorporated into the masterplan if possible. The provision of other cycle infrastructure will be subject to discussions with ECC, noting there may be a requirement for a shared or segregated cycle route at the access depending on future highways discussions.

3rd Party Land Constraints

- 2.9. Upon review of Land Registry online mapping information (see extract below at **Plate 2.1**), it appears that the entirety of Halstead Road (A1124) is adopted and therefore maintained by Essex County Council.

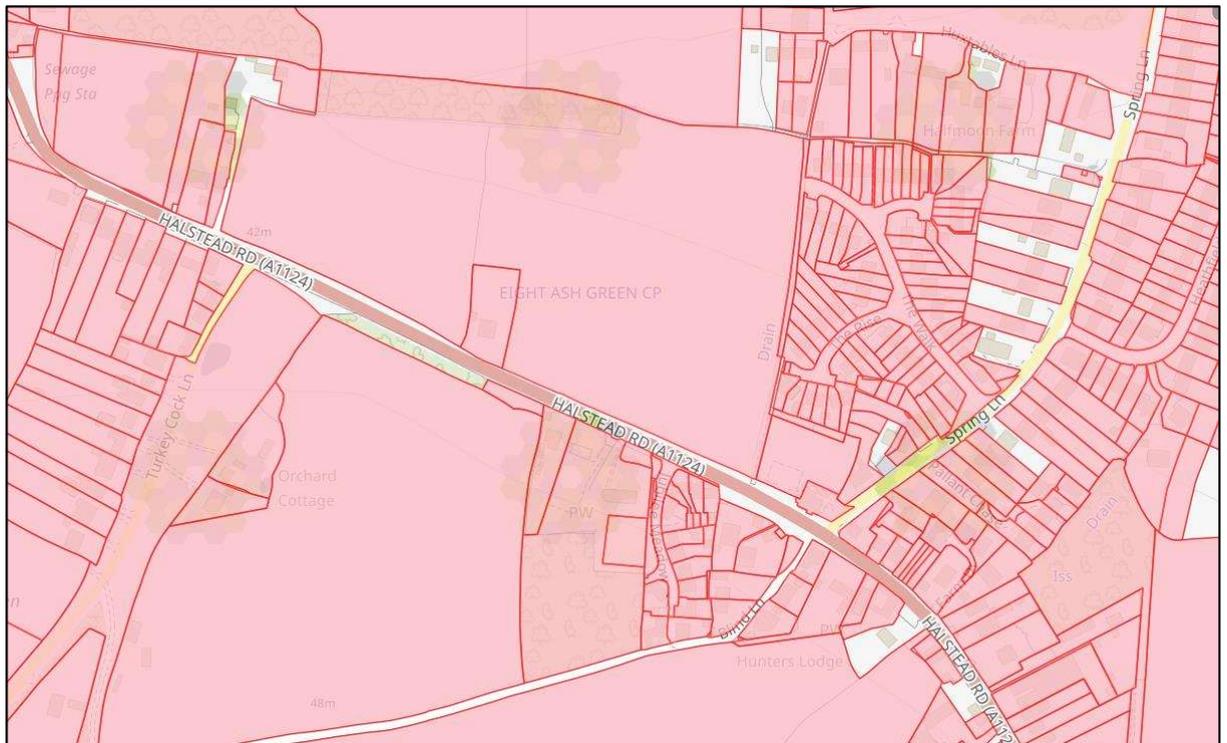


Plate 2.1: Extract from Land Registry

2.10. As part of this review, highway boundary information has been sought from ECC to confirm there are no 3rd party land constraints affecting access. The below extract shows the information received and appears to confirm that there is no apparent 3rd party concerns for achieving access from Halstead Road.



Plate 2.2: Extract from Highway Boundary Plan Obtained from ECC

Sustainable Travel

2.11. An initial review of the locality indicates that the site is suitably located in terms of access by sustainable modes of travel. Local facilities and amenities are available in the vicinity of the site, notably the proximity of Tollgate Shopping Park. These amenities would be accessed utilising existing infrastructure and proposed accesses. Bus stops are located on Halstead Road and on Spring Lane within 100m of the proposed site access. The stops on Halstead Road serve a higher frequency of services (82A, 82B, 88, 88A and 716) and therefore the most direct connection to them should be considered and incorporated into the layout.

