



## Greater Cambridge Partnership

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# CAMBOURNE TO CAMBRIDGE

Technical Report 4 – Community and Human Health, Land Use and Land Take





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Technical Report 4 – Community and Human Health, Land Use and Land Take

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# 1. INTRODUCTION AND SUMMARY

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- 1.1.1. The Cambourne to Cambridge (C2C) Scheme will include a 13.6km long mainly dedicated busway connecting Cambourne in the west with Cambridge in the east. A service road and maintenance track, which is able to be used as an active travel path, will run alongside the segregated sections of busway. The C2C Scheme will use hybrid vehicles (and in due course, electric vehicles), providing a service of around 10 buses per hour each way. The Scotland Farm travel hub (a park and ride facility) will be situated along the route, just north of the A428, approximately 5km west of Cambridge. Further details about the C2C Scheme proposals are set out in Chapter 3 of the Environmental Statement (ES)<sup>1</sup>.
- 1.1.2. This technical report details the outcome of the assessment of impacts on community and human health, land use and land take resulting from the C2C Scheme.
- 1.1.3. This technical report is intended to be read as part of the main ES with reference to other technical reports as necessary, namely:
- **Technical Report 1: Acoustics;**
  - **Technical Report 2: Air Quality;**
  - **Technical Report 8: Landscape and Visual; and**
  - **Technical Report 12: Traffic and Transport**
- 1.1.4. This technical report assess the following impacts and evaluates effects from:
- Temporary access disruption to / from residential properties, community land and assets and development land and assets during construction;
  - Temporary and permanent access disruption and journey length changes to walker, cyclist and horse-rider (WCH) facilities;
  - Temporary and permanent land take and severance for agricultural land holdings;
  - Temporary and permanent changes to human health; and
  - Temporary changes to employment.

## SUMMARY

- 1.1.5. The following likely significant effects on community, human health and land use receptors will occur as a result of the C2C Scheme:
- Very large permanent operational beneficial effect on the housing allocation at Bourn Airfield;
  - Permanent moderate beneficial effect due to replacement of currently poor-quality designated Open Space (land to the east of M11 (within a City Wildlife Site)) with more and better quality open space;
  - Permanent moderate beneficial effect on employment land allocation S/WC (allocated under the Greater Cambridge Local Plan (first proposals));

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<sup>1</sup> Environmental Statement (C2C-10-00-Environmental Statement (Volume 1)).

- Permanent moderate adverse effect on Bridleway 39/30<sup>2</sup>, although usage is understood to be relatively low;
- Very large permanent beneficial effect on walkers, cyclists and wheelers in the local community from the provision of a new active travel route, which will be located along the length of the C2C Scheme and will provide a continuous segregated WCH facility from Upper Cambourne to west Cambridge; and
- Temporary large adverse effect on tenant farmer.

1.1.6. The following health outcomes are likely as a result of the C2C Scheme:

- A permanent beneficial health outcome associated with mental and physical health for local residents, recreational users and commuters due to the provision of the new active travel route;
- Temporary negative health outcomes associated with mental health for those residing in the four dwellings with significant construction noise effects;
- A neutral outcome on human health for local residents and users associated with respiratory and cardiovascular diseases during construction;
- A beneficial outcome on human health associated with respiratory and cardiovascular diseases for local residents and users during operation of the C2C Scheme;
- Temporary impacts during construction and in the medium-term once operational on visual amenity for local residents are likely to have negative health outcomes associated with mental health (e.g. stress and anxiety) as a result of the C2C Scheme. Negative health outcomes will diminish as planting becomes established during the long-term, and a permanent neutral health outcome will occur; and
- Neutral health outcomes for local residents are anticipated during construction and operation as a result of effects on the water environment.

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<sup>2</sup> Highway Asset Management 2023. Appendix T – Rights of Way. Available online: [Highway policies and capital maintenance programme - Cambridgeshire County Council](#) (Accessed 17/05/23).

## 2. METHODOLOGY SUMMARY

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- 2.1.1. The methodologies to be used to assess the population and human health elements are in accordance with DMRB, LA 104 (Environmental Assessment and Monitoring)<sup>3</sup> and DMRB, LA 112 (Population and Human Health)<sup>4</sup>, and consider temporary construction effects and permanent and operational effects.

### 2.2. SCOPE OF THE ASSESSMENT

- 2.2.1. A request for a formal EIA Scoping Opinion was submitted alongside an EIA Scoping Report to the DfT TWA Unit in February 2022. The EIA Scoping Report and Scoping Opinion are provided in **EIA Scoping Report** and **EIA Scoping Opinion** respectively. This section provides, where necessary, an update on the scope of the assessment and reiterates the evidence base for insignificant effects.

#### SCOPED OUT ISSUES

- 2.2.2. The two following potential impacts have been identified and have not been considered within the ES. A factual evidence base has been provided below to support this:
- Private property and housing: loss of residential property during construction. There is not expected to be any loss of residential property as a result of the C2C Scheme; and
  - Private property and development land and business: impacts during operation. Access to residential and business properties is not expected to be adversely impacted during operation of the C2C Scheme.

#### SCOPED IN ISSUES

- 2.2.3. The following effects are considered to have the potential to give rise to impacts and have therefore been considered within the ES:
- Temporary access disruption to / from residential properties, community land and assets and development land and assets during construction;
  - Temporary and permanent access disruption and journey length changes to walker, cyclist and horse-rider facilities;
  - Temporary and permanent land take and severance for agricultural land holdings;
  - Temporary and permanent changes to human health; and
  - Temporary changes to employment.

#### STUDY AREAS

- 2.2.4. The relevant study areas for each element covered under the assessment are as follows:

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<sup>3</sup> National Highways (2019). DMRB Volume 11 Section 2 LA 104 Environmental assessment and monitoring. Available online: <https://www.thenbs.com/PublicationIndex/documents/details?Pub=HA&DocID=327091> (Accessed 17/05/23).

<sup>4</sup> National Highways (2020). DMRB Volume 11 Section 3 LA 112 Population and Human Health. Available online: <https://www.standardsforhighways.co.uk/search/1e13d6ac-755e-4d60-9735-f976bf64580a> (Accessed 17/05/23).



### **Land-use and Accessibility**

- 2.2.5. The study area suggested in DMRB LA 112<sup>4</sup> Population and human health for land-use and accessibility receptors is 500m beyond the C2C Scheme. The land-use and accessibility study areas for the C2C Scheme are outlined below, from paragraph 2.2.6 to 2.2.16. Where the study area differs from the DMRB LA 112<sup>4</sup>, a justification is provided.

### **Private Property and Housing**

- 2.2.6. Although DMRB LA 112<sup>4</sup> suggests a study area of 500m for private property and housing, it is not considered that any effects would be associated with the C2C Scheme beyond the Order Limits where no land take or direct access disruption are anticipated, except for those with direct means of access within the Order Limits. Therefore, the study area comprises private properties, associated land parcels and housing allocations that lie within, or immediately adjacent to the Order Limits, or those which have a direct means of access within the Order Limits.

### **Community Land and Assets**

- 2.2.7. Community facilities, recreational facilities (including open spaces) that lie within 500m of the C2C Scheme, or those which have a direct means of access within the Order Limits; and
- 2.2.8. Separation or severance of residents from facilities and services that they use within their community within 500m of the C2C Scheme. For example, a river or motorway with no crossing located between residential properties and facilities and services would be considered a complete separation or severance. A road with high levels of traffic and no formal crossings, but still able to be crossed by walkers, cyclists and horse-riders (WCH) at their risk, will have a degree of severance. Similarly, extensions to WCH and vehicular access routes can introduce an element of severance where this extends beyond reasonable or average travel times, depending on the mode of travel.

### **Development Land and Businesses**

- 2.2.9. Although DMRB LA 112<sup>4</sup> suggests a study area of 500m for development land and businesses, it is not considered that any effects would be associated with the C2C Scheme beyond the Order Limits where no land take or direct access disruption are anticipated. Therefore, the study area comprises land parcels of employment allocation, permitted development for employment and businesses that lie within (or use land within), or immediately adjacent to the C2C Scheme, or those which have a direct means of access within the Order Limits.

### **Agricultural land holdings**

- 2.2.10. Although DMRB LA 112<sup>4</sup> suggests a study area of 500m for agricultural land holdings, it is not considered that any effects would be associated with the C2C Scheme beyond the Order Limits where no land take or direct access disruption are anticipated. Therefore, the study area comprises agricultural land holdings which manage or own land parcels of agricultural land that lie within the Order Limits, or those which have a direct means of access within the Order Limits.
- 2.2.11. **Walkers, Cyclists and Horse-riders** Public Rights of Way (PRoW) and non-designated routes located within 500m of the Order Limits of the C2C Scheme.

### **Human Health**

- 2.2.12. DMRB LA 112<sup>4</sup> states that the Study Area for human health shall be defined based on the following:
- The extent and characteristics of a project; and



- The communities/wards directly and indirectly affected by the C2C Scheme.

2.2.13. The guidance also notes that the study area will be unique to each project and should be based on the sensitivity of affected communities and the nature/extent of the project resulting in changes to health determinants.

2.2.14. In line with the guidance, the Study Area is comprised of the wards directly and indirectly affected by the C2C Scheme due to their proximity, and therefore includes the following District level wards which are located within 500m of the Order Limits:

- Cambourne;
- Caldecote;
- Hardwick;
- Harston & Comberton;
- Caxton & Papworth;
- Girton;
- Newnham; and
- Castle.

2.2.15. This assessment has been informed by data profiles of administrative areas at various levels. These areas are set out as follows:

- National: England;
- County: Cambridgeshire County Council;
- Local Authority / District Council: South Cambridgeshire and the City of Cambridge; and
- District Level Ward: Cambourne, Caldecote, Hardwick, Harston & Comberton, Caxton & Papworth, Girton, Newnham and Castle.

### **Employment**

2.2.16. The impact of the C2C Scheme on employment is considered relative to Cambridgeshire as a region, as this represents the principal labour market catchment area. South Cambridgeshire and the City of Cambridge are accessible from all areas of Cambridgeshire by car and by public transport. The Cambridgeshire labour market incorporates the population that may reasonably be expected to travel to and benefit from the C2C Scheme. Therefore, the study areas for construction employment are based on Cambridgeshire (county level) and South Cambridgeshire and Cambridge City (district level).

## **2.3. METHOD OF BASELINE DATA COLLECTION**

### **Desk Study**

2.3.1. A desk-based review of online sources was undertaken to determine sensitive receptors within the study area. The following data sources have been consulted to inform the baseline review:

#### **Land Use and Accessibility**

- Site Allocations Plan; and
- Google Maps.

## Human Health

- Public Health England – Local Health Profile;
- Ministry of Housing, Communities & Local Government, English Indices of Deprivation 2019;
- NOMIS, Labour Market Profile;
- Department for Environmental Food & Rural Affairs (DEFRA), UK Air Information Resource; and
- DEFRA, Noise Action Planning Important Areas Round 2 England.

## Surveys and Data Sources

- 2.3.2. A range of publicly available datasets have been used to form the baseline and inform the assessment. This includes Office for National Statistics datasets including the 2011 Census, Population Estimates, and the Annual Population Survey as well as Ordnance Survey Address Base, English Indices of Multiple Deprivation and data from Public Health England ‘Fingertips’. Information on PRoW and other walking and cycling routes has been obtained using data from CCC.
- 2.3.3. Surveys relevant to determinants of human health such as noise or air quality are as reported by the relevant environmental topic assessments.

## Land Use and Accessibility

### Private Property and Housing

- 2.3.4. The assessment has:
- Identified the location of private property and housing in the study area;
  - Determined the disruption to access and the likelihood of severance to private property and housing; and
  - Identified the location and number of units of residential development land, and evaluated the likely effects upon it.

### Community Land and Assets

- 2.3.5. The assessment has:
- Identified the location of community land and assets in the study area;
  - Considered the frequency of use of community land and assets;
  - Determined the level of accessibility restrictions / severance to community land and assets; and
  - Determined any changes to amenity value of community land and assets.

### Development Land and Businesses

- 2.3.6. The assessment has:
- Identified the location and number of businesses in the study area;
  - Determined the level of accessibility restrictions / severance to businesses; and
  - Identified the location and extent of land allocated for development and / or subject to planning applications, and evaluated the likely effects upon it.

### Agricultural Land Holdings

- 2.3.7. The assessment has:

- Identified the type, location and number of agricultural holdings at risk of demolition or from which land will be required/access affected by a project;
- Identified the level of existing severance/accessibility restrictions to agricultural land holdings within the study area; and
- Identified the frequency of use of the agricultural holdings/assets within the study area.

### Walking, Cycling and Horse-riding

2.3.8. The assessment has:

- Identified likely routes taken by WCH;
- Considered the frequency of use for WCH routes; and
- Determined any changes to journey length on WCH.

### Human Health

2.3.9. The assessment has:

- Identified the change to health determinants as a result of the C2C Scheme using appropriate information from ES topics and other available information regarding health;
- Identified the likely health determinants to be affected by the C2C Scheme, and therefore, included in the assessment of human health include; air quality; noise; visual amenity; accessibility to community, healthcare, social and employment facilities and opportunities for physical activity;
- Determined the sensitivity of the population using professional judgement applied to the health profile presented in the baseline, and reported as low, medium, or high in accordance with DMRB LA112<sup>4</sup> guidance; and
- Based a health receptors' sensitivity on their ability to experience a potential impact without incurring a substantial change to their health status. Several elements have been used to determine receptor value including level of deprivation and accessibility.

