LAND AT
SCOTLAND FARM

Transport Appraisal

Prepared on behalf of:
Dry Drayton Estate Ltd & Hallam Land Management

By:
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November/2021

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Project Number: 21042
Doc Number: TS01

Rev	Issue Purpose	Author	Checked	Reviewed	Approved	Date
A	Draft for Comment	SEC	DJT	SEC	DJT	21/04/2021
B	First issue	ESG/SEC	DJT	ESG/SEC	DJT	20/05/2021
C	Second issue	ESG/SEC	DJT	ESG/SEC	DJT	21/06/2021

Contents

Tables

Figures

Drawings

Appendices

1. Introduction

1.1 Preamble

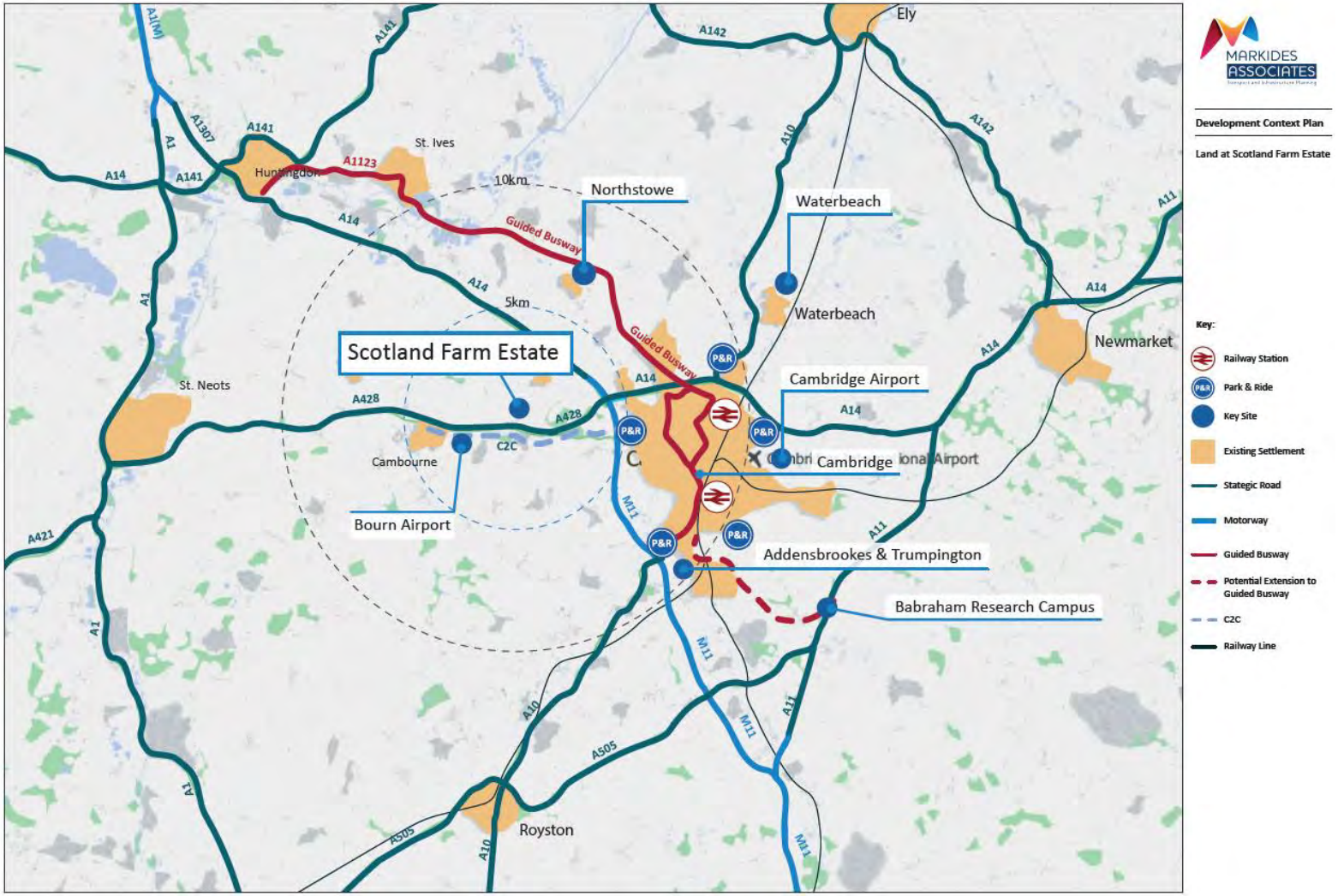
1.1.1 Markides Associates (MA) have been instructed by Dry Drayton Estate Ltd and Hallam Land Management to assess the suitability of land at Scotland Farm Estate as a prospective allocation for a new settlement having regard to paragraph 108 of the National planning Policy Framework. It is anticipated that the site could deliver a new sustainable settlement providing circa 6,250 new homes along with commercial and educational floor space. A plan showing the site within the wider area of Cambridge City and surrounding settlements is included as **Figure 1.1**.

1.2 Site Context

1.2.1 The site is principally split into an eastern and western parcel which straddle Scotland Road to the immediate north of the A428. It is excellently located to connect sustainably to Cambridge and other key settlements with the eastern parcel encompassing the preferred site of the proposed Scotland Farm Travel Hub. The Travel Hub will be served by a high frequency public transport service between Cambridge and Cambourne as part of the C2C proposals, substantially reducing the peak hour journey times into Cambridge City centre. As set out in the Local Transport Plan (LTP), it also forms a first phase of Cambridgeshire and Peterborough Combined Authority plans to deliver the Cambridgeshire Autonomous Metro (CAM); a world leading public transport network that will serve the region by reducing congestion, support the delivery of new homes and jobs and boost economic growth.

1.2.2 This report examines the existing sustainable transport situation, the new infrastructure that will be of significant benefit to the site, the extent and potential impact/mitigation of other committed development sites and sets out the key transport principles that will underpin the delivery of the site.

Figure 1.1 Development Context Plan



1.3 Summary of Development Proposals

1.3.1 The vision for the Scotland Farm estate is for a landscape-led, highly connected new settlement which will be a self-contained new community, with its own services, employment, and sense of place, underpinned by strong connectivity to the local Cambridge area and beyond.

1.3.2 The development will retain the existing farm complex and seeks to provide:

- Around 6,250 new homes;
- Around 10Ha of new employment land;
- A new District Centre and Local Centres;
- A new Transport Hub; and
- New Primary and Secondary Schools.

1.3.3 In terms of transport and accessibility, the overarching principles are:

- The provision of excellent public transport that is integrated from the outset and throughout the life of the development scheme, fully aligning with the proposed C2C.

- A connected microcosm where people can live, work, learn and play in one community, with sustainable access to the opportunities of the wider region.

- A low-car centre with services which provides the means for people to meet their daily needs without reliance on private cars; a place where low car ownership is encouraged.

- A community in which active travel is easy and attractive for all users and a natural choice.

- A new district centre that is connected to rural spaces; where the countryside can be enjoyed and accessed.

- A place which looks towards a sustainable transport future, with electric charging points throughout, and flexible considerations to allow for future technologies and changes in travel behaviour.

1.4 Structure of the Report

1.4.1 Following this introduction, this report appraises the current transport conditions, before describing the aspirations for the masterplan and proposed transport enhancements in more detail. The report then considers the likely impacts of the development before setting out how the development can facilitate sustainable connections to the existing and proposed transport networks.

1.4.2 The remainder of this report is structured as follows:

- **Section 2** reviews the baseline conditions of the site in terms of its context with other significant developments; the baseline local highway as existing; and examines typical congestion at peak hours;
- **Section 3** assesses the site's existing accessibility by active modes, walking and cycling, and by public transport. This section details the extent of the existing PROW network, bus routes and cycle infrastructure.
- **Section 4** provides an overview of the proposed sustainable transport interventions for west Cambridge and how these may change the future position. It provides insight into how the site may both benefit from, and provide support for, these interventions.
- **Section 5** provides the details thus far determined of the site Masterplan, the schedule of land uses, the proposed access arrangements, the proposed enhancements to Scotland Road and strategies for accessible transport.
- **Section 6** assesses the impact of development using trip generation, trip distribution and junction capacity assessment.
- **Section 7** provides a final assessment of the likely impact of development.
- **Section 8** summarises and concludes this report.

2. Local Context

2.1 Preamble

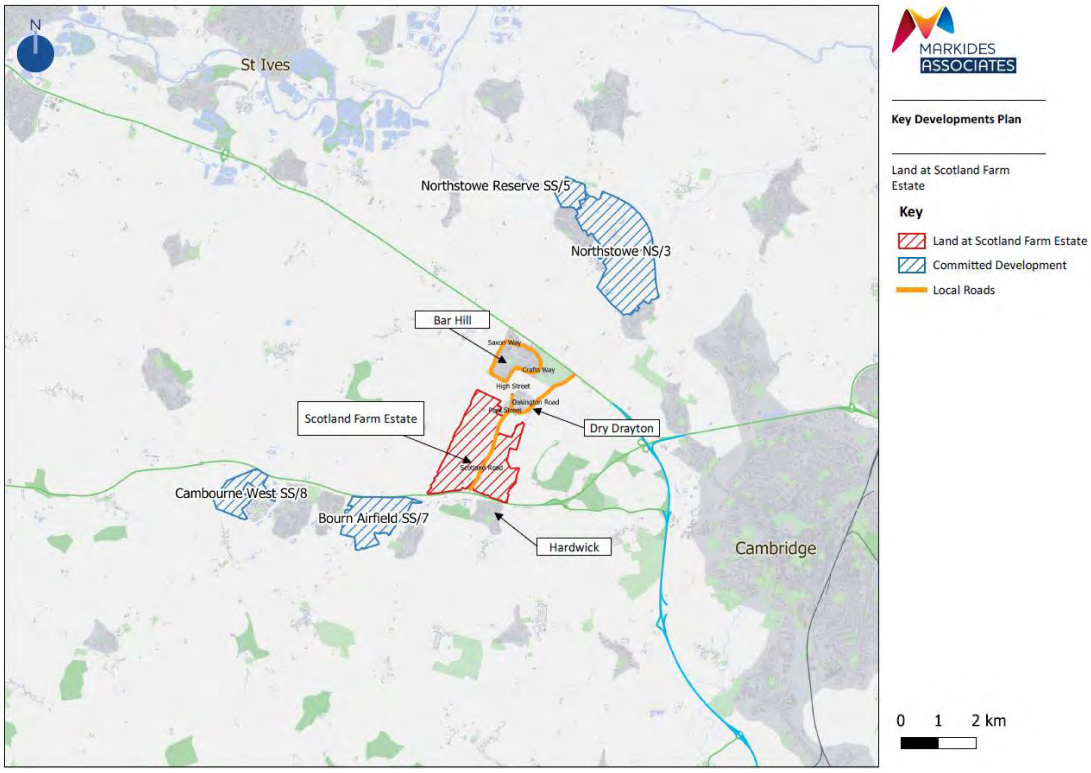
2.1.1 This section of the report provides a summary of the site in the context of the local area. It also considers the new settlements in proximity, based on the committed development schemes so far identified.

2.1.2 This site lies approximately 5 miles west of Cambridge near the village of Dry Drayton. The settlement of Bar Hill is located some 1.5 km north of the site, where a range of shops and services are provided. The site also benefits from direct access to the A428 via the dumbbell roundabouts to the south of the site. Given the current context of the site, direct connectivity into the public transport and active mode networks is somewhat limited.

2.2 Other Significant Development

2.2.1 There are a number of new developments of significant scale in proximity to the site, which have recently been granted planning permission or are already under construction. The three sites most relevant to the proposals for the Scotland Farm estate are Bourn Airport, Land to the West of Cambourne and Northstowe. A summary of each development in respect of quantum and infrastructure provision is given below with their respective locations shown on **Figure 2.1**.

Figure 2.1 Key Development Plan



Bourn Airport

2.2.2 Outline planning permission was resolved to be granted for a new mixed-use village with 3,500 dwellings; and additional employment, retail, hotel, leisure, residential institutions, education, community facilities & open space; a principal eastern access from the roundabout on St Neots Road and western access with Broadway, including a first section of strategic public transport route, will also be provided. All matters were reserved except for the principal highway junctions from the St Neots Road roundabout and onto Broadway.

2.2.3 As part of the proposals bus routes City 4, X3 and 18 will be diverted into the site and a new bus service will serve the most southern tip of the development. The development is also promoting the use of 2 taxi buses to Addenbrookes hospital and to Cambridge Science Park. Direct, segregated pedestrian and cycle links to Cambridge, Cambourne, Caldecote/Highfields, Hardwick and Bourn will also be delivered.

2.2.4 Other key links for improvement are identified as being a bus-only corridor through the northern edge of the site, a new foot/cycle connection between Highfields Road and the Scotland Road dumbbell junction and improvements to the existing cycle route to the east of Scotland Road along St. Neot's Road as far as the Madingley Road/Northampton Street/ A1134 Queen's Road roundabout adjacent to Westminster College. The scheme will also offer an e-bike hire point and car club hire.

Land to the West of Cambourne

2.2.5 Planning permission has been granted for 2,350 residential units; retail use classes A1-A5 (up to 1.04 ha); offices/light industry use class B1 (up to 6.25ha); community and leisure facilities use class D1 and D2 (up to 0.92 ha). There will also be two primary schools and one secondary school (up to 11 ha) three vehicular access points including the extension and modification of Sheepfold Lane, a four-arm roundabout provided on A1198/Caxton Bypass and an access point off the A1198 south of the Caxton Gibbet to serve the proposed employment uses.

2.2.6 The development will contribute towards new cycle routes connecting Caxton, Papworth Everard, Bourn, Knapwell and Elsworth. Pedestrian and cycle links are proposed to run parallel to the A428 along St. Neots Road and improve cycle access along Sheepfold, at Cambourne Road as well as Back Lane and Eastgate within Cambourne village. Improvements to St. Neots Road do not extend as far east as the Scotland Road junction.

2.2.7 One existing bus route (not yet known which) will be diverted, and a new route will be provided which would operate a total of 3 buses per hour. The development will either provide an inbound bus lane between the A1303/A428 and the M11/A1303 junction or provide an equivalent financial contribution towards the delivery of bus priority measures along the A4428 corridor, including the C2C and CAM schemes.

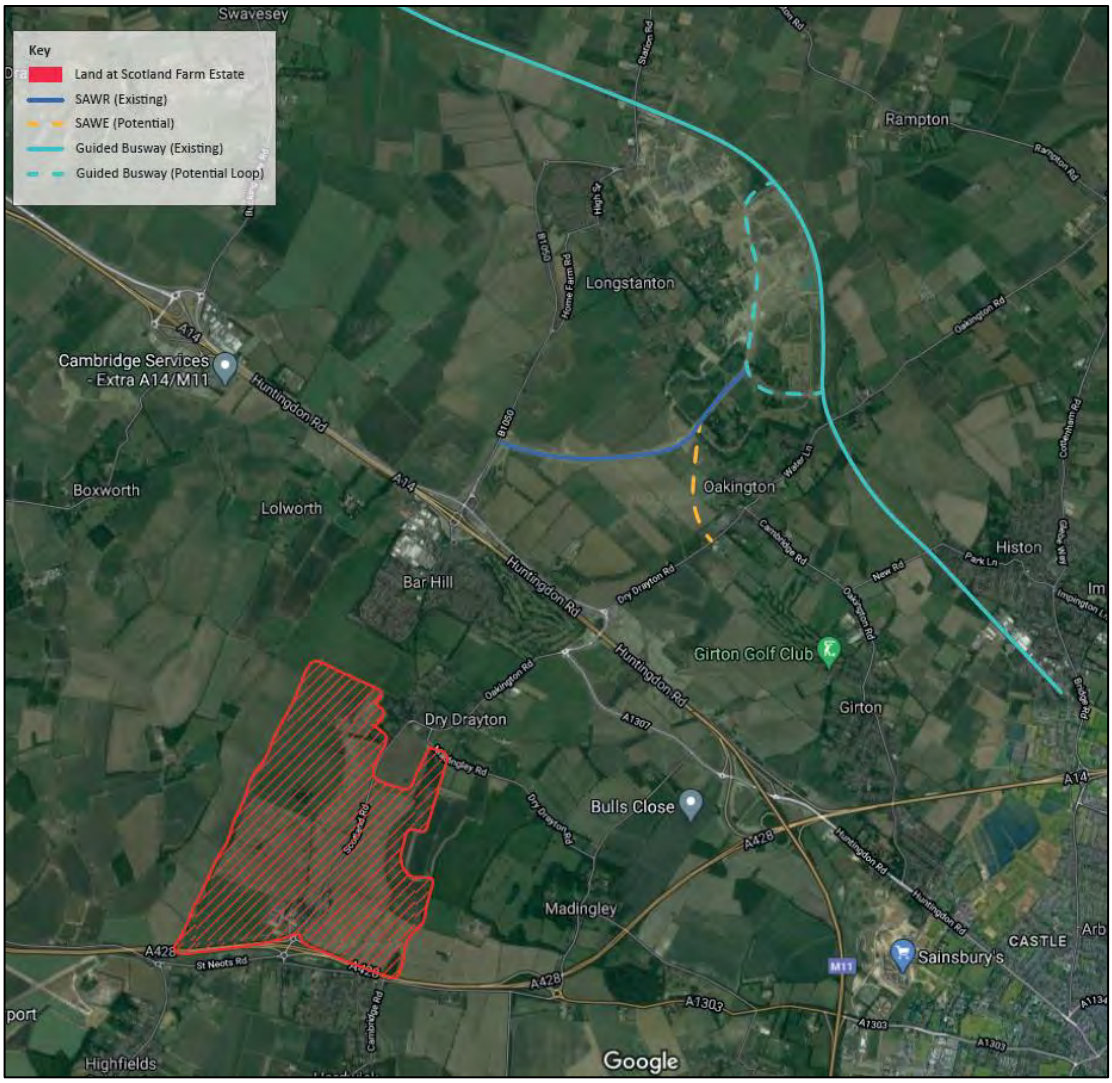
Northstowe

2.2.8 Northstowe will consist of at least 3 phases; 2 of which already have planning permission:

- **Phase 1** is for the delivery of 1,500 homes, a primary school, a mixed-use local centre, health and employment provision.
- **Phase 2** is for the delivery of 3,500 dwellings; 2 x primary schools, a secondary school; new town centre, employment uses; busway, primary road to link to southern access between new town and B1050 and improvements to the B1050.
- **Later Phases (TBC)** – 5,000 dwellings and associated amenities.

2.2.9 Northstowe will be delivered in tandem with new access roads known as Southern Access Road West (SARW) and Southern Access Road East (SARE) respectively. SARE is connected to the delivery of Phase 3, whilst SARW is linked to the earlier phases; both are part of the Northstowe Area Action Plan (NAAP). SAWR is under construction and will carry up to 30% of the traffic generated by the development towards Cottenham, northwest Cambridge and Cambourne. SARE is not likely to be required for some considerable time (circa 12-15 years). This interim period could see the delivery of significant portions of the CAM and other sustainable transport schemes, further influencing the need for the SARE and its trigger points. These accesses are shown in **Figure 2.2**. in the context of the Scotland Farm estate.

Figure 2.2 Site in the Context of Northstowe new Accesses



3. Sustainable Travel Context

3.1 Preamble

3.1.1 Given that the site is largely undeveloped its accessibility and connectivity by active modes of travel and public transport is currently limited. This section of the report summarises the existing level of accessibility.

3.2 Public Rights of Way

3.2.1 The existing PROW have been mapped and a plan is shown overleaf, categorised by type as follows:

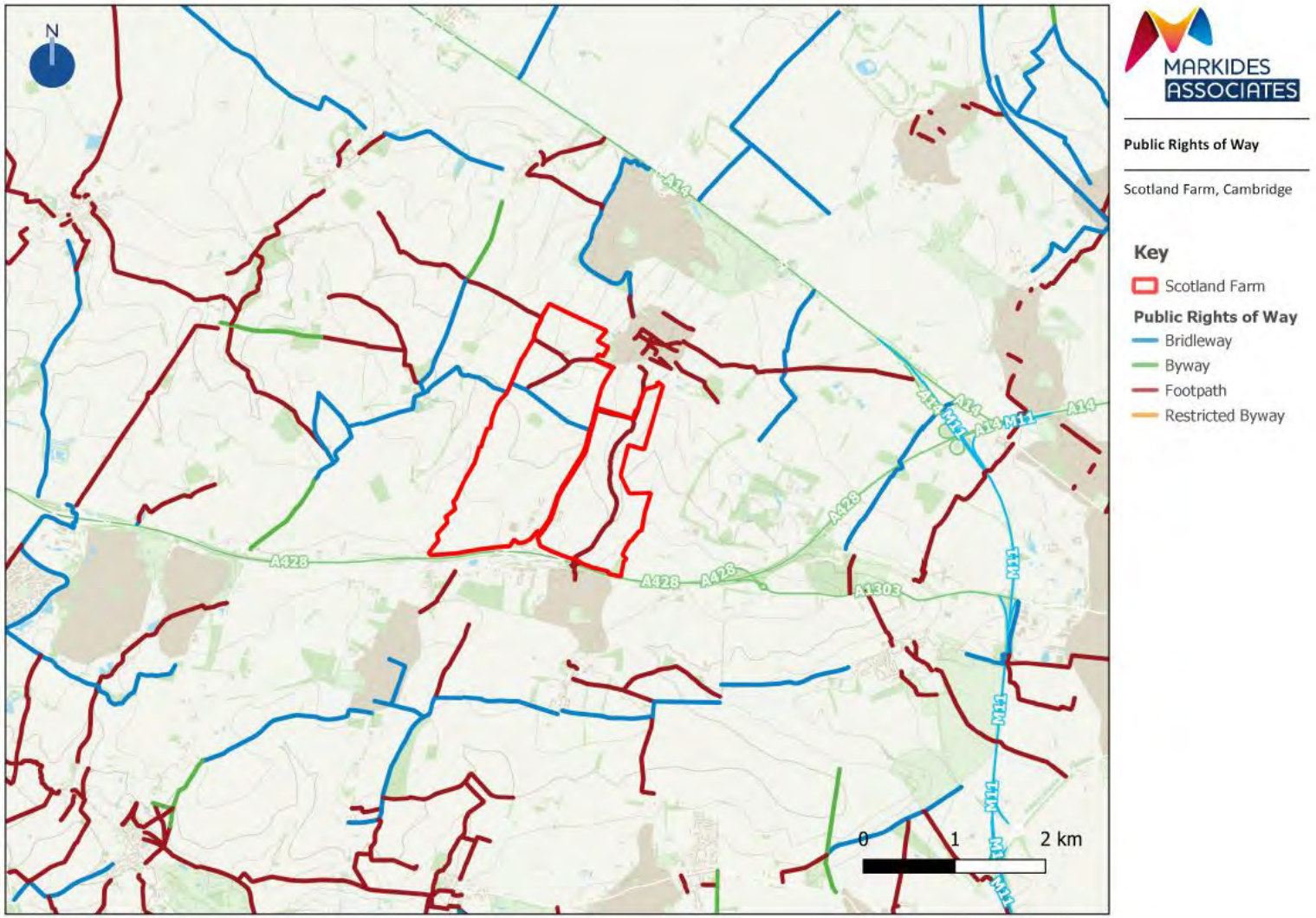
- Footpath
- Bridleway
- Byway
- Restricted Byway

3.2.2 As shown in the figure, the site benefits from an existing PROW footpath connecting the eastern parcel to both Hardwick to the south and to Dry Drayton to the north. From Dry Drayton, the PROW network extends via a bridleway to Bar Hill. The western parcel also benefits from an existing PROW footpath into Dry Drayton and is bisected by the bridleway which extends westwards.

3.2.3 The westward bridleway connects southwest via a byway to St Neots Road, which could provide access to Cambourne; however, there is no adequate connection across the A428 into the existing settlement, except via another bridleway at the western edge of Cambourne, which would be a significant diversion.

3.2.4 The quality of the existing PROW network has yet to be determined; some existing routes consist of unmetalled farm tracks or country lanes and are likely to be suitable for cycling. Others pass through agricultural fields and are not likely to be suitable in all weather or for all users. It is noted that significant mitigation is proposed along St. Neots Road and to the south of the A428 as part of the Bourn Airport and West Cambourne developments, as already discussed in **Section 2**.

Figure 3.1 Public Rights of Way



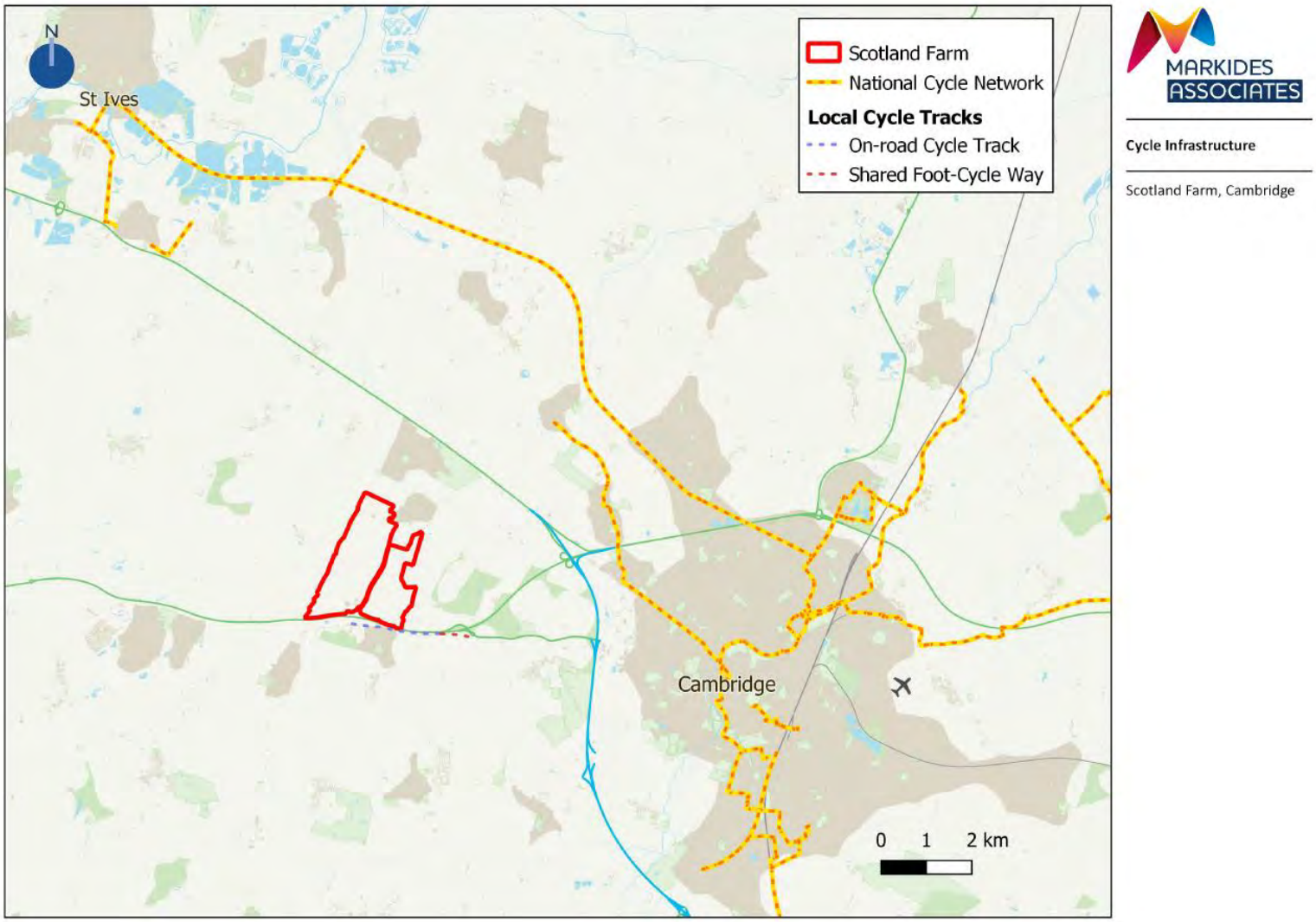
3.3 Cycle Accessibility

3.3.1 The nearest cycle routes are the National Cycle Route to the north along the guided busway, and to the south along St Neots Road on the on-road track previously mentioned. The National Cycle Route is some distance from the site and is not likely to be utilised by future residents for daily trips.

3.3.2 A plan showing the extent of the existing local cycle network is included as **Figure 3.2** overleaf.

3.3.3 In terms of potential future networks, the site benefits from existing PROW links which could be upgraded to provide cycle access. The existing foot/cycle bridge also provides an access for the eastern parcel to the existing network to the south and to the potential new pedestrian and cycle route which will follow the alignment of the Cambridge to Cambourne (C2C) busway extension.