2.12. As mentioned earlier on in this section, based on inspection of the ECC Interactive Map (extract below), there is a PRoW that extends along the eastern boundary of the site, which currently comprises a public footpath. Hence, any future layout will ideally need to incorporate connection the PRoW and consider potential improvements if there are rights to do so. The route could be utilised to connect to National Cycle Route 13 further north via an existing bridleway, which in turn

connects with Colchester and providing residents with a designated cycle route to the town centre. This would however rely on cyclists dismounting for a short section immediately north of the site, and so is subject to further discussions with ECC highways. In addition, there is also the opportunity for cyclists to travel east from the site within the carriageway on Halstead Road.

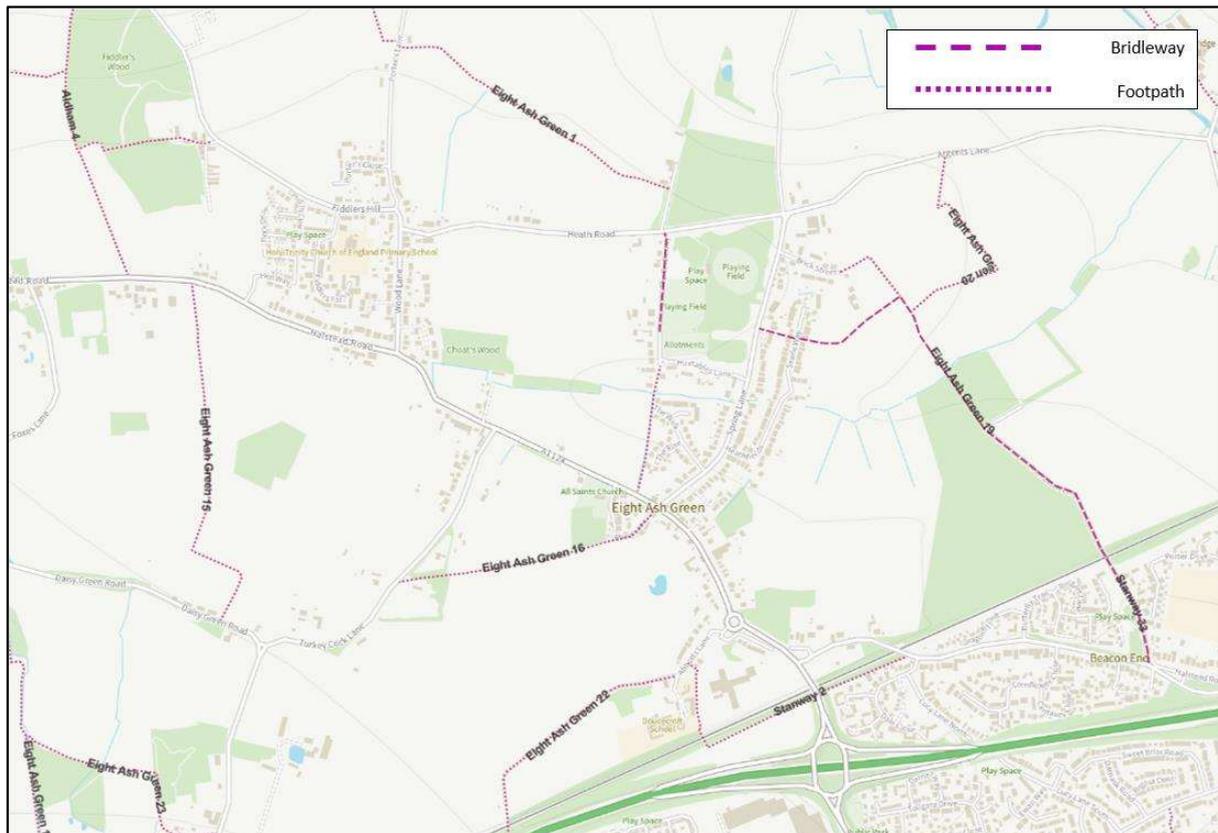


Plate 2.3: Extract from ECC PROW Interactive Map

2.13. Overall, there are good opportunities for travel via non-car modes and the site is therefore considered to be in accordance with national policy reflected within the National Planning Policy Framework (NPPF) and Local / Regional Policy (North Essex Authorities' Shared Strategic Section 1 Plan, 2021).

Internal Layout

2.14. Any internal layout shall need to be designed to an adoptable standard. The Essex Design Guide adopts the principles of Manual for Streets and should be used as a basis for the layout. Suitable visibility for the internal road layout will also be required. At present ECC are also reviewing the design guide with a view to

incorporating design advice for cycle route infrastructure design contained in Local Transport Note 1/20 (LTN1/20). This may result in the need for either shared or segregated cycle route facilities within the site, albeit the scale of development might mean this requirement can be avoided, located on or near road frontages.