### Construction Employment Generation

2.3.10. Leakage, displacement, and multiplier effects have been taken account of to determine the total net employment. Employment generation has been assessed by geographical scale as determined by the Census 2011 Origin and Destination Statistics.

#### Leakage

2.3.11. Leakage effects are the “*proportion of outputs that benefit those outside of the intervention’s target area or group*”. Therefore, the leakage effects show the benefits of the C2C Scheme to areas outside of the local Study Area. A low leakage rate has been applied and implies that the majority of employment opportunities would go to people living within the target (effect) area (i.e. the local Study Area).

#### Displacement

2.3.12. Displacement measures the extent to which the benefits of a project are offset by reduction of output or employment elsewhere. Additional demand for labour as a result of the construction phase of the C2C Scheme cannot simply be treated as a net benefit as it has the potential to remove workers from other positions, and the net benefit is therefore reduced by the extent that this occurs.

2.3.13. While construction workers typically move between construction projects when delays occur or to help the workforce meet particular construction deadlines, the construction workforce within South Cambridgeshire and Cambridge City is likely to have a moderate level of flexibility. The English Partnerships Additionality Guidance provides guidance on the levels of displacement. Within the context of the C2C Scheme, a low level of displacement of 25% is considered appropriate. It should be noted that given the long construction phase, there is expected to be a concentration of construction workers in the area, with firms likely investing in local assets and upskilling of local workers.

#### Multiplier effects

2.3.14. In addition to the direct employment generated by the C2C Scheme itself, there would be an increase in local employment arising from “*further economic activity (jobs, expenditure or income) associated with additional local income and local supplier purchases*”<sup>5</sup> and the indirect and induced effects of the construction activity. Employment growth would arise locally through manufacturing services and suppliers to the construction process (indirect or supply linkage multipliers). Additionally, part of the income of the construction workers and suppliers would be spent in South Cambridgeshire, generating further employment (induced or income multipliers).

2.3.15. The effects of the multiplier depend on the size of the geographical area that is being considered, the local supply linkages and income leakage from the area. The English Partnerships Additionality Guidance provides a guide to the composite multipliers (the combined effect of indirect and induced multiplier effects) which should be applied. In line with this guidance, within South Cambridgeshire and Cambridge City context a ‘high’ multiplier of 1.3 is considered appropriate and has been used to determine indirect employment generation.

## **2.4. SIGNIFICANCE CRITERIA**

2.4.1. The significance level attributed to each effect has been evaluated based on the magnitude of impact / change due to the C2C Scheme and the sensitivity of the affected receptor, as well as a number of other factors that are outlined in more detail in **Section 2.4** of the **ES**. The sensitivity of the affected receptor is assessed on a scale of negligible, low, medium, high and very high (as defined by Table 3.11 within DMRB LA 112 Population and Human Health<sup>4</sup>), and the magnitude of impact / change is assessed on a scale of no change, negligible, minor, moderate and major (as defined by Table 3.12 within DMRB LA 112 Population and Human Health<sup>4</sup>, and as outlined in **TR4-2-1**).

2.4.2. Whilst the significance ratings in **Section 2.4** of the **ES** have been used, it is not prescriptive and professional judgement has been applied where appropriate.

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<sup>5</sup> Homes and Communities Agency, Additionality Guide Fourth Edition, 2014. Available online: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/378177/additionality\\_guide\\_2014\\_full.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/378177/additionality_guide_2014_full.pdf) (Accessed 17/06/23).

## TR4-2-1 – Magnitude of Impact Criteria for Land-use and Accessibility Elements

Magnitude of Impact	Receptor	Typical Criteria Descriptors
Major	<ul style="list-style-type: none"> <li>▪ Private property and housing;</li> <li>▪ Community land and assets;</li> <li>▪ Development land and businesses; and</li> <li>▪ Agricultural land holdings.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements, e.g., direct acquisition and demolition of buildings and direct development of land to accommodate highway assets; and/or</li> <li>▪ Introduction (adverse) or removal (beneficial) of complete severance with no/full accessibility provision.</li> </ul>
Major	Walking, cycling, horse riding	>500m increase (adverse) / decrease (beneficial) in WCH journey length.
Moderate	<ul style="list-style-type: none"> <li>▪ Private property and housing;</li> <li>▪ Community land and assets;</li> <li>▪ Development land and businesses; and</li> <li>▪ Agricultural land holdings.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Partial loss of/damage to key characteristics, features or elements, e.g., partial removal or substantial amendment to access or acquisition of land compromising viability of property, businesses, community assets or agricultural holdings; and/or</li> <li>▪ Introduction (adverse) or removal (beneficial) of severe severance with limited / moderate accessibility provision.</li> </ul>
Moderate	Walking, cycling, horse riding	>250m - 500m increase (adverse) or decrease (beneficial) in WCH journey length.
Minor	<ul style="list-style-type: none"> <li>▪ Private property and housing;</li> <li>▪ Community land and assets;</li> <li>▪ Development land and businesses; and</li> <li>▪ Agricultural land holdings.</li> </ul>	<ul style="list-style-type: none"> <li>▪ A discernible change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements, e.g., amendment to access or acquisition of land resulting in changes to operating conditions that do not compromise overall viability of property, businesses, community assets or agricultural holdings; and/or</li> <li>▪ Introduction (adverse) or removal (beneficial) of severance with adequate accessibility provision.</li> </ul>
Minor	Walking, cycling, horse riding	>50m - 250m increase (adverse) or decrease (beneficial) in WCH journey length.
Negligible	<ul style="list-style-type: none"> <li>▪ Private property and housing;</li> <li>▪ Community land and assets;</li> <li>▪ Development land and businesses; and</li> <li>▪ Agricultural land holdings.</li> </ul>	<ul style="list-style-type: none"> <li>▪ Very minor loss or detrimental alteration to one or more characteristics, features or elements, e.g., acquisition of non-operational land or buildings not directly affecting the viability of property, businesses, community assets or agricultural holdings; and/or</li> <li>▪ very minor introduction (adverse) or removal (beneficial) of severance with ample accessibility provision.</li> </ul>
Negligible	Walking, cycling, horse riding	<50m increase (adverse) or decrease (beneficial) in WCH journey length
No change	All	No loss or alteration of characteristics, features, elements or accessibility; no observable impact in either direction.

## Human Health

- 2.4.3. A qualitative assessment of human health was undertaken following guidance set out within DMRB LA 112 Population and Human Health<sup>4</sup>. No significance of effect has been assigned for human health in accordance with DMRB LA 112<sup>4</sup>.
- 2.4.4. Once the health profile of communities was established, the sensitivity of a community / population to change have been reported as:
- Low;
  - Medium; or
  - High.
- 2.4.5. Once community or population sensitivity, and changes to health determinants likely to occur as a result of a project, have been established, the likely health outcome(s) have been identified in line with the categories in **TR4-2-2**, with evidence provided to support.

### TR4-2-2 – Human Health Outcome Categories

Human Health Outcome Category	Human Health Outcome Description
Positive	A beneficial health impact is identified.
Neutral	A discernible health impact is identified.
Negative	An adverse health impact is identified.
Uncertain	Where uncertainty exists as to the overall health impact.

## Socio-economic

- 2.4.6. A quantitative assessment process for construction employment generation has been undertaken. The quantified effects for construction employment generation has been assessed based on the following definitions:
- Beneficial: classifications of significance indicate an advantageous or beneficial impact on an area, which may be minor, moderate, or major;
  - Negligible: classifications of significance indicate imperceptible impacts on an area; and
  - Adverse: classifications of significance indicate a disadvantageous or adverse impact on an area, which may be minor, moderate or major.
- 2.4.7. Based on consideration of paragraph 2.2.1 where an effect has been assessed as being beneficial or adverse, significance has been assigned using the scale below based on professional judgement:
- Negligible: no receptors (or very few) are beneficially or adversely affected. The effect is unlikely to make a measurable difference on the receptors in the relevant areas of effect;
  - Minor: a small number of receptors are beneficially or adversely affected. The effect is likely to make a small measurable positive or negative difference on receptors in the relevant area(s) of effect;
  - Moderate: a moderate number of receptors are beneficially or adversely affected. The effect is likely to make a measurable positive or negative difference on receptors in the relevant area(s) of effect; and





- Major: all or a large number of receptors are beneficially or adversely affected. The effect is likely to make a substantial positive or negative difference on receptors in the relevant area(s) of effect.

2.4.8. Effects that are deemed to be **significant** for the purpose of this assessment are those that are described as being **moderate** or **major beneficial** or **adverse**.

### 3. BASELINE ENVIRONMENT

#### 3.1. LAND USE AND ACCESSIBILITY

##### PRIVATE PROPERTY AND HOUSING

- 3.1.1. The assessment of private property and housing considers both existing private property and land allocated for future housing development. Private property is land that does not accommodate public space or any other community facility or asset.
- 3.1.2. There are approximately 4,650 residential properties within 500m of the C2C Scheme. This includes properties in the settlements of Hardwick, Highfields and Coton as well as properties in Cambourne and Cambridge. There are also properties to the north of the proposed Travel Hub. There are no residential properties within the Order Limits. **TR4-3-1** outlines residential properties adjacent to the C2C Scheme or accessed by roads that are located within the Order Limits.
- 3.1.3. One property (1 Coton Court, Madingley Road) has been considered under the agricultural land holding assessment and is not included in **TR4-3-1**.

##### TR4-3-1 – Private Property and Housing Receptors

Location	Size	Sensitivity
<b>Cambourne</b>		
Properties off Sterling Way (including Vickers Way, Spitfire Road, Bristol Road, Handley Drive) (adjacent to the Order Limits)	Each property assumed to occupy >1ha (excluding any associated agricultural land)	Medium
Properties off Broadway (adjacent and accessed directly from Order Limits)		
<b>Highfields</b>		
Properties off Highfields Road (accessed from St Neots Road)	Each property assumed to occupy >1ha (excluding any associated agricultural land)	Medium
Properties off St Neots Road, Highfields (adjacent and accessed directly from Order Limits)		
<b>Hardwick</b>		
Properties on St Neots Road, Hardwick (adjacent and accessed directly from Order Limits)	Each property assumed to occupy >1ha (excluding any associated agricultural land)	Medium
Properties off the northern end of Hall Drive (accessed from St Neots Road and adjacent to the Order Limits)		

Location	Size	Sensitivity
Properties off Cambridge Road (accessed from St Neots Road and adjacent to the Order Limits)		
Properties off Millers Way (accessed from St Neots Road and adjacent to the Order Limits)		
<b>Coton</b>		
Properties off Cambridge Road, Coton (accessed from and adjacent to the Order Limits)	Each property assumed to occupy >1ha (excluding any associated agricultural land)	Medium
Properties off High Street, Coton, Brook Lane, Whitwell Way and the Footpath (accessed from Cambridge Road)		
<b>West Cambridge</b>		
Properties off Dane Drive (adjacent to the Order Limits)	Each property assumed to occupy >1ha (excluding any associated agricultural land)	Medium
<b>Dry Drayton</b>		
Properties off Scotland Road (accessed from and adjacent to the Order Limits)	Each property assumed to occupy >1ha (excluding any associated agricultural land)	Medium

3.1.4. Allocated land is land designated for residential development within the study area and / or land where planning permission for residential development has been granted or is pending.

3.1.5. Allocations have been identified from the following existing and emerging local plans:

- The Cambridge Local Plan 2018<sup>6</sup>;
- The South Cambridgeshire Local Plan 2018<sup>7</sup>; and
- The Greater Cambridge Local Plan<sup>8</sup> is a joint local plan between Cambridge City Council and South Cambridgeshire District Council. The local plan will ensure a consistent approach to planning and construction across both areas up to 2041. At the time of writing, the consultation is closed on the First Proposals.

<sup>6</sup> Cambridge Local Plan, 2018. Available online: <https://www.cambridge.gov.uk/local-plan-2018> (Accessed 17/05/23).

<sup>7</sup> South Cambridgeshire Local Plan, 2018. Available online: <https://www.scambs.gov.uk/planning/local-plan-and-neighbourhood-planning/the-adopted-development-plan/south-cambridgeshire-local-plan-2018/> (Accessed 17/05/23).

<sup>8</sup> Greater Cambridge Local Plan First Proposals, 2021. Available online: <https://consultations.greatercambridgeplanning.org/sites/gcp/files/2021-10/First%20Proposals%20-%20FINAL%20FURTHER%20REVISED%2028.10.21-red.pdf> (Accessed 17/05/23).

- 3.1.6. The following allocations, listed within the adopted and emerging plans (in the First Proposals), are located within the study area. Further details of the relationship between the C2C scheme and these allocations are outlined within the Outline Business Case and its addendums for the C2C Scheme.
- Bourn airfield, (identified as Policy SS/7: New Village at Bourn Airfield, within the South Cambridgeshire Local Plan 2018) is an allocation of 171.8ha (Reference SS/7 under the Greater Cambridge Local Plan (first proposals)) for 3,500 houses (2,460 houses within 2020 – 2041 and 1,040 post 2041, with no more than 500 houses to be occupied before C2C (or similar public transport scheme) is in operation), is located within the study area and Order Limits, south of St Neots Road, between Cambourne and Highfields. This receptor is of very high sensitivity;
  - West Cambridge, a mixed use allocation of 66.9ha (identified as Policy 19: West Cambridge Area of Major Change under the Cambridge Local Plan 2018 and S/WC under the Greater Cambridge Local Plan (first proposals)), which would allow an element of residential development, focused on affordable housing, although no housing delivery is currently committed to under the Plan. This site allocation is located within the Order Limits of the C2C Scheme, south of the A1303 Madingley Road. With no housing committed to within this allocation, and its primary purpose being for an innovation district, a sensitivity of medium is assumed for this allocation;
  - North West Cambridge (Eddington) is a housing allocation of 90.9ha (S/NWC under the Greater Cambridge Local Plan (first proposals)), for 3,142 houses from 2020-2041. This site allocation is located approximately 350m north of the C2C Scheme This receptor is of very high sensitivity; and
  - Grange Farm off Wilberforce Road, Cambridge is a housing allocation of 1.2ha (identified as Allocated Site U3 in the Cambridge Local Plan 2018 and S/C/U3 under the Greater Cambridge Local Plan (first proposals), for 48 houses from 2020-2041. This site is located adjacent to the Order Limits. This receptor is of high sensitivity.