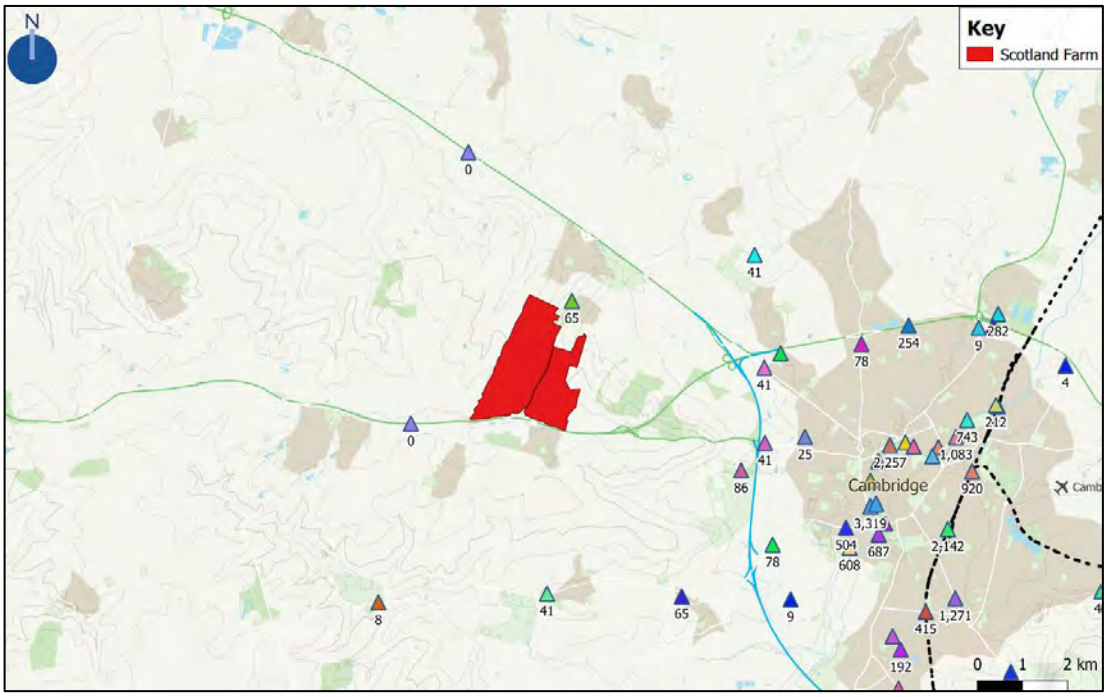
Figure 3.2 Cycle Infrastructure Plan



3.4 Pedestrian and Cycle Access Demand

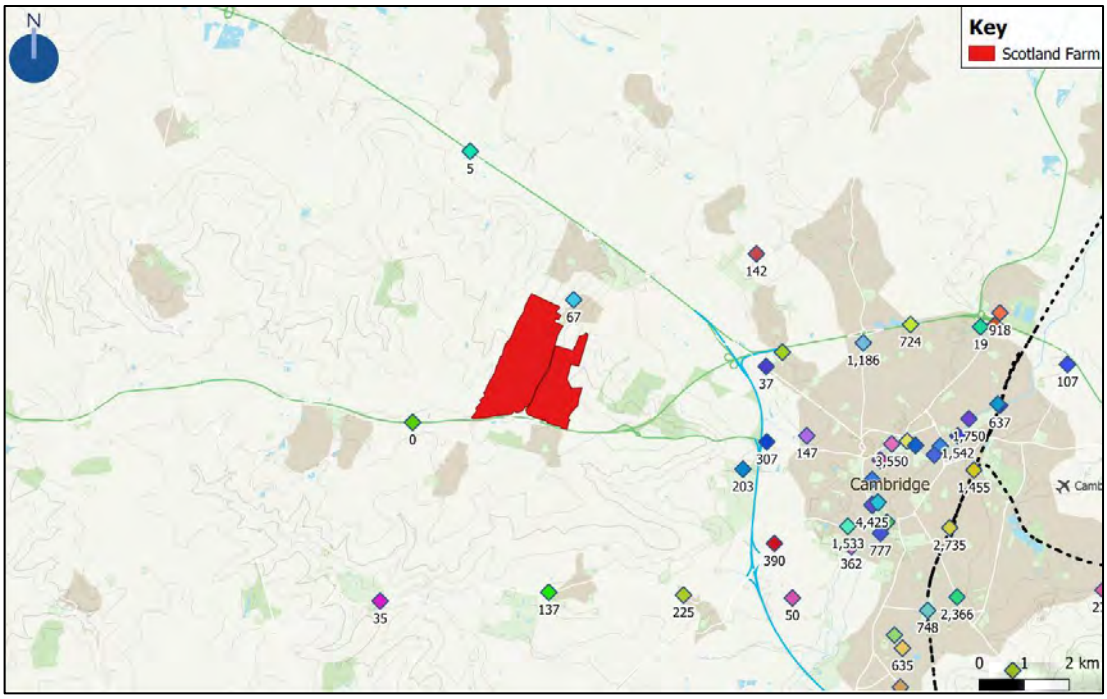
3.4.1 To determine the most popular walking and cycling routes within proximity of the site, data has been extracted from the Cambridgeshire County Council website. The data has then been transferred into GIS to graphically summarise the data which have been included as **Figure 3.3** and **Figure 3.4**.

Figure 3.3 Pedestrian Traffic Counts



3.4.2 **Figure 3.3** demonstrates that the pedestrian/cycle link between the site and Bar Hill is well used by pedestrians, given the limited local population, with approximately 65 movements daily. It is assumed that the majority of the movements towards Bar Hill will originate in Dry Drayton and will be trips to the educational land uses. It is also estimated that a proportion of the movements will be residents of Dry Drayton accessing the Tesco Superstore and other associated retail units in Bar Hill.

Figure 3.4 Cycle Traffic Counts



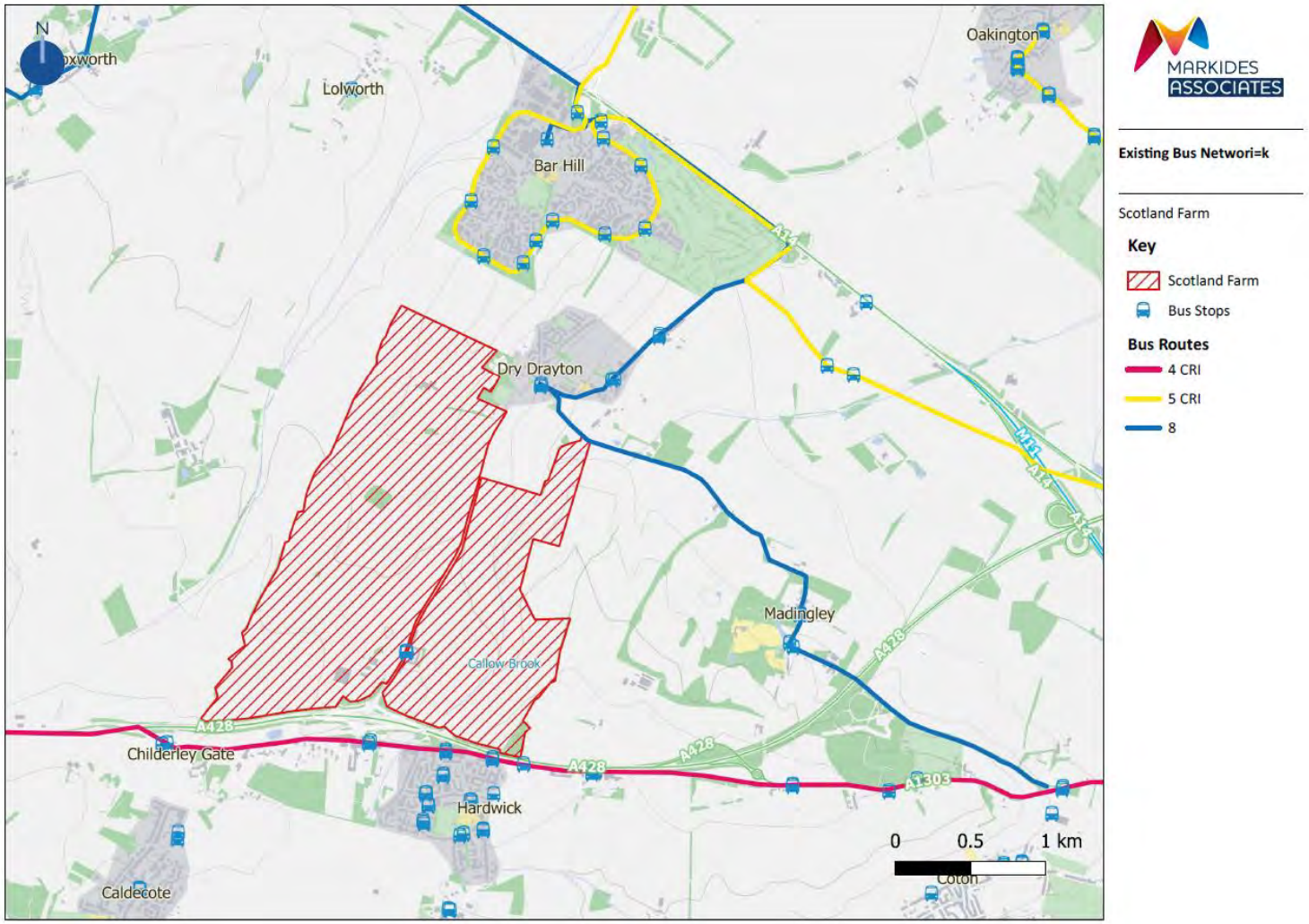
3.4.3 **Figure 3.4** also demonstrates that there are a similar number of cycle movements along the link from Dry Drayton toward Bar Hill. There are a total of 67 cycle movements along the link per day. Whilst the majority of the movements will be people travelling from Dry Drayton to Bar Hill, it is also evident that some of the movements continue beyond Bar Hill with 5 movements being recorded along the A14, suggesting that residents of Bar Hill/Dry Drayton may use this link as part of their commute to work.

3.5 Public Transport

3.5.1 Given that the site is undeveloped, it is not currently served directly by public transport. The nearest bus stops are located on St Neots Road to the south of the site, which are served by the 4 Citi bus service which operates twice hourly between Cambridge and Cambourne between 05:30 and 23:30 on weekdays, with key stops at Madingley Road Park & Ride and Cambourne Morrisons. On Saturdays, the route runs a limited loop between Emmanuel Road and Cambourne Morrisons twice hourly. The service on Sundays is hourly only.

3.5.2 The existing bus routes are shown diagrammatically overleaf in **Figure 3.5**.

Figure 3.5 Existing Bus Routes



4. Local Highway Context

4.1 Preamble

4.1.1 This section of the report reviews the local context of the site in respect of the local highway network, including the A428, St Neots Road and Scotland Road.

Overview

4.1.2 The site has frontages onto Scotland Road and the A428 and is situated between the A428 to the south and the A14 to the north.

4.1.3 Scotland Road bisects the site on a north-south alignment whilst the A428 forms the southern boundary. Scotland Road connects the A428 to the village of Dry Drayton where it joins Park Street at a 3-armed roundabout with Dry Drayton High Street. Park Street continues northeast, becoming Oakington Road past the junction with Park Lane and finally junctions with the A1307 to the northeast of the site. In turn, the A1307 splits east to west and provides access to the A14 and the B1050 to the west at Bar Hill, whilst to the east, it provides access to the M11 and as Huntingdon Road it enters the city of Cambridge.

4.1.4 The site therefore benefits from ease of access to the strategic highway network.

Dry Drayton

4.1.5 The main road through Dry Drayton, Park Street, is a two-way single carriageway with a speed restriction of 30mph. Park Street benefits from a joint pedestrian and cycle footway on the westbound side of the carriageway. Whilst Park Street is the main road through the village, Park Street is joined to the south by Scotland Road and Oakington Road to the north.

4.1.6 Dry Drayton forms a direct route which connects the A14 in the north to the A428 in the south. Currently, this route does not suffer from congestion, particularly during peak hours and therefore it is anticipated that the route would be capable of accommodating an increase in traffic movements.

Scotland Road

4.1.7 Scotland Road will provide the main point of access to the proposed development. It comprises some 2.5km of single carriageway road between the A428 as far as Dry Drayton. The general alignment of Scotland Road, Park Street and Oakington Road is continuous, with other roads forming secondary arms at junctions.

4.1.8 The road benefits from footways from the edge of Dry Drayton through the village centre, but the majority of the road is rural in nature, subject to the national speed limit of 60mph and lacks footways and lighting; although there are verges which can provide minimal refuge for pedestrians. There is a 30mph speed limit entering the main settlement of Dry Drayton to the north, and on approach to Scotland Farm at the southern end of the road, some 600m from the junction with the A428.

4.1.9 The junction with the A428 is a dumbbell roundabout and bridge with numerous slip roads, as shown in **Figure 4.1**.

Figure 4.1 Junction of Scotland Road/ A428/St Neots Road

Source: Google Satellite

4.1.10 The junction is well-lit and a continuous footway with crossing points demarked by tactile paving is provided from Scotland Farm on the eastern side of the junction only, linking with St. Neots Road and Hardwick to the south. Scotland Road on the approach to the junction reverts to 60mph, albeit the distance from the speed change to the junction is only 200m.

A428

4.1.11 The A428 is the main strategic road connecting Cambridge with St Neots, which lies to the immediate south of the site. It provides the primary route to and from the site and will be used by the majority of traffic accessing the future Travel Hub. In the vicinity of the site, the A428 is a dual carriageway road and stopping restrictions apply. The road is subject to the national speed limit of 60mph.

4.1.12 Some 500m to the east of the dumbbell roundabout junction with Scotland Road and St. Neot's Road is a large pedestrian and cycle bridge crossing, connecting the existing PROW with St Neot's Road and existing bus stops. A photo showing the bridge is included as **Photo 4.1** below.

Photo 4.1 Existing Foot-Cycle Bridge

St Neots Road

4.1.13 St Neots Road runs parallel to, and to the south of, the A428. It is a single-carriageway road subject to a 40mph speed limit. East of the junction with Scotland Road/A428 there are on-road cycle lanes in each direction. To the west, the road splits into two sections; both named St. Neots Road. The first forms a cul-de-sac access to residential units and is restricted with a slalom as shown in **Photo 4.2**.

Photo 4.2 Slalom on St Neots Road

4.1.14 The main branch of St Neots Road west joins to the southern section of the dumbbell roundabout and constitutes a single carriageway road with no footways or lighting, it is subject to a 60mph speed limit. There is a footway on the southern side of the road leading from the cul-de-sac of St. Neots Road.

4.1.15 Some 1.5km to the west of the site, St Neots Road bridges the A428, proceeding westwards thereafter on the northern side of the A428. The bridge benefits from a wide footway, although pedestrian facilities on each side of the bridge are narrow and there is no cycle-specific infrastructure.

Saxon Way/Crafts Way

4.1.16 Saxon Way and Crafts Way are located to the north of the site and together form a ring road around Bar Hill, with Saxon Way circling the western side of the village and Crafts Way circling the eastern side. Although the name of the road changes, effectively it is a single loop beginning and ending at a 5-arm roundabout with the B1050 adjacent to the A14 at the northern edge of Bar Hill. The roundabout itself is subject to the national speed limit but both Saxon Way and Crafts Way are subject to a 40mph speed limit. The junction is shown in **Photo 4.3**.

4.1.17 Although Saxon Way / Craft Way are only a short distance from the site with pedestrian and cycle connections via Dry Drayton; Bar Hill is approximately 5 miles from the site by road, with traffic having to route via the A1307 and the aforementioned junction.

Photo 4.3 Junction 14 of the A14

Source: Google Satellite

4.1.18 The roads within Bar Hill are generally lit; however, footways are very intermittent, and the route is not greatly attractive to pedestrians or cyclists. Although adjacent to residential development, this is fenced off and faces away from the road and there is little passive surveillance. Regardless, there are wide verges which show signs of foot traffic and

pedestrian desire lines, particularly to the south of Bar Hill near the access to the nature reserve. Typical conditions are shown in **Photo 4.4**.

Photo 4.4 Saxon Way, Bar Hill

B1050

4.1.19 The B1050 is a 3.6km single carriageway road connecting the A1307 and A14 at Bar Hill to Northstowe, where the road terminates at the junction with Ramper Road. As existing, it is of marginal relevance to the site; however, it is likely to form a key road as part of the Northstowe committed development scheme.

4.2 Areas of Key Consideration

4.2.1 The roads of key consideration to the development of the Scotland Farm estate are summarised in Table 4.1.

Table 4.1 Key Links for Assessment

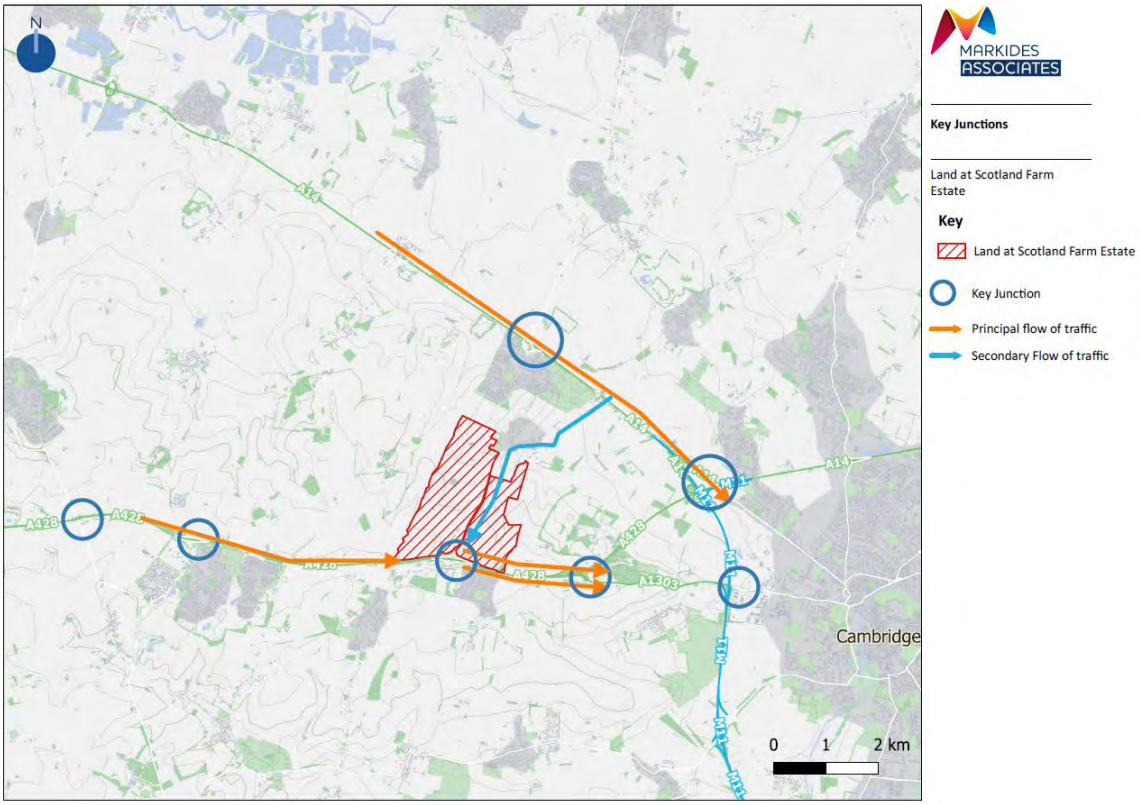
Name	Rationale	Relevance to the Site
Scotland Road	The immediate access to the site, which will change in character as the result of development from a 'country lane' to an access road with footways and cycle access; linking both to the proposed development and the new Travel Hub	High
A428	A strategic road which carries most of the traffic into and out of Cambridge and upon which the most development is concentrated	High
St. Neots Road	Provides a route along the A1303 directly into the city centre, and therefore offers an attractive alternate at peak hours when congestion on the A428 and at Madingley Cross increases average journey times. A lower classified road and therefore more vulnerable to impact.	High
A14	A strategic road which carries most of the traffic into and out of Cambridge, subject to substantial mitigation; a lower proportion of Scotland Farm estate traffic will use this route.	Moderate
Roads through Dry Drayton	A secondary consideration due to the link that this provides from the A14 to the A428; local roads which are sensitive by nature and may provide key cycle links to Bar Hill.	Moderate

4.2.2 Consideration has also been given to the highway's assessments undertaken by committed development schemes and where additional traffic generation may have a cumulative impact in the future. At this stage, the review has been qualitative, however all committed and future development proposals will require further assessment using the Cambridge Transport strategic model in due course as part of the Local Plan process.

4.2.3 Some junctions are likely to carry only marginal increases in development traffic from the Scotland Farm estate. Improvements to the A14 soon to be completed are significant, and further intervention along that route is not considered to be necessary. Similarly, the M11 interchanges have been reviewed but have not been assessed by any other development and the proportional increase in traffic generated by Scotland Farm estate is expected to be marginal.

4.2.4 Existing conditions on both the A428 and the A14 are expected to be mitigated by public transport improvements provided by committed development. A plan showing the principal flow of traffic in the area generated by all of the identified developments and the secondary flow of traffic which may need to be considered in the future scenario is below as **Figure 4.2**.

Figure 4.2 Areas of Key Consideration



4.2.5 The key junctions that will require further assessment are circled and are as follows:

- West to East along the A428:
  - A428 Caxton Gibbet
  - Cambourne Dumbbell roundabout junction
  - Scotland Road Dumbbell roundabout junction
  - A428/A1303 Madingley Cross
- West to Southeast along the A14/M11
  - A14/B1050 at Bar Hill
  - A14/M11 Interchange
  - A1303/ M11 Interchange

4.2.6 The cumulative impact on these junctions will be assessed in due course once the extent and location of future development sites is better understood.

5. Sustainable Transport enhancements

5.1 Preamble

5.1.1 Whilst the existing sustainable infrastructure is limited, a number of significant transport enhancements are proposed by neighbouring developments and the South Cambridgeshire Local Plan, which will fundamentally transform the current level of accessibility by all modes between St Neots and Cambridge, and which will also be of benefit to the future residents of the site.

5.1.2 The proposals will significantly improve connections between the existing villages, new developments, major employment sites and the city of Cambridge, offering fast, frequent, and reliable journeys and will fundamentally transform the accessibility of the area and the Scotland Farm estate.

5.1.3 This section of the report summarises these proposals, sets out how they will be of benefit to future residents and in particular, how development at the Scotland Farm Estate would comply with Paragraph 108 of the NPPF.

5.2 Cambridge to Cambourne (C2C)

5.2.1 On 31st October 2018 it was agreed that the Cambourne to Cambridge Better Public Transport (C2C) scheme should be progressed by the GCP as an essential first phase of developing proposals for the CAM. The timescale for delivery is estimated to be 2024.

5.2.2 To better accommodate expected growth in the towns and villages around Cambridge, the GCP want to make it easier for people to get into the city on public transport, on foot or by cycling. The GCP's project linking Cambourne to Cambridge is one of four proposed routes into the city from the wider area. The route is made of three key elements;

- A public transport corridor between Cambridge and Cambourne, providing reliable and sustainable public transport services bypassing on road congestion;
- A new Travel hub located at Scotland Farm off the A428 / A1303;
- New cycling and walking facilities along the route. It is not yet known if these will be provided by the St Neot's Roads improvements proposed by Bourn Airport and West Cambourne or be provided by a new off-road foot/cycle route as per the original aspiration.

5.2.1 Travel to work data for key origins along the C2C corridor currently illustrate the high level of car use along the route, with the car mode share for residents of Cambourne and surrounding areas being particularly high (65%). Residents currently have limited options to use public transport due to the low level of service and current unreliability.

5.2.2 The traffic modelling for the preferred option estimates a 167% increase in bus ridership when the scheme opens and 233% by 2036 when all the currently assumed housing and

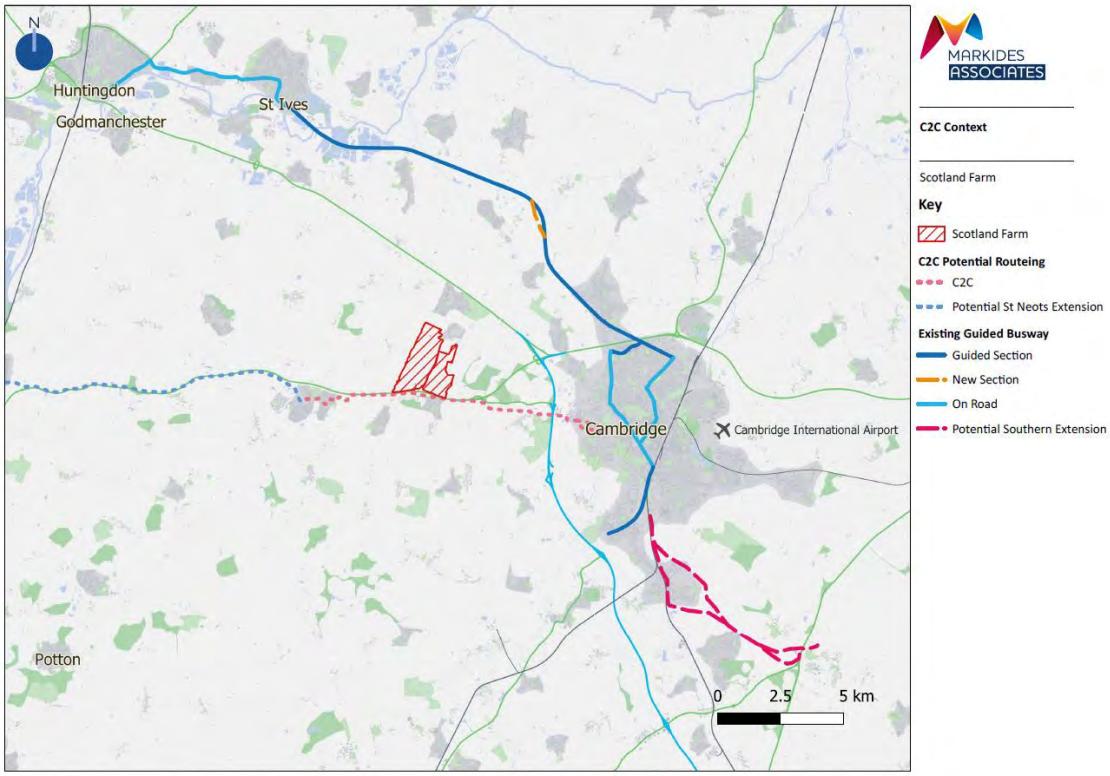
employment in the corridor is assumed to be built. This amount of mode shifting, mainly from private car, is predicated on the C2C delivering significant journey time savings to users from Cambourne, Bourn village and the Scotland Farm P&R. For instance, C2C passengers from Cambourne to Cambridge city centre are predicted to have 23 minutes lower journey time in the morning peak hour compared to a do minimum scenario. Alternative on-road options do not offer anywhere near this journey time saving or reliability.

5.2.3 The C2C project has therefore been recognised in the Local Plans and local transport strategy as a key project to help address these infrastructure constraints on growth by linking Cambridge to growth areas to the west. The provision of a high-quality service supporting journeys to key employment sites presents a viable alternative to car use/purchase for residents in new developments. The assumption is that the added capacity of the scheme will support the densification in the areas easily accessible to the busway.

5.2.4 The routes will be served by modern, electric public transport vehicles that can be adapted as technology changes. As mentioned, the route also includes a Travel hub, on land within the Scotland Farm estate, meaning it will be easily accessible to future residents. As well as a Park & Ride site with a capacity for up to 2,000 cars. The travel hub will provide for cycle storage allowing people to directly connect to key destinations using segregated pedestrian and cycle routes alongside the proposed bus route.

5.2.5 As shown in **Figure 5.1**, the route is currently proposed to run on existing roads through Cambourne. It is understood that GCP are working closely with East West Rail to ensure that the route ties in with the planned Bedford to Cambridge rail link (detailed below) and the location for Cambourne station once its location has been determined.

Figure 5.1 C2C Routeing



5.2.6 After leaving Cambourne the route continues off-road on a purpose-built track away from general traffic. It will pass through Bourn Airfield and run south along the A428/A1303 via the new Travel Hub site at Scotland Farm.

5.2.7 The route then continues off-road from Madingley Mulch roundabout and passes to the north of Coton village. It then goes via the West Cambridge site and the Rifle Range up to the closest possible point within central Cambridge. Public transport services would then continue on-road to the city centre and to employment sites such as Cambridge Biomedical Campus, Addenbrooke's Hospital and Cambridge Science Park, linking the site with a number of key destinations.

5.2.8 It is evident that a new settlement proposal at Scotland Farm would be of significant benefit to the viability of the C2C service through an increase in patronage, as well as allowing journeys from any future development to be undertaken by sustainable modes.

5.3 Cambridge Autonomous Metro

5.3.1 The Cambridgeshire Autonomous Metro (CAM) forms an important part of the LTP and is to be delivered by the Cambridgeshire and Peterborough Combined Authority, with a reported delivery timescale of 2023-2029; however, this is not yet fully committed, and the scheme may be subject to longer timescales than predicted.

5.3.2 It is intended that CAM will bring a high-quality public transport service to the Cambridgeshire and Peterborough region. CAM will provide benefits by helping to cut

congestion and tackle air quality issues by reducing car use, and it will improve the environment by using zero emission vehicles. It will aspire to seamlessly connect and interchange with other transport, including buses and rail and support more cycling and walking. It will also link in with other new infrastructure being built such as East West Rail and Cambridge South rail station as and when these projects move forward.

5.3.3 CAM will initially extend from St Neots to Haverhill and from Alconbury to Mildenhall, via tunnels under Cambridge. The extent of the CAM network is designed to be flexible, and other locations are also being explored as the network is considered further, there is the potential that the CAM service will eventually replace the C2C services.

5.3.4 The CAM network comprises of two main elements:

- A City Tunnel Section, comprising new underground tunnels and stations under the city of Cambridge planned major interchange hubs at Cambridge City Centre and at Cambridge Railway Station; and
- 4 regional routes, through the central tunneled section.

5.3.5 Regional routes will extend to Haverhill, Mildenhall, Waterbeach, Alconbury and St. Neots. However, the regional routes in the short-to-mid-term will operate as busways, either off-road or with priority where on-road sections cannot be avoided, similarly to the existing guided busway which operates between Huntingdon and Cambridge.

5.3.6 **Figure 5.2** overleaf shows the draft network map and the expected route between St Neots and Cambridge, via Cambourne and potentially Scotland Farm.

Figure 5.2 CAM

5.3.7 It is noted; however, that there are various constraints to the delivery of the CAM and that the delivery of this scheme is dependent on a number of factors.

5.4 East – West Rail

5.4.1 The East-West train line is a longer-term project that aims to deliver much-needed transport connections for communities between Oxford and Cambridge by:

- Upgrading existing railway between Oxford and Bicester;
- Bringing back a section of railway between Bicester and Bletchley;
- Refurbishing existing railway between Bletchley and Bedford; and
- Building brand new railway infrastructure between Bedford and Cambridge.

5.4.2 It is currently proposed that the railway will be constructed in 2 phases; firstly, between Oxford and Bedford, and secondly between Bedford and Cambridge. Work for the first phase is already underway, following improvements to Oxford Station with new platforms and the completion of the Oxford-Marylebone line via Bicester Village. The scheme could be completed by 2030, with some services on the Oxford-Bedford line functional by the end of 2025.

5.4.3 The precise alignment of the railway line for Phase 2 to Cambridge is still to be determined; however, the preferred route passes from Bedford via Sandy-St Neots and Cambourne, both of which would receive new rail stations. Public consultation will take place throughout 2021 and £760m of government funding has been allocated to the scheme with the precise location of the station serving Cambourne to be determined.

5.5 Committed Development Transport Improvements

5.5.1 As well as the major enhancements to the transport network identified above, the committed development at Bourn, Cambourne and Northstowe also includes the provision of new and improved transport facilities which will be of benefit to the proposals for the Scotland Farm estate, these have been detailed within Section **2.2** of this report.

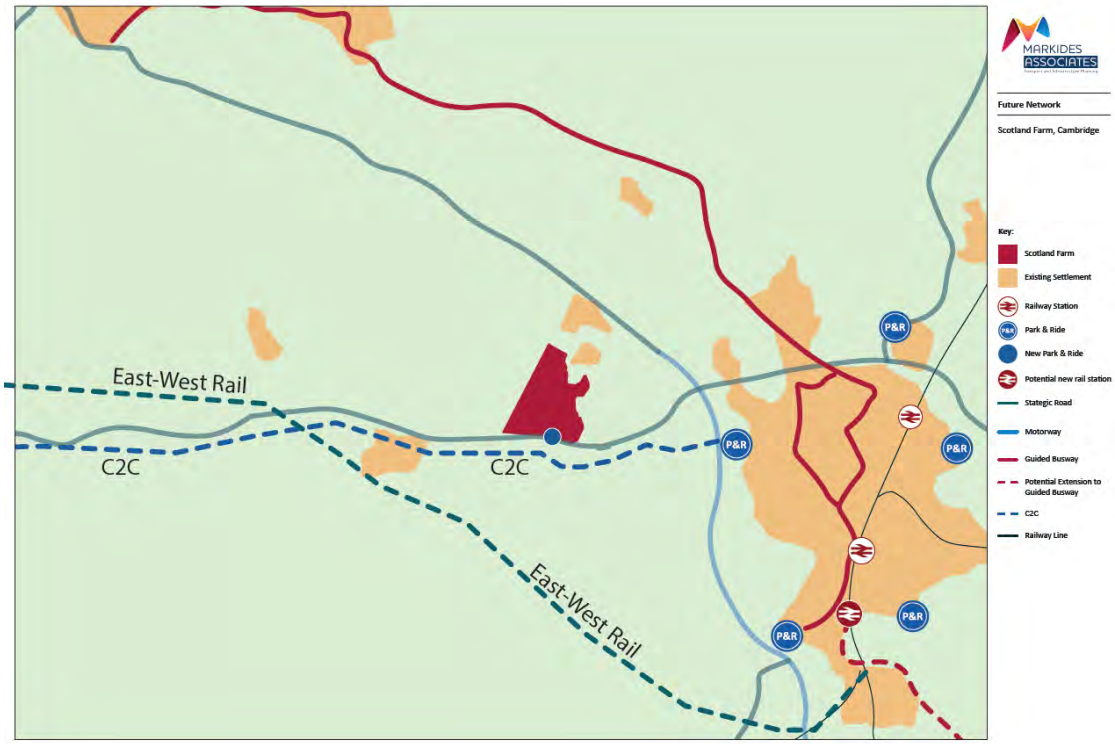
5.6 Summary

5.6.1 It is evident that Scotland Farm benefits from good access to the existing highway and existing PROW network. The proximity to West Cambourne and Bourn Airport allows the site to integrate with a number of proposed sustainable travel enhancements that will promote modal shift. The site will also be supported by a number of new transport connections and improvements, which are discussed in **Section 6** of this report.

