- Careful location of the flues zone to lessen competition with existing landmarks of Cambridge's skyline;
- Reshape the building blocks to appear more slender and create articulation in the elevations to mitigate the appearance of a continuous built form;
- Alter the height of the proposed blocks towards the creation of a cluster of tall buildings that would lessen the perceived geographical extent of the change and preserve some sense of openness in views from Coldham's Common.

10.26 The Design Code (DC) incorporates the above measures providing a degree of control over the architectural outcome of the outline application. The TVIA considers this primary mitigation as part of the proposal and recommends mitigation measures (secondary measures) for residual townscape or visual effects as necessary. The secondary measures are considered in the Mitigation and Monitoring section of this Chapter.

Planning Policy Context

10.27 This section outlines the planning policy context insofar as it specifically relates to the topic of Townscape and Visual Assessment.

National Planning Policy Framework (NPPF)

10.28 The NPPF (2021) sets out the overall economic, social, and environmental objectives that the planning system should follow to achieve sustainable development. At the heart of the NPPF is a '*presumption in favour of sustainable development' (Par. 10)*. More specifically, the NPPF policies relevant to the Site and Proposed Development are detailed below.

10.29 The framework stresses the importance of high-quality design (Par. 126 and 134). It states that efficient use of land should take into account *'the importance of securing well-designed, attractive and healthy spaces*' (Par. 124e). Par. 126 adds that *'good design is a key aspect of sustainable development, creates better places in which to live and work and helps make development acceptable to communities.'* Furthermore, the policy states that developments (Par. 130):

- '(a) will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;
- (b) are visually attractive as a result of good architecture, layout and appropriate and effective landscaping;
- (c) are sympathetic to local character and history, including the surrounding built environment and landscape setting, while not preventing or discouraging appropriate innovation or change (such as increased densities);
- (d) establish or maintain a strong sense of place, using the arrangement of streets, spaces, building types and materials to create attractive, welcoming and distinctive places to live, work and visit;
- (e) optimise the potential of the Site to accommodate and sustain an appropriate amount and mix of development (including green and other public space) and support local facilities and transport networks; '

10.30 …'Conservation and enhancement of the natural environment are also at the heart of the NPPF objectives. It is noted that the new NPPF does not clearly define what constitutes a '*valued landscape'*, despite some useful information on '*areas or assets of particular importance'*

provided by footnote 7. Similarly, there is no reference to "valued townscape". For the purpose of this baseline, the 'Stroud DC v Gladman High Court judgement (reference CO/4082/2014) will be applied where appropriate, namely on landscape/townscape value related matters, as well as the Landscape Institute Technical Guidance Note 02/21 and Technical Information Note 05/17. According to the judgement, to be valued in terms of the NPPF would require the landscape to show *'some demonstrable physical attribute rather than just popularity'* i.e. it has to be "out of the ordinary".

Local Planning Policy

10.31 The **Cambridge Local Plan** (2018) forms part of the development plan for Cambridge, setting out vision and guidance for developments and land use within the city council. The following policies are relevant to the TVIA.

- Policy 8: Setting of the city

10.32 The policy states that development abutting the Cambridge Green Belt, green infrastructure corridors and open spaces will only be supported if:

- *'responds to, conserves and enhances the setting, and special character of the city, in accordance with the Cambridge Landscape Character Assessment 2003, Green Belt assessments11, Cambridgeshire Green Infrastructure Strategy and their successor documents;*
- *promotes access to the surrounding countryside/open space, where appropriate; and*
- *includes landscape improvement proposals that strengthen or re-create the well-defined and vegetated urban edge, improve visual amenity and enhance biodiversity.'*

10.33 The policy's supporting test explains the importance of the interface of Cambridge's urban edge with the countryside, which is an 'important and valued landscape feature of the city, contributing to the quality of life and place'.

10.34 Development that will occur to the edge of the city must 'conserve and enhance the city's setting'.

10.35 Finally, the supporting text emphasises the importance of urban landscape in contributing to the wider green infrastructure strategy.

- Policy 55: Responding to Context

10.36 The policy states that '*development will be supported where it is demonstrated that it responds positively to its context and has drawn inspiration from the key characteristics of its surroundings to help create distinctive and high quality places*.'

10.37 More specifically the proposal is required to fulfil the following parameters:

- *'identify and respond positively to existing features of natural, historic or local importance on and close to the Proposed Development site'*; and
- *'use appropriate local characteristics to help inform the use, siting, massing, scale, form, materials and landscape design of new development.'*

10.38 The policy aims to enhance and protect the special character of Cambridge. For this purpose, it is important to understand the proposal context including '*land uses, open spaces, the built*

and natural environment and social and physical characteristics.' The proposal is required to be appropriate to its context and '*complement the local identity of an area.'*

- Policy 57: Designing New Buildings

10.39 This policy identifies desirable qualities for new developments, namely:

- *'a positive impact on their setting in terms of location on the Site, height, scale and form, materials and detailing, ground floor activity, wider townscape and landscape impacts and available views;'* and
- *'include an appropriate scale of features and facilities to maintain and increase levels of biodiversity in the built environment.'*

10.40 Once more the importance of the proposed buildings appropriateness to its context is highlighted, putting further stress on qualities such as scale, height, form, proportion and materiality.

- Policy 59: Designing Landscape and Public Realm

10.41 This policy promotes a coordinated approach to the design of the open space associated with new development to ensure '*the design relates to the character and intended function of the spaces and surroundings buildings'.* Furthermore, the policy '*requires existing features including trees, natural habitat, boundary treatments and historic street furniture and/or surfaces to be retained and protected';* proposed materials are to be '*of a high quality and respond to the context to help create local distinctiveness'.*

- Policy 60: Tall Buildings and the Skyline of Cambridge

10.42 The policy sets out criteria that should be considered to protect or enhance the character and qualities of Cambridge's skyline, these include:

- *'location, setting and context – applicants should demonstrate through visual assessment or appraisal with supporting accurate visual representations, how the proposals fit within the existing landscape and townscape;'*
- *'impact on the historic environment - … including impact on key landmarks and viewpoints, as well as from the main streets, bridges and open spaces in the city centre and from the main historic approaches, including road and river, to the historic core. Tall building proposals must ensure that the character or appearance of Cambridge, as a city of spires and towers emerging above the established tree line, remains dominant from relevant viewpoints as set out in Appendix F;'* and
- *'scale, massing and architectural quality – applicants should demonstrate through the use of scaled drawings, sections, accurate visual representations and models how the proposals will deliver a high-quality addition to the Cambridge skyline and clearly demonstrate that there is no adverse impact.'*

10.43 The policy describes Cambridge as free from clusters of modern towers and bulky buildings, except for the hospital and airport areas, which contrast with the surrounding low-lying suburbs. Also noted is the difference between the '*background buildings*' in the historic core and the suburb's built form. The former rises between three to five storeys with occasional, modern, six storey buildings, while the latter is largely characterised by two storey buildings with only a few areas with three storeys. '*This characteristic leads to the setting of height thresholds against which proposals will be judged in accordance with the criteria of Policy 60.*

10.44 Policy 60 continues to say: '*Trees form an important element of the Cambridge skyline, within both the historic core and surrounding suburbs. Elevated views from the rural hinterland and from Castle Mound reveal a city of spires and towers emerging above an established tree line. Buildings therefore work with subtle changes in topography and the tree canopy to create a skyline of 'incidents', where important buildings rise above those of a prevailing lower scale*.'

10.45 Appendix F (Tall Buildings and the Skyline) provides further guidance in regard to Policy 60.

10.46 Relevant to this assessment are the following criteria listed in Appendix F:

- *'maintain the character and quality of the Cambridge skyline;'*
- *'ensure that tall buildings, as defined in this guidance, which break the established skyline are well considered and appropriate to their context;'* and
- *'support only new buildings which are appropriate to their context and contribute positively to both near and distant views.'*

10.47 Appendix F acknowledges that it is the nature of the contextual townscape that defines a tall building, based on this in Cambridge a tall building is *'any structure that breaks the existing skyline and/or is significantly taller than the surrounding built form.'*

10.48 It goes on to say that within the suburbs (where the Site is located) '*buildings of four storeys and above (assuming a flat roof with no rooftop plant and a height of 13m above ground level) will automatically trigger the need to address the criteria set out within the guidance.'*

10.49 The key characteristics of Cambridge's skyline identified in Appendix F include:

- *'Trees form an important element in the modern Cambridge skyline, within both the historic core and the suburbs. Many of the elevated views of the city from the rural hinterland and from Castle Mound show a city of trees with scattered spires and towers emerging above an established tree line.';* and
- In the suburb, the height of the building is generally lower with some three-storey Victorian and Edwardian buildings on the main approach roads.

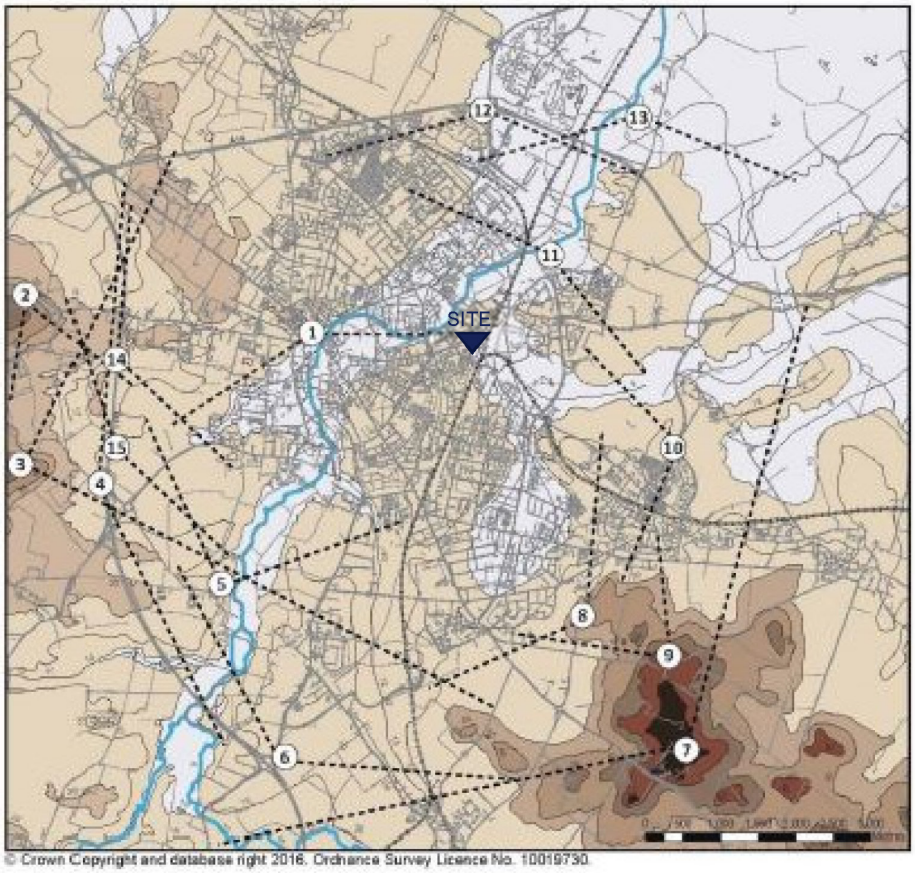
10.50 Figure F.3 from the Cambridge Local Plan 2018 (**Figure 10.1**) provides a list of '*Strategic Viewpoints'*, which include Castle Mound, Castle Hill, (32m AOD), the only vantage point affording significant panoramic views across the city (apart from the tops of tall buildings).

- Policy 61: Conservation and Enhancement of Cambridge's Historic Environment

10.51 This policy largely concerns the preservation of significant historic assets and the following parameters inform the assessment of townscape qualities. Proposals should:

- *'retain buildings and spaces, the loss of which would cause harm to the character or appearance of the conservation area;'* and
- *'be of an appropriate scale, form, height, massing, alignment and detailed design which will contribute to local distinctiveness, complement the built form and scale of heritage assets and respect the character, appearance and setting of the locality'*.

10.52 As the policy states, it is important to understand the qualities of Cambridge's historic environment as it '*defines the character and setting of the city, and contributes significantly to Cambridge residents' quality of life.'* Enhancing the character of the city Cambridge benefits from *'a number of registered parks and gardens of special historic interest, including college grounds, cemeteries and the Cambridge University Botanic Garden.'*



1. Castle Hill Mound, Shire Hall
2. Madingley Rise, Madingley Road
3. Redmeadow Hill, Barton
4. Grantchester Road
5. Grantchester Meadow
6. M11/A1309 Elevated Roundabout
7. Little Trees Hill, Magog Downs
8. Limekiln Road
9. Worts' Causeway/Shelford Road
10. Cherry Hinton Road roundabout, overlooking Cambridge Airport
11. Ditton Meadows
12. A14 Junction 33 with A10 and A1309
13. River Cam looking south between the A14 and Baits Bite Lock
14. Coton footpath over the M11
15. M11 between Junctions 12 and 13

- Land between 70m - 80m AOD
- Land between 60m - 70m AOD
- Land between 50m - 60m AOD
- Land between 40m - 50m AOD
- Land between 30m - 40m AOD
- Land between 20m - 30m AOD
- Land between 10m - 20m AOD
- Land below 10m AOD
- Contours and heights in metres
- Railway line

Figure 10.1: Figure F.3 from Cambridge Local Plan 2018 Showing Key Viewpoints

- Policy 67: Protection of Open Space

10.53 The principal aim of the policy is to prevent the loss of or the causing of harm to the character of open spaces. The policy places emphasis on protected open space (POS) as they *'make a significant contribution to the character of Cambridge.'*

- Policy 71: Trees

10.54 The policy is aimed at preventing the loss of trees of amenity, or other value. It highlights that existing trees and hedgerows contribute to the townscape character, including Cambridge's open spaces and streetscapes. It lists the importance of urban trees as focal points, or landmarks, providing a sense of place. According to the policy, '*trees on or affected by development sites are a material consideration in the determination of applications. They are an important facet of the townscape and landscape and the maintenance of a healthy and species diverse tree cover brings a range of benefits for health, well-being, social and microclimate.'*

Existing baseline condition - Townscape

Townscape Designations

10.55 Planning designations and constraints, within 2 km of the Site, relevant to the assessment of landscape and visual effects are set out in **Table 10.1** and shown on Map 4a in **Appendix 10.2**.