2.15. Parking should be provided in accordance the minimum standards set out within Essex County Council 'Parking Standards – Design and Good Practice' (2009), with a preferred parking space size of 5.5m x 2.9m. Visitor parking should be in accordance with the above standards and evenly distributed across the site.

2.16. Electric Vehicle (EV) charging should also be considered. ECC design guidance requires one 3-7kW chargepoint per dwelling with dedicated off-street parking and passive provision for electric charging points at all on plot proposed car parking spaces within new developments. For dwellings with on-street parking, 10% of unallocated bays should have an active chargepoint and 10% should have passive infrastructure installed.

2.17. Cycle parking facilities should be provided in long and short stay format in accordance ECCC Parking Principles and design guidance. The minimum standards outlined within the adopted Vehicle parking Standards for Essex specify the minimum provision – it is therefore a requirement to include additional short stay parking where reasonable and possible.

Off-Site Impacts

2.18. Typically for a development of this size we would review circa 1-2 junctions in terms of capacity, however this is dependent on the distribution split, chosen access strategy and any sensitivity at local junctions. We have not modelled any other nearby junctions at this stage, however further detailed assessment of the developments impact would be undertaken as part of any future Transport Assessment.

2.19. Based on Ardent's experience in the area and on review of the consented development to the west, it is expected that a review of Junction 26 of the A12 will be required. Committed development in the area have contributed towards an improvement scheme at the junction, so it may be that a contribution towards this scheme can be explored as part of the proposed development. Discussions with ECC

and National Highways will be required on this matter to understand the latest stance and whether the improvements already secured to date might be sufficient to address the impacts of this site.

2.20. In the meantime, an initial review of CrashMap has been undertaken to identify whether there are any significant safety issues at any location junctions or roads that would be likely to warrant mitigation (in tandem with any capacity improvements that are highlighted after future detailed assessment). Upon review of CrashMap, there does not appear to be any significant concerns from a highway safety perspective (minimal slight injuries recorded on local roads and junctions) and therefore should not raise any concerns to the local highway authority. The exception to this is Junction 26 of the A12, however this is to be expected given the strategic nature of the junction.

Summary

2.21. Overall, the following headline conclusions are pertinent to note from a transport perspective:

- From a geometric and visibility perspective, an access can be achieved from Halstead Road (A1124), consideration has been given to the Essex Design Guide regarding Type of Access, Size, and location with regard to neighbouring junction.
- There is an existing Public Right of Way along the eastern edge of the site that should be connected to as part of any future masterplan if possible.
- It is considered that the site is located in a sustainable location and suitable connections should be provided to the existing bus stop provision in the vicinity of the site.
- A review of Junction 26 of the A12 is likely to be required, with possible improvements or contributions required. Beyond this, off-site highway impacts are not likely to be a significant concern but this is subject to discussions with the local highway authority.

3. Flood Risk and Drainage

Flood Risk

Introduction

- 3.1. The following statements and conclusions relating to Flood Risk are based on a desktop study using publicly available information.

Fluvial Flood Risk

- 3.2. The Environment Agency (EA) Flood Map for the area confirms the site to be wholly located within Flood Zone 1; an area deemed to be at 'very low' risk of fluvial or tidal flooding which corresponds to an annual flood probability of <0.1% and >1% (less than 1 in 1000 chance of flooding in any given year).
- 3.3. The site is located within the River Colne catchment. The River Colne is a designated main river and is located approximately 1.5km northeast of the site. The River Colne discharges into the North Sea at an estuary located approximately 17.0km southeast of the site.
- 3.4. The closest surface water feature is an existing drain located within the site boundary to the north, running from west to east and discharging into an off-site main river (serving as a tributary to the River Colne) northeast of the site.

