Gallagher Developments

COLLEGE FARM, SHORTSTOWN, BEDFORD

Transport Technical Note

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WSP

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

Phone: +44 148 352 8400

WSP.com

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Signature				
Checked by	Martin Paddle			
Signature				
Authorised by	Steph Howard			
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CONTENTS

TABLES

FIGURES

EXECUTIVE SUMMARY

The purpose of this Technical Note (TN) is to demonstrate that the site at College Farm, Bedford (the 'Site') is available, deliverable and suitable for residential development of around 1,000 homes. This TN identifies proposed connections/extensions to existing bus routes, off-Site pedestrian and cycle improvements, and potential junction capacity enhancements. The TN also demonstrates that there are no technical transport/highway constraints that would preclude development of the Site.

The Site is located to the west of Shortstown and south of Bedford and is in part bounded by A600 High Road to the east and agricultural land to the west and south. Further to the north east is 'New Cardington' which comprises some 1,100 homes and social facilities and is currently in the final phase of being built out. Almost immediately east are the two listed airship sheds and surrounding development land which has partially implemented planning permission for over 700 homes.

The Site Movement Strategy aims to create a sustainable network that would cater for all travel modes, with enhanced connectivity and permeability for pedestrians, cyclists and public transport services between development areas and community facilities. The strategy would be implemented in the context of a Site wide Travel Plan. The delivery of sustainable travel options within the site and the local area will positively influence sustainable travel behaviours from the first occupation of the proposed development, which will help to minimise the transport impacts of the development on the local area.

The Site is within a walkable catchment of a range of local facilities in Shortstown and New Cardington including retail, medical and education, ensuring that the Site location is sustainable, and is fully accessible on foot as well as by bicycle, thereby reducing the dependence on the car. Nonetheless, a local centre will be provided on-Site along with a primary school.

The Proposed Development will be designed with pedestrians and cyclists in mind, with, where appropriate, the residential streets forming shared spaces where primary consideration will be given to the safety and convenience of non-motorised users. In relation to public transport, bus stops will be provided on Site to serve the development and would be fully accessible by local residents within an acceptable walking distance following key desire routes.

Development of the Site would align with the vision and objectives the Local Plan 2030 and with the National Planning Policy Framework through minimising the need to travel, and provision of enhanced connectivity by all modes including improved walking, cycling and public transport infrastructure.

It is considered that the local and strategic highway networks would have sufficient capacity to accommodate development at the Site for circa 1,000 dwellings within the emerging Plan period through to 2036 and beyond. Through the delivery of the Travel Plan, trips by private car will be discouraged in favour or more sustainable and active modes of travel to further reduce any impact of the development on the local and strategic highway network.

This Technical Note provides a broad review of the existing and proposed transport conditions in relation to the Site at College Farm and indicates that there are no significant technical transport/highway constraints that would prevent the Site from progressing. The Site is policy compliant, available, deliverable, and therefore suitable for new residential development to be brought forward as an appropriate allocation within the emerging BBC Local Plan.

1. INTRODUCTION

1.1.1. The purpose of this Technical Note (TN) is to demonstrate that the site at College Farm, Bedford (the 'Site') is available, deliverable and suitable for residential development of around 1,000 homes. This TN will identify proposed connections/extensions to existing bus routes, off-Site pedestrian and cycle improvements, and potential junction capacity enhancements. The TN will also demonstrate that there are no technical transport/highway constraints that would preclude development of the Site.

