

Summary of the Constraints Evidence Base

Cambridge East
August 2023

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Appendices

Appendix 1 – Cambridge East development process: evidence required – prepared by GCSP

Appendix 2 – Education and Health Baseline Data

1. Introduction and Purpose of the Document

- 1.1 This document, together with the suite of technical studies / assessments appended to it, has been prepared to report the findings of the technical evidence base work that Marshall and its consultant team has been preparing in relation to the development of Cambridge East ('the Site'). The purpose of this document is to summarise the work that has been undertaken to date and outline the main site constraints that have been identified. The work will inform discussions with Greater Cambridge Shared Planning (GCSP) through joint working which is being undertaken under a Memorandum of Understanding (MOU).
- 1.2 The Site, outlined in red in Figure 1.1, incorporates three land parcels in single ownership – two north of Newmarket Road and the main airport site south of Newmarket Road – with a combined area of 187.25 hectares.

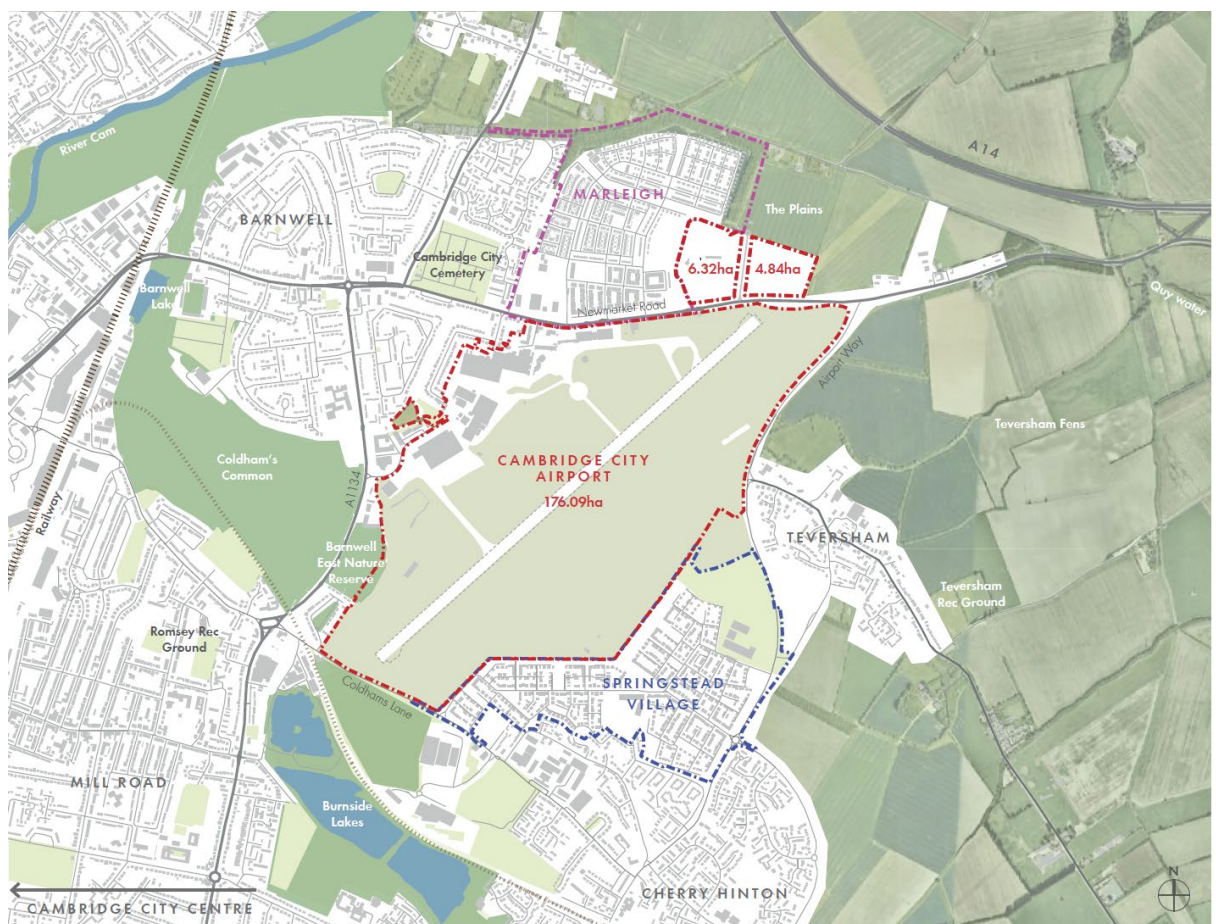


Figure 1.1: Site Plan

- 1.3 The terms and conditions of the MOU set out the requirements for the joint working arrangements between GCSP and Marshall on work that may inform Marshall's business decisions regarding the Site, and also GCSP's development of a draft allocation for Cambridge East within the emerging Greater Cambridge Local Plan.
- 1.4 This document has been informed by MOU discussions between Marshall and GCSP and seeks to outline a baseline position, recording what is already known about the

Site in terms of its technical constraints. By outlining the approach that Marshall and its team has taken in preparing these technical studies / assessments and the conclusions that have been drawn from this work, it is intended that this report (subject to GCSP's agreement) then forms an agreed evidence base position for progressing MOU discussions in relation to key design principles for the Site and a focused scenario testing exercise. This report may also identify gaps in the evidence base that need to be addressed to ensure that Marshall and GCSP can robustly demonstrate that the Site is suitable for development and deliverable within identified timescales.

- 1.5 This report is structured so that it broadly follows the topics identified in GCSP's 'Cambridge East site development process: evidence required' document, circulated to Marshall on 17th May 2022 (Appendix 1). Additional sections have been included (i.e. on Noise & Air Quality Emissions and Environmental Net Gain) to reflect the further information that the team has gathered beyond that identified in GCSP's documents. Where relevant, full technical reports have been appended to support the summary conclusions outlined in this document.
- 1.6 The Site consists of the main airfield site, being the area currently occupied and operated as Cambridge Airport, together with two non-airfield sites to the north of Newmarket Road.



2. Water Management

Introduction

- 2.1 This section outlines the opportunities and constraints regarding the management of water resources on the Site. This section covers a range of issues relevant to water management, considering water supply, drainage and flooding.
- 2.2 Section 2 summarises the baseline potable water demand and provides some initial analysis on the future water supply and demand for the proposed development. Drainage constraints and opportunities are also identified, as well as the future flood management of the Site as all these elements relate to a single water cycle, which includes the management of finite groundwater resources.

Baseline Potable Water

- 2.3 Stantec have assessed the baseline potable water demand from the existing occupation of the Site and considered the implication of the baseline demand on the future water supply for the proposed development.
- 2.4 The baseline has been assessed from water meter readings taken at the supply points across the existing site from March 2017 until February 2022. This consumption data includes monthly meter readings from the North Works, and biannual meter readings from the South Works and Greenhouse Farm. Meter reading data has been transposed to average daily consumption (Ml/d) and is presented in the figure below, summing the demand from the three sub-sites.

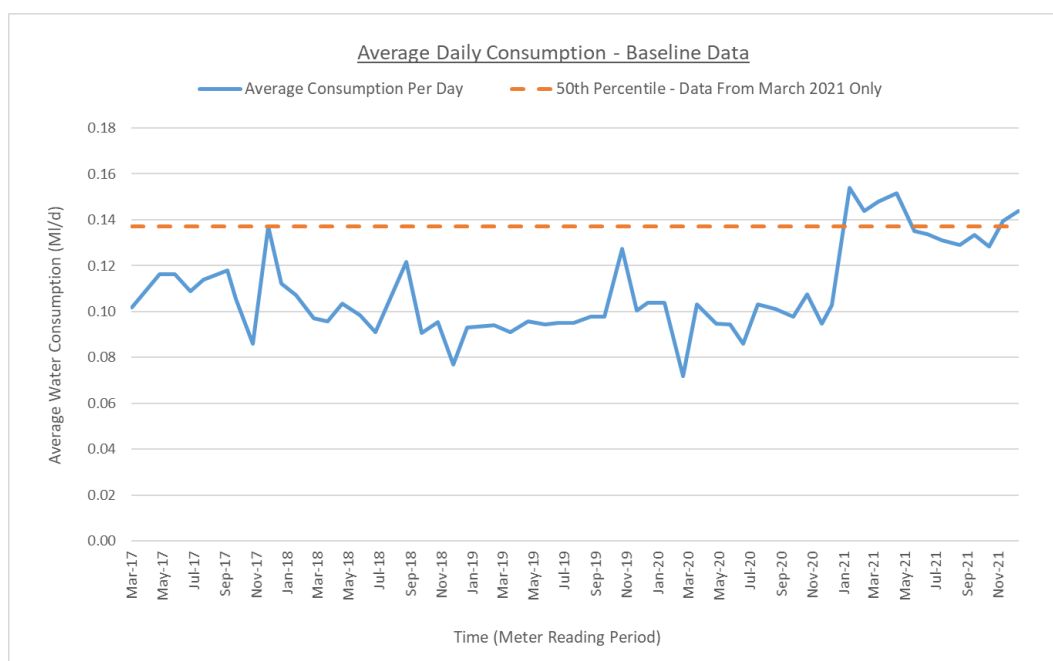


Figure 2.1: Average daily consumption – baseline data

- 2.5 Average daily water consumption (blue line) is variable throughout the monitoring period, with a marked increase from March 2021 onwards. To set a baseline figure for

the current consumption of the Site, the 50th percentile (i.e., mean average) of the data proceeding March 2021 has been calculated and expressed on the graph (orange dashed line). This calculated baseline demand figure is 0.137ML/d. This is equivalent to 500 new homes assuming these were built to enhanced Building Regulations with a per capita consumption of 110 litres and an occupancy of 2.49 people per dwelling.

- 2.6 It is assumed that Cambridge Airport will be decommissioned prior to first occupation. Therefore, the baseline demand figure will be considered as 'existing available supply capacity' for the proposed development and would allow the initial development phases to be occupied without any major upgrades to the existing potable water network. Assuming further demand-side water efficiency measures are included this would be equivalent to >500 new homes. The draft regional and both draft local Water Resources Management Plans (Water Resources East, Anglian Water and Cambridge Water) also identify a number of water supply schemes that will introduce significant new supplies of water into Cambridge from more sustainable resources after 2030 (the new Grafham Bulk Water transfer could be introduced as soon as 2027 and the new Fen Reservoir will be introduced after 2035 introducing a further 43.5ML/d) such that the development of the Site could have negligible impact on local groundwater resources. Irrespective of this the water neutrality hierarchy will be followed and extremely high levels of water efficiency will be introduced.

Baseline Potable Water – Greater Cambridge

- 2.7 Stantec / Hilson Moran have reviewed the current situation for the supply and demand of potable water in the Greater Cambridge region, considering the figures published in the Water Resources Management Plan (WRMP) by Cambridge Water in 2019 and the draft Cambridge Water WRMP24.
- 2.8 The current deployable output is set at 99ML/d (2019) for the dry year annual average, having been reduced from 113ML/d in 2014. Since 2014, the deployable output rate has been restricted by the local water authority, Cambridge Water, to reduce the impacts of water abstraction on the environment as per legislation under the Water Framework Directive. Under Cambridge Water's draft WRMP24 currently being consulted upon this will include a further 6ML/d reduction to also reduce the impact of a drought event by ensuring a positive water balance during a 1:500-year drought event (changing from a 1:200-year drought event).
- 2.9 The current total water demand (household consumption, non-household consumption and leakage) in the Greater Cambridge region is 84ML/d (2020). Leakage accounts for 13.5ML/d of demand under Cambridge Water's current commitment for network performance. For the 129,000 domestic properties in Greater Cambridge, the dry year annual average demand is 141 litres per capita consumption (PCC) and the average occupancy rate is 2.4. Building Regulations currently mandate a PCC of 125 litres, with an optional requirement of 110 litres per head per day.
- 2.10 The target headroom (i.e., difference between supply and demand) is currently 2ML/d and is set to increase to 3ML/d in 2045.

Aiming towards a 'Water Neutral' development

- 2.11 Water Neutrality is a relatively new concept for managing water resources in the context of new developments. There is an established definition of water neutrality that states that: *'Total demand for water should be the same after new development is built, as it was before. That is the new demand for water should offset in the existing community by making existing homes and building in the area more water efficient'*.
- 2.12 Achieving 100% water neutrality within a new development is a theoretical concept and requires reducing water demand within a dwelling or other buildings, typically using water considerate design and very efficient water fittings, which is required to meet the optional Building Regulation of 110 litres per head per day. Water use can be further reduced through supply-side interventions, notably rainwater harvesting and greywater recycling. Water neutrality as currently defined would theoretically require the further reduction of approximately 90 litres per head per day through a form of off-setting. It should be noted that it will likely not be possible to off-set the daily water consumption for the Site within the same water supply zone; further there is no framework or model to undertake equitable and accounted off-setting. Mechanisms are being considered for carbon through organisations such as the UK Green Building Council (UKGBC) but not water and therefore this should not be considered as a mandatory or achievable requirement.
- 2.13 More realistically the highest levels of water efficiency can be achieved by optimising water re-use systems, and to capture the benefits of 'Managed Aquifer Recharge' (MAR) where this is possible. In order to implement aquifer recharge rainwater needs to infiltrate back into the aquifer and therefore SuDS should be designed to slow the conveyance of stormwater rather than conveying straight to traditional attenuation ponds. This will significantly improve water neutrality and could support extremely high levels of water efficiency however will likely reduce the opportunities for large community-scale rainwater harvesting systems as employed at Eddington, and perhaps might better accommodate grey water recycling. Grey water recycling would perform better if it were more technologically advanced (for example membrane-based technologies), but would then likely need to be adopted by a water or sewerage undertaker, which is certainly not typically an approach currently employed by water companies.
- 2.14 Ultimately a lower percentage of water neutrality would be a more realistic target, which acknowledges aquifer recharge and water re-use and also acknowledges that water re-use at a micro-scale places additional burden on consumers and which would greatly benefit from investment by the incumbent water and sewerage undertaker or an embedded network operator.
- 2.15 In line with the emerging Local Plan, development of the Site should meet high standards of water efficiency and we would encourage that the levels set out in the First Proposals for residential and non-residential developments should be followed. To achieve these levels consideration will need to be given to the re-use of water on the Site such as rainwater harvesting and grey water recycling. A scheme for site-wide integrated water management should be followed, making use of Sustainable drainage systems (SuDS) ideally with aquifer recharge where geological conditions



allow. Sustainable drainage should be at surface level to enable multiple benefits for biodiversity and amenity and space for these will need to be considered in the design.

Flood Risk

- 2.16 The National Planning Policy Framework (NPPF) reinforces the importance that the Government attaches to the management and reduction of flood risk in the land-use planning process, whilst also adopting a precautionary approach and fully accounting for the effects of climate change. The NPPF states how flood risk should be considered at all stages of planning and development, in an attempt to reduce future loss of life and damage to property.
- 2.17 The Greater Cambridge Level 1 Strategic Flood Risk Assessment (SFRA) (Stantec, 2021) has considered all the sources of flooding in the area, including fluvial flood risk, surface water flood risk, sewer flood risk, groundwater flood risk and reservoir breach flood risk, as well as the relevant climate change impacts.
- 2.18 Environment Agency (EA) mapping for flooding from rivers and the sea shows that the Site is entirely within Flood Zone 1 and, therefore, has a low probability of flooding (less than 0.1% annually) (Figure 2.2).

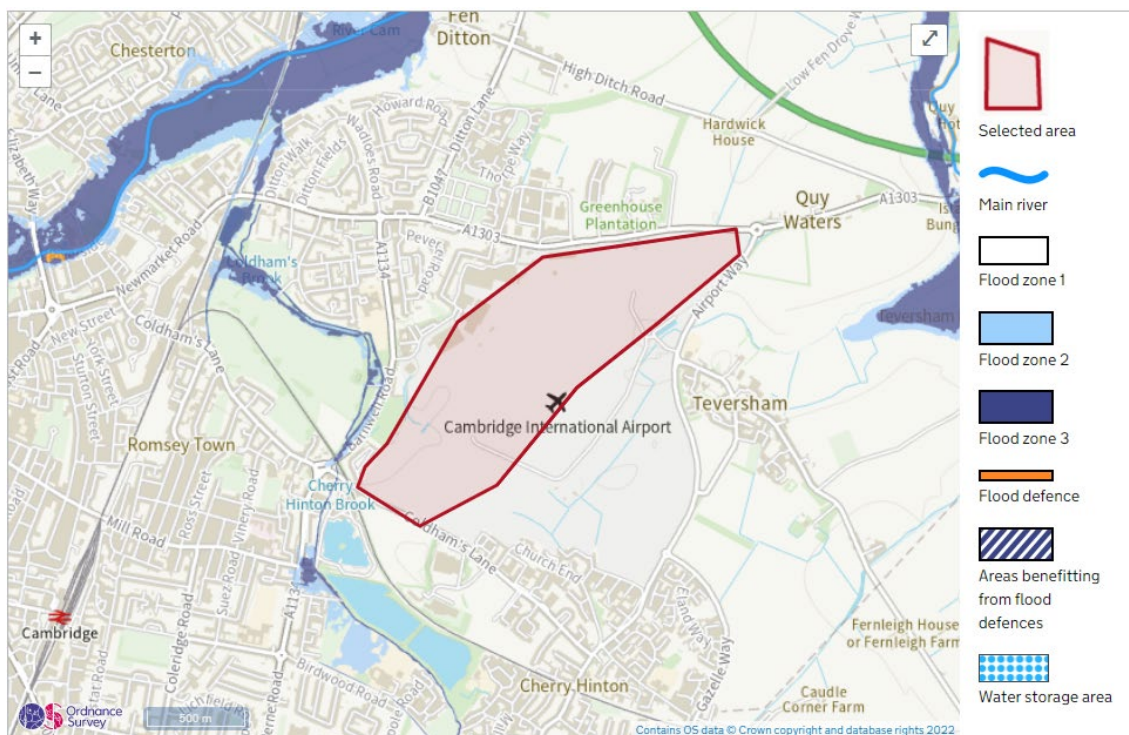


Figure 2.2: Extract from EA map for flooding from rivers and the sea

- 2.19 The NPPF stipulates that developments in EA defined Flood Zones 2 and 3 ("Medium" and "High" risk), and/or lying within a Critical Drainage Area (CDA) and/or exceeding 1 hectare in size will require a Flood Risk Assessment (FRA) to be undertaken at the planning stage, which should assess the risk from all sources of flooding. Although the Site lies entirely within Flood Zone 1, it possesses an area greater than 1 ha and, therefore, a FRA will be required.

- 2.20 EA mapping for surface water flooding indicates some areas of high and medium risk, having annual flood probabilities of at least 3.3% and 1%, respectively (Figure 2.3). Additionally, the surface water flood map below indicates a 'low risk' of flooding (0.1% – 1% annual probability of flooding) around the ordinary watercourse along the eastern boundary of the Site; this watercourse runs through the Springstead Village development which is under construction at the time of writing of this report. The watercourse has been modelled and a slight watercourse realignment agreed under the planning application for the Springstead Village site (Cambridge City Council planning portal reference: 18/0481/OUT). A review of this flood modelling, and further modelling, is likely to be required to bring forward the flood risk and drainage strategy for the development of the Site.

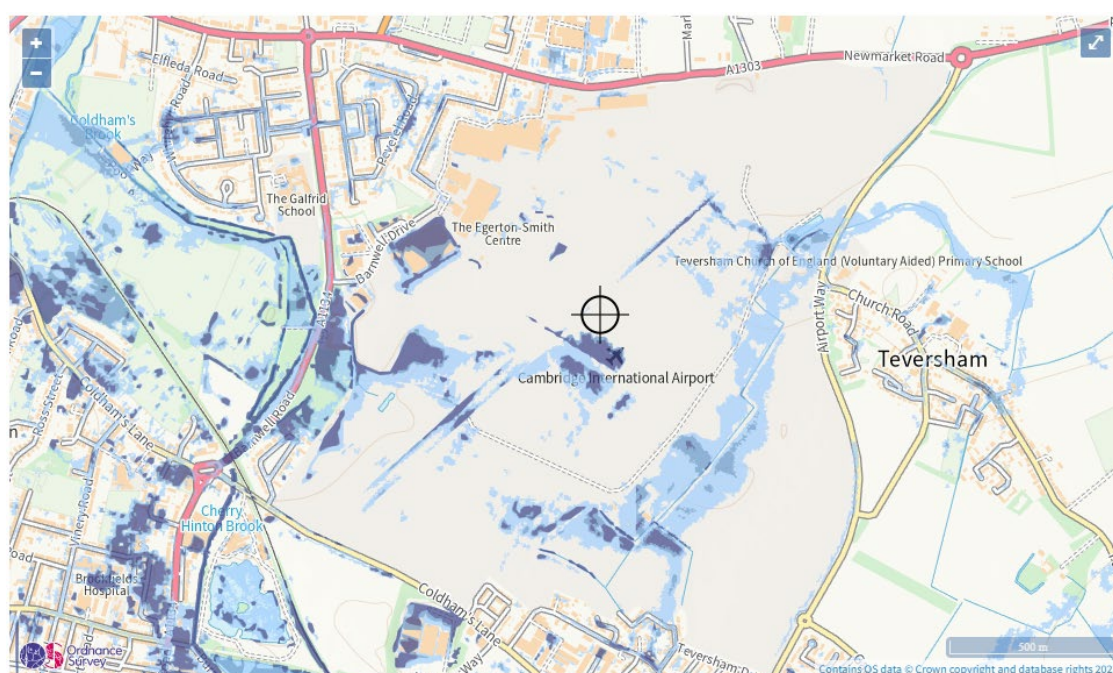


Figure 2.3: Extract from EA map for surface water flooding

- 2.21 The future proposals for surface water drainage will need to manage the surface water risk across the development and provide designated areas for surface water runoff to be stored safely during and after storm events. The surface water drainage strategy will, therefore, need not only to address the localised risks demonstrated above but also to accommodate additional runoff generated by an increase in impermeable surfaces associated with the scheme and also futureproof the development against increases in peak rainfall events associated with climate change over its operational lifetime.
- 2.22 An extract of the Greater Cambridge Level 1 SFRA (Figure 2.4) shows that higher areas of the Site to the north and south lie within areas where groundwater flooding has the potential to occur at properties situated below ground level, whilst groundwater flooding in lower lying areas has the potential to occur at the surface. Planned comprehensive ground investigations will confirm the nature of groundwater levels across the Site which will also inform the design of the surface water drainage strategy.

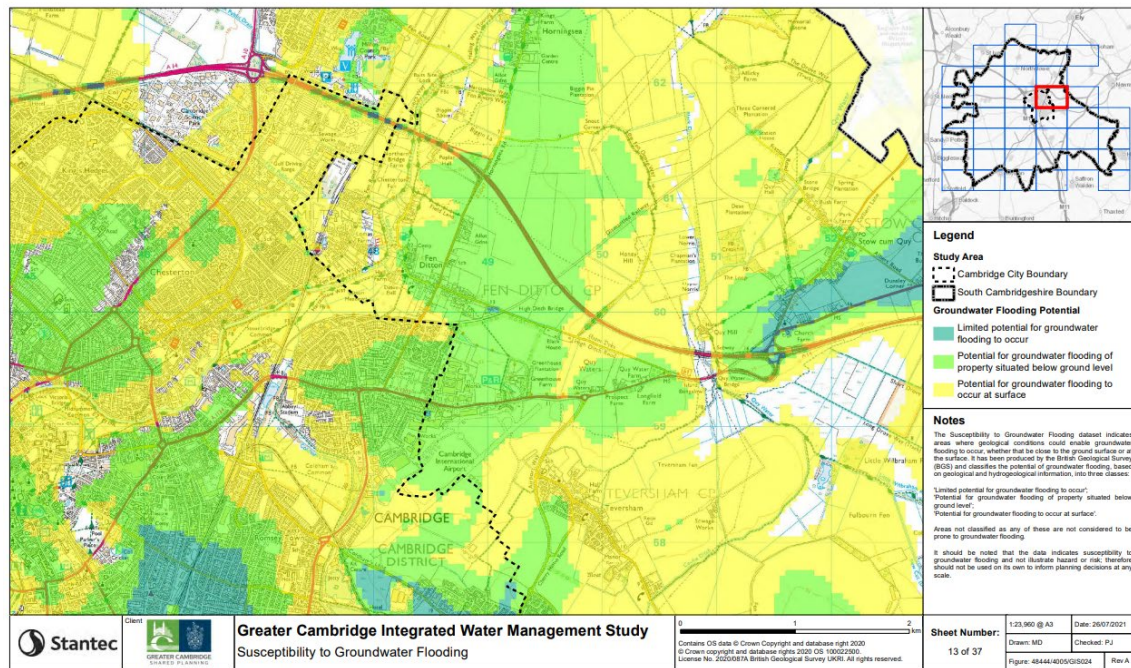


Figure 2.4: Extract from Greater Cambridge Integrated Water Management Study – susceptibility to groundwater flooding

Existing Surface Water Drainage

- 2.23 Local and national planning policy identifies surface water disposal as a material consideration for local planning authorities when determining individual land-use planning proposals and that SuDS should be incorporated into a development wherever practical. It is hoped that infiltrating SuDS will be feasible for the Site and that these will not only sustainably manage surface water runoff, but also provide opportunities for groundwater recharge in this water stressed area.
- 2.24 The Site includes several existing drainage networks serving the airport infrastructure and assets owned by Marshall. Also, the drainage ditch along the eastern boundary of the Site, and running within the Site boundary in the north-east, serves to drain surface water flows from the neighbouring development, Springstead Village. There is dialogue with the developer of that site to ensure that the southern area of the airfield site can drain into this network.
- 2.25 Hilson Moran have identified outfall locations to the east and the west of the Site and through dialogue with GCSP and LLFA in May 2023, there is now a study ongoing to assess the impact of the development on these areas (specifically Barnwell Nature reserve) at the request of the LLFA.
- 2.26 The existing runway and taxiways are positively drained via filter drains that run adjacent to the edge of the hardstanding. Surface water runoff is then conveyed via pipes and filter drains to ponds located in the north-east and south-west of the Site. Runoff from the recently constructed Ground Running Enclosure flows into the south-western pond. The pond in the north-east of the Site (Teversham Stream), which flows eastwards and passes underneath Airport Way. The pond in the south-west discharges storm water into an off-site watercourse located near the pond (Figure 2.4).

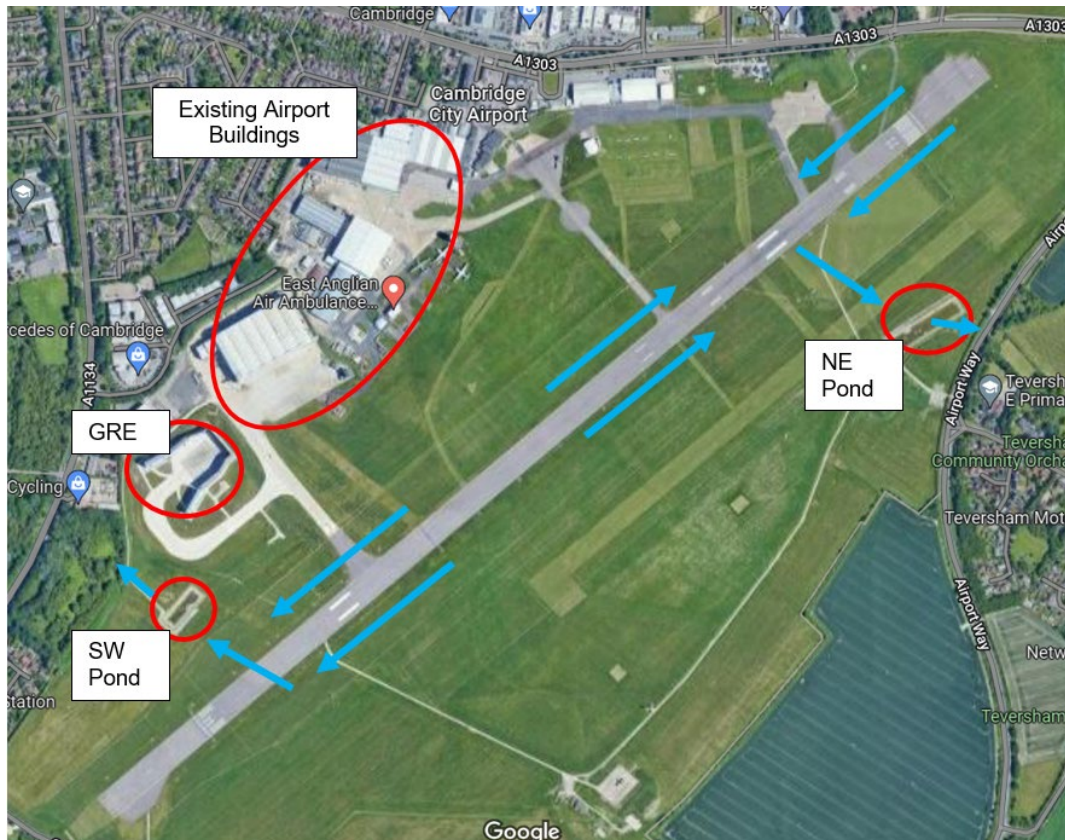


Figure 2.4: Existing surface water drainage network

- 2.27 Historic maps of the Site indicate that a small watercourse once crossed the southern end of the Site. It is assumed that this has since been culverted and also discharges into the off-site watercourse located near the south west pond. Further investigations are planned to confirm the culverting of this watercourse, its route and how it can be integrated into the proposals.
- 2.28 Runoff from the hangars and office buildings in the north of the Site are positively drained via a private pipe network and conveyed into an existing Anglian Water pipe network north of the development.

