The Network Rail (Cambridge South Infrastructure Enhancements) Order  $\label{eq:cambridge} % \begin{center} \b$ 

Environmental Statement – Volume 1: Non-Technical Summary Report



# **Environmental Statement**

Volume 1: Non-Technical Summary Report

June 2021

Security Classification: OFFICIAL

The Network Rail (Cambridge South Infrastructure Enhancements) Order Environmental Statement – Volume 1: Non-Technical Summary Report



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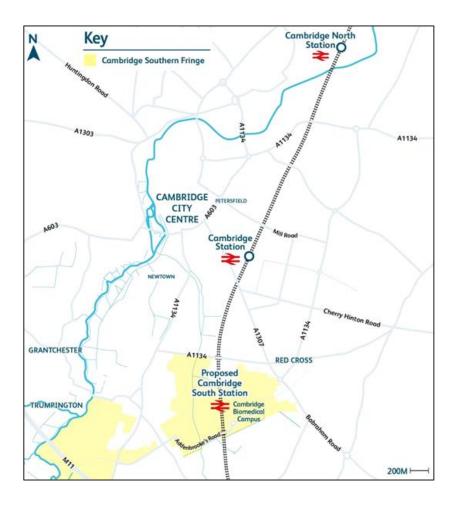
# 1 What is Cambridge South Infrastructure Enhancements?

Network Rail is responsible for the operation of railways across the UK. The proposed Cambridge South Infrastructure Enhancements (CSIE) scheme (the 'proposed Development') will provide infrastructure necessary to deliver a new station adjacent to the Cambridge Biomedical Campus in south Cambridge whilst maintaining capacity and improving capability of the railway network.

The Cambridge Biomedical Campus is the largest centre of medical research and health science in Europe and is expected to grow. There are also new housing developments anticipated (namely, those in the area of the Cambridge Southern Fringe), which will continue to grow in the local area. This urban growth is needed to meet the high demand for housing and support the local economy, and it necessitates excellent transport infrastructure.

The proposed Development comprises these three main components:

- A new Cambridge South station;
- To the north of the new station, a new connection between existing rail lines at Hills Road junction; and
- To the south of the new station, junction and track improvements at Shepreth Branch Junction



In order to deliver the proposed Development, an application will be made to the Secretary of State for a Transport and Works Act Order (TWAO). The TWAO application will request powers to enable Network Rail to construct and operate the proposed Development including the acquisition of land and rights over land. This is a specific legal process that enables statutory bodies such as Network Rail to develop projects that allow essential transport infrastructure such as railways to be built. The

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benefits for the wider general public need to be demonstrated in order to justify the development and purchase of land and rights. The TWAO application is supported by the Environmental Statement and a separate request for deemed planning permission.

# 2 Why is the Development Needed?

Taking into consideration the scale and type of the development taking place, a range of existing and future transport problems in Cambridge have been identified:

- There is a lack of long-distance public transport opportunities to access the Cambridge Biomedical Campus and Cambridge Southern Fringe area;
- The area suffers from indirect public transport connectivity to international gateways, for example to Europe via Stansted Airport or via the Channel Tunnel rail links from London;
- There is indirect public transport accessibility in the Cambridge Southern Fringe area, with a dependence on public transport infrastructure within Cambridge city centre to access it;
- Highway congestion in Cambridge has been increasing along with associated environmental concerns of pollution and poorer air quality resulting from increased traffic;
- Parking availability at the Cambridge Biomedical Campus is currently constrained.

Network Rail's objectives for Cambridge South Infrastructure Enhancements scheme are to:

- Improve sustainable transport access to housing, services, and employment within the Cambridge Southern Fringe and Biomedical Campus area, to fulfil existing and future demands
- Contribute to minimising highway congestion associated with the Southern Fringe and Cambridge Biomedical Campus by increasing the mode share for sustainable transport modes
- Reduce reliance on Cambridge city centre transport infrastructure for serving the Southern Fringe and Cambridge Biomedical Campus
- Be capable of integrating with and enhancing the opportunities presented by Thameslink and East West Rail, to support development of the Cambridge Biomedical Campus

Increase public transport connectivity between the Cambridge Biomedical Campus and international gateways, in recognition of its

international significance.

As part of the application submission for this proposed Development, an Environmental Impact Assessment has been carried out to understand how the existing and future environmental conditions are likely to be affected by the proposed Development. This includes effects during construction as well as once the project is built and is in use. The purpose of the Environmental Impact Assessment is to protect the environment, by ensuring that the Secretary of State has full knowledge of the likely significant effects of the proposed Development and takes these into account when deciding whether to give consent to the proposed Development.

The purpose of this Non-Technical Summary is to summarise the findings of the assessment in non-technical language.



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### 3 Environmental Impact Assessment

Environmental Impact Assessment (EIA) is a process whereby the key likely environmental effects (also referred to as 'likely significant effects') of a proposed development are identified and assessed. Positive effects are identified and wherever possible, identified negative environmental effects are avoided or reduced. This process and its outcomes are reported in an Environmental Statement that will be considered in full by the Secretary of State prior to determining the Transport and Works Act Order application. This document provides a non-technical summary of the Environmental Statement that supports the application.

### **EIA Scoping**

The scope of the EIA and the methodology to be applied were agreed with the Transport Infrastructure Planning Unit of the Department for Transport. The EIA Scoping process ensures that the Environmental Statement is proportionate and focuses on the key potential environmental issues.

A Scoping Report was issued to the Transport Infrastructure Planning Unit on 1<sup>st</sup> December 2020. In response, a formal Scoping Opinion was issued to Network Rail on 22<sup>nd</sup> January 2021. The Scoping Opinion confirmed that the following environmental topics should be assessed as part of the EIA, and reported in the ES:

- Acoustics Assessment Part 1 Noise
- Acoustics Assessment Part 2 Vibration
- Air Quality
- Biodiversity
- Climate Part 1 Climate Change Adaptation
- Climate Part 2 Greenhouse Gas Emissions
- Cultural Heritage
- Ground Conditions and Contamination
- Landscape and Visual Impact
- Materials and Waste
- Population and Health
- Socio-economics
- Transport
- Water Resources and Flood Risk

Findings of the assessments for each of these environmental topics reported in the Volume 2 – Main Environmental Statement are summarised below.

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### 4 The Site and the Surrounding Area

The site covers an area of approximately 46.5 hectares and is located approximately 1.5km south of the centre of Cambridge. An existing railway line is present on site. The proposed station area is located immediately west of the Cambridge Biomedical Campus (CBC). The site area allows for the works to build and operate the Development. Of this area, approximately 5 hectares would be used for the Development footprint in operation.

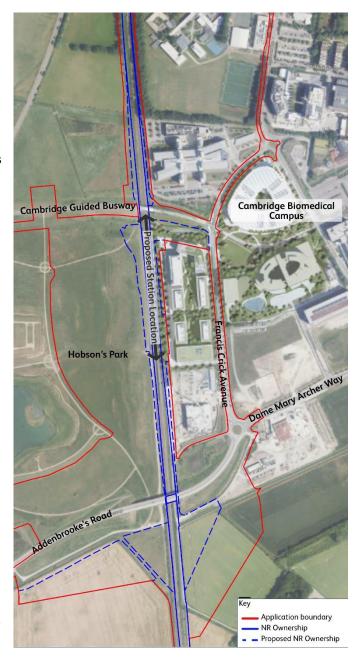
In the immediate surrounding area to the east of the railway line lie other research and development buildings. The Anne McLaren Research Facility, and AstraZeneca Energy Centre are located on Francis Crick Avenue adjacent to the eastern site boundary in the area of the proposed station. To the south of Dame Mary Archer Way is Abcam plc, a biotech company. Land further to the south of this area is largely occupied by arable farmland, and represents part of the 'Cambridge Southern Fringe'.