5.6.2 In particular, the site includes a new Travel hub which will provide excellent connections to Cambridge along the proposed C2C corridor and has the potential to integrate with the CAM network in the longer term. It will be within reasonable proximity of new East-West Rail stations with public transport connections to those stations being provided. The hub could readily support e-bike hire as a reflection of the proposal at Bourn Airport, allowing for greater ease of interchange between cycle and public transport.

5.6.3 A plan showing the future bus-rail network is included below as **Figure 5.3**.

Figure 5.3 Future Public Transport Network



5.6.4 It is evident that a proposed development at the Scotland Farm estate would be located in proximity to a number of excellent public transport, cycle, and pedestrian facilities in the future, connecting residents to key employment and leisure destinations by sustainable modes. Should the land be allocated for development, it is evident that the new residents and employees would assist in supporting the long-term viability of these projects.

6. Emerging Masterplan

6.1 Preamble

6.1.1 The vision for the Scotland Farm estate is for a landscape-led, highly connected new settlement set within the thriving Greater Cambridge area, which will be a self-contained new community, with its own services, employment, and sense of place, underpinned by strong connectivity.

6.1.2 This section of the report sets out the emerging masterplan concept and how the development will provide connectivity by all modes to the existing and proposed transport networks. It also demonstrates compliance with paragraph 108 of the NPPF which seeks to ensure appropriate opportunities to promote sustainable transport modes can be/or have been taken up, given the type of development and its location.

6.2 Schedule of Land Uses and Scenarios

6.2.1 The indicative land uses are as follows:

- 6,250 new homes, with 5,000 in the western parcel and 1,250-1,500 homes in the eastern parcel;
- Around 10Ha of new employment land or some 77,000sqm floorspace;
- Associated green Infrastructure such as public open space; sports pitches; children's play areas; green buffers and woodland; and SUDS and other bodies of water;
- A new District Centre and Local Centres with some 23,000sqm of non-residential floorspace comprising health facilities, community uses, retail and so on;
- 3-4 new primary schools; and
- 1 new secondary school.

6.2.2 Principal roads will be tree-lined and designed to permit bus penetration. The extent of bus-route diversion through the site (independent of, or in conjunction to, the Park & Ride facility or C2C) is not yet known; however, bus inclusion within the design allows for future changes to the network.

6.2.3 The indicative masterplan is shown in **Figure 6.1** overleaf.

Figure 6.1 Masterplan

Source: Scotland Farm Vision Document April 2020

6.3 Principle Vehicle Access Arrangements

6.3.1 As shown on **Drawing 21042-MA-XX-XX-SK-C-0009_P01**, the main point of access to the site will be from Scotland Road via a northern and southern access point. To accommodate the

increased traffic flow heading towards the A428, it is considered that the southern section of Scotland Road should be widened to provide a two lane, dualled approach to the dumbbell Roundabout junction. An extract of this arrangement is shown in Figure 6.2 below.

Figure 6.2 Site Access Arrangement

6.3.2 It is currently proposed that the southern access junction is signalised in order to provide new pedestrian and cycle connectivity across Scotland Road linking to the proposed Travel Hub whilst allowing signal priority measures to be implemented for the C2C service.

6.3.3 Whilst more detailed assessment would be undertaken in due course, the proposals would also seek to safeguard sufficient land to allow for a dedicated left turn and ahead lane on the southbound approach to the roundabout. This would separate the majority of the left turning vehicular traffic from the C2C service and assist in ensuring a more consistent journey time can be provided. This arrangement has been initially modelled to demonstrate that the Park and Ride and development traffic can be sufficiently accommodated and provisionally discussed with GCP. This assessment is summarised later in this report.

6.3.4 At this stage, the Cambridge Transport strategic model has not been reviewed and therefore the current assessment is indicative of the likely impact only; however, capacity testing has been undertaken of the arrangement above and the results are given in **Section** 8 of this report.

6.4 Making Better Places

6.4.1 Whilst understanding vehicular access is important, a well-designed development needs to be connected. It has therefore been essential to look beyond the red line boundary of the site at an early stage to consider how the emerging development proposals will connect with the surrounding area and in particular, the new sustainable travel connections and nodes.

6.4.2 A more vibrant and sustainable development results from designing places that make walking to local facilities and public transport stops as convenient and comfortable as possible. It is therefore essential that the development contributes to connecting places together and breaking down existing physical boundaries. In particular, this has meant looking at how to improve connectivity between the site, Dry Drayton and Bar Hill and how to improve connectivity by all modes to the places that attract a need to travel.

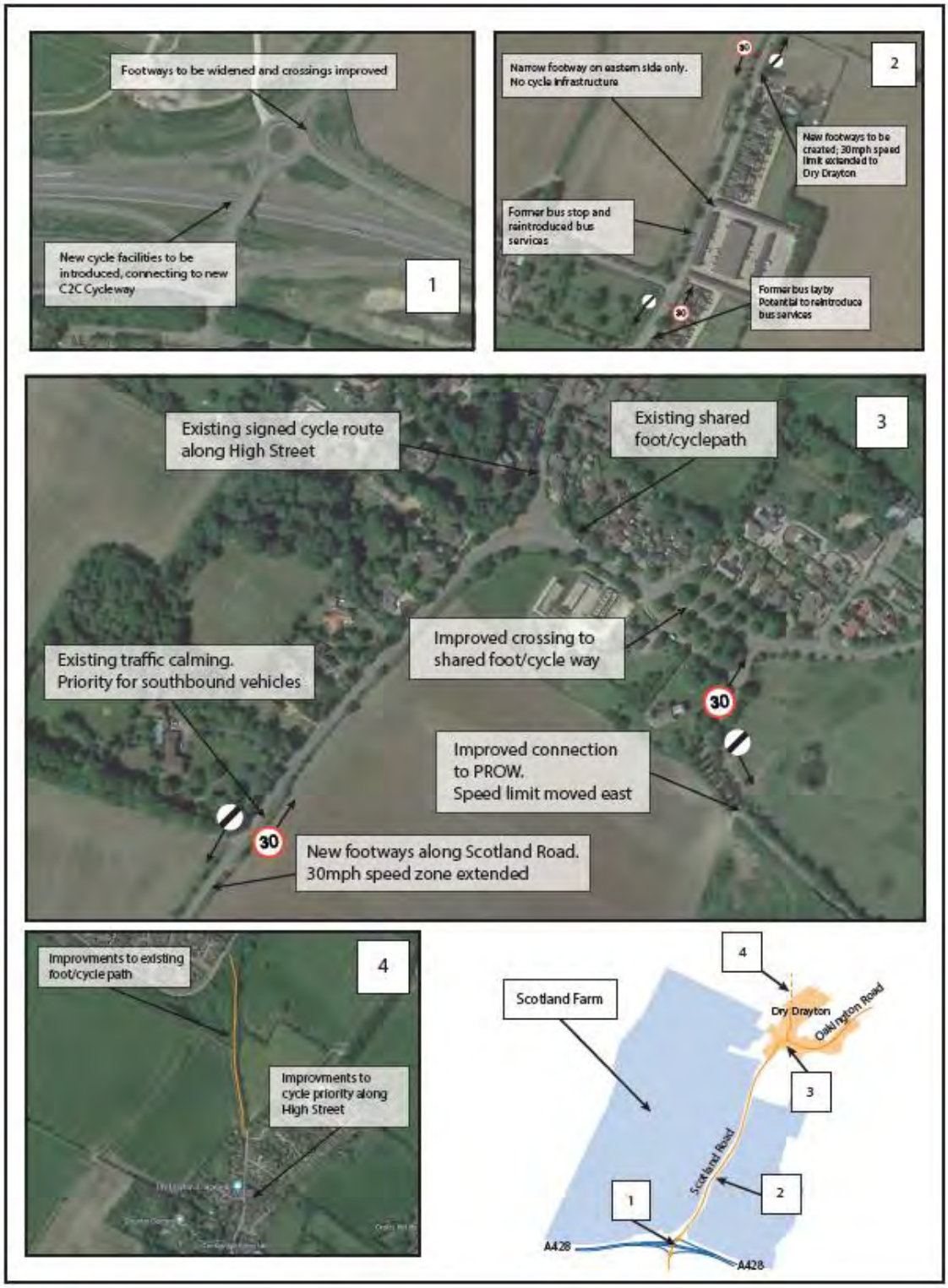
6.5 Enhancements to Scotland Road

6.5.1 As discussed in **Section 3**, Scotland Road is generally rural in character with intermittent footways and a lack of cycle infrastructure between communities with the exception of the PROW link between Dry Drayton and Bar Hill.

6.5.2 The development could deliver improvements to Scotland Road / Oakington Road as part of the wider access strategy which would see new and enhanced footways for much of the length of the road. The highways improvements, including speed reductions to discourage rat-running and enhanced foot/cycle connections would link the site with the A1307 and potentially beyond to Northstowe. In particular, the site could provide widening of much of Scotland Road to provide new foot and cycle ways. Enhanced landscaping would create a gateway and boulevard feel along Scotland Road and along principal internal roads and improvements to the existing PROW network would encourage active travel, including by improving the existing connection to Bar Hill.

6.5.3 A plan showing the indicative improvements to Scotland Road are given in **Figure 6.3** overleaf, whilst more details are included in **Drawing 21042-MA-XX-XX-SK-C-0009_P01.**

Figure 6.3 Improvements to Scotland Road



Public Transport Access

6.5.4 The Cambridgeshire Local Plan advises that all new residential development should be within a 400m walking distance of a bus stop in order to encourage the use of public transport.

6.5.5 For the local bus network to play its full role, it is important that the development is designed specifically to encourage their use. This involves bringing together the planning of land uses, the access routes to bus stops, and the bus infrastructure at an early stage. As identified in **Section 3,** it is proposed that the site will be served by an internal link road and high-quality infrastructure connecting to the travel hub.

6.5.6 Such an arrangement would place most of the development site within 400m of a new bus route whilst also greatly improving the connections for existing residents of Dry Drayton. In the shorter term, bus routes (such as the current service 8 which is operated by Go-Whippet or the Citi bus 4 and 5 services operated by Stagecoach) could divert into the site, whilst in the medium to longer term, new services would be provided.

6.5.7 Initial discussions with Stagecoach have confirmed that the existing Citi Bus 4 and 5 services could be enhanced with the option to reroute the existing services into the site in the future. It was also agreed that a new service could be provided at the appropriate time and once the first phases of development are built out. A letter has been provided from Stagecoach giving their in-principal support to the proposals, detailing the potential bus improvements and that they consider the site can be well integrated into the existing and future public transport networks. This letter has been included at the end of this report as **Appendix B**.

Longer-Term Public Transport Potential

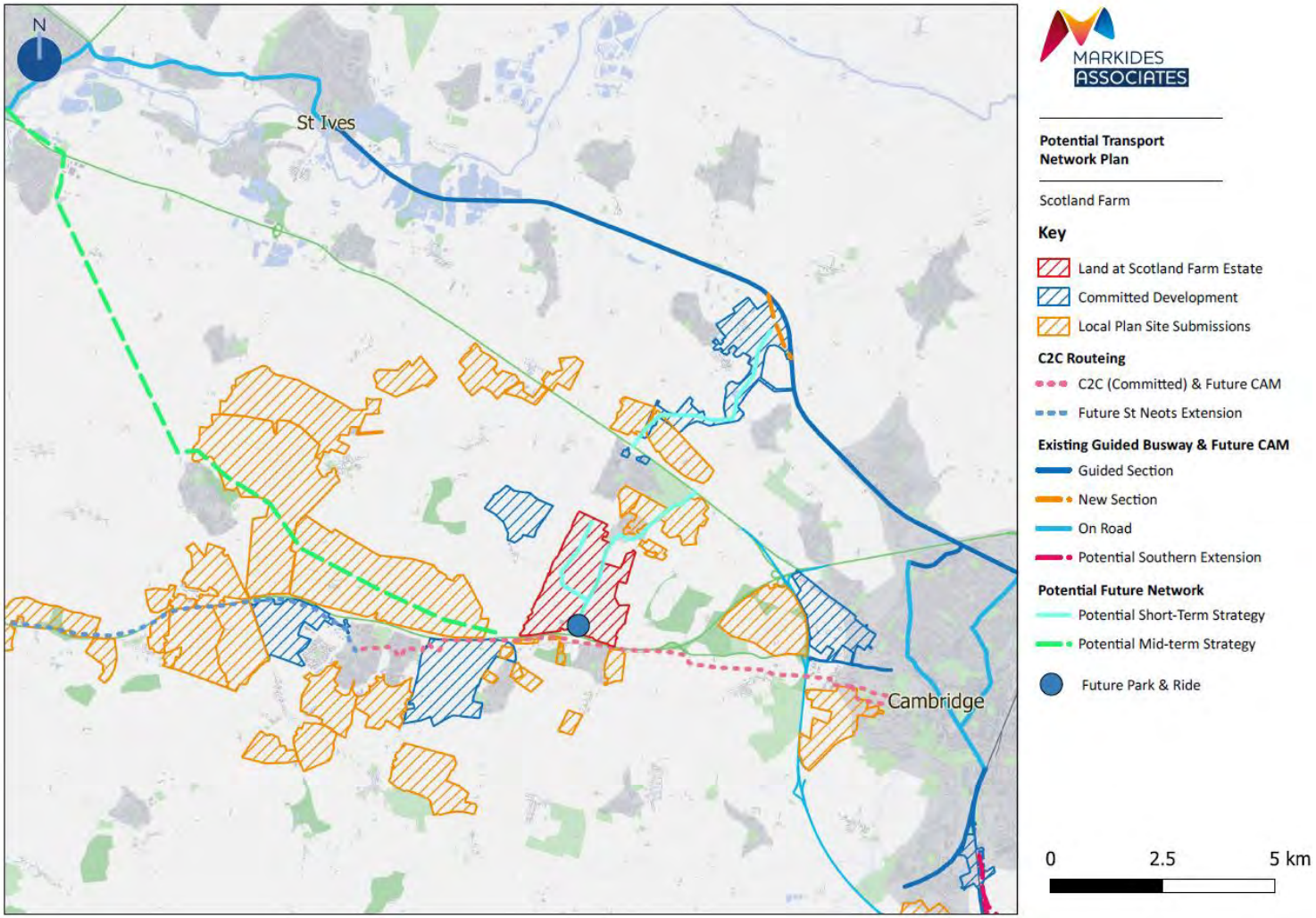
6.5.8 All of the new sustainable infrastructure for the region will provide significant improvements to linear routes in and out of the city of Cambridge, which presently is the main economic draw for travel and the destination most in demand. However, a significant quantity of development is now committed around the edge of Cambridge city and for journeys other than to Cambridge City.

6.5.9 As a case in point, even in the medium term, Northstowe Phase 3 assumes some 500 vehicle trips per day will travel south via Dry Drayton to the new developments at Cambourne and at Bourn Airport – confirming that there is a potential demand for travel between these areas which can currently only be met by private vehicle.

6.5.10 Scotland Farm is well-positioned to facilitate the delivery of new sustainable links between the 3 committed development sites and provide better public transport and cycle routes through the development via the creation of a north – south corridor. This approach would allow a connection to the C2C and with the existing guided busway and could provide a loop for north-west Cambridge between the city centre, Northstowe, Scotland Farm and Madingley.

6.5.11 Options for the delivery of this link include the use of the existing highway via Dry Drayton in the shorter term. A plan showing this potential connection is included overleaf as **Figure 6.4**.

Figure 6.4 Longer-Term Public Transport Strategy



Cycle and Walk Access

6.5.12 Critical to the success of the masterplan will be in creating a high-quality pedestrian environment that is well connected, safe and easy to use. Delivering on this objective means putting the needs of pedestrians and cyclists at the heart of the movement strategy.

6.5.13 Creating a walkable and bike friendly development is about designing a high-quality place for people. Interrelated with this objective is the need to better manage vehicle access, car parking and servicing access to ensure that is does not dominate the development.

6.5.14 It is therefore proposed to significantly improve access for cyclists and pedestrians between the site, Dry Drayton, the new Travel Hub and other local destinations.

6.5.15 As shown on the emerging masterplan, several surface level pedestrian crossings are proposed to provide new connections across Scotland Road between the site and the Travel Hub. A new north-south cycle corridor will also be provided along the site boundary edge that will connect via the surface level crossings. These proposals have the additional benefit of promoting more active lifestyles as well as forging links with the places and facilities that people wish to reach (desire lines).

6.5.16 It is considered that these measures will facilitate the reduction in speed limit along sections of the route, from a 60mph road to a 40 or 30mph road, which will also assist in reducing the number of accidents.

6.5.17 In respect to cycling, the approach is to support a step change in cycling by promoting a bicycle-friendly development and providing coherent, easy access between the site to connect into the local area, Cambridge and Cambourne.

6.5.18 Particular attention will be provided to ensure that internal desire lines tie into new and existing crossings points across the A428 tying in with the proposed St. Neots Road improvements, which form part of the cycle corridor along the anticipated C2C/CAM alignment.

6.5.19 As shown on the masterplan, to facilitate the westbound desire line, a new pedestrian and cycle bridge is proposed. This is shown indicatively in **Figure 6.5** and can be provided within land controlled by Promotor on the adopted highway. Whilst the final design of the bridge is still to be determined, it would provide a new and more direct connection into Cambourne and Bourn along a principally un-trafficked route. This could equally be used to connect to the cycle lane proposed along St Neots Road.

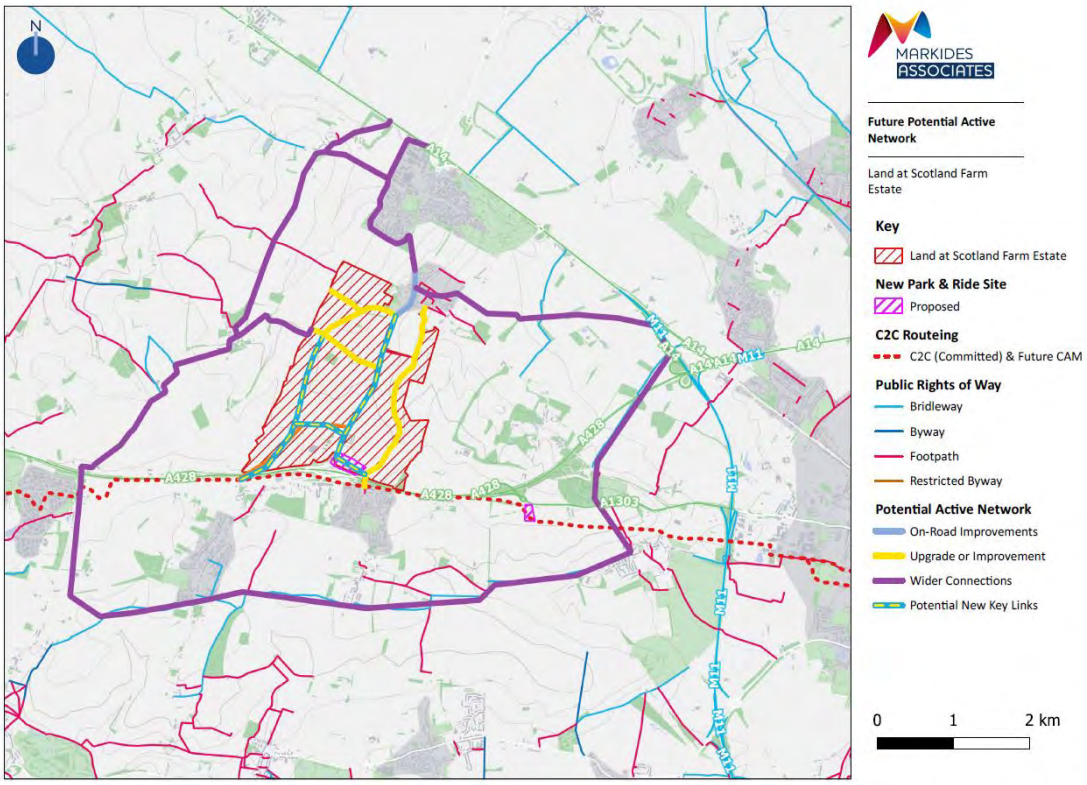
Figure 6.5 Indicative Western Bridge

6.5.20 Heading east and into Cambridge, a new cycle route is proposed through the site's Travel hub, connecting with the existing pedestrian and cycle bridge. Again, this will connect users with the proposed traffic free route along the C2C corridor.

6.5.21 Where existing Public Rights of Way pass through the development, these will be retained and enhanced with new surfacing, signage, and seating. New routes will extend through and around the development to maximise recreation benefits; improving the existing pedestrian and cycle routes between the site and Bar Hill will ensure a direct link to a superstore, situated in Bar Hill, and also other local amenities, conversely, a new high quality cycle route connecting to the travel hub, would place Bar Hill within cycle distance of onward bus connections into Cambridge, Cambourne and other key destinations.

6.5.22 A plan showing the future potential foot and cycle network is included as **Figure 6.6** overleaf.

Figure 6.6 Future Potential Active Network



6.6 Summary

6.6.1 It is evident that proposals for the Scotland Farm estate can fully integrate with the existing and proposed sustainable transport links ensuring that future residents and employees can access the site by all modes.

6.6.2 Furthermore, it is evident that the site can play an important role in connecting the new and proposed communities to the north of the A14 and South of the A428 through the provision of a high-quality north – south, public transport, cycle, and pedestrian corridor that links to key transport nodes minimising any future impact on Dry Drayton. This will be achieved through the use of internal pedestrian and cycle ways as well as providing a western bridge over the A428 to connect the site to Bourn Airport and Cambourne. Improvements to the existing PROW to the north of the site will also improve the connect from the site to Bar Hill.

7. Approach to Assessment

7.1 Preamble

7.1.1 This section of the report summaries how impact of the site will be assessed in respect of transport matters. At this stage, it is proposed that the site could accommodate up to 6,250 homes.

7.2 Vehicle Trip Generation

7.2.1 To determine the potential trip generation of the site, peak hour trip rates have been extracted from the Bourn Airport Transport Assessment and the West Cambourne Development Transport Assessment as the most appropriate proxy sites that will be representative of the proposal. Daily trip rates had been calculated using a strategic model provided by Cambridge County Council but were not stated within that report.

7.2.2 In lieu of the county model, daily rates have been calculated on a pro rata basis. In addition, these figures have been validated against TRICS using the following criteria:

- Land Use: 03 – Private Houses
- Regions: East Anglia
- Dated Between: 01/01/12 – 11/07/2018.
- Location Type: Edge of Town/Suburban Area/Residential Zone
- Parameter – Per unit
- Day of the Week: Monday-Thursday

7.2.3 The search returned 3 proxy sites, one of which is located in Cambridgeshire. The full TRICS output is included at the end of the report as **Appendix A** and the total vehicle trips are summarised in **Table 7.1.**

Table 7.1 Vehicle Trip Rates

Total Vehicles Trip Rates	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)			Daily Flows[1]		
	In	Out	Total	In	Out	Total	In	Out	Total
Bourn Airport	0.11	0.37	0.48	0.46	0.20	0.67	2.51	2.26	4.77
West Cambourne	0.09	0.43	0.51	0.50	0.19	0.69	2.53	2.45	4.98
TRICS Validation	0.15	0.32	0.48	0.30	0.18	0.47	1.94	1.98	3.92

[1] Daily trip rates approximated using TRICS validation and pro-rata calculation.

7.2.4 As shown in **Table 7.1**, the calculated trips rates (as per the Bourn Airport and West Cambourne Data) are higher than the TRICS validation exercise but are largely comparable, and the differences are not seen to be significant at this stage. It should be noted that the trip rates within the Bourn Airport and West Cambourne transport assessment have been:

- Derived from the local model in 2015, and subsequently that model has been adjusted to account for changes in background traffic growth – these may therefore be somewhat higher than would be derived from the model today;
- The Bourn Airport Data considers the following committed developments; Loves Farm, Alconbury Weald, Ridgeway Papworth, Wintringham Park and Cambroon West Traffic; and they
- Allow for associated amenities to residential development such as any new primary school or local centre and these uses are captured within the model's trip rates.

7.2.5 Based on the trip rates identified in **Table 7.1**, the trip generation for the maximum of 6,250 dwellings, has been calculated to and from the site. This has been summarised in **Table 7.2** for the main assessment periods.

Table 7.2 Total Vehicle Trips

Trip Rate Basis	AM Peak (08:00-09:00)			PM Peak (17:00-18:00)			Daily Flows		
	In	Out	In	In	Out	Total	In	Out	In
Bourn Airport	657	2,329	2,986	2,902	1,259	4,161	15,688	14,106	29,813
West Cambourne	531	2,669	3,200	3,150	1,175	4,325	15,813	15,313	31,125
TRICS Validation	950	2,019	2,969	1,856	1,106	2,963	12,100	12,400	24,500
Average	**594**	**2,499**	**3,093**	**3,026**	**1,217**	**4,243**	**15,750**	**14,709**	**30,469**

7.2.6 **Table 7.2** demonstrates that the site is likely to generate around 3,000 two-way trips in the AM peak and approximately 4,000 two-way trips in the PM peak. It is also approximated that the site is likely to generate around 30,000 two-way vehicle trips per day.

7.2.7 It should be noted that this trip generation assumes no modal shift as a result of the Park & Ride, C2C or CAM proposals. In addition, it is assumed that a vast proportion of the commercial, retail and leisure trips will be internal from within the site or from the local areas of Bar Hill and Dry Drayton and will not generate a significant level of traffic in their own right. These assumptions would however be reviewed once the quantum and type of additional land uses is further established.

7.3 Existing Mode Share

7.3.1 Given the current level of connectivity, existing residents are generally not currently reliant on public transport. However, to provide context of the existing travel behaviour, data has

been extracted from the 2011 census in regard to method of travel to work. As the site is largely agricultural in nature, the Middle Super Output Area (MSOA) of South Cambridgeshire 005, which encompasses Dry Drayton and Bar Hill, and MSOA South Cambridgeshire 020, which encompasses Cambourne and West Cambourne have been used.

7.3.2 The results of the search are summarised in **Table 7.3**.

Table 7.3 Existing Settlements – Method of Travel to Work

Mode	MSOA South Cambridgeshire 005 Dry Drayton and Bar Hill		MSOA South Cambridgeshire 020 Cambourne and West Cambourne	
	Number	%	Number	%
Metro, light rail, tram	2	0%	6	0%
Train	41	2%	133	4%
Bus	288	11%	205	6%
Taxi	5	0%	5	0%
Motorcycle	20	1%	28	1%
Car	1,828	69%	2,652	76%
Passenger	126	5%	152	4%
Bicycle	85	3%	103	3%
On foot	246	9%	199	6%
Other	11	0%	15	0%
Total	**2,652**	**100%**	**3,498**	**100%**

7.3.3 The table above shows that existing settlements in the local area are largely reliant on the private car, with 69% mode share to the north of Scotland Farm and 76% to the south in Cambourne. This position is expected to change significantly with the upcoming development at Bourn Airfield New Village and the implementation of the C2C bus link, providing better access to local facilities and means of transport to key destination other than by road.

7.4 Traffic Distribution

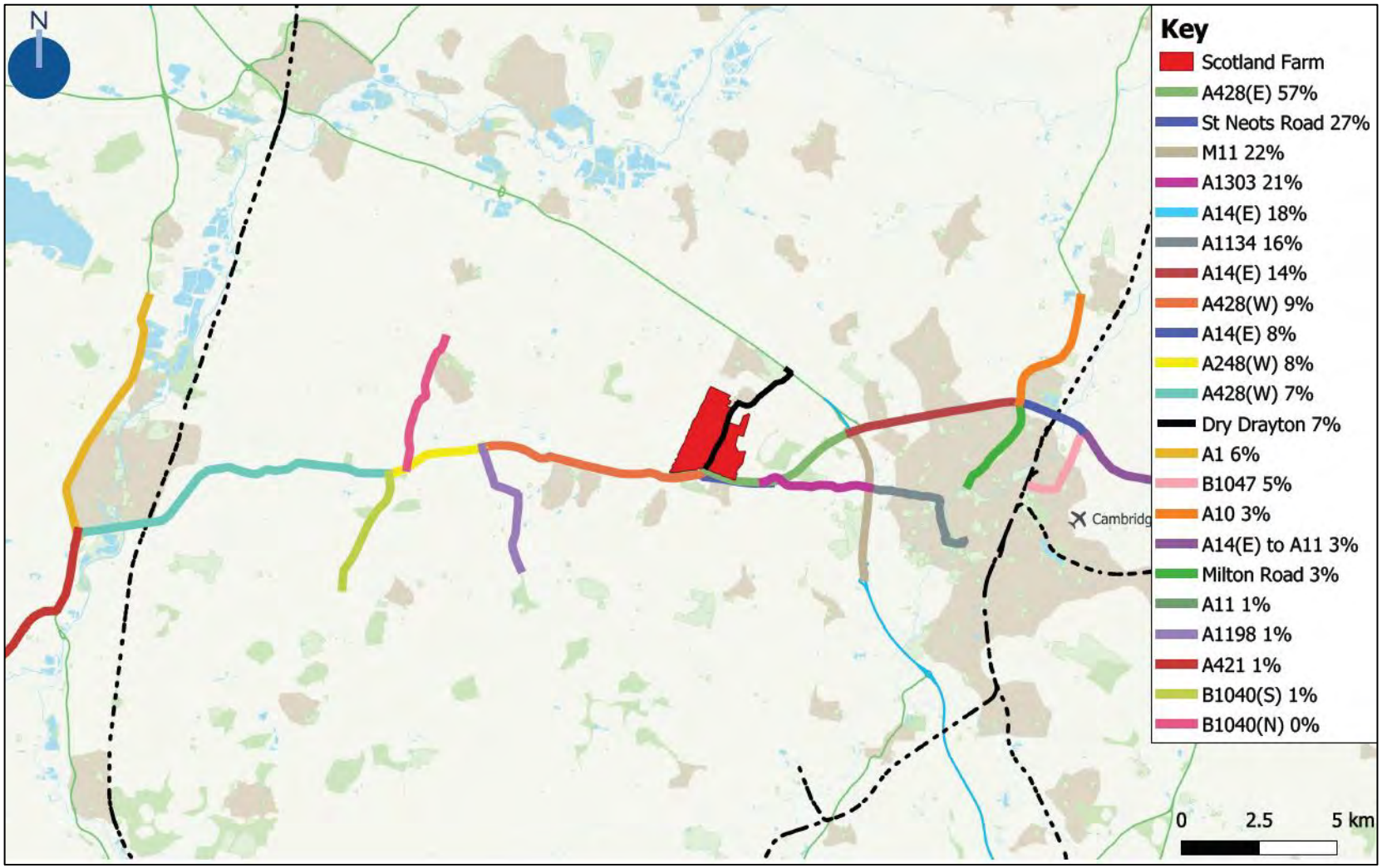
7.4.1 To demonstrate the likely traffic impact, a high-level assessment of the estimated trip distribution has been undertaken using a Trip Distribution Model and Census 2011 Data Table 'WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)' with the place of usual residence identified as E02004556 South Cambridgeshire 005.