Proposed Surface Water Drainage

- 2.29 It is intended that the surface water drainage strategy of the proposed development will:
- i. Ensure that post-development runoff will be limited to the greenfield rate, as per the Cambridgeshire Flood and Water Supplementary Planning Document;
 - ii. Mimic the current on-site watersheds, catchment areas and flow directions described above, with outfall locations both to the west and east of the Site;
 - iii. Provide aquifer recharge wherever feasible, thereby benefitting local groundwater sources;
 - iv. Include multi-functional SuDS that will provide not only water quantity and quality benefits and reduce surface water flood risk, but will also offer amenity and biodiversity enhancements throughout the scheme.

- 2.30 The EA has updated its climate change allowances in May 2022. For the Ely and Ouse Management catchment, the peak rainfall allowances should take into account both the 1 in 30 and 1 in 100 year Annual Exceedance Probability (AEP) events.
- 2.31 Due to the very low calculated Qbar for the Site (mean annual greenfield flood flow, equating to a circa 2.3 year return period), it has been agreed with Cambridgeshire County Council that the discharge rate for the post-development condition will be set to 2 l/s/ha.
- 2.32 The use of infiltrating SuDS will be preferred throughout the scheme, although the strategy will avoid locating such features in contaminated areas to prevent remobilisation of any contaminants associated with the former use of the Site.
- 2.33 Previous studies on small areas of the Site have demonstrated that the strata are variable and the relatively small number of infiltration rates determined so far reflect this, with variations across relatively small areas above and below the threshold for the feasibility of infiltrating SuDS. Groundwater levels have also been shown to be relatively shallow in low-lying areas of the Site. Consequently, a comprehensive programme of infiltration testing and groundwater monitoring is planned for the Site, so the feasibility of using infiltrating SuDS can be appraised at an early stage.
- 2.34 The surface water drainage strategy is currently being progressed with information on soil conditions, groundwater levels, permeability of strata, surface water flow paths and other constraints and opportunities (e.g. ecological and amenity) feeding into the design as it becomes available.
- 2.35 It is envisaged that the scheme will be an exemplar for the use of SuDS at all levels of the development. Although still to be confirmed, it is anticipated that:
- i. A range of SuDS will be provided at the neighbourhood levels including blue/green roofs, rain gardens, permeable pavements with shallow sub-surface storage, "with-contour" swales maximising groundwater recharge opportunities and multi-functional "green" attenuation and infiltration features, accommodating runoff from storm events up to and including the circa 1 in 5-year event;
 - ii. Main, "cross-contour" swales, located along green links, with check-dams where necessary, again to maximise groundwater recharge opportunities and accommodating runoff from storm events up to and including the circa 1 in 10-year event;
 - iii. Multifunctional off-line attenuation/infiltration basins located within the central Green Corridor, accommodating runoff from storm events up to and including the 1 in 100-year + climate change (CC) event. These will remain dry except for only extreme storm events, providing additional amenity and biodiversity benefits throughout the lifetime of the scheme.

Foul Water Drainage

- 2.36 The buildings in the north of the Site are currently served by a private gravity foul water network which discharges into the Anglian Water pipe network north of the Site. Foul effluent is pumped in at least one short section of the private foul water network.



- 2.37 The foul water drainage strategy for the proposals is currently being worked up, with elements such as the location of on-site pumping stations still to be decided. However, the system will be designed and constructed to an adoptable standard and in consultation with Anglian Water.

Next Steps

- 2.38 Both the surface water and foul water drainage strategies will continue to be progressed. In particular, the results of the planned initial infiltration testing/groundwater monitoring programme will demonstrate the feasibility of infiltrating SuDS and potential groundwater recharge across the Site. Whether or not infiltration will be feasible, the use of "soft SuDS" will be maximised across the Site, to provide a range of flood risk, biodiversity, amenity and aesthetic benefits, ensuring that surface water is managed in a sustainable manner throughout its operational lifetime, in keeping with national and local policies.
- 2.39 Enquires and dialogue with Anglian Water will need to test and fully understand the capacity in the Network to delivery early and future phases. The design and positioning of the (likely) two or three. foul pumping stations is at an early stage but the overall strategy is to make a connection into the mains 'super' sewer to the south west of the Site. This is informed by topographical data and site constraints. Early dialogue with developer of Springstead Village is underway since this is a route they will also use to make connections.



3. Climate Change Mitigation and Adaptation

Baseline Summary of Potential Impacts

- 3.1 Whilst significant national and global efforts are ongoing to mitigate the impacts of climate change, it is recognised that human society must adapt and become more resilient to those impacts that are now unavoidable. Climate change is causing environments to alter, bringing future challenges in relation to ecosystems, society, urban infrastructure, and water supply.
- 3.2 As a result of climate change, scientists predict that over the next century global temperatures could increase by several degrees, whilst flooding and extreme weather conditions are becoming more frequent and intense.
- 3.3 Climate resilience looks to design with climate in mind, by anticipating as best we can the future impacts of climate change. It aims to ensure that the environments we create have the adaptive capacity to absorb climate stresses, improve sustainability aspects, and ultimately ensure future preparedness for the impacts of climate change. This is an intrinsic concept in any emerging scheme, and is at the heart of the plans for the Site.
- 3.4 'Designing with climate in mind' encompasses both mitigation and adaptation strategies. The mitigation strategies are aimed at reducing GHG emissions. Adaptation strategies focus on reducing the vulnerability and risks generated by climate change and, for the specific case of the building infrastructure, are aimed at strengthening the resilience of buildings.
- 3.5 Strategies to mitigate the impact of development on Climate Change primarily focus on limiting greenhouse gas emissions by:
- Shifting away fossil fuel transport and encouraging the electrification of transport;
 - Improving construction processes;
 - Encouraging the electrification of heating;
 - Increasing the efficient use of energy, water and other resources;
 - Reducing resource depletion and pollution of natural resources such as water and raw material;
 - Considering the impact on natural capital, biodiversity and geodiversity; and
 - Minimising other forms of local and wider pollution.
- 3.6 Climate adaptation strategies looking at increasing resilience and reducing vulnerability and risks may include:
- Designing buildings that aim to reduce the potential risk of overheating with future temperatures rising.
 - Designing a masterplan that reduced the urban heat island effect by considering soft landscaping and albedo effect of materials selected for building facades.
 - In the context of water scarcity, designing buildings that promote efficient waster use through efficient water fittings (e.g. low-flow taps), water reduction (e.g. dual flush toilets) and installation of rain harvesting and/or re-use/recycling greywater.



- Inclusion of sustainable urban drainage systems that can withstand the future anticipated patterns of precipitation and potential increased flood risk.

3.7 Climate impacts relating to flood risk and water supply are covered within Chapter 2: Water Management, this chapter focussing on Net Zero Carbon. Climate mitigation related to biodiversity and geodiversity, transport and environmental net gain are covered in Chapters 6, 18 and 9 respectively.

Potential for Baseline Changes by 2027

3.8 The baseline position is not anticipated to change significantly by 2027, as climate change is looking to predict and plan for future changes rather than focussing on the present day. However, throughout the masterplan process the latest climate change predictions, guidance, legislation, and technology will be taken into account, to mitigate these potential effects and ensure that a robust scheme is developed.

Management within the Future Masterplan

- 3.9 The development of the Site will target achieving Net Zero Carbon emissions (embodied and operational) for the built environment, as defined at the time of procurement, construction and operation. Alongside meeting the Royal Institute of British Architects (RIBA) Sustainable Outcomes and RIBA 2030 Challenge, and the UKGBC 'Net Zero Carbon: A Framework Definition' (2019), this aligns with Greater Cambridge's Big Themes of Climate Change and the declaration of a climate change emergency by both Councils in 2019.
- 3.10 The GCLP First Proposals require, under the title 'Net Zero Carbon Buildings – construction', *'residential developments of 150 homes or more and non-residential development of 1,000 m² or more calculate whole life carbon emissions through a nationally recognised Whole Life Carbon Assessment and demonstrate actions to reduce life-cycle carbon emissions. This should include reducing emissions associated with construction plant'*.
- 3.11 Climate Change, Policy CC/NZ: Net zero carbon new buildings – sets out the levels of energy use that will be allowed for new development, how [low carbon fuels/ zero fossil fuels and] renewable energy should be used to meet that energy need, and how whole-life carbon emissions (emissions associated with constructing buildings) should be taken into account. Notably, proposals should generate at least the same amount of renewable energy (preferably on-plot) as they demand over the course of a year.
- 3.12 Climate Change, Policy CC/DC: Designing for Climate Change – sets out how the design of developments should take account of our changing climate, including how passive design should take priority over mechanical and active cooling mitigate the risk of overheating.
- 3.13 Climate Change, Policy CC/RE: Renewable energy projects and infrastructure – aims to control how renewable energy generation projects and associated infrastructure should be planned and designed.



- 3.14 Infrastructure, Policy E/EI: Energy infrastructure masterplanning – sets out the requirements for energy infrastructure to support development. Notably, energy masterplans should include an assessment of the capacity of infrastructure to support the development, any necessary reinforcements and the approach to energy provision to support net zero carbon development, smart energy management to reduce peak loads and greenhouse gas emissions and the electrification of transport giving consideration to site-wide approaches.
- 3.15 Infrastructure, Policy E/ID: Infrastructure and delivery – sets out how necessary infrastructure to support development should be delivered.
- 3.16 Infrastructure, Policy E/DI: Digital infrastructure – sets out how developments should contribute to Greater Cambridge's requirements for broadband, mobile phone and smart infrastructure.
- 3.17 Albeit at a very early stage, the framework is being developed with consideration of the following opportunities:
- Layout, including grid orientation and spacing
 - Massing, daylighting, and natural ventilation
 - Overheating and thermal comfort
 - Energy efficiency (fabric and systems), energy storage and recycling
 - Renewable energy generation, storage and management
 - Site-wide low carbon energy strategy
 - All-electric energy (fossil-fuel free on-site)
 - Electric vehicle charging points
 - Optimised structures, materials efficiency and waste reduction
 - Maximised use of recycled material
 - Low carbon material, structures and infrastructure
 - Limited grey infrastructure
 - Demountable structures (design for deconstruction)
 - Measure whole life carbon emissions through design, procurements and construction
 - Monitoring infrastructure, periodic rating and public disclosure of energy use and emissions
 - Material passporting of building elements, buildings and infrastructure

It is however recognised that residual carbon emissions are still expected, for which a robust offsetting strategy will be developed. Aspects for consideration currently include off-site renewable generation (e.g. wind farms) and/or carbon sequestration schemes such as carbon forestry, grassland, and fenland restoration. The strategy will give preference to local offsetting.

- 3.18 The offsetting strategy will align with the principles outlined by the UKGBC 'Renewable Energy Procurement & Carbon Offsetting: Guidance to net zero carbon buildings' (March 2021) and the new UK Net Zero Carbon Standard (under development). The former guidance outlines in eight key principles to safeguard the environmental integrity, or 'quality' of the carbon offset credit. These include a requirement for the offsets to be real, avoid leakage, be measurable, permanent, additional, independently



verified and unique, and avoid social and environmental harm. Carbon offsets can be procured via existing offsetting standards that have clear and transparent governance, by adhering to the 8 principles above and demonstrated through carbon credits documentation.

4. Noise and Air Quality Emissions

Outline of Baseline Constraints

Noise

- 4.1 Noise can have a significant impact on public health and on quality of life. Proposed developments can be constrained by the future baseline noise climate impacting upon introduced sensitive receptors as well as noise impacts of the development upon existing and introduced receptors.
- 4.2 The current baseline includes road and rail traffic, in addition to aviation noise from the airport itself, the latter of which will cease following the relocation of all airport operations to Cranfield Airport. The airport is currently mainly used for the maintenance, repair and overhaul of military aircraft and is also available for corporate and private use, including flying schools, however there are currently no publicly accessible scheduled flights. In that respect, aviation noise from the airport, the noise climate encompasses occasional aircraft movements, occasional engine ground running noise in the ground running enclosure (GRE) and light industrial noise from aircraft maintenance activities.

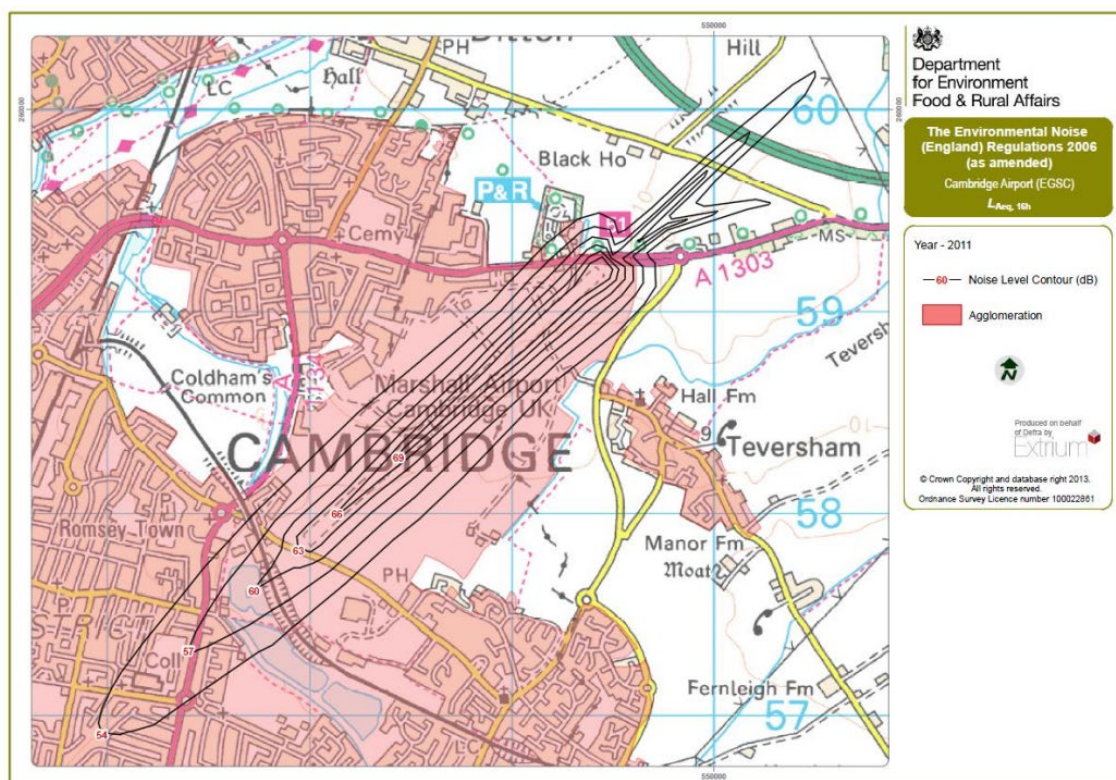


Figure 4.1: Strategic noise mapping daytime noise exposure – dBLAeq,16h

- 4.3 Air noise contours for the existing airport are shown in Figure 4.1. The figure is based on round 2 strategic noise mapping (2011) conducted on behalf of Defra in respect of the Environmental Noise (England) Regulations 2006 (as amended). These contours represent the most recent known modelling for the airport.

- 4.4 A ground noise contour from the aircraft ground running enclosure (GRE) at Cambridge Airport (Planning Permission References 16/2212/FUL and S/3591/16/FL) is shown in Figure 4.2. The figure was taken from the planning application submission in support of the development and represents noise emissions from typical engine testing averaged over a 12 hour period. Notably, a number of additional noise contours are included within the ES, with aircraft types disaggregated, assessed over shorter time periods and both inside and outside the GRE. Importantly it remains necessary for aircraft to conduct ground runs outside of the GRE on rare occasions. Consequently, the baseline noise conditions related to ground running are quite complex and variable.

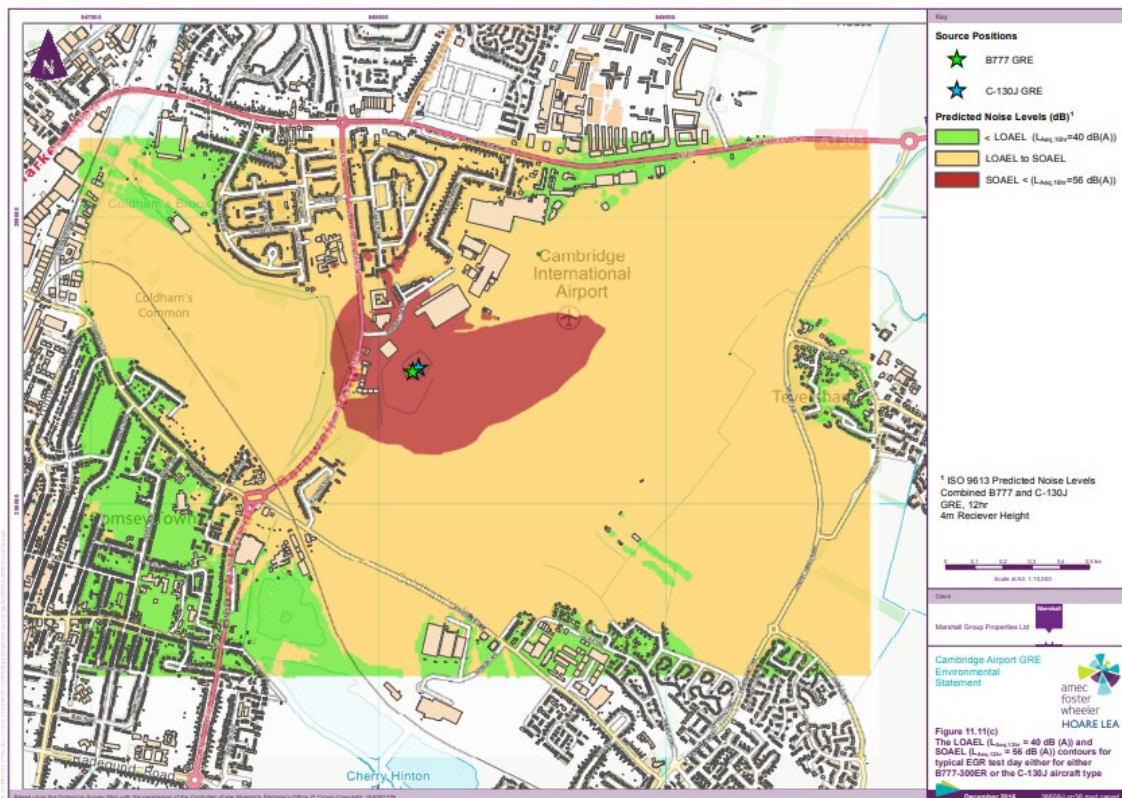


Figure 4.1: Low Observed Adverse Effect Level (LOAEL) and Significant Observed Adverse Effect Level (SOAEL) noise exposure – $dB_{LAeq,12h}$

- 4.5 Transportation noise sources are shown in Figure 4.3. The figure is based on round 3 strategic noise mapping data conducted on behalf of Defra in respect of the Environmental Noise (England) Regulations 2006 (as amended). The noise exposure scale is presented in terms of risk criteria proposed in ProPG: Planning & Noise, Professional Practice Guidance on Planning & Noise 'New Residential Development' (ProPG, 2017).
- 4.6 The figure includes the noise contributions from the A1303 (Newmarket Road) to the north, the Ipswich to Ely (Cambridge branch) railway line to the south and the A1134 (Barnwell Road) to the west. The strategic noise mapping however excludes smaller roads, with the baseline also likely to be influenced by Airport Way to the east and Coldhams Lane to the south.

- 4.7 Figure 4.3 below presents daytime road traffic noise levels from primary roads in isolation of any other noise sources. It therefore represents the levels of noise that would be anticipated in the absence of aviation noise from Cambridge Airport.

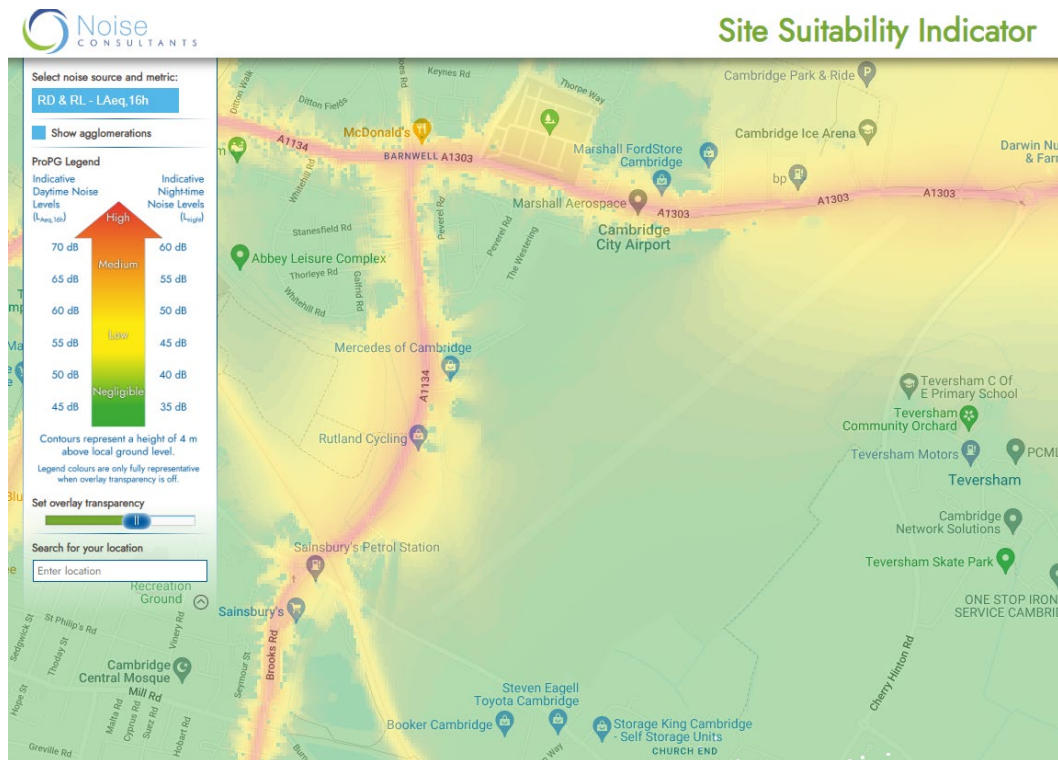


Figure 4.3: Strategic noise mapping daytime noise exposure – $dBL_{Aeq,16h}$

- 4.8 Figure 4.4 below likewise presents night-time road traffic noise levels from primary roads.

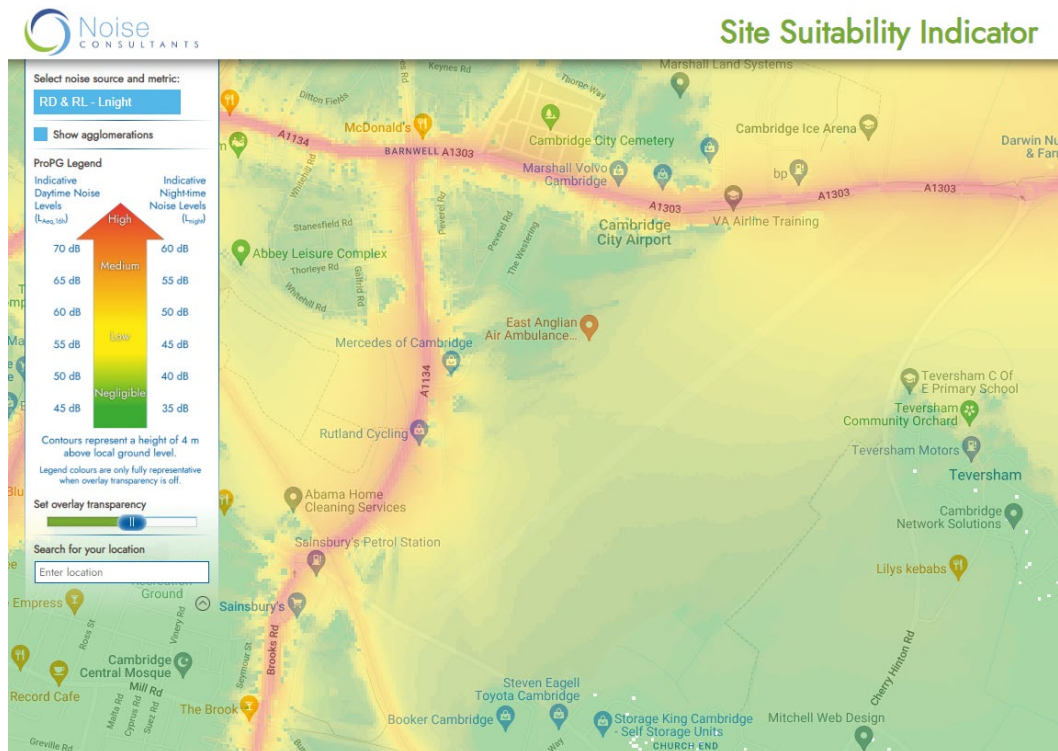


Figure 4.4: Strategic noise mapping night-time noise exposure – $dBL_{Aeq,8h}$

4.9 In addition to road traffic noise, it is expected that some commercial uses outside the red line boundary would be retained as follows:

- North of Newmarket Road (various car dealerships);
- Rosemary Lane (Nanna Therapeutics etc);
- Coldhams Lane (Booker Cash and Carry and Hanson Ready Mix Concrete);
- Barnwell Road and Barnwell Drive (see Figure 4.5).



Figure 4.5: Commercial premises located to the west of the existing airport

Air Quality

- 4.10 Air quality can have a significant impact on public health, both on mortality, morbidity and on quality of life.
- 4.11 The main air pollutants of concern related to road traffic emissions are nitrogen dioxide and fine particulate matter (PM₁₀ and PM_{2.5}) and the predominant source of emissions of these pollutants in the local area is road traffic.
- 4.12 Cambridge Airport is located near to an Air Quality Management Area (AQMA) that has been declared by Cambridge City Council for exceedances of the annual mean nitrogen dioxide objective which is largely attributable to emissions from road traffic. An AQMA has also been declared by South Cambridgeshire District Council along the A14 corridor between Bar Hill and Milton. Although PM₁₀ from road traffic is a relevant pollutant within this AQMA and was included in 2008, the modelled PM₁₀ boundary is smaller and inside the NO₂ boundary, so the NO₂ boundary is the adopted one.
- 4.13 Defra's roadside annual mean nitrogen dioxide concentrations which are used to identify and report exceedances of the EU limit value, do not identify any exceedances

within the vicinity of the Site. As such, there is considered to be no risk of a limit value exceedance in the vicinity of the proposed development by the time that it is operational.

- 4.14 The operation of Cambridge Airport does generate emissions of air pollutants, principally nitrogen dioxide and fine particulate matter. There is also a low risk of odour impacts from aircraft testing in the ground run enclosure. However, it is road traffic that is currently travelling to and from the airport, as opposed to emissions from aircraft and other airside operational activities, that has most potential to affect air quality in the area immediately around the airport, including potentially, within the AQMAs.

High Level Conclusions

Noise

- 4.15 In respect of the future baseline noise climate impacting upon introduced sensitive receptors, based on Figure 1, constraints are likely to be modest for the majority of the Site with some areas close to roads requiring further consideration.
- 4.16 In respect of noise impacts of the development upon existing and introduced receptors, constraints will be dependent upon the proposed uses and spatial relationship. Therefore, the noise impacts of the Site masterplan will require detailed consideration as part of any future planning application. It will be necessary to demonstrate that the development proposals do not have a significant adverse impact on noise.