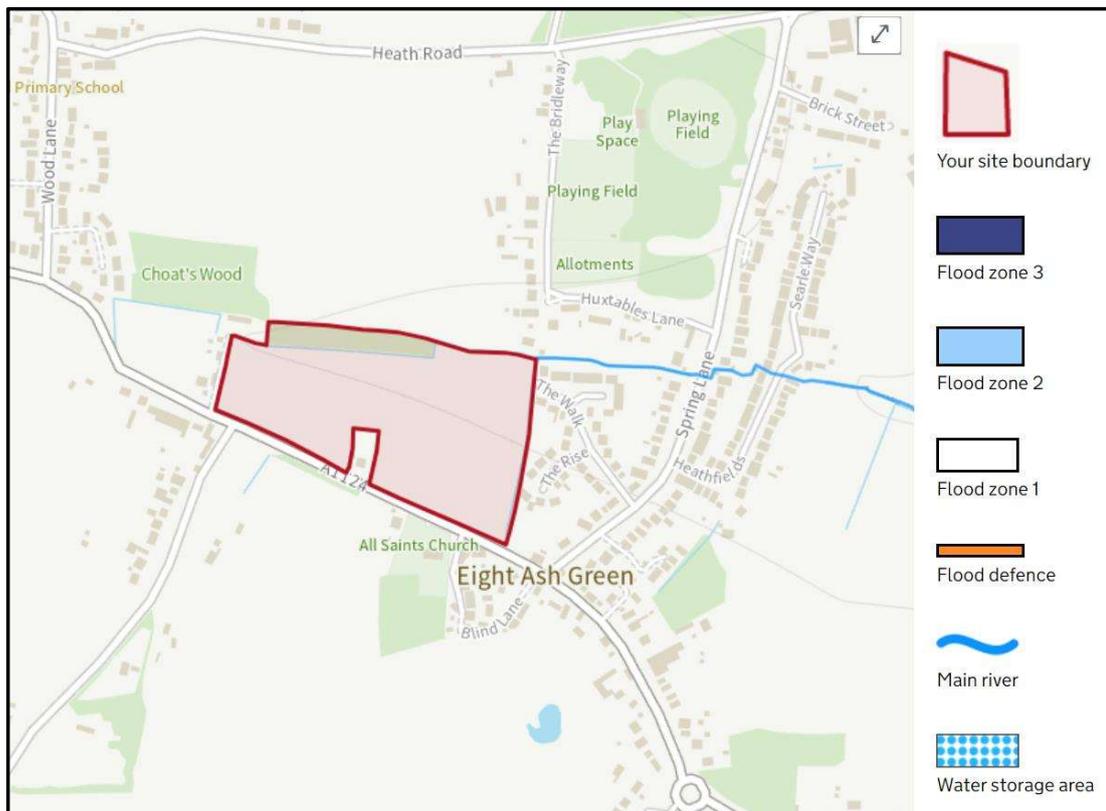


Plate 3.1: Extract from Environment Agency Flood Risk Map for Planning

3.5. A site-specific Flood Risk Assessment will be required to accompany a planning application for the redevelopment of the site due to the size and increased vulnerability ('more vulnerable' development). The entire site is located within Flood Zone 1 therefore the Exception Test is not required. The Sequential Test covers all types of flood risk, based on the desktop review its unlikely it will need to be carried out.

Pluvial Flood Risk – Surface Water

3.6. The EA surface water flood map shows that the majority of the site is anticipated to be at 'very low' risk of surface water flooding, however, there is a surface water flow path along the northern section of the site. The surface water flow path flows in an easterly direction and correlates with the existing topography and surface water features (drains).