## COMMUNITIES AND COMMUNITY FACILITIES

- 3.1.7. Community land is land that is accessible to the public and provides a service or resource to the community. There are multiple community facilities located within the study area in adjacent villages, as well as Cambridge and Cambourne.
- 3.1.8. Further detail on designated Open Space (as designated by the local authority) in the vicinity of the C2C Scheme is found in the C2C Open Space Assessment<sup>9</sup>.
- 3.1.9. The following communities are located within the Study Area, and sensitivities are provided on these considered as a whole (where individual assets are considered within the assessment their sensitivity is provided):
- Cambourne**
- 3.1.10. Cambourne is a settlement comprising of the three villages of Great Cambourne, Lower Cambourne and Upper Cambourne. Upper Cambourne is situated at the western end of the C2C Scheme, and can be accessed from the A428 or Broadway. There is a concentration of commonly used community facilities in Cambourne, which are likely to be used not only by residents of Cambourne, but of smaller nearby villages such as Highfields Caldecote and Hardwick (and should therefore be

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<sup>9</sup> C2C-19-00-Public Open Spaces Assessment

considered of high sensitivity, when considered in combination). Community facilities in Cambourne include:

- Four primary schools (Jeavons Wood, Monkfield Park, Cambourne Preschool, The Vine Inter-Church Primary School);
- Kindred Cambourne nursery and pre-school;
- Two churches (Peacehaven Baptist Church, Cambourne Church Centre);
- A dental clinic;
- A medical practice;
- Sports centres and facilities;
- Brace Dein allotments;
- Community centres;
- A library;
- Four playgrounds.

### **Highfields Caldecote**

3.1.11. Highfields Caldecote is a village located east of Bourn Airfield, and is accessed from the north by St Neots Road and Highfields Road, as well as from minor roads to the south. The C2C Scheme will be located north of this settlement. There is a nursing home located in the area of Highfields that is located within the study area (Gracefield Nursing Home & Residential Care), as well as Caldecote Social Club, Caldecote Sports Pavillion and recreation ground and Caldecote Village Hall. The majority of other commonly used community facilities are likely to be accessed in Cambourne for residents of Highfields Caldecote. Therefore it is considered that the community and community facilities are of medium sensitivity, when considered in combination.

### **Hardwick**

3.1.12. Hardwick is a village located south of the A428, and is accessed by St Neots Road and Cambridge Road (Hardwick). The C2C Scheme runs through the northern part of this settlement. Community facilities in Hardwick that are within the study area include Hardwick Community Primary School, Hardwick Play Park, and Hardwick Sports & Social Club. The majority of other commonly used community facilities are likely to be accessed in Cambourne for residents of Hardwick. Therefore it is considered that the community and community facilities are of medium sensitivity.

### **Coton**

3.1.13. Coton is a village located south of the A1303 Madingley Road (from which it is accessed, via Cambridge Road (Coton)) on the western fringe of Cambridge. The C2C Scheme will be located north of the built part of this settlement. Community facilities in Coton that are within the study area include the Coton C of E Primary School; Coton Village Hall; Saint Peter's Church Coton; Cambridge RC Raceway sports cub. It is likely that further services required by residents of Coton will be sought in the centre of Cambridge, due to its proximity. Therefore it is considered that the community and community facilities are of medium sensitivity, when considered in combination.

### **West Cambridge**

3.1.14. The C2C Scheme's most eastern extent is within west Cambridge, where it follows Charles Babbage Road and ends at Grange Road. Cambridge Biomedical Campus and Cambridge and

Anglia Ruskin universities are located there, alongside a number of university-owned facilities including university sports facilities, research institutes, laboratories and libraries. Other community facilities include the following:

- land east of the M11 within a City Wildlife Site and designated as Open Space (within the Cambridge City Local Plan 2018);
- the 'Top Pitch', a rugby training pitch south of the Cambridge University Sports Facility;
- University Rugby Club practice pitch, west of the University Rugby Club;
- Cambridge Rugby Club;
- non-university owned sports facilities;
- one place of worship (Robinsons College Chapel);
- two preparatory schools (St John's College School - Byron House, King's College School);
- two children's nurseries (Bright Horizons Wolfson Court Day Nursery and Preschool, University Nursery at West Cambridge);
- two play areas/playgrounds (Gough Way playground, Top Pitch Park); and
- the Museum of Classical Archaeology.

3.1.15. It is considered that the community located in this area and community facilities are of high sensitivity, when considered in combination.

## DEVELOPMENT LAND AND BUSINESSES

### Development Land

3.1.16. Development land as defined within DMRB LA 112<sup>4</sup> is employment land allocated within the Local Plan for development purposes. There is one employment land allocation located within the study area, West Cambridge, a mixed use allocation of 66.9ha (S/WC under the Greater Cambridge Local Plan (first proposals)), which would be developed as an innovation district, in relation with Cambridge University. This site allocation is located within the Order Limits of the C2C Scheme, south of the A1303 Madingley Road.

### Businesses

3.1.17. Businesses are classed as land and buildings operating as commercial / industrial enterprise. There are approximately 430 business properties within the study area. Business properties are primarily located towards the eastern part of the study area in Cambridge, most of which are knowledge economy facilities such as research institutes, laboratories and other university uses. There are also some business properties located close to the C2C Scheme along St Neots Road at Hardwick.

3.1.18. **TR4-3-2** outlines businesses within the Order Limits, adjacent to the C2C Scheme or accessed by roads that are located within the Order Limits.

### TR4-3-2 – Businesses Identified within the Study Area

Location	Size	Sensitivity
<b>Highfields/Caldecote</b>		
Bourne Quarter Development (Industrial park with Phase 1 of two completed, accessed by Wellington Way, Highfields)	>1-5ha	High



Location	Size	Sensitivity
PUDLO Waterproof Systems (accessed by Wellington Way, Highfields)	<1ha	Medium
BP Petrol Station / Budgens Supermarket (accessed from St Neots Road Highfields)	<1ha	Medium
Gracefield Nursing Home and Residential Care (accessed from St Neots Road Highfields)	<1ha	Medium
<b>Dry Drayton</b>		
The Irwin Centre, accessed from Scotland Road, Dry Drayton	<1ha	Medium
Laser Scan Engineering, accessed from Scotland Road, Dry Drayton	<1ha	Medium
Units at Dry Drayton Industries, accessed from Scotland Road, Dry Drayton	<1ha	Medium
<b>Hardwick</b>		
Spotless Dog (accessed from St Neots Road Hardwick)	<1ha	Medium
Signwork LTD, (accessed from St Neots Road Hardwick)	<1ha	Medium
Mark Weatherhead Lawn Mower Shop (accessed from St Neots Road Hardwick)	<1ha	Medium
Cambridge Isuzu car dealership (accessed from St Neots Road Hardwick)	<1ha	Medium
Nails to Notice, (accessed from St Neots Road Hardwick)	<1ha	Medium
Hardwick Clinic, (accessed from St Neots Road Hardwick)	<1ha	Medium
CSC Automotive, (accessed from St Neots Road Hardwick)	<1ha	Medium
Cambridge Vehicle Wrap, (accessed from St Neots Road Hardwick)	<1ha	Medium
Cambridge Reptiles and Exotics, (accessed from St Neots Road Hardwick)	<1ha	Medium
The Tattoo Place, (accessed from St Neots Road Hardwick)	<1ha	Medium
Ash Croft Veterinary Surgery, (accessed from St Neots Road Hardwick)	<1ha	Medium
Ward Howard Chartered Surveyors (accessed from St Neots Road Hardwick)	<1ha	Medium
The Hair Care Bunch (accessed from St Neots Road Hardwick)	<1ha	Medium
Shelton Estates (accessed from St Neots Road Hardwick)	<1ha	Medium

Location	Size	Sensitivity
Azuki Web & Mobile Development (accessed from St Neots Road Hardwick)	<1ha	Medium
Valeader Pneumatics (accessed from St Neots Road Hardwick)	<1ha	Medium
Silver Star Chauffer Service (accessed from St Neots Road Hardwick)	<1ha	Medium
DVSA Driving Test Centre (accessed from St Neots Road Hardwick)	<1ha	Medium
<b>West Cambridge</b>		
Rectory Farm Hotel (accessed from Madingley Road)	>5ha in total with associated land	Medium <sup>10</sup>
Atlas Building (Disused storage facility <sup>11</sup> in poor state of repair, owned and once used by University of Cambridge to house Sedgwick Museum's working geological collections), accessed from Ada Lovelace Road, Cambridge	<1ha	Medium
University of Cambridge buildings, and all other buildings/businesses accessed from Charles Babbage Road, Ada Lovelace Road, JJ Thomson Avenue and Grange Road, Cambridge	<1ha (individually)	Medium
Blueshift Memory, accessed from Charles Babbage Road, Cambridge.	<1ha	Medium

## WALKING, CYCLING AND HORSE RIDING

- 3.1.19. Walking, cycling and horse riding (WCHR) routes include public footpaths, public bridleways, restricted byways, cycle paths, recreational routes and footways.
- 3.1.20. Two unsegregated cycle lanes run along either side of the St Neots Road at Hardwick (linking with the Madingley Road to Cambridge), close to the C2C Scheme. One off-road cycle and pedestrian path runs to the south of the West Cambridge site, crossing the C2C Scheme. There are also unsegregated cycle lanes on Grange Road at the eastern end of the route.
- 3.1.21. There are no National Cycle Network (NCN) routes in the study area, but there are NCN routes running through Cambridge city centre including NCN Route 51 to Oxford from Cambridge and Regional Cycle Network Route 24, which run north-west of Cambridge towards St Ives which cyclists on the local network may travel onward to.
- 3.1.22. There are 17 public rights of way (PRoW) within or partly within the study area, including three bridleways and one long distance way – the Harcamlow Way, and which are listed in **TR4-3-3**. The C2C Scheme intersects four of these PRoW:

<sup>10</sup> The property itself with associated land extends to approximately 50ha, the hotel is <1ha.

<sup>11</sup> University of Cambridge (2023). Sedgwick Museum Collections Store. Available online at: <https://www.esc.cam.ac.uk/alumni/support-the-department/sedgwick-museum-collections-store> (Accessed 17/05/2023).

- Bridleway 39/30 between the A1303 Madingley Road and the M11 footbridge, to the east of the M11;
- Footpath 39/31 that connects Bridleway 39/30, running east to Wilberforce Road;
- Footpath 55/2 between the A1303 Madingley Road and Coton High Street; and
- Footpath 66/17 that runs from Dry Drayton to the A428 to the north of Hardwick.

3.1.23. Other pedestrian routes include non-designated footpaths along the St Neots Road and in Cambourne, Hardwick, Highfields Caldecote, Coton and Cambridge.

3.1.24. Existing public transport includes a direct bus service from Cambourne to Cambridge, with approximately three buses per hour at 20-minute intervals, with stops along the St Neots Road at Hardwick. There are six existing bus stops along St Neots Road.