Air Quality

- 4.17 The air quality impacts of the Site masterplan will require detailed consideration as part of any future planning application. It will be necessary to demonstrate that the development proposals do not have a significant adverse impact on air quality.

Baseline Changes by 2027

Noise

- 4.18 There is the potential for the baseline noise climate in 2027 to deteriorate due to committed schemes being implemented around the Site and other developments coming forward, which is likely to increase road traffic (albeit such schemes would need to demonstrate that local noise impacts are acceptable).

Air Quality

- 4.19 During the planning phases of the Site it is possible that air quality objectives or targets may be tightened, and the evolution of the masterplan will need to take this into consideration. For example, in March 2022, Defra began consultation on new targets for PM_{2.5} concentrations in England. One proposed target is to achieve PM_{2.5} concentration of 10 µg/m³ at relevant national monitoring sites by 2040. This would be accompanied by a target to reduce overall population exposure to PM_{2.5}, which will



be assessed by national government using its own measurements. If adopted, these targets will apply to national government; it is not yet clear how these will apply to local government and, as such, are not considered further in this assessment.

- 4.20 Measures to reduce pollutant emissions from road traffic are principally being delivered in the longer term by the introduction of more stringent emissions standards, largely via European legislation (which is written into UK law). Air quality across the UK is generally improving and is forecast to continue improving into the future owing to measures to reduce emissions from all combustion sources including road traffic. The Government has announced that the phase-out date for the sale of new petrol and diesel cars and vans will be brought forward to 2030 and that all new cars and vans must be fully zero emission at the tailpipe from 2035. If these ambitions are realised, then road traffic-related NO_x emissions can be expected to reduce significantly over the coming decades and ambient air quality will improve further.
- 4.21 Therefore, by the late 2020s (~2027), local air quality is likely to have improved from the current baseline (2022) and is unlikely to be a significant constraint to the development of the Site.

Mitigation Required

Noise

- 4.22 Through design evolution the minimisation of the development's impact on the noise climate and the impact of the future baseline upon introduced sensitive receptors will be considered. In respect of off-site receptors, mitigation of direct impacts such as building services noise, will need to consider noise control at source, noise barriers and set back distances from receptors. In respect of introduced residential receptors this would also include enhancements to the building envelope to achieve suitable internal noise levels and noise barriers around garden areas as appropriate.
- 4.23 In respect of off-site receptors, mitigation of indirect impacts such as road traffic noise, may include encouraging active modes of transport such as walking and cycling as well as increasing public transport mode-share.
- 4.24 Importantly, the ethos of the proposed development will be to minimise transport-related emissions through the use of public transport and active travel. A proportion of the development will be car free, with parking located to the periphery of the Site and green infrastructure being used where appropriate to screen properties adjacent to roads.
- 4.25 Multidisciplinary design workshops will be undertaken to shape and refine the indicative masterplan to optimise residential amenity.



Air Quality

- 4.26 In the evolution of the Site masterplan, it has been recognised that further action should be taken to minimise its impact on local air quality. This includes design-based measures that are incorporated into the masterplan to support maintaining and improving local air quality, both in terms of managing emissions, and also in managing receptors that could be exposed to poor air quality.
- 4.27 Such measures will include encouraging active modes of transport such as walking and cycling as well as increasing public transport mode-share. The whole ethos for the proposed development of the Site will be to minimise emissions to air through the use of public transport and active travel. The vision for the Site aspires to increase the number of active travel only streets that will occur within the development, with parking proposed on the periphery of the Site. Green infrastructure will be used where appropriate to provide separation between site users and vehicles.
- 4.28 The provision of suitable charging infrastructure will also support the increased uptake of low emission vehicles.

Implications for a Future Masterplan

Noise

- 4.29 With the incorporation of effective noise mitigation measures, it is unlikely the noise impacts of the future masterplan will be significant, and thus noise is unlikely to be a constraint to development of the Site.
- 4.30 Importantly, the timing of baseline noise surveys should be carefully considered, however it is noted it should be possible to establish future baseline conditions in the short term, even with the airport in operation. Furthermore, the development should seek to build in tranquil areas which people can use to support their well-being.

Air Quality

- 4.31 The air quality assessment will need to address any reduction in road traffic and emissions associated with the cessation of airport activities in the late 2020s, followed by a possible increase in road traffic numbers and associated emissions, during the construction and operation of the Site. With the incorporation of effective mitigation measures to reduce private car use and reduce emissions per vehicle, it is unlikely the air quality impacts of the future masterplan will be significant, and thus air quality should not be a constraint to development of the Site.



5. Land Conditions / Constraints

Baseline Ground Conditions

- 5.1 This assessment provides a basic overview of the geological, hydrology and hydrogeological setting of the Site based on freely available information and partly informed by previous investigations held on file for the Site. The assessment has considered risks from land contamination but not a detailed review of the history of the Site in terms of land use, and is limited to identifying high level constraints to construction and the presence of contamination as identified in the Mott MacDonald RAG Assessment from November 2020.

Made Ground

- 5.2 Some areas of raised ground forming noise attenuation features are known within the Site's boundary. During the construction of the new ground running enclosure and soil materials were moved under a materials management plan. This should ensure that soils are suitable for use in that area of the Site and are thus unlikely to present a potential future contamination source. Two further areas of significant made ground are present, the historical ground running enclosure to the north adjacent to Newmarket Road and to the east of the Site in the vicinity of Airport Way near an old fire training ground. These are, as far as the available records show, of unknown constituents. Some made ground is anticipated beneath existing structures and areas of historical construction. See Figure 5.1.



Figure 5.1: Anticipated areas of Made Ground

Superficial Geology

- 5.3 Superficial (drift) deposits are largely absent across the majority of the Site however River Terrace Deposits are noted within the British Geological Survey ('BGS') records as being present in the northern part of the site area stretching from the eastern end of Barnwell Drive, across the main hangar space and along the northern boundary of the Site with Newmarket Road. BGS records indicate that these are a mixture of granular sand and gravel deposits with variable proportions of clays and silts. See Figure 5.2.

Solid Geology

- 5.4 The Site is generally underlain by the West Melbury Marly Chalk at the base of the Lower Chalk. Projects undertaken by Stantec (formerly Peter Brett Associates) on the Site have identified that the Lower Chalk at this elevation is described as a structureless chalk of gravelly silt and alternatively described on other logs in the area as a siltstone, mudstone or claystone. The Lower Chalk is known to be between 10 and 15m thick and underlain by Gault Clay. In areas there is record of a layer of the Cambridge Greensand found between the lower chalk and the Gault Clay, a phosphate rich sand deposit. See Figure 5.2.



Figure 5.2: Geology

Hydrology

- 5.5 Groundwater is known to be shallow in the area within the upper 2m of the Site – although dependant on the local ground elevation and topography. See Figure 5.3.
- 5.6 There is a principal aquifer underlying the Site however not within a Source Protection Zone or Water Safeguarding Area. See Figure 5.3.

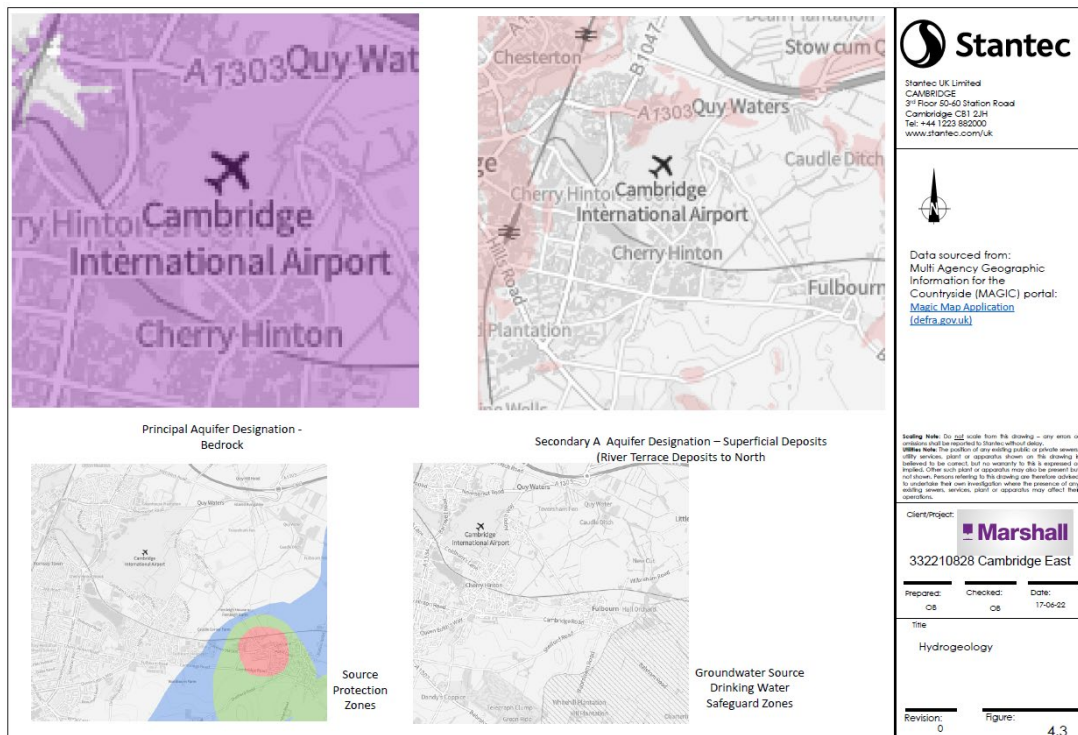


Figure 5.3: Aquifer designation and ground water

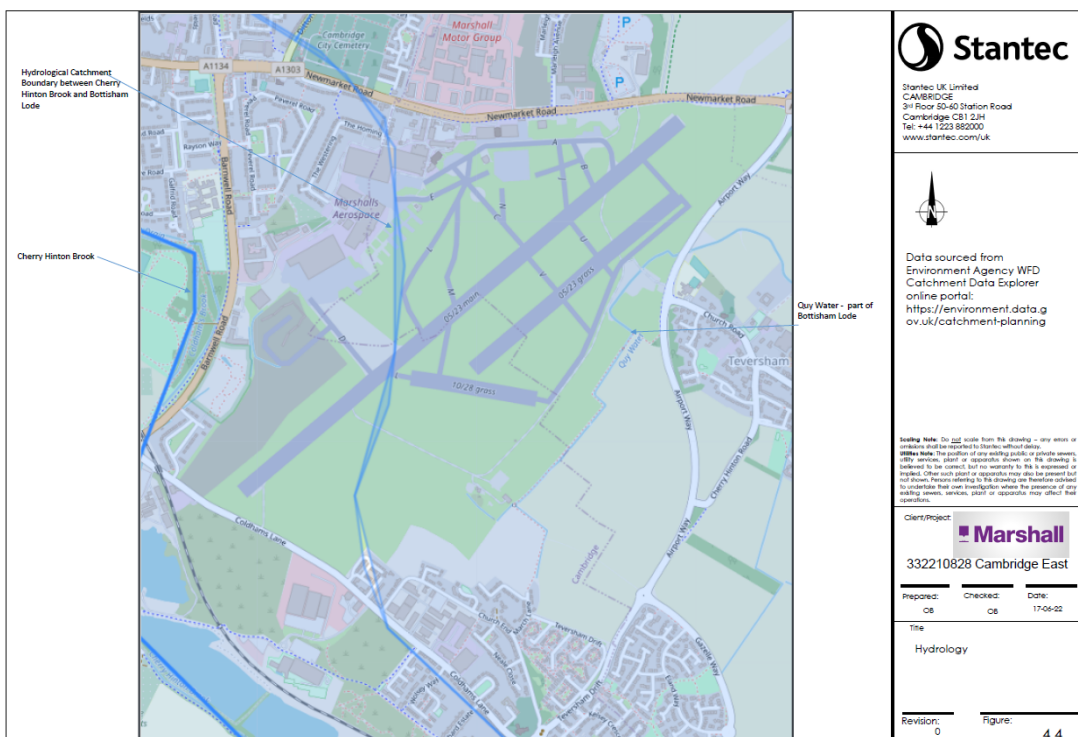


Figure 5.4: Hydrology

- 5.7 A network of shallow ditches exist to the south and east of the Site flowing towards the north east towards confluence with the Cam in the vicinity of Waterbeach. The western half of the Site is within the catchment of the Cherry Hinton Brook which also flows to the north where it confluences with the Cam in the vicinity of Chesterton. River and ditch flow are considered to be influential on groundwater flow direction within the Lower Chalk/River Terrace Deposits. See Figure 5.4.

Unexploded Ordnance

- 5.8 A UXO detailed threat assessment for the Springstead Village site (located to the south and east of the Site) identified a majority Medium Risk level for the majority of the Site with an area of Medium High Risk. The currently assessed risk level for the Site is currently unknown based on freely available information however it is considered likely that the Site will be given a Medium Risk level.

Contamination

- 5.9 A separate submission has been presented, issued by Mott MacDonald in November 2020, presenting a Red Amber Green (RAG) assessment in respect of contamination across the proposed development area. The report is presented in Appendix 4.1 in full and should be referred to in its entirety. To summarise the Site was split into 6 plots which were considered at the time. This summary only relates to Plot A, the airfield site, as presented on the drawings associated with this chapter.
- 5.10 The report identifies a number of liquid storage facilities both underground (now disused) and above ground. The report also details out the differing land uses across the airfield site and defines them a risk ranking of red, amber or green.



Figure 5.5: RAG Assessment – contamination

- 5.11 The report summarises that of the 472 hectare area of Plot A only 14.8 hectares is defined as red, 67.9 ha as amber and the remaining 390 ha as green (predominantly as grassed areas).

- 5.12 The types of contaminants that are likely to be encountered in the amber and red areas were summarised in the RAG report and comprise hydrocarbons from fuel storage, solvents from aircraft maintenance and metals from paints. These are all common contaminants associated with airfields and general industry and remediation methods are well known and proven for these contaminants. The report summarised likely contaminants and remediation or mitigation measures that have enabled development on similar sites in terms of land use and environmental setting. This confirms that, if encountered, the risks can be effectively mitigated to support development in all areas of the Site.
- 5.13 More complex contaminants are known to be present in the area of the fire training grounds (PFAS). These are more difficult to treat as they are very persistent in the environment and are highly mobile. These chemicals are present in older firefighting foams which were banned from production in the mid-2000s and were regularly used for fire training since the mid-1960's, where stock is still held, these materials are still allowed, under exemption to be stored on sites.
- 5.14 Marshall has completed PFAS groundwater remediation in this area, to satisfy a planning condition for the Springstead Village development. This was agreed with the Environment Agency and incorporates the installation of a porous activated carbon slurry barrier injected into the sub strata, the location of which is shown on Figure 5.6.

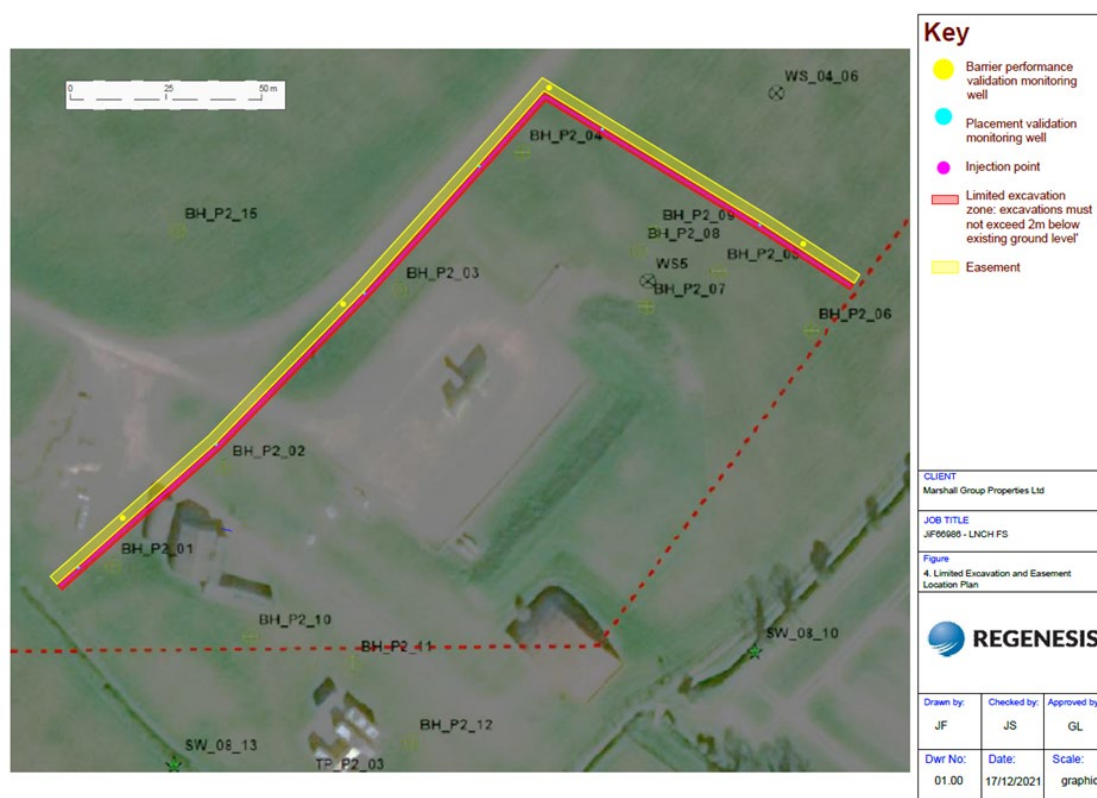


Figure 5.6: PFAS groundwater remediation

- 5.15 This barrier and its location would present a constraint to construction as it is likely that it would need to remain undisturbed for the duration of treatment, until regulatory sign off. The Granular Activated Carbon barrier absorbs the PFAS chemicals, and other

absorbable groundwater constituents, preventing it from migrating through the groundwater body and may need to be replaced/ recharged when the absorption capacity of the activated carbon has been exhausted. The previous investigations at the Springstead Village development, undertaken by Stantec (formerly Peter Brett Associates) to the south and east of the Site found three former fire training areas impacted by PFAS contamination. These assessments also concluded that historical landfills on Coldhams Lane to the south west of the of the Site were not impacting the Springstead Village site, however given the prevailing groundwater flow directions there is potential for off-site impact on the far north western area of the Site borne by uncontrolled groundwater flow from the old landfills.

- 5.16 The report also details that the area to the north of Newmarket Road (the former Marshall North Works and now known as Marleigh) is subject to remediation of ground gas and chlorinated solvents and hexavalent chromium within groundwater using reductive dichlorination techniques and soil beneath the Site by a variety of techniques. These include the provision of a passive venting trench to act as a preferential pathway to venting of shallow groundwater and soil borne vapours. It is probable that some contamination is present within the area of River Terrace deposits is via back diffusion or as a source of the contamination.

High Level Conclusions

- 5.17 The ground conditions prevailing across the Site, based on the data freely available and that from discrete areas of historical investigation held on file by Stantec, are not considered to present significant constraint to development notwithstanding the presence of the permeable reactive barrier for remediation of PFOS around the current Fire Training Ground.
- 5.18 Standard construction techniques should be suitable for low rise development, with piling or pad foundations for taller structures (if suitable). However due consideration will be required of the relatively shallow groundwater which will need to be managed during construction activities. Piling activities will need to consider potential contamination risks to the underlying Principal Aquifer although these will not be extensive as the Site is not within a source protection zone.
- 5.19 Previously undertaken shallow infiltration assessment in proximity of the Site within the West Melbury Marly Chalk Formation recorded infiltration rates of $3.11 \times 10^{-6} \text{m/s}$. This indicates there is potential on-site to use shallow infiltration drainage solutions (SuDS), however this will be constrained by the relatively shallow groundwater table.
- 5.20 Contamination on the majority of the Site remains generally un-investigated to a large degree as far as the records available indicate. However, it is not envisaged that extensive remediation will be required at this time, although there is potential for issues such as those identified on the North Works to be identified in due course. These should be readily managed and remediated by existing remediation technologies.
- 5.21 Contamination by radioactive materials remains unexplored on the airfield site which has provided maintenance service to aircraft for many decades where radioactive components were common until the 1960's.



Baseline Position in 2027

- 5.22 It is not anticipated that the geotechnical baseline conditions will change in the period to 2027. Until full intrusive investigations and contamination assessments are conducted it is not anticipated that geoenvironmental conditions will change. Remediation works could be conducted prior to the vacant possession of the Site, where identified as being required, and they could also been delayed until 2027 unless regulatory pressures dictate otherwise.

Mitigation

- 5.23 Should existing noise attenuation bunds (considered to be associated with the existing and former Ground Running Enclosures from the aeronautical operations) and the eastern mounds of made ground be deemed as required within earthworks for the Site, these materials will need to be tested and managed with due consideration of material management plans and the Definition of Waste Code of Practice.
- 5.24 A UXO Detailed Risk Assessment should be undertaken for the Site which will provided information in regard to UXO mitigation requirements.

Future Masterplan Implications

- 5.25 Surface water drainage will need to be carefully considered as part of the masterplanning process.
- 5.26 The Masterplan will also have to consider the passive remediation of PFAS in the central southern area of the Site at the current Fire Training Ground and access requirements required for monitoring and maintenance to the permeable reactive barrier over its operational lifetime.



6. Biodiversity and Geodiversity

- 6.1 An ecological desk study, an Extended Phase 1 habitat survey (undertaken on the 8th and 9th February 2022) and a Biodiversity Metric 3.1 Calculation have been undertaken, to identify the baseline constraints to, and opportunities for, development of the Site. Note that the survey was completed in winter, and therefore outside of the optimal period for undertaking Phase 1 habitat surveys and in particular biodiversity net gain (BNG) condition assessment. A follow-up survey was therefore undertaken on 11th July 2022 to clarify the condition of identified habitats for the purposes of BNG, with the results confirmed with the Council Ecologist (Guy Belcher) during a site visit on 11th August 2022.
- 6.2 The desk study identified any protected species, local wildlife sites, and statutory designated sites in the vicinity of the Site; the Site survey identified any important habitats and protected species present (or likely to be present) on-site; and the Biodiversity Metric 3.1 Calculation identified the value of each of the habitats present on-site, as well as for the Site overall, measured in terms of biodiversity units. Comparing the overall biodiversity units for the Site baseline with those for the post-development design will enable BNG to be calculated.

Outline of Baseline Constraints

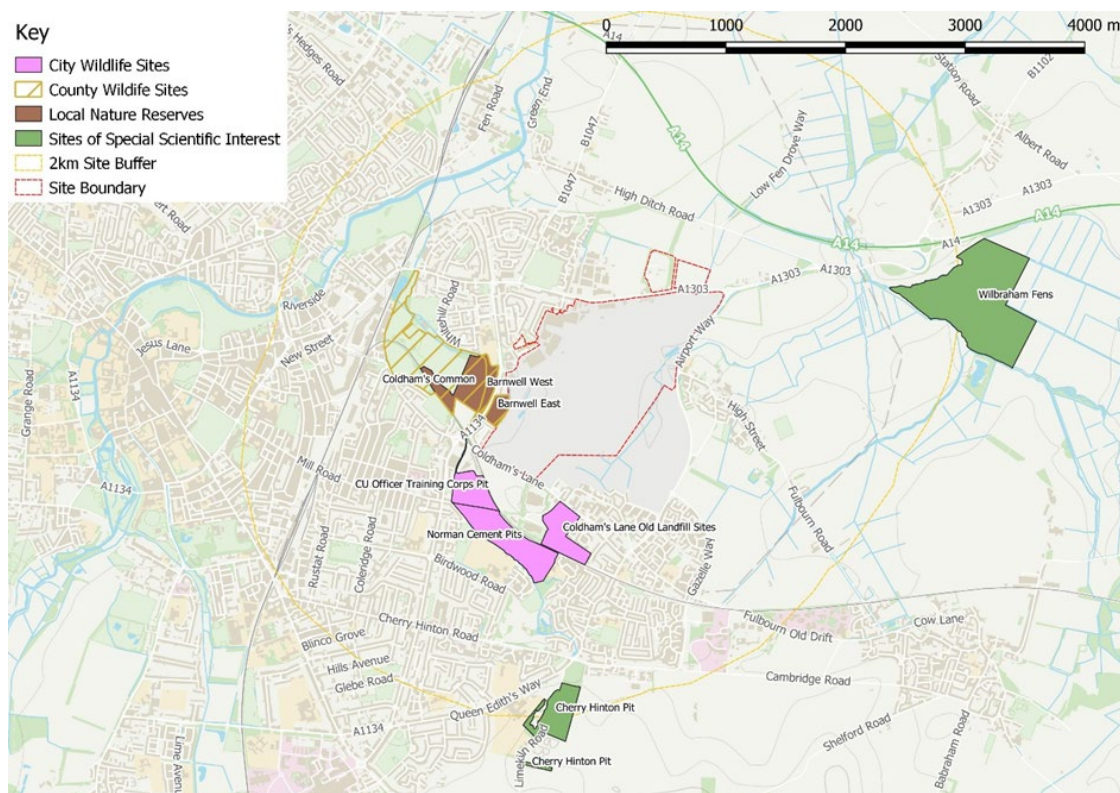


Figure 6.1: Key designated sites in the vicinity of the Site

- 6.3 There are two Sites of Special Scientific Interest (SSSI) within 2km of the Site boundary: Cherry Hinton Pit located 170m to the south, and Little Wilbraham Fen 1.5km to the east. There are also 37 non-statutory sites within 2km of the Site boundary: nine Local Nature

Reserves (LNR), six County Wildlife Sites (CWS), 22 City Wildlife Sites (CiWS), and two Protected Road Verges (PRV). The closest of these is Barnwell East LNR/CiWS, located immediately west of the Site. The SSSIs and the non-statutory sites closest to the Site are shown in Figure 6.1.

6.4 The desk study also revealed records of protected or otherwise notable species occurring within 2km of the Site. These include:

- Amphibians: common frog *Rana temporaria*, common toad *Bufo bufo*, and great crested newt (GCN) *Triturus cristatus*.
- Bats: soprano pipistrelle bat *Pipistrellus pygmaeus*, common pipistrelle bat *Pipistrellus pipistrellus*, Daubenton's bat *Myotis daubentonii*, noctule bat *Nyctalus noctule*, brown long-eared bat *Plecotus auratus*, and serotine bat *Eptesicus serotinus*.
- Birds: lesser redpoll *Acanthis cabaret*, brambling *Fringilla montifringilla*, Cetti's warbler *Cettia cetti*, hobby *Falco subbuteo*, kingfisher *Alcedo atthis*, peregrine *Falco peregrinus*, red kite *Milvus milvus*, Eurasian skylark *Alauda Arvensis*, house sparrow *Passer domesticus*, lapwing *Vanellus vanellus*, spotted flycatcher *Muscicapa striata*, turtle dove *Streptopelia turtur*, yellow hammer *Emberiza citronella*, common reed bunting *Emberiza schoeniclus*, fieldfare *Turdus pilaris*, merlin *Falco columbarius*, greylag goose *Anser anser*, redwing *Turdus iliacus*, corn bunting *Emberiza calandra*, and starling *Sturnus vulgaris*.
- Flowering plants: Jersey Cudweed *Gnaphalium luteoalbum*, Pennyroyal *Mentha pulegium*, Rampion Bellflower *Campanula rapunculus*, Cornflower *Centaurea cyanus*, Basil Thyme *Clinopodium acinos*, Eyebright *Euphrasia pseudokernerii*, Sea Barley *Hordeum marinum*, and Wild Candytuft *Iberis amara*.
- Mammals: Eurasian badger *Meles meles*, water vole *Arvicola amphibius*, otter *Lutra lutra*, West European hedgehog *Erinaceus europaeus*, harvest mouse *Micromys minutus*, and polecat *Mustela putorius*.
- Reptiles: common lizard *Zootoca vivipara* and grass snake *Natrix Helvetica*.

6.5 The survey undertaken covered the main airfield site (174.68 ha) and two other non-airfield land parcels to north of Newmarket Road (12.04 ha). The habitats present on-site, along with their area or length and biodiversity units (BUs) are listed below, and shown in Figures 6.2 and 6.3.

6.6 Airfield site:

- Poor semi-improved grassland, measuring 134.89 ha and 269.78 BUs.
- Plantation mixed woodland, measuring 0.17 ha and 0.68 BUs.
- Amenity vegetation, measuring 0.10 ha and 0.20 BUs.
- Sustainable urban drainage feature, measuring 0.37 ha and 1.48 BUs.
- Native hedgerow, measuring 1.51 km and 6.04 BUs.
- Native hedgerow with trees, measuring 0.73 km and 7.40 BUs.
- Native species-rich hedgerow, measuring 0.72 km and 5.76 BUs.
- Line of trees, measuring 0.33 km and 0.66 BUs.
- Ornamental hedge, measuring 0.58 km and 0.58 BUs.