7.4.2 The trip distribution has been demonstrated using the existing highway network. The results are summarised in **Table 7.4** and are shown diagrammatically in **Figure 7.1**.

Table 7.4 Trip Distribution

Road	% Distribution of Existing Highway Network
A428 East	57%
St Neots Road East	27%
M11(South)	22%
M11	22%
A1303	21%
A1134	16%
A14 East	14%
A248 West	9%
Dry Drayton	7%
A1 (M)	6%
B1047	5%
Milton Road	3%
A14 East to A11	3%
A10	3%
A428 West (after B1040)	1%
A421	1%
B1040 South	1%
A11	1%
A1	1%
A1198	1%
B1040 North	0%

Figure 7.1 Trip Distribution



7.4.3 As shown in **Figure 7.1**, distribution to the east of the site is higher than to the west. It is also noted that one of the highest areas of employment is Cambridge itself with key destinations being reached via Milton Road, Cambridge Road and the B1047. Finally, it is noted that the majority of traffic disperses south onto the A428 rather than to the north along the A14.

7.4.4 **Table 7.5** demonstrates the level of trips along each link for the proposed 6,250 homes at the site. This assumes little to no modal shift as the result of either third-party transport interventions or other improvements associated with the site.

Table 7.5 Distributed Trips Per Link – 6,250 Homes

Link	%	6,250 Homes								
		AM Peak (08:00-09:00)			PM Peak (17:00-18:00)			Daily Flows		
		In	Out	Total	In	Out	Total	In	Out	Total
A428 East	57%	339	1,424	1,763	1,725	694	2,418	8,978	8,384	17,367
St Neots Road East	27%	160	675	835	817	329	1,146	4,253	3,972	8,227
M11(South)	22%	131	550	680	666	268	933	3,465	3,236	6,703
M11	22%	131	550	680	666	268	933	3,465	3,236	6,703
A1303	21%	125	525	650	635	256	891	3,308	3,089	6,398
A1134	16%	95	400	495	484	195	679	2,520	2,354	4,875
A14 East	14%	83	350	433	424	170	594	2,205	2,059	4,266
A248 West	9%	53	225	278	272	110	382	1,418	1,324	2,742
Dry Drayton	7%	42	175	217	212	85	297	1,103	1,030	2,133
B1047	5%	30	125	155	151	61	212	788	735	1,523
Milton Road	3%	18	75	93	91	37	127	473	441	914
A14 East to A11	3%	18	75	93	91	37	127	473	441	914
A10	3%	18	75	93	91	37	127	473	441	914
A428 West (After B1040)	1%	6	25	31	30	12	42	158	147	305
A421	1%	6	25	31	30	12	42	158	147	305
B1040 South	1%	6	25	31	30	12	42	158	147	305
A11	1%	6	25	31	30	12	42	158	147	305
A1	1%	6	25	31	30	12	42	158	147	305
B1040 North	0%	0	0	0	0	0	0	0	0	0

7.4.5 **Table 7.5** demonstrates that the majority of all traffic would travel along the A428 East towards Cambridge with a total of 17,367 two-way trips travelling using this link on a daily basis. Some 14,000 two-way trips would be made on the M11, with roughly equal proportions travelling to the north and the south. There would also be a further 8,227 two-way vehicular trips using St Neots Road East on a daily basis throughout the day. The A14 would attract 4,266 two-way trips between the site and Cambridge per day. Finally, it is estimated that a total of 2,742 two-way vehicular trips will travel along the A428 in a westerly direction towards the A1(1M) an the A241.

7.4.6 Further work will be required to assess whether any further mitigation will be required across the wider area and will in part be dependent on the location and context of other potential sites that may come forward. It is therefore considered that a strategic assessment of the wider network will be undertaken at the appropriate time and once all allocated development is known.

7.4.7 Nonetheless, it is considered that the distribution, when accounting for the significant public transport enhancements that are proposed will have the ability to be accommodated on the surrounding highway network.

7.4.8 Immediate to the site it is recognised that the dumbbell roundabout to the immediate south will need to be upgraded as a consequence of the development and the P&R facility of and this has been assessed later in this report alongside the proposed mitigation.

7.5 Cycle/Pedestrian Distribution

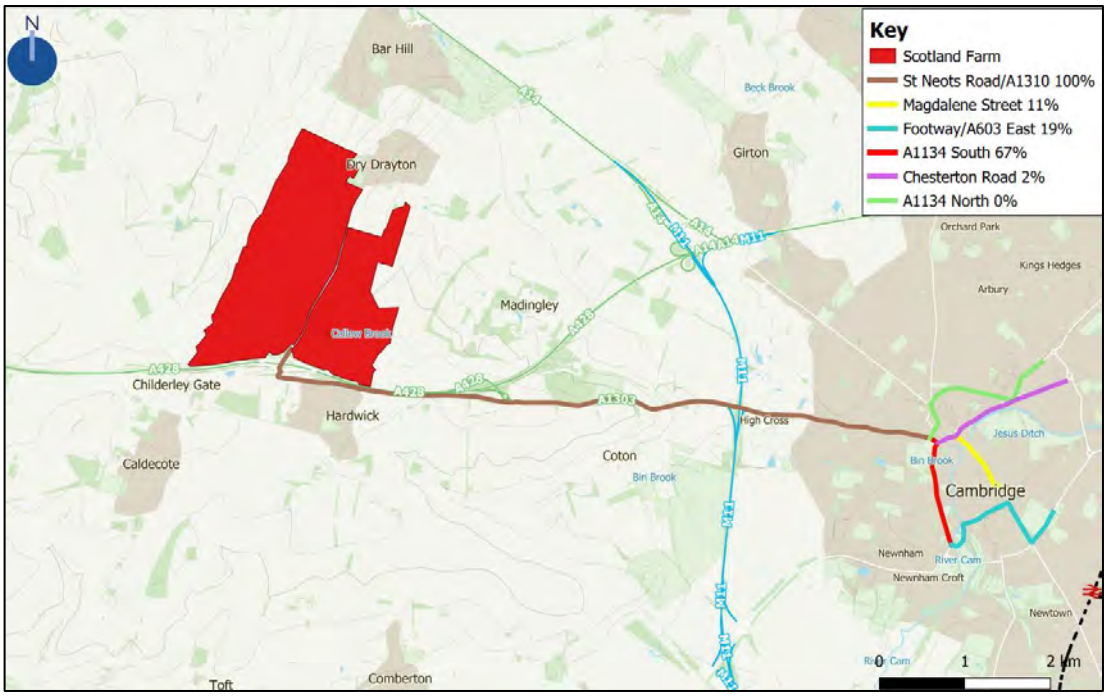
7.5.1 Further to the existing vehicular trip distribution, the level of existing pedestrian and cycle movements have been analysed, also using the Location of usual residence and place of work by method of travel to work (MSOA level)' with the place of usual residence identified as E02004556 South Cambridgeshire 005.

7.5.2 The cycle and pedestrian movements have been distributed along the relevant links which connect to the site. The results are demonstrated in **Table 7.6** and are shown visually in **Figure 7.2**.

Table 7.6 Trip Distribution – Cycle/Pedestrian

Road	% Distribution of Existing Highway Network
St Neots Road East	100%
A1303 East	100%
A1134 South	67%
A1134 North	0%
Footway/A603	19%
Chesterton Road	2%
Magdalene Street	11%

Figure 7.2 Pedestrian/Cycle Trip Distribution



7.5.3 **Table 7.6** demonstrates that 100% of bicycle and pedestrian movements from the site will travel in an eastbound direction. There are currently no trips attributed to the west of the site. This could be due to a number of factors:

- Limited pedestrian/cycle infrastructure to facilitate safe movement to the west of the site; and
- A lack of employment opportunities to the west of the site which are accessible via foot or cycle.

7.5.4 However, it is considered that the existing committed developments at Bourn Airport and West Cambourne will provide employment opportunities and therefore trips to the west from the site may be generated in the future. Therefore, it is important to consider any sustainable transport connections which would aid the use of active modes of travel in order to make the site sustainable.

7.5.5 The lack of cycle and pedestrian movements to the west of the site further confirms that the provision of a cycle/pedestrian bridge would create movements in a western direction and would facilitate the potential movements to Bourn Airport and West Cambourne. The third-party improvements proposed along St Neots Road are also likely to attract new cycle trips.

8. Potential Effects

8.1 Preamble

8.1.1 This section of the report sets out the high-level and preliminary assessment of the potential impact of development. The full assessment will be dependent on further input from the highway authority, as well as data from the county model at a later date. This assessment is intended to provide an indication of impact on key variables including the function of the Scotland Road dumbbell roundabout and the potential for modal shift.

8.2 Potential Modal Shift

8.2.1 To understand the benefit of the future sustainable travel plans will have on the site, workplace destinations have been analysed to understand which destinations will be reachable via foot, cycle, bus or train rather than via the private car. The future sustainable travel options which have been taken into consideration in this analysis include the C2C, East West Rail and the CAM proposals. The workplace destinations have been derived from the 2011 Census information within the geographic area of South Cambridgeshire 005, which is the same search criteria that was used to provide the trip distribution of the existing site in section 6 of this report.

8.2.2 The analysis has been set out in **Table 8.2**. It should be noted that only those workplace destinations have been included where it is thought that a significant shift in travel behaviour is likely to occur.

Table 8.1 Areas of Potential Mode Shift away from the Private Car

Work Place Destination	Potential Mode Transport Mode Shift			
	Walk	Cycle	Bus	Rail
Dry Drayton	✓	✓	✓	
Bar Hill	✓	✓	✓	
Hardwick	✓	✓	✓	
Northstowe			✓	
South Cambridgeshire		✓	✓	
Cambridge		✓	✓	
Cambourne		✓	✓	
Huntingdonshire			✓	
East Cambridgeshire			✓	
Bedford				✓
Central Bedfordshire				✓
Milton Keynes				✓
Vale of White Horse				✓
St Neots			✓	✓

8.2.3 **Table 8.1** demonstrates that it is likely that there will be a shift in mode of transport towards rail to Bedford, Milton Keynes, Cambourne, Central Bedfordshire and Milton Keynes due to the introduction of the East West Rail Line. In terms of a shift towards cycling, it is likely that this will occur to destinations such as South Cambridgeshire, Cambridge and Cambourne, along with a movement towards bus travel due to the introduction of the C2C and CAM which will have a dedicated cycle route running parallel with the guided busway which will run to the south of the site. It is also envisaged that the Travel Hub will be utilised to connect with the C2C or the CAM to travel via bus into Cambridge, St Neots, Huntingdonshire and Cambourne among other popular destinations.

8.2.4 To understand how the future sustainable travel options may change the existing modal split, the total number of vehicle trips for each of the destinations listed in **Table 8.1** have been split between the private car and the new potential mode of transport. For example, the vehicular trips for East Cambridgeshire have been split between Bus and Private Car. The results of this analysis have been included in **Table 8.2**, as an indication of potential modal shift in a 'do something' scenario with the development and transport enhancements in place.

Table 8.2 Potential Multi Modal Share

Mode	MSOA South Cambridgeshire 005	
	Existing Mode Share %	'Do something' Mode Share %
Train	1%	7%
Bus/C2C/CAM	11%	18%
Motorcycle	1%	1%
Car	69%	46%
Passenger	5%	4%
Bicycle	3%	15%
On foot	10%	9%
Total	**100%**	**100%**

8.2.5 **Table 8.2** sets out a possible mode shift scenario. The table shows that the site could generate 26% of all movements by public transport to and from the site, alongside 26% of active modes of travel including by foot or cycle. Furthermore, the share of private vehicle trips will reduce by up to 23%. Therefore, it can be summarised that the provision of the new sustainable travel corridors will result in the development being located in an extremely sustainable location in accordance with the aspirations of local and national policy.

8.3 Scotland Road Dumbbell Roundabout

8.3.1 As the key junction through which much of the development traffic and traffic associated with the new Park & Ride must travel through, this junction is considered the most crucial to the future development scenario. The existing roundabout also lacks sufficient pedestrian and cycle access, and it is expected that mitigation will be necessary to reduce severance across the A428. At this stage, this junction has therefore been assessed in more detail along with some potential mitigation measures.

Assumptions and Assessment History

8.3.2 Transport assessments for Bourn Airport, Land to the West of Cambourne (LWC) and Northstowe have been examined. Bourn Airport discounted the Scotland Road Dumbbells from assessment on the basis that there is very little existing traffic, and no development traffic was expected to be distributed along that link. The TA therefore concluded that the junction would operate within capacity, again assuming very little existing traffic and minimal use of the link by development traffic. Finally, any assessment of the junction in the context of Northstowe has yet to be identified.

8.3.3 Base flows of existing traffic movements must be taken from the county model and additionally have yet to be identified within any of the existing assessment documents. On that basis, only the development and identified committed development flows have been assessed at this stage, as these will generate the most significant traffic volumes. Further

work on traffic redistribution as a result of other development proposals would be undertaken once any proposals are better established.

Development Traffic Turning Movements

8.3.4 Vehicle turning movements for Scotland Farm have been derived by using the percentage distribution flows set out in **Table 7.5**. These are set out for the AM and PM peaks respectively in **Figure 8.1** and **Figure 8.2**. In order to calculate these flows, the potential modal shift which has been calculated in **Table 8.2** have been applied to the flows in order to demonstrate a robust assessment of the future scenario. Therefore, a mode shift of 46% has been applied to the trip rate for the proposed development.

Figure 8.1 AM Peak Development Flows

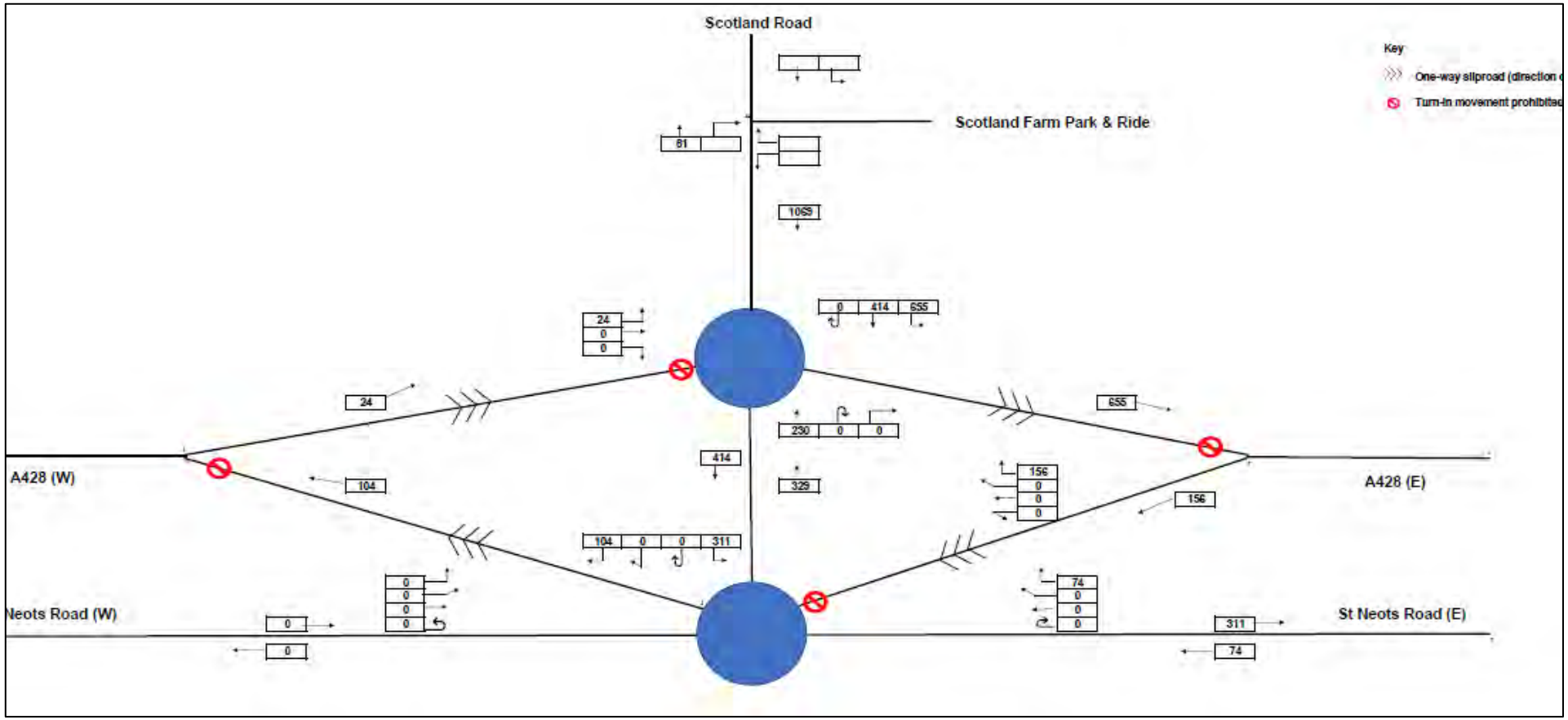
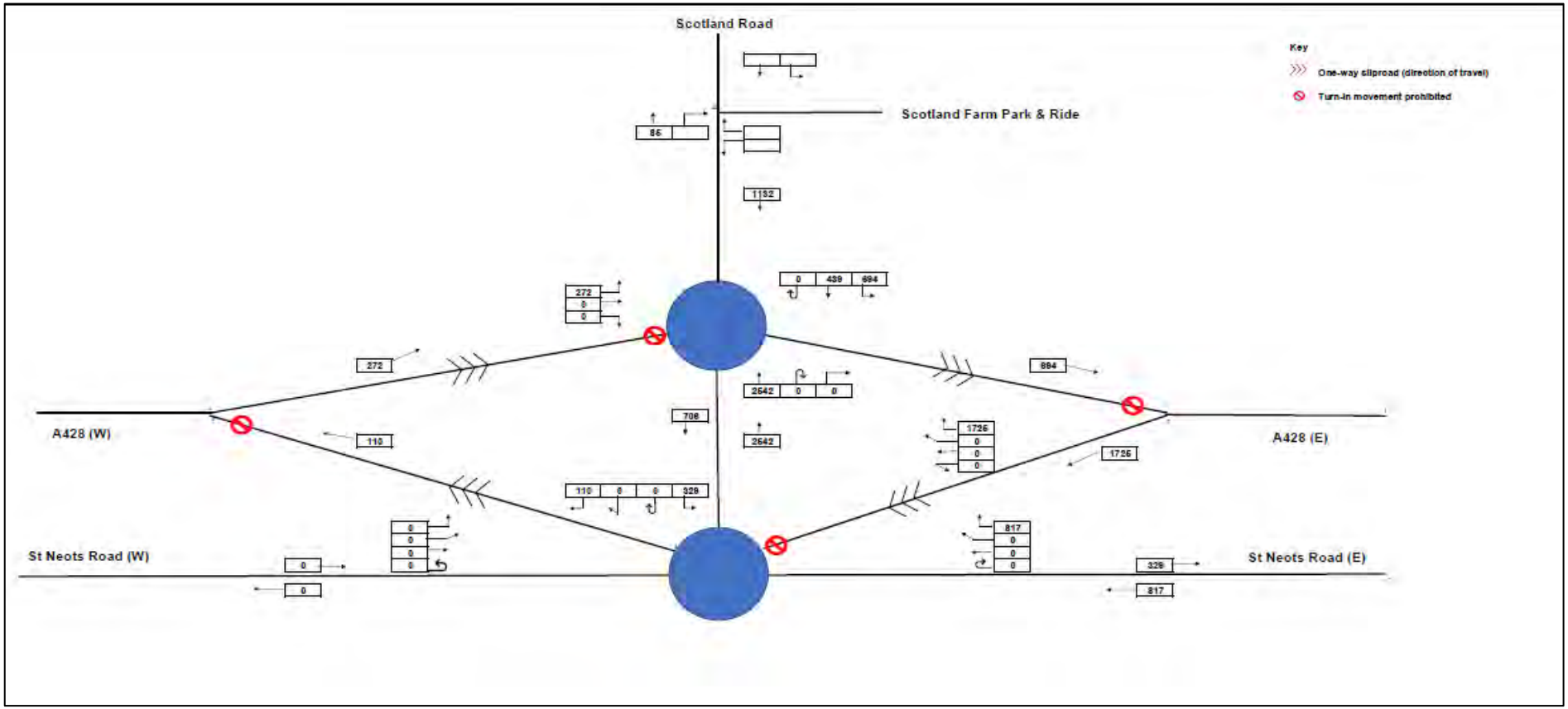


Figure 8.2 PM Peak Development Flows



Committed Development

8.3.5 To assess the movements generated by the new Travel hub, the estimated Park & Ride trip generation has been extracted from Transport Assessment work associated with the new Park & Ride at Trumpington, which provided flows for 3 existing Park & Ride sites around Cambridge. These have been used to derive trip rates and an average, which are summarised in **Table 8.3**.

Table 8.3 Park & Ride Site Trip Rates

Site	Trip Rate AM			Trip Rate PM		
	In	Out	Total	In	Out	Total
Trumpington	0.26	0.00	0.26	0.01	0.29	0.30
Madingley	0.33	0.06	0.39	0.06	0.23	0.29
Babraham	0.20	0.02	0.22	0.02	0.15	0.17
Average	**0.26**	**0.03**	**0.29**	**0.03**	**0.22**	**0.25**

8.3.6 The average trip rate above has been used to calculate the estimated trip generation for the new 2,000 space Park & Ride at Scotland Farm, and trips distributed assuming that 20% of traffic will come from Scotland Farm and the north via Scotland Road, and 80% of traffic will come from the A428 to the west of Cambridge. The results are given in **Table 8.4**.

Table 8.4 Park & Ride Traffic Distributed by Link

Link	%	Trip Rate AM			Trip Rate PM		
		In	Out	Total	In	Out	Total
2000 spaces	100%	527	53	580	60	447	507
Scotland Road	20%	105	11	116	12	89	101
A428 West	80%	421	43	464	48	357	405

8.3.7 The sum of the Scotland Farm development traffic and the new Park & Ride has been calculated and the results are given in **Figure 8.3** and **Figure 8.4** for the AM and PM peaks, respectively.

Figure 8.3 AM Peak Development + P&R

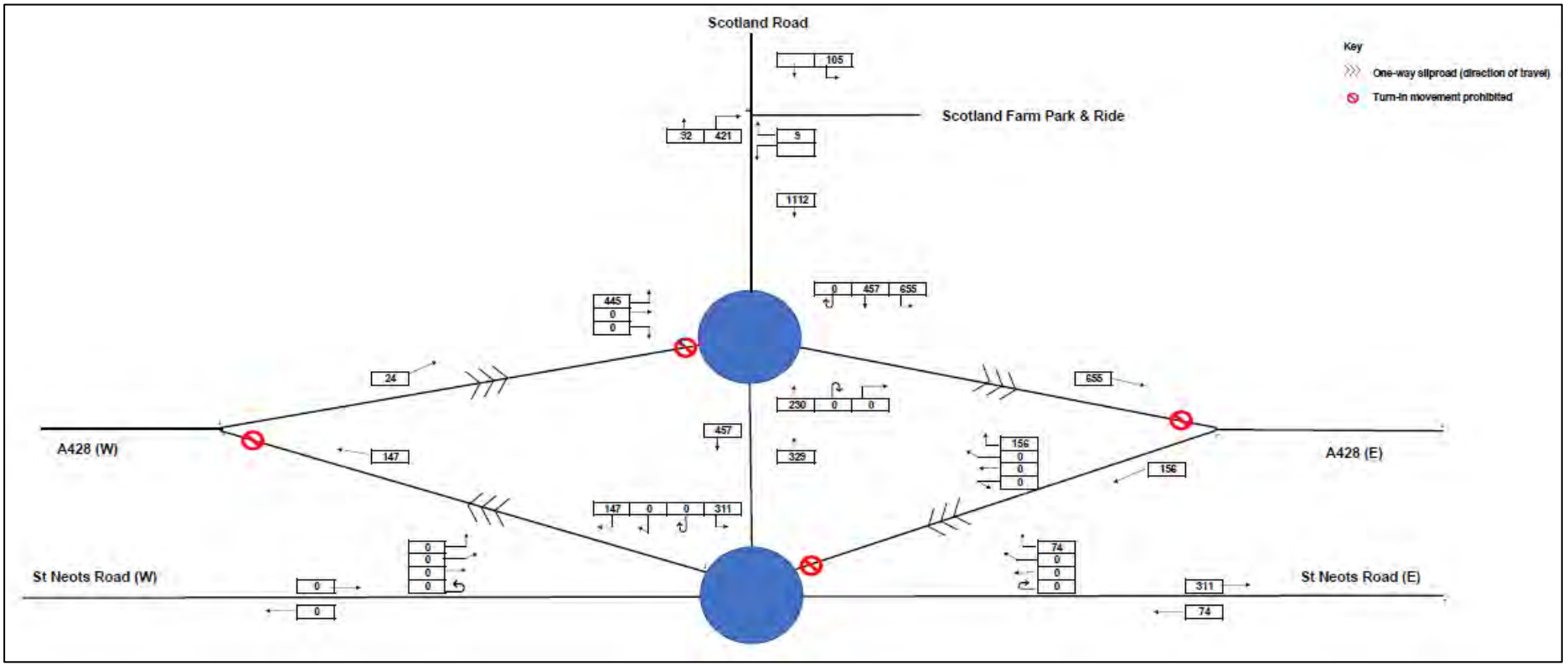
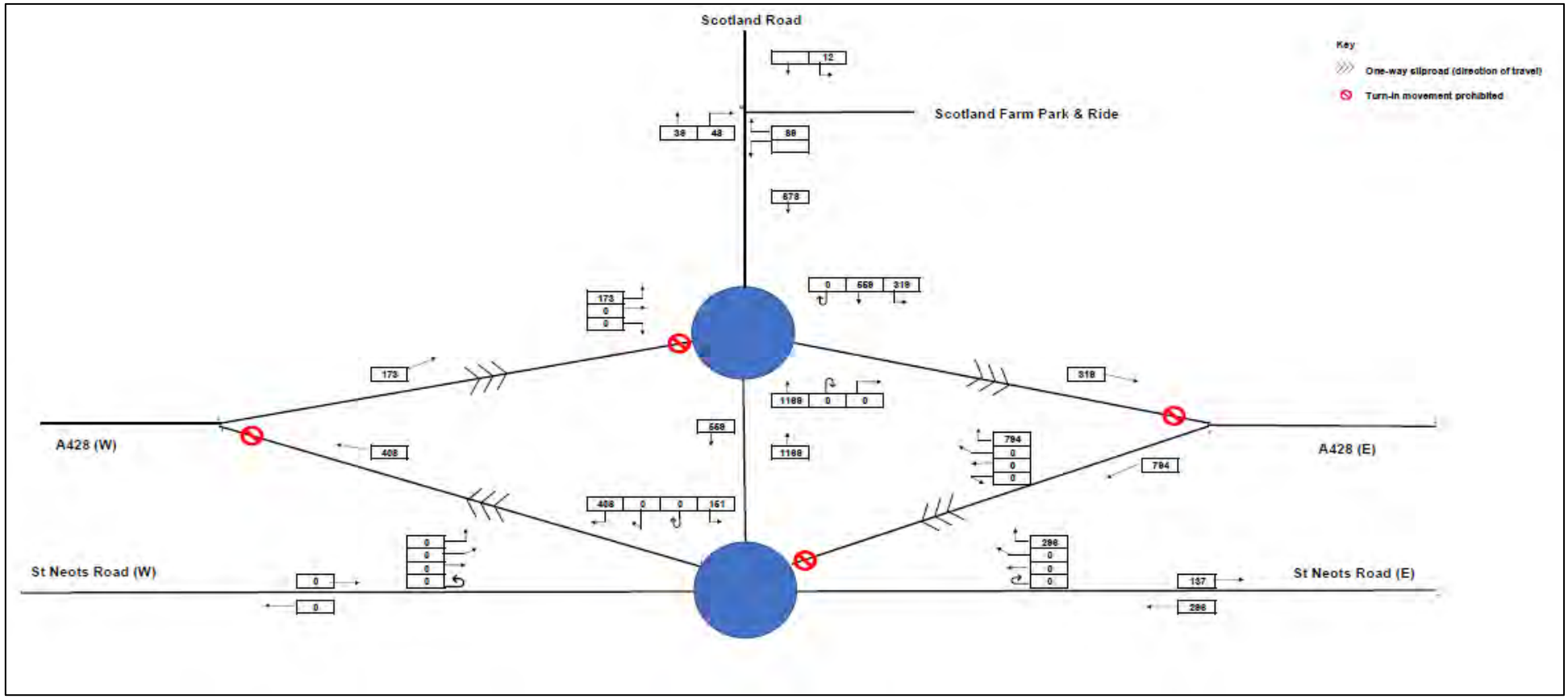


Figure 8.4 PM Peak Development + P&R



Junction Modelling

8.3.1 The proposed junction arrangement has been assessed using ARCADY for the 'development' (Scotland Farm development traffic) and the 'development plus committed' (Scotland Farm, and the Park & Ride) scenarios. The Geometrical inputs have been measured from Ordnance Survey (OS) mapping and have been input into the ARCADY models. The junction has been assessed with the proposed mitigation measures in place, as described in Section 5.3.

8.3.2 The results of the junction capacity modelling have been summarised in **Table 8.5** and **Table 8.6** below and the full outputs are included as **Appendix C**.

Table 8.5 Scotland Farm Northern Dumbbells Roundabout

Development Scenario				
North Dumbbell Roundabout	**AM Peak**		**PM Peak**	
	RFC	**Queue**	**RFC**	**Queue**
Scotland Farm	0.48	0.9	0.24	0.3
Bridge	0.15	0.2	0.76	3.1
A428W	0.01	0.0	0.12	0.1
Private Access	0.00	0.0	0.00	0.0
Development + P&R				
North Dumbbell Roundabout	**AM Peak**		**PM Peak**	
	RFC	**Queue**	**RFC**	**Queue**
Scotland Farm	0.51	1.1	0.48	0.9
Bridge	0.15	0.2	0.76	3.1
A428W	0.27	0.4	0.17	0.2
Private Access	0.00	0.0	0.00	0.0

Table 8.6 Scotland Road Dumbbells Southern Roundabout

Development Scenario				
South Dumbbell Roundabout	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Bridge	0.24	0.3	0.12	0.1
A428E Slip	0.12	0.1	0.58	1.3
St Neots Road East	0.05	0.1	0.27	0.4
St Neots Road West	0.00	0.0	0.00	0.0
Development + P&R				
South Dumbbell Roundabout	AM Peak		PM Peak	
	RFC	Queue	RFC	Queue
Bridge	0.26	0.4	0.32	0.5
A428E Slip	0.13	0.1	0.68	2.1
St Neots Road East	0.05	0.1	0.34	0.5
St Neots Road West	0.00	0.0	0.00	0.0

8.3.3 It is evident from this initial appraisal, that with the assumed mitigation in place, the junction has the potential to accommodate the traffic generated by the proposed development and the Travel Hub.