The majority of the western portion of the site lies within Hobson's Park which contains Hobson's Park Nature Reserve. Arable farmland lies to the south-west of Addenbrooke's Road

The northern area of the site predominantly comprises existing railway infrastructure. This area is bordered by large educational and industrial buildings. Along the Cambridgeshire Guided Busway (CGB) route, which crosses over the northern portion of the site, there are stretches of national cycle route, public rights of way (PRoWs), and minor roads which frame the site and create connectivity to surrounding areas.

The surrounding area contains significant archaeological potential, which presents a key constraint, as it surrounds the site boundary on all sides. In particular, there is a Scheduled Monument in the farmland south-west of Addenbrooke's Road.

Hobson's Brook, a partially natural watercourse, is also located within the site boundary, which rises from Nine Wells Local Nature Reserve



There are two Sites of Special Scientific Interest (SSSI) within 2km of the proposed Development: Gog Magog Golf Course besides Babraham Road and Cherry Hinton Pit alongside Limekiln Road.

Cambridgeshire County Council's proposed Cambridge South East Transport (CSET) scheme has been taken into account within the EIA (in terms of potential inter-project combined environmental effects), due to its close proximity to the proposed Development.

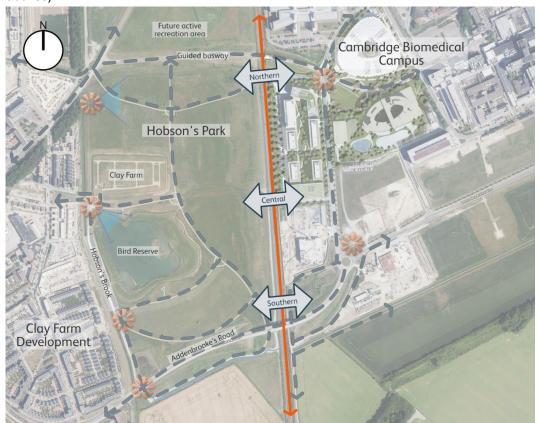
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# **5** Evolution of the Design and Alternatives

The design of the proposed Development has undergone a number of changes, influenced by consultation with stakeholders, and the environmental and engineering constraints.

The location of the new railway station was a key design decision. The proposed station had to be positioned between the Addenbrooke's Bridge and the Nine Wells Bridge due to operational requirements. Three location options were considered, these were:

- North close to the Addenbrooke's Bridge (Guided Busway) (West = Pedestrian and cycle (P&C) access; East = Full access)
- Central (West = P&C access; East = Full access)
- South close to (Addenbrooke's Road) Nine Wells Bridge (West = Full access; East = P&C access)



The North station option was chosen as it was the preferred option from an environmental perspective. It would:

- Ensure there is likely to be no significant detrimental impact on Hobson's Park
- Ensure there is likely to be no significant detrimental impact upon the route, character, hydrology and biodiversity of Hobson's Conduit and its tributaries
- Provide a legible<sup>1</sup> transport interchange within the Southern Fringe between the CBC and Clay Farm

<sup>&</sup>lt;sup>1</sup> A A legible transport interchange is one that's easy for users to understand. A "legible environment makes navigation and movement easy and seamless helping improve peoples' understanding, enjoyment and experience. A legible interchange zone will result in quicker and less stressful transfer between modes, easier identification of landmarks, nodes, pathways and operational thresholds and minimise the need for additional infrastructure and signs to aid movement" (Transport for London, Interchange Best Practice Guidelines 2009).

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- Provides the most benefits in terms of road safety, safe pedestrian/cycle crossing facilities and is the closest walking distance to the key destinations in CBC, including the hospitals, and the wider area
- Avoid a significant detrimental impact upon the Scheduled Monument and its setting

To facilitate access to the station and to promote sustainable transport modes for passengers, several additional improvements to the existing infrastructure are proposed:

- Widening of the existing crossing on the southern arm of Francis Crick Avenue/CGB junction to accommodate additional pedestrian and cycle movements between the station and within the CBC; and
- Widening of the existing crossing on the CGB connecting Trumpington residential area and Hobson's Park and adjacent section of the shared use path on the western side of the CGB to accommodate additional pedestrian and cycle movements.
- Provision of a new pedestrian crossing and associated permissive pathways to maintain connectivity between Hobson's Park and the Active Recreation Area north of the CGB.

The proposed Development encourages active travel which has positive health and climate change implications.



Indicative section through the station building towards Addenbrooke's Bridge

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# **6** The Proposed Development

### The CSIE Proposal

Cambridge South Infrastructure Enhancements (CSIE) scheme comprises these three main components:

- A new Cambridge South station
- A new connection between existing lines at Hills Road
- Junction improvements at Shepreth Branch Junction

The latter two components above are proposed to ensure that there are no service disbenefits for passengers as a result of the proposed new Cambridge South station.

The station is proposed to be built out in phases, whilst maintaining the current live operational railway.

The proposed station works comprise:

- Four platforms with step-free access via a footbridge and lifts
- Seating and shelter for waiting passengers
- A two-storey station building, ticket office and ticket vending machines, along with automatic ticket gates; facilities such as a retail/catering unit, waiting room, toilets, Changing Places for the mobility impaired, baby changing facilities, and staff facilities
- Cycle parking on both sides of the railway for a total of 1,000 cycles
- Pedestrian and cycle access paths on both sides of the railway
- Five parking bays for Blue Badge Holders; two parking bays for station staff; two parking bays for maintenance staff; three bays for drop-off/pick-up by private cars; and three bays for dropoff/pick-up by taxis

The image below provides an indication of what the station may look like when approaching from the north-western part of Hobson's Park.



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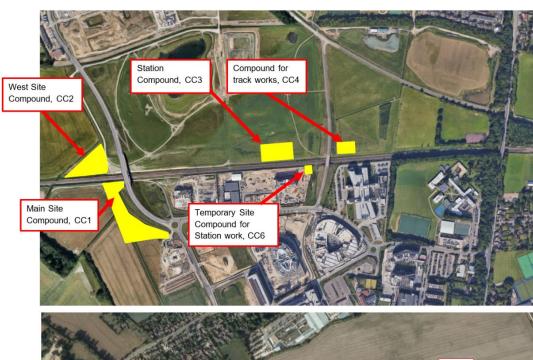
#### Construction

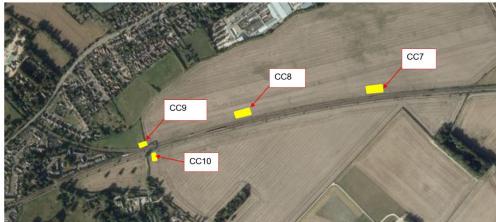
The main construction works are expected to start in 2023 and to be completed in 2025. The duration, intensity and scale of the works along the route will vary over this period.