3.7. An extract from the EA Surface Water Flood Risk map is shown in **Plate 3.2** below.

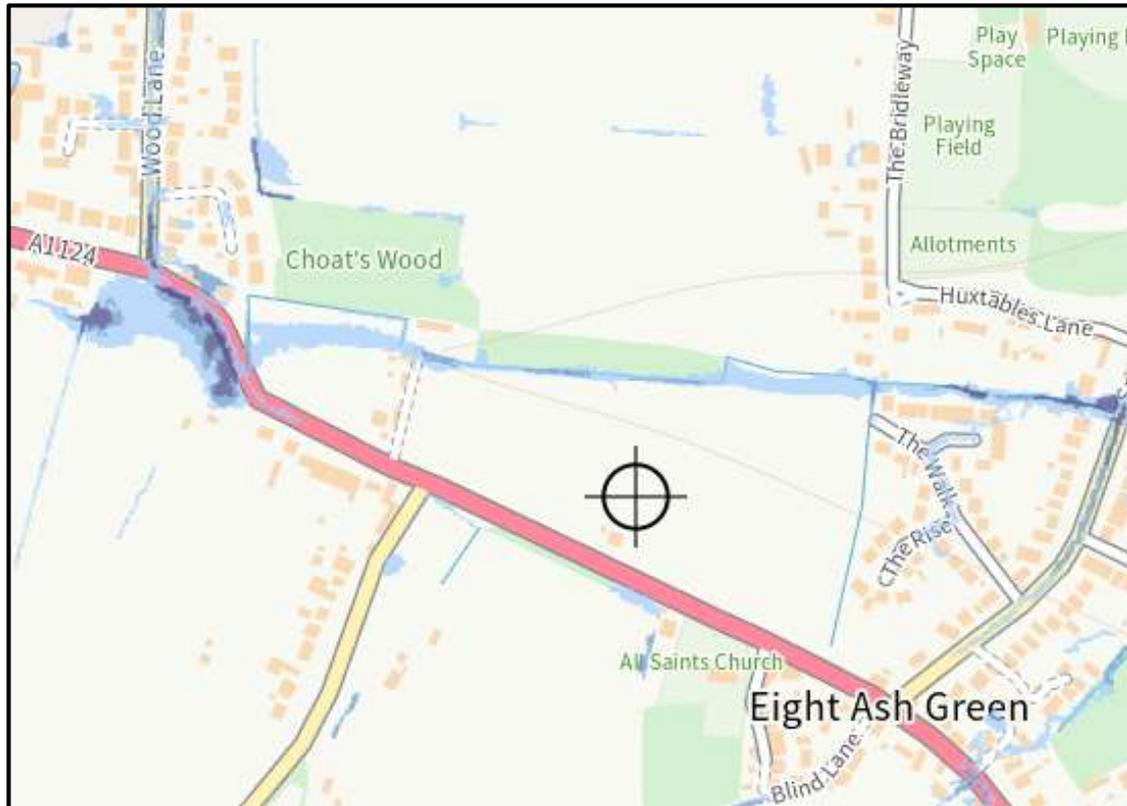


Plate 3.2: Extract from Environment Agency Flood Risk Map for Surface Water

3.8. Consideration will need to be given to the routing of this surface water flow path through the proposed development. The site topography generally falls from south to north which will ensure that surface water is channeled towards the existing drainage ditch.

Groundwater

3.9. The site is located within a source protection zone, though the geology beneath the site is regarded as being generally cohesive in nature. The bedrock geology beneath the site is of the London Clay Formation (clay) according to BGS mapping of the area. BGS mapping indicates that superficial sedimentary deposits of Cover Sand (clay, silt and sand) are present over the majority of the site. An extract from BGS mapping is presented in **Plate 3.3** on the following page.



Plate 3.3: BGS Mapping extract – Bedrock Geology

3.10. The nearest investigative data log to the site is located approximately 200m north of the boundary (BGS ref: TL92NW38) and comprises a trial pit log showing generally head deposits to 2.8m depth underlain by London Clay (groundwater levels not recorded); this is available on the BGS website. A borehole log was taken approximately 450m to the southwest of the site (BGS ref: TL92NW24), generally showing clayey, sandy gravel deposits to 8.8m depth underlain by London Clay. A water level was recorded at 44.8m AOD (2.7m BGL) in October 1969. It is possible that this groundwater was perched. Taken from OS data, existing site levels range from 35.0 to 43.0m AOD. **It is recommended that a compressive intrusive ground investigation is carried out including infiltration testing, using the BRE365 methodology;** if groundwater is recorded close to the surface during the initial site investigation monitoring should be carried out over the winter months should be undertaken.

3.11. The underlying geology may not be considered appropriate to support the use of infiltration type drainage as part of the redevelopment, due to the presence of clays and potentially shallow groundwater levels.

Sewer Flooding

3.12. At the time of writing, the Preliminary Flood Risk Assessment (PFRA) from the local LLFA (Essex County Council) does not cover any potential risks of flooding or instances of historic flooding at the site or it’s immediate vicinity.

3.13. At the time of writing, Anglian Water sewer records have not been obtained. Consultation with Anglian Water will need to be undertaken, as well as a review of local policy documents to determine the extent of historic sewer flooding in the area.

Artificial Sources

3.14. The proposed site is not located within an area designated by the EA to be at risk of flooding due to reservoir failure.

Flood Risk Summary

3.15. Error! Reference source not found.**3.1** on the following page summarises the potential sources of flood risk discussed above

SOURCE OF FLOODING	PATHWAY	COMMENT	RISK*
<i>Fluvial / Tidal</i>	River Colne (main river) approx. 1.5km northeast of the site.	EA flood maps confirm the site is located within Flood Zone 1 – Very Low Probability.	‘Very Low’
<i>Pluvial</i>	Surface Water and Overland Flow.	The site is deemed to be at “very low to high risk” in accordance with EA maps for surface water flooding.	Low with suitable mitigation.
<i>Groundwater</i>	Through underlying strata when groundwater levels rise above surface levels.	Anticipated high groundwater, intrusive ground investigation required.	Low with suitable mitigation.
<i>Sewers</i>	Surcharging of nearby sewers.	To be confirmed	To be confirmed.