### TR4-3-3 – WCHR Routes within the Study Area

WCHR Routes	Location	Extent	Sensitivity
<b>Footpath - 279/3</b>	Approximately 460m south of the A428	The footpath links Broadway and Caxton Road and provides direct access to the community in Upper Cambourne. It is likely that the footpath is used mainly recreational purposes and potentially commuting purposes along Brace Dein road. It is approximately 1.9km in length	Medium- likely to be used primarily for recreational use
<b>Byway – 142/7</b>	Location between St Neots Road and a bridleway (27/12)	The byway links St Neots Road to a bridleway (27/12). It is likely that the byway is used for agricultural uses by the Bird Pasture farm as well as recreational uses. It is approximately 1km in length	Medium- likely to be used primarily for agricultural and recreational use
<b>Footpath - 38/1</b>	Approximately 150m metres south of the A428	The footpath links St Neots road and Highfields road and provides direct access to the community in Highfields as well as The Cottage Highlands farm and community facilities such as Fortitude Fitness Centre. It is likely that the footpath is used mainly recreational purposes. It is approximately 0.6km in length	Medium- likely to be used primarily for recreational use
<b>Footpath - 66/17</b>	Between A1303 and Madingley Road	The footpath links St Neots road and Worcester avenue, located between residential properties. It links the residential area with the main road where there is access to public transportation. It is likely that the footpath is used mainly commuting and recreational purposes. It is approximately 2.9km in length	Medium- likely to be used primarily for commuting and recreational use
<b>Footpath 114/6</b>	Between A1303 and Worcester Avenue	The footpath links A1303 and Worcester Avenue, located between residential properties. It links the residential area with the main road where there is access to public transportation. It is likely that the footpath is used mainly commuting and recreational purposes. It is approximately 0.07km in length	Medium- likely to be used primarily for commuting and recreational use
<b>Footpath 154/4</b>	Between A1303 and Cambridge Road	The footpath links A1303 and Cambridge Road. The footpath runs alongside the Cambridge American Cemetery, and it is likely that the footpath is used for recreational purposes and to access this facility.	Medium- likely to be used primarily for recreational use

WCHR Routes	Location	Extent	Sensitivity
		It is approximately 0.4km in length	
<b>Footpath 55/2</b>	Between A1303 and Whitwell Way	The footpath links A1303 and Whitwell Way. The footpath runs alongside the perimeter of a field and is likely used for recreational and agricultural purposes. It is approximately 0.7km in length	Medium- likely to be used primarily for recreational and agricultural use
<b>Footpath 154/3</b>	Between Cambridge Road and the M11	The footpath links Cambridge Road and the M11. The footpath runs alongside the perimeter of a field towards the motorway and is likely used for recreational and agricultural purposes. It is approximately 1.7km in length	Medium- likely to be used primarily for recreational and agricultural use
<b>Footpath 55/3</b>	Between footpath 55/4 and Wisteria Barn	The footpath links Wisteria Barn and footpath 55/4 and providing access to the barns and Rectory Farm. It is likely that the footpath is used for recreational purposes and to gain access to a larger footpath which leads to a main road. It is approximately 0.4km in length	Medium- likely to be used primarily for recreational use
<b>Footpath 55/4</b>	Between the High Street and an unnamed road off Brook Lane	The footpath links the High Street and an unnamed road off Brook Lane. It is likely that the footpath is used for recreational purposes. It is approximately 0.2km in length	Medium- likely to be used primarily for recreational use
<b>Footpath 55/6</b>	Between Brook Lane and the A603	The footpath links Brook Lane and the A603. It is likely that the path is used for agricultural and recreational purposes. It is approximately 2km in length	Medium- likely to be used primarily for recreational and agricultural use
<b>Footpath 55/9</b>	Approximately 25m east of the M11	The footpath follows through agricultural fields from footpath 39/31 towards an unnamed track. It is likely that the footpath is used for agricultural and recreational purposes. It is approximately 0.9km in length	Medium- likely to be used primarily for agricultural and recreational use

WCHR Routes	Location	Extent	Sensitivity
<b>Footpath 39/31</b>	Approximately 25m east of the M11	The footpath links from an intersection between two bridleways (39/112 and 39/30) and Wilberforce Road. It is likely that the footpath is used for commuting and recreational purposes (due to being in close proximity to university facilities and type of path). It is approximately 1.7km in length	Medium- likely to be used primarily for commuting and recreational use
<b>Footpath 39/58</b>	Between Grange Road and the A1134	The footpath links Grange Road and the A1134. It is likely to be used for commuting and recreational purposes (due to the location and type of path) It is approximately 0.4km in length	Medium- likely to be used primarily for commuting and recreational use
<b>Bridleway 55/5</b>	Between The Footpath (adjacent to Coton Football Club) and the M11	The bridleway links The Footpath with the 39/112 bridleway. It is likely that the bridleway is used primarily for recreational (and possibly commuting) purposes into Cambridge. It is approximately 0.4km in length	Medium- likely to be used primarily for commuting and recreational use
<b>Bridleway 39/112</b>	Between two bridleways (55/5 and 39/30)	The bridleway links two other bridleways (55/5 and 39/30). It is likely that the bridleway is used primarily for recreational (and possibly commuting) purposes into Cambridge. It is likely that the bridleway is used for commuting and recreational purposes to cross the M11. It is approximately 0.2km in length	Medium- likely to be used primarily for commuting and recreational use
<b>Bridleway 39/30</b>	Between a bridleway (39/112) and the A1303	The bridleway links another bridleway (39/112) and the A1303. It is likely that the bridleway is used primarily for recreational (and possibly commuting) purposes. It is approximately 0.6km in length	Medium- likely to be used primarily for recreational use The wildlife site and area through which the PRoW runs has high vegetation cover, and usage is understood to be low. However, usage could increase in the future.





## **AGRICULTURAL LAND HOLDINGS**

3.1.25. Agricultural land holdings within the study area are outlined in **TR4-3-4**, and shown on **Figure 1** in **Appendix A**.

### TR4-3-4 – Agricultural Land Holdings

Agricultural Land Holding	Nature	Husbandry	Size of Farm (Known Hectarage)	Sensitivity
1	Freeholder & Tenant	Arable land (crops including oil seed rape)	375.9	Medium (due to type of husbandry and frequency of access)
2	Freeholder occupier	Arable land (crops including winter barley and oil seed rape)	68.2	Medium (due to type of husbandry and frequency of access)
3	Tenant	Arable land (crops including winter barley and oil seed rape)	112.7	Medium (due to type of husbandry and frequency of access)
4	Freeholder & Tenant	Arable land (crops including oil seed rape)	294.4	Medium (due to type of husbandry and frequency of access)
5	Tenant	Arable land (crops including barley and oil seed rape)	4.6	Medium (due to type of husbandry and frequency of access)
6	Freeholder & Tenant (Elliot & Hannah Willis)	Paddock	12	Low (due to non-commercial nature)
7	Tenant	Arable land (crops including winter barley and oil seed rape)	191.3	Medium (due to type of husbandry and frequency of access)
8	Tenant	Livestock and arable, used as a teaching resource for veterinary department of the university	120.6	High (due to type of husbandry and frequency of access)
9	Tenant	Livestock	10.3	High (due to type of husbandry and frequency of access)

Agricultural Land Holding	Nature	Husbandry	Size of Farm (Known Hectarage)	Sensitivity
10	Freeholder	Former Orchard (no longer commercially operated)	23.6	Low (due to current status as not commercially active, type of husbandry and frequency of access)

## 3.2. HEALTH

3.2.1. This section provides an overview of human health indicators for South Cambridgeshire and the City of Cambridge; Cambourne, Caldecote, Hardwick, Harston & Comberton, Caxton & Papworth, Girton, Newnham and Castle, compared where appropriate to county (Cambridgeshire), and/or national (England) performance.

### AGE BREAKDOWN

3.2.2. The percentages of population per age group for Cambridge, South Cambridgeshire and England can be seen in **TR4-3-5**.

#### TR4-3-5 – Population Baseline Data<sup>12</sup>

Area	Total Population	Age		
		Under 15	15 – 64	65+
Cambridge	145,700	16.5%	64.9%	18.6%
South Cambridgeshire	162,000	18.4%	62%	19.6%
England	56,489,800	17.4%	64.2%	18.4%

### LIFE EXPECTANCY

3.2.3. **TR4-3-6** shows that life expectancy at birth for both males and females in Cambridge and South Cambridgeshire are higher than the regional and national averages.

3.2.4. The data for life expectancy in for Cambridge and South Cambridge are reflected at ward level, where life expectancy is seen to vary between about 80 and 85 for men and about 83 and 89 for women. All wards are in line or have a higher life expectancy at birth for male and female when comparing with the county and national averages.

#### TR4-3-6 – Life Expectancy at Birth for Period 2021<sup>13</sup>

Location	Male (Years)	Female (Years)
Cambridge	80.6	84.0
South Cambridgeshire	82.6	85.7
East of England	79.7	83.3
England	78.7	82.8

<sup>12</sup> Office for National Statistics. NOMIS Labour Market Profile (2022) Available online: <https://www.nomisweb.co.uk/reports/lmp/la/1946157205/report.aspx> (Accessed 04/05/2023).

<sup>13</sup> OHID. Local Authority Health Profiles, (2021). Available online: <https://www.localhealth.org.uk/#bbox=523842,265692,17185,12436&c=indicator&selcodgeo=E05011287&iew=map12> (Accessed 04/05/2023).

## POPULATION HEALTH

- 3.2.5. The tables below present key health indicators within the South Cambridge and Cambridge. Both Cambridge and South Cambridgeshire. The 2020 OHID Health Profile for South Cambridge Council and Cambridge Council compares a range of population and human health indicators for a local authority with the national average. Overall, the health of people in South Cambridgeshire and Cambridge City is better when compared to the national average, however the health of people in South Cambridgeshire and Cambridge City is generally similar to the national average.
- 3.2.6. **TR4-3-7** and **TR4-3-8** shows the indicators included within the health profile and whether they are significantly\* better, significantly worse or similar to the national average. (\*source: statistical significance as determined by OHID).
- 3.2.7. South Cambridgeshire generally performed better than the national average on public health indicators, including mortality rates. Cambridge however generally performed similarly to the national averages, especially considering mortality rates.

### TR4-3-7 –South Cambridgeshire Health Indicators in Relation to National Averages<sup>14</sup>

Significantly Better	Similar	Significantly Worse
<ul style="list-style-type: none"> <li>▪ Life expectancy at birth (males)</li> <li>▪ Life expectancy at birth (females)</li> <li>▪ Under 75 mortality rate from all causes</li> <li>▪ Mortality rate from all cardiovascular diseases</li> <li>▪ Mortality rate from cancer</li> <li>▪ Emergency hospital admission rate for intentional self-harm</li> <li>▪ Hospital admission rate for alcohol-related conditions</li> <li>▪ Percentage of adults classified as overweight or obese</li> <li>▪ Teenage conception rate</li> <li>▪ Infant mortality rate</li> <li>▪ Year 6: Prevalence of obesity (including severe obesity)</li> <li>▪ Percentage of children in low income families</li> <li>▪ Percentage of people in employment</li> <li>▪ Violent crime – hospital admission rate for violence (including sexual violence)</li> <li>▪ New STI diagnoses rate (excluding chlamydia aged &lt;25)</li> <li>▪ TB incidence rate</li> </ul>	<ul style="list-style-type: none"> <li>▪ Suicide rate</li> <li>▪ Hip fractures in people 65 and over</li> <li>▪ Hospital admission rate for alcohol-specific conditions- under 18s</li> <li>▪ Smoking prevalence in adults</li> <li>▪ Percentage of physically active adults</li> <li>▪ Percentage of smoking during pregnancy</li> <li>▪ Smoking prevalence in adults in routine and manual occupations</li> <li>▪ Excess winter deaths index</li> </ul>	<ul style="list-style-type: none"> <li>▪ Estimated diabetes diagnosis rate</li> <li>▪ Estimated dementia diagnosis rate</li> </ul>

<sup>14</sup> OHID. Local Authority Health Profiles – South Cambridgeshire, (2020). Available online: <https://fingertips.phe.org.uk/profile/health-profiles/data#page/1/gid/1938132701/pat/15/ati/501/are/E07000012/iid/90366/age/1/sex/1/cat/-1/ctp/-1/yr/3/cid/4/tbm/1/page-options/car-do-0> (Accessed 04/05/2023).



**TR4-3-8 –Cambridge Health Indicators in Relation to National Averages<sup>15</sup>**

Significantly Better	Similar	Significantly Worse
<ul style="list-style-type: none"> <li>▪ Life expectancy at birth (males)</li> <li>▪ Life expectancy at birth (females)</li> <li>▪ Under 75 mortality rate from all causes</li> <li>▪ Emergency hospital admission rate for intentional self-harm</li> <li>▪ Percentage of physically active adults</li> <li>▪ Percentage of adults classified as overweight or obese</li> <li>▪ Percentage of breastfeeding initiation</li> <li>▪ Year 6: Prevalence of obesity (including severe obesity)</li> <li>▪ Percentage of children in low income families</li> <li>▪ New STI diagnoses rate (excluding chlamydia aged &lt;25)</li> <li>▪ TB incidence rate</li> </ul>	<ul style="list-style-type: none"> <li>▪ Mortality rate from all cardiovascular diseases</li> <li>▪ Mortality rate from cancer</li> <li>▪ Suicide rate</li> <li>▪ Emergency hospital admission rate for hip fractures</li> <li>▪ Hospital admission rate for alcohol-specific conditions – under 18s</li> <li>▪ Hospital admission rate for alcohol-related conditions</li> <li>▪ Smoking prevalence in adults</li> <li>▪ Teenage conception rate</li> <li>▪ Percentage of smoking during pregnancy</li> <li>▪ Smoking prevalence in adults in routine and manual occupations</li> <li>▪ Violent crime – hospital admission rate for violence (including sexual violence)</li> <li>▪ Infant mortality rate</li> <li>▪ Percentage of people in employment</li> <li>▪ Excess winter deaths index</li> </ul>	<ul style="list-style-type: none"> <li>▪ Estimated diabetes diagnosis rate</li> <li>▪ Estimated dementia diagnosis rate</li> </ul>

<sup>15</sup> OHID. Local Authority Health Profiles – Cambridge, (2020). Available online: <https://fingertips.phe.org.uk/profile/health-profiles/data#page/1/gid/1938132701/pat/15/ati/501/are/E07000008/iid/90366/age/1/sex/1/cat/-1/ctp/-1/yr/3/cid/4/tbm/1/page-options/car-do-0> (Accessed 04/05/2023).

3.2.8. In addition, areas and communities sensitive to changes in environmental health determinants as a result of the C2C Scheme such as air quality management areas or areas sensitive to noise are addressed in the relevant technical reports for these topics, and have been used to inform the health assessment.

### INDICES OF DEPRIVATION

3.2.9. The English Indices of Multiple Deprivation (IMD) 2019 are commonly used for the measurement and comparison of relative levels of deprivation (poverty). IMD data is not available at ward level, but is broken down into smaller areas, known as Lower Super Output Areas (LSOAs), which are a standard statistical geography designed to be of a similar population size, with an average of approximately 1,500 residents or 650 households.

3.2.10. The Study Area includes 15 LSOAs within the communities of Cambourne, Caldecote, Hardwick, Harston & Comberton, Caxton & Papworth, Girton, Newham and Castle. Most residents (85%) within 500m of the C2C Scheme live in the 20% least deprived neighbourhoods in the country.