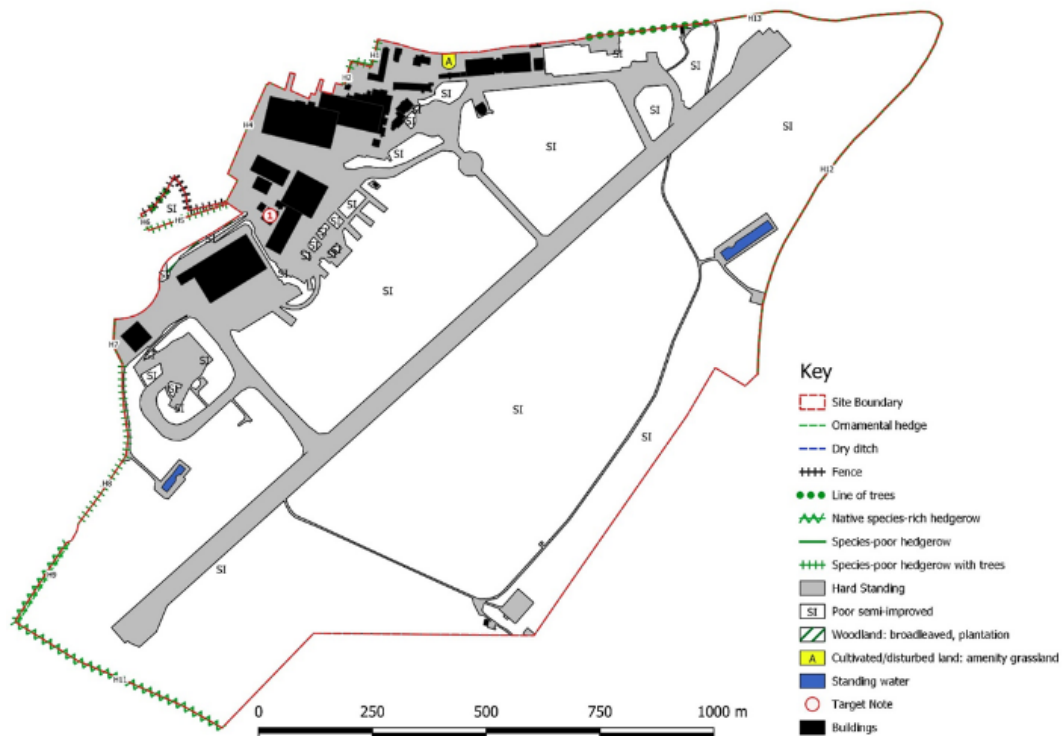


Figure 6.2: Extended Phase 1 Habitat Plan – airfield site

6.7 Non-airfield land parcels:

- Poor semi-improved grassland, measuring 5.17 ha and 20.68 BUs.
- Semi-natural mixed woodland, measuring 1.93 ha and 15.44 BUs.
- Amenity vegetation, measuring 0.74 ha and 1.48 BUs.
- Native hedgerow, measuring 0.40 km and 0.80 BUs.
- Native species-rich hedgerow, measuring 0.15 km and 1.98 BUs.



Figure 6.3: Extended Phase 1 Habitat Plan – non-airfield land parcels

- 6.8 The site survey revealed the following in terms of protected or notable species:
- Amphibians: there are no waterbodies on Site which are suitable for great crested newt.
 - Bats: due to the management of the airfield there is very little opportunity for commuting and foraging bats on this part of the Site, except in the west where the hedgerows create corridors to local wildlife sites. The non-airfield land parcels have a more diverse habitat make up and therefore greater potential to provide foraging opportunities for bats. There are also two trees in this part of the Site that have the potential to support roosting bats.
 - Birds: the Site provides opportunities for nesting and breeding birds within the hedgerows and trees.
 - Mammals: a single outlier badger sett was found during the survey. The hedgerows present on Site could provide habitat for hedgehogs. The ditches on Site do not provide habitat opportunities for otter or water vole.
 - Reptiles: The semi-improved grassland and hedgerows on Site provide suitable habitat for reptile species.
- 6.9 The baseline biodiversity units present on Site have been calculated by inserting habitat data recorded during the Site survey into the Biodiversity Metric 3.1 Calculation tool. The results of this are presented below.
- 6.10 Airfield site:
- Habitat units = 272.48
 - Hedgerow (linear) units = 20.44
- 6.11 On the airfield, nearly all of the habitat units come from the poor semi-improved grassland, with the rest comprising a small amount of plantation woodland. Note that the grassland was determined as being in fairly poor condition throughout during the winter survey; however, this was modified following the subsequent survey in July 2022 to poor condition. The condition assessment has been updated and agreed during an on-site meeting with Council Ecologist Guy Belcher 11th August 2022.
- 6.12 Non-airfield land parcels:
- Habitat units = 37.60
 - Hedgerow (linear) units: 2.78
- 6.13 The majority of the habitat units associated with the non-airfield land parcels come from the poor semi-improved grassland and the semi-natural mixed woodland that is present.

High Level Conclusions

- 6.14 The hedgerows throughout the Site are of moderate biodiversity value, and provide an ecological network that links the Site to the wider countryside and / or local conservation sites (albeit separated by roads in many cases). Also of importance are the semi natural woodland and other trees on the non-airfield land parcels, due to their age, structural diversity, and presence of standing deadwood.

- 6.15 In contrast, the areas of plantation woodland, grassland and ornamental planting on Site are considered to be of low biodiversity value due to their limited species diversity, often intensive management, and prevalence within the local landscape.
- 6.16 In terms of fauna, the Site provides suitable habitat for a range of protected or otherwise notable species, including bats, birds, reptiles and various mammal species. However, in most cases such habitat is extremely common in the local landscape, and therefore the likelihood of an exceptional diversity of species, more notable species, or a large or locally important population of such species occurring on-site is low.
- 6.17 Based on the outputs of the Biodiversity Metric 3.1 Calculation tool, the airfield is the least biodiverse part of the Site overall, with an average of 1.6 habitat units per hectare, compared to 3.1 habitat units per hectare for the non-airfield land parcels.

Baseline Changes by 2027

- 6.18 Given that this is an operational airport and Marshall's move of its aerospace business is predicated on the granting of planning permission for the development of the Site, it is unlikely that the baseline position will change before vacant possession is achieved.

Mitigation Required

- 6.19 CCC's emerging policy requirement is that developments seek to achieve BNG of circa 20%. As a result, significant consideration will be paid to the development of a green infrastructure strategy for the Site that maximises the benefits of the development for biodiversity. In particular, the green corridor which will stretch from the western boundary of the Site, right to its far eastern boundary, will need to be designed so as to create a mosaic of habitats that will attract a large diversity of species.
- 6.20 In addition to the green corridor, landscaping associated with areas that are largely to be developed will also need to accommodate features and habitats that can attract a rich diversity of biodiversity. In order to seek to achieve the highest levels of BNG at the Site there needs also to be a focus on bringing biodiversity into areas of development. This will have other benefits including in particular bringing people closer to nature.
- 6.21 Even taking the above into account, achieving a level of 20% BNG on site could prove to be difficult. In this event there will be a need to provide off-site BNG, on either areas of land owned by Marshall, or via a commercial BNG unit provider (as are beginning to develop to service the emerging BNG market).
- 6.22 Apart from BNG, more detailed species surveys will be required before any planning application is made. Generally the habitats are considered to be of limited value for supporting protected or otherwise notable species but nonetheless surveys will be needed which may either influence the development's design so that what is found can be retained as part of the development, or in order that a mitigation strategy can be put in place so they are considered appropriately. The surveys that will be required include:

- Bat activity survey;
- Bat roost survey;
- Breeding birds survey;
- Reptile survey;
- Otter and water vole surveys.

Implications for a Future Masterplan

6.23 Certainly what occurs on Site, and in particular to satisfy BNG emerging policy and legislative requirements, will require considerable input to best integrate biodiversity into the development design and most particularly into the green infrastructure design. The ambition will be to embed biodiversity enhancement into the scheme design as much as possible, with the priority being to attain the highest levels of BNG on-site possible. In doing this the ecologists will need to work closely with others responsible for green infrastructure and landscape design to create a coherent and complementary design proposal that maximises the opportunities with regard Site greening.

7. Landscape / Townscape & Views

- 7.1 Bradley Murphy Design Limited (BMD) carried out a high-level Landscape and Visual Capacity Appraisal (LVCA) to identify (in landscape and visual terms) the baseline constraints to, and opportunities for, development of the Site. The Townscape Consultancy has conducted an internal review of this document with specific reference to townscape and heritage considerations.

Baseline Constraints and Opportunities



Figure 7.1: Google aerial photograph, showing interface with surrounding context

- 7.2 The Site lies to the east of Cambridge, between the post war suburbs of Barnwell (to the northwest) and Cherry Hinton (to the south), with the village of Teversham set within an agrarian landscape to the east, along with the green corridor of Coldhams Common directly to the west.
- 7.3 The historic core of Cambridge lies 2km to the west of the Site and is disconnected from the Site by the city's surrounding suburbs. Elevated views towards the Site from the historic core are limited. As stated within the CCC Local Plan (2018), it is only Castle Mound (a locally elevated position in the city centre) that is easily accessible. From this location, the view is focused upon the historic core, with glimpses of the Site in the distance, beyond a well-established treescape and on the periphery of these wide panoramic views of the city.
- 7.4 To the south of the Site, the Gog Magog Hills rise above the landscape, providing distant views over the Cambridge skyline. Views in this area take in the Site as well as Barnwell, Coldhams Common, the historic core of Cambridge, tall buildings around Cambridge Station and those of Addenbrooke's Hospital. As reported in the GCSP Strategic



Heritage Impact Assessment (2021), views are wide and general. They illustrate the contemporary character of the Cambridge periphery and the separation of the Site from the historic core. The airport hangars of Cambridge Airport are clearly visible and commonly characterised as negative elements upon the skyline at the periphery of the city.

- 7.5 The adjacent suburb of Barnwell is largely comprised of 2 storey high residential housing, with large commercial properties – including Cambridge Airport – along its southern and eastern edges. These activities and their associated buildings and external spaces provide a strong influence on the townscape and views along this edge of Cambridge and the eastern approach into the city.
- 7.6 The character of this area is in a state of change, with residential-led development beginning to encircle the Site. To the north of Newmarket Road, the development of Marleigh (consented for 1,300 dwellings with a maximum height of 18m, comprising 3 – 5 storey buildings), and to the south the development of Springstead Village will provide a buffer of built form between the Site from Cherry Hinton (providing 1,200 dwellings with a maximum height of 15m comprising up to 4 storey buildings).

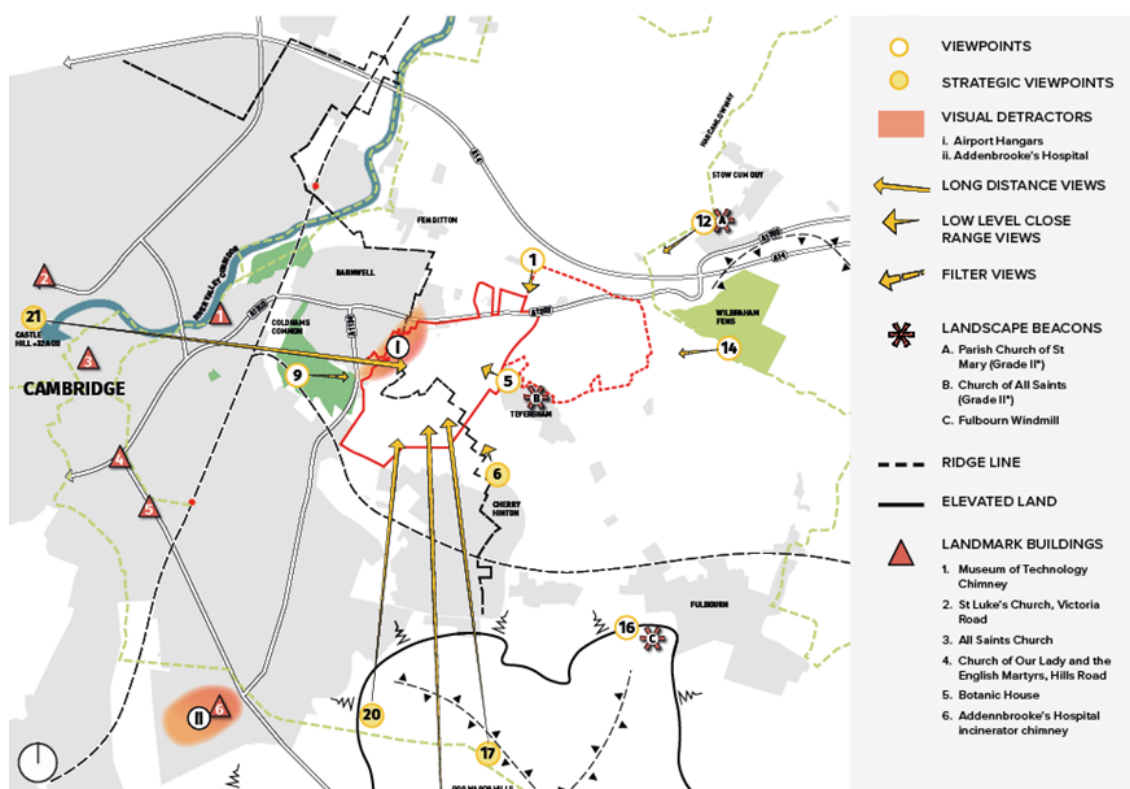


Figure 7.2: Plan extract of the baseline visual context

- 7.7 Built form within the northwest area of the Site is of a larger scale, mass and height to that of the adjacent commercial areas to the north and west – with airport hangars and other large buildings rising to heights of up to 30m, with footprints of up to 1,500 square metres (over 16,000 square feet) and largely painted in various tones of (mostly pale) grey. A number of these buildings are clustered together and are therefore perceived to have a much larger footprint. The existing radar tower, albeit of a smaller footprint, rises further to a height of 38m. The Cambridge Landscape Character

Assessment (2003), Cambridge Inner Green Belt Study (2015), Cambridge Local Plan, and Strategic Heritage Impact Assessment (2021) each report that the hangars are visually detracting and form a negative edge to the city in the east.

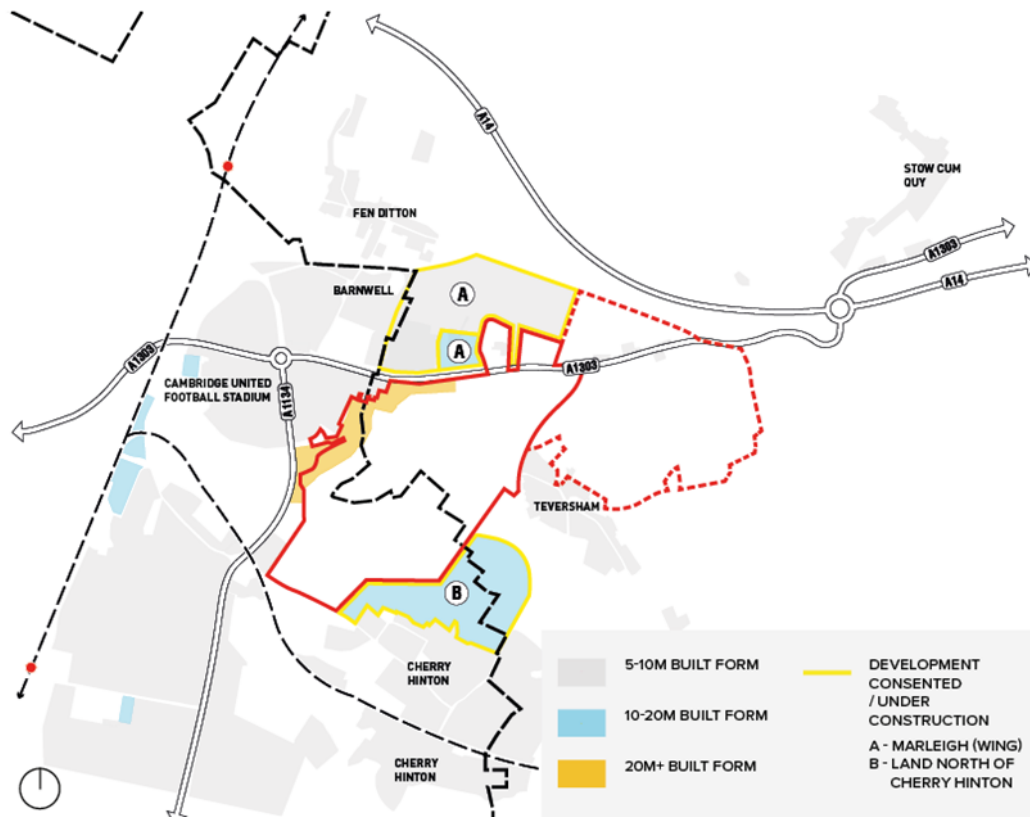


Figure 7.3: Plan extract of the future baseline scale & height

- 7.8 As a functioning airport, the Site largely comprises open areas of grassland and surfaced runway, with these buildings forming prominent features influencing the character of the surrounding landscape, townscape and views – standing proud in views from streets and properties on the eastern edge of Barnwell to the northwest, rising above the tree line when viewed from Coldhams Common to the west and seen clearly in the distance from the Gog Magog Hills to the south.



Figure 7.4: Airport buildings rising above skyline of Barnwell residential properties



Figure 7.5: Airport radar tower rising above Barnwell residential properties



Figure 7.6: Airport buildings seen above tree line at Coldhams Common

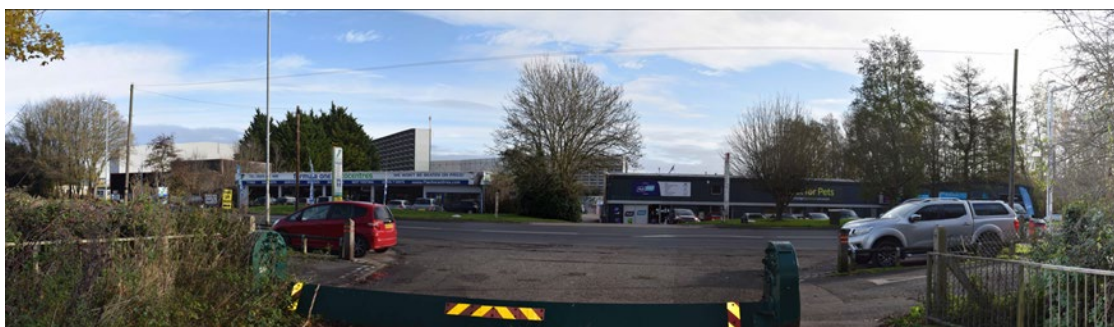


Figure 7.7: Airport buildings seen from Barnwell Road & Coldhams Brook



Figure 7.8: Airport buildings seen from Shelford Road and European Long Distance Route E2 (edge of Gog Magog Hills)



- 7.9 The village of Teversham (the northern part of which is a Conservation Area) lies near to the Site, beyond Airport Way to the east, and forms one of the 'necklace villages' described in the Cambridge Inner Green Belt Study – which are required by policy to remain separate from the edge of the city. It is visually contained by mature trees, and the tower of the Grade II* listed Church of All Saints is obscured during summer and winter months. The Conservation Area extends north of Church Road where there is less visual containment and it is expected that built form would step down towards Airport Way. Landscape mitigation measures will be useful in this area and the agreed location of the green corridor is a pertinent response.
- 7.10 The character of the landscape surrounding the Site comprises the convergence of three separate character types:
- the open landscape of the fenlands to the east and northeast
 - the wooded landscape of the western claylands to the northwest
 - the chalklands landscape to the south and west



Figure 7.9: Illustration of the surrounding green infrastructure influences

- 7.11 There is extensive planning policy of relevance to landscape / townscape and visual matters that will need to be considered as part of masterplan development, relating to:
- the purposes of the Cambridge Green Belt and mitigating the impact of adjacent development
 - responding to context and protecting and enhancing the setting of the city
 - enhancement of the city's skyline and the placement of tall buildings
 - the provision of open space and biodiversity / ecological enhancements
 - protecting and enhancing landscape character
 - protecting existing trees and seeking opportunities to plant new trees, including increases in tree canopy cover as part of urban greening and areas of new woodland

- 7.12 Emerging policy for the Site includes Policy S/CE, which requires retention of: *“a green corridor that runs through the development to link the countryside with Coldhams Common and the heart of Cambridge, that lies within the Green Belt and has a landscaping, biodiversity and recreation function whilst also maintaining the individual identity of Teversham village.”*
- 7.13 With regard to existing landscape features, the vast majority of the Site is comprised of heavily managed open grassland. A managed hedge with occasional trees runs along the east boundary with Airport Way and along much of the north boundary with Newmarket Road. Deciduous native trees and areas of native scrub surround the current Park & Ride and Ice Rink part of the Site, to the north of Newmarket Road, and mature trees continue west along the grassed verge to the south of the road. Barnwell Local Nature Reserve lies directly to the west of the Site, providing a wooded connection beyond to the Coldhams Common Local Nature Reserve.
- 7.14 There is no public access across the airfield site, which acts as an impermeable barrier to public movement. National Cycle Route 51 runs along Newmarket Road from the east, before heading through the existing Park and Ride area and on to the west, toward the River Cam corridor and the centre of Cambridge.

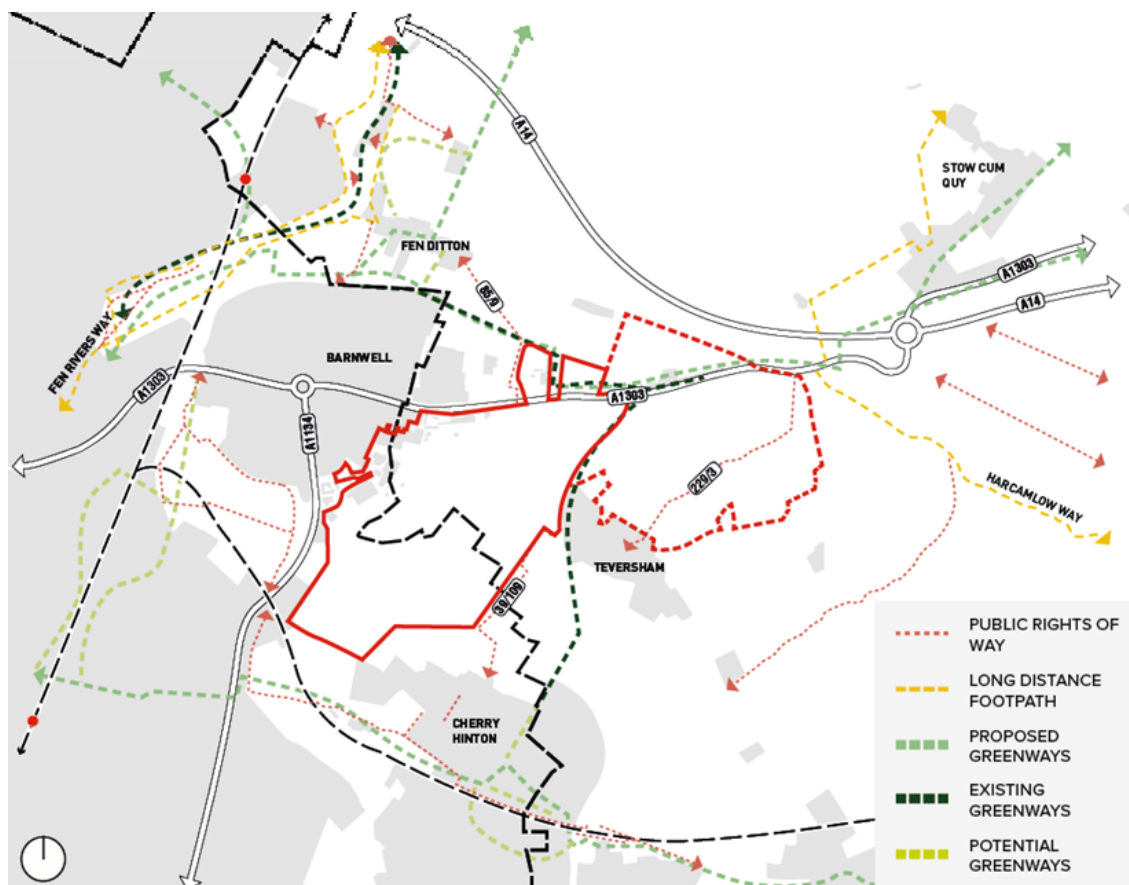


Figure 7.10: Plan extract of the access and movement context

Potential for Influence to Landscape / Townscape and Views

- 7.15 Strategic Views listed in the CCC Local Plan have been assessed by BMD and included within the Evidence Base submitted to GCSP. As with the record of heritage assets, this assessment of viewpoint positions is seen as a working document to be expanded concurrently with project development. There is potential for views of development on the Site from:
- the northern, eastern and southern edges of Teversham – along with direct views toward the Site when looking northwest along Church Road
 - the adjacent residential streets of Barnwell, from and between existing residential properties
 - parts of Coldhams Common, seen through its surrounding tree line
 - the elevated viewpoint of Castle Mound, in the centre of Cambridge
 - the facing edges of new development at Marleigh to the north of Newmarket Road and on Springstead Village
 - the gateway into Cambridge along Newmarket Road
 - parts of the open fen landscape to the east, particularly from public rights of way including long distance footpaths
 - elevated parts of the chalklands landscape to the south, particularly in open views toward Cambridge from the Gog Magog Hills
- 7.16 There is potential for development on the Site to enhance the townscape character of the existing post war suburbs of Barnwell and Cherry Hinton, along with nominal change to the character of the surrounding fenland and chalkland landscape.

Baseline Position by 2027

- 7.17 As noted above, development is currently underway to the north of the Site at Marleigh. This will extend the edge of Cambridge further to the east, expanding areas to the north of the Site. Completed areas of this development and areas currently under construction are visible across the airfield of Cambridge Airport and are influencing the character of the surrounding landscape / townscape.
- 7.18 Construction activities and areas of new built form at Springstead Village north of Cherry Hinton will also extend the edge of this suburb, bringing it closer to the Site and the southern edge of Teversham, albeit with a vegetated buffer provided to the eastern edge of the development – adding to the eastern edge of the Green Corridor required by policy through the Site.
- 7.19 These developments will increase the sense of enclosure to the north and south of the Site, reducing the visual influence of the Site on the existing landscape / townscape and views in these directions by providing new residential properties that will overlook the airfield.

Likely Mitigation Requirements

- 7.20 The height of development on the Site needs to take into account the current context of the following:

- existing areas of taller buildings of the Cambridge Biomedical Campus and Addenbrooke's Hospital, CB1 in central Cambridge, and North Cambridge Station.
- proposed areas of taller buildings around North East Cambridge.
- effects of existing airport hangars upon the Site on the skyline and setting of Cambridge.
- consented proposals for development currently under construction at Marleigh and Springstead Village.
- the influence of existing commercial uses and built form on the eastern and southern edges of Barnwell and Coldhams Common (including the existing built form on the northwest of the existing airport) to provide an enhancement to the townscape / landscape and views on this edge of the city.
- the influence on Teversham village and the fenland landscape to the east.
- the influence on the elevated view from Castle Mound to the west and the clayland landscape to the south, including the elevated Gog Magog Hills.
- the historic core of Cambridge together with the recognition of the changing character and setting of the Cambridge periphery as stated in the Strategic Heritage Impact Assessment (2021).

- 7.21 Variation in building heights and block form will be required, to reduce perceived massing, along with high-quality architecture to enhance character.
- 7.22 Existing structural vegetation of mature hedgerows, trees and scrub should be retained, protected and integrated into a comprehensive green infrastructure framework.
- 7.23 Woodland, shelterbelts and tree planting should be proposed in key locations along the Green Corridor and visually sensitive parts of the Site (sensitive boundaries), to help mitigate views of development from the immediately surrounding landscape / townscape.
- 7.24 Development proposals should be permeable and provide sufficient space between built form for green infrastructure corridors and fingers that can accommodate meaningful tree planting, to soften the appearance of built form. Trees form an important element of the Cambridge skyline and layers of green infrastructure permeating the developable areas will be crucial in assimilating new built form, mitigating adverse visual effects (particularly from distant elevated viewpoints), creating a positive green edge and green skyline that extends from the east side of Cambridge.
- 7.25 A minimum buffer of 200m in width should be provided between new built areas of development and the edge of Teversham village, these should be suitably vegetated with structural planting to mitigate any visual effects and to maximise the perception of separation between the development and the village.