Table 10.1: Landscape Designations

DESIGNATION/PROTECTION	STUDY AREA STATUS
National Park	None within the study area.
Area of Outstanding Natural Beauty	None within the study area.
Area of High Landscape Value (or similar local designation)	None within the study area.
Green Belt	Yes, the Cambridge Green Belt extends along Coldham's Common to the east of the Site and up to Ditton Meadows to the north. The Site is not located within the Green Belt.
World Heritage Sites	None within the study area.
Scheduled Monuments	Yes. The Old Cheddar's Lane pumping station is located approximately 670m north east of the Site. Other Scheduled Monuments are located at further distance from the Site, see Map 4a.
Conservation Area	Yes, there are two Cambridge Conservation Areas covered within the Study Area, with the Site located adjacent to the Mill Road Conservation Area, see Map 4a.
Listed Buildings	Yes, there are a number of Listed Buildings within the Study Area, see Map 4a.
Registered Parks and Garden	Yes, Mill Road Cemetery located approximately 275m south of the Site.
City Wildlife Sites	Yes, Mill Road Cemetery 300m circa to the west of the Site
Local Nature Reserves	Yes, Coldham's Common LNR is circa 200m to the east of the Site.

DESIGNATION/PROTECTION	STUDY AREA STATUS
Recreational Routes and Public Rights of Way (PRoW)	Yes, the majority of the PRoWs are located along the River Cam and in Coldham's Common, including several Recreational Routes, see Map 1b in **Appendix 10.2**.
Tree Preservation Orders (TPO)	Trees in the Conservation Area have a similar protection to trees covered by a TPO, TPO area A1 covers the whole Site.
Flood Risk	Yes, refer to Map 9 in **Appendix 10.2**.

Townscape Character

10.56 The assessment of landscape and townscape character is an integral part of prescribed methodology for determining landscape effects which requires a full appreciation of the components that make up the quality and value of an area. Identification of the components will also inform future mitigation measures.

10.57 In this case, the Site is located within the urban area of Cambridge, therefore it is not included in the Landscape East or The Cambridgeshire Landscape Guidelines (1991) landscape character assessments. The townscape character is, instead, very relevant to the assessment of the Site and its context.

10.58 Landscape and townscape character are considered at three levels:

- National setting, in relation to the National Character Area Profiles, produced by Natural England;
- Local townscape and landscape character taking into account the objectives of the Cambridge Landscape Character Assessment (April 2003);
- Greater Cambridge Landscape Character Assessment (February 2021); and
- Local Setting as observed on Site.

National Landscape Character

10.59 The Site is located within the National Character Area (NCA) profile 88: Bedfordshire and Cambridgeshire Claylands (**Figure 10.2**). This is a '*broad, gently undulating, lowland plateau dissected by shallow river valleys that gradually widen as they approach The Fens NCA.'* Generally the NCA is sparsely populated with settlements, such as Cambridge, located within the river valleys. *'A feeling of urbanisation is brought by numerous large towns, including Milton Keynes, Bedford, Cambridge, Huntington and Peterborough, and major transport routes…'.*

10.60 Generally, settlement expansion caused a decline of tranquillity within the NCA which is also affected by visual intrusion, noise and light pollution from agriculture. *'Strong contrasts exist between greater tranquillity in more rural, inaccessible areas (including sections of the river valleys) and lower tranquillity in areas with a settled, urban and developed feel.'* On the other hand, the NCA is focused on new growth and development. *'Transport infrastructure, business and commercial development are now major components of the NCA's character, with good transport links north and south and particular nodes along the corridors of the A1, M1 and A14.'*

10.61 Notably, the NCA largely describes landscape rather than townscape qualities. However, it is noted that some parts of the landscape area are characterised by extensive clay extraction for brick making. This is one of the diverse materials used for buildings within the NCA, which

also include render, thatch and stone. Locally quarried limestone is the cause of distinctive landscapes along the river valleys and is also featured in the local architecture. *'The locally quarried limestone is used in the buildings in villages north of the River Great Ouse whereas clay tile and brick is commonly found to the south and east. Surviving examples of timber-frame buildings and thatch and the occasional use of colour-washed render add to the eclectic nature of the area's building stock.'*

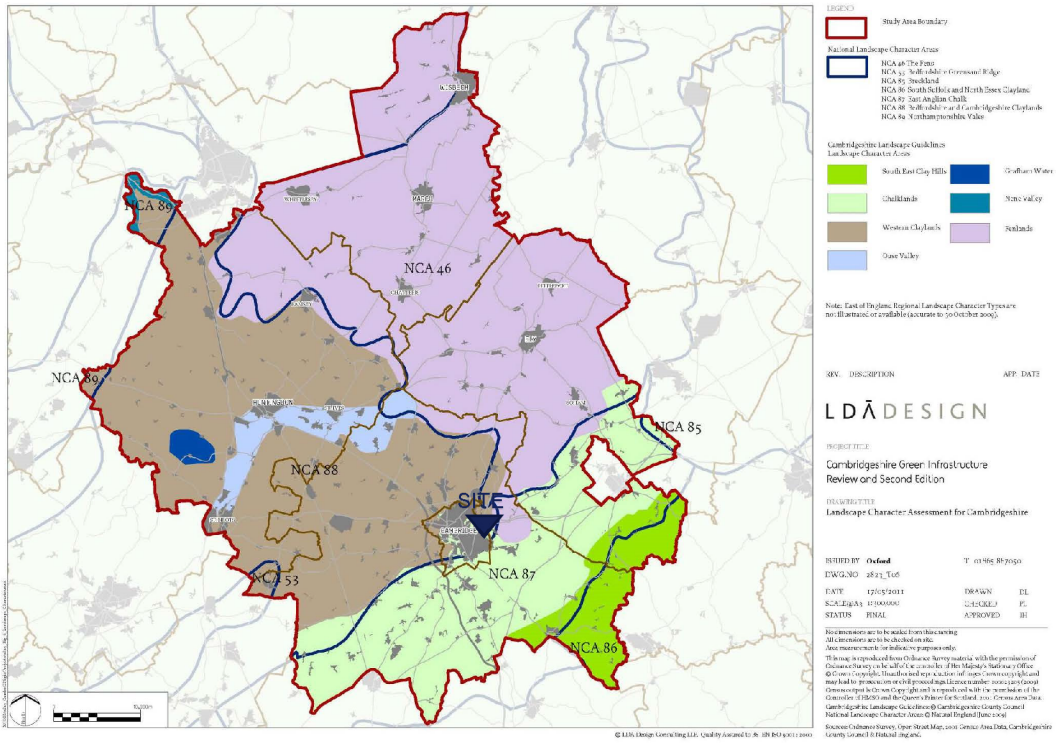


Figure 10.2: NCA map from the Cambridgeshire Green Infrastructure Strategy by Cambridge Horizons 2011

10.62 The NCA notes the importance of recreational facilities linked to the enjoyment of the outdoors and landscape. Large towns within this character area provide substantial green spaces within the urban fabric including green infrastructure links to the wider countryside.

Cambridge Landscape Character Assessment (April 2003)

10.63 Generally, Cambridge is defined as a collegiate city in a rural setting, with good accessibility to the countryside and green corridors. The assessment considers that compactness and sense of arrival are important features and 'w*here the edges are positive, and the City is anticipated by glimpsed and distinctive views to the skyline or landmarks, this is a Defining Character of views and setting.'*

10.64 The assessment recognises that although intrinsic to the quality of Cambridge, the notion of compactness and sense of arrival is difficult to delineate. *'The 'Defining Character' of Cambridge is therefore restricted to physical features as follows:*

- Buildings and Historic Core;
- Green Fingers and Corridors;

- Water Courses and Bodies;
- Open Green Spaces within the City;
- Setting and Views of the City Skyline; and
- Separation.'

10.65 Contribution of the Site to each Defining Character will be considered through the assessment of the development's impact on the townscape. To this purpose it is important to note that the Site is located adjacent to one of Cambridge's nine Conservation Areas and in proximity to Coldham's Common, a green finger within the city and part of the River Cam valley.

10.66 The assessment highlights important views of the city skyline which are particularly distinctive when approaching from the south east and west.

10.67 'The adopted meaning of 'Defining Character' precludes features and areas which are also very important to Cambridge and its character, but not so important that their removal or development would completely change the distinctive character of Cambridge. The importance of these areas are defined as 'Supporting Character'. Where features are identified as Supporting Character they are regarded as very important to the character of Cambridge. This importance should be a material consideration and new development should take account of these characters, and where possible conserve or improve upon existing character.'

10.68 The areas of Supporting Character relevant to the assessment of the development include:

- Local Open Space;
- Local Views; and
- Ancient Woodland, Tree Cover, Hedgerows and Veteran Trees.'

10.69 These areas make substantial contribution to the character of the locality and setting of Cambridge. As an example, Mill Road Cemetery is a local open space with value even if it's not a Defining Character. The tall chimney at the Museum of Technology is considered a positive strategic landmark.

10.70 Cambridge is considered overall a well-treed City. Tree belts and avenues are characteristics of many streets and contribute to the City's character, however, if they coincide with major green spaces, setting or views they become by association Defining Character.

10.71 According to the assessment definition of character areas and types, the Site is located in the Residential Character Type and, more specifically, in the Post 1900 Suburb Cambridge Character Type (see Map 7 in **Appendix 10.2**). No particular character areas are identified for this type.

10.72 Key characteristics of the Post 1900 Suburb character areas are:

- *'Concentrated to areas in the north, east and south-east.'*
- *'Characterised by their mostly rectilinear layout, and include areas built later last century'.*
- *'The plots are of medium size with medium size front gardens. The house types tend to be semi-detached or detached. The gardens tend to have mature, well-established trees and shrubs.'*
- *'Various house styles and building materials are evident, but each area has a typical palette*

of material and style giving a uniform and orderly look.'

- There is *'little or no open space provision within the main area.'*
- *'The roads tend to be of medium size with enough room for parking within the dwelling curtilage.'*
- *'There are often grass roadside verges sometimes with highway trees planted along the roads.'*
- *'Individual garden trees can contribute significantly to the scene.'*

10.73 Adjacent to the Site on the southern boundary is the Pre 1900 Residential Terraces and Large Terraces Character Type. The study area particularly reflects the characteristics of the Pre 1900 Residential Terraces type. Key characteristics include:

- '*Similarities of the street pattern, the tight grain with small street frontages, prominent chimneys that develop a strong rhythm, and the building materials.'*
- *'The presence or absence of front garden, boundary and path details, the width of road and the presence or absence of street trees provides local distinctiveness.'*
- *'Where the terraces have been built in a piecemeal fashion there is a diversity of house heights.'*
- The housing layout is generally in a rectilinear pattern with back-to-back formation.
- While the majority of this character type is largely residential, with pubs often being significant buildings in the streets or on streets corners, some areas towards the east have a mixture of residential and minor industry, adding diversity to the streetscape.
- 'Vistas along the street either tend to be long, out to areas of open space, including the commons, and often to significant trees, or stopped by other terraces or feature buildings at right angles to that street.'

10.74 According to the assessment definition of character areas and types, the Site appears to also fit the description of the Industrial and Commercial Character Type, and more specifically, in the Industrial - Railway Corridor Cambridge Character Type.

10.75 The Railway Corridor Cambridge Character Type overlaps markedly with the Road Corridor Character Type and the Site embodies this overlap in its location between Newmarket Road and the Fen Line which connects Cambridge Station to Kings Lynn and to London. The rail line runs north - south through the eastern side of Cambridge which expanded rapidly around it in the latter 19th Century.

10.76 The assessment identifies a hinterland created along the Rail Corridor that was *'mostly unsuited to housing'* where industry associated with the railway and later other industrial buildings including *'sheds, warehouses and large retail concerns'* established. The assessment also identifies a trend for these industrial areas being replaced by new and usually smaller-scale development.

10.77 Notably this Cambridge Character Type is characterised by a *'miscellany of buildings and wasteland following the railway track',* which suggest an overall neglected townscape.

10.78 The assessment highlights the opportunity in this character area type to '*improve and create a new district with its own character.'*

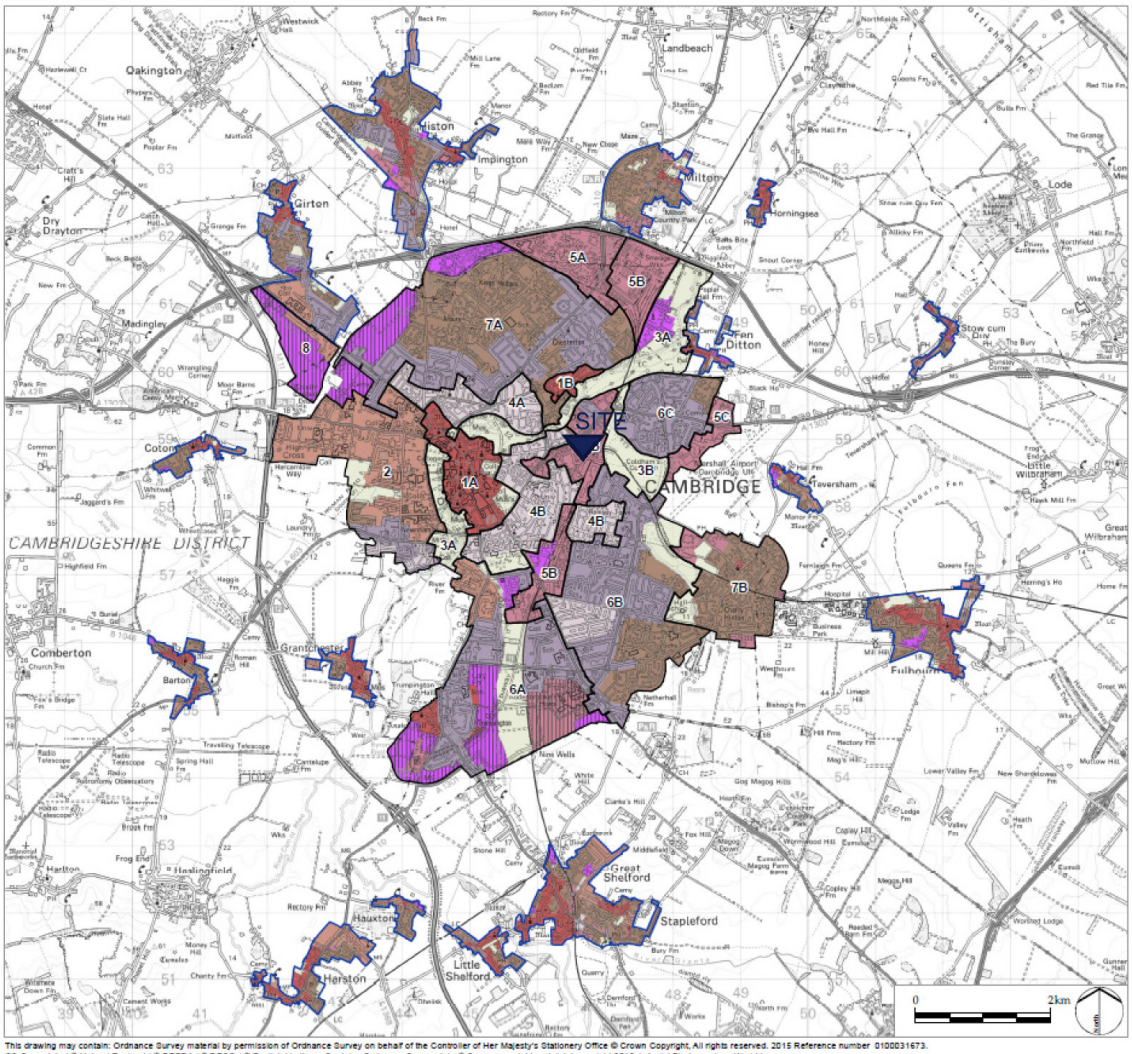


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Figure10. 3: Townscape Character Areas abstract from the Cambridge Inner Green Belt Boundary Study, 2015

Key characteristics of the Railway Corridor include:

- 'large warehouses and derelict sites;'
- 'derelict and underused large urban spaces – gradually passing out of this phase;' and
- 'rail corridor gives poor impression to those entering City.'