3.2.11. Two LSOAs are within the 40-50% least deprived neighbourhoods<sup>16</sup>:

- South Cambridgeshire 020A; and
- South Cambridgeshire 005C.

3.2.12. Ten LSOAs are within the 30-20% least deprived neighbourhoods;

- South Cambridgeshire 020E ;
- South Cambridgeshire 021D;
- South Cambridgeshire 010A;
- South Cambridgeshire 021B;
- South Cambridgeshire 009A;
- South Cambridgeshire 010D;
- Cambridge 007D;
- Cambridge 007F;
- Cambridge 005B; and
- Cambridge 005D.

3.2.13. Three LSOAs are within the 10% least deprived neighbourhoods;

- South Cambridgeshire 010C;
- South Cambridgeshire 010B; and
- Cambridge 007E.

3.2.14. In 2019, Cambridge and South Cambridgeshire local authorities were ranked 205 and 300, respectively, out of 317 local authorities in England<sup>17</sup>. This shows a low level of deprivation in South Cambridgeshire as a whole, and a higher level of deprivation in Cambridge when compared to South Cambridgeshire.

<sup>16</sup> See a map indicating these areas within the Equality Impact Assessment (TR Appendix 4.1)

<sup>17</sup> Indices of Deprivation 2019. Index of Multiple Deprivation (2019). Available online: [http://dclgapps.communities.gov.uk/imd/iod\\_index.html#](http://dclgapps.communities.gov.uk/imd/iod_index.html#) (Accessed 10/05/2023).

## AIR QUALITY AND NOISE

- 3.2.15. There is one AQMA within 500m of the C2C Scheme located in Cambridge City Council, declared primarily as a result of pollution caused by road traffic.
- 3.2.16. There are no noise important areas (NIAs) adjacent to or in proximity to the C2C Scheme.

## 3.3. EMPLOYMENT

### EMPLOYMENT AND ECONOMIC ACTIVITY

#### 3.3.1. Qualifications and employment

- 3.3.2. The proportion of the population within the Cambridge district who hold a National Vocational Qualification level 1 and above, 2 and above, 3 and above and 4 and above is higher than the regional and national averages.

#### TR4-3-9 – Employment and Economic Activity

Location	Economically Active (16-64)	Employment Rate (16-64)	Unemployed (16-64)	Total Jobs (2020)
Cambridge	82.2%	79.7%	3.2%	133,000
South Cambs	86.5%	82.4%	2.7%	97,000
England	78.8%	75.4%	4.2%	30,055,000

- 3.3.3. Cambridge contains major universities as well as a major shopping and office centre and several science and medical employment centres. Major industries of employment in the local authority, compared to regional and national averages are shown in **TR4-3-10** below. The largest industry groups in Cambridge are high-skills industries such as, education (29.5%), health (15.6%) and professional, scientific and technical industries (14.8%).

#### TR4-3-10 – Employee Jobs by Industry (2020)<sup>18</sup>

Industry	Cambridge	South Cambs	England
Mining and utilities	0.3%	0.7%	1.2%
Manufacturing	1.2%	11.8%	7.8%
Construction	1.4%	5.9%	4.7%
Wholesale retail and motor trades	8.2%	10.6%	15.0%
Transport and storage	1.2%	2.1%	5.2%
Accommodation and food service	8.2%	4.7%	7.2%

<sup>18</sup> Office for National Statistics. NOMIS Labour Market Profile (2022) Available online: <https://www.nomisweb.co.uk/reports/lmp/la/1946157205/report.aspx> (Accessed 10/05/2023).

Industry	Cambridge	South Cambs	England
Finance, ICT and property	9.6%	11.4%	10.1%
Professional, scientific & technical	14.8%	23.5%	9.0%
Administrative & support service	4.1%	8.2%	9.0%
Public administration & defence	2.0%	1.5%	4.2%
Education	29.5%	7.1%	9.0%
Health	15.6%	9.4%	13.2%
Arts, entertainment, recreation & other services	3.8%	3.2%	4.2%

## 4. ASSUMPTIONS AND EMBEDDED MITIGATION

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### 4.1. EMBEDDED MITIGATION

- 4.1.1. The WSP CoCP summarises various best practice measures that will be used as a minimum to ensure that impacts from construction affecting noise, air quality, transport, visual amenity are limited. These will be implemented to reduce potential impacts on community, human health and land take. A number of crossings have been included within the design of the C2C Scheme to ensure continued access to agricultural land once the C2C Scheme is operational. Further details are provided in **TR4-5-3**.
- 4.1.2. Two PRoW diversions have been incorporated into the C2C Scheme to provide permanent alternative routes and enhanced connectivity where the C2C Scheme intersects existing routes (Footpath 39/31 and Bridleway 39/30).
- 4.1.3. Land parcel 14-144 on the Works and Land Plans will be used as replacement open space for land permanently acquired for the C2C Scheme, east of the M11. It is assumed that this will be available for public use prior to the development and closure of land east of the M11.
- 4.1.4. Those that have a qualifying interest (an owner, lessee, occupier or tenant of land within the Order; or a person who may have the right to claim compensation) will be able to make a claim for compensation if impacted by the C2C scheme. A claim for compensation will need to be submitted by the claimant and will be assessed by the Acquiring Authority and will be reviewed in line with the Land & Compensation Act 1973 (and associated case law). However this is not considered as mitigation under this assessment.

### 4.2. ASSUMPTIONS

- 4.2.1. The following limitations and assumptions have been identified for Population and human health assessment:
- The assessment relies on, in part, data provided by third parties (e.g. OS Mapping, Local Authorities, ONS) which are the most up-to-date, available at the time of the assessment. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment for EIA purposes;
  - The sensitivities of residential properties, business premises and allocated housing and employment sites have been assessed using approximate areas based on publicly available data where possible;
  - There is no data publicly available on frequency of use for community land and assets. The sensitivities of community land and assets have been assessed based on professional judgement, using publicly available information and according to the location and type of the facilities;
  - Temporary and permanent road realignments associated with the works will be necessary. These are assumed to be advanced works and are subject to further development and discussion with the local highway authority;
  - Where a land parcel within the Order Limits is to be used for environmental mitigation during operation of the C2C Scheme, it has been assumed for the purposes of the assessment of impact on agricultural land holdings that this will be permanently removed from agricultural use;

- There are a number of existing businesses owning land within Bourn Airfield, and with rights to use land within Bourn Airfield. It is assumed that impacts associated with these businesses will be assessed as part of the Bourn Development in advance of the C2C Scheme, and these businesses will no longer operate within land within the Order Limits associated with the Bourn Development. Therefore, they are not assessed as part of this assessment;
- The assessment identifies population impacts down to the lowest defined population group available according to ONS survey outputs (lower super output areas), further granularity of data has not been available. No significant changes or limitations in these datasets have been identified that would affect the robustness of the assessment for EIA purposes; and
- Where a range of level of effect is applicable in Table 3.8.1 of DMRB LA 104<sup>3</sup>, professional judgement has been applied to determine the significance of effect.

## 5. ASSESSMENT OF IMPACTS AND EVALUATION OF EFFECTS

### 5.1. LAND USE AND ACCESSIBILITY

#### PRIVATE PROPERTY AND HOUSING

- 5.1.1. **TR4-3-1** outlines the location of residential properties within the study area. It is anticipated the properties identified within the study area of the C2C Scheme assessment will experience a level of temporary disruption to access during the construction period due to the removal of lay-bys, construction work to the C2C Scheme on access roads and installation of the active travel and maintenance route. However, this is anticipated to be of **negligible to minor** magnitude with consideration of the implementation of measures outlined in the CoCP, which states that traffic management will be in place and continued access to existing properties will be retained. With properties in **TR4-2-1** deemed to be of **medium** sensitivity, there is likely to be a worst case temporary **minor** adverse significance of effect (not significant) during construction.
- 5.1.2. Once operational, access will be unaffected to the properties within the study area, and therefore no adverse permanent or operational effects are anticipated.
- 5.1.3. There are four site allocations for residential development located within the study area. **TR4-5-1** outlines the nature of impact and the level of effect on these from the C2C Scheme.

#### TR4-5-1 – Effects on Housing Allocations within the Study Area

Housing Allocations	Sensitivity	Impact	Significance of Effects
Bourn Airfield	Very high	This site is within the study area and Order Limits, south of St Neots Road, between Cambourne and Highfields. However, the allocation is dependent on the delivery of the C2C Scheme, and therefore the C2C Scheme is integral to the delivery of committed housing for this allocation. It is not anticipated that the C2C Scheme will inhibit the delivery of Bourn Airfield, and by which the allocation will be partially facilitated. Therefore the magnitude of impact on the housing allocation is deemed to be major beneficial.	Large permanent operational beneficial effect (significant)
West Cambridge	Medium	This site allocation is located within the Order Limits of the C2C Scheme, south of the A1303 Madingley Road. The proposed Local Plan notes that the developments should include provision of high-quality walking and cycling connections, and development should maximise the opportunity provided by public transport improvements such as C2C. Section 106 negotiations are still ongoing for this site but a contribution will be secured from University of	Neutral permanent operational effect (not significant)

Housing Allocations	Sensitivity	Impact	Significance of Effects
		Cambridge towards the costs of the C2C project. It is not anticipated that the C2C scheme will inhibit the delivery of this site allocation or committed housing, and the magnitude of impact is therefore of <b>no change</b> .	
North West Cambridge (Eddington)	Very high	This site allocation is located approximately 350m north of the C2C Scheme. As such no impacts are anticipated on this site and its ability to deliver the committed amount of housing, and the magnitude of change is <b>no change</b> .	Neutral permanent operational effect (not significant)
Grange Farm off Wilberforce Road, Cambridge	High	This site is located adjacent to the Order Limits. As such no impacts are anticipated on this site and its ability to deliver the committed amount of housing, and the magnitude of change is <b>no change</b> .	Neutral permanent operational effect (not significant)

## COMMUNITY LAND AND COMMUNITY FACILITIES

- 5.1.4. The following impacts on community land or facilities will occur due to the construction of the C2C Scheme. Effects are outlined in **TR4-5-2** (and as shown on TWAO plans).
- 5.1.5. Land to the east of M11 (within a City Wildlife Site and designated as Protected Open Space)<sup>19</sup> will be permanently acquired for the permanent placing of structures including the overbridge, its embankments, the diversion of the Bridleway along with permanent landscaping. There will also be some additional land that will be temporarily acquired to facilitate construction of these permanent features of the C2C Scheme. However, the permanent land lost to facilitate the C2C Scheme will be mitigated for through the provision of replacement/ exchange land and therefore there will be no significant residual effects on users Open Space land. The replacement Open Space land to be provided is considered to be more advantageous to the public being well connected to, and of equal or greater quality, than the existing open Site to be acquired. Therefore, there will be no loss in terms of the quantity or quality of Open Space land as a result of the C2C Scheme.
- 5.1.6. Land south of the Cambridge University Sports Facility – the ‘Top Pitch’, a rugby training pitch, approximately 500m<sup>2</sup> will be permanently acquired. The site is noted to be in private ownership with public access only available through the University Sports Club to the north. The project is seeking to permanently acquire the area associated with southern boundary hedge of the Top Pitch – it will not reduce the active playing pitch area. The C2C Scheme requires this land for landscaping that will replace the existing hedge with species rich hedgerow planting; and
- 5.1.7. Land west of the University Rugby Club - University Rugby Club practice pitch. A small area will be partially permanently acquired (for the construction of a bridge over Bin Brook, works to streets consisting of the construction of a junction with Grange Road, attenuation pond and environmental

<sup>19</sup> Land plots 14-152, 14-153, 14-154, 14-157, 14-155, 14-156 and 14-158



mitigation consisting of landscape planting). It is considered that the permanent acquisition of an area of the rugby practice pitch does not constitute a loss of a sports facility as the proposed works and land take will not impact the active playing pitch area in its permanent state, with the proposed landscaping works replacing the existing area of grassland like for like.

#### TR4-5-2 – Effects on Community Assets and Facilities

Community Facility	Sensitivity	Magnitude of Impact	Significance of Effect
Land to the east of M11 (within a City Wildlife Site)	Medium (due to level of use of Bridleway through area assumed to be frequent and limited alternative facilities available in the local community)	Permanent moderate beneficial	Permanent moderate beneficial (significant)
Land south of the Cambridge University Sports Facility – the 'Top Pitch'	Medium (due to level of use assumed to be frequent and limited alternative facilities available in the local community)	Permanent minor adverse (the active playing pitch will not be impacted and overall viability should remain)	Permanent slight adverse (not significant)
Land west of the University Rugby Club - University Rugby Club practice pitch.	Medium (due to level of use assumed to be frequent and limited alternative facilities available in the local community)	Permanent minor adverse	Permanent slight adverse (not significant)

5.1.8. It is anticipated that vehicular travel between communities within the study area will be temporarily disrupted due to construction of the C2C Scheme. This is particularly relevant for the following locations:

- Access routes using Broadway, serving trips to Cambourne;
- Access from St Neots Road, serving trips to Highfields Caldecote and Hardwick; and
- Access from the A428, serving trips to Dry Drayton.

5.1.9. However, traffic management measures will be implemented as outlined within the CoCP (and in Section 4 of this report), to minimise disruption. It is anticipated that minor impacts will be

experienced by members of these communities, and at worst temporary slight adverse effects during construction will be experienced.

## DEVELOPMENT LAND AND BUSINESSES

- 5.1.10. The following effects outlined in **TR4-5-3** on development land and businesses will occur due to the construction of the C2C Scheme.