The main construction activities include:

- Construction of the station buildings, stairs, connecting footbridges, lift shafts, forecourts and access paths
- Installation of new tracks and platforms and associated infrastructure including new signalling,
   Overhead Line Equipment (OLE) structures and associated utility diversions
- Temporary diversion and reinstatement of National Cycle Network (NCN) Route 11 including a temporary bridge crossing Hobson's Conduit
- Changes to the intersection of the Guided Busway and Francis Crick Avenue to create a station forecourt entrance; and
- Track and signalling enhancements at Shepreth Branch Junction.

A number of temporary construction compounds are required in order to facilitate and manage construction. The proposed siting of these compounds has taken into account public consultation responses, initial engagement with landowners, environmental features, topography and ownership of land for access.





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An outline Code of Construction Practice (CoCP Part A) has been submitted as part of this application. The CoCP Part A describes the high-level environmental management and mitigation requirements to be implemented during the construction works. The mitigation requirements include the measures that have been identified by the EIA process as being necessary to satisfactorily control any adverse environmental effects. A detailed version of the CoCP (CoCP Part B) and its associated management plans will provide more detail on the measures to be used to control the potential impacts during construction. The CoCP Part B will be prepared by Network Rail's appointed contractor and agreed with the Local Planning Authority before construction works commence.

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### 7 Acoustics Assessment Part 1 – Noise

An assessment has been undertaken of the potential noise impacts that may occur during the construction and operational phases of the proposed Development. The likely significant effects of the proposed Development have been considered in accordance with relevant UK legislation, current national and local policy and technical guidance with regard to noise.

Existing baseline noise levels within the study area have been measured at selected locations close to potentially affected sensitive uses e.g. residential buildings, and laboratory equipment associated with the CBC and other research and development sites. The noise survey methodology was agreed with the local Environmental Health Officers at Cambridge City Council and South Cambridgeshire District Council prior to commencement of the surveys. Currently, the area is dominated by road traffic noise from the surrounding roads. Existing noise levels are also influenced by noise from passing trains, particularly at the buildings within the Cambridge Biomedical Campus immediately adjacent to the railway line.

The potential noise impact associated with changes in road traffic noise levels resulting from the construction of the proposed Development have been assessed. It is considered that there would not be any significant effects upon any noise sensitive receptors.

To ensure that construction plant noise is suitably controlled, it is proposed that the CoCP Part B to prepared by the Main Contractor, will set out construction methodologies and methods for noise control. Aside from the above measures, additional measures such as mufflers for breakers and localised screening around smaller plant items and activities are proposed to provide further reduction of construction noise levels.

Notwithstanding, significant but temporary impacts resulting from construction works are predicted at the following receptors:

- AstraZeneca Academy House
- The Belvedere residential receptors
- Long Road Sixth Form College
- MRC Laboratory of Molecular Biology, trackside (west)
- MRC Laboratory of Molecular Biology, greater distance from tracks (east); and
- Anne McLaren Building.

The potential noise impact associated with predicted changes in rail and road traffic flows during the operational phase of the proposed Development have been assessed. It is considered that there would not be any significant effects upon any existing or proposed noise sensitive receptors.

The potential noise impact associated with the station plant noise and Public Address/Voice Alarm system during the operational phase of the proposed Development have been assessed. It is expected that through detailed design, significant effects can be avoided.

An assessment of the cumulative effects of other planned development coinciding with the proposed Development has been undertaken for the construction and operational phases. It is considered that noise resulting from the construction phase for other cumulative schemes would not change the conclusion of the construction noise assessment of the proposed Development. In respect of the operational phase, cumulative effects are not expected to be significant (other than Cambridge South East Transport (CSET) scheme). The CSET scheme will increase the noise levels at some receptors. However, there is no predicted additional contribution to the noise levels as a result of the proposed Cambridge South development.

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### 8 Acoustics Assessment Part 2 - Vibration

An assessment has been carried out of the environmental impact of the proposed Development with respect to vibration. The scope of the assessment included both the construction and operational phases. The construction phase assessment focused on two key areas:

- Proposed construction works to form the new station building, new track and signalling configuration and associated infrastructure works supporting these.
- The proposed track re-alignment works at Shepreth Branch Junction include piled foundation works for new columns that support the overhead line electrification system.

The operational phase assessment focused on:

- Proposed track changes for the new station area where the existing two-line track will be replaced with a four-platform station served by two mainline tracks and two platform tracks.
   These changes will introduce switches and crossings on the track that will be used to switch trains from the mainline to the platform tracks and vice-versa.
- Proposed line speed change at Shepreth Branch Junction for trains travelling to and from Royston. The change will be from 30mph to 50mph through the Junction.

The receptors (aspects of the environment that are sensitive to change) identified in the assessment are those buildings which are closest to the areas of the proposed track changes and areas of construction. They include scientific and research facilities on the Cambridge Biomedical Campus along with nearby residential areas, and the residential properties near to the Shepreth Branch Junction.

Baseline vibration measurements in the areas identified above have been undertaken in locations agreed with the Environment Health Officers at the EIA scoping consultation stage. These measurements have been used to determine the current vibration levels due to trains passing by as well as the background vibration levels due to all sources.



Vibration measurement equipment

The likely significant effects of the proposed Development have been considered in accordance with relevant UK legislation, current National and Local Policy and technical guidance. For the scientific and research receptors at CBC an additional, specific methodology has been used to assess the

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vibration impacts against the very sensitive vibration requirements for each building. Consultation with each of the building users has been undertaken to agree their sensitivity as part of the assessment.

The impact of vibration depends on the distance and the construction techniques employed. So for the construction phase, the location of construction compounds and work sites have been assessed in terms of their distance from receptors. The assessment has been based on the likely methods to be employed although the contractor will be responsible for choosing the actual equipment to be used. The assessment of potential construction equipment has shown that vibratory piling and compaction could result in significant effects for the nearest residential receptors to the Shepreth Branch Junction, although quieter piling techniques would be the priority. However, the duration of the impact would be short due to the limited amount of such work required in this area.

The higher sensitivity of the scientific and research buildings on CBC which are adjacent to the new station construction area results in the potential for significant impact from a wider range of construction activities.

Approaches to mitigation of potential significant effects from construction activities have been included in the assessment and will be set out in more detail within a later more detailed version of the Code of Construction Practice (CoCP Part B). This will be prepared by the Main Contractor and agreed with the local authority prior to any works commencing. In particular, this document will set out the best practice measures to be employed to reduce the vibration levels as far as practicable, the proposed construction vibration monitoring and the consultation and liaison plan with neighbouring properties. This will ensure activities with potentially significant effects are reduced to a minimum where achievable and communicated well in advance with those receptors that could be affected.

For the assessment of operational impacts from the new station area, the predictions have focussed on the effect of the new track switches and crossings which act as an additional vibration source when trains pass by. The locations of the switches and crossings have been positioned away from sensitive buildings where practicable. To the north of the new station area there are restrictions on their location due to presence of the Long Road overbridge. The vibration levels caused trains passing over the new switches and crossings have been predicted using published guidance and measurements of switches and crossings. Calculations were also undertaken for the existing Shepreth Branch Junction.

The effect of line speed changes through the Shepreth Branch Junction and on the Royston line have been predicted using best practice guidance methods and based on the baseline measurements undertaken at Granham's Close.

There are no significant vibration effects predicted for any residential receptors due to the operational phase.