Greater Cambridge Landscape Character Assessment (Chris Blandford Associates, February 2021)

10.79 The Greater Cambridge Shared Partnership published an updated Landscape Character Assessment, produced by Chris Blandford Associates. The Site is located in the Cambridge Urban Area.

10.80 Cambridge is described as a small-scale city focused on the historic core. Reference is made to the Cambridge Inner Green Belt Boundary Study (LDA, 2015) in regard to the detailed townscape character areas. According to the LDA document, the Site is located in Townscape

Character Type Large Scale Commercial, Industrial and Service Development. This townscape type is characterised '*by medium to large-scale industrial, commercial and hospital buildings, often with closed facades, signage, security fencing and extensive areas of hard surfacing.'*

10.81 The Site is then located in the Townscape Character Area 5B – Railway Corridor (**Figure10.3**). This is characterised by:

- *'medium and large-scale commercial, light industrial and office development on both sides of the railway line';* and
- *'extensive areas of hard surfacing for car parks and little vegetation'.*

Local and Site Landscape Context

10.82 The Site is located within Cambridge's urban area within the suburb of Petersfield. While clearly the urban character prevails, there are landscape features within the Site context that provide relief into the dense fabric. Also, due to Cambridge strong network of Public Open Spaces, the Site has a wider context of good connectivity to open landscapes which connect out the city's rural edge.

Vegetation Cover

10.83 Cambridge is known as a well-treed city. Tree cover is provided in the parks and along avenues, as well as in private gardens. The Site consists of large warehouses operating as retail concerns with vehicular access and parking taking up the remainder of the Site. There is some shrub and tree planting typical to large scale car parks and some boundary vegetation, but these have little impression on the local landscape character much beyond the Site boundary.

10.84 The boundary vegetation along the southern and western boundaries is stronger and more in-keeping with the residential areas it separates the Site from. The continuation of large-scale retail and commercial land use north and to some extent east of the Site means that the somewhat sylvan character of the adjacent private gardens ends at the Site boundary.

10.85 Over the road bridge which crosses the rail line, Coldhams Lane meets Coldham's Common which is one of the green corridors and strategic open spaces within Cambridge as well as part of the Cambridge Green Belt. Coldham's Common is largely characterised by open grazing fields, bounded by dense vegetation and crossed by the railway line to Norwich and Ipswich.

10.86 The green open space at Coldham's Common includes a discreet woodland cover. Although these mature trees provide some screening to the industrial warehouses along the railway line, the urban influence is not missed within the green space. There is no ancient woodland within the Site context, but notable woodlands listed as Priority Habitats are located within some of the city's parks (see Map 5 in **Appendix 10.2**). Grassland along the River Cam is also a Priority Habitat.

Topography

10.87 The Site is located on a largely flat plateau that gently falls towards the River Cam valley to the west and north and to a valley associated with Coldham's Brook to the east. Castle Hill almost 2km to the north west is the only notable high ground within the Site context at 20-30m AOD (see Map 3 in **Appendix 10.2**).

Tranquillity

10.88 The Site is a shopping centre and Coldham's Lane, which forms the northern Site boundary,

is transiently an exceptionally busy road during peak times. The Site offers very little into the experience of tranquillity as even when the shops are closed, the Site still has the connotations of its function and the open space is dominated by car parking.

10.89 Some relief from the noise and activity of the urban townscape is afforded within Coldham's Common. However, despite the tree enclosure, the visual and auditory urban influence causes a decline in the sense of tranquillity.

Local and Site Townscape Context

10.90 The Site itself is part of a wider area of retail and commercial properties distributed along the rail line and Newmarket Road that extends to the Airport and Marshalls site at the eastern edge of the city. Within the Site there are some 6no. separate building masses. The most northerly is the smallest and most isolated. This building is a showroom with office space and the building has a modern form with curved roof and the material and architectural quality are by far the highest of any building on Site. The other buildings on Site are large retail sheds, as one might expect to find at an out-of-town shopping centre. The sheds are typically steel framed with flat or very gently sloping corrugated steel roofs and clad in brick and/or steel with largely glazed fronts. The northern retail shed is divided internally into two retail units and is roughly the same size as the two buildings in the southern corner of the Site which are split into a larger number of slightly smaller units. In the western corner a slightly smaller building houses two retail units.

10.91 The largest building on the Site is mostly taken up by an ASDA supermarket but also has some smaller units on the southern end. Each retail unit has a large billboard over its entrance to advertise its presence and these sit higher than the facades, breaking the rooflines. The roofline itself is often a non-distinct assemblage of shallow slopes at perpendicular angles to cover the extents of floorspace required.

10.92 To the back of all the buildings are the plant and service areas and accesses to the buildings which contrast with the sparse and ordered front facades of the buildings. These buildings are designed to be seen from one direction.

10.93 The Cambridge Landscape Character Assessment includes the Site in the Industrial Railway Corridor Cambridge Character Type. This is a non-residential urban typology which is dominated by transport movement and large scale commercial and retail buildings. The Site sits at the city end of the corridor, including large-shed development that stretches down Newmarket Road from Cambridge Airport. As a result of this, the Site context is partly commercial and retail urban edge but is also city centre residential edge.

10.94 The railway corridor has seen many recent developments, evolving the character of this townscape type with a prominence of large-scale building for residential and commercial uses. On the northern end of this railway corridor is the recent development around Cambridge North Station. The development at CB4 and the Cambridge North East Fringe can be seen as a northern expansion of a corridor of new-scale development in the city that has started around Cambridge Station with the CB1 development. The residential developments at CB1 have spread north along the railway corridor via the Mill Road Depot site and residential apartments on Cromwell Road, east of the railway. South of Hills Road Cambridge Assessment and several residential developments show similar building forms moving south towards Addenbrookes hospital and Cambridge Biomedical Campus.

10.95 The Site sits at one of relatively few crossing points of the railway line and on an axis between

urban commercial, residential and open space. It is a barrier to access as it is unappealing to pedestrians and cyclists when busy due to the prominence of vehicular traffic, and it is unappealing when quiet due to a lack of perceived security.

10.96 The Site has limited permeability as it is bounded by the railway to the east and the road bridge crossing the railway forms a physical barrier for much of the northern Site boundary. The residential areas along the western and southern site boundaries are largely closed to the Site, with small pedestrian cut-throughs to Sleaford Street, York Street and St. Matthew's Gardens. The main access to the Site is via the roundabout from Coldhams Lane which also serves Cambridge Retail Park to the north.

10.97 The Site is bounded along its eastern extents by a tall, galvanised security fence prohibiting access to the operational rail lines on the other side. The northern boundary is also mainly inaccessible as it meets the raised form of the road bridge over the railway lines. Where access is possible from the northern boundary, it is largely dominated by vehicular access via the roundabout on Coldhams Lane.

10.98 The western boundary is formed most of its length by a tall brick wall with boundary vegetation from the residential properties beyond growing over the top. There is a pedestrian and cycle access which links through to St. Matthew's Gardens before another closed boundary leads to the western corner where there is a narrow cut-through to York Street. The Chisholm Trail, a new cycle route which connects Cambridge and Cambridge North railway stations opened in 2021. This passes through the Site, crossing the railway over the bridge on the Site's northern boundary and exits the Site via the cut through onto York Street. Currently, the proposed route uses the Site's car park access roads.

10.99 The south-western and south-eastern boundaries are essentially formed by the retail units which are backed by boundary vegetation, save for another cut-through which allows pedestrian and cycle access through the delivery yards of some of the units via Sleaford Road.

Townscape Value

10.100 Box 5.1 of GLVIA3 and the Technical Information Note 05/17 on Townscape Character Assessment by the Landscape Institute provide indicators to define townscape value.

10.101 The baseline study identifies three distinct townscape and landscape areas: the residential area, the industrial railway corridor and the Coldham's Common open space.

10.102 The landscape area associated with the Coldham's Common open space is obviously very distinct due to its openness and verdant character, albeit it is also characterised by a strong urban enclosure which includes a mix of residential and industrial developments. It provides a range of recreational opportunities contributing greatly to the community's wellbeing. It is maintained sustainably with a rotation of grassland and grazing, therefore ensuring biodiversity is preserved. Its natural features would also contribute towards various aspects of climate change (rising temperature, carbon sequestration, air quality, etc). The value of this landscape area is considered high.

10.103 The townscape areas are fundamentally different, which is reflected in the different scoring of their value.

10.104 The industrial railway corridor does not include any townscape designation or distinctive features. The cluttered railway corridor infrastructure is prominent and surrounded by undescriptive commercial and industrial urban areas with buildings of large footprints and

various heights. The material quality is poor and repetitive. There are no recreational activities besides the shopping facilities that would positively impact the well-being of the community. The prevailing hard surface creates a stark and climate-unfriendly environment. The value of this townscape area is low.

10.105 The residential area portrays an interesting variety of built forms of more or less quality. Still, the Conservation Area covers much of this townscape with examples of fine vernacular architecture. The sense of coherence is emphasised by a prevailing low-lying height with a strong chimney rhythm; however, new developments along the railway line introduce some taller elements which are also distinctive for their modern style. There are some green pockets within the dense urban area providing local recreational opportunities, such as play areas and allotments. The value of this townscape area is considered high.

Townscape Receptors

10.106 Based on the townscape baseline study findings, the following receptors, divided into areas and components, have been identified.

10.107 Townscape areas/types:

- Industrial – Railway Corridor Cambridge Character Type; and
- Residential Character Type: Post 1900 Suburb

10.108 Townscape components:

- Cambridge skyline: The city skyline and the setting of important landmarks such as the Christ Church on Christchurch Street which are collectively a distinctive character of the city and its townscape;
- Setting of open green spaces: The Site is located in proximity of Coldham's Common which is a strategic open space within the city;
- Setting of the Green Belt: The Site is located in proximity of a green corridor that brings into the Cambridge urban fabric an open Green Belt area;
- Setting of Public Rights of Way: The Site is located in proximity of popular footpaths within the Coldham's Common and the Chisholm Trail; and
- Setting of the conservation area: The Site is bounded by Mill Road Conservation Area, which is largely characterised by low-lying residential buildings. While the Heritage Impact Assessment will consider the impact on the Conservation Area itself, the TVIA considers changes to its context (the receptor) in wider terms to establish the appropriateness of the proposals.

Evolution of the Townscape Baseline Conditions without Development

10.109 In the adopted Local Plan there is no evidence regarding future development of the Site, which is not allocated. The emerging Greater Cambridge Local Plan identifies it as the Beehive Centre Opportunity Area (Policy S/OA) which suggests a future development intention, however, the draft status of this plan leads to a limited planning weight of its policies.

10.110 It is therefore concluded that the evolution of the townscape baseline shall not account for the potential redevelopment of the Site, which would remain a commercial shopping area, as existing, for the foreseeable future. It is also noted that there is no evidence of other emerging

development that will alter the townscape character of the study area; the Area of Major Change at the Grafton Centre builds on the existing commercial uses and, therefore, albeit potentially introducing a new architectural style, it will not alter the balance between residential and commercial characters.

Predicted Townscape Impacts

Assessment of Sensitivity

10.111 Townscape sensitivity is the degree to which the townscape can accommodate the Proposed Development. It is calculated by combining the 'value' attributed to the townscape resource with its 'susceptibility' to change.

10.112 The townscape receptors are key elements of the townscape that are likely to be affected by the proposed scheme. The Landscape Institute and Institute of Environmental Management & Assessment guidance defines them as '*overall character and key characteristic, individual elements or features, and specific aesthetic or perceptual aspects of the landscape'.*

10.113 A value of 'low', 'medium' or 'high' is attributed to the sensitivity for each receptor and shown in **Table 10.2** below (see **Appendix 10.1** for value and susceptibility criteria).