### TR4-5-3 – Assessment of Likely Significance Effects on Development Land and Businesses

Development Land and Businesses	Sensitivity	Impact	Magnitude of Impact	Significance of Effect
<b>Development Land</b>				
Employment land allocation South/West Cambridge	Very high	Temporary disruption will occur during construction due to works to streets and to accommodate the C2C Scheme. However, once operational the C2C Scheme will help to fulfil the aims of the allocation with provision of walking and cycling connections and providing access to business located and yet to be developed in the allocation area.	Temporary negligible adverse impacts and minor beneficial permanent impacts	Temporary slight adverse and permanent moderate beneficial effects
<b>Businesses</b>				
Bourn Quarter Development (Industrial park with Phase 1 of two completed, accessed by Wellington Way, Highfields)	High	This development is adjacent to the C2C Scheme, and accessed by Wellington Way, which will be realigned. Access may be disrupted during construction but CoCP measures will be in place to ensure access to the businesses in the Development is maintained.	Temporary minor adverse	Temporary slight adverse (not significant)
PUDLO Waterproof Systems (accessed by Wellington Way, Highfields)	Medium	Access may be disrupted during construction but CoCP measures will be in place to ensure access to the business is maintained.	Temporary minor adverse	Temporary slight adverse (not significant)
BP Petrol Station / Budgens Supermarket (accessed from St Neots Road Highfields)	Medium	Access may be disrupted during construction but CoCP measures will be in	Temporary minor adverse	Temporary slight adverse (not significant)

Development Land and Businesses	Sensitivity	Impact	Magnitude of Impact	Significance of Effect
Gracefield Nursing Home and Residential Care (accessed from St Neots Road Highfields)	Medium	place to ensure access to the business is maintained.	Temporary minor adverse	Temporary slight adverse (not significant)
Spotless Dog (accessed from St Neots Road Hardwick)	Medium	St Neots Road required temporarily during construction.	Temporary minor adverse	Temporary slight adverse (not significant)
Signwork LTD, (accessed from St Neots Road Hardwick)	Medium	Access may be disrupted during construction but CoCP measures will be in place to ensure access to the business is maintained.	Temporary minor adverse	Temporary slight adverse (not significant)
Mark Weatherhead Lawn Mower Shop (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
Cambridge Isuzu car dealership (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
Nails to Notice, (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
Hardwick Clinic, (accessed from St Neots Road Hardwick)	Medium	St Neots Road required temporarily during construction.	Temporary minor adverse	Temporary slight adverse (not significant)
CSC Automotive, (accessed from St Neots Road Hardwick)	Medium	Access may be disrupted during construction but CoCP measures will be in place to ensure access to the business is maintained.	Temporary minor adverse	Temporary slight adverse (not significant)
Cambridge Vehicle Wrap, (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
Cambridge Vehicle Wrap, (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
Cambridge Reptiles and Exotics, (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
The Tattoo Place, (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)

Development Land and Businesses	Sensitivity	Impact	Magnitude of Impact	Significance of Effect
Ash Croft Veterinary Surgery, (accessed from St Neots Road Hardwick)	Medium	St Neots Road required temporarily during construction. Access may be disrupted during construction but CoCP measures will be in place to ensure access to the business is maintained.	Temporary minor adverse	Temporary slight adverse (not significant)
Ward Howard Chartered Surveyors (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
The Hair Care Bunch (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
Shelton Estates (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
Azuki Web & Mobile Development (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
Valeader Pneumatics (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
Silver Star Chauffer Service (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
DVSA Driving Test Centre (accessed from St Neots Road Hardwick)	Medium		Temporary minor adverse	Temporary slight adverse (not significant)
Rectory Farm Hotel	Medium	Permanent land take (3ha, 6% of the area of the property) will be required to accommodate the construction of the C2C Scheme and associated environmental mitigation during operation. This will be taken from fields / pasture land belonging to the hotel potentially used to graze animals. The C2C Scheme will bisect the land owned and operated by this holding, therefore there will be some	Permanent minor adverse	Permanent slight adverse (not significant)

Development Land and Businesses	Sensitivity	Impact	Magnitude of Impact	Significance of Effect
		severance experienced due to the C2C Scheme.		
Atlas Building (Disused storage facility in poor state of repair, University of Cambridge), accessed from Ada Lovelace Road, Cambridge	Medium	The Atlas building falls within land permanently required for the C2C Scheme, and will be demolished to accommodate the scheme.	Minor permanent adverse	Permanent slight adverse (not significant)
University of Cambridge buildings accessed from Charles Babbage Road, Ada Lovelace Road, JJ Thomson Avenue and Grange Road, Cambridge	Medium	<p>Charles Babbage Road and JJ Thomson Avenue are to be used as a construction route from the east of the C2C Scheme and are required temporarily during construction to develop walking and cycling facilities, which will be used during operation of the scheme.</p> <p>A section of Ada Lovelace Road will be required temporarily, to accommodate the C2C Scheme, and it will be crossed during the busway in operation.</p> <p>A section of Grange Road will be required temporarily, to accommodate the C2C Scheme.</p> <p>Access may be disrupted on these roads during construction but CoCP measures will be in place to ensure access to the business is maintained.</p>	Temporary minor adverse Permanent minor beneficial	Temporary slight adverse (not significant) Permanent slight beneficial (not significant)
Blueshift Memory, accessed from Charles Babbage Road, Cambridge.	Medium	Charles Babbage Road is to be used as a construction route from the east of the C2C Scheme and is required temporarily during construction to develop walking and cycling facilities, which will be used during operation of the scheme.	Temporary minor adverse	Temporary slight adverse (not significant)

Development Land and Businesses	Sensitivity	Impact	Magnitude of Impact	Significance of Effect
The Irwin Centre, accessed from Scotland Road, Dry Drayton	Medium	Scotland Road is required temporarily during construction.	Temporary minor adverse	Temporary slight adverse (not significant)
Laser Scan Engineering, accessed from Scotland Road, Dry Drayton	Medium	Access may be disrupted during construction but CoCP measures will be in place to ensure access to the business is maintained.	Temporary minor adverse	Temporary slight adverse (not significant)
Units at Dry Drayton Industries, accessed from Scotland Road, Dry Drayton	Medium		Temporary minor adverse	Temporary slight adverse (not significant)

## WALKING, CYCLING AND HORSE RIDING

- 5.1.11. The C2C Scheme is anticipated to result in temporary disruption and permanent changes to some PRoW, cycleways and footways. The potential effects on WCH routes are presented in **TR4-5-4**.

### TR4-5-4 – Effects on WCH Facilities

WCH Route	Sensitivity	Impact on the Route	Magnitude of Impact	Significance of Effect*
Footpath - 279/3	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is not likely to be affected during construction or operation.	No change	Temporary and permanent neutral effect (not significant)
Byway – 142/7	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is not likely to be affected during construction or operation.	No change	Temporary and permanent neutral effect (not significant)
Footpath 38/1	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is not likely to be affected during construction or operation.	No change	Temporary and permanent neutral effect (not significant)
Footpath 66/17	Medium	This footpath is located on the eastern border of the Travel Hub and crosses the A428 over an existing footbridge. The footpath is assumed to be kept open during construction, but the alignment may need to be adjusted to accommodate construction works.	Negligible	Temporary neutral effect (not significant)

WCH Route	Sensitivity	Impact on the Route	Magnitude of Impact	Significance of Effect*
		On completion of the works, there will be a new controlled crossing point over St Neots Road and will be adjacent to an existing bus stop on the C2C Scheme route which will be retained. During operation, this footpath will provide a link between the Travel Hub and the C2C Scheme.	Minor beneficial	Permanent slight beneficial (not significant)
Footpath 114/6	Medium	This footpath is located south of St Neots Road, on Millers Way, opposite the end of Footpath 66/17. The footpath is assumed to be kept open during construction, but users may experience some temporary PRow management during construction to ensure user safety.  No impact on this PRow is anticipated during operation.	Negligible	Temporary neutral effect (not significant)
Footpath 154/4	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is not likely to be affected during construction or operation.	No change	Temporary and permanent neutral effect (not significant)
Footpath 55/2	Medium	This footpath will be crossed by the C2C Scheme. The footpath is assumed to be kept open during construction, but the alignment may need to be adjusted slightly to accommodate construction works. Users are likely to experience some temporary PRow management during construction to ensure user safety.	Negligible	Temporary neutral effect (not significant)
		During operation, users of this PRow will be diverted over an at grade, uncontrolled crossing over the C2C Scheme.	Minor	Permanent slight effect (not significant)
Footpath 154/3	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is not likely to be affected during construction or operation.	No change	Temporary neutral effect (not significant)
Footpath 55/3	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is	No change	Temporary neutral effect (not significant)



WCH Route	Sensitivity	Impact on the Route	Magnitude of Impact	Significance of Effect*
		not likely to be affected during construction or operation.		
Footpath 55/4	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is not likely to be affected during construction or operation.	No change	Temporary neutral effect (not significant)
Footpath 55/6	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is not likely to be affected during construction or operation.	No change	Temporary neutral effect (not significant)
Footpath 55/9	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is not likely to be affected during construction or operation.	No change	Temporary neutral effect (not significant)
Footpath 39/31	High (as part of the Harcamlow Way)	<p>This footpath will be crossed by the C2C Scheme. The footpath is assumed to be kept open during construction, but the alignment may need to be adjusted slightly to accommodate construction works. Users are likely to experience some temporary PRow management during construction to ensure user safety.</p> <p>There will be a permanent diversion north east of the Cambridge University Sports Centre, which will add approximately 40m to the length of the route.</p> <p>This footpath does link into Bridleway 39/30 which will also be permanently diverted.</p>	Negligible	Permanent slight adverse effect (not significant)
Footpath 39/58	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is not likely to be affected during construction or operation.	No change	Temporary neutral effect (not significant)
Bridleway 55/5	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is not likely to be affected during construction or operation.	No change	Temporary neutral effect (not significant)



WCH Route	Sensitivity	Impact on the Route	Magnitude of Impact	Significance of Effect*
Bridleway 39/112	Medium	Given the footpath is outside of the Order Limits, and not aligned with the construction access routes, it is not likely to be affected during construction or operation.	No change	Temporary neutral effect (not significant)
Bridleway 39/30	Medium	The bridleway is within a Cambridge City Wildlife Site and will be crossed by the C2C Scheme. Therefore it will be permanently diverted during construction, to Ada Lovelace Road, with an increase to journey length by approximately 300m.	Moderate	Permanent moderate adverse effect (significant)
New Active Travel Route	Very high	The new active travel route, which will be along the length of the C2C Scheme and will provide a continuous segregated WCH facility from Upper Cambourne to west Cambridge.	Major (facilitates travel for recreation and commuting between communities and a continuous route into Cambridge)	Very large permanent beneficial effect (significant)

Note: \*denotes where a range of level of effect is applicable in Table 3.8.1 in DMRB LA 104<sup>3</sup>, and professional judgement has been applied to determine the significance of effect.

## AGRICULTURAL LAND HOLDINGS

- 5.1.12. **TR4-5-5** outlines the nature and magnitude of impact on agricultural holdings from the C2C Scheme, and the significance of effect<sup>20</sup> (**Appendix A** provides map of the agricultural land holdings).

<sup>20</sup> Quantities of land and types of acquisition determined against the TWAO plans and correct at the time of writing.

### TR4-5-5 – Potential Temporary and Permanent Effects on Agricultural Land Holdings

Agricultural Land Holdings	Sensitivity	Area Required for C2C Scheme (Temporary and Permanent)	Nature of Impact	Magnitude of Impact	Significance of Effect
1	Medium	<p>0.1ha of land will be required for temporary use, but with permanent access rights (less than 1% of holding)</p> <p>11.7ha of land will be permanently required (3% of holding)</p> <p>Total land required during construction: (11.8ha, 3% of holding)</p> <p>Total land required during operation: (11.7ha, 3% of holding)</p>	<p>Temporary land take is required to provide access during construction, and will retain rights of access permanently.</p> <p>Permanent land take is required to accommodate the construction and operation of the travel hub.</p> <p>An existing field access will be retained, north of the travel hub, to maintain access to land to the north. There is not anticipated to be any severance.</p>	Minor	Temporary and permanent slight adverse (not significant)
2	Medium	<p>0.4ha of land will be required for temporary use (less than 1% of holding)</p> <p>Total land required during construction: (0.4ha, 1% of holding)</p> <p>Total land required during operation: 0ha</p>	<p>Temporary land take during construction (for placement of a construction compound) in the northern corner of a field, south of the alignment of the C2C Scheme, which in this location follows along St Neots Road. There is not anticipated to be any severance.</p>	Minor	Temporary slight adverse (not significant)

Agricultural Land Holdings	Sensitivity	Area Required for C2C Scheme (Temporary and Permanent)	Nature of Impact	Magnitude of Impact	Significance of Effect
3	Medium	<p>1.5ha of land will be required for temporary use (1% of holding)</p> <p>0.1ha of land will be required for temporary use, but with permanent access rights (3.2% of holding in combination with permanent land take)</p> <p>3.5ha of land will be permanently required</p> <p>Total land required during construction: (5.1ha, 4.5% of holding)</p> <p>Total land required during operation: (3.6ha, 3.2% of holding)</p>	<p>Temporary land take is required for works to streets and access for construction.</p> <p>Land that will be required temporarily but with permanent access rights will be used for environmental mitigation.</p> <p>Permanent land take will be required to accommodate the C2C Scheme and associated environmental mitigation.</p> <p>As well as the temporary and permanent land take, the C2C Scheme will isolate a parcel of land from this holding once constructed. A new access is incorporated as part of the scheme from Long Road to ensure this parcel remains accessible, but there will be some severance experienced due to the C2C Scheme.</p>	Minor	Temporary and permanent slight adverse (not significant)
4	Medium	<p>2.5ha of land will be required for temporary use (less than 1% of holding)</p> <p>0.2ha of land will be required for temporary use, but with permanent access rights (1.5% of holding in combination with permanent land take)</p>	<p>Temporary land take is required for placement of a construction compound and access for construction.</p> <p>Land that will be required temporarily but with permanent access rights will be used for environmental mitigation.</p> <p>Permanent land take will be required to accommodate the C2C Scheme including an attenuation pond and associated environmental mitigation.</p>	Minor	Temporary and permanent slight adverse (not significant)