For the CBC scientific and research receptors, significant effects are predicted only for the most sensitive imaging equipment within the Laboratory of Molecular Biology ('LMB'). With mitigation these effects can be reduced to acceptable levels. The approach to this will be developed in the detailed design stage and may require mitigation at the affected buildings if mitigation at the switches and crossings themselves is not practical. There is ongoing consultation with the LMB users to agree the approach.

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### 9 Air Quality

The proposed Development has the potential to cause air quality impacts as a result of construction traffic fumes and dust during the construction phase. Road-traffic exhaust emissions associated with vehicles travelling to and from the site during operation have been considered in the context of positive improvements, given the anticipated change from private car use to more public transport, including the new station itself. Pollutants considered were nitrogen dioxide (a gaseous pollutant) and particulate matter (small particles generated by vehicles through incomplete combustion, tyre wear, braking and resuspension of dust).

The proposed assessment methodology was shared with representatives from Greater Cambridge Shared Planning and Natural England and feedback captured in the assessment. Comments from local stakeholders regarding operational air quality impacts were considered.

Baseline data collection was desk-based and a number of air quality monitors managed by Cambridge City Council (CCiC) were located in the vicinity of the proposed Development, and used to help inform an understanding of existing conditions. The monitors show that existing air pollutant concentrations are below health-based air quality objectives (set by the government) at all the CCiC monitoring locations in the vicinity of the proposed Development. The monitored concentrations at these sites were also used to calibrate the air quality dispersion modelling which was undertaken for the construction and operational phase assessments. Dispersion modelling is



Nitrogen Dioxide Monitor Image Credit: Gosport Borough Council

undertaken using computer software to predict future emissions of nitrogen dioxide and fine particulate matter from vehicle traffic generated by new developments like Cambridge South.

Potential construction phase air quality impacts from dust deposits have been assessed as a result of earthworks and other construction activities. Best practice control measures, which are included in the outline Code of Construction Practice (CoCP Part A) which has been submitted as part of this application, would provide effective mitigation for a development of this size and nature, and reduce potential dust impacts to acceptable levels for the duration of the construction phase.

Exhaust emissions from the construction vehicles used to transport materials and waste to and from the proposed Development were assessed using estimates of highest yearly number of construction vehicles within the entire construction period. The results of the assessment show that the construction vehicles would not have a significant effect on air quality along the roads used by the vehicles in the vicinity of the proposed Development and that any impacts are expected to be negligible. The assessment also showed that concentrations of all the modelled pollutants were well below the air quality objectives set by the government, both without and with the construction vehicles.

Potential impacts from road vehicle exhaust emissions once the proposed Development is operational have been assessed by predicting air quality conditions at sensitive locations both with and without the proposed Development in place. Further to this, atmospheric dispersion modelling was undertaken in order to predict pollutant concentrations across the site as a result of emissions from the highway network. The results of the assessment demonstrated that the proposed Development will lead to a small improvement in air quality as pollutant concentrations are predicted to decrease as a result of the predicted shift from road to rail once the proposed Development is operational.

Construction vehicle data for CSET was not available at the time of this assessment, however, ongoing liaison with the CSET Scheme in the vicinity of the proposed Development regarding construction vehicle routes and mitigation measures is ongoing. It is not anticipated that the CSET Scheme would cause significant cumulative effects, particularly as existing background concentrations are low. It was determined that cumulative impacts during the operational phase from

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the proposed Development and CSET would not be significant as the operation of the proposed Development serves to reduce pollutant concentrations.

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### 10 Biodiversity

An assessment has been undertaken of the potential effects of the proposed Development on biodiversity. Biodiversity can be defined as the variety of plant and animal life in a particular habitat or area. This assessment has been carried out in accordance with industry guidance.

There has been a substantial level of consultation throughout the undertaking of the assessment. Key consultees have included Natural England, ecology and biodiversity officers at Cambridgeshire County Council, Greater Cambridge Shared Planning, and the local Wildlife Trust.

The key features identified in relation to the proposed Development can be broken down into three broad categories:

- Designated sites, including international designated sites such as Special Protection Areas, and Ramsar Sites, statutory designated sites such as Sites of Special Scientific Interest, and non- statutory designated sites such as City Wildlife Sites;
- Habitats considered to be of principal importance to the UK, and more common and widespread habitats; and
- Species, including protected species, notable species and/ or species of principal importance to the UK.

Impacts to the features within the three broad groups were identified through a suite of desk and field-based studies. Studies employed desk-based sources, and based on initial surveys of vegetation, trees and hedgerows, targeted surveys for species with the potential to be present were undertaken. The targeted surveys included those for reptile, badger, great crested newt; otter; water vole; bats; breeding birds and wintering birds. An assessment of biodiversity enhancements to deliver a net gain for the proposed Development and surrounding area was also undertaken.

These studies found the following key features associated with the site:

- Designated sites key sites identified included a number of nationally and internationally designated sites although they are all sufficiently distant not to be affected by the development during construction or when in operation. The nearest designated sites to the proposed Development are:
  - o Nine Wells Local Nature Reserve (located approx. 0.1km east of the site)
  - o Hobson's Brook City Wildlife Site (located within the site boundary)
  - "Triangle North of Long Road" City Wildlife Site (located within the site boundary)
- Habitats Key habitats identified in relation to the site included ponds, broad-leaved semi-natural woodland, semi-improved neutral (located primarily within Hobson's Park) and chalk grasslands, hedgerows and riverine habitats such as Hobsons Brook and Hobson's Conduit.
- Species Key species identified included great crested newts, reptiles, birds, bats, water vole, badger and invasive non-native plant species.



View of Hobson's Park from Nine Wells bridge/Addenbrooke's Road

The priorities of environmental mitigation are to avoid (preferably) or reduce effects to acceptable levels if they cannot be avoided. In line with this approach, from the early stages of the project the

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proposed Development has been designed to ensure primarily that the most valuable habitats are retained, and impacts are avoided.

Where impacts could not be avoided, essential construction mitigation methods include:

- Habitat creation to replace habitats lost to the development
- Obtaining appropriate protected species licences from Natural England where necessary, which will set out specific mitigation requirements.
- An ecologist supervising the construction works to ensure appropriate methods of habitat clearance and potential need to trap and translocate species as required.
- The provision of habitat to compensate for temporary habitat loss for amphibians and reptiles, and the enhancement of breeding ponds.
- The provision of bird nest boxes and bat boxes within retained habitats to offset the loss of nesting/roosting opportunities and methods of reducing noise disturbance.
- Pre-construction surveys to establish changes in the presence of biodiversity recorded at the EIA stage.

Operational mitigation measures, such as lighting, noise and vibration strategies, methods to reduce disturbance from increased footfall and facilitate the movement of animals, management of habitats, and monitoring of protected species would also be implemented.

Government guidance requires net gain to be assessed by identifying habitat "units" and assessing the gain or loss of their biodiversity value as a result of the Development. This is referred to as measuring 'biodiversity net gain'. A biodiversity net gain assessment was therefore carried out in line with the appropriate guidance. The assessment concluded that, while hedgerow and river units show a net gain of approximately 11% and 10% respectively, there would be an approximate 5% decrease in biodiversity value of all habitat units on site. Network Rail are committed to achieving 10% net gain in biodiversity. Network Rail will therefore secure the additional biodiversity units required to reach this figure through the following options:

- The purchasing of additional land to provide space to build new habitat;
- Purchasing biodiversity units from a third party organisation; or
- Working with third parties such as local authorities, trusts, etc to deliver biodiversity units on their land.