Table 10.2: Townscape Sensitivity

KEY TOWNSCAPE RECEPTORS	FACTORS INFLUENCING VALUE AND SUSCEPTIBILITY OF RECEPTORS	VALUE	SUSCEPTIBILITY	TOWNSCAPE SENSITIVITY
Character Areas/Types which may be affected by the proposals				
Industrial – Railway Corridor Cambridge Character Type	Value – Although the receptor includes some portions of the Conservation Area and some exemplar of modern, high-quality architecture, it is locally characterised by undescriptive industrial features which are nor distinctive, neither in good condition. The receptor provides some sort of recreational opportunities, however these are far from promoting wellbeing and health of the local community as they are purely associated with the existing commercial, shopping area. Susceptibility – The Proposed Development is akin to the existing commercial uses, albeit introducing a new urban scale.	Low	Medium	**Medium - Low**

KEY TOWNSCAPE RECEPTORS	FACTORS INFLUENCING VALUE AND SUSCEPTIBILITY OF RECEPTORS	VALUE	SUSCEPTIBILITY	TOWNSCAPE SENSITIVITY
Residential Character Type: Post 1900 Suburb	Value – The receptor is not associated with any townscape designation. It portrays various degrees of aesthetic quality and coherence, although much of the urban fabric is low-lying, red brick and rendered housing, some modern residential development introduced new architectural scale and style. It is also influenced by the railway corridor which includes some undescriptive townscape areas. There are some discrete areas of green open space for recreational use, including play areas and allotments. Susceptibility – The Proposed Development, although in contrast with the residential character of the receptor, is located within an already commercial area; nonetheless it is introducing a new urban scale.	Medium-Low	Medium	**Medium**
Components which may be affected by the proposals				
Cambridge skyline	The skyline is identified as a distinctive townscape component by several reference documents and is considered a townscape receptor in its own right. Value – Although not associated with a particular designation, the receptor is defined in the Local Plan as a distinctive feature of Cambridge townscape. Furthermore, the incidence of spires and towers rising over the tree cover are often associated with heritage assets. Susceptibility – The receptor cannot accommodate the proposal, without consequences to the baseline.	High	High	**High**
Setting of open green spaces and Setting of the Green Belt	Value – The receptor does not include any townscape designation, albeit it is indirectly associated with the Green Belt policy protection on Coldham's Common green open space, which is also accessible through a network of PRoWs. The receptor is characterised by some tree cover and a strong urban enclosure that contrasts the good landscape quality of the green space with an incoherent and largely industrial urban fabric. There are no distinctive features, and the railway line constitutes a containing barrier to landscape and community connectivity. Susceptibility – The proposed Development is akin to the main characteristics of the receptor, which could accommodate the proposal without undue consequences to the baseline.	Low	Low	**Low**

KEY TOWNSCAPE RECEPTORS	FACTORS INFLUENCING VALUE AND SUSCEPTIBILITY OF RECEPTORS	VALUE	SUSCEPTIBILITY	TOWNSCAPE SENSITIVITY
Setting of Public Rights of Way	Value – The receptor is associated with the Green Belt and Coldham's Common designations and does share some of their qualities in relation to the urban enclosure. However, the sense of openness and verdant character is more evident for this receptor which relates to the kinetic experience across the whole open space. The receptor contributes to the well-being of the community through the recreational activity associated with the use of the PRoWs. Susceptibility – The Proposed Development is akin to some existing element of the receptor, therefore the baseline has some capacity to accommodate change.	Medium	Medium	**Medium**
Setting of the Conservation Area	Value – The receptor is indirectly associated with the heritage townscape designation, which includes fine examples of historical architecture. However, the receptor consists largely of the railway corridor and residential post-1900 suburb, both lacking any landscape or townscape designations. Conversely, there are some detracting elements particularly related to the cluttered infrastructure of the railway line and industrial/commercial uses like the one on the Site. The urban fabric is not consistent, with fine-grain residential abutting large-footprint warehouses. However, it is noted that there is some consistency in the overall height, are there are large areas of low-lying residential areas. Susceptibility – The Proposed Development, although in contrast with the residential character of the receptor, is located within an already commercial area, however introducing a new urban scale.	Low	Medium	**Medium-Low**

Townscape Impacts Year 1

10.114 **Table 10.3** below sets out the predicted magnitude of change and significance of effects at Year 1 on the identified townscape receptors as per **Table 10.2**. The assessment relates to the start of the operational phase, when the construction phase is complete, and before any potential planting in the landscape and open space is mature. The design recommendation of the DC also considered as part of the assessment, where these lead to a clear and unequivocal outcome (i.e. "must").

Table 10.3: Predicted Townscape Effects - Year 1

KEY TOWNSCAPE RECEPTORS	FACTORS INFLUENCING TOWNSCAPE EFFECTS (YEAR 1 POST CONSTRUCTION)	SENSITIVITY	MAGNITUDE OF EFFECTS	SIGNIFICANCE OF TOWNSCAPE EFFECTS
Character Areas/Types which may be affected by the proposals				
Industrial – Railway Corridor Cambridge Character Type	The Proposed Development will introduce a noticeable change to the receptor and, within the study area, this will impact a good portion of the railway corridor, however the interested geographical extent is not extensive if the whole character type (from Addenbrookes to Cambridge North) is considered.	Medium - Low	Medium	Moderate (Beneficial)
Industrial – Railway Corridor Cambridge Character Type	The Proposed Development will cause the loss of undescriptive townscape features, which will be replaced with a modern, articulated development which includes areas for vegetation and open spaces for public use. While the receptor is already characterised by a built form of large footprint, the proposed massing and height are introducing a new urban scale. Noticeably the Site is not located in a central area and it follows the emerging trend of locating tall buildings along the railway line. In conclusion, there will be an improvement to the qualities of the receptor and consolidation of a modern, distinctive townscape character along the railway corridor.	Medium - Low	Medium	Moderate (Beneficial)
Residential Character Type: Post 1900 Suburb	The Proposed Development will have a direct effect on the receptor as it is located within its area, however the geographical extent of the change is relatively limited considering the reach of the townscape character beyond the study area. It is also noted that the current Site uses and qualities are not akin to the receptor residential character. Therefore, the proposal is not introducing a completely new character, but rather reinforcing the existing commercial townscape. It is also considered that the existing Site does not contribute positively to the receptor character due to its purely functional elements (i.e. car park and shopping uses). The Proposed development will introduce a more active use of the local townscape with recreational green space and a variety of uses.	Medium	Medium	Moderate (Beneficial)

KEY TOWNSCAPE RECEPTORS	FACTORS INFLUENCING TOWNSCAPE EFFECTS (YEAR 1 POST CONSTRUCTION)	SENSITIVITY	MAGNITUDE OF EFFECTS	SIGNIFICANCE OF TOWNSCAPE EFFECTS
Residential Character Type: Post 1900 Suburb	Notably there is a considerable contrast of the proposed massing and height compared with the receptor's prevailing height, albeit some of the most recent development along the railway line (i.e. Timber Works, Pym Court and Winstanley Court) already introduced tall residential elements. In conclusion, assuming the detailed proposal will follow the proposed design code and DAS guidance to the achievement of high-quality design, there will be an improvement in the qualities of the receptor, that would outweigh the adverse effects of the proposed scale and massing which challenges the distinctive low-lying character of the receptor.	Medium	Medium	Moderate (Beneficial)
Components which may be affected by the proposals				
Cambridge skyline	Visual effects on this receptor are considered in detail in the Visual Impact section of this TVIA, notably the visual changes range between major-moderate and moderate adverse levels, therefore resulting in some significant impact. It is therefore implied that changes to the overall character of Cambridge skyline will occur and it will be noticeable. From a general townscape character perspective, it is noted that the Site is located towards the edge of Cambridge centre, at some distance from the distinctive historic core, which includes the skyline's landmarks. The design approach grouping the tall buildings has diminished the geographical extent of the change, which would have otherwise created a large new cluster in the skyline. Nonetheless, the proposal introduces a new element that will be identified as a new feature in the receptor and not akin to its distinctive qualities.	High	Medium	Moderate (Adverse)
Setting of open green spaces and Setting of the Green Belt	The proposed development will introduce a noticeable feature in the receptors, as also evidenced in the assessment of viewpoints 2 and 3. However, from a general townscape character perspective, the Proposed Development will not create a new quality to the receptor, which is already characterised by strong urban enclosure. Therefore, it will not cause the loss of distinctive features.	Low	Low	Minor (Neutral)

KEY TOWNSCAPE RECEPTORS	FACTORS INFLUENCING TOWNSCAPE EFFECTS (YEAR 1 POST CONSTRUCTION)	SENSITIVITY	MAGNITUDE OF EFFECTS	SIGNIFICANCE OF TOWNSCAPE EFFECTS
Setting of Public Rights of Way	The proposed development will introduce a noticeable feature in the receptors, as also evidenced in the assessment of viewpoints 2 and 3. However, from a general townscape character perspective, the Proposed Development will not create a new quality to the receptor, which is already characterised by strong urban enclosure. It is also noted that the kinetic experience associated with the receptor suggests that the perceived geographical extent of the change will change at different locations and the sense of openness is likely to be preserved in many instances.	Medium	Low	Moderate – Minor (Neutral)
Setting of the Conservation Area	The Proposed Development introduces a noticeable feature to the receptor, although the Site is already characterised by commercial uses, and therefore, the nature of the receptor will not change. It is also noted that the scale of the proposal along the edge with the receptor is lowered in response to the contextual low-lying residential scale. As evident in viewpoints 4 and 7, this creates a respectful interface which does not overly detract from the distinctive CA qualities. Finally, the Proposed Development will replace what's currently a nondescript townscape area. Therefore, assuming the detail proposal will follow the proposed design code and DAS guidance to the achievement of high-quality design, there will be an improvement in the qualities of the receptor.	Medium-Low	Medium	Moderate (Beneficial)

Townscape Impacts Year 15

10.115 The proposed parameter plan PO-LDA-ZZ-XX-DR-A-08005 illustrates the landscape zones and planting areas that break up the built form and will eventually provide some sort of vegetative cover.

10.116 It is evident that a comprehensive and diverse landscape scheme is essential to the achievement of high-quality design and that it will enhance the townscape character of the Site. However, in relation to the Cambridge skyline receptor which would be experiencing adverse effects, at this stage, due to the lack of detailed planting plans, plans (including site level, tree species and a canopy study), it is not possible to comment on the impact that vegetation will have once matured (i.e. year 15) on the effects identified in **Table 10.3**.

Townscape Impacts During Construction

10.117 It is conceivable that the townscape impact will be greater during the construction period due to the introduction of machinery, material stockpiles and other construction facilities, which will create a cluttered and noisy area. The effects during construction are likely to affect all the identified receptors, However, due to the outline nature of the proposal and lack of a detailed construction plan it is not possible to quantify the level of impact, which, at any rate, will be temporary until construction work is completed. It is also noted that the Construction Environmental Management Plan (CEMP) sets up high-level requirements to monitor and mitigate the expected construction impact. Therefore, it is conceivable that construction effects will be at the lower scale of impact, as well as temporary.

Existing Baseline Conditions - Visual

Visibility Envelope and Visual Receptors

10.118 The Site is located in a highly-urbanised area in proximity of Coldham's Common public common land. The current buildings on Site have little impact on their surroundings despite their massive size as they are relatively low-rise and the local topography raises up to the south, making the adjacent residential area sit higher than the Site. Despite this, Cambridge is a topographically very flat city and the built form is predominantly 2-4 storeys and so any taller buildings will tend to be visible from much of the city and environs.

10.119 There is a slope that raises up towards the Newmarket Road area from the river. This, along with a number of newer apartment buildings which have risen notably above the typical Victorian suburbs of the area serve to screen views of potential development of the Site from much of the river corridor within the city. There is, though, certain to be visual impact on other key open spaces, namely Coldham's Common. The Site is adjacent to the Mill Road Conservation Area and due to its proximity will likely have some visual impact on places within this conservation area.

10.120 Long views of the city skyline are possible from many areas in the surrounding countryside due to the flat topography of the area, this is particularly true to the south and west of the city, where the land rises gently to provide vantage points over the city. Any development notably larger than the typically fine grain of the city is likely to have a visual impact on those area which provide a long view panorama of the city skyline or from a raised position. Castle Hill Mound Scheduled Monument in particular offers a panoramic view of the city centre and much of the rest of the city and will likely be visually impacted by development on the Site.

10.121 ZTV mapping has been produced with VuCity to understand the visibility of the proposal (**Appendix 10.3**). In both cases, with and without the flues, it appears evident that the visual envelope will extend beyond the VuCity's tool limits. It is also evident that appreciation of the whole building, top to bottom, (the red areas on the ZTV) is accentuated within the Site's proximity; however, the flues are likely to be visible from a wider landscape and townscape.

10.122 Based on all the above, it was agreed with the LPA that the following groups of visual receptors are likely to experience some effects from the proposal:

- Visitors to Castle Hill Mound Scheduled Monument;
- Ramblers on Coldham's Common;
- Ramblers on Fen Ditton and river towpath;

- Ramblers on Redmeadow Hill;
- Drivers on Wort's Causeway and Limekiln Road;
- Ramblers on Little Trees Hill;
- Residents of the adjacent residential area to the south and west, including within the Mill Road Conservation Area; and
- Pedestrians on Mill Road Bridge.

Representative Viewpoints

10.123 15 viewpoints were agreed with the Landscape Officer to represent typical views from potential receptors at varying distances and orientations from the Site. The viewpoints are mostly located within 1 km of the Site with 4no. longer-distance views. (see viewpoint locations map in **Appendix 10.3)**.

10.124 A location map and Type 1 technical visualisation[1] for each view are available in **Appendix 10.3**.

10.125 The viewpoints used in the assessment are:

Viewpoint 1: Castle Hill Mound

10.126 Viewpoint 1 represents Strategic Viewpoint 1 from Cambridge Local Plan 2018 Appendix F. This viewpoint demonstrates the views of the visitors of a publicly accessible open space and Scheduled Monument looking north towards the Site. The Site is located centrally within the view, it is in the middle distance, towards the far edge of the visible built form but is screened by intervening vegetation and built form.

10.127 This is a distinctive panoramic view of the city centre and surrounding suburbs. In the foreground is the historic core of the city and the historic open spaces of Jesus Green and Midsummer Common. Much of the city is obscured by the abundance of tree cover due to the low-rise nature of built form across the city. A typical character of Cambridge's skyline are the church spires and steeples, and solitary towers which protrude from the tree cover that cloaks the city, even throughout winter. The fine grain of the city stretches out into the suburbs and the edge of the city where the arable land beyond gently rises to the south. At the north east edge of the city the larger forms of the buildings associated with Cambridge airport stand out.

Viewpoint 2: Coldham's Common - north

10.128 This viewpoint is taken from the public footpath which connects Newmarket Road to Coldham's Lane across Coldham's Common (part of the Cambridge Green Belt), looking south west towards the northern end of the Site. Receptors are the ramblers and cyclists for leisure, commuting to work or travelling to the centre of town from the Abbey Ward. The Site is currently screened by vegetation and built form.

10.129 The Common consists of unimproved grassland which is seasonally grazed. The area is largely open, split into three parcels by the railway line which connects to Cambridge Station and forms the Norwich and Ipswich line and the trees associated with the railway line and Coldham's Brook.