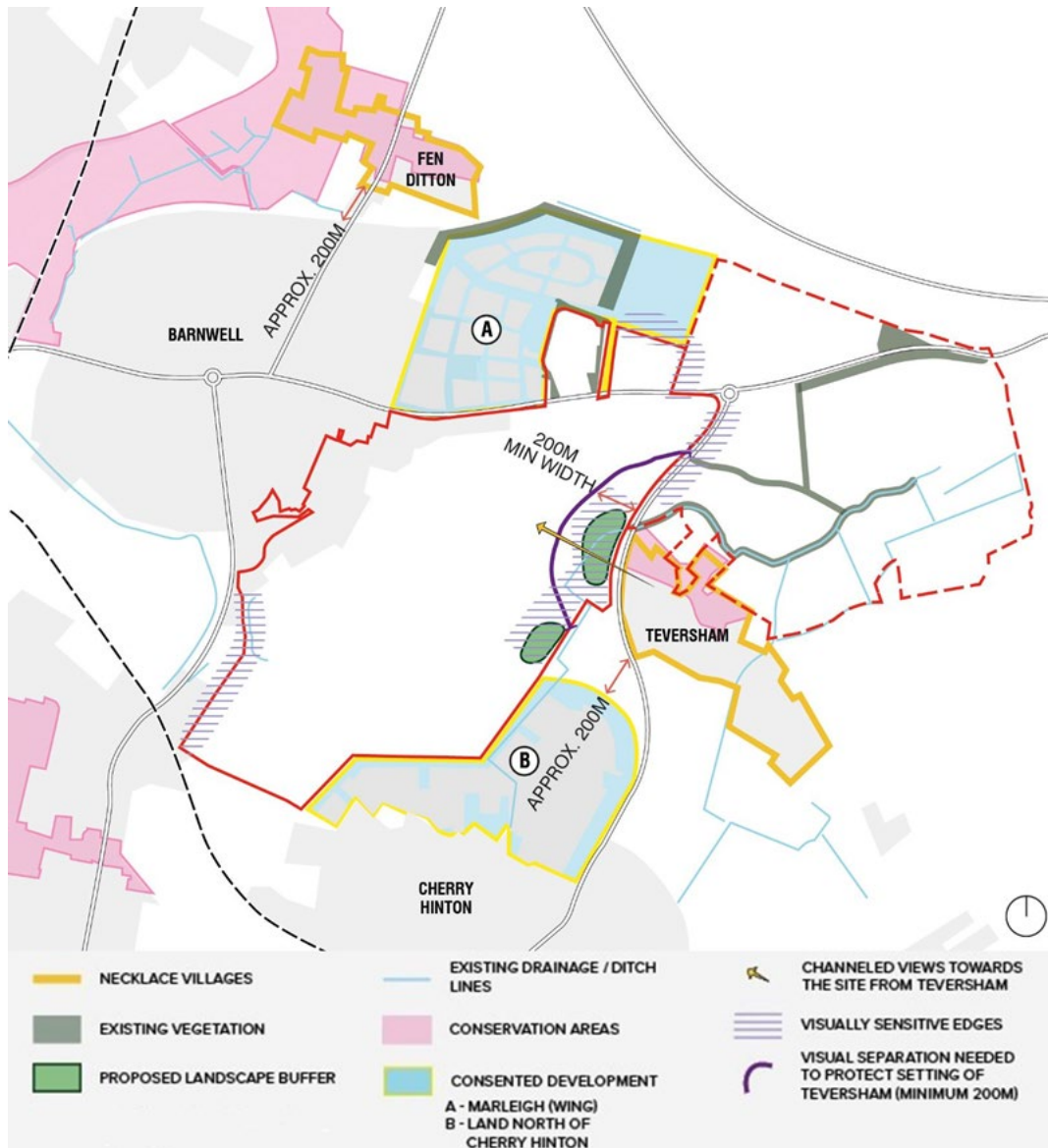


Figure 7.11: Plan extract illustrating the importance of protecting the setting of Teversham, ensuring separation from the Site and creating a soft green edge to the east

Conclusion

7.26 The existing built form and infrastructure within the airport are visually detracting and form a negative edge to the city. The scale and mass is accentuated by their expansive and blank pale grey facades that contrast against the muted tones of the Cambridge suburbs and treed horizon.

7.27 Development of the Site provides the opportunity to:

- improve the quantum and diversity of the Site's landscape features.
- provide better connections between and facilities for local communities.
- substantially improve the scale, mass and architectural quality of built form, enhancing landscape / townscape character and visual amenity to the eastern edge of Cambridge.

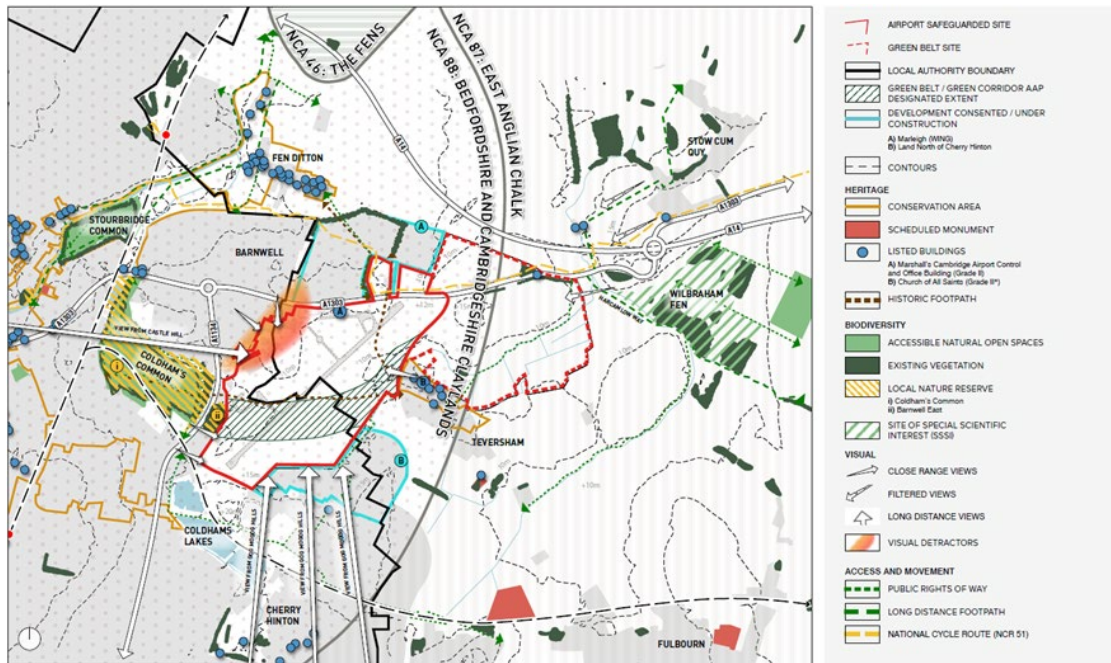


Figure 7.12: Key considerations plan, collating all landscape and visual constraints

8. Open Space / Green Infrastructure

Baseline Position

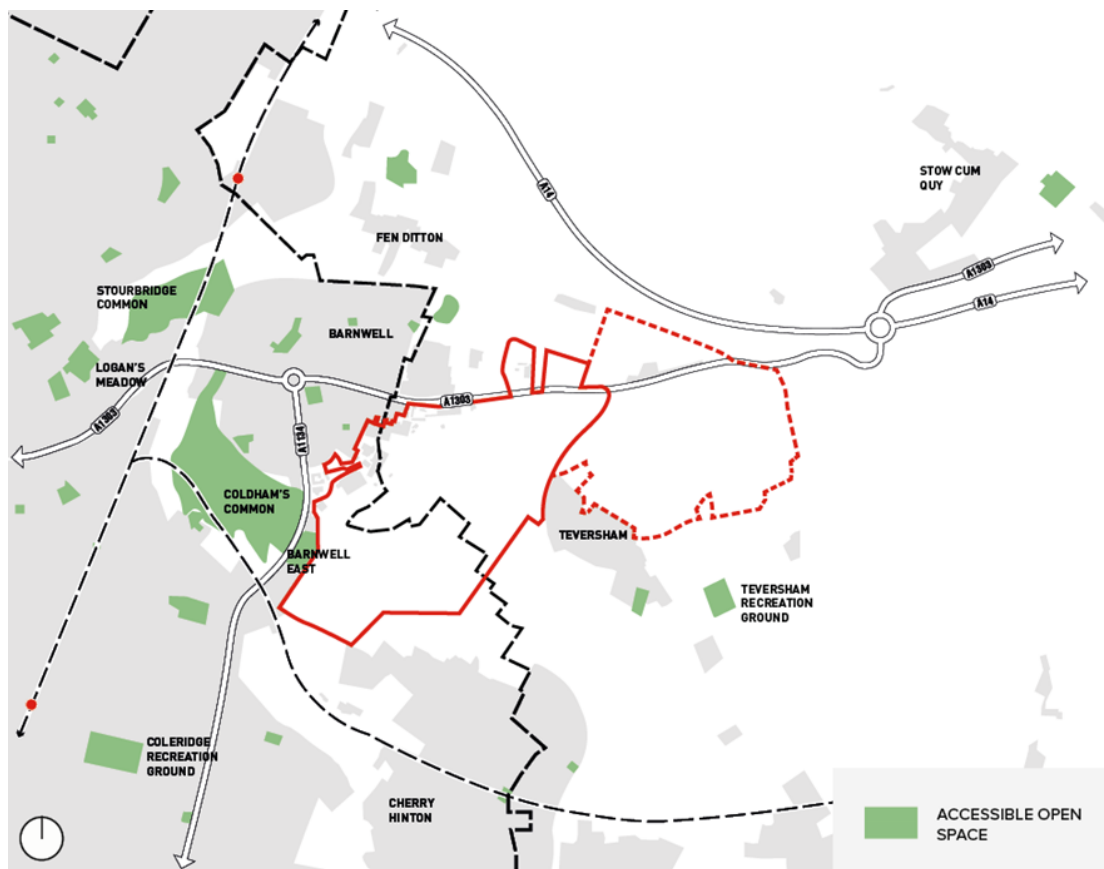


Figure 8.1: Plan extract of existing areas of accessible open space

Policy & Standards

- 8.1 The Site is covered by overlapping policies and open space standards set by the former planning teams within Cambridge City Council (CCC) and South Cambridgeshire District Council (SCDC), the authorities over which the Site is split.
- 8.2 GCSP is developing a new joint Local Plan which is still at the early stages. The following draft policies will be relevant to the Site:
- Policy S/CE: Cambridge East – mentions the Site and that open space will be considered within the Site, alongside other community facilities. The policy states that a green corridor should be retained through the development “to link the countryside with Coldham’s Common and the heart of Cambridge, that lies within the Green Belt and has a landscaping, biodiversity and recreation functions while also maintaining the individual identity of Teversham Village.”
 - Policy BG/EO: Providing and enhancing open spaces – confirms that the different standards applied for CCC and SCDC are reflective of the difference between the urban character in CCC and the more rural environment of SCDC. It states that a review of these standards will be undertaken to inform the emerging plan, to ensure that the standards are up to date.

- Policy WS/CF: Community, sports, and leisure facilities – mentions that the level of demand for these types of facilities will be set in the future Infrastructure Delivery Plan. This may overlap with open space requirements, therefore will need to be considered going forward.
- 8.3 As the emerging plan does not yet include details on issues such as open space and recreation standards, the previously adopted standards remain relevant for this stage of the masterplanning process.
- 8.4 Adopted policies that are relevant here include:
- CCC Local Plan (adopted October 2018) Appendix I – Open Space and Recreation Strategy 2011
 - CCC & SCDC Cambridge East Area Action Plan Supplementary Planning Document (2008) Appendix 3
 - SCDC Local Plan 2018 – Policy SC/7 ‘Outdoor play space, informal open space and new developments’
- 8.5 In reviewing the three adopted policies set out above, each have a slightly different standard for various typologies of open space. Each includes the following typologies:
- Outdoor sports facilities
 - Provision for Children and Teenagers
 - Informal Open Space Provision
 - Allotments
- 8.6 Standards of space per person vary under each. These have all been reviewed. Considered cumulatively the total area requirements are highest within SCDC’S Local Plan (an overall requirement of 44 sqm per person) and lowest in the Cambridge East Area Action Plan (37 sqm per person).
- 8.7 Whilst the standards set out in the Cambridge East Area Action Plan are the eldest of the policy documents / standards, at a meeting on 26th July 2022, GCSP officers present agreed that they seem like the most appropriate level for determining the development capacity of the Site at this stage, given they were designed with this site in mind.

Natural England’s Accessible Greenspace Standards (ANGSt)

- 8.8 Alongside the public open space standards set out in the various policies, Natural England’s new Green Infrastructure Standards for England (2023) advise that all people should have access to a natural green space close to home. Benchmarks in the green infrastructure standards include guidance on size / distance criteria (see table below) and are accompanied by a national map – which shows where these criteria are not currently met – to help guide provision of green spaces to the places that need it most.

TYPE OF SPACE	SIZE DISTANCE CRITERIA	WALKING & CYCLING TIMES
Doorstop Greenspace	A green space of at least 0.5ha within 200m	Under 5 mins walk
Local Natural Greenspace	A natural green space of at least 2ha within a 300m (straight line route) or 500m (actual route)	5-10 mins walk, 2 mins cycle
Neighbourhood Natural Greenspace	A natural green space of at least 10ha within 1km	15 mins walk, 4 mins cycle
Wider Neighbourhood	A natural green space of at least 20ha within 2km	25 mins walk
District	100ha within 5km	20 mins cycle
Sub-Regional	500ha within 10km	40 mins cycle
Local Nature Reserves	At least 1ha per 1000 population	

Resilience to Climate Change

8.9 As set out in various policies and evolving national guidance, there is also a requirement to ensure development is designed to be resilient to the impacts of climate change. This includes open space and green infrastructure, which will need to ensure it is designed to limit the effects of climate change, whilst also responding to (amongst others):

- increasingly dry summers
- increasingly wet winters with flash flooding
- diversity in planting of all types, to ensure resilience to existing and emerging pests, diseases and disorders

Multi-Functional Green Infrastructure

8.10 The green infrastructure of the Site must be designed to accommodate the multi-functional needs of the community and environment, weaving together all of the following (in no specific order of priority):

- biodiversity and wild infrastructure
- sustainable drainage and water management
- active transport and sustainable connectivity
- heritage and landscape assets
- landscape / townscape character and amenity
- community uses including productive landscape and formal / informal recreation / play
- carbon sequestration and storage

9. Environmental Net Gain

- 9.1 The government's 25 Year Environment Plan (published in 2018) required there to be the embedding of an environmental net gain principle for development including housing and infrastructure so as to include, among other items, wider natural capital benefits (or ecosystem services) such as flood protection, recreation and improved water and air quality, and the producing of stronger new standards for green infrastructure. The NPPF also requires planning policies and decisions to take opportunities to achieve net environmental gains – such as developments that would enable new habitat creation or improve public access to the countryside.

Baseline Constraints and Opportunities

- 9.2 The habitat data recorded during the Extended Phase 1 habitat survey (see Chapter 6: Biodiversity and Geodiversity) has been input into the NATURE Tool (Nature Assessment Tool for Urban and Rural Environments) to establish the baseline natural capital performance of the Site.
- 9.3 The NATURE Tool allows assessing up to 17 ecosystem services plus physical and mental health benefits through a scoring system indicating both the baseline position and the direction and magnitude of project impacts. These scores are aggregated based on policy priorities resulting in an overall 'people score' for the project. A 'potential' score is also calculated to indicate to how close the Site is to providing the maximum potential for each ecosystem service/benefit (noting that a score of 100% is unlikely to be achievable in practice). The outputs of the NATURE Tool are summarised below.
- 9.4 Airfield site:
- Total people baseline score = 201;
 - Per hectare people baseline score = 1.1;
 - Proportion of theoretical maximum potential reached = 12%.
- 9.5 Non-airfield land parcels:
- Total people baseline score = 14;
 - Per hectare people baseline score = 1.1;
 - Proportion of theoretical maximum potential reached = 12%.
- 9.6 For the three main groups of ecosystem services (cultural, regulating and provisioning), the results are summarised below.
- 9.7 Airfield site:
- Cultural score (and potential reached) = 36 (6%);
 - Regulating score (and potential reached) = 127 (18%);
 - Provisioning score (and potential reached) = 38 (10%).



9.8 Non-airfield land parcels:

- Cultural score (and potential reached) = 2 (5%);
- Regulating score (and potential reached) = 10 (21%);
- Provisioning score (and potential reached) = 2 (7%).

9.9 A breakdown of the results for each ecosystem service, or benefit, provided by the Site's natural capital is shown in Figures 9.1 and 9.2 below.



Figure 9.1: Baseline natural capital assessment for airfield site

Cambridge East

Non-airfield

Policy Priorities Based On Default Priorities for England | Assessment By Logika Consultants Ltd

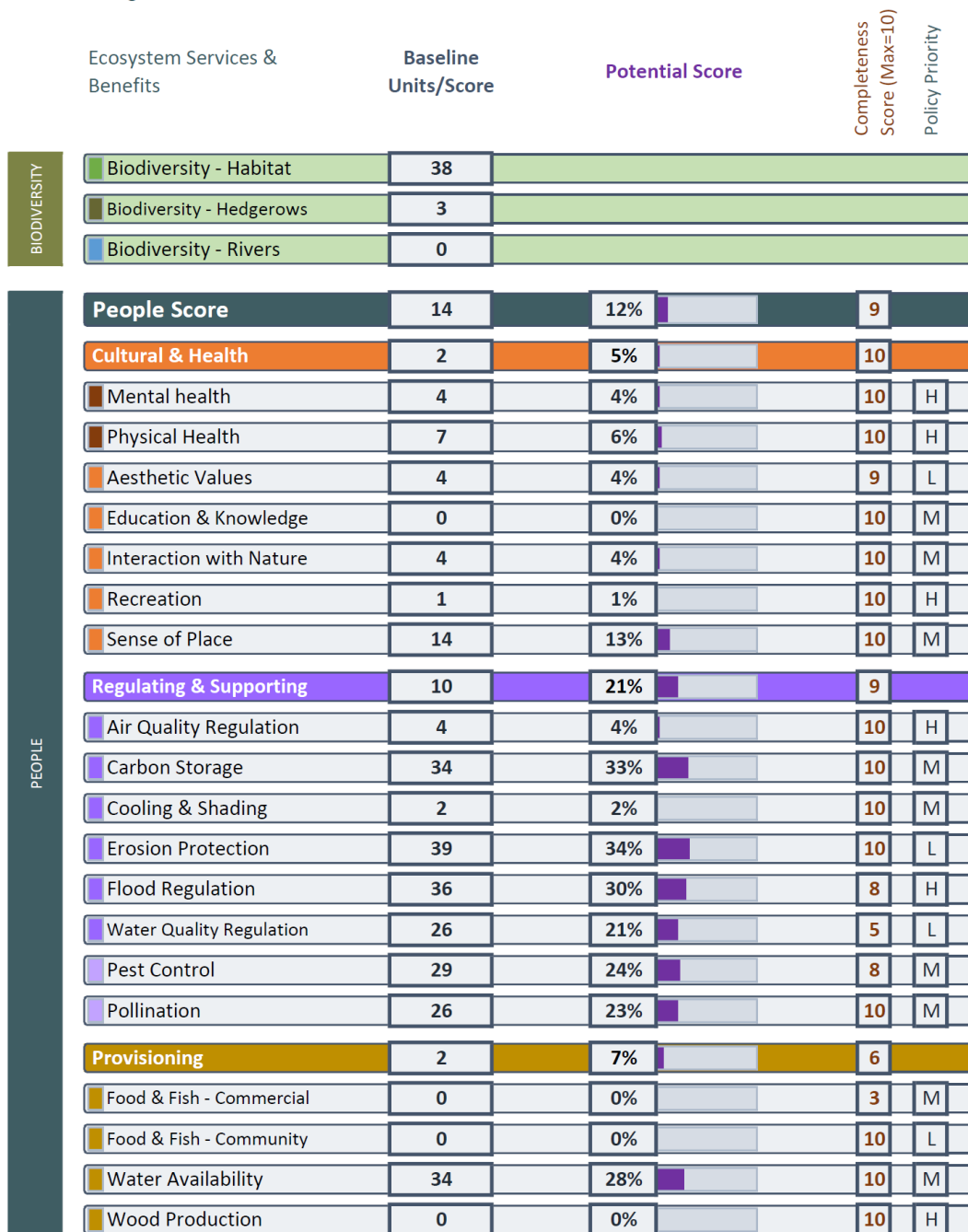


Figure 9.2: Baseline natural capital assessment for non-airfield land parcels

High Level Conclusions

- 9.10 The natural capital performance of the Site is currently poor, reaching just 12% of its theoretical maximum potential for the airfield site, and also 12% for the non-airfield land parcels. The provision of cultural ecosystem services is particularly poor. The ecosystem services currently being delivered to greatest effect are:

- Water availability – 39% of maximum potential for the airfield site, and 28% for the non-airfield land parcels;
- Erosion protection – 34% of maximum potential for the non-airfield land parcels, and 29% for the airfield site.
- Carbon storage – 33% of maximum potential for the non-airfield land parcels, and 28% for the airfield site.

Baseline Changes by 2027

- 9.11 Given that this is an operational airport and Marshall's move of its aerospace business is predicated on the granting of planning permission for the development of the Site, it is unlikely that the baseline position will change before vacant possession is achieved.

Mitigation Requirements

- 9.12 CCC's emerging policy requirement is that developments will seek to achieve environmental net gain ('ENG'). Though this is yet to be defined, emerging national policy suggests it may require net gains in both stocks of natural capital (quality and/or quantity) and flows of multiple ecosystem services. As a result, significant consideration will be paid to the development of a green infrastructure strategy for the Site that maximises the benefits of the development for both people and biodiversity.
- 9.13 In particular, the green corridor which will stretch from the western boundary of the Site, right to its far eastern boundary, will need to be designed so as to create a mosaic of habitats that will attract a large diversity of species, as well as providing connectivity across the Site for people, providing sense of place, and helping to create a Site that is resilient to climate change.
- 9.14 In addition to the green corridor, landscaping associated with areas that are largely to be developed will also need to accommodate features and habitats that can attract a rich diversity of biodiversity and provide a range of ecosystem services, including bringing people closer to nature.
- 9.15 Even taking the above into account, achieving ENG for multiple ecosystem services on Site could prove to be difficult. In this event, depending on the detail of emerging policy requirements, there may be a need to provide off-site ENG, on either areas of land owned or that can be controlled by Marshall, or via a commercial ENG unit provider (though it should be noted that the development of ecosystem services markets are in their infancy).

Implications for a Future Masterplan

- 9.16 There is substantial opportunity to enhance the performance of the on-site natural capital and associated delivery of ecosystem services – thus contributing to ENG – by embedding green infrastructure enhancement into the scheme design as much as is possible.



10. Historic Environment

- 10.1 As part of the LVCA mentioned in section 6 above, BMD mapped the heritage features that contribute to the character of the landscape / townscape in the vicinity of the Site and considered the potential for views from these features that may be influenced by development on the Site. The Townscape Consultancy has conducted an internal review of this document, looking specifically at the setting and significance of heritage assets in and around the Site.
- 10.2 The following heritage features were identified in the LVCA as currently sharing intervisibility with the Site and potentially affected by the type of development proposed:
- Marshall's Cambridge Airport Control and Office (Grade II)
 - Teversham Conservation Area and Church of All Saints (Grade II*)
 - Castle Mound (locally referred to as Castle Hill)
 - Parish Church of St Mary (Grade II*), Stow Cum Quy
 - Fulbourn Conservation Area
 - Historic Core Conservation Area
- 10.3 The site itself features Marshall's Cambridge Airport Control Building, which is a Grade II listed building, orientated to front onto Newmarket Road toward the northern part of the Site.
- 10.4 Teversham Conservation Area is located immediately to the east of the Site beyond Airport Way. The Teversham Conservation Area Appraisal (2006) provides a description, noting that a handful of historic buildings around the church and green provide an indication of the original character of the village – however, post war development has surrounded this nucleus, largely to the south and east sides of the village. The Appraisal advises that the Airport Way road side verge (a County Wildlife Site) *“creates a definite green edge to the side of the village.”* It also advises that the key landmark of the village is the Church of All Saints (Grade II*) and states it is *“the only building of any substantial height in the village and is reasonably prominent as a result.”* The village is visually well enclosed, due to its treed and wooded edges, with views towards the Site limited to its western edge along Airport Way, channelled views north west along Church Road and views towards the northern corner of the Site on its outer northern edges.
- 10.5 Castle Mound is a scheduled monument located approximately 3.5km to the west of the Site near the centre of Cambridge. It is a discrete, isolated, elevated hill, rising up from its surroundings from approximately +20m AOD, to approximately +32m AOD, providing a panoramic view of 360 degrees across the city. This elevated view focuses on the historic core of Cambridge with scattered church spires and towers emerging above an established tree line. On the periphery of the view, the top of the airport hangars are visible in the distance, with the radar tower and lighting scaffolds of Abbey Stadium breaking the horizon.



- 10.6 The Parish Church of St Mary (Grade II*) is located on the southern edge of Stow cum Quy, approximately 1.5km to the north east of the Site, albeit separated by Junction 35 of the A14, with glimpsed views of the airfield and associated buildings.
- 10.7 Fen Ditton Conservation Area is located approximately 600m to the north west of the Site, separated by consented residential development at Marleigh. From testing in the field, it is considered Fen Ditton Conservation Area is unlikely to be affected by development of the Site, due to the extent of intervening vegetation, combined with the emerging built form at Marleigh.
- 10.8 The Fulbourn Conservation Area has been added to the list due to intervisibility of Fulbourn Hospital from Shelford Road in a view identified within the SHIA. Listed buildings within the conservation area are well separated from the Site within the village centre that has a *“strong sense of enclosure created by twisting lanes and substantial areas of mature trees, leaving only glimpsed views of the surrounding fields.”*
- 10.9 Despite its distance from the Site, the Historic Core Conservation Area has been included in the list due to its particular significance within Cambridge. It is separated from the Site by twentieth century suburban development, the well-established treescape of Coldhams Common, and large scale retail park development adjacent to the railway line. The SHIA notes that views from the north and east of Cambridge are *“predominantly modern in character”* and *“do not tend to convey a strong image of Cambridge”*. In more distant views, as established in the BMD assessment of strategic viewpoints, the visual and geographic separation of the historic core suggest that any perceived effect of development upon the Site is likely to be minimal.
- 10.10 There are numerous other listed buildings within the study area primarily within the Cambridge historic core and the necklace of villages surrounding Cambridge (Fen Ditton, Teversham, Stow cum Quy and Fulbourn), and the Grade I listed ecclesiastical buildings west of Barnwell and within Cherry Hinton. In general, intervisibility with the Site is likely to be negligible at most.
- 10.11 Historic mapping (1885 – 1900) of the Site and the immediate context show that, prior to the airport being opened in 1938, the surrounding land use was arable farmland. The Site was associated with Rectory Farm, featuring hedgerow and ditch field boundary enclosures. Historic mapping identifies a footpath previously ran across the airfield site in an east / west direction, connecting Coldham's Common and Teversham. Church Road extended from Teversham across the Site past Rectory Farm to Fen Ditton. The expansion of the airport and construction of the Airport Way bypass in 1972 severed this connection however, the route remains from Newmarket Road, through Marleigh and onto Fen Ditton as part of public footpath 85/9.

Historic Views

- 10.12 The figure below illustrates a view of Cambridge in 1688 from the east. The Cambridge Inner Green Belt Boundary Study acknowledges how, to present day, the view has changed considerably and is very different. Historic buildings are seen in the context of more modern peripheral development, or not visible due to the much greater distance between the historic core and the city edge. The report states *“although there are*



some key views of the historic buildings from the countryside (in the east), they are more distant and dominated by a foreground of suburban and commercial development including massive elements on the city edge such as the hangar buildings at Cambridge Airport".



Figure 10.1: Prospect / View of Cambridge from the East. 1688 (Source: Cambridge Inner Green Belt Boundary Study, 2015)

10.13 This assessment is echoed in the SHIA which recognises the contemporary character of Cambridge, describing the various aspects of setting and identity of the city. Together with the Inner Green Belt Boundary Study (2015) and Cambridge Suburbs and Approaches Study (2009), the SHIA considers that the significance of the inner core is preserved through its physical separation from modern development at Addenbrooke's Hospital and Cambridge Airport on the distant periphery of the city. The SHIA maintains that any effect on setting and identify the city is reduced through the "subtle bowl like topography" and "layered landscapes" mean that "even the tallest structures in the city (see Landmarks below) do not dominate a wide landscape or appear strongly in long-distance views." While the historic core is a primary consideration in the setting of Cambridge, its physical and visual separation from the Site is an important determining factor in assessment of future development.