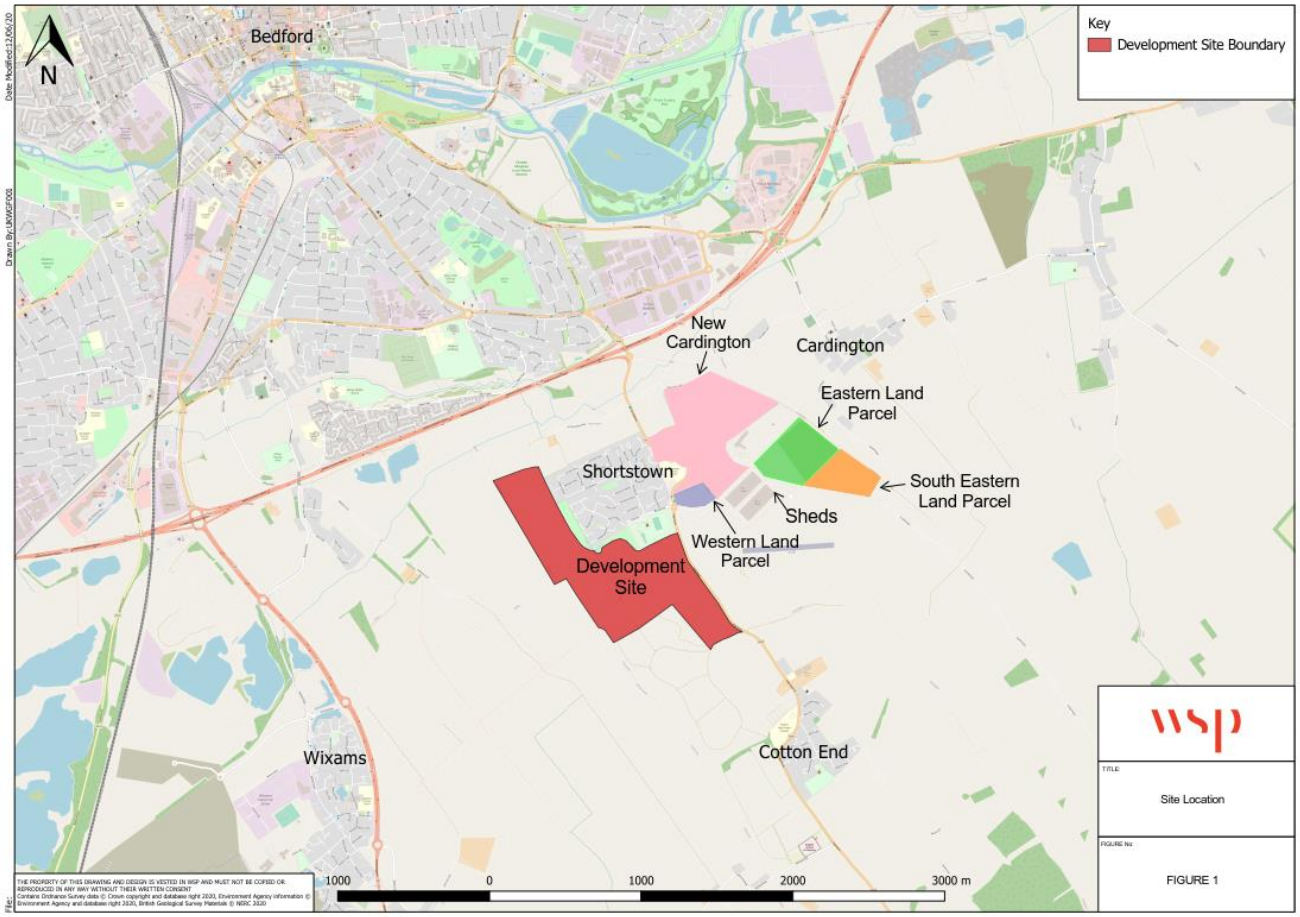
1.1.2. The Technical Note is structured as follows:

- Site Location
- Local Policy
- Baseline Review
- Proposed Movement Strategy
- Impact of Development
- Potential Mitigation
- Next Steps
- Summary

2. SITE LOCATION

2.1.1. The Site is located to the west of Shortstown and south of Bedford and is in part bounded by A600 High Road to the east and agricultural land to the west and south. A421 which is part of the Strategic Road Network (SRN) and managed by Highways England (HE) is located further to the north of the Site. Further to the north east is 'New Cardington' which comprises some 1,100 homes and social facilities and is currently in the final phase of being built out. Almost immediately east are the two listed airship sheds (the 'Sheds') and surrounding development land which has partially implemented planning permission for over 700 homes, as shown below in Figure 2-1.

Figure 2-1 - Site Location



3. POLICY CONTEXT

3.1. NATIONAL PLANNING POLICY FRAMEWORK (FEBRUARY 2019)

3.1.1. The Government's National Planning Policy Framework (NPPF) emphasises the importance of rebalancing the transport system in favour of sustainable transport modes, whilst encouraging local authorities to plan proactively for the transport infrastructure necessary to support the growth of major generators of travel demand.