8.4 Summary

8.4.1 It is evident that the site is excellently located to support new development. Its proximity to a number of new public transport networks has the potential to significantly offset the impact of vehicle trips that would otherwise arise from a development of this nature. The proposed development is also of a scale sufficient to ensure that a number of trips are internalized and would therefore not impact on the wider road network as would the case if future residents were required to access leisure, retail, and educational facilities elsewhere.

9. Summary and Conclusions

9.1 Summary

9.1.1 Markides Associates (MA) have been instructed by Dry Drayton Estate Ltd and Hallam Land Management to assess the suitability of land at Scotland Farm Estate as a prospective allocation for a new settlement having regard to paragraph 108 of the National planning Policy Framework.

9.1.2 This report sets out the overarching transport strategy to provide a vibrant and sustainable development that will fully integrate with the significant transport enhancements proposed of the local area.

9.1.3 It is evident that the sustainable transport links being developed will be important in and ensuring that sufficient highway capacity can be provided on the A428 and A14, in particular, the location of the new travel hub within the site boundary will provide and important connection to Cambridge and will be delivered within the context of the wider masterplan ensuring it is easily accessible by existing and future residents on cycle and by foot. The site offers the potential to directly integrate with the C2C initiatives as well as operate as a standalone high-frequency bus service which will follow the same route as the C2C. As has been demonstrated, the north – south alignment of the site has the potential for new, outer transport corridors to be provided in the future, linking to other proposed development sites. The new transport corridors include the provision of a new bridge to the west of the site over the A248 and improvements to existing PROW from Bar Hill towards the northern parcel of the site. This will offer significant benefit to these areas that are currently not well integrated by public transport including Bourn Airport and Cambourne.

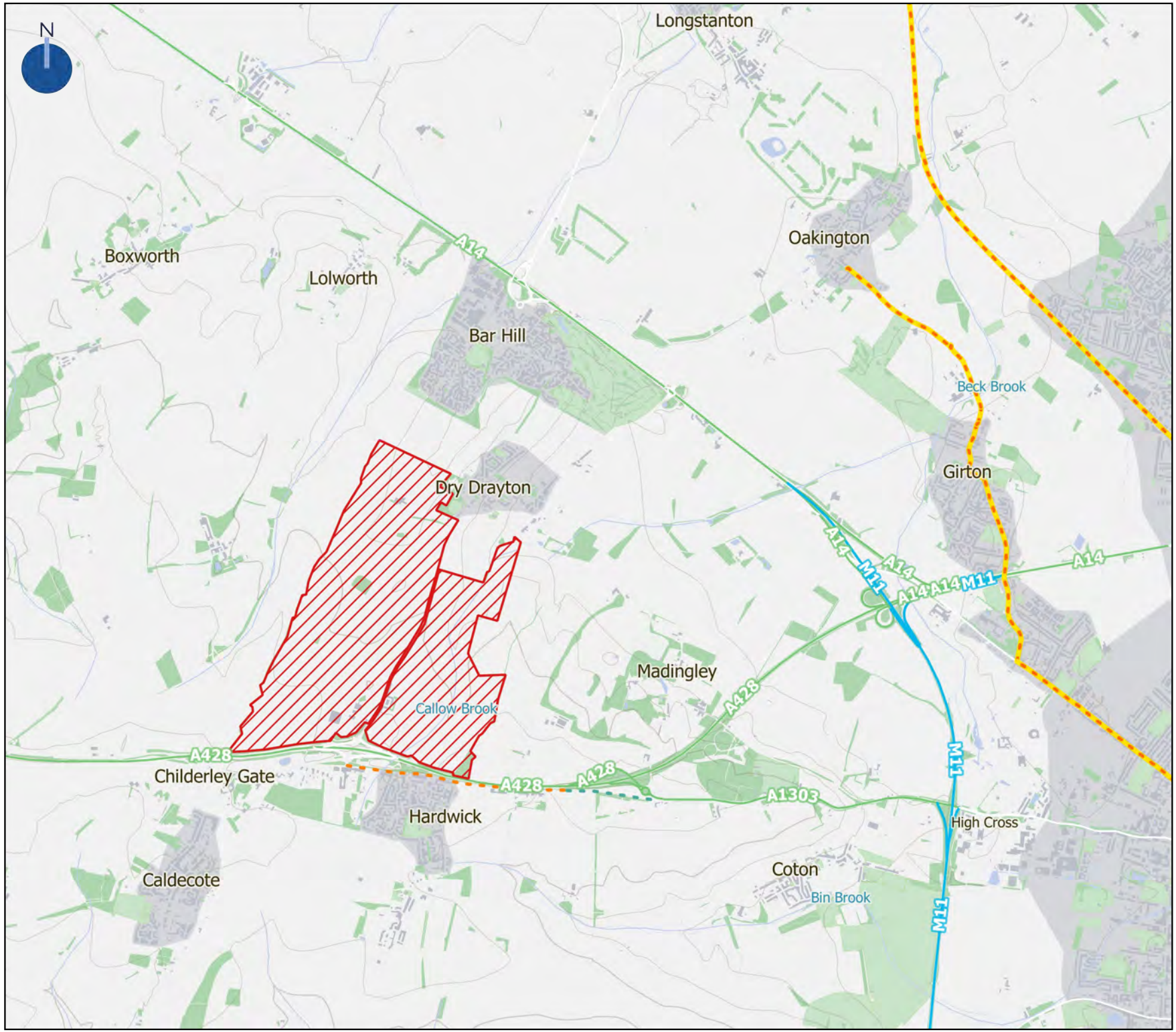
9.1.4 All primary vehicular access points to the development are to be taken from Scotland Road; this will ensure that the proposals are well connected into the surrounding highway network and can cater for direct bus linkages between the site and the wider area. The initial assessment work undertaken demonstrates how sufficient mitigation could be provided Scotland Road to provide sufficient vehicular access to the development and the new P&R facility.

9.1.5 In conclusion, it is considered that, subject to more detailed modelling and delivery of the sustainable transport measures, the development could be supported and will facilitate a wider modal shift across the local area.

9.1.6 Should it be considered appropriate that the proposals at Scotland Farm progress, further discussions would be undertaken with GCP in respect of the C2C proposals to ensure that the masterplan can maximise the connectivity and attractiveness of these proposals and provide links between the facility, the site, and other key destinations.

9.1.7 In due course, it would also be proposed that strategic modelling work is undertaken to assess the impact of the site in the context of any other proposals so that appropriate highway mitigation can be developed alongside a strategy for its delivery.

FIGURES



MARKIDES ASSOCIATES

Cycle Infrastructure Plan

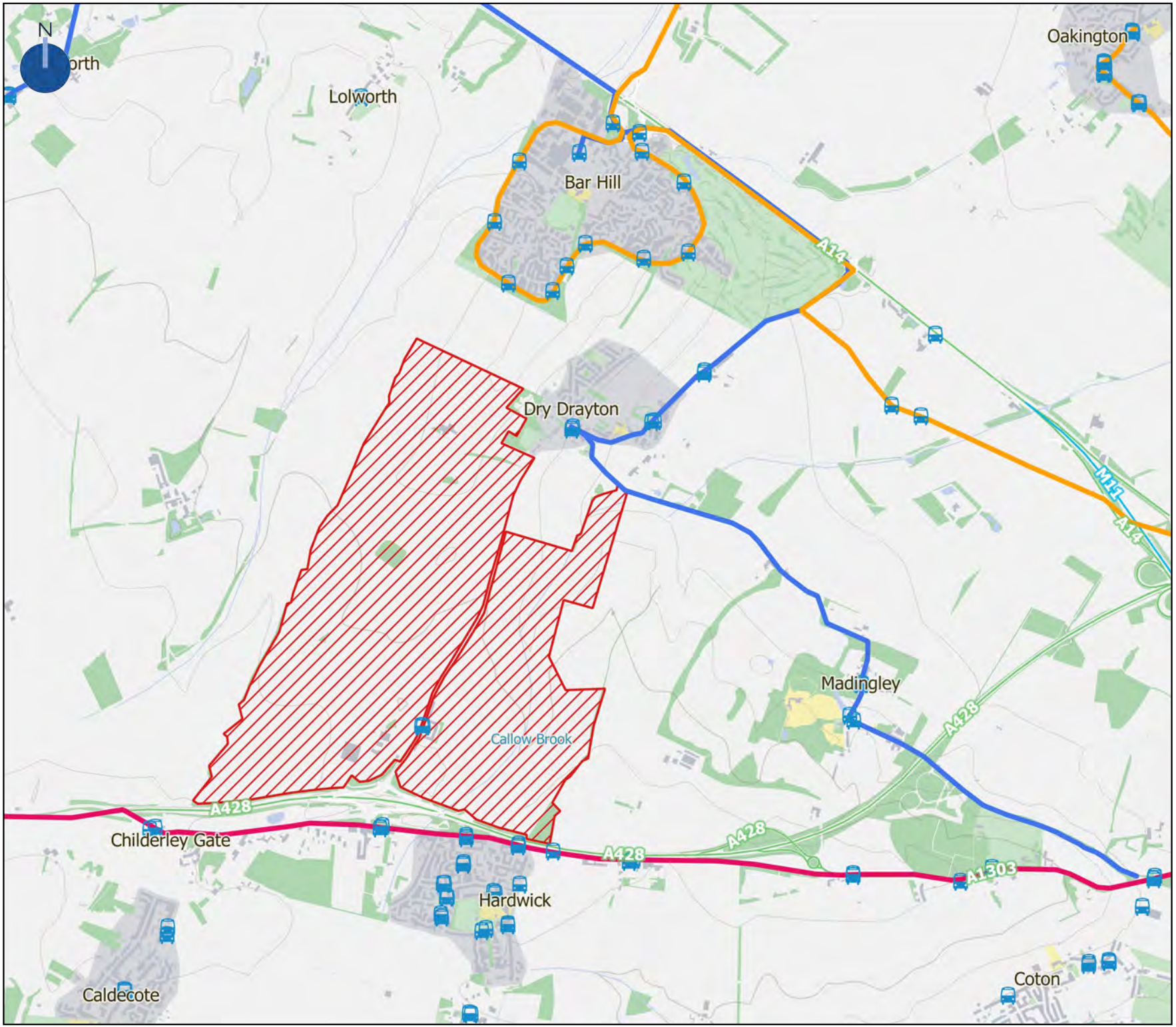
Land at Scotland Farm Estate

Key

- Land at Scotland Farm Estate
- National Cycle Network

On-Street Cycle Track

- On-road Cycle Track
- Shared Foot-Cycle Way



MARKIDES ASSOCIATES

Existing Bus Networki=k

Land at Scotland Farm Estate

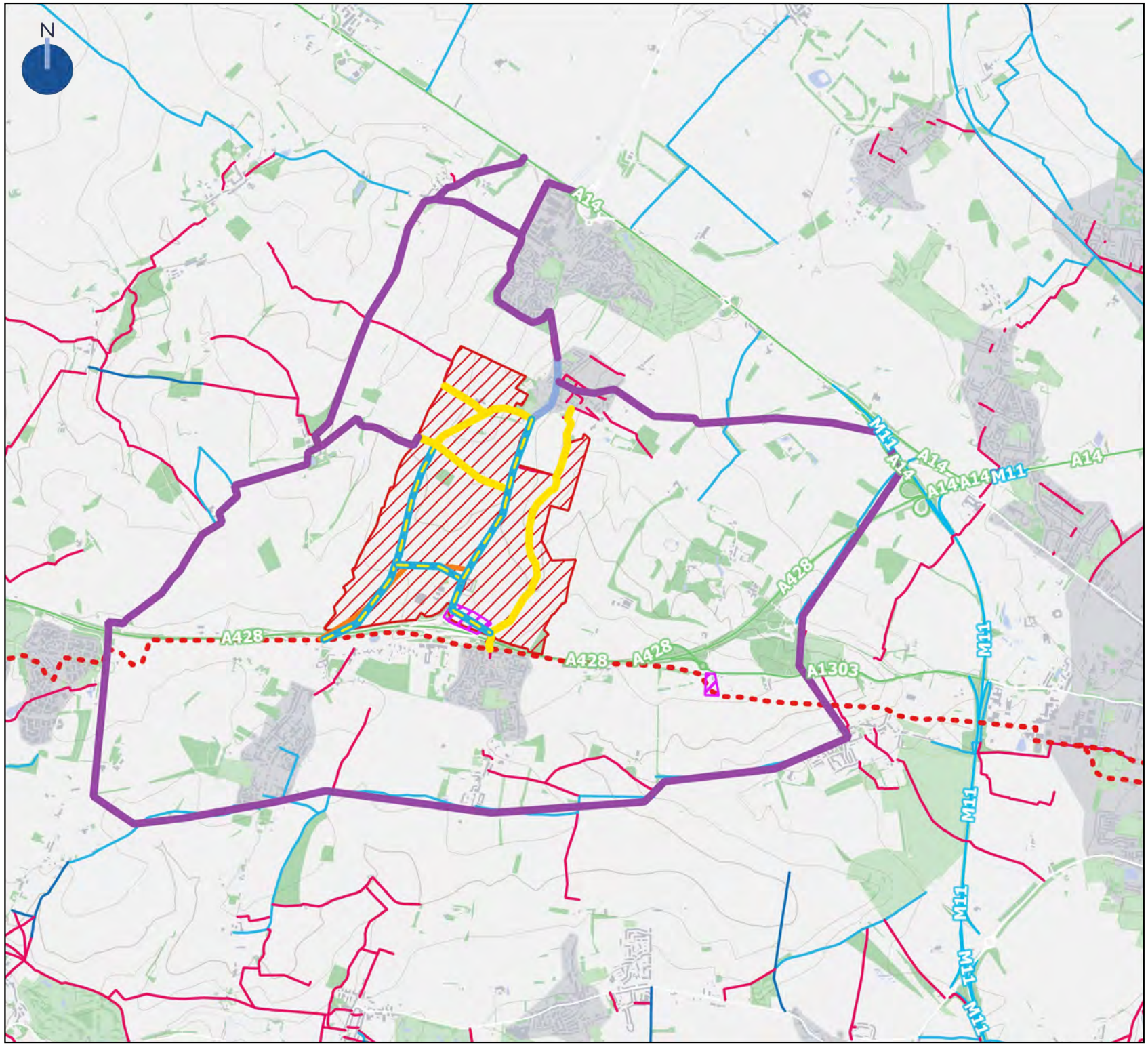
Key

- Land at Scotland Farm Estate
- Bus Stops

Bus Routes

- 4 CRI
- 5 CRI
- 8

0 0.5 1 km



MARKIDES ASSOCIATES

Future Potential Active Network

Land at Scotland Farm Estate

Key

Land at Scotland Farm Estate

New Park & Ride Site

Proposed

C2C Routeing

C2C (Committed) & Future CAM

Public Rights of Way

Bridleway

Byway

Footpath

Restricted Byway

Potential Active Network

On-Road Improvements

Upgrade or Improvement

Wider Connections

Potential New Key Links

0 1 2 km

MARKIDES ASSOCIATES
Transport and Infrastructure Planning

Future Network

Scotland Farm, Cambridge

East-West Rail

C2C

C2C

East-West Rail

P&R

P&R

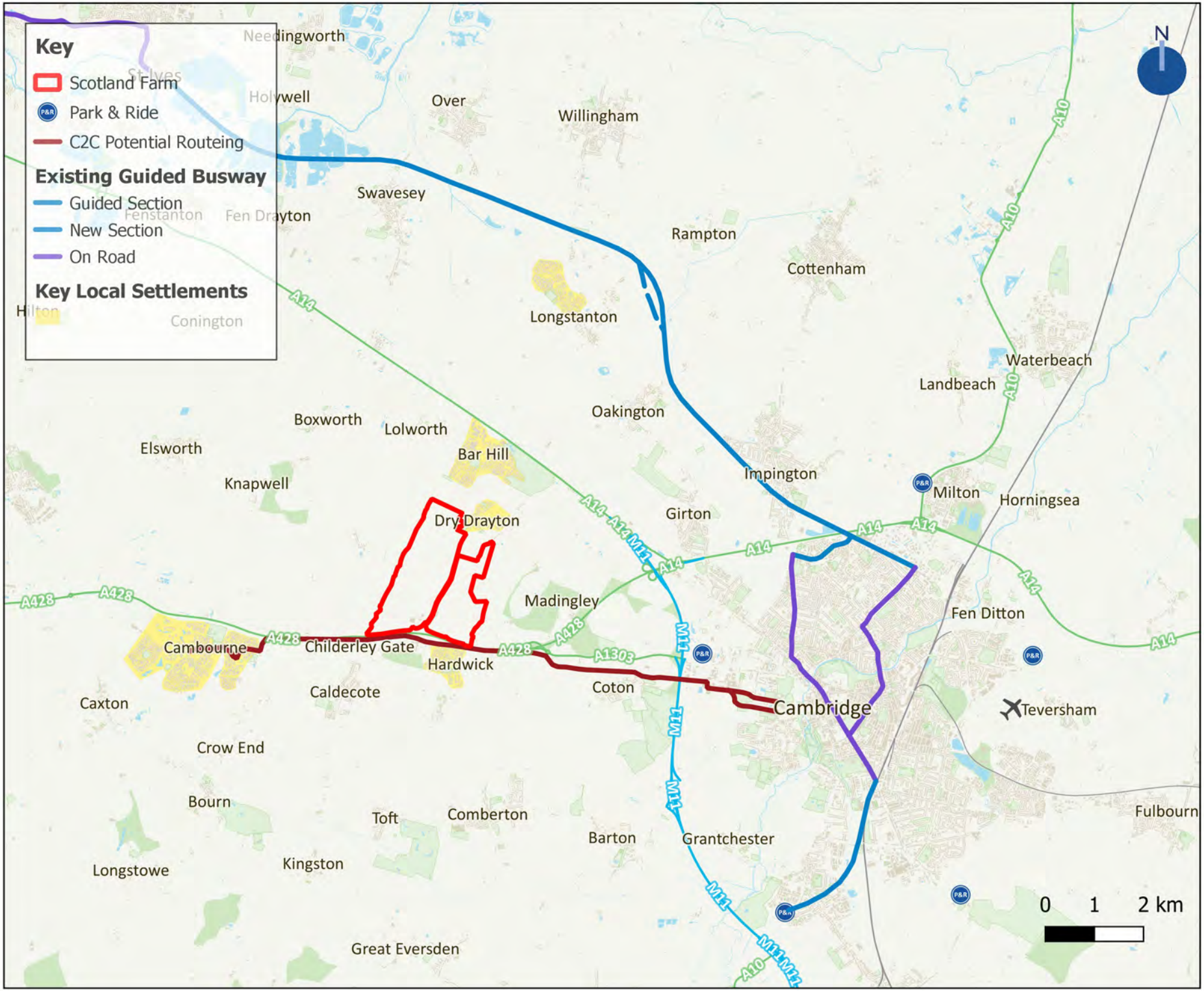
P&R

P&R

P&R

Key:

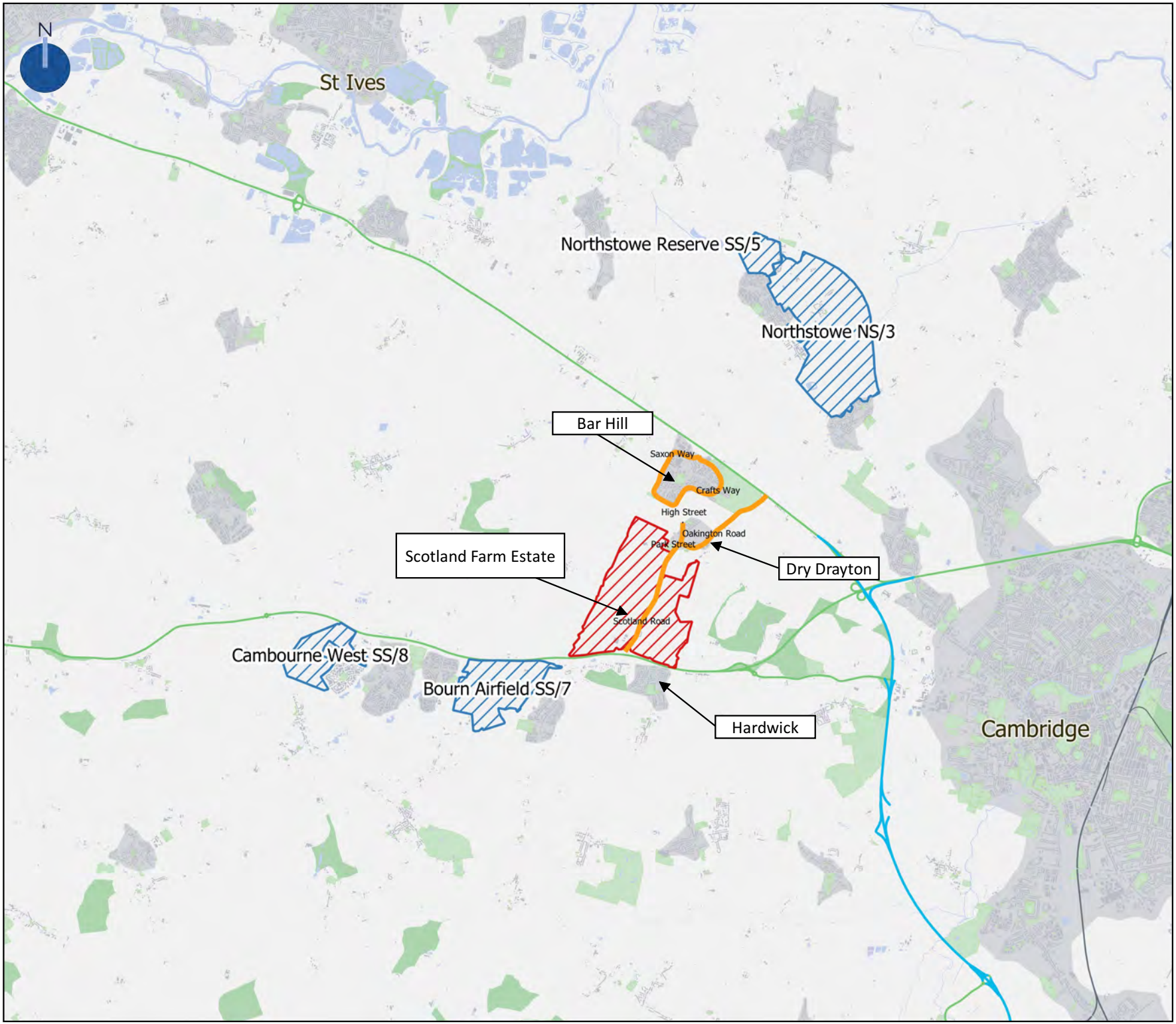
- Scotland Farm
- Existing Settlement
- Railway Station
- Park & Ride
- New Park & Ride
- Potential new rail station
- Stategic Road
- Motorway
- Guided Busway
- Potential Extension to Guided Busway
- C2C
- Railway Line



MARKIDES ASSOCIATES

Area Base Plan

Scotland Farm, Cambridge



MARKIDES ASSOCIATES

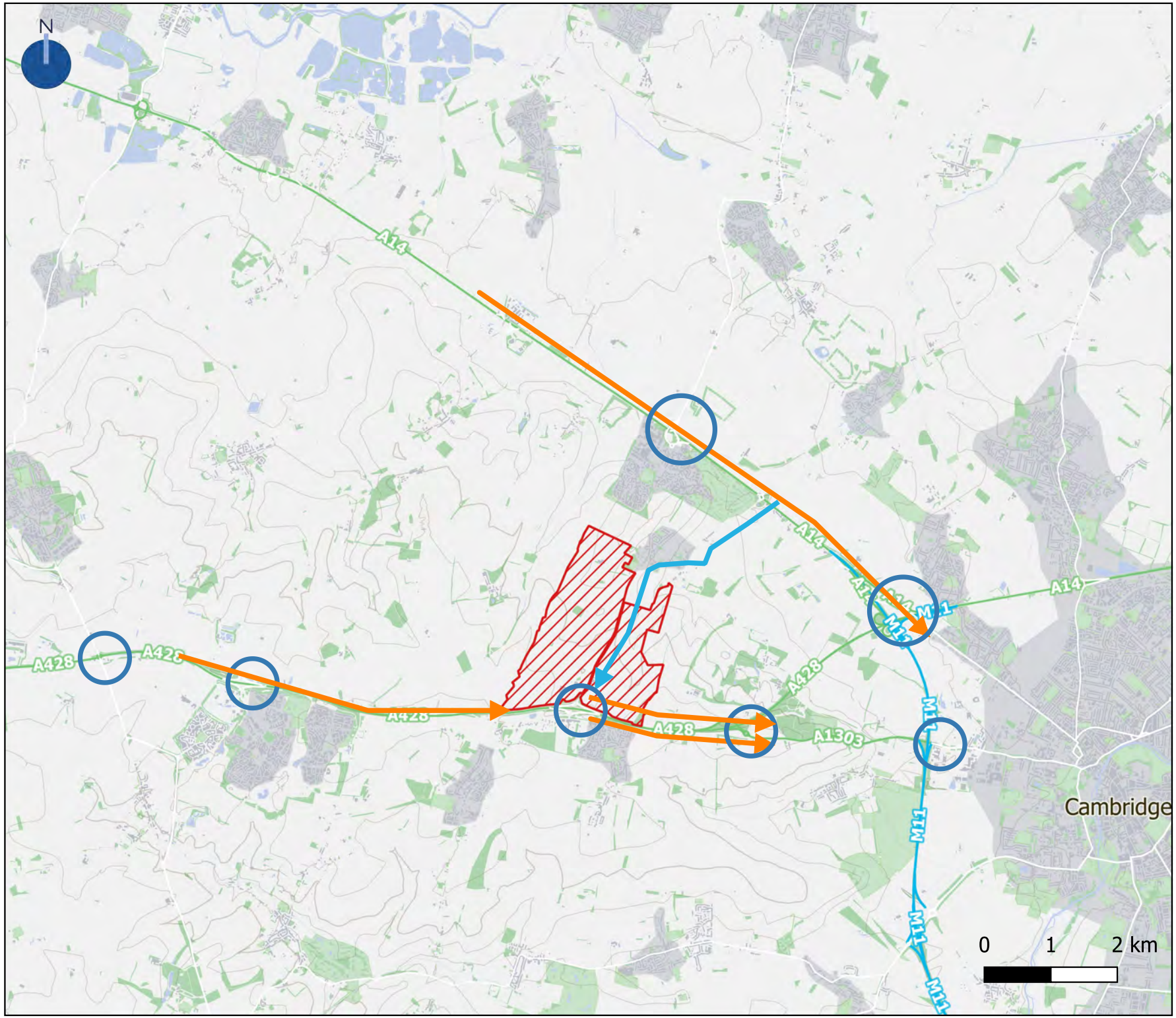
Key Developments Plan

Land at Scotland Farm Estate

Key

- Land at Scotland Farm Estate
- Committed Development
- Local Roads

0 1 2 km



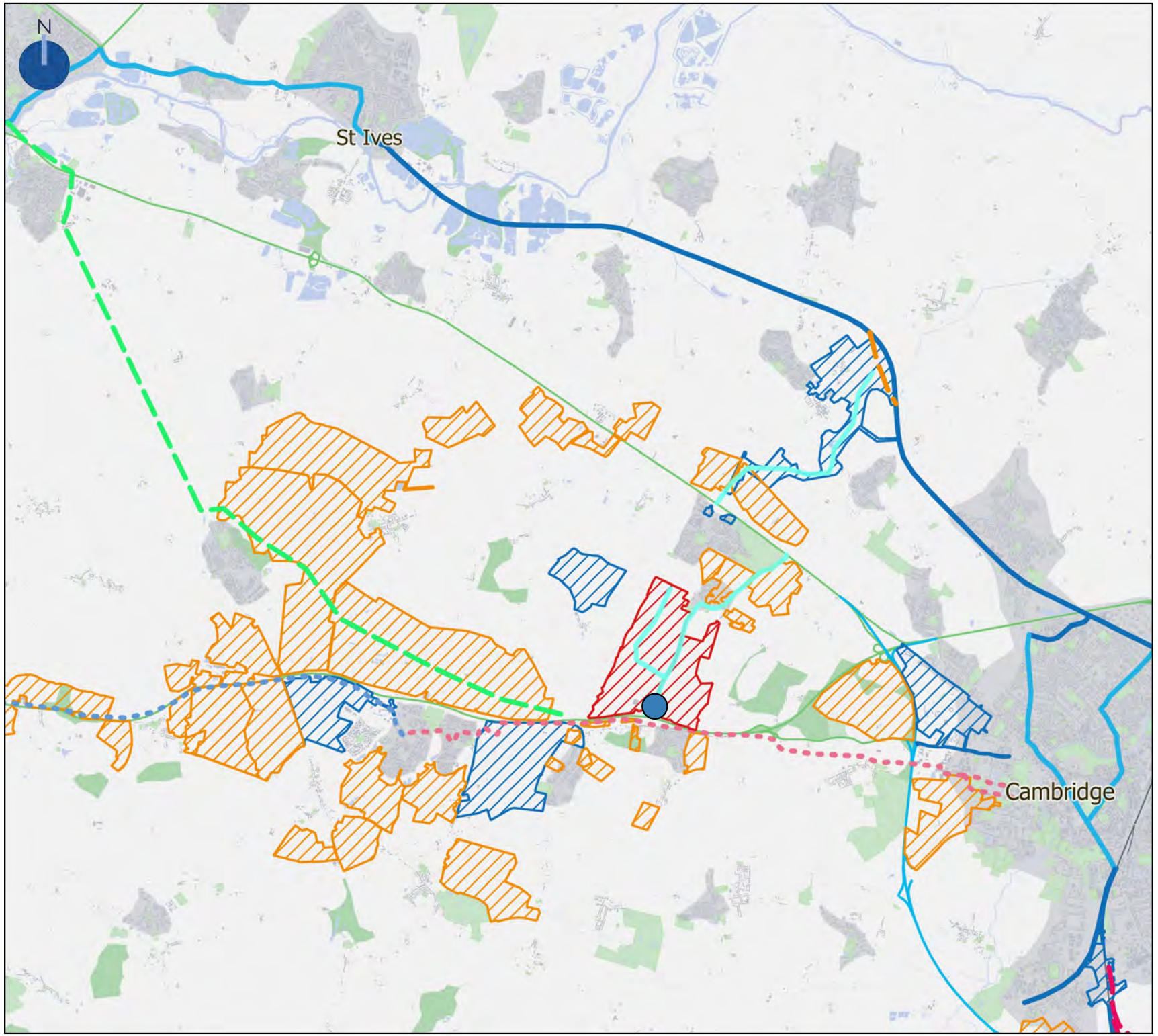
MARKIDES ASSOCIATES

Key Junctions

Land at Scotland Farm Estate

Key

- Land at Scotland Farm Estate
- Key Junction
- Principal flow of traffic
- Secondary Flow of traffic