10.130 In the near distance, sheds associated with the rail-side light industrial, storage and retail are visible through the boundary trees and lend the common a suburban quality. At the centre of the viewpoint, cranes and raised residential apartment buildings show the expansion of high-rise development along the rail line to the east of the city centre.

1 Landscape Institute Technical Guidance Note, Visual Representation of Development Proposals, Technical Guidance Note 06/19, 17 September 2019, Landscape Institute

Viewpoint 3: Coldham's Common - south

10.131 This viewpoint is also taken from Coldham's Common (part of the Cambridge Green Belt), looking west towards the northern end of the Site. The city centre lies behind the Site from this approach. Receptors are ramblers and cyclists for leisure, commuting to work or travelling to the centre of town from the Abbey Ward. The Site is currently screened by vegetation and built form

10.132 This parcel of the common is much more open to the adjacent suburban area which is on the opposite side of the London – Kings Lynn rail line to the Site. The boundary of the common to Coldhams Lane is much less treed than the majority of other boundaries around the common and affords open views of the immediate suburban housing and apartment buildings behind as well as the large storage sheds adjacent to the rail corridor.

10.133 Further beyond, the top stories of taller apartment buildings onto Newmarket Road are just visible over the treeline. The skyline is perhaps a little higher than is typical of Cambridge suburban areas due to the larger blocks of apartment buildings and commercial sheds which flank the railway line. This location has again a very suburban look despite the abundance of open space in the foreground.

Viewpoint 4: York Street

10.134 Viewpoint 4 is located within the Mill Road Conservation Area and directly adjacent to the southern corner of the Site. Receptors are local residents and road users (although this is a low traffic area for motor vehicles) travelling to and from the city centre, the rail station or to the retail centre along Newmarket Road. The Site is visible, despite built form screening to some extent and boundary vegetation partially screening the rest. This viewpoint is taken from the Victorian terrace, York Street, which is typical of the Mill Road Conservation Area. The character of the view is largely residential.

10.135 The viewpoint is in close proximity to the southern corner of the Site and is afforded a view into the Site by a break in the terraced housing where it opens onto Sleaford Street. The narrow streets and lack of curtilage to the front of properties in the Conservation Area create a restricted skyline of gutters and chimneys for a majority of the area.

Viewpoint 5: Mill Road Cemetery

10.136 Viewpoint 5 is located within the Mill Road Conservation Area, 400m south west of the Site. This viewpoint is taken from the centre of Mill Road Cemetery looking towards the southern end of the Site. Receptors are visitors to the cemetery. The Site is screened by the intervening built form and the boundary vegetation of the cemetery. As it is typical of the Conservation Area, which consists of a well-preserved Victorian suburb, rooflines that are visible are relatively low and are the linear ridgeline of slate roofs of 2-2.5 storey terraced housing or the outline of a Victorian brick light industrial or storage building which is scarcely higher than the houses that surround it. The cemetery is well vegetated at its boundaries, screening the immediate built surroundings and softening the skyline with tree canopies.

Viewpoint 6: Elizabeth Way Bridge

10.137 This viewpoint is taken from the pedestrian footpath on the northern side of Elizabeth Way Bridge, looking south east towards the Site. Receptors are road users crossing the river in this direction. The Site is screened by the built form in front.

10.138 The viewpoint looks over the largely Victorian suburban terraced housing of the Riverside and Stourbridge Common Conservation Area which leads up the slope from the river to Newmarket

Road. At Newmarket Road newer and larger volumes of apartment buildings (the Beacon Rise and 16 Abbey Street) and hotel (the Travel Lodge) sit atop the skyline with a clutch of cranes beyond hinting at the ongoing development along the railway corridor.

Viewpoint 7: St. Matthew's Gardens

10.139 This viewpoint is taken from the entrance to St. Matthews Gardens from York Street and is on the very edge of the Mill Road Conservation Area, looking east towards the Site. Receptors are residents of St Matthew's Gardens and drivers, pedestrians and cyclists travelling along York Street and pedestrians and cyclists entering St. Matthew's Gardens to access what is currently the Beehive Centre (the Site). The Site is screened by the built form of St. Matthew's Gardens.

10.140 St. Matthew's Gardens is a 21st Century residential development set out around a central open space. It is inward looking and closed on all side apart from a vehicular and pedestrian access onto York street, which is the location of this viewpoint. The built form of the residential development around the central gardens is a consistent 2.5 storey terrace punctuated by attached, but protruding facades of taller 3-storey town house style dwellings.

10.141 The closed and constant form of the residential development in St. Matthew's Gardens serves to form an effective visual barrier to the Site behind. The skyline of the viewpoint is dictated by the roofline of St. Matthew's Gardens. The built form of the residential development around the central gardens is a consistent 2.5 storey terrace punctuated by attached, but protruding facades of taller 3-storey town house style dwellings.

Viewpoint 8: Mill Road Bridge

10.142 This viewpoint is taken from Mill Road Bridge, looking north, up the railway line from Cambridge Station to Cambridge North Station. The rail line forms a no-man's land between the two halves of the Mill Road Conservation Area. Receptors are road users crossing the bridge, which has been recently restricted to bus access, cyclists and pedestrians. The vista along the railway corridor is interrupted by the cluster of train infrastructure and features and the Site is not visible from this viewpoint.

10.143 Besides the rail lines and sidings, the foreground and mid-ground are dominated by the residential development taking place at the former Council Depot site, now branded 'The Ironworks'. The open corridor created by the railway itself does allow for an unbroken view almost as far as the Site which sits directly adjacent the rail line. The existing buildings on Site are screened by the intervening built form. Although glimpses of the eastern Site's boundary are visible along the railway line, the existing buildings are set back from the Site's edge and therefore are not evident.

10.144 The skyline is dominated by the construction works at The Ironworks, followed by the existing residential built form and railway infrastructure. It will eventually be largely defined by built form, besides the tree canopies to the right of the view. Nevertheless, this view affords extensive appreciation of the open sky.

Viewpoint 9: Ditton Meadows and River Towpath

10.145 Viewpoint 9 represents Strategic Viewpoint 11 from Cambridge Local Plan 2018 Appendix F. This viewpoint is taken from the public footpath on the north side of the River Cam on the eastern side of the rail bridge. The viewpoint looks south west towards the Site over Ditton Meadows, receptors are pedestrians and cyclists who use the towpath and to some extent the meadow on the other side of the river. The Site is screened by vegetation at the edge of the meadows and the built form beyond.

10.146 The viewpoint looks back along the rail line towards the Site. The foreground of the meadow is ended at a tree-lined boundary which screens views of the city beyond, save for the occasional light industrial unit associated with the northern end of Newmarket Road and areas around the rail line. However, the clear corridor of the rail line allows for some visual penetration further towards the Site.

10.147 The skyline over Ditton Meadows is fairly distant and low, and is dominated by the trees which form the boundary of the meadow. The occasional façade or partially screened form of a light industrial unit can be seen in places. Towards the Site, the flood lights of Abbey Stadium are visible over the line of the boundary trees.

Viewpoint 10: Redmeadow Hill

10.148 The viewpoint represents Strategic Viewpoint 3 in the Cambridge Local Plan 2018 Appendix F. This viewpoint is taken from a publicly accessible vantage point near Barton, which affords a panoramic view of the city from the countryside to the west. Receptors are ramblers and visitors to the viewpoint. The Site is screened by the intervening built form and vegetation of the city.

10.149 The view of the city from this location is largely that of the skyline, with prominent features including church steeples and spires, such as the impressive spire of the Church of Our Lady and the English Martyrs. The white-painted steel structure of the footbridge over the railway from Devonshire Road is visible above the skyline as another single vertical accent.

10.150 Further south from the city centre, CB1, the development around Cambridge rail station looms as a large conglomerate bulk. CB1 would be the most prominent group of recent tall buildings in Cambridge, but can be seen as part of a pattern of taller development along the rail corridor through the eastern side of the city. From this viewpoint, the Site sits alongside the raised skyline of the CB1 development.

Viewpoint 11: Worts' Causeway

10.151 The viewpoint represents Strategic Viewpoint 9 in the Cambridge Local Plan 2018 Appendix F. This viewpoint is taken from Worts' Causeway, a public highway to the south of Cambridge which affords panoramic views of the city from an elevated position as the land slopes steeply upwards here from the city edge. The view looks north west towards the southern end of the Site. Receptors are road users and potentially ramblers using the Wort's Causeway Road as part of a recreational route Public Right of Way. The Site is not easily distinguishable from this distance however glimpses of the warehouse roofs are visible amongst the vegetation.

10.152 The city skyline is generally low with a few spires and towers visible above the tree line, however the distinctiveness of these incidental landmarks has been partially eroded by the new development around the Cambridge train station (CB1) which introduces a cluster of tall buildings within the city. The prevailing buff colour of this modern architecture appears dominant over the more recessive, darker, historic assets.

10.153 The area of skyline around the Site is characteristically low, but there are larger scale horizontal breaks in the tree cover which represent the buildings of Anglia Ruskin University and the large commercial and light industrial sheds around Newmarket Road which include the retail units currently occupying the Site.

Viewpoint 12: The Beehive Centre

10.154 This viewpoint is taken from within the Site, on the western boundary with St. Matthew's

Gardens, looking to the eastern Site boundary. Receptors are local residents of St. Matthew's Gardens, cyclists and pedestrians travelling to and from St. Matthew's Gardens, York Street and Coldhams Lane. The majority of the Site is visible from this viewpoint.

10.155 The viewpoint shows the internal Site area which is predominantly car park with the retail units along the east and southern boundaries with loading bays behind.

10.156 The viewpoint shows the established boundary hedge which extends along most of the west and southern boundaries and the car park trees in the foreground which partially screen the frontages of the retail units from this angle. The retail units are all of a similar height of around 15m or so and form a consistent skyline but are visually monotonous.

10.157 The viewpoint faces away from the city centre and so there are no tall buildings beyond the retail units to break their roofline.

Viewpoint 13: Little Trees Hill

10.158 This viewpoint represents Strategic Viewpoint 7 in the Cambridge Local Plan 2018 Appendix F. It is taken form a publicly accessible country park to the south-west of the Gog Magog hill and it affords panoramic views of Cambridge and its skyline. The Site is located at the centre of the view and it is largely screened by intervening vegetation and built-form.

10.159 The view is rather verdant with prevailing rural qualities. Cambridge appears well nested in the dense tree canopies; spires and towers are certainly distinctive in the skyline albeit not prominent in the view as the buff coloured, large blocks of the contemporary urban development around the railway station and as far as the fire station is more dominant. The depth view is quite long and the wooded character is still dominant in the distant horizon line.

Viewpoint 14A: Limekiln Road Nature Reserve

10.160 This viewpoint represents views experienced by visitors of the Limekiln Road LNR near Cherry Hinton,

10.161 The view looks north over trees towards the airport and the eastern side of the city. The character is green, partially enclosed but also quite open to the sky. In the summer months there would be a greater sense of enclosure and verdance. The entire foreground is filled with trees. On the right and the left trees stand against the sky, although there is a break on the left where the city is visible. In the centre of the near background houses between Queen Edith's Way and Cherry Hinton Road can be seen with trees in Cherry Hinton Hall Park beyond, this creates a sense of the edge of the city. Beyond that white buildings of the airport can be seen. Despite their large scale bulky appearance, apart from a radar tower they do not stand against the sky.

Viewpoint 14B: Limekiln Road Layby

10.162 This viewpoint represents views experienced by road users on Limekiln Road near Cherry Hinton, including cyclists and pedestrians, although there is no dedicated footway. The viewpoint is listed as a Strategic Viewpoint in Appendix F of the Cambridge Local Plan.

10.163 The view portrays the strong tree cover of Cambridge, however the mixed development to the foreground is dominant. There are no distinctive elements in the view, however the railway alignment is readily identifiable by the row of emerging tall, geometrically consistent and largely buff coloured residential developments.

Evolution of the Visual Baseline Conditions without Development

10.164 In the adopted Local Plan there is no evidence regarding future development of the Site, which is not allocated. The emerging Greater Cambridge Local Plan identifies it as the Beehive Centre Opportunity Area (Policy S/OA), which suggests a future development intention, however, the draft status of this plan leads to a limited planning weight of its policies.

10.165 It is therefore concluded that the evolution of the visual baseline shall not account for the potential redevelopment of the Site, which would remain a commercial shopping area, as existing, for the foreseeable future. It is also noted that the existing trees appear to have reached maturity, and their growth rate would now be slower. Therefore, their visual contribution is not likely to substantially change in an evolving baseline.

10.166 It is also noted that there is no evidence of other emerging development that will alter the considered viewpoints; the Area of Major Change at the Grafton Centre envisage opportunities for development up to a maximum 6 storeys along East Road, which would not alter the viewpoints identified above.

Predicted Visual Impacts

Viewpoints Assessment

10.167 The visual assessment considers the effects on visual receptors who currently afford views towards the Site and, therefore, may be affected by the Proposed Development. The assessment is based on:

- Site observations made during the Site visits undertaken in November 2020, 24th March and 24th August 2022;
- Zone of Theoretical Visibility (ZTV) analysis; and
- Type 4, AVR 2 technical visualisations[2] produced by AVR London (see **Appendix 10.4**).

10.168 An assessment of visual effects for the identified viewpoints is provided in A**ppendix 10.3.** For each viewpoint, the following information` is provided:

- A representative panorama or photograph for context (Type 1 technical visualisation[2]);
- A description of the existing view;
- The sensitivity of the receptor is assessed using **Appendix 10.1**, Table A;
- Predicted changes to the view are described and the magnitude of the effect (at Year 1) is quantified using the criteria given in **Appendix 10.1** Table B; and
- The significance of the effect is determined by correlating the sensitivity of the visual receptor with the magnitude of effect, using **Appendix 10.1**, Table C.

10.169 The assessment considers the visual effects at Year 1 and Year 15 of the proposal as illustrated in the parameter plans. The AVR2 technical visualisations included, where possible, the “must” listed in the DC. Some weight has been given to the AVR3 technical visualisations as they illustrated how further architectural detailing aligned to the comprehensive DC recommendations (i.e. use of certain materials and colour palette, façade and rooftop treatments) will mitigate the visual effects.