3.1.2. At the heart of the NPPF is the presumption in favour of sustainable development, which is seen by the industry as "the golden thread" running through both plan making and decision taking.

NPPF: SECTION 9 – PROMOTING SUSTAINABLE TRANSPORT

3.1.3. In relation to considering development proposals, Paragraphs 109 and 110 of the NPPF state:

> *"109. Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."*
>
> *110. Within this context, applications for development should:*
>
> *a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
>
> *b) address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
>
> *c) create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
>
> *d) allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
>
> *e) be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations."*

3.1.4. The Site will be designed with pedestrians and cyclists in mind, with, where appropriate, the residential streets forming shared spaces where primary consideration will be given to the safety and convenience of non-motorised users. In relation to public transport, bus stops will be provided on Site to serve the development and would be fully accessible by local residents within an acceptable walking distance following key desire routes.

3.2. BEDFORD LOCAL PLAN 2030, JANUARY 2020

3.2.1. The Bedford Local Plan 2030 was adopted in January 2020 and sets out Bedford Borough Council's (BBC) strategy for meeting the borough's needs to 2030. The Plan sets out the policies by which development will be considered, including those related to transport and sustainable travel.

3.2.2. Transport is a key element of the objectives for the borough in 2030, with references as follows:

"As the borough grows and takes advantage of improved east-west connectivity quality of life will continue to improve. Residents and visitors alike will value Bedford borough for its attractiveness as a place to live and work and for its accessibility."

3.2.3. Objective 7 of the Plan aims to:

"Improve the borough's transport infrastructure in order to support growth in the local economy and to make the borough more attractive as a place to live and do business. Reduce congestion in the borough, particularly into and around the town centre and by making journeys by public transport, walking and cycling more attractive to encourage an increase in more sustainable and healthy modes of transport."

POLICY 31 – THE IMPACT OF DEVELOPMENT – ACCESS IMPACTS

3.2.4. Policy 31 sets out the need to ensure development proposals do not have an adverse impact on the public highway, with contributions to mitigation measures as appropriate. It states that developments should give attention to:

- Highway capacity, parking provision, safety and general disturbance;
- Provision of access by public transport, cyclists and pedestrians; and
- Suitability of access arrangements for all members of the community.
- Suitability of access arrangements for service and emergency vehicles.

POLICY 53 – DEVELOPMENT LAYOUT AND ACCESSIBILITY

3.2.5. Policy 53 aims to ensure developments takes on board the opportunities available to integrate sustainable design and layout within development proposals, wherever possible developments should be:

- Located and designed to provide access to local services by foot, cycle and by public transport.

POLICY 86S – DELIVERING INFRASTRUCTURE

3.2.6. Policy 86S requires that new development is required to either provide or contribute towards the provision of measures to directly mitigate the impact on existing infrastructure, secured through planning obligations or Community Infrastructure Levy (CIL) payments. Developments will need to demonstrate the need for the infrastructure and the phasing of implementation alongside development completion to ensure impacts are appropriately mitigated.

POLICY 87 – PUBLIC TRANSPORT

3.2.7. Policy 87 requires new development to provide:

- Public transport and infrastructure suitable for dedicated facilities from early occupation of the development;
- A bus stop within 400m of every dwelling and workplace with relevant service levels;
- Facilities capable of reflecting technology requirements (e.g. real-time information); and
- Contribute to off-Site interchange facilities.

POLICY 88 – IMPACT OF TRANSPORT ON PEOPLE, PLACES AND ENVIRONMENT

3.2.8. Policy 88 requires developments to demonstrate the social and environmental impact of traffic in terms of air quality management, resilience on the highway network, noise and pollution control, sustainable transport facilities, freight movements and highway safety.

POLICY 89 – ELECTRIC VEHICLE INFRASTRUCTURE

3.2.9. Policy 89 requires development to take account of BBCs policy for low emission vehicle infrastructure to ensure a coordinated approach across the Borough.