MARKIDES ASSOCIATES

Potential Transport Network Plan

Scotland Farm

Key

- Land at Scotland Farm Estate
- Committed Development
- Local Plan Site Submissions

C2C Routeing

- C2C (Committed) & Future CAM
- Future St Neots Extension

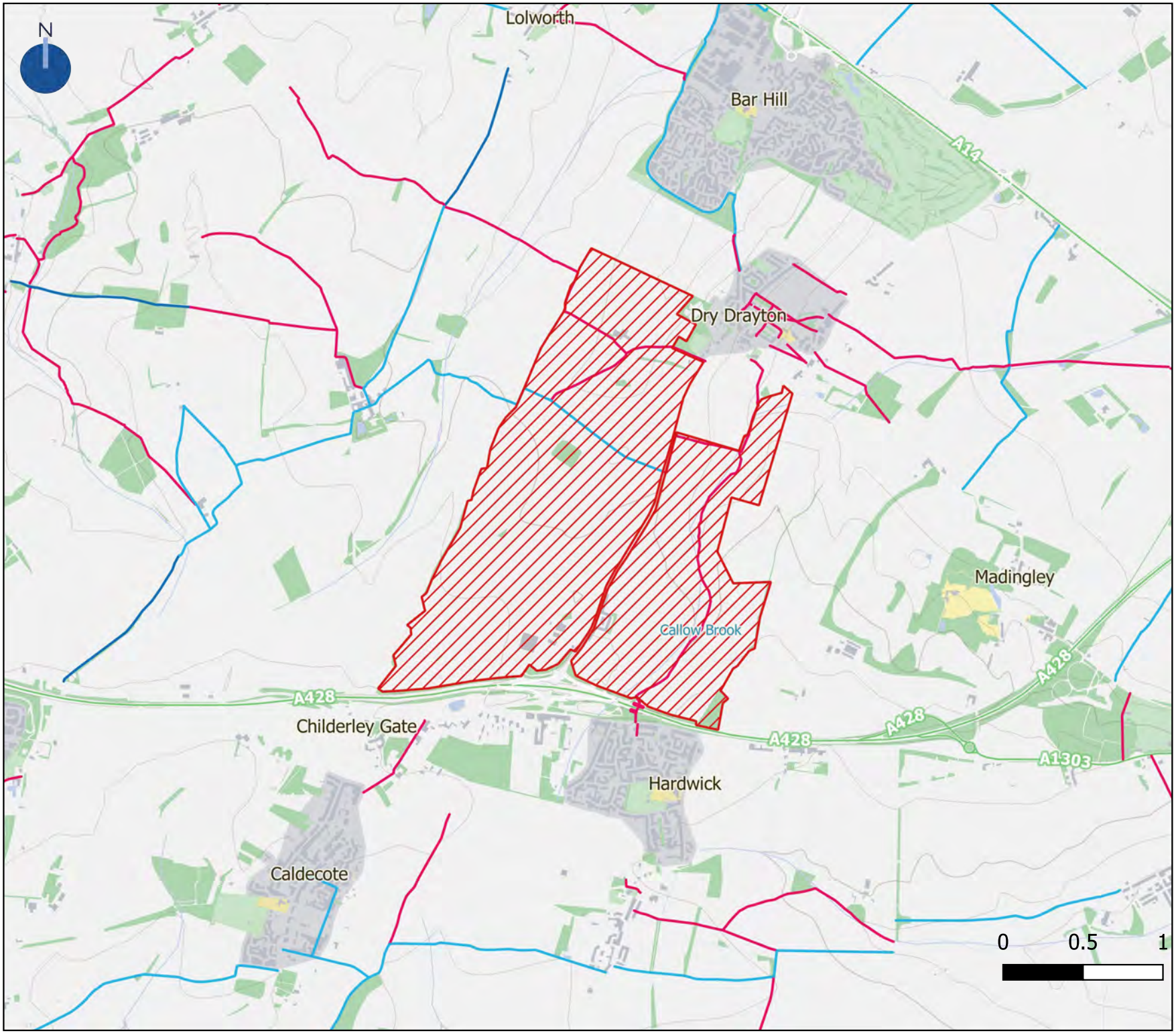
Existing Guided Busway & Future CAM

- Guided Section
- New Section
- On Road
- Potential Southern Extension

Potential Future Network

- Potential Short-Term Strategy
- Potential Mid-term Strategy
- Future Park & Ride

0 2.5 5 km



MARKIDES ASSOCIATES

Public Right of Way Network

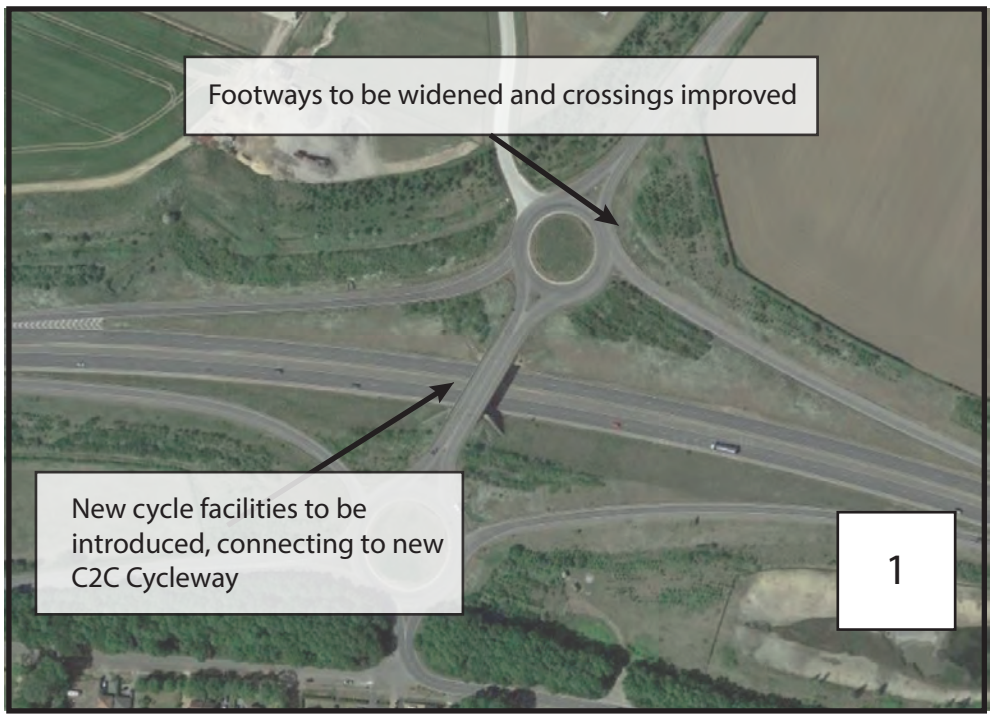
Land at Scotland Farm Estate

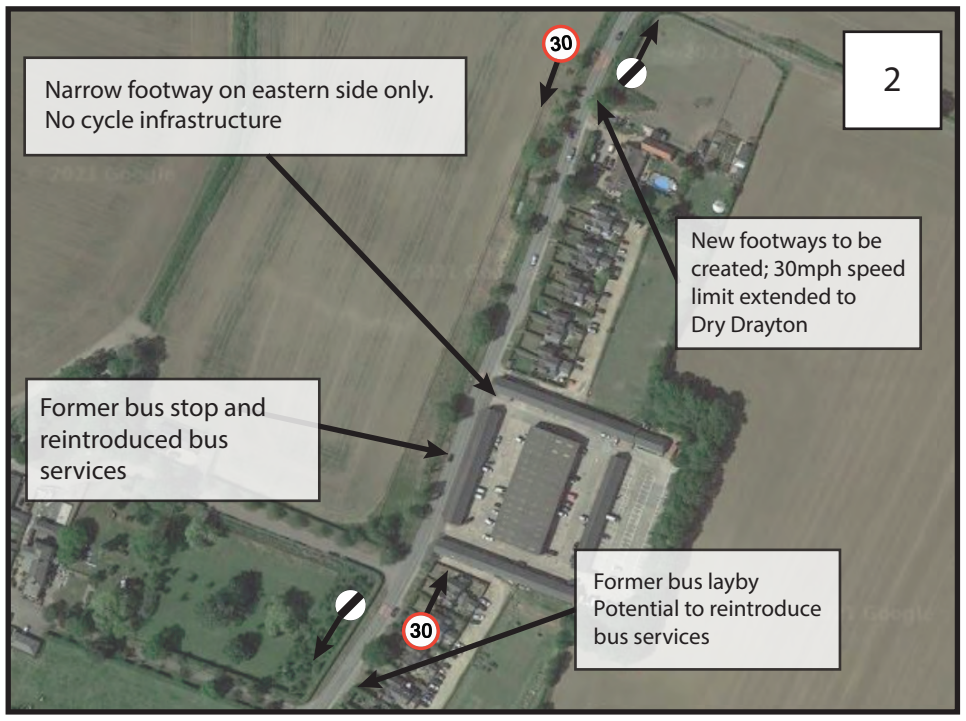
Key

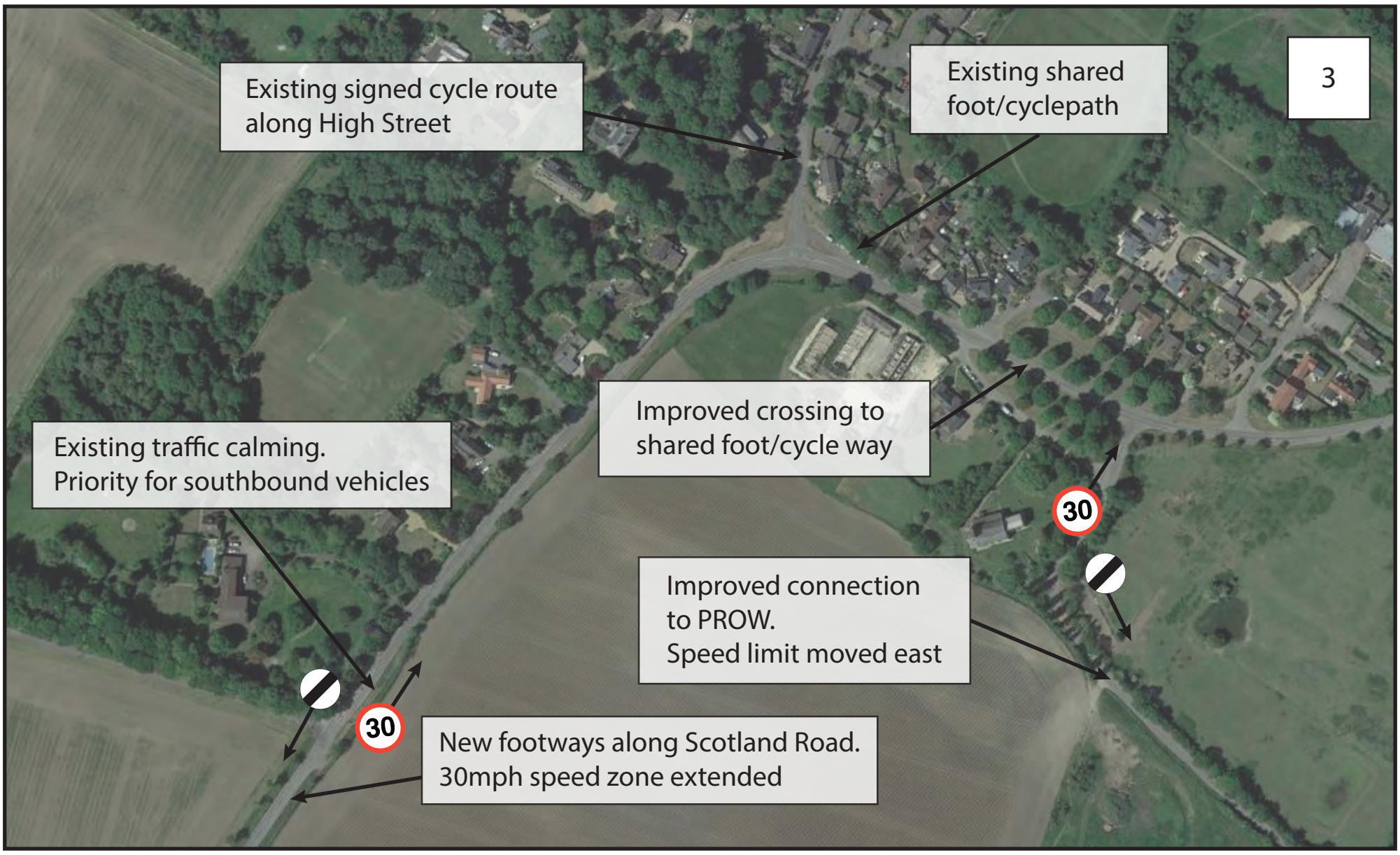
Land at Scotland Farm Estate

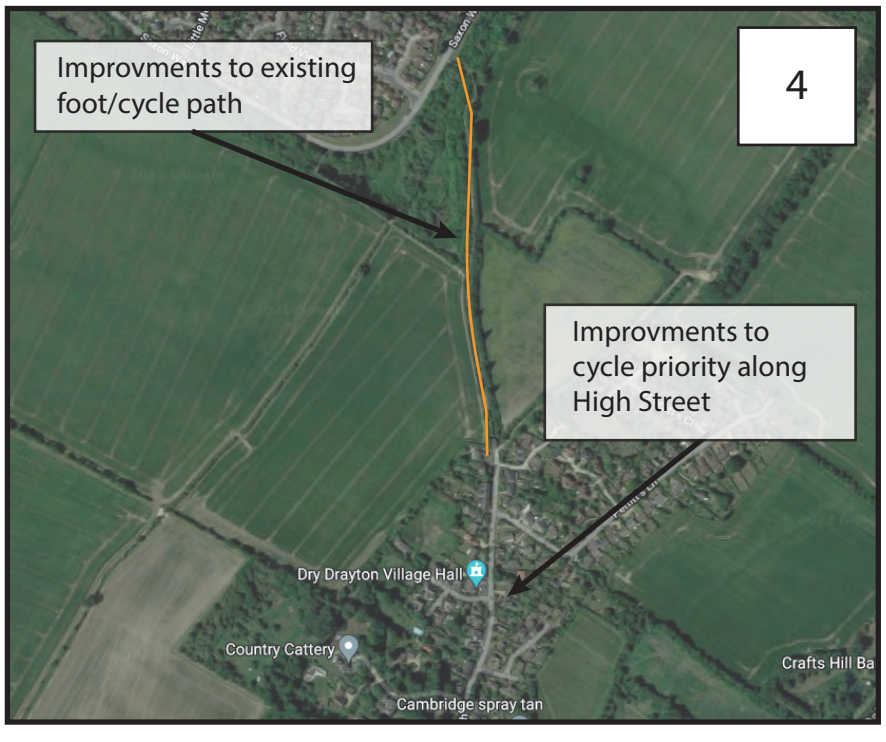
Public Rights of Way

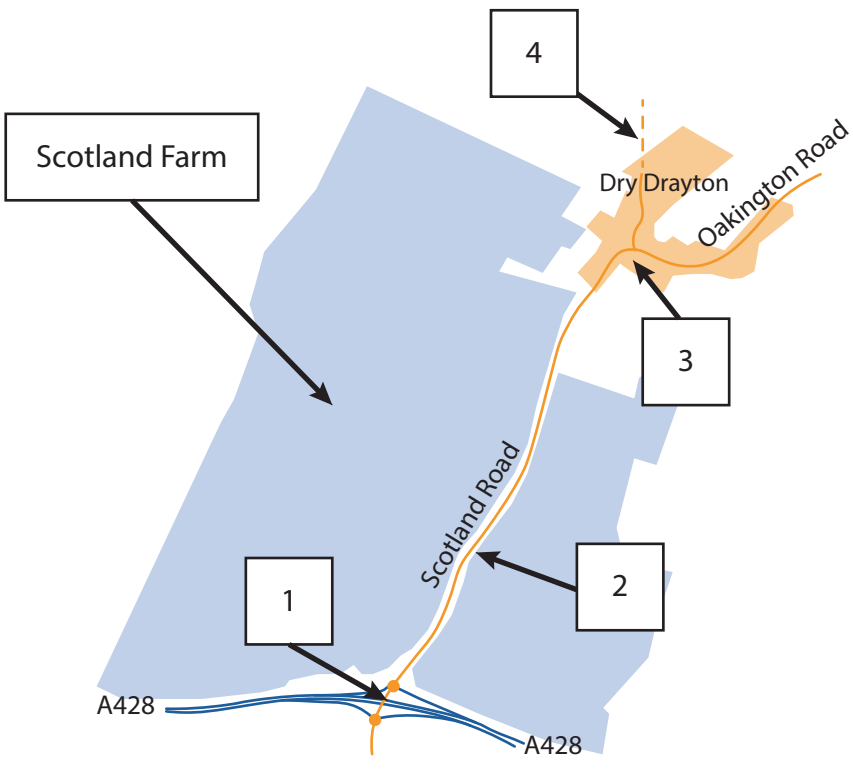
- Bridleway
- Byway
- Footpath
- Restricted Byway











MARKIDES ASSOCIATES
Transport and Infrastructure Planning

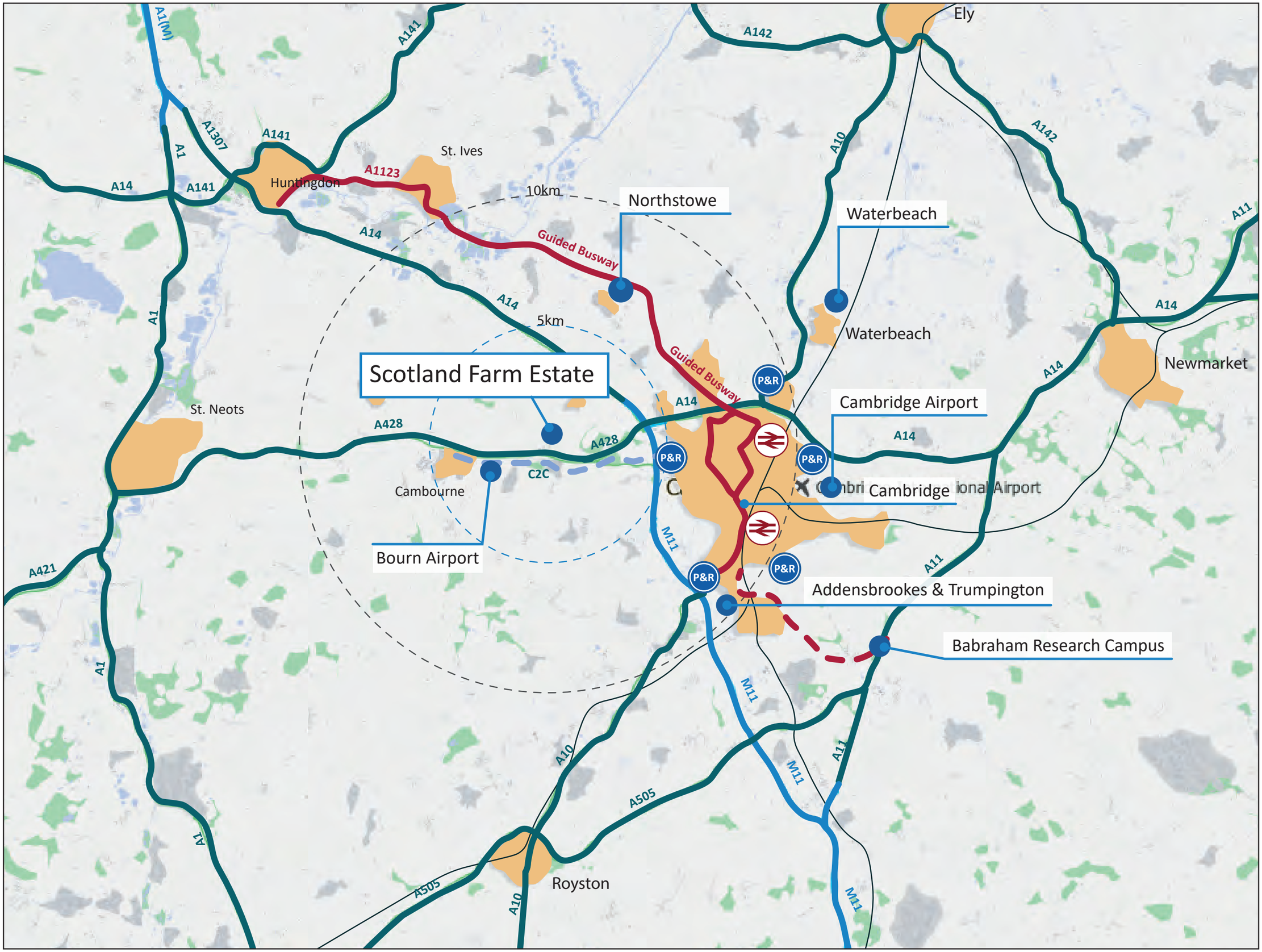
Scotland Farm - Existing

Land at Scotland Farm Estate

MARKIDES ASSOCIATES
Transport and Infrastructure Planning

Development Context Plan

Land at Scotland Farm Estate



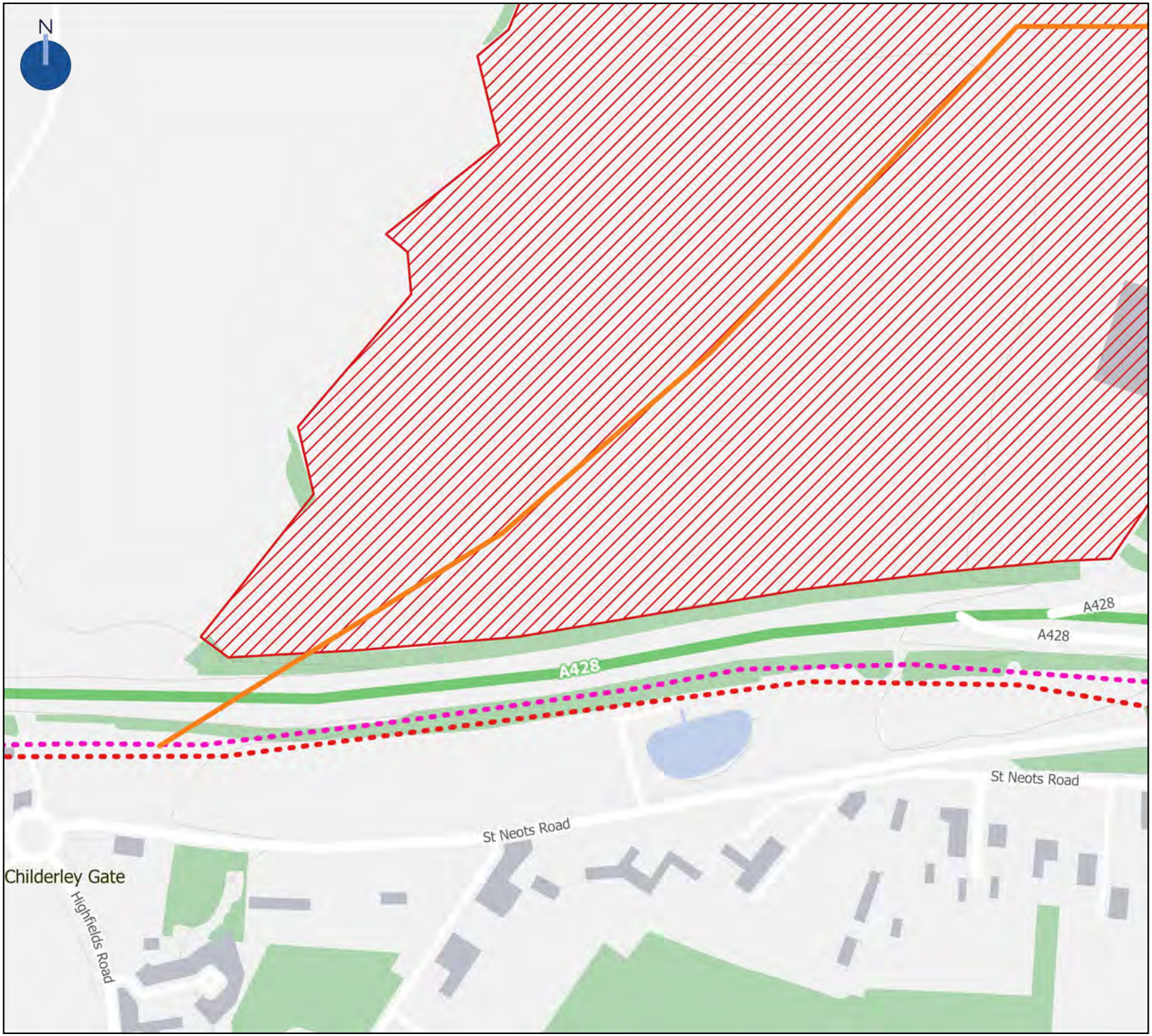
Key:

- Railway Station
- Park & Ride
- Key Site
- Existing Settlement
- Stategic Road
- Motorway
- Guided Busway
- Potential Extension to Guided Busway
- C2C
- Railway Line

Key

- Land at Scotland Farm Estate
- SAWR (Existing)
- SAWE (Potential)
- Guided Busway (Existing)
- Guided Busway (Potential Loop)

Swavesey
Station Rd
Rampton
Rampton Rd
High St
B1050
Horne Farm Rd
Longstanton
Oakington Rd
A14
Cambridge Services
- Extra A14/M11
Huntingdon Rd
B1050
Water Ln
Oakington
Cottenham Rd
Boxworth
Lolworth
A14
Bar Hill
Huntingdon Rd
Dry Drayton Rd
Cambridge Rd
New Rd
Oakington Rd
Histon
Park Ln
Impington Ln
Girton Golf Club
Girton
Bridge Rd
Oakington Rd
Dry Drayton
A1307
Madingley Rd
Scotland Rd
Dry Drayton Rd
Bulls Close
A14
A428
Huntingdon Rd
Huntingdon Rd
Madingley
A428
St Neots Rd
A428
A428
M11
Sainsbury's
CASTLE
A1303
A1303
A1303
A1134
Cambridge Rd
Highfields
Caldecote
Hardwick
Google



MARKIDES ASSOCIATES

Indicative Western Bridge

Land at Scotland Farm Estate

Key

Land at Scotland Farm Estate

Western Bridge

C2C Routeing

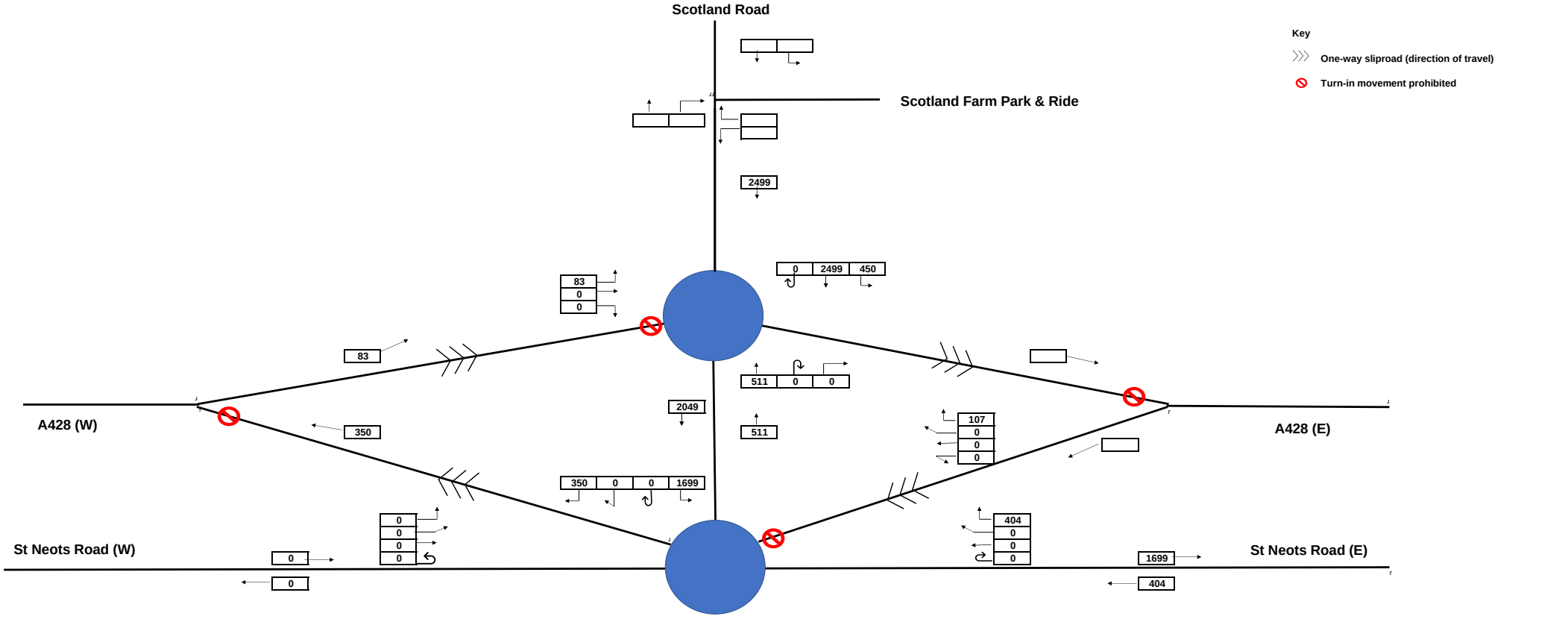
C2C (Committed) & Future CAM

Future St Neots Extension

Other Cycle Links

C2C Cycle Route

0 100 200 m



MARKIDES ASSOCIATES
81 Southwark Bridge Road
London, SE1 0NQ
T:020 7442 2225
W: www.markidesassociates.co.uk

Notes:

Job Title: Scotland Farm	Scale: NTS
Drawing Title: Base Flows AM Peak	Job No: 21042
Figure No:	Date: 22/04/2021