Once all of the proposed mitigation is applied, there will be one remaining residual impact from the loss of woodland habitat which is 'significant' at the local scale. However it should be noted that the 'significance' in this case relates to the relatively longer period of time it will take for replacement woodland to be established, rather doing nothing to mitigate it. However, overall, the proposed Development has ensured that there are no significant residual impacts on the majority of the ecological receptors, and for three of them - water vole, great crested newt, and habitats along the verge of the railway line, there will be a significant beneficial effects at the local scale. Though there is currently no net gain for biodiversity, once 10% net gain is achieved through the additional options there will be a further significant beneficial effects.

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# 11 Climate Change Part 1 - Adaptation

The proposed Development has the potential to be vulnerable to climate change effects, including an increased frequency and severity of prolonged and/or heavy precipitation events, prolonged droughts and heatwaves, a greater frequency of very hot days, and an increased risk of storms.

Current and historical regional weather data was obtained from a nearby weather station and UK Climate Predictions 2018 were analysed to present future climate projections. In the region of the proposed Development, by the end of the 21st Century, there is expected to be an increase in mean summer and winter air temperatures. While precipitation rates are expected to become more seasonal, with increased precipitation expected in winter and decreased precipitation in summer. Precipitation is likely to increase in winter by 20% by the end of the century and decrease in summer by 32%. Summer temperatures are projected to be 4-5.5°C warmer and winter temperatures around 3°C warmer.

The aspects of the proposed Development which are vulnerable to climate change have been identified as the concourses and rail surfaces, buildings, drainage, signs, rail signals, lighting, landscape (including biodiversity), workforce & passengers, plant and equipment and user facilities.

Mitigation measures will be implemented to ensure that the development can adapt to the effects of predicted climate change. During the construction phase, mitigation measures implemented will include utilising a flood warning service, using materials that are tolerant to fluctuating temperatures and extreme weather events, and reducing dust emissions (from particularly dry summer weather for example) through effective transportation and storage of soils and other dust-generating materials. During the operational phase, mitigation measures for the design of the proposed Development will include the use of sustainable drainage systems such as balancing ponds to manage surface water drainage and mitigate flood risk, and careful selection of building materials that would be resistant to the increased frequency and severity of extreme weather events.

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# 12 Climate Change Part 2 - Greenhouse Gas Emissions

An assessment has been undertaken of the environmental impact of construction and operation of the proposed Development with respect to greenhouse gas (GHG) emissions.

The Climate Change Act 2008 requires at least an 80% reduction in the UK's greenhouse gas emissions as compared to 1990 levels by 2050. Government amendments to the Climate Change Act 2008 have revised the 2050 GHG target of an 80% reduction of GHG emissions compared to 1990 levels to a 100% reduction carbon target and required that the pathway to achieving the 2050 carbon target should be set out in five-year carbon budgets. To ensure that regular progress is made towards the target, the Climate Change Act 2008 established a system of carbon budgets. The assessment has considered the significance of the proposed Development's contribution to the Government's ability to achieve its carbon reduction targets to meet the relevant carbon budgets. To measure this the scenario of the effects of greenhouse gas emissions generated by the proposed Development against the existing situation has been assessed and then compared against the UK Carbon Budgets.

A desktop study has established existing GHG emissions that occur within the study locality of the proposed Development. In 2019, transport was the largest emitting sector in the UK representing 27% of all emissions recorded. In Cambridgeshire, transport contributed to 44% of emissions in 2018, of which 97% were attributed to road traffic. Transport-related GHG emissions in Cambridge are therefore relatively high compared with the national average.

GHG emissions arising during construction are assessed based on estimated reasonable worst-case scenarios. The assessment covers material resources, waste generation, transport of material resources and waste, and site workers commuting to the construction site. Material resources are likely to contribute to the majority of the emissions from the proposed Development during construction. Mitigation measures that will be implemented during the construction to reduce GHG emissions include, amongst others, choosing materials with lower embodied carbon, reusing of material, reducing waste where possible, using locally sourced materials and a local workforce, and using energy efficient plant and renewable electricity in the construction process. During operation, mitigation measures include designing for end-of-life recyclability/reprocessing of materials, encouraging access to the station by public transport, cycling or walking, and use of energy efficient lighting and low carbon energy sources, where practicable.

GHG emissions arising during operation, including anticipated land use change, and rail user emissions as a result of the proposed Development, were also projected from available data. Such emissions arising from the proposed Development are estimated to contribute to no more than 0.00003% of any Carbon Budget. It is therefore concluded that the construction and operational phases of the proposed Development will not have a material impact on the ability of Government to meet its carbon reduction targets and are not significant.

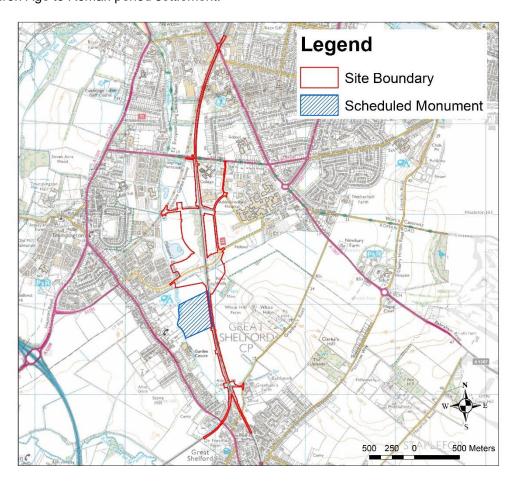
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# 13 Cultural Heritage

An assessment has been undertaken of the effects of the proposed Development on cultural heritage during both the construction and operational phases.

There are a wide range of heritage assets including designated archaeological remains, non-designated archaeological remains, and designated Listed Buildings within the vicinity of the proposed Development. There is a Scheduled Monument located within the site boundary which contains evidence of Roman and Prehistoric activity. The proposed Development is therefore in an area of known cultural heritage, much of which has been revealed during excavations ahead of works undertaken to develop the Cambridge Biomedical Campus complex.

There has been a high level of engagement with consultees at Historic England and Cambridgeshire County Council Historic Environment Team throughout the assessment process. Consultation identified the main area for further site investigation being the southern part of the proposed Development which impinges on the Scheduled Monument boundary (see below). The Scheduled Monument is a cropmark complex of rectangular enclosures. The cropmarks have been interpreted as an Iron Age to Roman period settlement.



The Cultural Heritage baseline has been established through data collected from a series of desk-based reports and field-based surveys completed between 2019 and 2021.

A Cultural Heritage desk-based assessment was carried out in 2019 which was able to confirm the archaeological potential of the northern part of the proposed Development area north of Addenbrooke's Road. This was followed by field-based investigations in the form of a geophysical magnetometry survey in 2020 and an investigative trench evaluation in 2021 in order to define the archaeological potential of the proposed Development area south of Addenbrooke's Road. The

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results of these investigations were that the proposed Development is in an area of high archaeological potential predominantly for features from the Bronze Age through to the Roman period.