<i>Canals and Artificial Sources</i>	No reservoirs or other artificial sources higher than the site.	EA flood maps show site not to be at risk of flooding due to a reservoir breach.	Negligible.
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Table 3.1: Flood Risk Summary

Drainage Strategy

3.16. In accordance with the ECC LLFA SuDS Strategy, there will be a requirement to incorporate a Sustainable Drainage System into the surface water strategy and restrict surface water flows from the site to greenfield rates unless clear evidence can be provided to show why greenfield rates cannot be provided.

3.17. Below-ground tanks, permeable paving, swales and detention basins are likely to be required to attenuate and treat surface water runoff from the site.

3.18. Given the underlying geology at the site comprising London Clay Formation, infiltration SuDS may be inappropriate; on-site investigation and infiltration testing will be required to confirm this before discharging to nearby public sewers or drain.

3.19. The closest surface water feature is an existing drainage ditch located within the site boundary to the north, running from west to east and discharging into an off-site main river (serving as a tributary to the River Colne) northeast of the site.

3.20. The surface water drainage strategy will need to comply with the following requirements:

- Flooding of the drainage system should not occur during a 1 in 100-year plus 40% climate change allowance storm event (in accordance with Part H of Building Regulations);
- A 40% allowance for climate change should be included within the design of the surface water drainage network;
- It will not be acceptable to drain the site in a manner which would increase the risk of flooding elsewhere;
- Storage for all rainfall events up to and including the 1 in 100-year return period plus 40% allowance for climate change should be provided within the drainage

system by means of Sustainable Drainage measures or other underground storage features;

- Runoff from the site should be restricted to the Greenfield runoff rate; and
- Green and brown roofs should be incorporated within the development where feasible.

3.21. The likely volume of attenuation storage required has been estimated based on several assumptions. It is assumed that site runoff will need to be reduced to the equivalent greenfield run-off rate for the site. The site area is calculated to be 6.96ha with an assumed impermeable area of 4.52ha (approximately 65% of the site area).

3.22. A number of hydrobrakes or similar devices would be utilised to restrict off-site flows. The use of more than one control in this way would be used to match post-development flow rates with greenfield rates for the 1 in 1 year, 1 in 30 year and 1 in 100-year rainfall events. Greenfield runoff rates have been assessed using MicroDrainage and are shown in **Plate 3.4** below.

<u>ICP SUDS Mean Annual Flood</u>			
Input			
Return Period (years)	1	SAAR (mm)	574
Area (ha)	6.960	Soil	0.400
		Region Number	Region 6
		Urban	0.000
Results		l/s	
	QBAR Rural		18.8
	QBAR Urban		18.8
	Q1 year		16.0
	Q1 year		16.0
	Q30 years		42.5
	Q100 years		59.9