2 Produced following the Landscape Institute Technical Guidance Note 06/19 Visual Representation of Development Proposals, 17 September 2019

Visual Impact Year 1

10.170 The Year 1 assessment is based on the first year after the construction works are complete. A full assessment of each viewpoint is presented in **Appendix 10.3**.

10.171 **Table 10.4** provides a summary of the significance of visual effects for each viewpoint.

10.172 The ZTV produced with VuCity confirmed that the visibility of the Proposed Development is constrained by the dense urban area surrounding the Site but it expands over the adjacent open space. Despite the limitation of the software, it is evident that the taller elements and higher floors, including the flues' zones, will be visible from a wider context.

Table 10.4: Significance of Visual Effects - Year 1

VIEWPOINT	RECEPTOR SENSITIVITY	MAGNITUDE OF CHANGE	SIGNIFICANCE OF VISUAL EFFECTS
1 – Castle Hill Mound	High	Medium	Major – Moderate (Adverse)
2 – Coldham's Common North	Medium - High	Medium - Low	Moderate – Minor (Neutral)
3 – Coldham's Common South	Medium - High	Medium	Moderate (Adverse)
4 – York Street	Medium	Medium - Low	Moderate – Minor (Neutral)
5 – Mill Road Cemetery	High	Negligible	Minor (Neutral)
6 – Elizabeth Way Bridge	Medium	Negligible	Minor – Negligible (Adverse)
7 – St Matthew's Garden	Medium	Negligible	Minor – Negligible (Neutral)
8 – Mill Road Bridge	Low	Low	Minor (Beneficial)
9 – Ditton Meadows & River Towpath	Medium - High	None	None
10 – Redmeadow Hill	High	Negligible	Moderate – Minor (Adverse)
11 – Worts' Causeway	High	Medium	Moderate (Adverse)
12 – The Beehive Centre	High	High	Major (Beneficial)
13 – Little Trees Hill	High	Medium	Moderate (Adverse)
14A – Limekiln Road Nature Reserve	Medium	Negligible	Minor - Negligible (Adverse)
14B – Limekiln Road Layby	Medium	Medium	Moderate (Adverse)

Visual Impact Year 15

10.173 The proposed parameter plan PO-LDA-ZZ-XX-DR-A-08005 illustrates the landscape zones and planting areas that break up the built form and will eventually provide some sort of vegetative cover.

10.174 It is evident that a comprehensive and diverse landscape scheme is essential to the achievement of high-quality design and that it will enhance the visual experience within the Site. While at this stage, due to the lack of a detail planting plan (including site levels and tree specimens), it is not possible to comment on the impact that vegetation will have once matured (i.e. year 15) on the effects identified in **Table 10.4** , it is also noted that the location of the open

space and potential planting areas is not favourable to mitigate the identified adverse visual effects.

Visual Impact During Construction

10.175 It is conceivable that the visual impact will be greater during the construction period due to the introduction of cranes in the Cambridge's skyline, which will disrupt both long distance and local views. However, due to the outline nature of the proposal and lack of a detailed construction plan it is not possible to quantify the level of impact, which, at any rate, will be temporary until construction work is completed.

Mitigation and Monitoring

Mitigation - Secondary

10.176 The TVIA concluded that there would be significant adverse effects on the following receptors:

- Townscape receptors:
  - Cambridge' Skyline
- Visual receptors:
  - Visitors of Castle Hill Mound;
  - Ramblers on Coldham's Common;
  - Drivers on Worts' Causeway and Limekiln Road;
  - Ramblers on Little Tree Hill.

10.177 The assessment accounted for the primary mitigation measurements, which have been the result of an iterative design process and are embedded within the proposed design. Therefore, to achieve the level of visual and townscape impact summaries in **Tables 10.3 and 10.4** the DAS and DC must be listed in the approved documents of the planning permission.

10.178 There are no evident secondary mitigation effects that would reduce the magnitude of change introduced by the Proposed Development within the proposed parameter plans. However, the Reserve Matter stage will be crucial to decide and agree design details that are not currently "must" in the DC. These relate to elements that will fundamentally alter the perception of the proposals in terms of shape, forms, and colours. Ultimately the achievement of a final architectural outcome that reflects the AVR3 (**Appendix 10.4**) appearance will change the adverse effects on the above receptors to neutral or beneficial through the introduction of a positive feature in the related visual and townscape baselines.

10.179 The secondary mitigation measurement, therefore, consists in pursuing a high-quality architecture that will resemble the perceptual qualities of the submitted illustrative master plan and visualisations.

Residual Effects

10.180 There will be some residual significant adverse effects following implementation of the primary mitigation measurement, this is largely due to the outline nature of the planning application which forces a worst-case scenario assessment that does not take into consideration architectural detailing such as materials, colour palettes and flue location.

10.181 There would be no residual adverse effects following the implementation of the secondary mitigation measurements (See **Table 10.5**).

Monitoring

10.182 In order to eliminate residual adverse effects and ensure the secondary mitigation measurements are implemented, it is recommended that monitoring of the following tasks is carried out:

- Preparation of a detailed lighting design and assessment of the potential visual effects on night views, which can be the subject of a suitably worded planning condition.
- Checking of the Proposed Development against the approved DAS and design codes to ensure achievement of high-quality design, which can be the subject of achieved with a condition to review the ES findings if the proposal differs from the approved documents when details such as material, colour palette and architectural form and massing are defined through Reserve Matter. .
- Condition the preparation of a comprehensive and detailed landscape plan to focus on mitigation of extreme climate events (i.e. maximise tree canopy cover to provide shade in summer, SUDS to control water flow) as well as soften the visual impact of the continuous and tall built form and increase tree cover within the Cambridge's skyline.

Summary of Impacts

Townscape Impact

10.183 The assessment of the impact on the identified townscape receptors resulted in one significant adverse effect on Cambridge's skyline, which is also reflected in the visual impact assessment of Viewpoint 1, 11, 13 and 14b. The Proposed Development introduces a new cluster of tall buildings within the receptor; although the extent of the cluster does not cover the whole Site and it has been limited by grouping the taller elements, this contrasts the characterisation of the receptor described as incidents of spires and towers rising from an underlayer of tree canopies. It is noted that although this description is still generally evident, the recent densification of the urban area within and adjacent to the historic centre (including CB1 development around the railway station, the fire station building, the Marque and the Cambridge Assessment's tower) has slightly diluted the prominence of the heritage landmarks. Nonetheless, it is acknowledged that the Proposed Development, albeit located at some distance from the historic core, will introduce a competing element which will further dilute the key qualities of Cambridge's skyline.

10.184 It is also important to note that although it is best professional practice to consider changes of the scale proposed to cause significant adverse effects on the skyline, when high-quality design is achieved this effect would likely become neutral or beneficial as the introduced feature would become a positive landmark that complements the existing receptor. The outline nature of the planning application forces a worst-case scenario assessment, however the details in the DAS and design codesDC suggest that achievement of high-quality design of a specific perceptual quality (see AVR 3 in **Appendix 10.4**) is possible during the reserved matters stage.

10.185 On the remaining receptors, the Proposed Development is not found to cause adverse effects. Conversely, the regeneration of a negative townscape area will be beneficial to the settings of the Conservation Area and to the quality of the railway corridor and post-1900 townscape character areas. While it is acknowledged that the scale of the new proposal is in places contrasting to the prevailing low-lying built form, the Proposed Development responds to its context with lower elements located to the west of the Site in a stepping-down approach, it is akin to the existing industrial/commercial uses and it will introduce townscape benefits that will outweigh the challenging scale. These benefits include areas of green open spaces accessible to the public, which will contribute to activities that promote well-being and function positively towards climate change.

10.186 Finally, the Proposed Development will have a neutral effect on the setting of Coldham's Common, the associated Green Belt openness and the setting of the PRoWs. Although some visual adverse effects are identified on viewpoint 3, the townscape effects consider the Common as a whole and, as evident in the assessment of viewpoint 2, the experience of the setting of the park is diverse, still with a common quality: it is enclosed by built form of residential as well as industrial nature and some tree planting. Therefore, the very quality of the setting of the Common, the Green Belt and the PRoW is unchanged by the introduction of more built form, which is also akin to the existing industrial/commercial uses.

Visual Impact

10.187 The Proposed Development resulted in some significant adverse effects. The majority are associated with the impact of the proposals on the Cambridge skyline (viewpoints 1, 3, 11, 13 and 14b), while one (viewpoint 2) (Viewpoint 3) is in relation to the visual amenity of receptors within Coldham's Common and the sense of openness of the Green Belt's setting.

10.188 In regards with to Cambridge's skyline, the greater visual effects are experienced from Castle Mound Hill (viewpoint 1). In this instance, the scale of the change introduced in the view is coupled with the competition of the proposal with the historic core, despite the distance between the two elements, detracting from the distinctive heritage landmarks within the view. While the distance and articulation of the Proposed Development better integrate the built form in the skyline viewed from the west (viewpoint 10 – Redmeadow Hill), resulting in a moderate-minor adverse effect, the remaining long-distance views are also adversely affected by the dominating scale of the Proposed Development which considerably alters the composition of the view.

10.189 As per the townscape effects above, it is important to note that although it is best professional practice to consider changes of the scale proposed to cause significant adverse effects on the visual experience of the skyline, when high-quality design is achieved this effect would likely become neutral or beneficial as the introduced feature would become a positive landmark that complements the existing receptor. The outline nature of the planning application forces a worst-case scenario assessment, however, the details in the DAS and design codes suggest that achievement of high-quality design with a specific perceptual outcome is possible during the reserved matters stage.

10.190 The above is also true for the remaining significant adverse effects on the visual amenity experienced by receptors in Coldham's Common (viewpoint 3). Notably, this is not an adverse effect that relates to the whole park, but it is specific to locations in closer proximity to the Site where vegetation cover is less dense and the urban enclosure more prominent. Albeit the proposal is viewed in the context of the existing urban enclosure and the proposed grouping of the taller buildings helps in the limitation of the geographical extent of the effects preserving the existing sense of openness, the contrasting scale of the Proposed Development with the contextual buildings is evident from this viewing angle.

10.191 Some minor-negligible adverse effects are experienced by road users on the Elizabeth Way Bridge due to the introduction of flues in the skyline which will introduce a new industrial character to the prevailing residential qualities of the Conservation Area.

10.192 The Proposed Development is found to have various degrees of neutral or beneficial effects on the remaining receptors, which include local residents, ramblers along the river towpath, road users within the Conservation Area and pedestrians on the Mill Road bridge. The beneficial effects are particularly evident when the poor conditions of the existing Site are a defining element of the quality of the views experienced by the receptors (viewpoint 8 and 12) and the

replacement of these with an architecture of high-quality potential will improve visual amenity.

10.193 Finally, an assessment of night-time views has not been undertaken due to the outline nature of the planning application and lack of light design details. However, it is noted that the proposal is located within an urban area, this is currently identified as a bright area in the CPRE map of dark skies (see map in **Appendix 10.2**). Notably, the map also illustrates the spillage of light in the adjacent Coldham's Common, which clearly reflects the urban enclosure of the park. Although the baseline lighting condition appears to have already affected the appreciation of dark sky and has already created a bright environment for local receptors, it is acknowledged that the Proposed Development could include lighting that might extend the brightest (>32 NanoWatts / cm2/sr) area. It is, therefore, essential that a detailed assessment of the lighting proposal and possible effects is conducted during the reserved matters stage when the detailed design is identified, or in response to a suitably worded planning condition to any subsequent outline planning permission to mitigate potential adverse effects.

10.194 A summary of impacts can be found in **Table 10.5.**

Table 10.5: Summary of Impacts: *Townscape and Visual*

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				SECONDARY MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Townscape												
Introduction of the Proposed Development in the Industrial – Railway Corridor Cambridge Character Type	Loc	Med-Low	Med	Ben	Irrev	LT	Mod	N/A	Ben	Irrev	LT	Mod
Introduction of the Proposed Development in the residential Character Type: Post 1900 Suburb	Loc	Med	Med	Ben	Irrev	LT	Mod	N/A	Ben	Irrev	LT	Mod
Introduction of the Proposed Development in the Cambridge skyline	Loc	High	Med	Adv	Irrev	LT	Mod	Progress the reserved matter in line with the submitted DAS and design codes to achieve high-quality design and a final proposal aligned to the AVR3 illustrative visualisations.	Ben	Irrev	LT	Mod
Introduction of the Proposed Development in the setting of green open spaces and setting of the Green Belt	Loc	Low	Low	Neu	Irrev	LT	Min	N/A	Neu	Irrev	LT	Min
Introduction of the Proposed Development in the setting of PRoW	Loc	Med	Low	Neu	Irrev	LT	Mod-Min	N/A	Neu	Irrev	LT	Mod-Min
Introduction of the Proposed Development in the setting of the Conservation Area	Loc	Med-Low	Med	Ben	Irrev	LT	Mod	N/A	Mod	Irrev	LT	Mod

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				SECONDARY MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Visual												
Introduction of the Proposed Development in the visual experience of visitors to Castle Hill Mound Scheduled Monument	Loc	High	Med	Adv	Irrev	LT	Maj-Mod	Progress the reserved matters in line with the submitted DAS and design codes to achieve high-quality design and a final proposal aligned to the AVR3 illustrative visualisations.	Ben	Irrev	LT	Maj-Mod
Introduction of the Proposed Development in the visual experience of Ramblers on Coldham's Common	Loc	Med-High	Med	Adv	Irrev	LT	Mod	Progress the reserved matters in line with the submitted DAS and design codes to achieve high-quality design and a final proposal aligned to the AVR3 illustrative visualisations.	Ben	Irrev	LT	Mod
Introduction of the Proposed Development in the visual experience of Ramblers on Fen Ditton and river towpath	Loc	Med-High	None	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Introduction of the Proposed Development in the visual experience of Ramblers on Redmeadow Hill	Loc	High	Neg	Adv	Irrev	LT	Mod-Min	Progress the reserved matters in line with the submitted DAS and design codes to achieve high-quality design aid integration within the visual context and a final proposal aligned to the AVR3 illustrative visualisations	Neu	Irrev	LT	Mod-Min
Introduction of the Proposed Development in the visual experience of Drivers on Wort's Causeway and Limekiln Road	Loc	High-Med	Med	Adv	Irrev	LT	Mod	Progress the reserved matters in line with the submitted DAS and design codes to achieve high-quality design and a final proposal aligned to the AVR3 illustrative visualisations.	Neu	Irrev	LT	Mod

DESCRIPTION OF IMPACT	GEOGRAPHICAL IMPORTANCE	RECEPTOR SENSITIVITY	MAGNITUDE	IMPACT BEFORE MITIGATION				SECONDARY MITIGATION	IMPACT AFTER MITIGATION (RESIDUAL)			
				ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE		ADVERSE/BENEFICIAL	REVERSIBLE/ IRREVERSIBLE	SHORT-TERM/LONG TERM	SIGNIFICANCE
Introduction of the Proposed Development in the visual experience of Ramblers on Little Trees Hill	Loc	High	Med	Adv	Irrev	LT	Mod	Progress the reserved matters in line with the submitted DAS and design codes to achieve high-quality design and a final proposal aligned to the AVR3 illustrative visualisations.	Neu	Irrev	LT	Mod
Introduction of the Proposed Development in the visual experience of Residents of the adjacent residential area to the south and west, including within the Mill Road Conservation Area	Loc	High	Neg	Neu	Irrev	LT	Min	N/A	Neu	Irrev	LT	Min
Introduction of the Proposed Development in the visual experience of Pedestrians on Mill Road Bridge	Loc	Low	Low	Ben	Irrev	LT	Min	N/A	Ben	Irrev	LT	Min

Key:

Loc: Local	Med: Medium	Min: Minor	Adv: Adverse	Neg: Negligible	Maj: Major
Mod: Moderate	Ben: Beneficial	Irrev: Irreversible	Rev: Reversible	LT: Long-Term	Neu: Neutral

Noise and Vibration

11

11.0 Noise and Vibration

Introduction

11.1 This chapter addresses the noise and vibration impacts of the Proposed Development. It has been prepared by Hoare Lea to assess the impacts of the Proposed Development in relation to existing noise-sensitive receptors and future users of the Proposed Development.