Using the data collected in the field and desk-based sources, an assessment was undertaken of the potential effects of the proposed Development on cultural heritage assets during its construction and operation. The assessment has determined the significance of effects on these assets through consideration of their value/importance and the magnitude of impact. Mitigation measures have been embedded into the design of the proposed Development to ensure it minimises the impacts on cultural heritage wherever possible. Avoidance of encroachment into the scheduled monument as much as possible has been a key influence on the design. Impacts during construction would be permanent for most heritage assets which lie within the site boundary where construction involves physical impact. For example, extensive groundworks required for new building foundations will require the removal of any below ground archaeological remains present. Mitigation will be implemented to reveal the extent and condition of remains (if found) further and reduce the overall impact on the cultural heritage resource. The archaeological mitigation proposed is for an archaeological strip map and record of areas of known archaeological potential. This will enable preservation 'by record' of archaeological remains involving a series of open area excavations on parts of the Site where there is dense archaeology or archaeological potential is thought to be high. This would take place pre-construction.

Impacts on heritage assets will be avoided or minimised wherever possible. Temporary effects on heritage assets would also be reduced during the construction phase through the use of hoarding and bunding, damping down of the construction area, and control of vehicle movement through site speed limits and defined routes. Overall, most residual effects to heritage assets are Not Significant. The only two exceptions to this are the impacts caused by construction of the proposed haul road on the designated Scheduled Monument and on the non-designated archaeological features associated with the Scheduled Monument.

For many assets, permanent impacts from the construction phase would continue into the operational phase (as they are permanent). Sympathetic planting and landscaping will help to reduce operational phase impacts on heritage assets.

Taking into consideration the above mitigation measures, residual effects on heritage assets would be not significant.

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### 14 Ground Conditions and Contamination

An assessment has been undertaken on the effects of the proposed Development on ground conditions and contamination during both the construction and operational phases.

Soils beneath the site are shown to be Grade 2: Very Good Quality Agricultural Land under the Agricultural Land Classification system.

Beneath parts of the site is a Secondary 'A' Aquifer, as defined by the Environment Agency. This is capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The chalk bedrock geology across the entire site is classified as a Principal Aquifer. Principal Aquifers usually provide a high level of water storage and may support water supply and/or base flow to rivers on a strategic scale. The combination of aquifers beneath the site means that any historic contamination within the ground water can move horizontally and laterally from and into the proposed Development site.

A historical review of Ordnance Survey mapping indicates the site has been occupied by the current railway line, running north to south through the site, since the earliest mapping reviewed in 1888. The railway line was constructed initially in 1851. General development is noted in the surrounding area associated with the growth of Cambridge.

Mitigation and enhancement measures have been proposed during the construction works to minimise risks to the environment and human health during the future use of the proposed Development.

Any contamination present at the site would most likely be related to its railway use. Prior to construction, intrusive investigations would be undertaken for the detailed design stage which will increase the understanding of ground conditions and further define areas of contamination, and remediation if required. If unacceptable risks are identified, remediation would be undertaken prior to construction works commencing. A contamination specialist would attend any intrusive site investigation works informing building foundations, and other pollution prevention practices would be adopted. Appropriate design of structures and foundations would be undertaken to accommodate the ground conditions encountered.

Overall, once the appropriate construction mitigation measures have been implemented, the residual effects to ground conditions are considered to be not significant. In the context of contamination, removal of any contamination from the site will be beneficial.

The works would result in the permanent loss of approximately 4.5 ha of Grade 2 agricultural land.

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# 15 Landscape and Visual Impact

An assessment has been undertaken of the potential effects of the proposed Development on landscape character and visual amenity. This assessment has been carried out in accordance with the most up to date industry guidance, and in consultation with Greater Cambridge Shared Planning.

The assessment required analysis of existing published landscape character assessments at a national, regional and local level to gain a thorough understanding the valued aspects of the existing landscape, and to identify which are vulnerable to change bought about by the proposed Development.

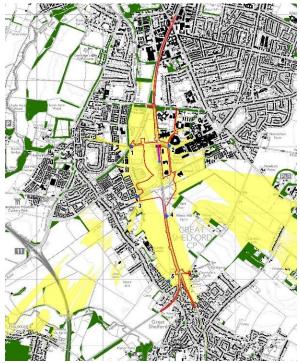


Image showing areas (yellow) from which the Development could theoretically be visible.

In addition, a computer model, using up-to-date existing building height information, was used to help establish the areas where the proposed new station buildings would likely be visible from (see opposite). The findings of this, and fieldwork across the site and its surrounds (up to 4km away), which were carried out during different seasons of the year, provided a greater awareness of the area's landscape characteristics, the visual amenity people experience within it, and the zone from which the development may be seen.

The most sensitive views were found to be those from:

- Hobson's Park:
- The east side of the Clay Farm residential area;
- Local public footpaths to the south of Addenbrooke's Road;
- National Cycle Route 11, the Genome Path, and
- Nine Wells Local Nature Reserve.

The assessment recognised that there was a likelihood of harm arising from the development to the visual amenity of people using / occupying these places, and also to the landscape character of the areas they span across.

This understanding was then used during the planning of the development to incorporate measures that helped avoid, design-out or reduce potential harmful impacts upon landscape character and visual amenity.

The following mitigation measures would be incorporated into the construction stage of the development:

- avoidance of excessive temporary land take, particularly within Hobson's Park;
- protection of retained trees and other habitat;
- use of appropriately designed fencing/hoarding around the most visually harmful of construction activities and when near housing, publicly accessible open space or public rights of way;
- limits on the heights of material stockpiles,
- directing and angling construction lighting away from sensitive areas such housing, publicly accessible open space or public rights of way; and
- reinstatement of existing trees and shrubs that would be harmed by the work.

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Measures for the development in operation include:

- Locating the station buildings away from the city's rural southern edge and clustering them
  near to the varied roofscapes and building forms of the Cambridge Biomedical Campus near to
  the Guided Busway bridge.
- Creating station buildings that use layered and sloping biodiverse green roofscapes, and cladding materials that are sympathetic with the natural materials that characterise Hobson's Park, to integrate it into its setting.
- A lighting design that minimises light pollution, and glare to users of surrounding homes, paths, roads and open space, whilst ensuring that the light levels are the minimum necessary to meet station users' safety standards.
- Creating areas of native tree and shrub planting within Hobson's Park, and south of Addenbrookes Road, to integrate the development into its setting.
- The creation of drainage ponds and swales with naturalised edges, and
- The creation of an eastern station forecourt that is in keeping with the character with other areas of the Biomedical Campus's public realm including an avenue of semi-mature trees, a rain garden, boundary hedging and high-quality surfacing / external furniture.

Following the consideration of the mitigation measures outlined above, the assessment concluded that there would be no significant negative effects to visual amenity and landscape character either during the proposed Development's construction or operation.



View of the proposed development from the south-west of Hobson's Park looking north-east

Furthermore, there would be some beneficial impacts arising from the proposed Development: the station buildings would help soften the contrast between the informal nature of Hobson's Park (see visualisation above) and the pronounced visible edge to the biomedical campus when seen from it; the planting to the south of the embankment and deck of the Addenbrooke's Road bridge would create a visibly more appropriate edge to this part of Cambridge's southern built-up boundary; and the planting and habitat creation proposals offer an opportunity to create a richer and more resilient landscape.

The potential for cumulative effects has also been assessed with reference to other planned development such as that within the emerging Biomedical Campus, at More's Meadow and with CEST. Despite the construction and operation of these schemes being likely to take place at a similar time to the proposed Development, the assessment concluded that the identified landscape character and visual amenity of the site and its surrounds were suitably robust (when taking into account the mitigation measures) to receive these without there being significant negative effects.