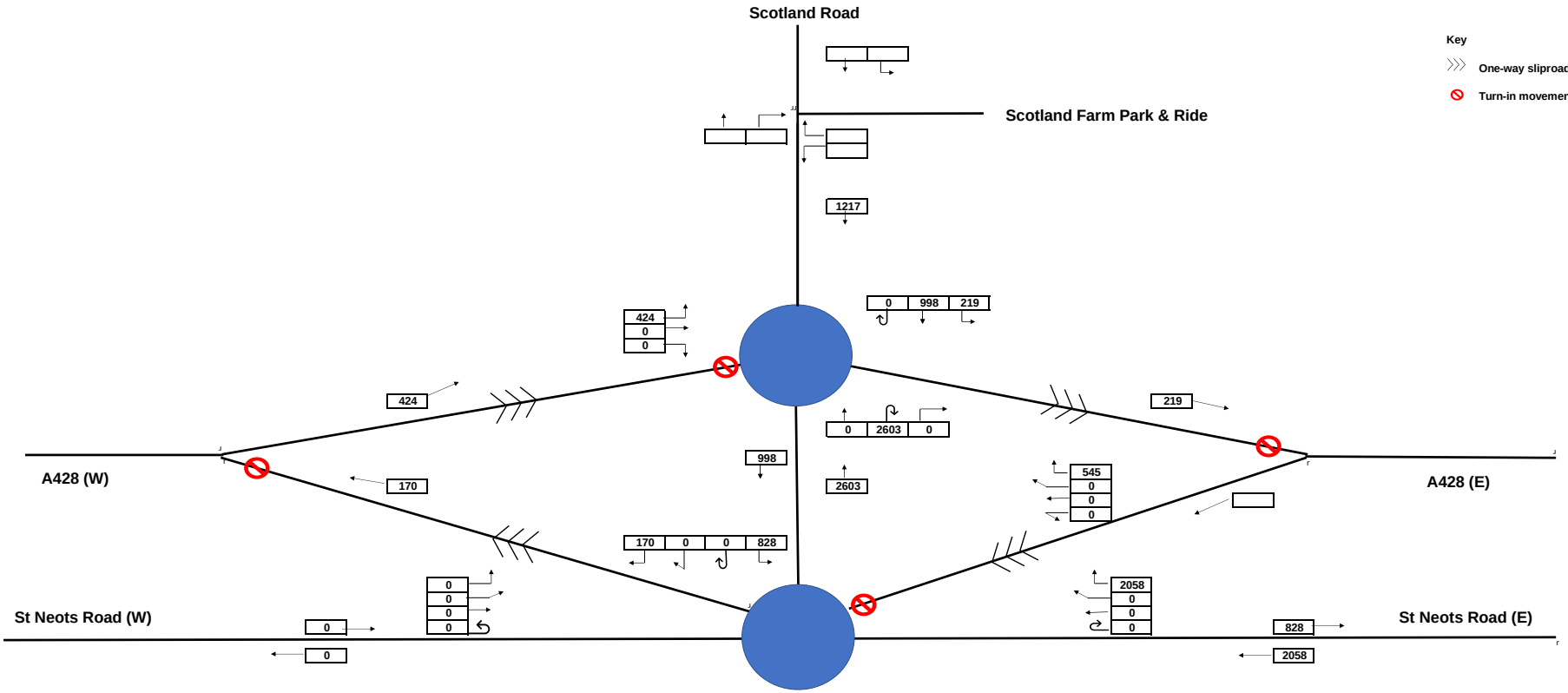


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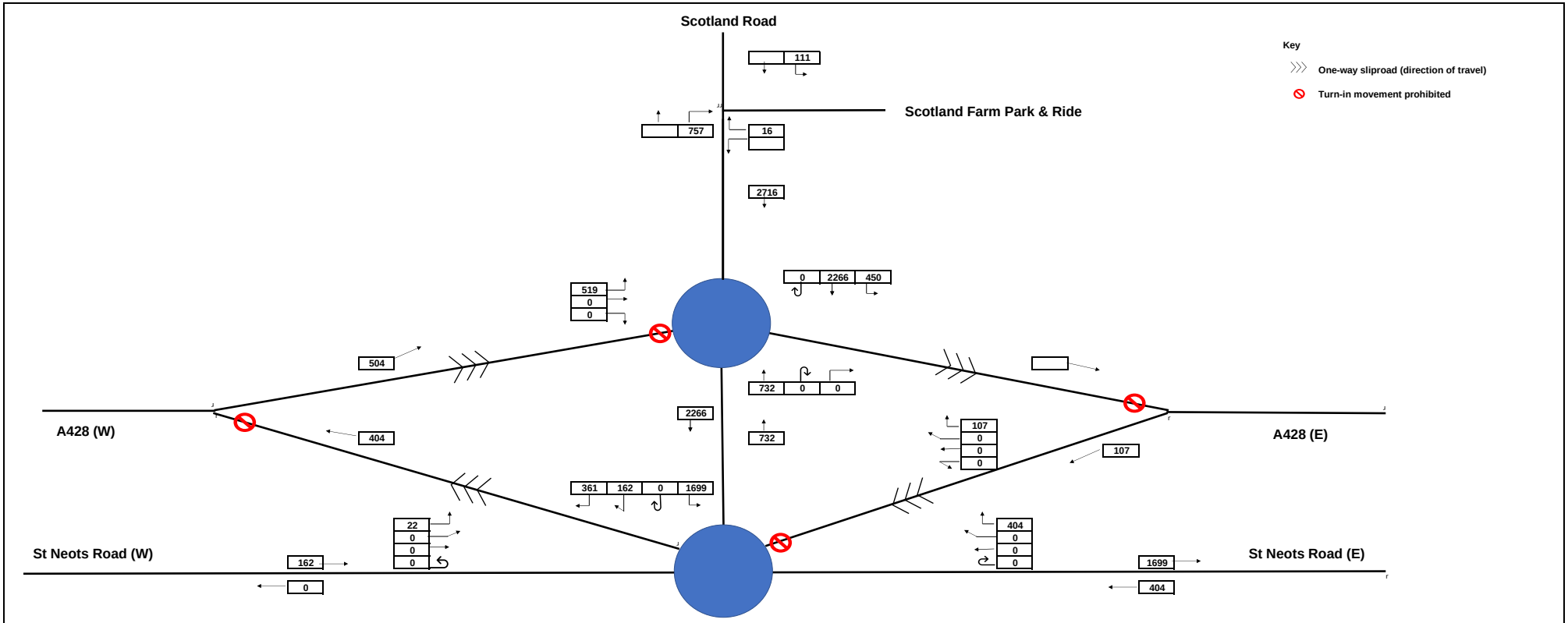
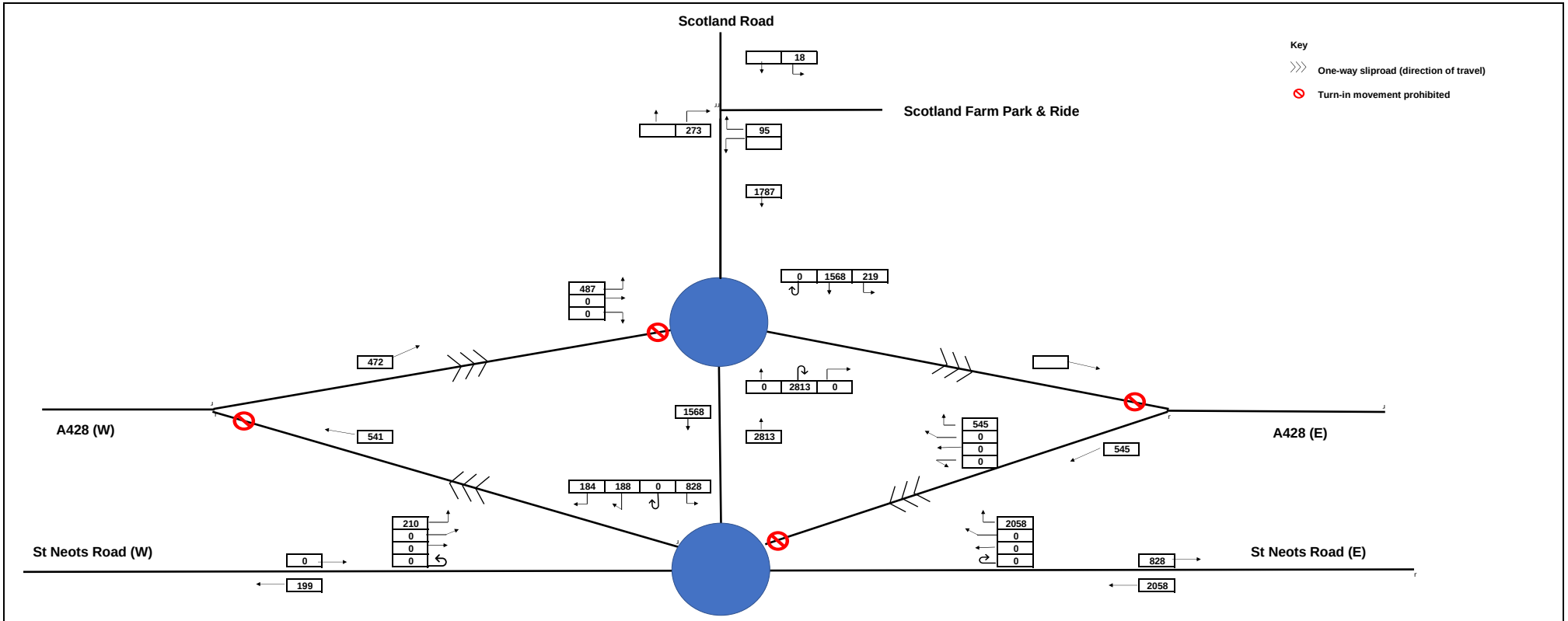
		Figure No:	Date: 22/04/2021



MARKIDES ASSOCIATES 81 Southwark Bridge Road London, SE1 0NQ T:020 7442 2225 W: www.markidesassociates.co.uk	Notes:	Job Title: Scotland Farm	Scale: NTS
		Drawing Title: Base Flows + Committed Development AM Peak	Job No: 21042
		Figure No:	Date: 22/04/2021



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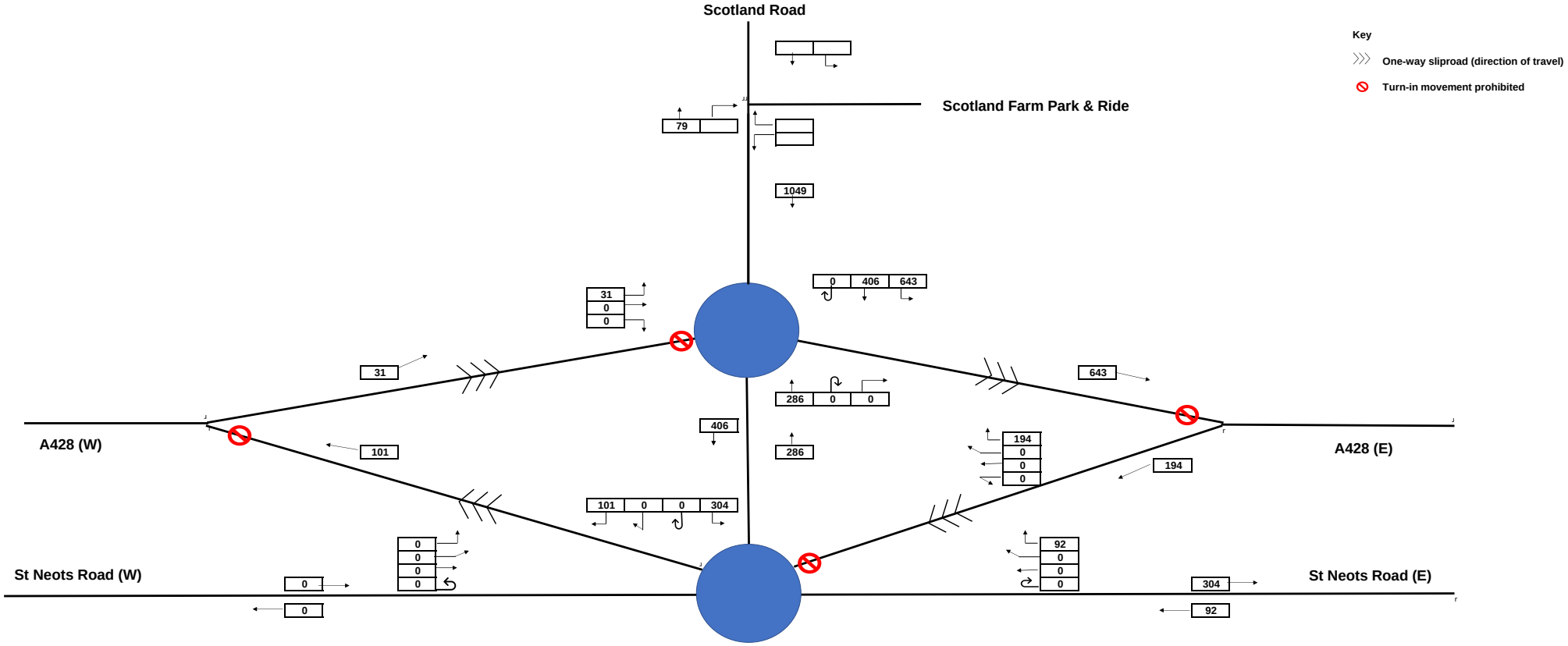
Notes:

Job Title: Scotland Farm	NTS
Drawing Title: Base Flows + Committed Development PM Peak	21042
Figure No:	22/04/2021



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Job Title: Scotland Farm	Scale: NTS
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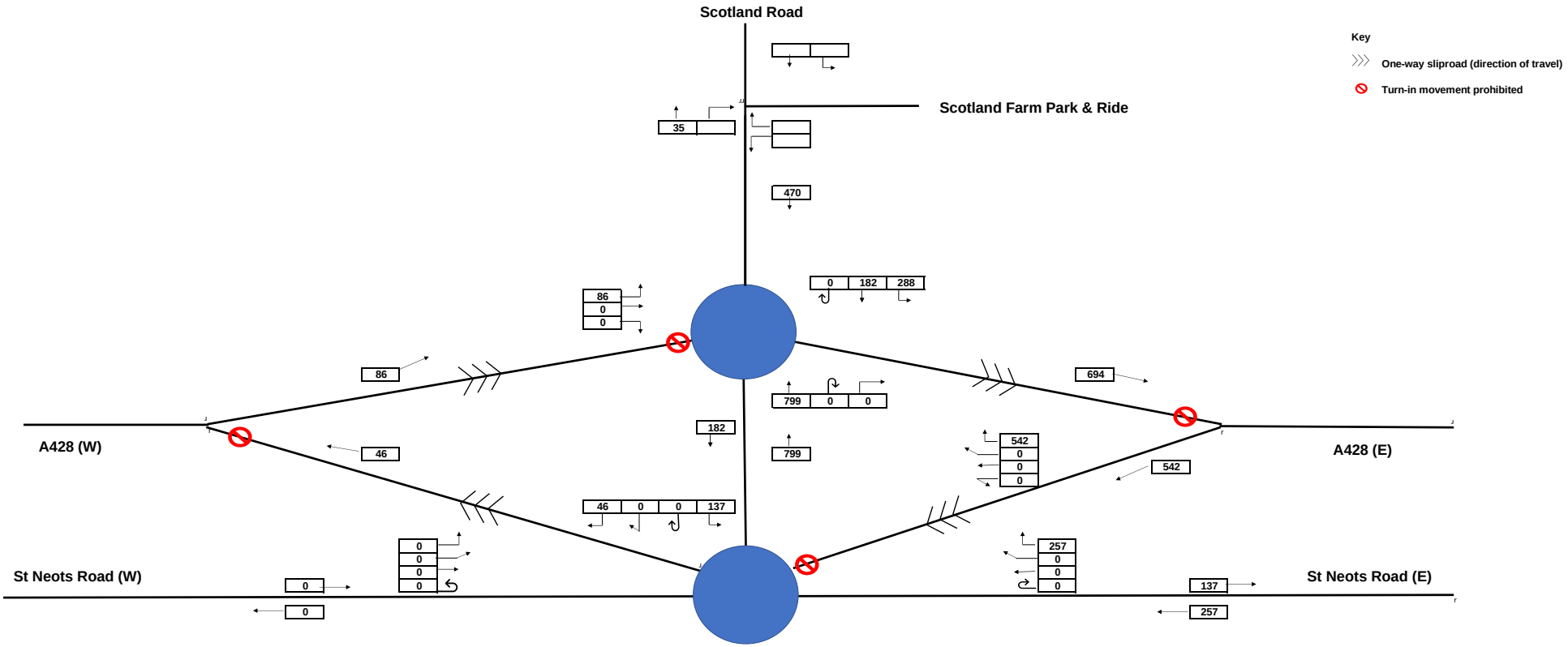
Figure No:	Date: 22/04/2021



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Notes:		Job Title: Scotland Farm	Scale: NTS
		Drawing Title: Base Flows PM Peak	Job No: 21042
		Figure No:	Date: 22/04/2021

DRAWINGS

Drawing 21042-MA-XX-XX-SK-C-0006_P01 – Proposed Junction Design Overall

DO NOT SCALE OFF THIS DRAWING

Revision History

P01	FOR INFORMATION	LB	SF	DM	24.02.21
Rev	Comment	By	Chkd	Appr	Date

Current Revision

P01	FOR INFORMATION	LB	SF	DM	24.02.21
Rev	Comment	By	Chkd	Appr	Date

S2 - FOR INFORMATION

HALLAM LAND MANAGEMENT LTD

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Project

SCOTLAND FARM

Drawing Title

PROPOSED JUNCTION DESIGN
OVERALL - OPTION 2b

Markides Associates reference: 21042/01 1:1250 @ A1

21042-MA-XX-XX-SK-C-0006 - P01

Scale 1:1250 @ A1 - 1:2500 @ A3

25m 0 25m 50m 75m 100m 125m

APPENDIX A – TRICS OUTPUT

Calculation Reference: AUDIT-860401-210324-0314

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : K - MIXED PRIV HOUS (FLATS AND HOUSES)
MULTI-MODAL TOTAL VEHICLES

Selected regions and areas:
04 EAST ANGLIA
CA CAMBRIDGESHIRE 2 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
Actual Range: 65 to 100 (units:)
Range Selected by User: 40 to 178 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/12 to 11/07/18

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:
Monday 1 days
Wednesday 1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:
Manual count 2 days
Directional ATC Count 0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:
Suburban Area (PPS6 Out of Centre) 1
Edge of Town 1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:
Residential Zone 2

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:
C3 2 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included

Secondary Filtering selection (Cont.):

Population within 1 mile:
5,001 to 10,000 2 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:
25,001 to 50,000 2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:
0.6 to 1.0 2 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:
Yes 1 days
No 1 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:
No PTAL Present 2 days

This data displays the number of selected surveys with PTAL Ratings.

TRIP RATE for Land Use 03 - RESIDENTIAL/K - MIXED PRIV HOUS (FLATS AND HOUSES)
MULTI-MODAL TOTAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	2	83	0.091	2	83	0.127	2	83	0.218
08:00 - 09:00	2	83	0.091	2	83	0.206	2	83	0.297
09:00 - 10:00	2	83	0.073	2	83	0.097	2	83	0.170
10:00 - 11:00	2	83	0.170	2	83	0.158	2	83	0.328
11:00 - 12:00	2	83	0.121	2	83	0.115	2	83	0.236
12:00 - 13:00	2	83	0.139	2	83	0.133	2	83	0.272
13:00 - 14:00	2	83	0.139	2	83	0.121	2	83	0.260
14:00 - 15:00	2	83	0.127	2	83	0.224	2	83	0.351
15:00 - 16:00	2	83	0.206	2	83	0.133	2	83	0.339
16:00 - 17:00	2	83	0.158	2	83	0.164	2	83	0.322
17:00 - 18:00	2	83	0.236	2	83	0.158	2	83	0.394
18:00 - 19:00	2	83	0.139	2	83	0.103	2	83	0.242
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			1.690			1.739			3.429

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	65 - 100 (units:)
Survey date date range:	01/01/12 - 11/07/18
Number of weekdays (Monday-Friday):	2
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	0

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/K - MIXED PRIV HOUS (FLATS AND HOUSES)
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	2	83	0.127	2	83	0.273	2	83	0.400
08:00 - 09:00	2	83	0.176	2	83	0.582	2	83	0.758
09:00 - 10:00	2	83	0.103	2	83	0.200	2	83	0.303
10:00 - 11:00	2	83	0.255	2	83	0.273	2	83	0.528
11:00 - 12:00	2	83	0.194	2	83	0.200	2	83	0.394
12:00 - 13:00	2	83	0.200	2	83	0.279	2	83	0.479
13:00 - 14:00	2	83	0.279	2	83	0.230	2	83	0.509
14:00 - 15:00	2	83	0.279	2	83	0.376	2	83	0.655
15:00 - 16:00	2	83	0.630	2	83	0.345	2	83	0.975
16:00 - 17:00	2	83	0.309	2	83	0.242	2	83	0.551
17:00 - 18:00	2	83	0.491	2	83	0.261	2	83	0.752
18:00 - 19:00	2	83	0.255	2	83	0.145	2	83	0.400
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.298			3.406			6.704

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

APPENDIX B – ARCADY OUTPUT

Junctions 9

ARCADY 9 - Roundabout Module

Filename: North Roundabout -mode shift.j9
Path: M:\Projects\2021\21042-00 - Scotland Farm\07. Technical\07.02 Modelling\ARCADY
Report generation date: 29/04/2021 16:02:33

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Base - Dev Flows 2021									
1 - Scotland Farm	D1	0.9	4.33	0.47	A	D2	0.3	2.89	0.21	A
3 - Bridge		0.2	2.62	0.19	A		1.1	4.45	0.52	A
4 - A428W		0.0	2.05	0.02	A		0.1	2.75	0.07	A
5 - Private Access		0.0	0.00	0.00	A		0.0	0.00	0.00	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

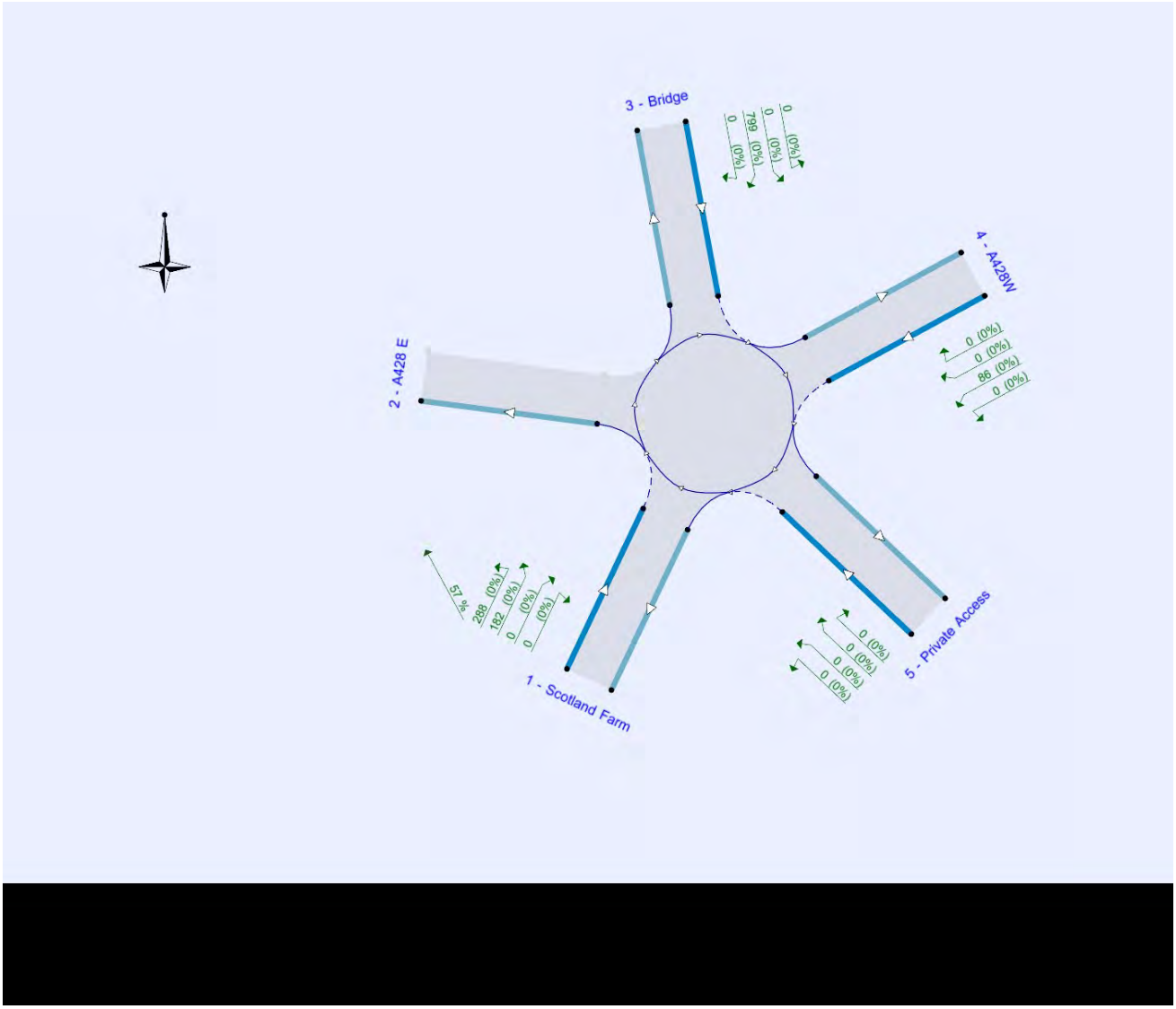
File summary

File Description

Title	
Location	
Site number	
Date	20/04/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MARKIDES\Markides Associates
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Base	✓	100.000	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	Dev Flows 2021	PM	ONE HOUR	16:45	18:15	15	✓

Base - Dev Flows 2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	North Dumbbell	Standard Roundabout		1, 2, 3, 4, 5	3.80	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Scotland Farm	
2	A428 E	
3	Bridge	
4	A428W	
5	Private Access	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Scotland Farm	3.75	6.27	7.5	55.0	30.0	24.0	
2 - A428 E							✓
3 - Bridge	4.60	7.13	6.6	37.0	30.0	44.6	
4 - A428W	3.75	9.62	29.1	17.0	30.0	54.4	
5 - Private Access	4.00	7.00	7.0	11.0	30.0	46.0	

Bypass

Arm	Arm has bypass	Bypass utilisation (%)
1 - Scotland Farm	✓	57
2 - A428 E		
3 - Bridge		
4 - A428W		
5 - Private Access		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - Scotland Farm			
2 - A428 E			
3 - Bridge			
4 - A428W	✓		1
5 - Private Access			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Scotland Farm	0.650	1583
2 - A428 E		
3 - Bridge	0.647	1689
4 - A428W	0.692	2010
5 - Private Access	0.576	1443

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Scotland Farm		ONE HOUR	✓	470	100.000
2 - A428 E					
3 - Bridge		ONE HOUR	✓	799	100.000
4 - A428W		ONE HOUR	✓	86	100.000
5 - Private Access		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Scotland Farm	2 - A428 E	3 - Bridge	4 - A428W	5 - Private Access
From	1 - Scotland Farm	0	288	182	0	0
	2 - A428 E	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	3 - Bridge	799	0	0	0	0
	4 - A428W	86	0	0	0	0
	5 - Private Access	0	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Scotland Farm	2 - A428 E	3 - Bridge	4 - A428W	5 - Private Access
From	1 - Scotland Farm	0	0	0	0	0
	2 - A428 E	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	3 - Bridge	0	0	0	0	0
	4 - A428W	0	0	0	0	0
	5 - Private Access	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Scotland Farm	0.21	2.89	0.3	A	431	421
2 - A428 E						
3 - Bridge	0.52	4.45	1.1	A	733	1100
4 - A428W	0.07	2.75	0.1	A	79	118
5 - Private Access	0.00	0.00	0.0	A	0	0

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsign level servi
1 - Scotland Farm	354	230	58	124	0	0	1583	0.146	230	664	0.0	0.2	2.659	A
2 - A428 E						137				93				
3 - Bridge	602	602	150	0	0	0	1689	0.356	599	137	0.0	0.6	3.296	A
4 - A428W	65	65	16	0	0	599	1595	0.041	65	0	0.0	0.0	2.352	A
5 - Private Access	0	0	0	0	0	664	1061	0.000	0	0	0.0	0.0	0.000	A

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsign level servi
1 - Scotland Farm	423	275	69	148	0	0	1583	0.174	275	795	0.2	0.2	2.752	A
2 - A428 E						164				111				
3 - Bridge	718	718	180	0	0	0	1689	0.425	718	164	0.6	0.7	3.704	A
4 - A428W	77	77	19	0	0	718	1513	0.051	77	0	0.0	0.1	2.506	A
5 - Private Access	0	0	0	0	0	795	985	0.000	0	0	0.0	0.0	0.000	A

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsign level servi
1 - Scotland Farm	517	337	84	181	0	0	1583	0.213	336	973	0.2	0.3	2.889	A
2 - A428 E						200				136				
3 - Bridge	880	880	220	0	0	0	1689	0.521	878	200	0.7	1.1	4.434	A
4 - A428W	95	95	24	0	0	878	1402	0.068	95	0	0.1	0.1	2.753	A
5 - Private Access	0	0	0	0	0	973	883	0.000	0	0	0.0	0.0	0.000	A

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsign level servi
1 - Scotland Farm	517	337	84	181	0	0	1583	0.213	337	974	0.3	0.3	2.889	A
2 - A428 E						200				136				
3 - Bridge	880	880	220	0	0	0	1689	0.521	880	200	1.1	1.1	4.447	A
4 - A428W	95	95	24	0	0	880	1401	0.068	95	0	0.1	0.1	2.755	A
5 - Private Access	0	0	0	0	0	974	882	0.000	0	0	0.0	0.0	0.000	A

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsign level servi
1 - Scotland Farm	423	275	69	148	0	0	1583	0.174	275	797	0.3	0.2	2.753	A
2 - A428 E						164				111				
3 - Bridge	718	718	180	0	0	0	1689	0.425	720	164	1.1	0.7	3.717	A
4 - A428W	77	77	19	0	0	720	1512	0.051	77	0	0.1	0.1	2.511	A
5 - Private Access	0	0	0	0	0	797	984	0.000	0	0	0.0	0.0	0.000	A

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsign level servi
1 - Scotland Farm	354	230	58	124	0	0	1583	0.146	230	667	0.2	0.2	2.664	A
2 - A428 E						137				93				
3 - Bridge	602	602	150	0	0	0	1689	0.356	602	137	0.7	0.6	3.316	A
4 - A428W	65	65	16	0	0	602	1593	0.041	65	0	0.1	0.0	2.355	A
5 - Private Access	0	0	0	0	0	667	1059	0.000	0	0	0.0	0.0	0.000	A

Junctions 9

ARCADY 9 - Roundabout Module

Filename: North Roundabout.j9
Path: M:\Projects\2021\21042-00 - Scotland Farm\07. Technical\07.02 Modelling\ARCADY
Report generation date: 28/04/2021 17:47:06

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Base - Dev Flows 2021									
1 - Scotland Farm	D1	56.8	112.36	1.05	F	D2	1.0	4.67	0.51	A
3 - Bridge		0.5	3.16	0.33	A		972.1	2014.69	1.66	F
4 - A428W		0.0	2.29	0.04	A		0.6	6.65	0.36	A
5 - Private Access		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	Base - Dev + Com Flows									
1 - Scotland Farm	D3	178.4	402.80	1.20	F	D4	8.9	23.52	0.91	C
3 - Bridge		0.9	4.02	0.47	A		1258.6	2583.20	1.79	F
4 - A428W		0.6	3.90	0.37	A		0.8	7.63	0.44	A
5 - Private Access		0.0	0.00	0.00	A		0.0	0.00	0.00	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