11.2 The following appendices are also referred to throughout the chapter and are included in ES Volume Two:

- **Appendix 11.1** Policy and Guidance
- **Appendix 11.2** Baseline Sound Survey

Potential Impacts

11.3 As part of the Scoping Report (see **Appendix 2.1**) for the Proposed Development (Planning reference: 22/05250/SCO), the following potentially significant impacts, associated with noise and vibration, have been identified during both the construction and operational phases:

- Noise and vibration from demolition and construction activity, including construction traffic
- Noise emissions from the introduction of new building services plant
- Noise emissions from the newly formed events space / public square
- Assessment of the Site's suitability with regards to noise

11.4 An assessment of operational phase road traffic noise has been excluded on the basis that changes to traffic noise would not trigger the threshold of a minor impact as defined within the Highway Agency's Design Manual for Roads and Bridges. In broad terms, this requires a doubling of traffic and it has now been confirmed within **Chapter 13 Transport,** that the Proposed Development is expected to significantly reduce vehicle trips compared to baseline conditions. This will result in a lowering of noise levels associated with road traffic.

11.5 An assessment of environmental vibration has also been excluded on the basis that the Proposed Development comprises commercial uses, and the control of vibration is considered to be a commercial matter for the developer/operator.

11.6 Vibration associated with the operational phase of the Proposed Development is expected to be limited to items of building services plant. It will be necessary to provide all plant with suitable anti-vibration mounts to minimise impact upon the operation of the facility which will inherently mitigate any impact upon nearby sensitive receptors.

Policy and Guidance.

11.7 The assessments of the identified effects have been undertaken in accordance with the principles contained within the following legislation and planning policy:

- National Planning Policy Framework (NPPF), 2021
- Planning Practice Guidance (PPG), 2019
- Noise Policy Statement for England (NPSfE), 2010
- Cambridge Local Plan, 2018

- Environmental Protection Act (EPA), 1990
- Control of Pollution Act (CoPA), 1974
- Noise at Work Regulations, 2005

11.8 Consideration has also been given to following non-statutory guidance:

- British Standard 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise
- British Standard 5228-2:2009 Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration
- British Standard 7445-1:2003 Description and measurement of environmental noise – Part 1: Guide to quantities and procedures
- DMRB LA 111:2020 – Noise and Vibration Highway's Agency Design manual for roads and bridges
- British Standard 4142:2014+A1:2019 Methods of rating and assessing industrial and commercial sound
- British Standard 8233:2014 Guidance on sound insulation and noise reduction for buildings
- World Health Organisation's Night noise guidelines, Guidelines for community noise and Environmental noise guidelines for the European region
- Cambridge City Council's Greater Cambridge Sustainable Design and Construction Supplementary Planning Document

11.9 Further discussion of the policy context and good practice guidance can be found within **Appendix 11.1.**

Study Area

11.10 The study area encompasses the Site and the nearest receptors which are considered sensitive to noise and vibration and likely to experience significant impacts.

11.11 The location, type of receptors and the minimum distances to the buildings of the Proposed Development are presented in **Figure 11.1** and **Table 11.1.** These receptors have been identified with reference to local mapping data and existing plans of the Site. They are typically located to the north/east/south/west of the Site and are less than 25 m away.

11.12 Individual existing receptors have been grouped into clusters based on their receptor type and geographic location to the Site in order to rationalise the number of assessment locations. A conservative approach has been taken throughout the ES chapter, with the closest point of each cluster being adopted as the assessment location for each effect. Noise and vibration effects will reduce with additional distance so it can therefore be assumed that the impact at other properties within the cluster (and beyond the study area) will either be the same or lesser.

11.13 The construction of the Proposed Development will be phased, meaning areas of the scheme may be occupied and operational while construction is still ongoing on other parts of the site. As such, the buildings of the Proposed Development have also been considered as a noise sensitive receptor within the demolition and construction activities noise assessment. As a worst case scenario, the shortest distance between proposed buildings has been considered. Noise

and vibration effects will reduce with additional distance so it can therefore be assumed that the impact at other buildings within the scheme will either be the same or lesser. Note that this receptor (S1) is only used for the construction phase assessment, and not for the operational phase assessment.

Figure 11.1: Location of Sensitive Receptors

Table 11.1: Identification of Sensitive Receptors

RECEPTOR	DESCRIPTION	TYPE	MINIMUM DISTANCE
R1	Dwellings on Silverwood Close	Residential	17 metres
R2	Dwellings on St Matthew's Gardens	Residential	22 metres
R3	Dwellings on York Street	Residential	18 metres
R4	Dwellings on Sleaford Street	Residential	10 metres
R5	Dwellings on Hampden Gardens and Pym Court	Residential	65 metres
S1	Occupied buildings within the Proposed Development	Office or Commercial Lab	8.5 metres

Defining Sensitivity

11.14 All identified existing receptors are residential in nature and will therefore be considered "High" sensitivity.

11.15 The buildings of the Proposed Development will all be office of commercial laboratory facilities and are therefore considered “Low” sensitivity in the context of this assessment.

Methodology

Noise from Demolition and Construction Activities

11.16 Construction noise and vibration is temporary and cannot be assessed in the same way as more permanent operational effects. BS 5228-1 indicates a number of factors that are likely to affect the acceptability of construction noise including site location, the existing ambient sound levels, duration of site operations, hours of work, attitude of the Site operator and noise characteristics of the work being undertaken.

11.17 Full details of the exact construction methodologies, plant and programme are not available at this stage, and will only be confirmed upon appointment of a Principal Contractor. As such, assumptions have been made, based upon past experience of similar developments, in terms of what activities will be required and the equipment and processes involved. An overview of the various construction activities, equipment and processes is set out in **Table 11.2.**

Table 11.2: Anticipated Construction Activities, Equipment and Processes

CONSTRUCTION ACTIVITY	EQUIPMENT AND PROCESSES
Demolition	Excavators, power tools, movement of site materials, concrete crushing.
Preparing/making ground	Dozers, excavators, distributing materials, vibratory rollers, drilling.
Construction of substructure	Piling operations, general site activity, concrete delivery and pouring.
Construction of superstructure & fit out.	Excavators, cranes, material deliveries, general site activity including generators, hand tools, lifting/pumping equipment.

11.18 Construction noise at each receptor has been predicted based on the calculation methods outlined in Chapter F.2.3 of BS 5228-1 and the provided noise data for activities.

11.19 The magnitude of impact associated with noise from demolition and construction works has been defined based on the example criteria set out within Annex E of BS 5228-1. These criteria are not considered to be definitive, but rather present a series of approaches which are commonly applied to construction noise.

11.20 The range of guidance values outlined in BS 5228 Annex E have been used to numerically define the magnitude levels set out in **Table 11.3**. Threshold values are presented as free-field levels occurring over a typical working day which is defined as 08:00 to 18:00 on weekdays and 08:00 and 13:00 on Saturdays.

Table 11.3: Magnitude Criteria for Demolition and Construction Noise

MAGNITUDE	THRESHOLD VALUE	DESCRIPTION
Neutral	≤ 65 dB $L_{Aeq,T}$	Below the threshold of Category A of the ABC method set out within BS 5228.
Minor adverse	> 65 - ≤ 75 dB $L_{Aeq,T}$	Above the threshold of ‘Category A’ of the ABC method set out within BS 5228, but lower than the trigger level for noise insulation works.

MAGNITUDE	THRESHOLD VALUE	DESCRIPTION
Moderate adverse	> 75 - ≤ 85 dB $L_{Aeq,T}$	Trigger level for noise insulation works, or cost thereof, as set out in Table E.2 of BS 5228.
Major adverse	> 85 dB $L_{Aeq,T}$	Trigger level for temporary rehousing, or reasonable cost thereof, as set out in E.4 of BS 5228.

Noise from Construction Traffic

11.21 Noise associated with construction traffic is considered separately from site activities and is assessed by comparing the expected level of road traffic noise with construction traffic to baseline conditions without the additional vehicle movements. The DMRB offers assessment criteria for short term road traffic noise impacts which are considered appropriate for the purposes of this assessment (**Table 11.4**).

Table 11.4: Magnitude Criteria for the Assessment of Construction Traffic Noise

MAGNITUDE	CHANGE IN $L_{A10,18HR}$
Neutral	0.9 dB or less
Minor adverse	Between 1.0 dB and 2.9 dB
Moderate adverse	Between 3.0 dB and 4.9 dB
Major adverse	5 dB or greater

11.22 DMRB advises that construction road traffic assessments should be undertaken when there is a potential for a 1dB change in the basic noise level. This will typically require a 25% increase in either the total number of road vehicles, or the number of heavy goods vehicles, along a road link. Increases in traffic below the 25% threshold will be deemed a negligible impact.

Vibration from Demolition and Construction Activities

11.23 The primary vibration generating activities are expected to comprise the demolition of the existing buildings and the piling of foundations. It is difficult to accurately predict levels of vibrations associated with these activities as there are many variables, but BS 5228-2 does attempt to overcome this by offering empirical data and calculation methodologies for some percussive piling techniques.

11.24 Guidance has been drawn from BS 5228-2 to evaluate the likely significance of any effects. Annex B offers a series of thresholds, in terms of a Peak Particle Velocity (PPV) which can be used to establish the likely effects of construction vibration upon humans (**Table 11.5**).

Table 11.5: Magnitude Criteria for Demolition and Construction Vibration

MAGNITUDE	THRESHOLD VALUE	DESCRIPTION
Neutral	< 0.30 mm/s	Vibration might be just perceptible in the most sensitive situations for most vibration frequencies associated with construction. At lower frequencies, people are less sensitive to vibration.
Minor adverse	≥ 0.30 mm/s <1.00 mm/s	Vibration might be just perceptible in residential environments. The upper value may cause complaints if prior warning is not given to residents.

MAGNITUDE	THRESHOLD VALUE	DESCRIPTION
Moderate adverse	≥ 1.00 mm/s < 10.0 mm/s	It is likely that vibration of this level in residential environments will cause complaints but can be tolerated if prior warning and explanation has been given to residents.
Major adverse	≥ 10.0 mm/s	Vibration is likely to be intolerable for any more than a very brief exposure to this level in most buildings.

11.25 Vibration also has the potential to cause cosmetic damage, but this typically occurs at far higher thresholds than those typically associated with human responses (50mm/s PPV for reinforced structures and 15mm/s for light-framed structures).

11.26 Guidance within BS 5228-2 (para. B.3.1) states that "*extensive studies carried out in the UK and overseas have shown that documented proof of actual damage to structures or their finishes resulting solely from well-controlled construction and demolition vibrations is rare."*

11.27 The assessment criteria have therefore focused on the human response and the likelihood of adverse comment rather than structural damage.

Operational Phase

Noise Emissions from the Introduction of New Building Services Plant

11.28 Noise emissions from fixed items of building services plant will need to be controlled at sensitive receptors to minimise the risk of disturbance.

11.29 At this early stage in the design, the full extent of building services plant is yet to be finalised. This will come forward at the Reserved Matters stage. It is therefore not possible to undertake an assessment of the building services proposals.

11.30 Noise limits for operational plant will instead be established at neighbouring noise sensitive receptors so as to ensure that commercial and industrial sound will not result in significant effects.

11.31 BS 4142 presents a recognised methodology for assessing the potential impact of new commercial and industrial sounds upon noise sensitive receptors by comparing the noise output from a new source against the prevailing background sound level.

11.32 The methodology requires consideration to be given to all aspects of the assessment process and account for any acoustic characteristics such as tonality, impulsivity and intermittency which may be readily identifiable against the prevailing noise climate through the addition of decibel penalty corrections. The size of the penalty depends upon the specific characteristics (tonality, impulsivity, intermittency or other) and the degree to which they are perceptible at the receptor location. The corrected noise level is referred to as the "rating level".

11.33 The background sound level is then subtracted from the rating level and the greater the positive difference, the greater the magnitude of impact. The thresholds of BS 4142 are presented in **Table 11.6.**

Table 11.6: Magnitude Criteria Adopted for Plant Noise and Commercial Activity Assessments

MAGNITUDE	DESCRIPTION
Neutral	The rating level is below the prevailing background sound level.
Minor adverse	The rating level is equal to the prevailing background sound level.
Moderate adverse	The rating level is 5 dB above the prevailing background sound level.
Major adverse	The rating level is greater than 10 dB above the prevailing background sound level.

11.34 CCC's standard requirement is to control the plant noise rating level to be equal to or lower than the prevailing background sound level at the nearest Site boundary. The need to achieve this standard will typically be secured by inclusion of a reasonably worded planning condition attached to any planning decision notice for the scheme. Compliance with this standard will inherently result in a minor adverse impact.