Agricultural Land Holdings	Sensitivity	Area Required for C2C Scheme (Temporary and Permanent)	Nature of Impact	Magnitude of Impact	Significance of Effect
		4.4ha of land will be permanently required Total land required during construction: (7.1ha, 2.5% of holding) Total land required during operation: (4.6ha, 1.5% of holding)	The C2C Scheme will bisect the land owned and operated by this holding. Three crossing points are incorporated in the C2C Scheme to allow access to land north and south of the scheme, but there will be some severance experienced due to the C2C Scheme.		
5	Medium	0.3ha of land will be permanently required (6.5% of holding) Total land required during construction and operation: (0.7ha, 6.5% of holding)	Permanent land take will be required to accommodate the construction of the C2C Scheme and associated environmental mitigation during operation.  The C2C Scheme will bisect the land owned and operated by this holding. One crossing point is incorporated in the C2C Scheme to allow access to land north and south of the scheme, but there will be some severance experienced due to the C2C Scheme.	Minor	Permanent slight adverse (not significant)
6	Low	0.7ha of land will be permanently required (5.8% of holding) Total land required during construction and operation: (0.7ha, 5.8% of holding)	Permanent land take will be required to accommodate the construction of the C2C Scheme and associated environmental mitigation during operation.  The C2C Scheme will bisect the land owned and operated by this holding. One crossing point is incorporated in the C2C Scheme to allow access to land north and south of the scheme, but there will be some severance experienced due to the C2C Scheme. An	Major	Permanent slight adverse (not significant)

Agricultural Land Holdings	Sensitivity	Area Required for C2C Scheme (Temporary and Permanent)	Nature of Impact	Magnitude of Impact	Significance of Effect
			outbuilding will also be required to be demolished to accommodate the C2C Scheme.		
7	Medium	0.6ha of land will be required for temporary use (less than 1% of holding) 2ha of land will be permanently required (1% of holding) Total land required during construction: (2.6ha, 2% of holding) Total land required during operation: (2ha, 1% of holding)	Temporary land take is required for works to streets and placement of a construction compound. Permanent land take will be required to accommodate the construction of the C2C Scheme and associated environmental mitigation during operation. The C2C Scheme will bisect the land owned and operated by this holding. One crossing point is incorporated in the C2C Scheme to allow access to land north and south of the scheme, but there will be some severance experienced due to the C2C Scheme.	Minor	Temporary and permanent slight adverse (not significant)
8	High	0.5ha of land will be required for temporary use (less than 1% of holding) 1.9ha of land will be permanently required (1.6% of holding) Total land required during construction: (2.4ha, 2% of holding) Total land required during operation:	Temporary land take is required for access for construction. Permanent land take will be required to accommodate a construction compound and access for the C2C Scheme during construction, and attenuation ponds and associated environmental mitigation during operation. The C2C Scheme will occupy the northern and eastern extent of this holdings' land, to the east of the University of Cambridge Sports Centre. It will also isolate an area of	Minor	Temporary and permanent slight adverse (not significant)

Agricultural Land Holdings	Sensitivity	Area Required for C2C Scheme (Temporary and Permanent)	Nature of Impact	Magnitude of Impact	Significance of Effect
		(1.9ha, 1.6% of holding)	this land parcel, south of the “Top Pitch”, therefore there will be some severance experienced due to the C2C Scheme.		
9 (Tenant farmer)	High	1.5ha of land will be required for temporary use (15% of holding) 4.7ha of land will be permanently required (45.6% of holding) Total land required during construction: (6.2ha, 60% of holding) Total land required during operation: (4.7ha, 45.6% of holding)	Temporary land take is required for placement of construction compounds and construction access. Some land may still be able to be grazed during construction but for the purposes of this assessment it is assumed that this will not be possible as a worst case scenario.  Permanent land take will be required to accommodate works to streets, access for the C2C Scheme during construction, and an attenuation pond and associated environmental mitigation during operation. However, as detailed in the Flood Risk Assessment, the majority of environmental mitigation to be contained within this land holding will not involve a change to the existing environment and will be retained to mitigate flood risk. Therefore, grazing rights over this land will still be able to be used as before.  The C2C Scheme will occupy land located either side of Bin Brook. It is not anticipated that there will be any severance.	Temporary moderate  Permanent minor	Temporary large adverse (significant) and permanent slight adverse (not significant)
10	Low	2.3ha of land will be permanently required	Temporary land take with permanent rights for access will be used for access to drainage of an attenuation pond.	Moderate	Temporary and permanent slight

Agricultural Land Holdings	Sensitivity	Area Required for C2C Scheme (Temporary and Permanent)	Nature of Impact	Magnitude of Impact	Significance of Effect
		<p>58m<sup>2</sup> of land will be required for temporary use, but with permanent access rights.</p> <p>Total land required during construction: (2.3ha, 9.7% of holding)</p> <p>Total land required during operation: (2.3ha, 9.7% of holding)</p>	<p>Permanent land take will be required to accommodate the construction and operation of the C2C Scheme.</p> <p>The C2C Scheme will bisect the land owned and operated by Coton Orchard. Two crossing points are incorporated in the C2C Scheme to allow access to land north and south of the scheme, but there will be some severance experienced due to the C2C Scheme.</p>		adverse (not significant)

## 5.2. HUMAN HEALTH

- 5.2.1. PRow provide opportunities for walking and cycling for both recreation and means of travel between community facilities and employment areas. Existing public rights of way adjoining and crossed by the C2C Scheme will be kept open during construction, and therefore a temporary neutral health outcome on physical and mental health is anticipated. During operation, there will be a new active travel route along the entirety of the C2C Scheme, which will result in a permanent beneficial health outcome associated with mental and physical health.
- 5.2.2. **Technical Report 1: Acoustics** has identified that significant adverse noise impacts are predicted to be possible at approximately six receptors as a result of the construction works during the site clearance, earthworks and road construction. No potentially significant adverse vibration impacts are predicted as a result of the construction works. As such, temporary **negative** health outcomes associated with mental health for those residing in the four dwellings are possible during construction. Significant noise effects are not anticipated from operating the C2C bus service or travel hub and therefore will result in a permanent **neutral** health outcome. .
- 5.2.3. **Technical Report 2: Air Quality** has identified that based on the current local air quality in the area, the proximity of sensitive receptors to the roads likely to be used by construction vehicles, and the likely numbers of construction vehicles and plant that will be used, the effects within the assessment of air quality during construction are considered to be negligible and not significant. As such, it is anticipated that there will be a **neutral** outcome on human health associated with respiratory and cardiovascular diseases during construction.
- 5.2.4. The World Health Organisation sets out the most stringent air quality guidance levels for the three main pollutants (NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>), which would be achieved at only around a third of model locations, and the C2C Scheme will have no bearing on this. **Technical Report 2: Air Quality** identifies overall improvements in air quality due to the C2C Scheme, though not to degrees that would be a significant beneficial effects As such, it is anticipated that there will be a **beneficial** outcome on human health associated with respiratory and cardiovascular diseases during operation of the C2C Scheme.
- 5.2.5. During construction, temporary adverse not significant (on 10 receptors) and significant (on three receptors) visual amenity change has been identified in **Technical Report 8: Landscape and Visual** on residential receptors. Additionally, during operation and in the medium-term, visual effects are anticipated to range from neutral to moderate adverse, with moderate adverse effects identified for receptors R5 (representing residents on Scotland Road), receptor R6 (representing users of PRow (Dry Drayton 66/17)), R16 (representing users of PRow (Barton 20/1)), R21 (representing residents on Cambridge Road), R24 (representing users of Rectory Farm), receptor R26 (representing users of PRow (Cambridge 39/30)). This is due to short distance views of the C2C Scheme on previously open agricultural fields. It is possible that the temporary changes during construction and in the medium-term once operational, on visual amenity for local residents, could have **negative** health outcomes associated with mental health (e.g. stress and anxiety) as a result of the C2C Scheme.
- 5.2.6. As the new planting establishes throughout the operational period, it will enhance visual amenity and further screen the C2C Scheme from the receptors. In this instance following establishment of embedded mitigation planting adverse effects are not anticipated to be significant in any of the visual



receptors. As such, negative health outcomes will diminish as planting becomes established during the long-term, and a permanent **neutral** health outcome will occur.

- 5.2.7. **Technical Report 13: Water Environment** concluded that there will be no significant effects on the water environment, and therefore **neutral** health outcomes are anticipated during construction and operation as a result of effects on the water environment.

## 5.3. EMPLOYMENT AND THE ECONOMY

### CONSTRUCTION EMPLOYMENT

- 5.3.1. Construction employment is likely to result in a positive economic effect that can be estimated as a function of the scale and type of construction (infrastructure and buildings). As outlined in Section 2 assessment methodology, the following section uses the estimated gross employment arising from the C2C Scheme during the construction phase to estimate the leakage, displacement and multiplier effects in order to assess the net effects on construction employment for South Cambridgeshire and Cambridge City economy.

#### Gross direct construction employment

- 5.3.2. The estimated construction period is 29 months, therefore the effect on the economy from construction would be temporary. The capital and revenue expenditure created as a result of the construction period would lead to increased output in the local authority, South Cambridgeshire and the wider economy.
- 5.3.3. The projected construction employment is likely to be 1,959 gross construction employees during the approximately 24-month construction phase. Hence, there would be approximately 979.5 gross construction employees per annum on the Order Limits.

#### Net additional construction employment

- 5.3.4. **TR4-5-6** presents the temporary employment generated by the C2C Scheme taking leakage, displacement and multiplier effects into account. The total net additional employment created within South Cambridgeshire/City of Cambridge as a result of the C2C Scheme is estimated to be 859.5 employees per annum, whilst 95.5 jobs would be created outside of South Cambridgeshire/City of Cambridge, resulting in a total net employment generation of 955.1 jobs on average per annum during the construction period.

#### TR4-5-6 – Construction Employment Generation per Annum

Employment Generation	South Cambridgeshire / Cambridge City	Outside South Cambridgeshire / Cambridge City	Total
Gross Direct Employment	881.6	98.0	979.5
Displacement	-220.4	-24.5	-244.9
Net Direct Employment	661.2	73.5	734.7
Net Indirect and Induced Employment	198.4	22.0	220.4

<b>Total Net Employment</b>	<b>859.5</b>	<b>95.5</b>	<b>955.1</b>
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Source: WSP calculations (note – numbers may not add up exactly due to rounding)

- 5.3.5. In the context of a large labour pool of construction workers in South Cambridgeshire and Cambridge City, the direct, indirect and induced employment, expenditure and upskilling created by the construction phase of the Scheme is likely to have a temporary **minor beneficial** effect on the South Cambridgeshire and City of Cambridge economy prior to the implementation of mitigation measures (not significant).

## 6. SUMMARY OF LIKELY SIGNIFICANT EFFECTS

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6.1.1. The following likely significant effects on community, human health and land use receptors will occur as a result of the C2C Scheme:

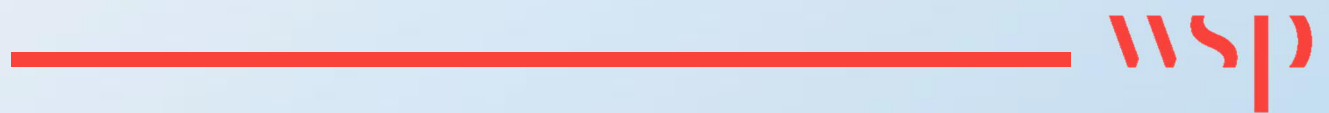
- Large permanent operational beneficial effect on the housing allocation at Bourn Airfield;
- Permanent moderate beneficial effect due to replacement of currently poor-quality designated Open Space (land to the east of M11 (within a City Wildlife Site)) with more and better quality open space;
- Permanent moderate beneficial effect on employment land allocation S/WC;
- Permanent moderate adverse effect on Bridleway 39/30;
- Very large permanent beneficial effect for the provision of a new active travel route, which will be along the length of the C2C Scheme and will provide a continuous segregated WCH facility from Upper Cambourne to west Cambridge; and
- Temporary large adverse effect on tenant farmer.