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#### 16 Materials and Waste

An assessment has been undertaken to understand and mitigate the potential effects the proposed Development may have on material use and waste management. The assessment considers potential effects on the supply and availability of material resources in the UK, and considers the generation of waste from construction, demolition and excavation activities. This assessment does not consider the operational phase of the proposed Development, as it was agreed with Greater Cambridge Shared Planning (GCSP) that material consumption and waste generation during this phase will be minimal. This assessment has been carried out in accordance with current industry guidance.

A desk-based study identified the existing waste management facilities and their capacities within the study area (administrative boundary of the Cambridgeshire and Peterborough Combined Authority). It is expected that over 26.3 million tonnes of construction, demolition, and excavation (CD&E) waste would need to be managed in the region between 2021 and 2036, however, interrogation of the Cambridgeshire and Peterborough Waste Needs Assessment indicated that there would be an overall shortfall of remaining inert landfill capacity and an excess of non-hazardous landfill capacity. Projected market sales volumes within the UK indicate that production of the materials likely to be used in the proposed Development are likely to increase over the next few years, in line with demand

#### **Materials**

The materials palette of the proposed Development is unknown at this stage, but is expected to include concrete, steel, bricks and bituminous materials (e.g., Asphalt). The estimated material usage has been calculated for these key materials. These materials are considered to be free from known issues regarding supply and stock, and it is anticipated that each material input is likely to reduce the national baseline of availability by less than 1%. The effect is therefore considered to be not significant.





Indicative Materials

The implementation of best practice measures, to be detailed in the Site Waste Management Plan (SWMP) produced by the Main Contractor as part of the Code of Construction Practice Part B, will promote resource efficiency and the use of reclaimed material where possible.

Key materials for the proposed Development are considered free from known issues regarding supply and stock and are therefore expected to be minimally reduced by additional schemes in the region. It is therefore likely that the proposed Development, when considered together with additional schemes, would not result in significant effects from materials use.

#### **Waste**

The proposed Development will generate construction, demolition and excavation (CD&E) waste including hard and inert materials, soils and stones, plastics, packaging, insulation material, bituminous materials and canteen and office waste.

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It is predicted that 96.7% (by volume) of construction and demolition waste will be re-used on site, with the remaining 3.3%, consisting of office and canteen waste, sent to landfill. This represents a 0.003% reduction in non-hazardous landfill capacity in the region and is not significant.

There is likely to be approximately 9,600m³ of excess unbulked (ie before it swells to a larger volume following excavation) spoil from the excavation activities required to construct the platforms and widen the track on the west of the site. This would equate to 0.08% of the projected 12,090,000m³ shortfall in inert landfill capacity in the study area. Options to retain all of the spoil onsite have been exhausted. However, as the spoil is expected to be suitable for reuse elsewhere, it will be diverted to another scheme locally, where practicable.

A SWMP will be prepared and implemented at the detailed design stage to establish a methodology for measuring and auditing construction, demolition and excavation (CD&E) waste. Best practice measures for the minimisation of waste, including the early identification of opportunities for reuse and recycling and the segregation of waste streams, are proposed as measures to be incorporated within the construction process and will be detailed in the CoCP Part B.

Any vegetation clearance or unexpected hazardous waste will be managed in accordance with the principles set out in the CoCP Part B. Opportunities to work with local community groups will be explored to find alternatives to composting or landfilling vegetation waste.

It is considered that the 2,124,000m³ of non-hazardous landfill capacity within the study area projected at the end of the construction programme would be sufficient to accommodate the cumulative effect of waste arisings from CSIE and other schemes such as the Cambridge Biomedical Campus. It is assumed that all of the inert construction waste will be re-used or re-cycled, resulting in no reduction in inert landfill void capacity. This is supported by the Waste Needs Assessment which concludes that if waste management targets are achieved, the existing capacity is sufficient to accommodate the region's disposal need. It is therefore expected that cumulative effects with other schemes will not be significant.

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### 17 Population and Human Health

An assessment has been undertaken of the potential impact of construction and operation of the proposed Development with respect to population and human health. It has assessed whether the proposed Development would have a health effect in terms of affecting people's ability to access community services and facilities such as the hospitals as well as access to public rights of way, open space and recreation facilities which are beneficial for people's health and wellbeing.

It also assesses the potential health effects of the construction process on local communities and patients and employees at the CBC, for example, in relation to noise, disturbance, construction traffic and potential air quality changes such as construction dust. The potential effects of the proposed Development on personal safety, perception of safety and suicide risk resulting from the large influx of construction workers and construction site has been assessed.

Industry guidance has been used to inform the human health assessment and is used to identify elements of people's health that are likely to be influenced by a specific development.

Consultation with a range of key stakeholders such Department for Transport and the Greater Cambridge Shared Planning has helped to guide the assessment. Publicly available baseline data and information was collected in a desk-based assessment. This helped to build up an understanding of the current situation and conditions in the area.

Effects of the proposed Development during the construction phase are considered to be minimal in terms of perception of crime, safety and suicide risk issues. Measures will be put in place such as ensuring adequate lighting and training for workers to minimise these risks so that they are reduced to appropriate safety levels.

There are not expected to be any significant effects on local residential amenity, or for patients and employees of the CBC as a result of construction activities. Measures will be put in place to reduce to an acceptably low level any slight increases in noise, air quality, vibration and traffic impacts that may occur as a result of construction works. There is not likely to be any significant effects in terms of access to community facilities such as the hospitals, open space, recreation facilities and public rights of way as temporary diversions will be put in place to ensure access to these routes and facilities.

Once the development is completed, accessibility to community infrastructure including open space, recreation facilities, education and healthcare should significantly improve as a result of the new station. This should have a significant positive effect on people's health. Although rail is one of numerous ways people travel to facilities, the new station should significantly increase the number of people that can access local community infrastructure. The new station will include 'Access for All' facilities such as a step-free access with two lifts on each platform covered by canopies.

It is estimated that the proposed Development will be used by approximately 1.8million passengers a year of which 0.5million will be new rail passengers. The proposed Development will provide potential beneficial health effects for existing residents as a result of an improved environment and new sustainable travel provision.

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### 18 Socio-economics

An assessment has been undertaken of the potential socio-economic and community effects of the proposed Development during both the construction and operational phases. The assessment addressed the effects of employment generated by the proposed Development. It assessed whether the proposed Development would have an effect on people's ability to access community services and facilities such as the hospitals and medical facilities at the CBC as well as access to open space, public rights of way and recreation facilities.

The assessment included the potential effects of the construction process on local communities. For example, in relation to noise, disturbance, construction traffic, potential air quality changes (from for example construction dust) as well as changes to the visual landscape. The assessment has been carried out in accordance with available guidelines and best practice approaches.

Consultation with key stakeholders such as Cambridge County Council, Cambridge City Council and South Cambridgeshire District Council has helped to guide the assessment. Publicly available baseline data and information was collected in a desk-based assessment. This helped to build up an understanding of the current situation and conditions in the area.

Effects of the proposed Development during the construction phase include the creation of an estimated 114 full-time jobs and associated increased demand in the supply chain. However short-term effects on local residential amenity as a result of construction activities may cause some disruption that could potentially affect the local community to some degree. However, there are not likely to be any adverse effects in terms of access to community facilities, open space, recreation facilities and public rights of way as temporary diversions will be put in place to ensure access to these routes and facilities is maintained during construction.