Archaeology

10.14 Cambridge Archaeology Unit is currently undertaking a desktop study, bringing together the results of previous archaeological assessment work undertaken within the vicinity of the Site. Trial trenching is thought unlikely to be possible until post closure of the airfield (and post outline permission).

10.15 It is possible that some archaeology may be found within the Site, but nothing in the vicinity found thus far has warranted 'in situ preservation'. Furthermore, the Site has already been, in totality, subjected to development which will have affected the potential for archaeological finds.

10.16 On this basis it is not thought likely that archaeology is likely to materially affect the masterplan.

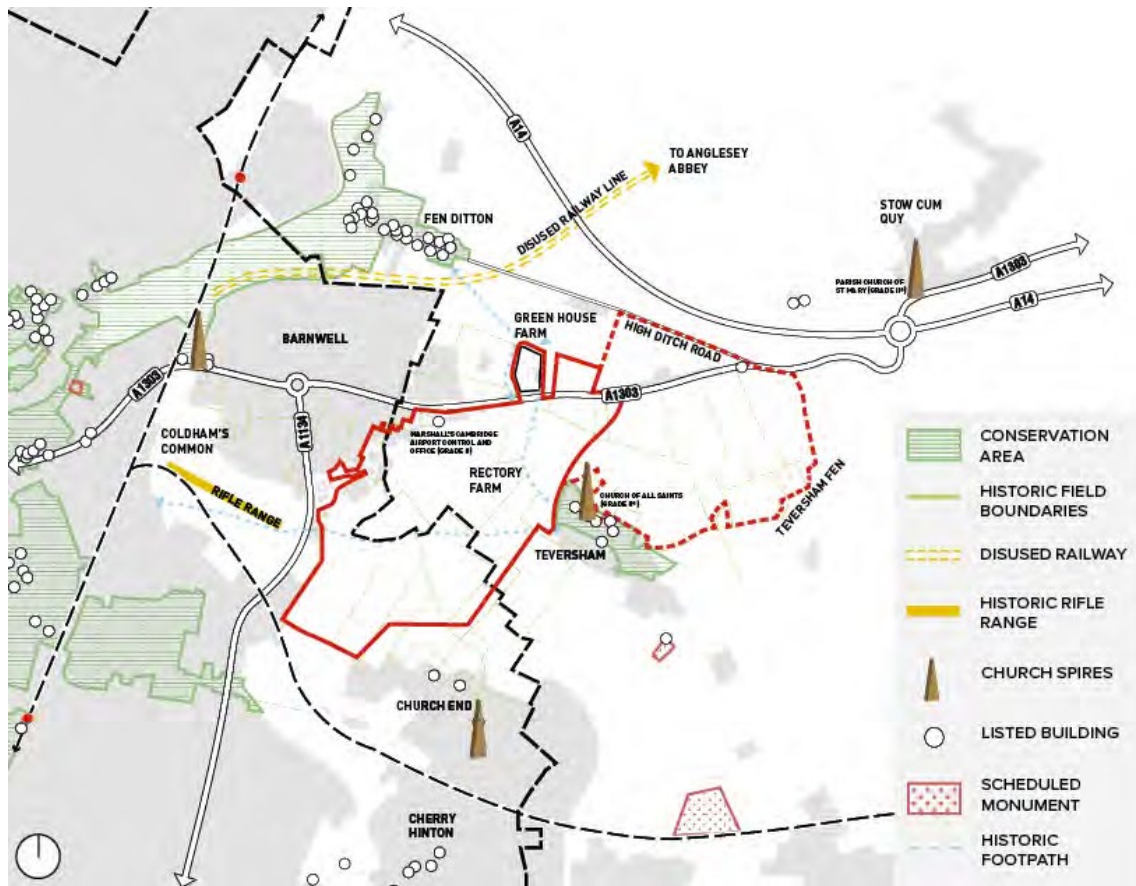


Figure 10.2: Plan extract of the heritage context

11. Utilities Capacity

11.1 This section covers the utility supply for the Site, assessing the electric and telecommunication infrastructure for future development. Water is included under Chapter 2, gas combustion will not be permitted, and heat networks and low to zero-carbon energy infrastructure included in Chapter 3.

Electricity

Baseline Electricity Demand

11.2 An initial assessment completed by GTC in January 2021, ahead of the announcements of the potential capacity of the Site in housing and job terms indicated that the electricity load for a high estimate of 12,003 homes with electric heating (led by air source heat pumps) would be 36,000kVA and the commercial electric demand would be 44,000kVA, resulting in a total electric load of 80,000kVA (80MVA – approximately equal to 80MW) for the full development. It was assessed that a 132 or 33kV Extra High Voltage (EHV) point of connection would be required with two primary substations located on-site.

Future Electricity Demand and Investment Need

11.3 In 2019, UKPN advised that the current maximum electricity demand for Greater Cambridge was 240 Megawatts (MW). The predicted additional demand, notably driven by the electrification of transport, could almost triple the existing maximum demand requirement for the Greater Cambridge area from 240MW in 2019 to 710MW by 2031, as illustrated in Figure 11.1 below.

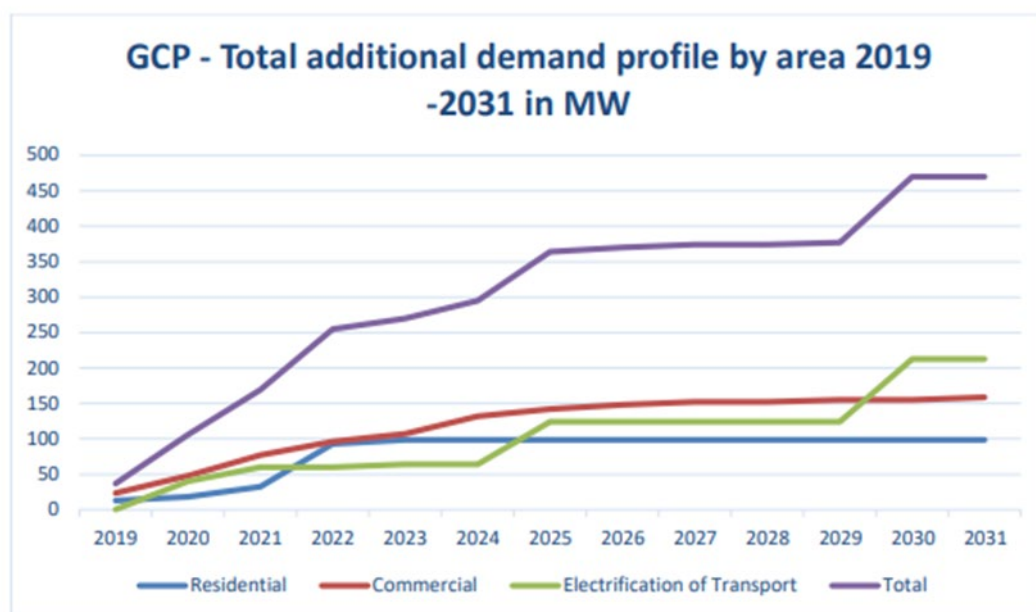


Figure 2.1 The cumulative additional demand profile by area together with the total cumulative demand profile from 2019-2031.

Figure 11.1: GCP cumulative total additional demand profile from 2019-2031.

- 11.4 UKPN's 132kV and 33kV network including 132kV Bulk Supply Point Substations and 33kV Primary Substations within and local to Cambridge are shown in Figure 11.2 below.

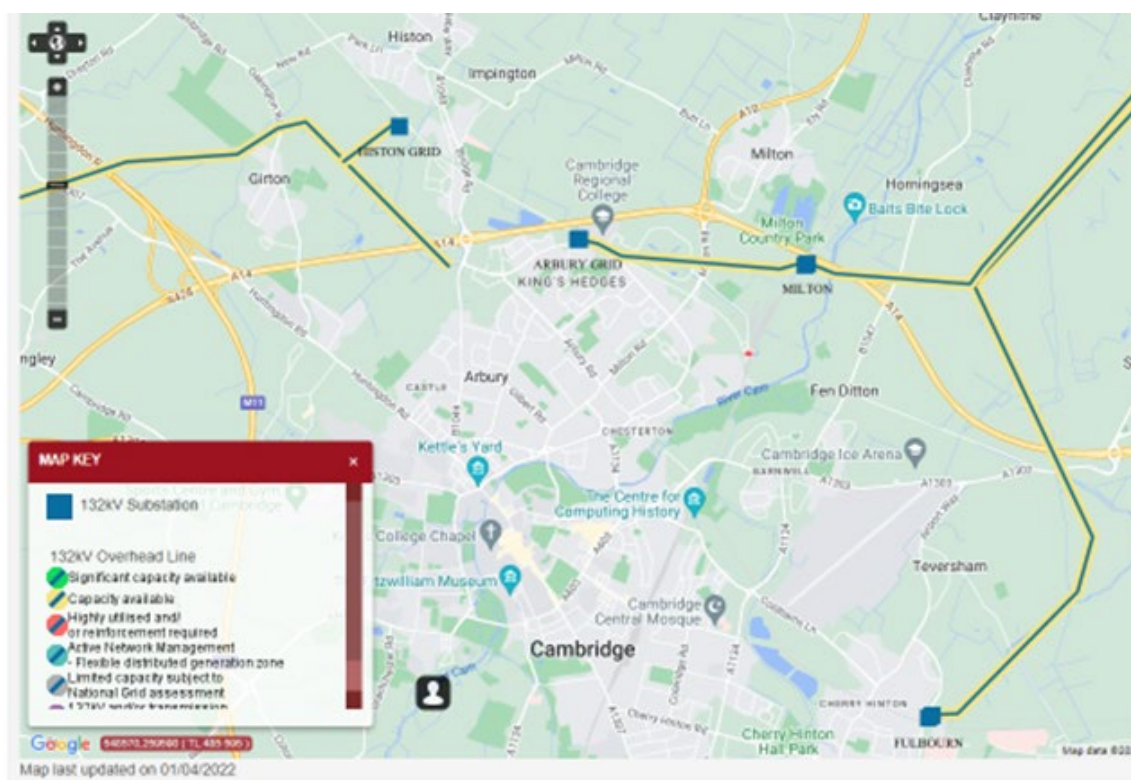


Figure 11.2: UKPN 132kV Network – Cambridge area. (Source: UKPN DG and LTDS Maps)

- 11.5 Following ongoing and recent network reinforcements, there is capacity available in the 132kV network shown as highlighted in Figure 11.2, however future growth is limited by existing circuits and transformers sizes at Histon, Arbury and Fulbourn grid substations as illustrated in Table 11.1 below.

Substation	Firm capacity (MW)	Load (2021-22)	Headroom capacity	Percent headroom
Arbury Grid 33kV	109.7	61.4	48.3	44%
Histon Grid 33kV	109.7	55.5	54.2	49%
Fulbourn Grid 33kV	109.7	77.9	31.8	29%

Table 11.1: UKPN Grid Substation Headroom Capacity (2021-22)

- 11.6 The current available headroom sums up to a capacity of 134MW, which is sufficient to meet the assumed demand of 80,000kVA, however it should be noted the distribution of the available capacity is dependent on the local distribution network and further local reinforcement would be necessary. The current headroom capacity is indicative and subject to change as supply applications are made and new connections are supplied by UKPN.
- 11.7 UKPN has produced the Distributed Future Energy Scenarios Network Headroom Report (DFES NHR) to assess the future headroom capacities based on 4 scenarios as shown in Figure 11.3 below. The information within the 'System Transformation' scenario has been used as the basis of our assessment.

Parameter	Steady Progression	System Transformation	Consumer Transformation	Leading the Way
Net-Zero by 2050?	No	Yes	Yes	Yes
Low-carbon gas grid?	No	Yes	No	Yes
Electric cars and vans in 2030	2.6 million	4.5 million	4.5 million	4 million ²
Homes with heat pumps in 2030	320,000	445,000	712,000	1,245,000
Homes with solar panels in 2030	195,000	248,000	397,000	248,000
Battery capacity in 2030	1.3 GW	2.7 GW	4.8 GW	4.1 GW
Total renewable generation in 2030	6.1 GW	7.2 GW	8.1 GW	8.6 GW

¹ National Grid ESO, Future Energy Scenarios, July 2020.

² Leading the Way has lower electric vehicles due a change in the way people travel, further detail provided in Low-carbon transport.

3

Figure 11.3: Overview of scenario worlds for UKPN DFES.

- 11.8 The April 2022 DFES NHR dataset used is based on UKPN's network, loading and scenario data, with the Long-Term Development Statement November 2021 as baseline.
- 11.9 Table 11.3 below summarises the future headroom capacity forecasted up to 2050. At present the headroom capacity is calculated to be 100.4MW. It is envisioned that in this scenario, the capacity will be exhausted at Fulbourn Grid Substation before 2040, while the region wide capacity across the three grid substations will fall to 23.2MW, leading the need for significant investment in the region to fulfil the growing demands from future developments.

Substation	2022	2030	2040	2050
Arbury Grid 33kV	47.3	32.4	25	24.2
Histon Grid 33kV	46.2	21.9	8.6	6.4
Fulbourn Grid 33kV	6.9	1.7	-5.9	-7.4
Total Headroom Capacity	100.4	56	27.7	23.2

Table 11.3: UKPN Future headroom capacity – System Transformation scenario

- 11.10 In November 2021, an outline business plan was developed to support the future growth in Greater Cambridgeshire, whilst meeting UK Government's Vision for the Net Zero Economy by enabling the use of:
1. renewable technologies
 2. electric vehicles
 3. reductions in dependence on gas for domestic power supply
- 11.11 The preferred option has been identified as Option 2 where both Cambridge East Grid and Trumpington Primary are delivered to maximise the possible benefits by increasing the current electricity demand capacity by 28%, adding 69MVA to the existing capacity. This additional capacity could unlock the development of approximately 5,700 homes as well as 270,000sqm of commercial, clinical or research and development floorspace, allowing further economic growth in the Greater Cambridge area.
- 11.12 Trumpington Primary is proposed on the west side of Cambridge (Trumpington) and is dependent on the Cambridge East Grid being complete.

- 11.13 The new Cambridge East Grid substation is proposed to be built in the Babraham Road Area and will be connected to Fulbourn Grid at 132kV. It is noted in the Technical Risk Review that UKPN formal grid offers are subject to the availability of space at the existing Fulbourn Grid to facilitate the East Grid works. To mitigate this risk, a detailed design study will be conducted by UKPN post-offer acceptance, and a formal notification of any adjustment(s) will be issued.
- 11.14 In late 2022 UKPN's investment plan for the period 2023 to 2028 (RIIO-DG2) was approved by Ofgem thus green-lighting UKPN's proposed investment in the proposed East Cambridge 132/33kV Grid Substation and the new 33/11kV Trumpington Primary Substation. Two meetings with UKPN in early 2023 reinforce this proposed investment plan and confirm the development of a new East-West Primary Substation close to the Site (within the land parcel currently identified as the preferred option for the relocation of the Park & Ride, to the east of Airport Way).. This will support the relocation of Anglian Water's new waste water treatment works, with spare capacity to support numerous early phases of development at the Site. Much later phases can be secured from the Cambridge East Grid.

Gas

- 11.15 In support of the UK Government's Vision to achieve Net Zero Greenhouse Gas Emissions by 2050 and latest legislation ending the installation of fossil fuel heating in new homes from 2025, it is envisioned that gas connections will not be required.
- 11.16 Based on the previous work carried out in the area, it was identified that there is an Intermediate Pressure (IP) Gas Main running between Teversham and Cambridge located along the northern edge of the Site.



Figure 11.4: Cadent Gas – Teversham – Cambridge – IP Gas Main

Telecoms

- 11.17 Openreach (a BT Company) is the incumbent regulated open-access voice-data-video/fibre network operator in Cambridge. However a number of other regulated network operators can provide Fibre to the Home (FTTH) and Fibre to the Premises (FTTP) services to the Site. Some of these independent operators will 'backhaul' through

Openreach infrastructure and others will have their own dedicated backhaul infrastructure (back to a local exchange or even back to a data-centre). These independent operators would likely invest in the provision of new infrastructure within the Site if a business case was positive, and given the scale of the Site this would be likely. Irrespective of this Openreach, as the incumbent regulated open-access provider, must provide voice-data-video services under application and would certainly provide ultra-fast FTTH services.

11.18 At present, Openreach's local infrastructure includes superfast Fibre to the Cabinet (FTTC) broadband with speeds of up to 80Mbps. However, this does not apply to new-build projects where Openreach offer FTTH to all projects with more than 30 new dwellings, with download speeds up to 1Mbps.

11.19 As part of the UK Government's ambition to deploy ultrafast broadband connectivity across the UK, Openreach has embarked on a programme known as 'Fibre First' to fast track the deployment of its fibre network to urban and rural areas.

11.20 An assessment of Openreach's fibre roll out confirms that the Cambridge area is scheduled to be upgraded for Ultra-Fast fibre connectivity between 2022 and 2026 as shown in Figure 11.5 below.

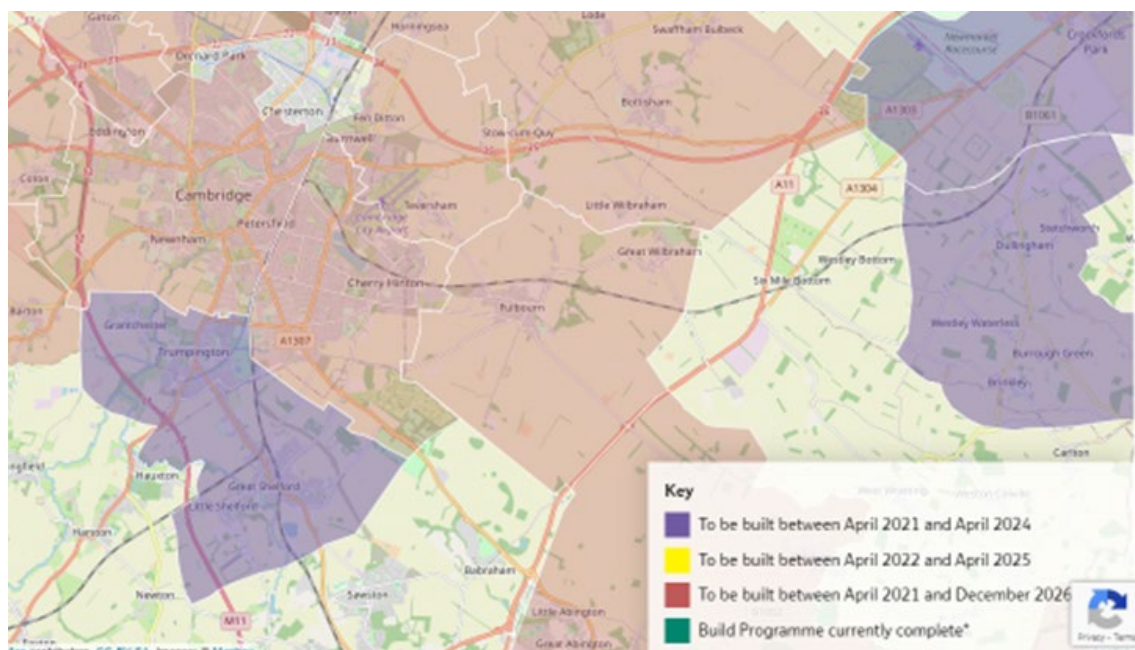


Figure 11.5: Openreach Fibre First Development Map

12. Infrastructure

Introduction

- 12.1 For development of this size the social infrastructure delivery strategy will be a key component to achieving successful, and sustainable placemaking. The supporting infrastructure not only needs to meet the needs of the people living and working here, but also needs to complement the existing network of social infrastructure in the wider area, to knit this masterplan into the existing social fabric and surrounding communities.
- 12.2 Planning for the delivery of social infrastructure for a development of this scale, that will be phased over a long time can be challenging, as the needs of the community and methods for delivery over time will change.
- 12.3 This section of the evidence base looks at the policy framework relevant to social infrastructure delivery and the range of facilities that could be delivered by the masterplan. More detailed baseline analysis is set out on key infrastructure that has a greater influence on the masterplan and a series of assumptions that will be applied going forward.

Policy Framework

- 12.4 Cambridge City Council (CC) and South Cambridgeshire Council's (SC) adopted Local Plans provide policy context for social infrastructure provision. Policy framework for open space is set out in section 8 and therefore not repeated here.

Cambridge City Local Plan (2018) (CCLP)

- Policy 13: Cambridge East – the Site is within the land allocation covered by this policy. In relation to social infrastructure this policy states that the masterplan should include provision for primary and secondary education and a local centre including community provision.
- Policy 73: Community, sports and leisure facilities – this policy sets out how any new provision of these types of facilities must improve the range, quality and accessibility of provision to the community, where there is identified need. In new developments of a scale of the Site, the policy is clear that on-site provision will be permitted once it is of an appropriate scale to the development and meets the needs of future residents, workers and visitors.
- Policy 74: Education facilities – this policy states that new schools will be supported where needed to meet existing deficit or are required to support new developments. In addition, the policy notes the importance of appropriate phasing of delivering of schools in line with new homes. It is recommended that new schools are also have provision for community use that can be accessed by the wider community.
- Policy 75: Healthcare facilities – similar to Policy 74 new healthcare facilities will be supported where they meet an identified deficit or are required to support population growth. The supporting text to this policy notes the changes in the way in which healthcare is delivered, with more services provided for outside of hospitals. Community based healthcare delivery requires greater flexibility in the planning for and delivery of new facilities. Primary and community care provision



should be co-located with other community/ voluntary sector uses and commercial spaces. Co-location has the benefits of creating a focal point for the community, better connecting services that promotes healthy lifestyles.

South Cambridgeshire Local Plan (2018) (SCLP)

- Policy SS/3: Cambridge East – this policy states that the masterplan should include provision of primary and secondary education, a local centre with a community hub and open space.
- Policy SC/4: Meeting Community Needs – this states that all developments will need to include or contribute to the services and facilities needed to meet demand. Scale of provision should be established through assessments undertaken in partnership between landowners and the local authority. These assessments should include consideration of the timing of delivery, the capacity at existing facilities in the local area and other local circumstances.
- Policy SC/5: Community Healthcare Facility Provision – this relates to healthcare services that would have otherwise been provided in hospitals.
- Policy TI/9: Education Facilities – new schools will be supported in new developments where they are required to meet new demand or address an existing deficit. Developers should engage with the Children's Services Authority to ensure phasing of residential development is in line with appropriate mitigation.

Social Infrastructure – Defining Need

12.5 Social infrastructure encompasses a wide range of facilities and services. The property and spatial requirements for each vary greatly.

12.6 Certain core facilities have more typical and predictable physical space requirements and are more directly linked to housing and population growth. Provision for these types of facilities need to be planned for at the outset of a masterplan such as this and have been carefully considered throughout the evolution of plans for the Site. These include:

- Schools
- Primary healthcare
- Open space

12.7 However, social infrastructure covers a much wider and more diverse network of assets including:

- Post offices
- Community spaces, village halls, meeting spaces etc
- Libraries
- Places of worship
- Recreation/ leisure/ sports facilities
- Nurseries/ creches
- Banks
- High speed internet access
- Pharmacies, dentists, opticians, specialist care facilities (such as chiropodists etc)
- Care homes
- Petrol stations and garages
- Shops, dry cleaners, beauticians, hairdressers



- Pubs, cafes, restaurants, takeaways
- Cultural venues, theatres, museums, galleries etc.

12.8 Most of these facilities and services are met by the market, and can be delivered in various types of commercial buildings. Many will evolve over time, and come to a place through evolution of existing provision looking for new space or from grass roots initiatives. Therefore, they are less formulaic to plan for at a policy or masterplan level.

12.9 A successful and sustainable settlement needs to be able to respond to demand for social infrastructure and have the flexibility and supporting governance to support their delivery over time. This is not limited to the initial build period, but the long-term stewardship of a place.

12.10 As part of our evidence base a community facilities audit has been undertaken to consider the spatial distribution of the existing social infrastructure in the area surrounding the Site (see Figure 12.1 below). Note: This map is not included within this evidence base document for the purpose of identifying individual facilities and services, but to illustrate the spatial distribution and range of facilities available in the locality. As expected, most services are located within the city, with fewer facilities to the east in the rural areas and smaller villages.

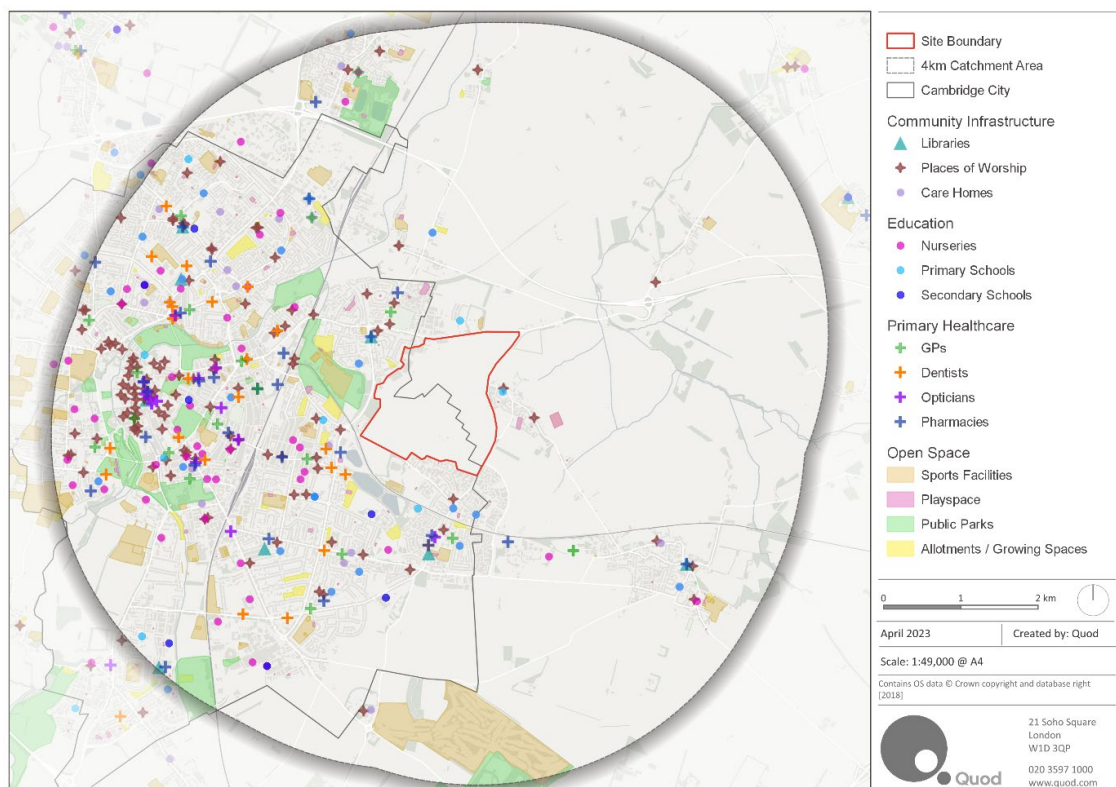


Figure 12.1 Spatial Distribution of Social Infrastructure

12.11 Over time this will help inform a gap analysis to understand what services are well provided for, what are needed and used by the local community, and what additional provision could be included within the masterplan to better meet the needs of the population. However, this is an ongoing process that will need to be continuously

reviewed as the masterplan evolves, and crucially be informed by community consultation in due course.

- 12.12 This evidence baseline document has therefore focused in detail on schools and health. Open space is covered in detail in section 8 and therefore is not repeated here. However open space has been commented on in this section as it is one of the most important elements of social infrastructure (as set out in section 8).

Education Provision

- 12.13 A development of scale will require several schools (both primary and secondary) to meet the needs of the new population. As schools require significant land take, planning for this provision has been a key focus throughout the masterplanning and site capacity testing process.
- 12.14 Cambridgeshire County Council (CCC) are responsible for ensuring there are sufficient school places across the county (Education Act 1996 Section 14). A detailed baseline analysis has been undertaken to understand the existing provision of schools in the local area and planned future provision. CCC's Cambridgeshire 0-19 Education Organisation Plan (2022) provides details on the projected level of demand for school places and the council's plan to manage this demand. The Department for Education Annual Schools Census (2022) provides data on existing school rolls and can be used to calculate the level of available capacity.