Plate 3.4: Assessment of Greenfield Runoff Rates

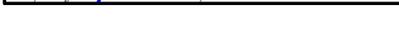
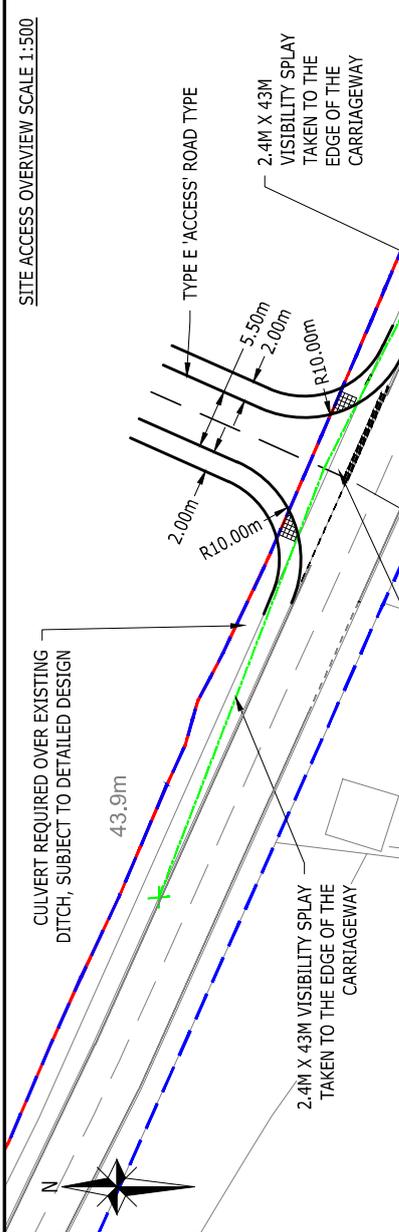
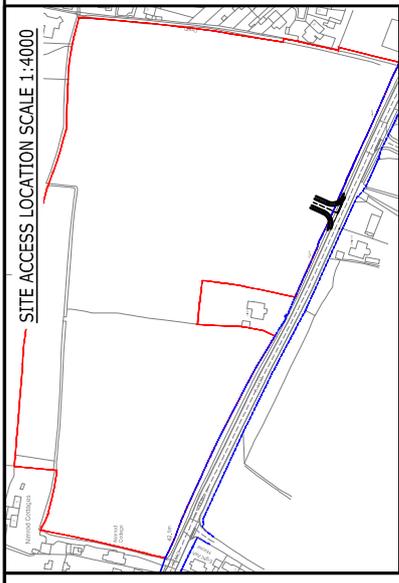
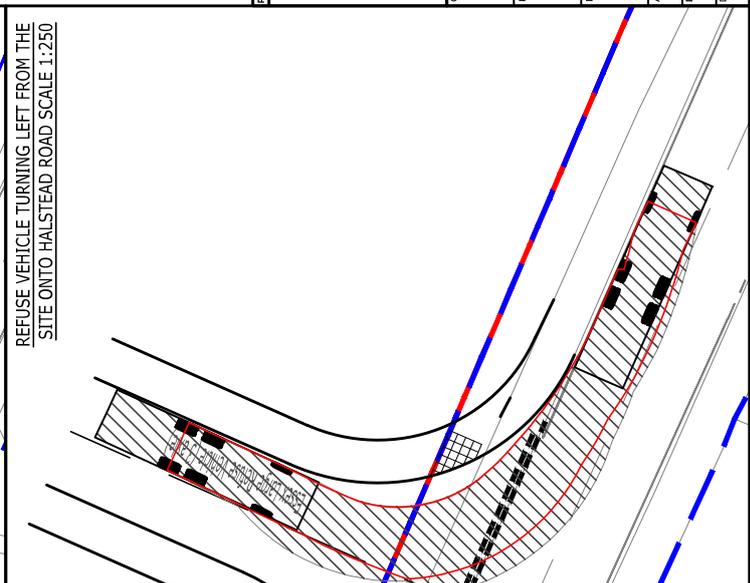
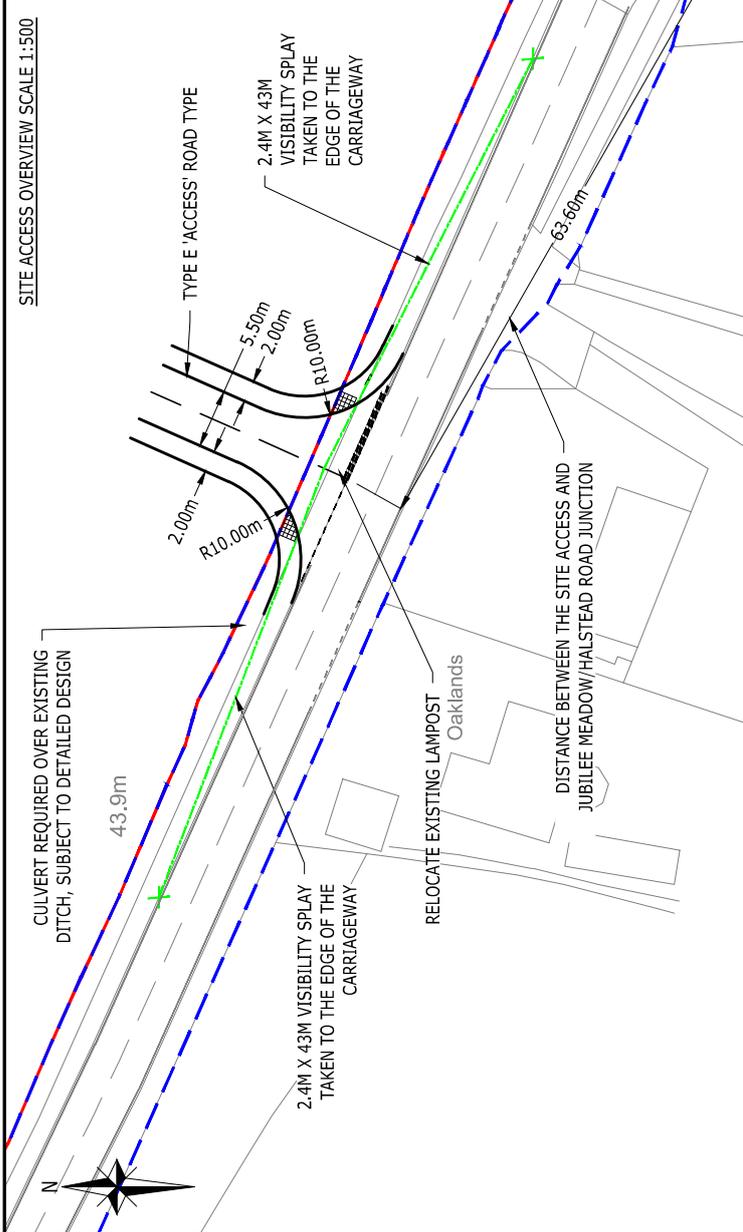
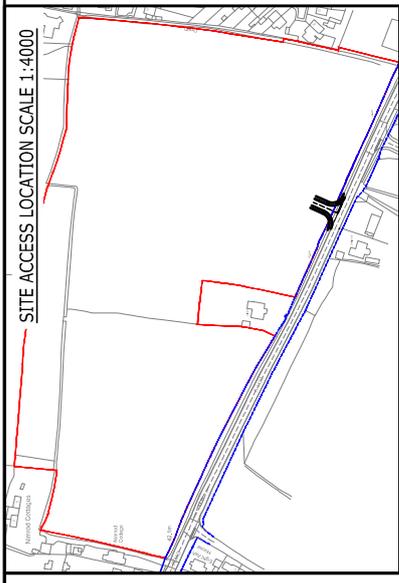
3.23. Attenuation storage is required to contain excess surface water when the discharge rates for the site are restricted in line with the above rates. The volume of attenuation storage needed within the developed site has been assessed to be approximately