Noise Emission from the Newly Formed Events Space / Public Square

11.35 It is recognised that entertainment noise associated with the newly formed event space and public square have the potential to disturb existing receptors. However, there is no recognised methodology for assessing this type of noise.

11.36 Instead, it is proposed that the following fixed limits for event noise shall be adopted at residential receptors in line with good practice guidance and CCC's typical planning requirements (**Table 11.7**).

Table 11.7: Fixed Limits for Event and Patron Noise

RECEPTOR	LOCATION	TIME	DESCRIPTION
Residential	Inside bedroom	Night (23:00 – 07:00)	NR 20 $L_{eq,15min}$
	Inside all habitable rooms	Day (07:00 – 23:00)	NR 25 $L_{eq,15min}$

11.37 Compliance with these limits would be considered a negligible to minor adverse magnitude of change and result in non-significant impacts. They do not guarantee inaudibility but would control event noise to such a level that the sound level perceived at receptors would be commensurate with desirable residential standards.

11.38 Consideration has also been given to the potential for residential receptors to leave their windows open for prolonged periods, particularly during overheating conditions.

Site Suitability

11.39 The suitability of the Site for the Proposed Development has been assessed on the basis of whether suitable internal sound levels for the proposed uses can be achieved.

11.40 Baseline sound level data from the survey have been used to determine the worst-case environmental sound levels anticipated at the facades of the Proposed Development.

11.41 BS 8233 offers a simplified calculation method by which to establish the minimum composite performance of a façade. This involves subtracting the desired internal sound level from the external sound level and applying a +5 dB correction to account for factors such as the influence of the size and shape of the receiving room, acoustic finishes etc.

11.42 Guidance on appropriate internal sound levels for flexible office / laboratory space can be taken from BS 8233, the British Council for Office's Guide to Specification and the Department for Health's HTM08-01 guide. These are summarised within **Table 11.8.**

Table 11.8: Recommended Internal Sound Levels for the Proposed Development

	RECOMMENDED INTERNAL AMBIENT SOUND LEVELS OWING TO EXTERNAL SOURCES.	
TYPE OF SPACE	DESIGN RANGE (DB $L_{AEQ,T}$)	GUIDELINE NR LEVEL (L_{EQ})
Boardroom	35 - 40	30
Meeting room / cellular office	35 - 45	35
Open plan offices / laboratories	45 - 50	40
Corridors / circulation space / toilets / changing rooms	45 - 55	45

11.43 Compliance with the values set out above can be expected to avoid significant effects for future users of the Proposed Development.

Defining Significance

11.44 The significance of impacts has been determined through a standard method of assessment based on professional judgement, considering both sensitivity and magnitude of change as detailed in **Table 11.9**.

11.45 Unless otherwise stated, all effects are considered to be adverse. Moderate and major effects are considered significant in the context of this assessment.

11.46 Impacts, and the associated effects, during demolition and construction phase will always be considered temporary. Impacts resulting from the operational phase of the Proposed Development will always be considered permanent.

Table 11.9: Significance Criteria for Impacts

SENSITIVITY	MAGNITUDE OF CHANGE			
	NEUTRAL	MINOR ADVERSE	MODERATE ADVERSE	MAJOR ADVERSE
HIGH	Negligible	Minor	Moderate	Major
LOW	Negligible	Minor	Minor	Moderate

Assessment Limitations and Assumptions

11.47 Reasonable efforts have been made to minimise uncertainties associated with the survey data and capture any obvious noise sources in the local area which may affect the local acoustic environment.

11.48 In the absence of a Principal Contractor at this early stage in the design, assumptions have been made regarding the construction and demolition methods that will be adopted. These assumptions have been made based on professional judgement and experience of similar developments and aim to present a conservative assessment scenario of likely noise levels. For example, the construction noise assessment assumes that all plant and equipment will be located at the same distance from the noise-sensitive receptors. This is unlikely to occur in practice.

11.49 As there will be some elements of the application that will be outline in nature, information on potential commercial activities and events is not available. Limiting operational sound levels have therefore been defined which will need to be observed in developing noise management plans going forward.

Existing Baseline Conditions

11.50 An environmental sound survey has been undertaken in accordance with BS 7445 to establish baseline acoustic conditions across the Site and likely to be experienced by surrounding noise sensitive receptors.

11.51 Measurements comprised long-term noise monitoring at two fixed positions on the eastern and western Site boundary over a 7-day period between Friday 11th December and Friday 18th December 2020. The data from these positions have been used to establish long term trends in the local acoustic climate and typically occurring background sound levels at neighbouring noise-sensitive receptors.

11.52 Further short-term attended measurements have been captured at five positions to determine how sound levels vary across the Site and to provide spectral data to assist with informing the building envelope sound insulation design.

11.53 No notable developments or changes in transport infrastructure have been identified within the local area since 2020 and the survey data are still considered relevant. Corroborative measurements undertaken in May 2023 confirm that noise levels have not changed significantly across the Site.

11.54 A high-level overview of the measurement positions and data metrics pertinent to the acoustic design are presented in **Figure 11.2**. Full details of the survey methodology and results can be found within **Appendix 11.2.**

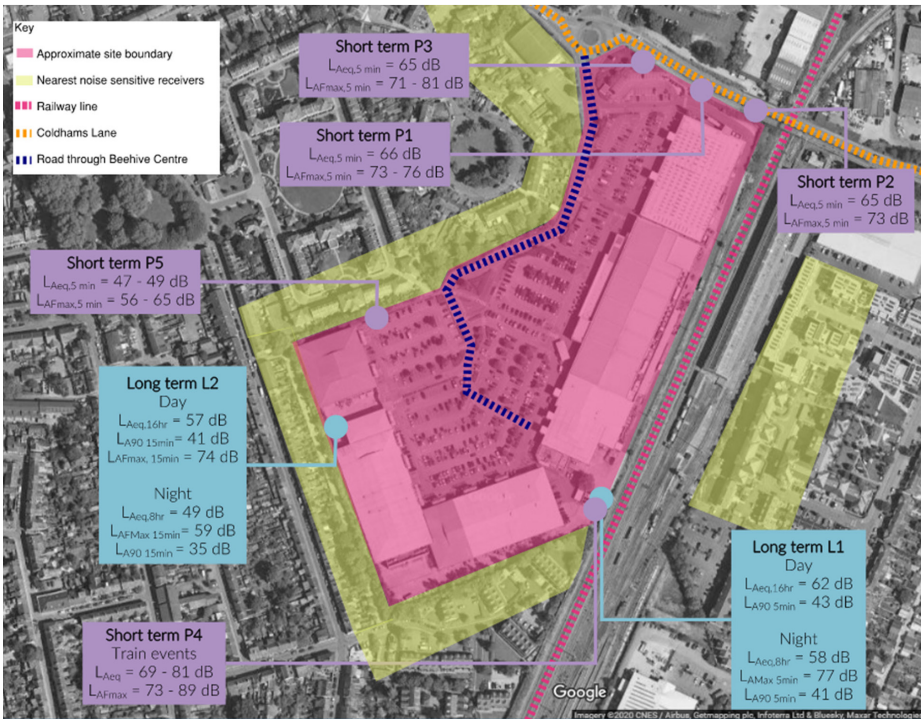

Figure 11.2: Overview of Survey Results (image courtesy of Google)

11.55 The primary sources of environmental sound affecting the Site have been identified as road traffic on the local road network, particularly vehicles travelling along Coldhams Lane, and trains running along the railway tracks which demark the eastern Site boundary.

11.56 It should be noted that the assessment methodology of BS 4142 recommends the use of a 1-hour assessment period during the day and 15 minutes at night. The use of the $L_{A90,15min}$ and $L_{A90,5min}$ can be expected to result in a more onerous assessment as these shorter time periods provide more opportunity to identify a lower L_{A90}.

Evolution of the Baseline Conditions without Development

11.57 The primary sources of environmental noise have been identified as road and rail traffic. Transport information shows that future baseline without development does not increase, therefore future baseline noise and vibration conditions would be expected to be similar to those currently experienced at the Site in the absence of the project.

Predicted Impacts

Construction Phase

Noise from demolition and Construction Activities

11.58 Demolition and construction noise levels have been calculated at each receptor for a range of anticipated construction activities as set out in **Table 11.2**. The calculations have assumed that all activities will occur in locations closest to each receptor and are therefore considered to represent a reasonable worst-case scenario. In practice, works are unlikely to occur close to the Site boundary for prolonged periods and equipment will be moving around the Site, which will tend to reduce the impact magnitude.

11.59 **Table 11.10** presents an overview of the predicted range of noise levels during each demolition and construction phase based on the different construction activities. Noise levels that would result in a moderate or major adverse magnitude of change are presented in **bold red text**.

Table 11.10: Predicted Levels of Construction Noise

CONSTRUCTION PHASE	RECEPTOR					
	R1	R2	R3	R4	R5	S1
Demolition	55 – **76**	53 – 74	55 – **76**	60 – **81**	44 - 65	61 - 82
Preparing/making ground	55 – 70	53 – 68	55 – 70	60 – 75	44 – 59	61 - 76
Construction of substructure	55 – 73	53 – 71	55 – 73	60 - **78**	44 – 61	61 - 79
Construction of superstructure & fit out.	55 – 72	53 - 70	55 - 72	60 - **77**	44 - 61	61 - 78

11.60 As can be seen from the results in **Table 11.10**, the majority of demolition and construction activities can be expected to have an impact that is of a **neutral to minor adverse** magnitude.

11.61 Some works, such as breaking concrete, piling and drilling, have the potential to generate higher levels of noise at receptors R1, R3, R4 and S1. These activities have been assessed as being of **moderate adverse** magnitude.

Noise from construction traffic

11.62 In addition to noise from construction activity, Heavy Vehicles (HVs) and other delivery vehicles will be visiting the Site throughout the construction programme.

11.63 The Outline CEMP has identified a peak number of 190 daily vehicle trips during construction which, for the purposes of this assessment, have all been treated as HVs. This is considered to be a worst-case assumption, and it is likely that there will be significant periods where fewer vehicle movements would be expected.

11.64 Changes in road traffic noise, in terms of the $L_{A10,18hr}$, have been calculated at the receptors in accordance with the methodology set out in CRTN. The peak daily construction trips have been treated as surplus to current baseline conditions and no allowance has been made for a reduction in traffic flows associated with the removal of businesses currently occupying the Site.

11.65 A summary of the traffic data used for the calculations is presented in **Table 11.11**.

Table 11.11: Traffic Data used in Noise Calculations

LINK	BASELINE			DURING CONSTRUCTION		
	TWO-WAY AAWT (ALL TRAFFIC)	TWO-WAY AAWT (HGV %)	TWO-WAY AAWT (HGV ONLY)	TWO-WAY AAWT (ALL TRAFFIC)	TWO-WAY AAWT (HGV %)	TWO-WAY AAWT (HGV ONLY)
Link 2: Coldhams Lane (east)	17061	2	341	17061	3	531
Link 3: Coldhams Lane (west)	16640	2	333	16830	3	523

11.66 The predicted change in road traffic noise at each receptor is presented in **Table 11.12.**

Table 11.12: Predicted Changes in Road Traffic Noise at each Receptor

RECEPTOR	CHANGE IN ROAD TRAFFIC NOISE (DB $L_{A10,18HR}$)
R1	< 0.1
R2	< 0.1
R3	< 0.1
R4	< 0.1
R5	< 0.1

11.67 The results demonstrate that construction traffic will not increase road traffic noise by more than 0.1 dB at any receptor and would therefore be considered a neutral magnitude.

Vibration from Demolition and Construction Activities

11.68 At this relatively early stage in the design, the preferred methods for demolition and construction works are yet to be defined. The Principal Contractor will ultimately need to adopt demolition and piling methods that are both considerate of local sensitive receptors and suitable for the ground conditions, and low vibration methods should be adopted wherever possible.

11.69 For demolition, it is anticipated that a soft strip approach would be undertaken with additional control measures in place to stop materials falling from height. Vibration data is not readily

available for this type of work but in the knowledge that demolition works are routinely carried out in urban locations and successfully completely through careful management, it is expected that significant effects can be avoided.

11.70 For piling, it is anticipated that Continuous Flight Augur (CFA) piling methods will be adopted. Whilst there is no ratified method for calculating vibration from CFA piling, historic data for this piling method is provided within BS 5228-2. Examples, taken from Table D.6 of BS 5228-2, are presented for a range of soil conditions and distances to allow a comparison against the threshold values of **Table 11.5**.

Table 11.13: Historic Vibration Data for Augering

REFERENCE	SOIL CONDITIONS	DISTANCE (M)	PPV (MM/S)
Table D.6. 101	Fill / dense ballast / London clay	20	0.5
Table D.6. 102	Fill / wet sand / lias clay	9	0.2
Table D.6. 103	Fill clay	10	0.38
Table D.6. 103	Fill clay	20	0.3
Table D.6. 103	Fill clay	30	0.03
Table D.6. 104	Fill / sand / clay	10	0.40
Table D.6. 104	Fill / sand / clay	15	0.10
Table D.6. 104	Fill / sand / clay	26	0.02
Table D.6. 105	Sands and gravels over chalk	3.5	0.23
Table D.6. 105	Sands and gravels over chalk	8	0.04
Table D.6. 106	6m of soft ground over rock	5	0.54
Table D.6. 107	Fill including pockets of gravel over London clay	5.5	0.13

11.71 The data in **Table 11.13** demonstrates that vibration associated with piling can be expected to fall well below the threshold of a moderate adverse magnitude for a range of soil conditions and at relatively short distances (< 10 metres).

11.72 On the basis that all receptors, including occupied buildings within the Site (Receptor S1), are located at least 8 metres away from the Proposed Development, construction vibration is therefore considered to be of **neutral to minor adverse** impact.

Operational Phase

Noise Emissions from the Introduction of New Building Services Plant

11.73 Fixed building services plant serving the development have the potential to emit noise which may be considered disturbing to existing sensitive receptors in the local area.

11.74 Noise limits for plant are proposed at neighbouring noise sensitive receptors and Site boundary to ensure that noise emissions will not result in significant effects. These limits are in line with CCC's standard planning requirements and have been defined relative to the background sound levels typically expected at the receptors. Careful consideration has been given to the measurement position that best represents each receptor.

11.75 The proposed noise limits at each receptor during the day and night are presented in **Table 11.14.**