Spatial Context of Baseline Analysis

- 12.15 State-funded primary schools have been assessed using the school place planning areas (SPPAs) as set out by the Cambridgeshire Council. The Site falls across three SPPAs, Cambridge City North of the Cam, Cambridge City South of the Cam, and Bottisham Rural 1 as shown in Figure 12.2.
- 12.16 Cambridge City Council's Local Plan Policy 74 states that primary schools should be located within two miles from homes, and secondary provision should be within three miles of homes. Some schools in these SPPAs are a little further from the Site than these distances, and therefore children living here are less likely to attend these schools. However, it is important to understand the general capacity and provision across these areas to help inform the strategy for the masterplan.
- 12.17 CCC are required to manage the education provision across these SPPAs to ensure that the balance of demand and provision of new schools is maintained. Both to make sure there is sufficient provision, but also not too much. Significant surplus provision is inefficient and can damage the viability of schools – negatively impacting upon individual schools to deliver high standards of education.

Primary School Baseline

- 12.18 There are a total of 35 primary schools within these three SPPAs. Based on the Annual Schools Census data (2022) and CCC's published admission numbers (PANs), the current combined surplus capacity of primary schools within the Cambridge City and Bottisham



Rural 1 SPPAs is 1,274 places, equivalent to 12%. Details of the existing capacity of these schools are set out within Table A12.1 in Appendix 2. This data does not include the recently opened Marleigh Primary Academy (map reference 35 on Figure 12.2) as this only opened in September 2022.

- 12.19 The closest primary schools to the Site are; Marleigh Primary Academy (no data available), The Galfrid School (48% surplus capacity) (map reference 22), St Philip's CofE Aided Primary School (20% surplus capacity) (map reference 21) Cherry Hinton Church of England Primary School (13% surplus capacity) (map reference 2) and Teversham CofE VA Primary School (10% surplus capacity) (map reference 29).

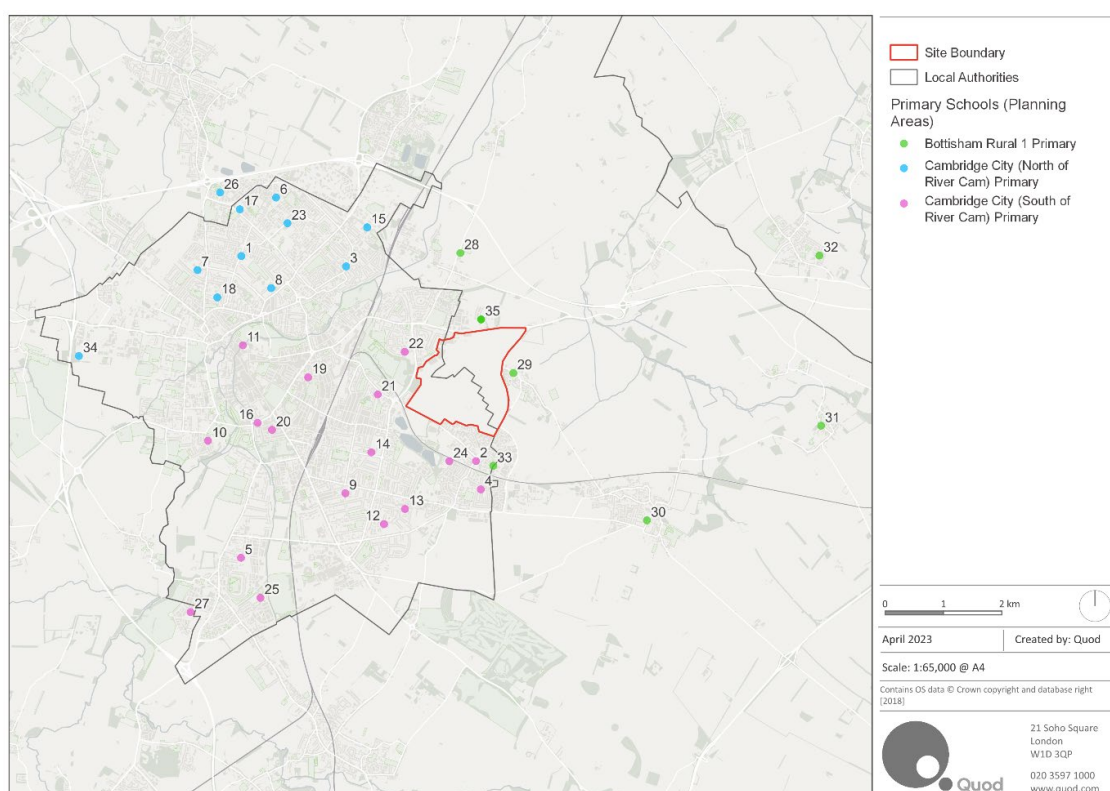


Figure 12.2 Local Primary School Provision

- 12.20 According to the Cambridgeshire Education Organisation Plan 2022-23, as the most recent increases in the birth rate have begun to level off, the balance between demand and capacity for the near future will need to be kept under review. Planned housing development in and around the city will generate more demand which will start to use up some of this additional capacity. New schools have also been planned as part of larger housing developments.

- 12.21 The Darwin Green development is set to provide 2,500 homes across two phases and two new schools have been put forward as part of these proposals. Planning permission has been granted for the first school and is not expected to be required before 2023/24, while the second school will not be required for a several years.

- 12.22 The growth in demand for primary schools in Trumpington continues to be monitored, with increases in the published admissions number (PAN) of Trumpington Park Primary School and Trumpington Meadows Primary School set to be made when necessary.

12.23 In addition, a new 2FE/420 place primary school, Marleigh Primary Academy, was approved to pre-implementation stage through Wave 12 of the government's Free School Programme to serve the Marleigh housing development. The school opened in September 2022 and is run by the Anglian Learning Trust. The school includes a 52-place nursery for children aged 3 and 4 years. The school opened with 30 places in reception.

12.24 The Springstead Village development is anticipated to generate demand for a further new 2FE/420 place primary school – and the proposals includes plans for a school to meet this need. According to the Education Organisation Plan the decision to deliver this school will be taken subject to a review of capacity at the surrounding schools including Berwick Bridge and Teversham.

Secondary School Baseline

12.25 The analysis of secondary provision (for academic years 7–11) has also been carried out at SPPA level, which allows for pupil preference/school specialisms to be taken into account, in addition to the fact that most secondary school children tend to travel further than primary school students. For the purposes of this assessment, we have analysed schools within Cambridge City and Bottisham SPPAs.

12.26 According to the Annual School Census data (2022), there are nine secondary schools within Cambridge City and Bottisham SPPAs, with a surplus of 333 places – equivalent to 5% capacity – as detailed in Table A12.2 (see Appendix 2).

12.27 As shown in Figure 12.3 the closest secondary school to the Site is St Bede's Inter-Church School (which does not have any surplus capacity) (map reference 2) and Coleridge Community College which currently has 11% surplus capacity (map reference 4).

12.28 It is also important to note that St Bede's Inter-Church School's published admission number changed from 160 to 180 in September 2019. The school will therefore reach its new capacity of 900 in September 2024.

12.29 According to the previous Education Organisation Plan (2021–22), a 2FE/300 place expansion of Chesterton Community College was completed in 2019 but the school has not yet increased its PAN which will be subject to ongoing monitoring. It was agreed that the impact of larger primary school cohorts will result in a growing shortfall in provision in the coming years but as of now, the council deems there to be no actions required on this matter.

12.30 Delays to the Darwin Green Development suggest that the opening date of the new school that will serve the housing development is still under review. This will be a 6FE/900 place school but will open with a smaller PAN and grow gradually in line with the completion of developments and the demand for school places.



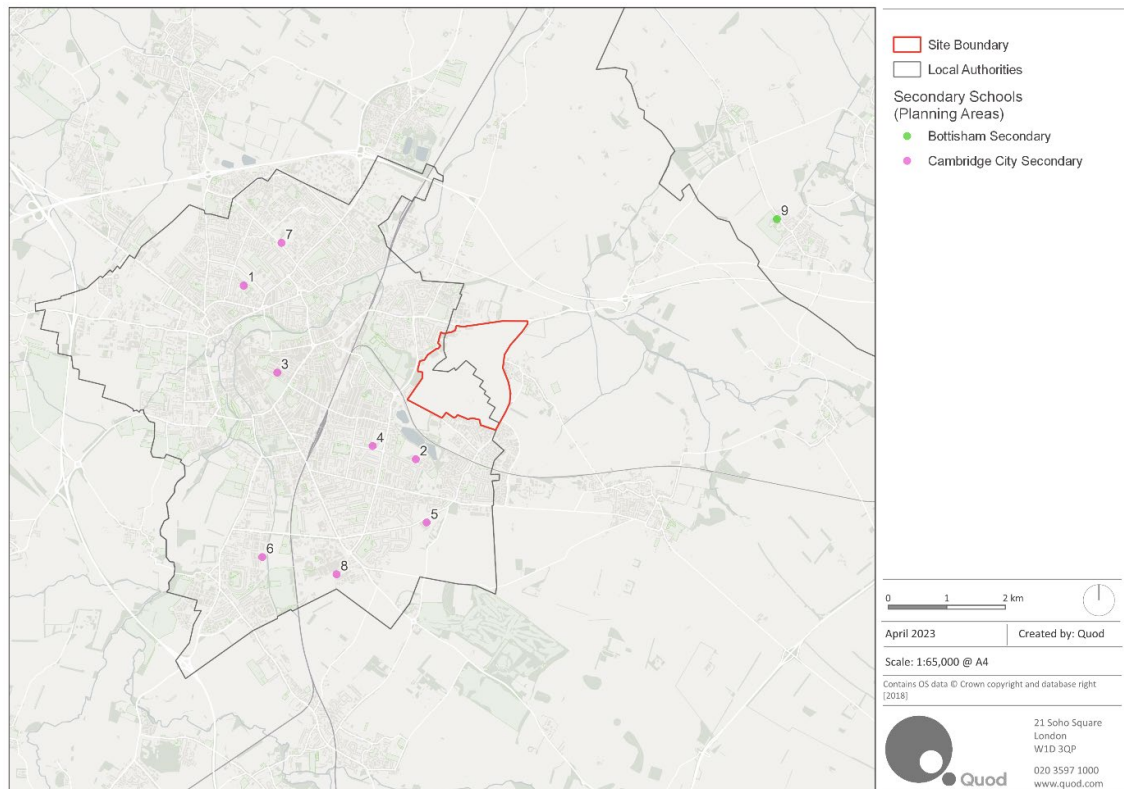


Figure 12.3 Secondary School Provision

Schools Baseline Summary

12.31 This analysis shows there is a significant level of surplus capacity at primary level, and less at secondary level. This is similar to the experience of many local authorities across the country, where the response to an increase in births between 2007 – 2012 led to expansion of primary school provision. This wave has now worked its way through to secondary school stage, leaving some authorities needing to consider primary schools or reduce their capacity to maintain the viability of existing provision.

12.32 CCC have also planned new provision linked to new developments within the surrounding area, particularly Springstead Village and Marleigh (now open). A decision as to whether to bring forward the school at Springstead Village will depend on capacity levels locally.

12.33 This context helps to inform the masterplan in terms of education provision, indicating additional capacity will be required to meet demand from the new homes, but the level of demand may not be a straightforward linear relationship.

Criterion for Planning for Schools Within the Masterplan

12.34 A key challenge for the masterplan is to ensure there is sufficient space planned for schools that also has the flexibility to be able to adapt to changing patterns of demand and that can respond to the local context at the time that the development is brought forward. The strategy should allow for flexibility to be able to respond to a situation where the level of provision planned within the masterplan is not required.

12.35 The approach taken to date has been to assume that all demand generated by the new homes delivered at the Site will need to be catered for by infrastructure on-site.

12.36 The following set of principles have underpinned the strategy for education planning for the masterplan:

- Primary schools must be located within 2 miles of homes (basis – CC Local Plan Policy 74 and SC Local Plan Policy TI/9)
- Secondary schools must be located within 3 miles of homes (basis – CC Local Plan Policy 74 and SC Local Plan Policy TI/9)
- School plots will be designed to meet the Department for Education's Area Guidance for Mainstream Schools (2014). This guidance provides detailed minimum and maximum area requirements for the school buildings and plot areas (including details for sports, play and open spaces required for schools of various education stages and sizes). Plot area ranges of different school sizes have been taken into account including:
 - Primary School (including nursery provision)
 - 2 FE: 1.6 – 2.0 ha
 - 3 FE: 2.3 – 2.9 ha
 - 4 FE: 3.0 – 3.8 ha
 - Secondary Schools (including sixth form provision assuming 80% retention)
 - 4 FE: 4.80 – 5.97 ha
 - 5 FE: 5.85 – 7.30 ha
 - 6 FE: 6.90 – 8.60 ha
 - 7 FE: 7.69 – 9.54 ha
- (Note: CCC have provided some school area sizes that differ from those set out above. At secondary level these are the same, at primary level, their total site area requirements are a little higher than the upper end of these ranges: 2FE – 2.3 ha, 3FE – 3 ha and 4FE – 4ha. However, given the scale of infrastructure required and the initial approach being taken to assume that all demand will need to be delivered on-site, the Department for Education plot areas will be applied. There are a number of objectives for the Site to meet aspirations for housing deliver and economic growth in Cambridge therefore the supporting infrastructure needs to be planned for in an efficient way, and not place an additional constraint on the ability of the masterplan to deliver on its potential).
- The number of school places required will depend not only on the number of homes that area delivered, but also the existing capacity within existing provision in the local area as set out above. Considering the demand from the new homes the following child yield has been applied. It is understood that CCC are now applying higher yields since the below yields were published. However, given the nature of the masterplan, and the mix and density of homes planned, it is considered that these yields would be more appropriate:
 - Primary school aged children – 30 per 100 homes
 - Secondary school ages children – 18 per 100 homes
- In line with policy it is assumed that schools will also provide community assess for shared uses. In particular outdoor sports provision in secondary schools can help to meet the overall demand for the wider masterplan as per the standard requirements set out in section 8, and make the most efficient use of land.



Healthcare

- 12.37 Primary healthcare provision is changing. As discussed above, the NHS's delivery strategy is to move some care provision and services that have previously been accommodated in hospitals and acute care settings into community and primary care settings. This means that future provision of healthcare needs to be flexible to meet changing needs, as set out in CC and SC's planning policies.
- 12.38 Provision of space for healthcare within the masterplan will need to be informed by healthcare stakeholders. A challenge for the masterplan team will be engaging with these stakeholders in a timeframe that works for both parties. There is a tension between the timescales in which the planning system needs to plan for new provision for a masterplan of this scale, five, ten and 15 years in advance, whereas the NHS considers needs on a much shorter timeframe, 18 months to three years in advance in most cases.
- 12.39 Therefore, the masterplan team will work closely with the local authority to establish working relationships with relevant stakeholders including the Cambridgeshire and Peterborough Clinical Commissioning Groups (CCG), the Estates Management Boards, Health and Wellbeing Boards and various NHS Trusts within the area (Cambridge University Hospital NHS Foundation Trust, Cambridgeshire and Peterborough NHS Foundation Trust, and Cambridgeshire Community Services NHS Trust).
- 12.40 Demand for healthcare will be planned for on the basis of the expected new resident population. In reflection of different household types a series of assumptions will be applied to the housing mix in the emerging masterplan. Including the following assumptions (source shown in parenthesis):
- Houses – 2.4 persons per household (Cambridgeshire Census data 2011)
 - Flats – 1.6 persons per household (Cambridgeshire Census data 2011)
 - Later living – 1.5 persons per household (British Property Federation, 2020, 'Housing and Care for Older People')
 - Students – 1 per bedspace (typically designed for single occupancy)
- 12.41 The Healthy Urban Development Unit provides a useful guidance on how much floorspace may be required for primary healthcare. This given an indicative guide for space per GP, but also includes space for wider services. This equates to 88 sqm per GP, and assumption that each GP has a benchmark patient list of 1,800 patients per GP. At this stage of the masterplanning process this helps to inform space planning for primary healthcare provision but more detailed input will be required from the various stakeholders to inform the strategy on likely service provision and space requirements.
- 12.42 There are 18 GP surgeries within 4km of the Site across five Primary Care Networks (PCNs): CAM Medical, Cambridge City, Cambridge City 4, Cambridge Northern Villages and Cantab.
- 12.43 The five surgeries to the east of the railway closest to the Site (map reference 1-5) have an average patient list size of 1,336 patients per GP (February 2023) – detailed in Table A12.3 (see Appendix 2).



12.44 As shown in Figure 12.4 the closest GP surgeries to the Site are East Barnwell Health Centre (901 patients per GP) (map reference 5), Mill Road Surgery (1,366 patients per GP) (map reference 3) and Cherry Hinton Medical Centre (2,555 patients per GP) (map reference 1).

12.45 The five relevant surgeries fall within PCNs Cambridge City (map reference 5) and Cambridge City 4 (map reference 1-4). Cambridge City PCN has an average patient list size of 1,198 patients per GP. Cambridge City 4 PCN has an average patient list size of 1,411 patients per GP. See Table A12.4 (Appendix 2) for details.

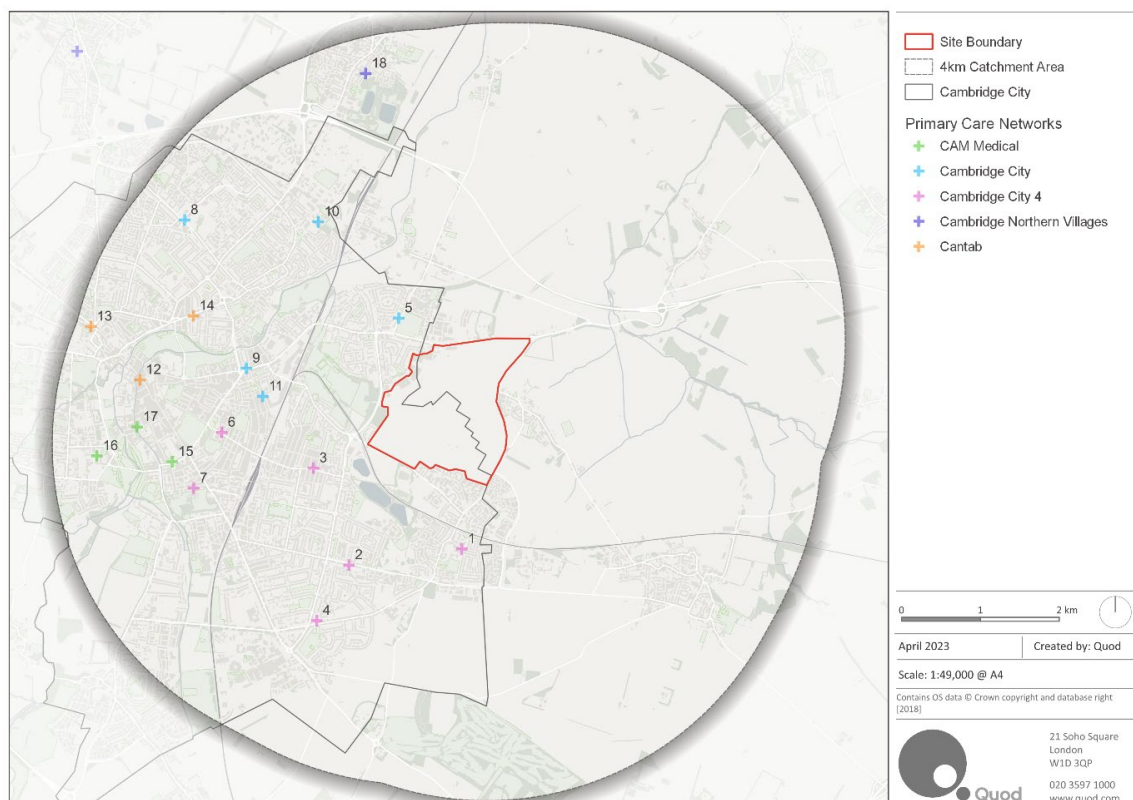


Figure 12.4 GP Surgery Provision

13. Transport

- 13.1 Transport constraints are multi-faceted. They include fixed and physical assets, environmental and heritage designations, physical network capacity and provision, safety, the mix of homes and jobs, and policies adopted by national and local government relating to transport, air quality and noise.
- 13.2 This section of the report sets out the baseline considerations and constraints of the Site from a transport perspective. The likely mitigations or design response will need to consider and address these constraints and requirements through the emerging masterplan.

Fixed and Physical Assets

- 13.3 The Site occupies a large area of land on the east side of the city. It inevitably has several interfaces and constraints with existing transport related infrastructure, assets, and features.
- 13.4 To the east of the Site is Airport Way. Airport Way runs north / south and is a single carriageway road which is subject to a 60mph speed limit and connects at its northern end to the A1303 Newmarket Road via a three-arm roundabout. There are proposals for a new roundabout at the junction of Church Road and a new signal junction with pedestrian facilities into the Springstead Village site at the southern end of Airport Way. As a result of these changes, the speed limit for the whole corridor is likely to reduce to 40mph. Airport Way is currently a significant barrier to movement and dislocates the Site from Teversham village. The changes proposed will reduce severance, once implemented.
- 13.5 The A1303 Newmarket Road is a distributor road and predominantly a single carriageway road which provides a link to the A14 at Junction 35 from Cambridge city centre. Newmarket Road runs east / west and runs along the northern edge of the Site and therefore dissects the main airfield site from two non-airfield sites and Marleigh. Newmarket Road in this location is characterised by a number of junctions which connect to minor roads and businesses. There is a central bus lane which provides inbound access to the existing Park and Ride site. The width of carriageway in this location is 11 metres although the total adoptable corridor is around 35m, however this narrows closer to the P&R access. Whilst good quality pedestrian and cycle links (or opportunities for them) are provided east west, the north south movements are inhibited by the road width, traffic volumes and speeds.
- 13.6 To the west of the Site lies the A1134 Barnwell Road. Barnwell Road is also a distributor road that runs north / south from Newmarket Road to the Coldhams Lane roundabout. Barnwell Road has similar characteristics to Newmarket Road in that the adopted corridor is wide due to a large carriageway and substantial verges in a number of places along its length. Beyond Barnwell Road lies Coldhams Common. Barnwell Road acts as a barrier for pedestrian and cyclist movements between the Site and this open space and the city centre beyond. Coldhams Common is common land that has the potential to provide access towards the city centre using paths and public rights of



way that already exist across it. However, changes to common land requires consent from the Secretary of State and therefore further enhanced or formalised connectivity across the Common cannot be assumed as being readily available.

- 13.7 To the south of the Site lies Coldhams Lane. Coldhams Lane is a local road that connects Cherry Hinton with the city centre. There is little by the way of pedestrian and cycle facilities along its length in this location although a shared user path will be forthcoming as a result of a planning obligation secured for the Springstead Village proposals. This will route via Nuttings Way to avoid the constraints for non-motor vehicle provision resulting from the narrow railway bridge. To the south of Coldhams Lane there is a significant levels difference between the road corridor and the land beyond which is allocated for development.
- 13.8 The closest trunk road to the site is the A14, which is located to the north of the Site. which can be accessed at Junction 35 via Airport Way (where eastbound or westbound movements are possible) or at Junction 34 via Ditton Lane which only has west facing on and off slips. The A14 is a major distributor road which extends from the port of Felixstowe in Suffolk to the Catthorpe Interchange at the M1 and M6 motorways near Rugby, Warwickshire. Whilst Junction 35 represents a significant barrier to movement between the Site and villages to the north of Cambridge, there are crossings at the Quay Mill close to J35, over the Lower Fen Drove Way and Horningsea Road.
- 13.9 The Cambridge to Ipswich rail corridor runs east west to the south of the Site. Whilst not contiguous with the Site, the corridor does create a significant barrier to north south movement across the east side of the city. There are places where vehicles, pedestrians and cyclists can cross, however this is limited to the level crossing on Cherry Hinton High Street and further east towards Fulbourn. Crossings for pedestrians and cyclists are available on the Tins Bridge shared path and at two locations across Coldhams Common. The rail corridor crosses Coldhams Lane and Barnwell Road on an overbridge. The overbridge has a limited head height (4.2 metres) meaning that double decker buses do not use Coldhams Lane. The overbridge is narrow in width, constraining the room available for pedestrians and cyclists travelling off-carriageway.
- 13.10 A disused railway corridor that previously formed the Cambridge to Burwell line runs around the northern edge of Barnwell, east of Fen Ditton before being dissected by the A14. Beyond the A14 the route continues towards Lode.
- 13.11 The main population receptors in the area that are sensitive to changes in road traffic are within the villages of Fen Ditton, Teversham and Cherry Hinton. Fen Ditton is en route to the A14 Junction 34 and as such is impacted by traffic entering and leaving the east side of the city. Little Wilbraham Fen SSSI is also located south of the A14 Junction 35. These receptors and communities will need to be protected from adverse impacts arising from development.
- 13.12 These physical infrastructure, assets, and features are set out below in Figure 13.1.



Figure 13.1: Plan of physical infrastructure, assets and features (Source: Stantec)

13.13 The primary implications of these physical features in the area are that any redevelopment of the airport needs to overcome the barrier effect and restrictions to movement that result with regard to pedestrians, cyclists, and public transport.

13.14 Additionally, the sensitivity of the surrounding villages needs to be carefully managed and ultimately mitigated.

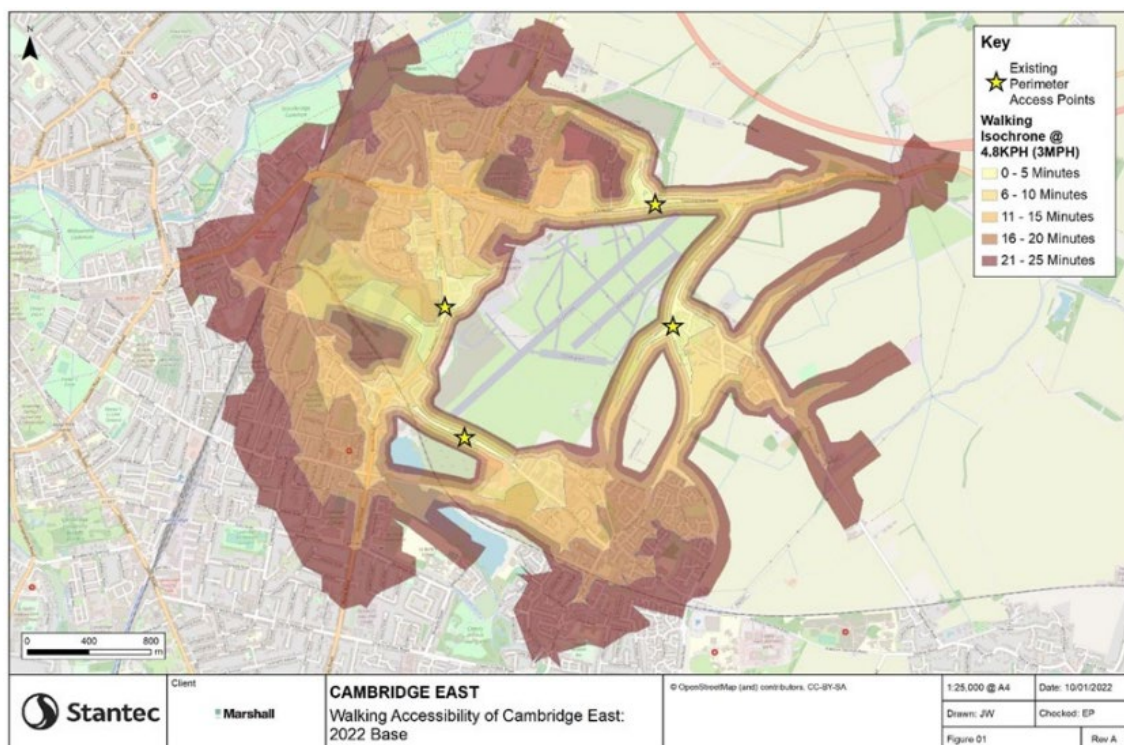


Figure 13.2: Plan of current 'barrier effect' to movements

13.15 In addition to the Site surrounds, due to the expansive size of the Site and its current impenetrability for walking and cycling, the Site itself creates a barrier for north-south

movements between Newmarket Road and Coldhams Lane, and for east-west movements between Airport Way and Barnwell Road. Figure 13.2 highlights the current 'barrier effect' to movements.

- 13.16 This lack of permeability is also emphasised by the network of public rights of way (PRoW) and National Cycle Network routes surrounding the Site, as displayed in Figure 13.3 below which show a lack of penetration close to or through the airfield site.