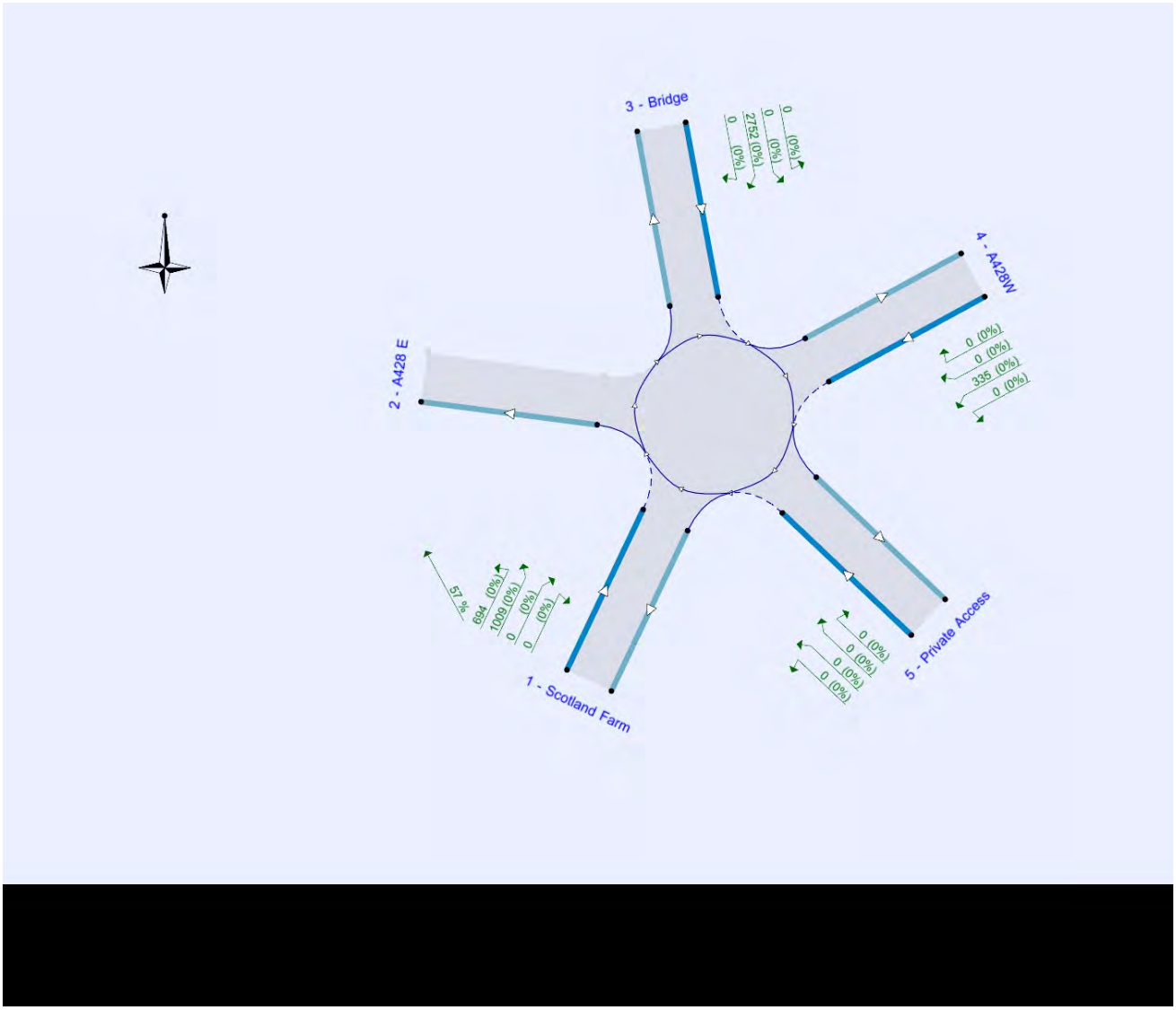
File summary

File Description

Title	
Location	
Site number	
Date	20/04/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MARKIDES\Markides Associates
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Base	✓	100.000	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	Dev + Com Flows	PM	ONE HOUR	16:45	18:15	15	✓

Base - Dev + Com Flows, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	North Dumbbell	Standard Roundabout		1, 2, 3, 4, 5	1493.02	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Scotland Farm	
2	A428 E	
3	Bridge	
4	A428W	
5	Private Access	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Scotland Farm	3.75	6.27	7.5	55.0	30.0	24.0	
2 - A428 E							✓
3 - Bridge	4.60	7.13	6.6	37.0	30.0	44.6	
4 - A428W	3.75	9.62	29.1	17.0	30.0	54.4	
5 - Private Access	4.00	7.00	7.0	11.0	30.0	46.0	

Bypass

Arm	Arm has bypass	Bypass utilisation (%)
1 - Scotland Farm	✓	57
2 - A428 E		
3 - Bridge		
4 - A428W		
5 - Private Access		

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - Scotland Farm			
2 - A428 E			
3 - Bridge			
4 - A428W	✓		1
5 - Private Access			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Scotland Farm	0.650	1583
2 - A428 E		
3 - Bridge	0.647	1689
4 - A428W	0.692	2010
5 - Private Access	0.576	1443

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Scotland Farm		ONE HOUR	✓	1703	100.000
2 - A428 E					
3 - Bridge		ONE HOUR	✓	2752	100.000
4 - A428W		ONE HOUR	✓	335	100.000
5 - Private Access		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Scotland Farm	2 - A428 E	3 - Bridge	4 - A428W	5 - Private Access
From	1 - Scotland Farm	0	694	1009	0	0
	2 - A428 E	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	3 - Bridge	2752	0	0	0	0
	4 - A428W	335	0	0	0	0
	5 - Private Access	0	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Scotland Farm	2 - A428 E	3 - Bridge	4 - A428W	5 - Private Access
From	1 - Scotland Farm	0	0	0	0	0
	2 - A428 E	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	3 - Bridge	0	0	0	0	0
	4 - A428W	0	0	0	0	0
	5 - Private Access	0	0	0	0	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Scotland Farm	0.91	23.52	8.9	C	1563	1800
2 - A428 E						
3 - Bridge	1.79	2583.20	1258.6	F	2525	3788
4 - A428W	0.44	7.63	0.8	A	307	461
5 - Private Access	0.00	0.00	0.0	A	0	0

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - Scotland Farm	1282	984	246	298	0	0	1583	0.622	978	1923	0.0	1.6	5.892	
2 - A428 E						755				223				
3 - Bridge	2072	2072	518	0	0	0	1689	1.227	1672	755	0.0	99.9	112.646	
4 - A428W	252	252	63	0	0	1672	852	0.296	251	0	0.0	0.4	5.965	
5 - Private Access	0	0	0	0	0	1923	336	0.000	0	0	0.0	0.0	0.000	

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - Scotland Farm	1531	1175	294	356	0	0	1583	0.743	1171	1989	1.6	2.8	8.640	
2 - A428 E						903				267				
3 - Bridge	2474	2474	618	0	0	0	1689	1.465	1689	903	99.9	296.2	426.437	
4 - A428W	301	301	75	0	0	1689	841	0.358	301	0	0.4	0.6	6.658	
5 - Private Access	0	0	0	0	0	1989	298	0.000	0	0	0.0	0.0	0.000	

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsig lev ser
1 - Scotland Farm	1875	1439	360	436	0	0	1583	0.910	1418	2057	2.8	8.1	19.755	
2 - A428 E						1095				324				
3 - Bridge	3030	3030	758	0	0	0	1689	1.794	1689	1095	296.2	631.4	991.668	
4 - A428W	369	369	92	0	0	1689	841	0.439	368	0	0.6	0.8	7.603	
5 - Private Access	0	0	0	0	0	2057	259	0.000	0	0	0.0	0.0	0.000	

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le s
1 - Scotland Farm	1875	1439	360	436	0	0	1583	0.910	1436	2058	8.1	8.9	23.520	
2 - A428 E						1109				328				
3 - Bridge	3030	3030	758	0	0	0	1689	1.794	1689	1109	631.4	966.7	1705.832	
4 - A428W	369	369	92	0	0	1689	841	0.439	369	0	0.8	0.8	7.630	
5 - Private Access	0	0	0	0	0	2058	258	0.000	0	0	0.0	0.0	0.000	

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le s
1 - Scotland Farm	1531	1175	294	356	0	0	1583	0.743	1199	1991	8.9	3.0	9.915	
2 - A428 E						925				274				
3 - Bridge	2474	2474	618	0	0	0	1689	1.465	1689	925	966.7	1162.9	2272.112	
4 - A428W	301	301	75	0	0	1689	841	0.358	302	0	0.8	0.6	6.696	
5 - Private Access	0	0	0	0	0	1991	297	0.000	0	0	0.0	0.0	0.000	

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction demand (PCU/hr)	Junction Arrivals (PCU)	Bypass demand (PCU/hr)	Bypass exit flow (PCU/hr)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsi le s
1 - Scotland Farm	1282	984	246	298	0	0	1583	0.622	990	1942	3.0	1.7	6.126	
2 - A428 E						764				226				
3 - Bridge	2072	2072	518	0	0	0	1689	1.227	1689	764	1162.9	1258.6	2583.202	
4 - A428W	252	252	63	0	0	1689	841	0.300	253	0	0.6	0.4	6.128	
5 - Private Access	0	0	0	0	0	1942	325	0.000	0	0	0.0	0.0	0.000	

Junctions 9

ARCADY 9 - Roundabout Module

Filename: South Roundabout.j9
Path: M:\Projects\2021\21042-00 - Scotland Farm\07. Technical\07.02 Modelling\ARCADY
Report generation date: 28/04/2021 17:47:45

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Base - Dev Flows 2021									
1 - Scotland Farm	D1	1.1	3.88	0.52	A	D2	0.3	2.51	0.25	A
2 - A428 E Slip		0.6	5.37	0.36	A		351.8	845.28	1.40	F
3 - St Neots E		0.1	2.83	0.12	A		45.6	177.44	1.08	F
4 - St Neots W		0.0	0.00	0.00	A		0.0	0.00	0.00	A
	Base - Dev + Com Flows									
1 - Scotland Farm	D3	1525.8	743420.30	178.37	F	D4	873.4	914819.48	219.10	F
2 - A428 E Slip		0.3	2.82	0.23	A		135.8	273.40	1.15	F
3 - St Neots E		0.1	2.49	0.11	A		109.4	545.90	1.27	F
4 - St Neots W		0.2	2.62	0.15	A		2.0	33.15	0.68	D

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

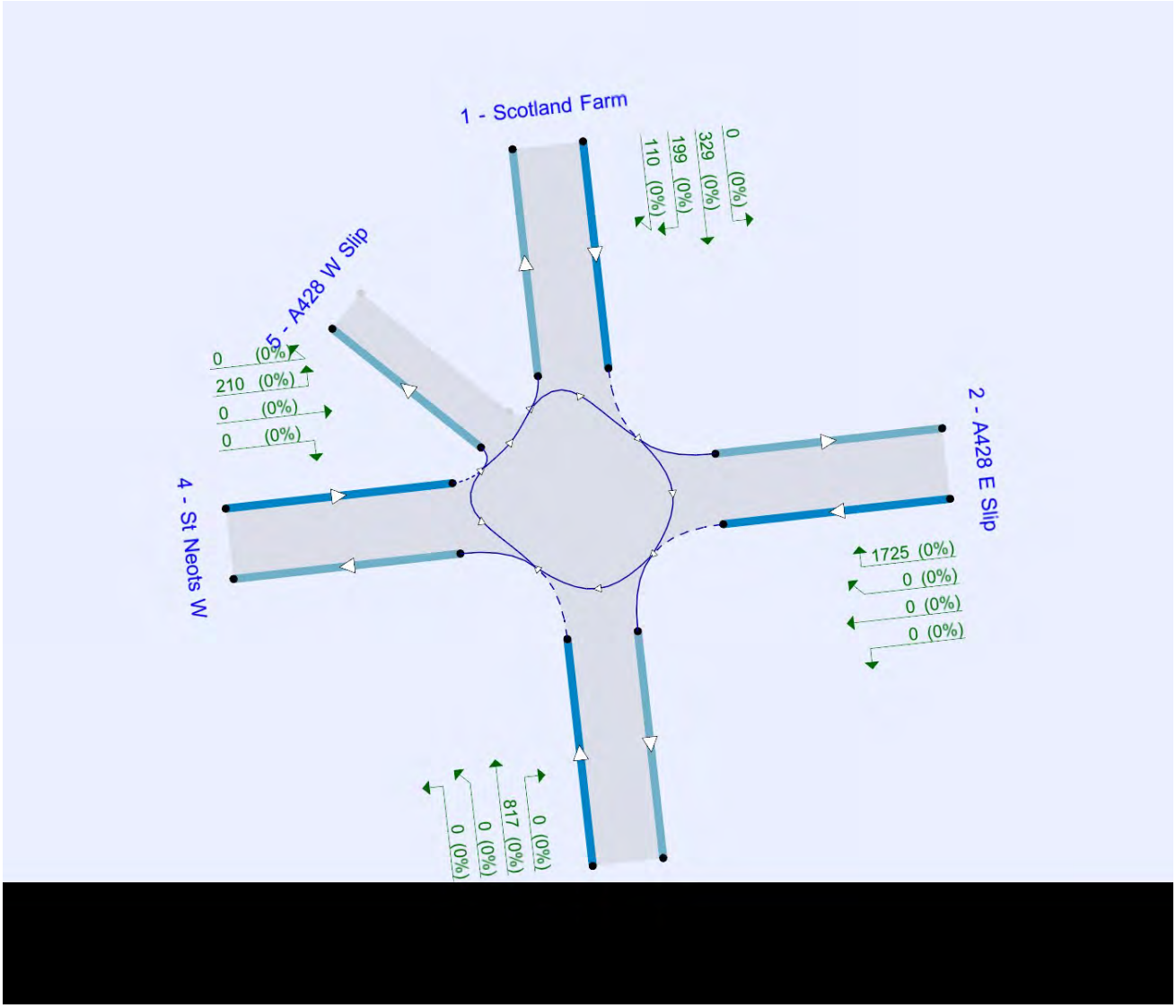
File summary

File Description

Title	
Location	
Site number	
Date	20/04/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MARKIDES\Markides Associates
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Base	✓	100.000	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	Dev + Com Flows	PM	ONE HOUR	16:45	18:15	15	✓

Base - Dev + Com Flows, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	4 - St Neots W - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	South Dumbbell	Standard Roundabout		1, 2, 3, 4, 5	172442.30	F

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Scotland Farm	
2	A428 E Slip	
3	St Neots E	
4	St Neots W	
5	A428 W Slip	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Scotland Farm	4.20	7.20	12.8	33.8	35.0	15.3	
2 - A428 E Slip	3.80	9.95	10.6	18.5	35.0	52.5	
3 - St Neots E	4.64	6.74	7.7	62.0	35.0	15.7	
4 - St Neots W	3.56	7.40	61.1	22.0	35.0	36.6	
5 - A428 W Slip							✓

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - Scotland Farm			
2 - A428 E Slip			
3 - St Neots E			
4 - St Neots W	✓		1
5 - A428 W Slip			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Scotland Farm	0.718	1919
2 - A428 E Slip	0.617	1656
3 - St Neots E	0.715	1890
4 - St Neots W	0.709	2010
5 - A428 W Slip		

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Scotland Farm		ONE HOUR	✓	638	100.000
2 - A428 E Slip		ONE HOUR	✓	1725	100.000
3 - St Neots E		ONE HOUR	✓	817	100.000
4 - St Neots W		ONE HOUR	✓	210	100.000
5 - A428 W Slip					

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Scotland Farm	2 - A428 E Slip	3 - St Neots E	4 - St Neots W	5 - A428 W Slip
From	1 - Scotland Farm	0	0	329	199	110
	2 - A428 E Slip	1725	0	0	0	0
	3 - St Neots E	817	0	0	0	0
	4 - St Neots W	210	0	0	0	0
	5 - A428 W Slip	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Scotland Farm	2 - A428 E Slip	3 - St Neots E	4 - St Neots W	5 - A428 W Slip
From	1 - Scotland Farm	0	0	0	0	0
	2 - A428 E Slip	0	0	0	0	0
	3 - St Neots E	0	0	0	0	0
	4 - St Neots W	0	0	0	0	0
	5 - A428 W Slip	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Scotland Farm	219.10	914819.48	873.4	F	585	878
2 - A428 E Slip	1.15	273.40	135.8	F	1583	2374
3 - St Neots E	1.27	545.90	109.4	F	750	1125
4 - St Neots W	0.68	33.15	2.0	D	193	289
5 - A428 W Slip						

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	480	120	0	3	148.572	3	2050	0.0	119.3	67527.971	F
2 - A428 E Slip	1299	325	3	1654	0.785	1285	0	0.0	3.5	9.432	A
3 - St Neots E	615	154	1286	970	0.634	608	2	0.0	1.7	9.795	A
4 - St Neots W	158	40	1894	668	0.237	157	1	0.0	0.3	7.028	A
5 - A428 W Slip			2050				0.55				

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	574	143	0	3	178.896	3	2421	119.3	261.9	215112.901	F
2 - A428 E Slip	1551	388	3	1654	0.938	1522	0	3.5	10.6	23.472	C
3 - St Neots E	734	184	1524	799	0.919	711	2	1.7	7.5	34.404	D
4 - St Neots W	189	47	2234	426	0.443	187	1	0.3	0.8	14.916	B
5 - A428 W Slip			2421				0.55				

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	702	176	0	3	219.103	3	2579	261.9	436.7	393310.322	F
2 - A428 E Slip	1899	475	3	1654	1.148	1645	0	10.6	74.2	101.617	F
3 - St Neots E	900	225	1646	712	1.264	707	2	7.5	55.6	174.915	F
4 - St Neots W	231	58	2353	343	0.675	227	1	0.8	1.9	30.000	D
5 - A428 W Slip			2579				0.55				

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	702	176	0	3	219.101	3	2589	436.7	611.5	589600.998	F
2 - A428 E Slip	1899	475	3	1654	1.148	1653	0	74.2	135.8	234.600	F
3 - St Neots E	900	225	1654	706	1.274	706	2	55.6	104.0	415.627	F
4 - St Neots W	231	58	2359	338	0.684	231	1	1.9	2.0	33.153	D
5 - A428 W Slip			2589				0.55				

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	574	143	0	3	178.896	3	2546	611.5	754.1	767799.285	F
2 - A428 E Slip	1551	388	3	1654	0.938	1642	0	135.8	113.1	273.402	F
3 - St Neots E	734	184	1643	714	1.028	713	2	104.0	109.4	545.897	F
4 - St Neots W	189	47	2355	341	0.554	192	1	2.0	1.3	24.589	C
5 - A428 W Slip			2546				0.55				

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	480	120	0	3	149.816	3	2508	754.1	873.4	914819.475	F
2 - A428 E Slip	1299	325	3	1654	0.785	1639	0	113.1	28.0	157.966	F
3 - St Neots E	615	154	1641	716	0.859	709	2	109.4	85.8	496.475	F
4 - St Neots W	158	40	2349	345	0.458	160	1	1.3	0.9	19.627	C
5 - A428 W Slip			2508				0.55				

Junctions 9

ARCADY 9 - Roundabout Module

Filename: South Roundabout -mode shift.j9
Path: M:\Projects\2021\21042-00 - Scotland Farm\07. Technical\07.02 Modelling\ARCADY
Report generation date: 29/04/2021 16:04:59

Summary of junction performance

	AM					PM				
	Set ID	Queue (PCU)	Delay (s)	RFC	LOS	Set ID	Queue (PCU)	Delay (s)	RFC	LOS
	Base - Dev Flows 2021									
1 - Scotland Farm	D1	0.3	2.44	0.23	A	D2	0.1	2.09	0.10	A
2 - A428 E Slip		0.2	3.08	0.15	A		0.6	3.85	0.39	A
3 - St Neots E		0.1	2.31	0.06	A		0.2	3.15	0.20	A
4 - St Neots W		0.0	0.00	0.00	A		0.0	0.00	0.00	A

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

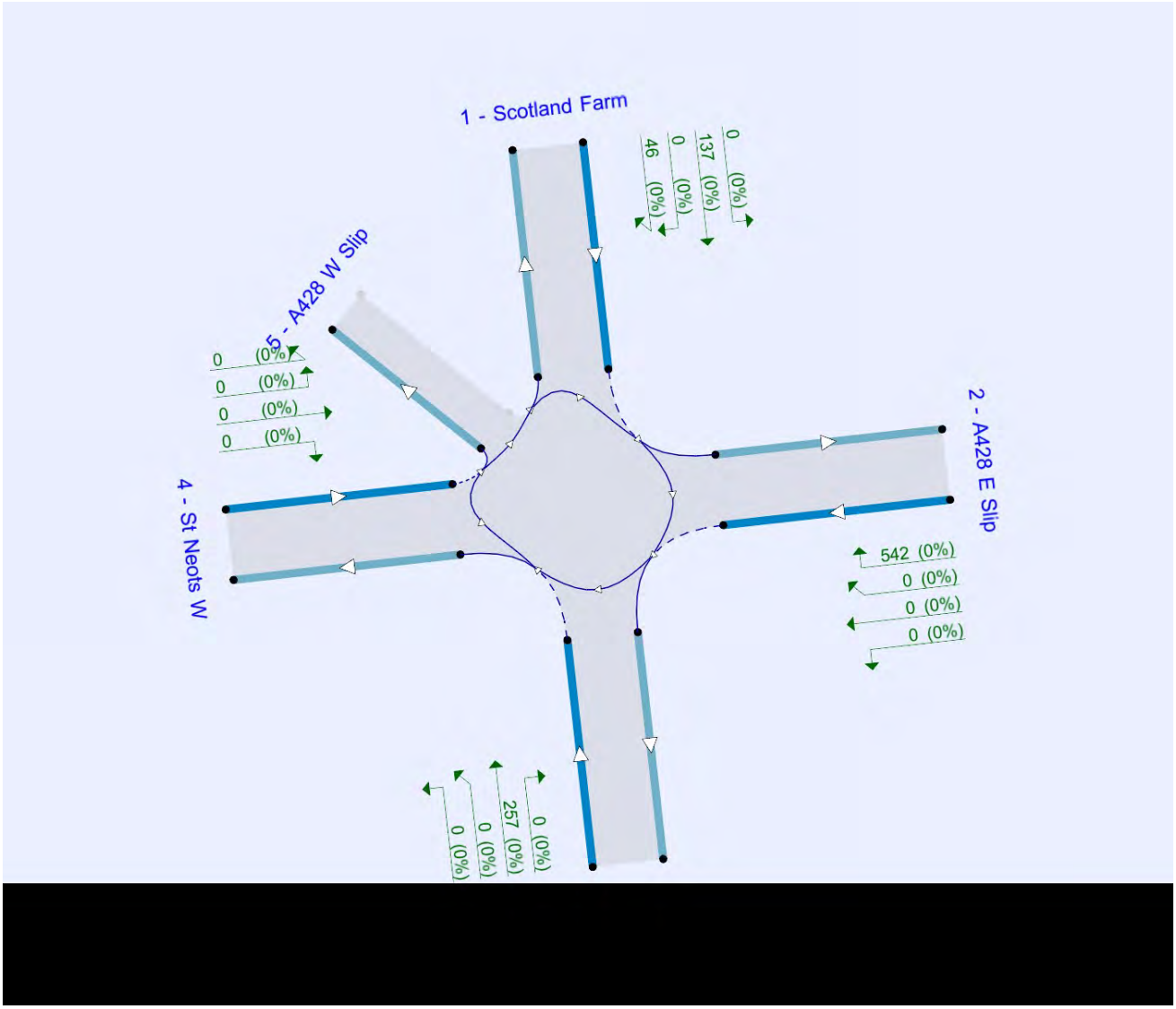
File summary

File Description

Title	
Location	
Site number	
Date	20/04/2021
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	MARKIDES\Markides Associates
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin



The junction diagram reflects the last run of Junctions.

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A1	Base	✓	100.000	100.000

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	Dev Flows 2021	PM	ONE HOUR	16:45	18:15	15	✓

Base - Dev Flows 2021, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	4 - St Neots W - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	South Dumbbell	Standard Roundabout		1, 2, 3, 4, 5	3.34	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description
1	Scotland Farm	
2	A428 E Slip	
3	St Neots E	
4	St Neots W	
5	A428 W Slip	

Roundabout Geometry

Arm	V - Approach road half-width (m)	E - Entry width (m)	l' - Effective flare length (m)	R - Entry radius (m)	D - Inscribed circle diameter (m)	PHI - Conflict (entry) angle (deg)	Exit only
1 - Scotland Farm	4.20	7.20	12.8	33.8	35.0	15.3	
2 - A428 E Slip	3.80	9.95	10.6	18.5	35.0	52.5	
3 - St Neots E	4.64	6.74	7.7	62.0	35.0	15.7	
4 - St Neots W	3.56	7.40	61.1	22.0	35.0	36.6	
5 - A428 W Slip							✓

Exit Restrictions

Arm	Exit restriction present	Linked exit restriction present	Maximum capacity (PCU/hr)
1 - Scotland Farm			
2 - A428 E Slip			
3 - St Neots E			
4 - St Neots W	✓		1
5 - A428 W Slip			

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/hr)
1 - Scotland Farm	0.718	1919
2 - A428 E Slip	0.617	1656
3 - St Neots E	0.715	1890
4 - St Neots W	0.709	2010
5 - A428 W Slip		

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
1 - Scotland Farm		ONE HOUR	✓	183	100.000
2 - A428 E Slip		ONE HOUR	✓	542	100.000
3 - St Neots E		ONE HOUR	✓	257	100.000
4 - St Neots W		ONE HOUR	✓	0	100.000
5 - A428 W Slip					

Origin-Destination Data

Demand (PCU/hr)

		To				
		1 - Scotland Farm	2 - A428 E Slip	3 - St Neots E	4 - St Neots W	5 - A428 W Slip
From	1 - Scotland Farm	0	0	137	0	46
	2 - A428 E Slip	542	0	0	0	0
	3 - St Neots E	257	0	0	0	0
	4 - St Neots W	0	0	0	0	0
	5 - A428 W Slip	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only

Vehicle Mix

Heavy Vehicle Percentages

		To				
		1 - Scotland Farm	2 - A428 E Slip	3 - St Neots E	4 - St Neots W	5 - A428 W Slip
From	1 - Scotland Farm	0	0	0	0	0
	2 - A428 E Slip	0	0	0	0	0
	3 - St Neots E	0	0	0	0	0
	4 - St Neots W	0	0	0	0	0
	5 - A428 W Slip	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
1 - Scotland Farm	0.10	2.09	0.1	A	168	252
2 - A428 E Slip	0.39	3.85	0.6	A	497	746
3 - St Neots E	0.20	3.15	0.2	A	236	354
4 - St Neots W	0.00	0.00	0.0	A	0	0
5 - A428 W Slip						

Main Results for each time segment

16:45 - 17:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	138	34	0	1919	0.072	137	600	0.0	0.1	2.020	A
2 - A428 E Slip	408	102	137	1571	0.260	407	0	0.0	0.3	3.088	A
3 - St Neots E	193	48	441	1574	0.123	193	103	0.0	0.1	2.604	A
4 - St Neots W	0	0	634	1561	0.000	0	0	0.0	0.0	0.000	A
5 - A428 W Slip			600				35				

17:00 - 17:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	165	41	0	1919	0.086	164	718	0.1	0.1	2.051	A
2 - A428 E Slip	487	122	164	1554	0.314	487	0	0.3	0.5	3.370	A
3 - St Neots E	231	58	528	1512	0.153	231	123	0.1	0.2	2.809	A
4 - St Neots W	0	0	759	1472	0.000	0	0	0.0	0.0	0.000	A
5 - A428 W Slip			718				41				

17:15 - 17:30

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	201	50	0	1919	0.105	201	879	0.1	0.1	2.095	A
2 - A428 E Slip	597	149	201	1531	0.390	596	0	0.5	0.6	3.849	A
3 - St Neots E	283	71	647	1427	0.198	283	151	0.2	0.2	3.145	A
4 - St Neots W	0	0	929	1351	0.000	0	0	0.0	0.0	0.000	A
5 - A428 W Slip			879				51				

17:30 - 17:45

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	201	50	0	1919	0.105	201	880	0.1	0.1	2.095	A
2 - A428 E Slip	597	149	201	1531	0.390	597	0	0.6	0.6	3.851	A
3 - St Neots E	283	71	647	1427	0.198	283	151	0.2	0.2	3.147	A
4 - St Neots W	0	0	930	1351	0.000	0	0	0.0	0.0	0.000	A
5 - A428 W Slip			880				51				

17:45 - 18:00

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	165	41	0	1919	0.086	165	719	0.1	0.1	2.052	A
2 - A428 E Slip	487	122	165	1554	0.314	488	0	0.6	0.5	3.380	A
3 - St Neots E	231	58	529	1511	0.153	231	123	0.2	0.2	2.812	A
4 - St Neots W	0	0	761	1471	0.000	0	0	0.0	0.0	0.000	A
5 - A428 W Slip			719				41				

18:00 - 18:15

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Circulating flow (PCU/hr)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Throughput (exit side) (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
1 - Scotland Farm	138	34	0	1919	0.072	138	602	0.1	0.1	2.021	A
2 - A428 E Slip	408	102	138	1571	0.260	408	0	0.5	0.4	3.100	A
3 - St Neots E	193	48	443	1573	0.123	194	103	0.2	0.1	2.610	A
4 - St Neots W	0	0	637	1559	0.000	0	0	0.0	0.0	0.000	A
5 - A428 W Slip			602				35				

APPENDIX C – ARCADY OUTPUT

Damian Tungatt
Director
Markides Associates Ltd
81 Southwark Bridge Road
London
SE1 0NQ

20th May 2021

Dear Damian,

Land at Scotland Farm

Thank you for discussing the proposals for Scotland Farm with Stagecoach this week. It is understood that the emerging masterplan envisages a development of at least 6,250 new homes along with commercial, leisure and educational floor space over the next plan period.

The site also incorporates the proposed Scotland Farm Park Travel hub which includes a P&R facility with some 2,000 car parking spaces coming forward as part of the C2C network. As mentioned, Stagecoach is supportive of this principle and consider it will assist in delivering significant mode shift as part of the wider package of measures being brought forward in the area; allowing for good quality cycle and pedestrian connectivity between the site and into this facility will maximise its potential.

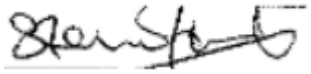
Given that the site is undeveloped, it is not currently served directly by public transport. The nearest bus stops are located on St Neots Road to the south of the site, which are served by the Citi 4 bus service which operates twice hourly between Cambridge and Cambourne. I would not be too prescriptive at this stage in respect of the exact rerouting of particular services owing to the timescales for any critical mass of development to come forward. However, it would be viable for these services to be enhanced and / or to reroute into the site in the future or for a new service to be provided that could connect with other destinations in the area. The latter may require some initial funding to be secured via S106 agreement.

We briefly discussed that the existing and proposed public transport routes into Cambridge are radial and that the Scotland Farm site could give the potential for outer routes to be developed over time that could more directly connect destinations such as Northstowe, Bar Hill and Cambourne, via a new transport corridor through the site. This is an interesting concept that we would be keen to see explored further, it would, in my view fit into the area wide strategy moving away from car use across the area.

continued

Accordingly, we are very keen to be kept informed of the progress of this promotion going forward. For now, we are happy to give to you our support in principle for this promotion and consider that it can be well served by existing and proposed public transport services in the future.

Yours sincerely



Steve Zanker
Commercial Manager

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