Once completed, the proposed Development will generate some new permanent employment. It is estimated that approximately 10 full time jobs will be directly generated at the new station. In addition, it is estimated that the creation of a new station at this location would help boost the local economy. This could lead to around 44 new jobs per year in the wider economy. There would not be any effects on open space or recreation land as a replacement approximately 2 hectares of land is being provided to compensate for the equivalent amount of land in Hobson's Park around the new station that will be required for the proposed Development.

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### 19 Transport

An assessment has been undertaken of the potential traffic and transport effects of the proposed Development during both the construction and operational phases. The assessment of construction effects was undertaken for 2023 as this is the year when the highest predicted levels of construction traffic are expected to occur. The new station would be operational from around 2026. However, the assessment of the operational phase was undertaken for 2031 as this is the year when the CBC is fully developed and subsequently the highest projected passenger numbers using the station will be reached.

In accordance with relevant guidelines, the assessment considered impacts on key receptors (i.e. users of transport infrastructure) in terms of pedestrian and cyclist severance (ie the ability for them to cross the roads based on gaps in traffic), delay, amenity, fear and intimidation driver and public transport users delay, accidents and safety for all road users and parking.

The key potential traffic impacts would occur during the construction of the proposed Development between 2023 and 2025. The peak construction period would be in 2023 when the highest predicted levels of construction traffic are expected to occur. The assessment focused upon the highway network to be used by construction vehicles and the adjacent land use and sensitive receptors.

Appropriate design and mitigation measures to be applied though the construction phase of the proposed Development were developed to minimise impacts on other road users and sensitive receptors e.g. at the nearby Addenbrooke's Hospital. A Construction Traffic Management Plan (CTMP) would be prepared by the appointed contractor to ensure that all traffic associated with the project's construction works operate in a safe and compliant manner at all times. The CTMP would provide a framework to manage all types of vehicle movement to and from the site and will provide details of the proposed traffic management of delivery vehicles and other traffic generated during the construction phase.

Taking the proposed measures into consideration, the assessment of potential construction impacts with respect to transport indicated that predicted effects from construction traffic are unlikely to be significant.

The proposed Development accords with national, regional and local transport policies and meets the principal objectives of the key policy documents. Embedded design measures have been discussed with key stakeholders including Cambridgeshire County Council, Greater Cambridge Shared Planning, AstraZeneca and Cambridge University Hospital. Access to the station will be provided from both the east and west of the railway. To provide full integration of the station within the existing urban environment, with good access to local populations and services, the station has been designed to provide direct access and interchange with key transportation modes, thereby promoting sustainable onward journeys for passengers.

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Indicative visualisation from Francis Crick Avenue

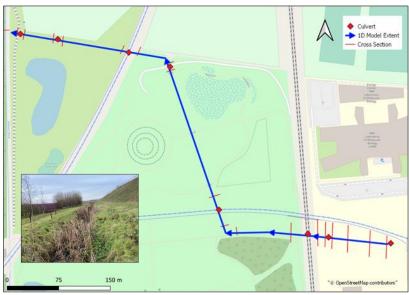
The station will provide 1,000 cycle parking for passengers, appropriate access for passengers with reduced mobility, and safe and convenient cycle and pedestrian access. It is anticipated that up to 95% of passengers will use sustainable, non-vehicular travel modes (walking, cycling and public transport) to travel to and from the station. Furthermore, the proposed Development will, by its very nature, promote sustainable modes of travel, being a rail station, and is predicted to result in a reduction in traffic on the local and strategic road networks. Therefore, it is expected that the proposed Development would have overall positive effects during the operational phase through encouraging more people to travel by rail to and from the surrounding area including the CBC and Trumpington residential area, and through improvements to the walking and cycling infrastructure within the site boundary.

The proposed Development would have overall positive effects during the operational phase due to the reduction in vehicular trips on the local road network, through encouraging more people to travel by rail to and from the CBC and surrounding area and through encouraging sustainable travel. For these reasons, it is anticipated that the proposed Development would result in net beneficial effects on transport networks, transport networks users and sensitive receptors during the operational phase.

### 20 Water Resources and Flood Risk

An assessment has been undertaken of the potential effects of the proposed Development on water resources and flood risk during construction and operation. Of particular relevance are managing rainfall runoff and land drainage to prevent increases in flood risk, safeguarding the water quality of local watercourses, and managing effects on groundwater resources.

The assessment has been informed by a desk study. A site walkover and surveys and hydraulic modelling of the North Ditch, a tributary of Hobson's Brook, have also been undertaken. The modelled extent is illustrated in the figure below.



The North Ditch Flood Model Extent

Consultation with relevant bodies, notably the Environment Agency (EA) and Cambridgeshire County Council in their role as the Lead Local Flood Authority (LLFA), and the Hobsons Conduit Trust have also shaped and informed the design development, which is supported by a Flood Risk Assessment. Surface water drainage principles have been agreed with the LLFA.

The study area drains to Hobson's Brook, which passes through the proposed Development site, via a network of smaller watercourses and drainage ditches. Water issues from springs at Nine Wells Local Nature Reserve and flows generally north-west across the site via Hobson's Brook.

Particularly during the construction phase, the proposed Development could potentially impact on the existing water quality by generating polluted runoff to watercourses and by earthworks and excavations, potentially opening up pollution pathways to the groundwater. These risks would be managed through adhering to the current best practice construction methods for pollution prevention, documented in the CoCP Part A, and carrying out works in accordance with the requirements of relevant environmental permits/consents. By implementing control measures to be detailed in the CoCP Part B by the Main Contractor, the residual effects of construction works on surface and groundwater quality will not be significant.

Construction activities would result in the creation of additional impermeable surface areas with increased rates and volumes of surface water runoff, potentially increasing flood risks off-site. To prevent an increase in flood risk to both the site and the surrounding area, runoff would be managed in accordance with best practice protocols, detailed in the CoCP Part B to be approved by the local planning authority. Water required for construction will be sourced and reused appropriately to ensure no residual impact from increased water usage for construction activities.

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During the operational phase, the main potential for water quality effects are linked to the discharge of surface water runoff from the proposed Development. Surface runoff would be treated through a series of well-designed and interlinked sustainable drainage features that would safeguard the water quality of receiving watercourses. Residual effects on water quality during operation of the proposed Development would not be significant. The drainage features would also attenuate increases in surface water runoff to prevent increases in surface water flood risk during operation of the proposed Development.

EA flood maps show the vast majority of the study area is at low risk of flooding from rivers and the sea, with a small area at medium to high risk of flooding from the North Ditch. Potential effects on baseline flood risk are associated with the extension of a culvert on this watercourse. However, the culvert would be designed in line with best practice to avoid localised hydraulic effects in accordance with LLFA requirements.

The study area is known to have limited surface and groundwater resources and is considered to be a water stressed area. Water-saving measures such as efficient sanitary facilities and using recycled water for flushing would be considered and included in the designs for the station buildings where possible. No impact on local water resources due to operation of the water-consuming components of the station is anticipated.

Overall, given the design and mitigation measures proposed, there are considered to be no significant negative effects to surface water resources and flood risk, during construction or operation of the proposed Development.

The potential for cumulative effects has also been assessed with reference to other planned development within the Hobsons Brook catchment, including the CSET scheme. The assessment concluded that there would not be significant effects on the surface water environment and groundwater resources within the study area.