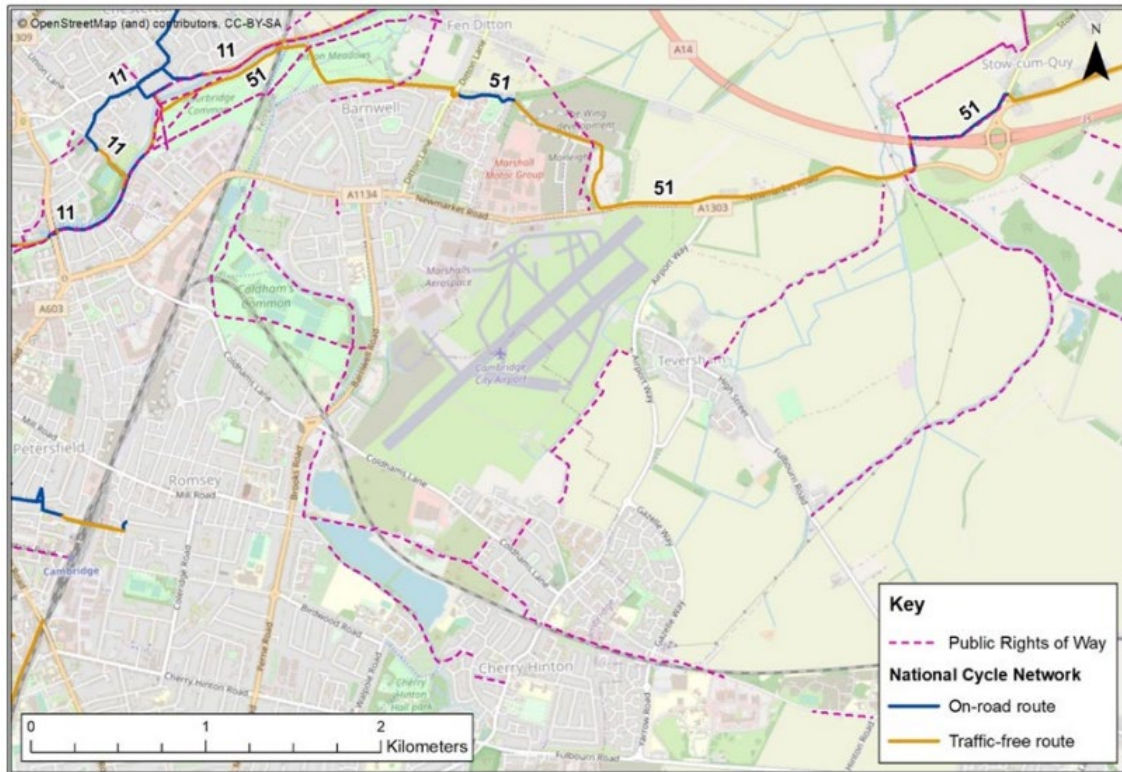


Figure 13.3: Plan of current network of public rights of way (PRoW) and National Cycle Network routes surrounding the Site

Environmental Designations and Heritage Constraints

- 13.17 These aspects are covered fully in sections 6, 7, 8 and 10 as part of the Biodiversity and Geodiversity, Landscape and Townscape, Open Space and Green Infrastructure and Historic Environment sections of the report respectively.

Physical Network Capacity and Provision

- 13.18 During the morning and evening peak periods, congestion is experienced on corridors into the city. Whilst network performance is improved when compared to condition prior to the pandemic, traffic levels during peak hours do result in delays at some key junctions, and over time the trend is for traffic levels to increase. The existing available capacity afforded by the road network is therefore considered to be the available capacity to accommodate any development growth in addition to any 'banking' of existing traffic that can be achieved. This therefore means that, in principle, development related demand must be accommodated through investment in public transport, walk and cycle networks.

- 13.22 Public Transport on the east side of the city is currently limited. The Citi 1 bus provides good access from Cherry Hinton to Addenbrooke's Hospital, however bus provision between Teversham and the city is poor. No services currently use Coldhams Lane. The Newmarket Road Park & Ride site provides 10-minute services to central Cambridge, but this site is now considered to be too close to the city and therefore relocation options are being considered by the Greater Cambridge Partnership (GCP) as part of the Eastern Access Project. Rail access is possible from Cambridge Station although bus access to the station is via the Citi 1, which has a journey time of 40 minutes or alternatively and more quickly, by bike. Existing bus services are shown in Figure 13.4 above.
- 13.23 Significant investment in transport on the east side of the city is currently proposed by the GCP in the form of the Eastern Access Project. Phase 1 of this study will see improved walking, cycling, and landscape investments being made along Newmarket Road. Whilst this will increase the attractiveness of these modes of transport along a currently hostile corridor, the capacity required to support the redevelopment of the Site will not be achieved through these measures alone. Therefore Phase 2 will include a new segregated public transport link from the relocated park and ride, through the centre of the Site with permeable walking and cycling connections to surrounding communities, enhancing accessibility for existing residents to the east of Cambridge as well as providing an attractive and regular high-capacity service for new residents.
- 13.24 The Phase 2 scheme is the sustainable transport 'back bone' to any redevelopment of the Site. Phase 1 will be delivered prior to 2025 and the Phase 2, the longer-term improvements will be delivered after 2025 and subject to the timescales for the relocation of the airport. A corridor of ~22 metres for the link through the Site has been assumed as needed for the GCP. The constraints whilst the airport remains operational are shown in Figure 13.5 below.

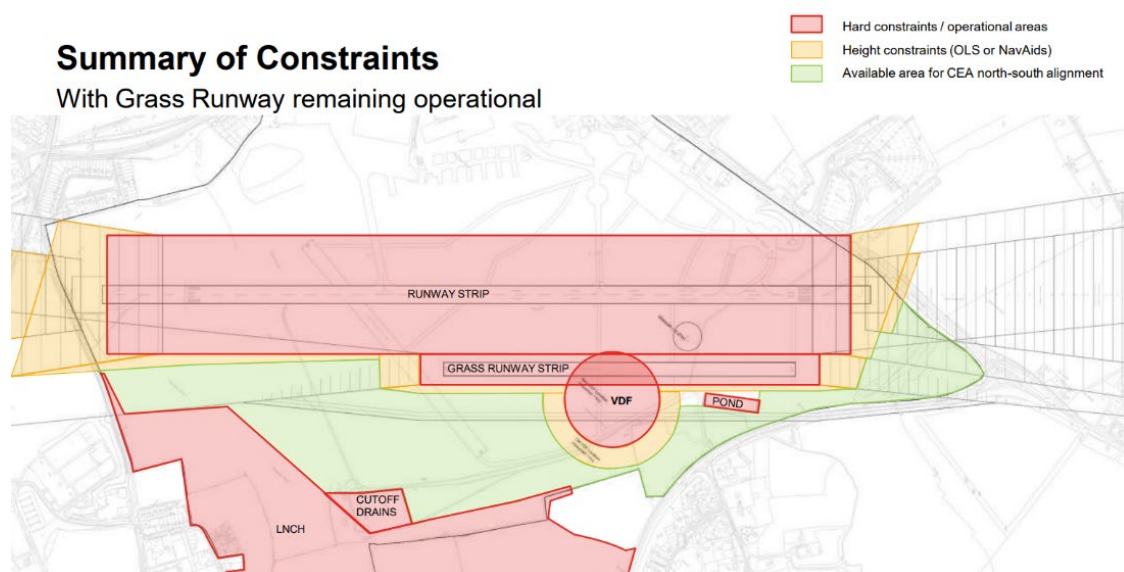


Figure 13.5: Plan of current runway constraints on the airport

- 13.25 Additional mitigation will be required to overcome the network capacity constraints identified. A schedule of mitigation has been identified and will be discussed with CCC to establish its merits and whether the impacts of the scheme can be fully mitigated.

The mitigation package may include limited highway improvements where this benefits safety or sustainable transport, but this would be at such a scale so as not to lead to an increase in car traffic.

Safety

13.26 Road safety statistics have been obtained from CCC for the last five years and for time periods pre and post Covid. These statistics indicate where on the highway network slight, serious, or fatal accidents have occurred and what the causation factors were. From this information there appears to be a cluster of accidents around the Coldhams Lane/ Barnwell Road roundabout, Ditton Lane and Junction 35 of the A14.

Policies and direction adopted by national and local government

13.27 The National Planning Policy Framework (July 2021) sets out the Government's planning policies for England and how these are expected to be applied. The crux of the NPPF in transport terms is to ensure that developments can be made sustainable and do not result in severe cumulative impact.

13.28 However, in more recent times several documents have been published which set the government's direction of travel regarding encouraging a less carbon intensive transport future.

13.29 The Transport Decarbonisation Plan (TDP), published in September 2021 included a restatement of the aims of the Government's 'Gear Change' vision document for cycling and walking. In particular, it included a commitment to deliver "a world class cycling and walking network for England by 2040". Whilst there have been criticisms over whether the aim was actually to reduce road traffic, or simply to replace our petrol and diesel vehicles with electric vehicles (EVs), the documents do demonstrate the direction of policy direction.

13.30 The Cambridge and Peterborough Combined Authority, CCC and GCSP as the strategic and local highway authorities and planning authority are, in many regards, further ahead in their thinking than currently reflected by national government. The Greater Cambridge Local Plan is predicated on a growth strategy that reduces carbon emissions from transport.

13.31 Further to this, CCC's recently adopted Active Travel Strategy (March 2023) outlines a comprehensive set of policies that will enable quality provision of active travel infrastructure and initiatives in Cambridgeshire to contribute to their target to achieve net zero carbon by 2045. Therefore, any proposals for the Site will need to reflect these positions and policies regarding carbon reduction.

13.32 To achieve this aim, CCC currently utilise a trip budget approach to car trips for new developments. The main principle is to establish an acceptable level of vehicular trip generation to and from the Site, such that off-site impacts from traffic generated by the proposal are acceptable. The monitoring of vehicle trips against the budget are a key control to managing acceptable impacts. Figure 13.6 below highlights how a modal shift can be achieved in line with vehicular banking. To maximise growth



opportunities within a vehicular trip budget approach, new development should be located:

- to take advantage of nearby sustainable transport hubs (such a railway stations, travel hubs, cycleways and other public transport hubs);
- where new strategic transport interventions may help reduce background traffic;
- where there are opportunities to rationalise existing developments, e.g., on brownfield land where there is extant use for a level of vehicular trips already; and
- where there is the ability to limit car trips and the incentive to drive a car, potentially through limiting road capacity.

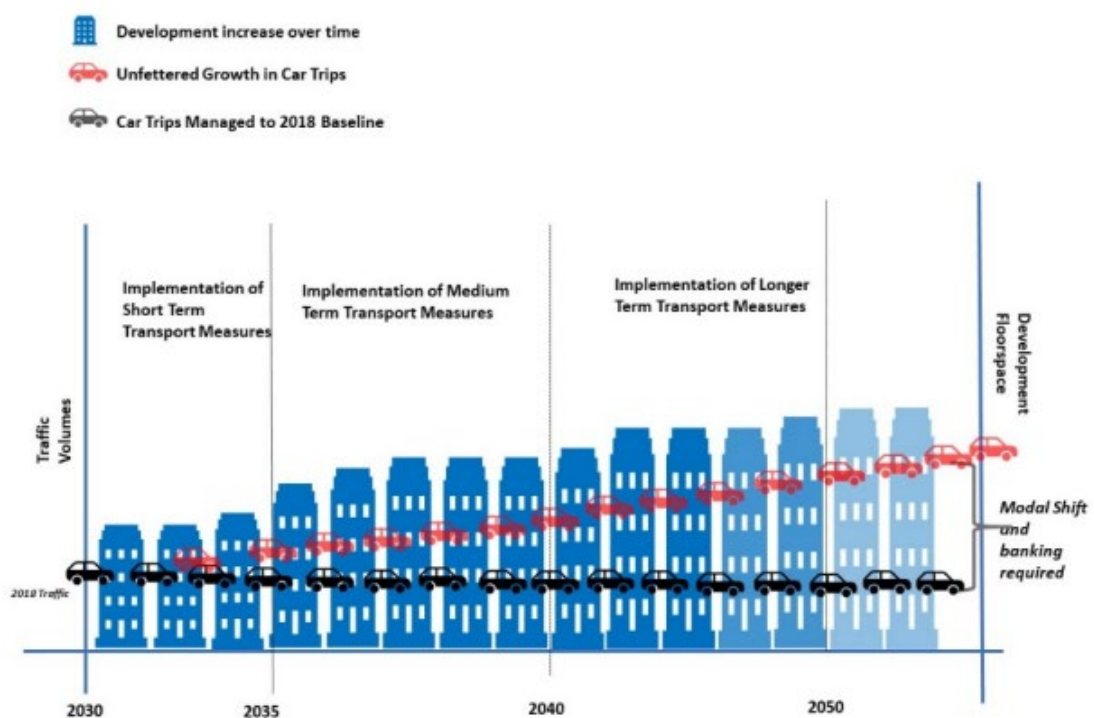


Figure 13.6: Plan demonstrating model shift

13.33 The specifics of the trip budget will be agreed with CCC and where a fuller appreciation of impacts and benefits of the scheme can be more accurately captured as this has a direct relationship with the quantum and mix achievable at the Site and for allocation within the plan. This will also need to consider any long-term changes to travel behaviour resulting from the global pandemic, the trips generated by the existing airport and also alongside the GCP's Making Connections proposals which seek, amongst improving public transport, to reduce traffic on the city's roads by around 15%.

13.34 The high-level principles of how Marshall will approach the development of a trip budget have been agreed in principle with CCC. Although its development is an evolving process, the trip budget approach consists of a number of distinct stages, allowing proportionate evidence at each stage of the plan-making process, planning application, delivery and occupation. The stages are shown in Figure 13.7 and further described below.

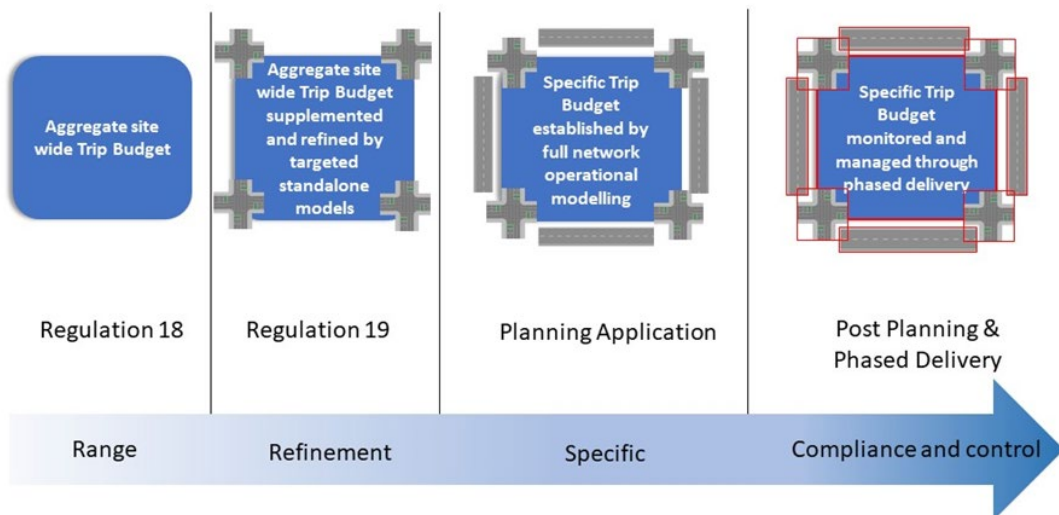


Figure 13.7: Stages in the development of a trip budget

Regulation 18 Local Plan – ‘The Range Stage’

13.35 At the Regulation 18 stage of plan-making, very early principles around the trip budget are established. There are two parts to this. The first part is to define a broad level of traffic impact and network performance that is considered acceptable. At this stage, these conclusions need to be based on proportionate evidence (and tools) commensurate with this early stage of the plan-making process.

13.36 The second part is then to consider what this vehicular trip limit means for the development quantum, mix and mitigation packages at the Site, and what vehicular mode shares would then need to occur so as not to breach the trip budget and the network performance. The resulting car driver mode shares associated with the eventual development quantum and mix should be credible and defensible. Both parts are necessary to demonstrate there is a reasonable prospect that this scale of development could come forward for further, more detailed assessment as part of the Local Plan process and that the principle of the Site's development is not likely to be inconsistent with the emerging Local Plan strategy.

13.37 Developing the trip budget at this stage therefore includes:

- a high-level understanding of the trip budget based on any broad estimates of the existing site traffic generation and forecasts of capacity within the road network, taking account of likely known infrastructure investment and other trends, such as increases in home or hybrid working;
- an indicative level of trip generation and distribution associated with the full scheme build out after mitigation;
- an indicative car driver mode share which it will be necessary to achieve for the development to meet the trip budget – and an assessment of whether this is credible;
- consideration, in principle, of whether any further mitigation may be necessary to ensure the development can operate consistently with the Plan's emerging strategy.

Regulation 19 Local Plan – ‘The Refinement Stage’

13.38 During later stages of the plan-making process, refinement of the above is undertaken, taking into account more advanced assumptions on land-use mix, quantum and mitigation packages arising from cross-topic evidence stages and a more detailed understanding of the capacity of the network and of planned infrastructure investment. This leads to a refinement of both of the parts above. In addition, a number of standalone operational models can be used to consider specific junctions and access locations. These operational models would be supplementary and would seek to validate the conclusions drawn from earlier stages of assessment.

Planning Application – ‘The Specific Stage’

13.39 During the planning application process, further operational network assessments would be undertaken as part of the Transport Assessment to further refine Part 1 of the trip budget. These will take full account of phasing, detailed access designs, network mitigations and wider changes, as well as detailed and agreed methodologies for wider growth / reductions and other committed schemes. The Transport Assessment will report the trip generation, distribution, mode share and assignment in detail of the completed development using a methodology scoped and agreed with CCC.

13.40 The outcome of the modelling at this stage will be to establish the level of acceptable trip making from the Site on the surrounding network on a corridor and junction basis which will form the basis of obligations and ongoing post-planning monitoring. It is at this stage that detailed conclusions can be reached about the precise trip budget and how it is to be applied and monitored.

13.41 It is generally standard practice that ‘worst case’ traffic scenarios are tested at this stage (‘i.e. predict and provide’ – although this could be done on a strategic level). However, emerging practice is moving towards a ‘decide and provide’ policy which places less emphasis on traffic, and more on sustainable modes of travel and what infrastructure and services are required to deliver high levels of sustainable travel. A ‘monitor and manage’ approach may be the best way of delivering the development in accordance with this approach and agreed mode shares and trip budget.

Post Planning – Phase Delivery – ‘The Compliance and Control Stage’

13.42 At each reserved matters application seeking consent for the details of phases of development, the technical work will be updated to consider the performance of the external network and the performance of the Site against the trip budget and the car driver mode share target established at outline stage. External changes can be incorporated into further assessments alongside detailed monitoring data from occupied parts of the development. Monitoring will ensure full accountability and if necessary further mitigation, or refocussed mitigation which may be needed to ensure that overall compliance with the trip budget is achieved. The full details of these mechanisms would be established in the S106 obligations entered into on the grant of outline consent.



13.43 As development phases progress so a 'monitor and manage' process will bring sharper focus on mode shares and actual outcomes against a trip budget.

13.44 Marshall accepts this principle and high-level approach and see this as a complementary measure to their own non-car-based ambition for the Site.

Cambridge East site development process: evidence required

Draft for discussion

May 2022

Introduction

This note sets out officers' initial view (to be refined through discussion with MGP and internally with Council specialists) on evidence required to support a sound allocation at Cambridge East. The list of required evidence is structured around the draft site development methodology (shown in a separate pdf) flowchart stages, including:

- Stage A: Baseline constraints, and developing vision and scenarios
- Stage B: Testing and refinement of scenarios
- Stage C: Confirm Local Plan Strategy

Points to note:

- GCSP consider there is potential for MGP to produce all required evidence except where otherwise stated in this note, consistent with the separate MoU.
- Where there is expectation of engagement with third parties this is noted.
- Discussion with MGP and its representatives will be required to confirm the current position on each topic as of May 2022 before confirming outstanding evidence required and agreement with MGP on the specific evidence it will produce.

Evidence required

Stage A: Baseline constraints, and developing vision and scenarios

The below list sets out officers' views on evidence relating to baseline constraints and in-principle assumptions (eg schools provision per population) that would inform an initial 2D concept plan.

Planning and Design

- Flooding and Drainage: Promoters submitted a high level statement regarding the flood zones with their submissions. A level 2 SFRA is required considering all forms of flooding, particularly surface water, and including modelling of the

ordinary watercourses on site and consideration of flood risk betterment. The EA have advised that the site should be considered strategically in relation to the adjacent allocations North of Newmarket Road and North of Cherry Hinton including strategic flood risk betterment.

- Climate change mitigation and adaptation: Exploration of the water needs of the site, including liaison with water stakeholders, water efficiency, energy efficiency and renewable energy opportunities
- Land conditions / constraints – evidence regarding contamination has been submitted by MGP and will require assessment by Council Environmental Health officers. Other constraints will need to be demonstrated to be capable of being addressed.
- Biodiversity and geodiversity – evidence required to establish features for protection/retention and a baseline for a biodiversity net gain plan
- Landscape and townscape – evidence required to establish features/areas for protection/retention/enhancement
- Open space/GI – discussion required about in principle assumptions about on and off site provision (GCSP are developing GI and open space standards for the draft plan stage), and a proposed on-site GI strategy will be required for discussion
- Historic environment – confirmation of historic environment structures and features within the site for retention required to inform 2D concept plan
- Other constraints to development (eg electricity substation on site) – confirmation required of features within the site that need factoring into a 2D concept plan
- Infrastructure (education/health/social/cultural) – discussion with County Council education/health/other providers to confirm local position on education/health/social/cultural provision, and of in-principle assumptions that could be used when generating development scenarios

Impact of existing consented development – in discussing the above issues consideration will need to be given to the relationship of development at Cambridge Airport with consented development at Marleigh/LNCH, to ensure comprehensive development as per adopted and emerging policy.

Transport

Evidence/discussion required to confirm baseline constraints eg:

- In principle strategic highways impact and mitigation required
- PT corridor location and land take
- Interface with GCP schemes, other infrastructure, and timings

In-principle approaches to be agreed at this stage including

- Trip budget approach
- Evidenced approach to achieving a balance of homes and jobs that results in high internalisation

Availability and deliverability

- Available for redevelopment - MGP have submitted and have committed to providing further evidence that the relocation to Cranfield is progressing. Evidence is required to confirm the year at which development at Cambridge Airport could begin, including any variations within different parts of the site
- Delivery – the Council produced Housing Delivery evidence to support the First Proposals, and needs to produce robust and defensible evidence on a trajectory for each site. MGP could helpfully develop evidence to inform a robust housing trajectory to 2041

Stage B: Testing and refinement of scenarios

Testing of scenarios

Evidence will be required to understand the implications for the confirmed development scenarios:

Planning and Design

- Landscape and townscape: GCSP are commissioning a Heritage Impact and Tall Buildings study for Greater Cambridge, in liaison with Historic England. Once that is available (anticipated late 2022), MGP could then provide further detail regarding landscaping, edge treatment
- Biodiversity – need to understand the implications for onsite net gain, dependent on the development scenario
- Infrastructure - GCSP will be commissioning an Infrastructure Delivery Plan to inform the local plan. Evidence for CE will be needed to test the infrastructure implications of each development scenario (potential for County Council/health provider involvement)
- Viability – GCSP will be commissioning a Viability Assessment to inform the local plan. Evidence for CE viability will be required to test the viability of implications of each development scenario

Transport

- Variations in transport impacts/mitigation
- Trip budget testing

Refinement of land uses

Planning and Design

- Employment/housing evidence – GCSP have commissioned employment and housing needs evidence which will inform the Councils' view on appropriate scale and types of employment/housing on site. MGP should produce a proposed mix of employment/housing uses for comment

Transport

- CE transport evidence: it would be helpful for MGP to provide a refined transport strategy for the site drawing on previous stages of work

Stage C: Confirm Local Plan Strategy

Confirming CE development within Local Plan strategy

Planning and Design

- Refined housing trajectory to 2041 and beyond - Dependent on previous work the Councils will look for MGP to provide a refined housing trajectory for the site including accounting for full build out
- Infrastructure implications – Drawing on previous stages of work the Councils will look for MGP to provide a confirmed infrastructure list to inform the GCLP Infrastructure Delivery Plan
- Viability implications - Drawing on previous stages of work the Councils will look for MGP to refine viability evidence list to confirm the viability of the proposed approach and help inform the GCLP Viability Assessment

Transport

- GC transport evidence- CCC for GCSP will refine the transport evidence for the Local Plan including drawing on the evidence produced for Cambridge East

Appendix 2: Education and Health Baseline Data

Table A12.1 – Existing Primary School Capacity

Map ref	School Name	Number on roll	Capacity	Total surplus	Total surplus (%)
Cambridge City (North and South of the Cam) SPPA					
1	Arbury Primary School	387	420	33	8%
2	Cherry Hinton CofE VC Primary School	182	210	28	13%
3	Chesterton Primary School	166	210	44	21%
4	Colville Primary School	207	210	3	1%
5	Fawcett Primary School	377	420	43	10%
6	Kings Hedges Primary School	417	420	3	1%
7	Mayfield Primary School	392	420	28	7%
8	Milton Road Primary School	412	420	8	2%
9	Morley Memorial Primary School	392	420	28	7%
10	Newnham Croft Primary School	229	238	9	4%
11	Park Street CofE Primary School	121	130	9	7%
12	Queen Edith Primary School	401	420	19	5%
13	Queen Emma Primary School	398	420	22	5%
14	Ridgefield Primary School	201	210	9	4%
15	Shirley Community Primary School	372	420	48	11%
16	St Alban's Catholic Primary School	209	210	1	0%
17	St Laurence Catholic Primary School	274	315	41	13%
18	St Luke's CofE Primary School	117	210	93	44%
19	St Matthew's Primary School	620	630	10	2%
20	St Pauls CofE VA Primary School	142	210	68	32%
21	St Philip's CofE Aided Primary School	252	315	63	20%
22	The Galfrid School	314	600	286	48%
23	The Grove Primary School	225	390	165	42%
24	The Spinney Primary School	207	210	3	1%
25	Trumpington Park Primary School	324	210	0	0%
Bottisham Rural 1 SPPA					
26	Orchard Park Community Primary School	161	210	49	23%
27	Trumpington Meadows Primary School	234	210	0	0%
28	Fen Ditton Primary School	163	175	12	7%
29	Teversham CofE VA Primary School	189	210	21	10%
30	Fulbourne Primary School	290	315	25	8%
31	Great Wilbraham CofE Primary School	89	105	16	15%
32	Bottisham Community Primary School	283	315	32	10%
33	Bewick Bridge Community Primary School	190	210	20	10%
34	University of Cambridge Primary School	595	630	35	6%
35	Marleigh Primary Academy ¹	–	–	–	–
Total		9,532	10,638	1,274	12%

Source: Annual Schools Census, 2022; Local Authority School Admissions Documents.

¹ Opened in September 2022 – no data available yet.



Table A12.2 – Existing Secondary School Capacity

Map ref	School Name	Number on roll	Capacity	Total surplus	Total surplus (%)
Cambridge City Secondary SPPA					
1	Chesterton Community College	1,007	900	0	0%
2	St Bede's Inter-Church School	909	860	0	0%
3	Parkside Community College	610	600	0	0%
4	Coleridge Community College	535	600	65	11%
5	The Netherhall School	891	900	9	1%
6	Trumpington Community College	410	540	130	24%
7	North Cambridge Academy	621	750	129	17%
8	Cambridge Academy for Science and Technology	285	225	0	0%
Bottisham Secondary SPPA					
9	Bottisham Village College	1,343	1,260	0	0%
Total		6,611	6,635	333	5%

Source: Annual Schools Census, 2022; Local Authority School Admissions Documents.

Table A12.3 – Existing GP Capacity

Map ref	Surgery Name	Full time equivalent GPs	Patient list size (Feb 2023)	Equivalent patients per FTE GP
1	Cherry Hinton Medical Centre	4.2	10,737	2,555
2	Cornford House Surgery	10.0	11,135	1,115
3	Mill Road Surgery	5.6	7,585	1,366
4	Queen Edith Medical Practice	6.8	9,729	1,434
5	East Barnwell Health C35.1entre	8.6	7,738	901
Total		35.1	46,924	1,336

Table A12.4 – Existing GP Capacity across the key PCNs

PCN Name	Full time equivalent GPs	Patient list size (Feb 2023)	Equivalent patients per FTE GP
Cambridge City	43	52,009	1,198
Cambridge City 4	41	58,540	1,411
Total	85	110,549	1,302