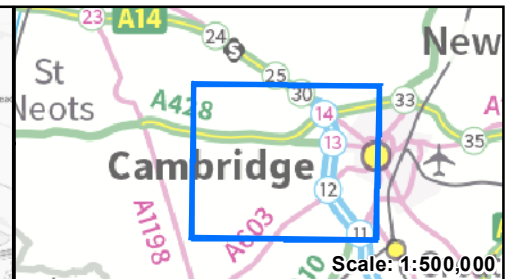
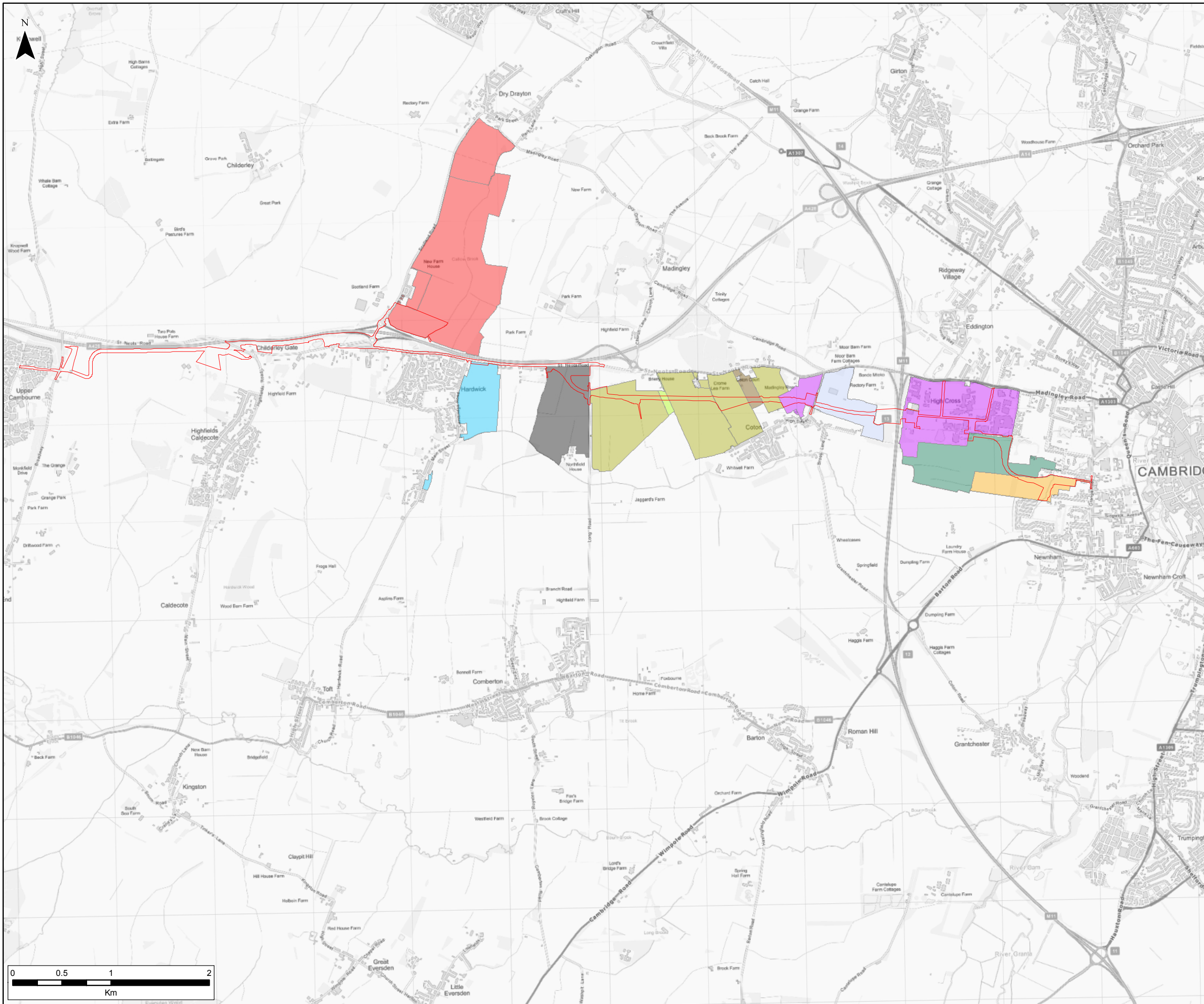
6.1.2. The following health outcomes are likely as a result of the C2C Scheme:

- A permanent beneficial health outcome associated with mental and physical health due to the provision of the new active travel route;
- Temporary negative health outcomes associated with mental health for those residing in the four dwellings are anticipated during construction due to increased noise levels;
- A neutral outcome on human health associated with respiratory and cardiovascular diseases during construction;
- A beneficial outcome on human health associated with respiratory and cardiovascular diseases during operation of the C2C Scheme;
- Temporary changes during construction and in the medium-term once operational, on visual amenity for local residents are likely to have **negative** health outcomes associated with mental health (e.g. stress and anxiety) as a result of the C2C Scheme. Negative health outcomes will diminish as planting becomes established during the long-term, and a permanent **neutral** health outcome will occur; and
- **Neutral** health outcomes are anticipated during construction and operation as a result of effects on the water environment.

# Appendix A

AGRICULTURAL LAND HOLDINGS





**Key**

— Order Limits

**Agricultural Land Holdings**

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

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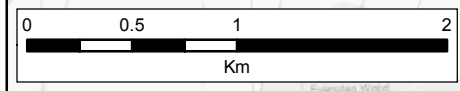
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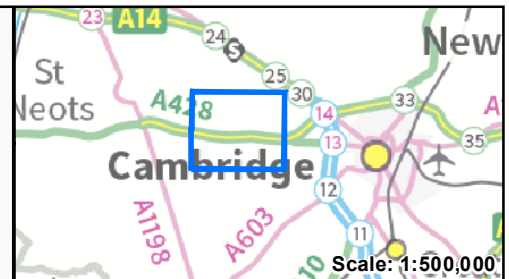
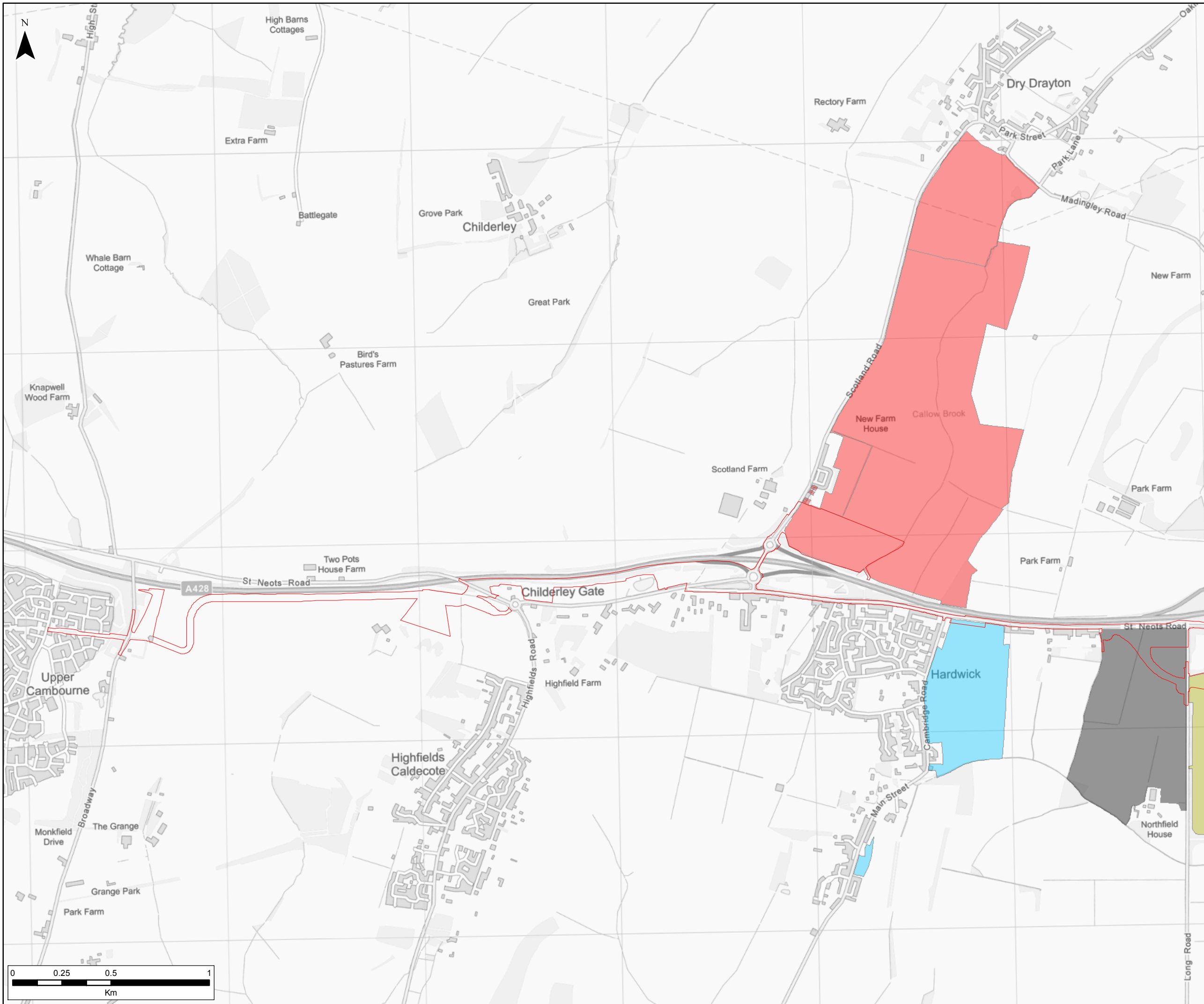
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**Key**

- Order Limits

**Agricultural Land Holdings**

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- 4

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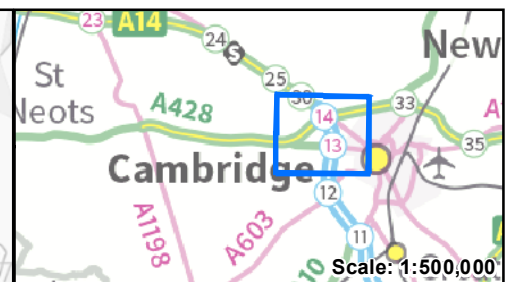
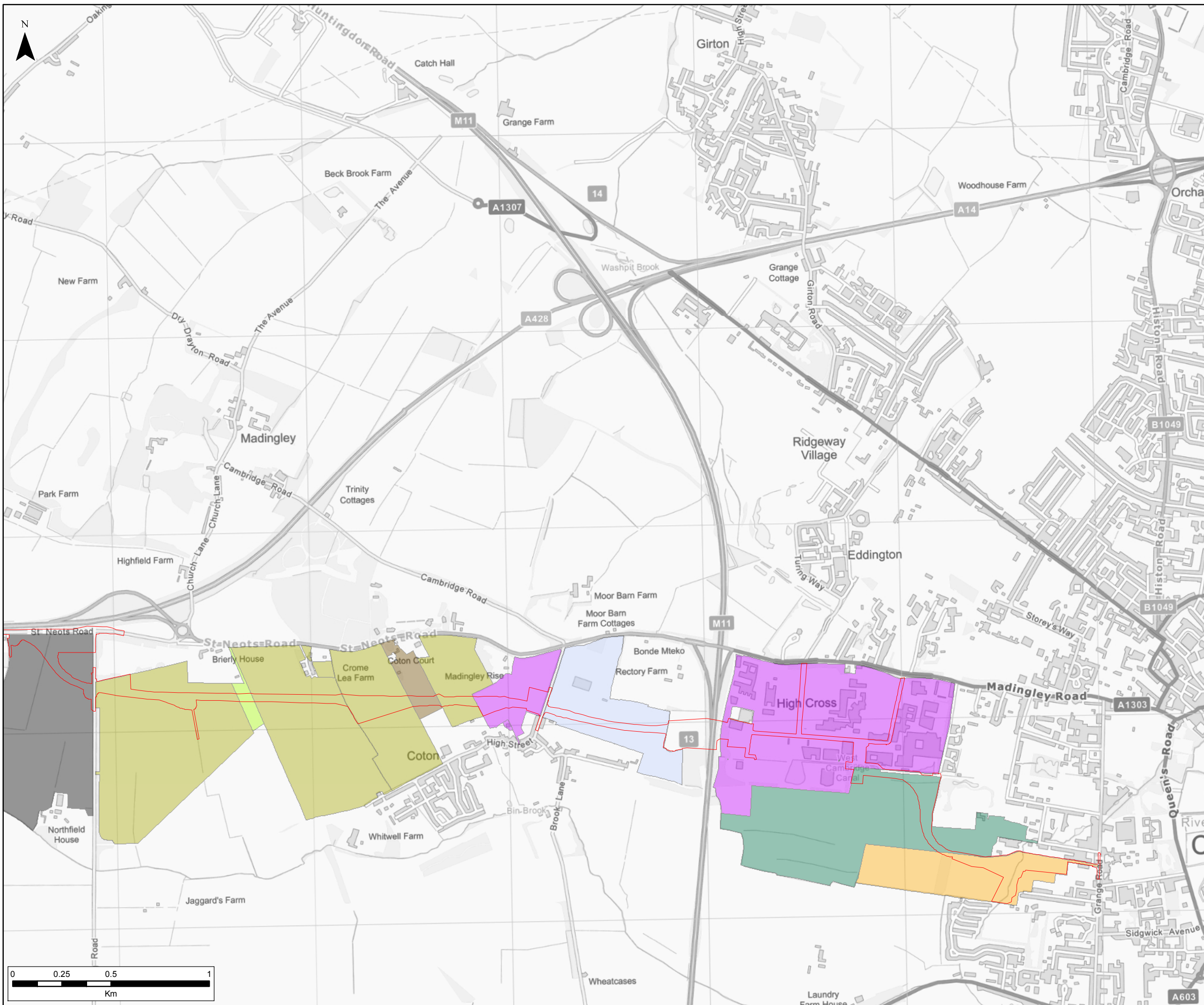
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- Order Limits

**Agricultural Land Holdings**

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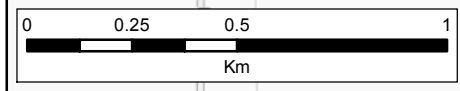
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