3,500m³, and will potentially take the form of lined permeable paving, detention basins and below ground attenuation tank(s). This is an indicative volume based on assumptions about the site and proposed development and will need to be confirmed through further design work. The outfall for discharging surface water runoff generated from the proposed development is to be confirmed upon receipt of an intrusive ground investigation report and topographical survey; the existing drainage ditch on site will likely be the most viable point of discharge.

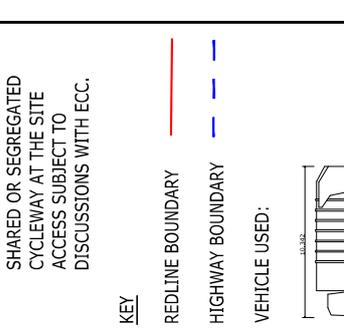
Foul Water Drainage

- 3.24. It is estimated that the peak foul water flow generated by 150 residential units will be in the order of 6.94 l/s.
- 3.25. Anglian Water sewers are likely located within The Walk, a residential street to the east of the site; however, any foul sewer connection to this street would need to cross an existing drainage ditch which may not be viable depending on the invert level of the existing foul sewer. Anglian Water sewer records should be obtained to determine whether a new connection into a public sewer at this location is viable. An adoptable pumping station will be required if a gravity connection to the existing sewer in The Walk cannot be achieved.
- 3.26. It will be necessary to submit a Pre-Development Enquiry to Anglian Water to confirm if there is sufficient capacity within their network to receive foul flows from the proposed development.

Drawings



- NOTES**
1. RED LINE BOUNDARY PLOTTED IN LINE WITH PLANS RECEIVED FROM BELLWAY (TITLE NUMBER EX869356).
 2. HIGHWAY BOUNDARY PLOTTED IN LINE WITH PLANS RECEIVED FROM ECC.
 3. SUBJECT TO TOPOGRAPHICAL SURVEY, TREE SURVEY, REMOVAL OF LAMPPOST, LEVELS, UTILITIES.
 4. POTENTIAL NEED FOR SHARED OR SEGREGATED CYCLEWAY AT THE SITE ACCESS SUBJECT TO DISCUSSIONS WITH ECC.



WORK IN PROGRESS

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Client: **BELLWAY HOMES LIMITED**

Project Title: **EIGHT ASH GREEN, COLCHESTER**

Drawing Title: **POTENTIAL SITE ACCESS**

AS Scale	Date	Designed by
AS SHOWN	04.12.23	CL

Drawn by	Checked by	Approved by
CL	PR	ATB

Drawing Number: **2301300-D002**

Row: 1