POLICY 90S – TRANSPORT INFRASTRUCTURE AND NETWORK IMPROVEMENTS

3.2.10. Policy 90S sets out the key pieces of transport infrastructure required to deliver the Local Plan and strategic growth, including consideration of the early provision of schemes. The Policy includes a commitment from BBC to work with partners, agencies and developers to deliver the infrastructure. East-West Rail, a new railway station at Wixams and junction improvements along A421 are included within the policy, as detailed within BBC's Infrastructure Development Plan. Development of the Site would create an opportunity to improve local infrastructure and enhance bus services that would also offer a wider community benefit across Shortstown, New Cardington and land surrounding the listed Sheds.

POLICY 91 – ACCESS TO THE COUNTRYSIDE

3.2.11. Policy 91 safeguards existing public rights of way, ensuring they are appropriately incorporated into new developments and providing improvements to enhance accessibility of the routes for all users.

SUMMARY

3.2.12. Any planning application for development at the Site would be accompanied by a comprehensive Transport Assessment (TA) and Framework Travel Plan (FTP) ensuring that the impacts of development are mitigated and managed to an acceptable level.

3.2.13. Development of the Site would align with the vision and objectives the Local Plan 2030 through minimising the need to travel, and provision of enhanced connectivity by all modes including improved walking, cycling and public transport infrastructure.

3.3. LOCAL PLAN 2030 INFRASTRUCTURE DELIVERY PLAN, SEPTEMBER 2018

3.3.1. A supporting document to the Bedford Local Plan is the Infrastructure Delivery Plan (IDP), dated September 2018. The IDP sets out BBC's aspirations and expectations for the delivery of infrastructure required in the area to meet the objectives, principles and policies of the National Planning Policy Framework (NPPF).

3.3.2. The main transport infrastructure requirements relevant to the Site as set out in the IDP include:

- A421/Bedford Road/Cambridge Road junction
  - desirable, to be funded by Community Infrastructure Levy (CIL) - £200-250k;
  - to be delivered 2026-2030;
  - junction enhancement potentially traffic signals or segregated left turn onto A421;
- A421/A428 junction

- essential, to be funded by CIL/Highways England - £150-200k;
- to be delivered pre-2026;
- enhancement to provide uninterrupted flow of traffic, expected to comprise an additional lane on the A421 westbound off-slip; and

- New railway station at Wixams
  - essential, to be funded by s106 contributions/Network Rail/third party - £21m;
  - to be delivered pre-2024;
  - BBC have agreed to provide part funding for the station in order to secure delivery.

3.4. BEDFORD LOCAL TRANSPORT PLAN 2011-2021

3.4.1. The third Local Transport Plan (LTP) for Bedfordshire was published on 1st April 2011. There are six objectives set out in LTP3, of which the following four are relevant to the proposed development:

- *"Objective 1: To provide a reliable and efficient transport system, in order to support a strong local economy and facilitate sustainable growth.*
- *Objective 2 To deliver improvements that encourage a reduction in transport emissions and greenhouse gases, in order to tackle climate change and develop a low carbon community capable of adapting to the impacts of climate change*
- *Objective 3 To promote greater equality of opportunity by providing opportunities for all residents to access key services and facilities*
- *Objective 4: To contribute to better safety, security and health by reducing death, injury or illness from transport and promoting travel modes that are beneficial to health*
- *Objective 5: To encourage and support a sustainable transport system that contributes to a healthy natural and urban environment*
- *Objective 6: To gain a better understanding of travel behaviour in and out of the Borough, in order to make informed decisions on how people can be encouraged to make "smarter" sustainable travel choices"*

3.4.2. Development of the Site would identify with the objectives in LTP3 through being located near to good public transport with infrastructure improvements proposed to support and help facilitate growth in Bedford in a sustainable way. The provision of facilities on the Site will reduce the need to travel by car, thereby reducing transport emissions. The development would promote travel opportunities for non-car users, so that the impact on the existing transport network is reduced, but also to encourage 'active mobility' and positive travel behaviour choices.

3.5. BEDFORD LOCAL PLAN TRANSPORT ASSESSMENT, AUGUST 2018

3.5.1. The TA produced by Systra on behalf of BBC in support of their Submission Draft Local Plan reviews the future forecast Reference Case of 2021 and a Local Plan assessment with a year of 2030. The Local Plan assessment includes an additional 4,356 dwellings with some growth to the south of the town around A421. A number of committed highway improvements are included within the strategic traffic model and comprise dualling and improvements at the A421/A1 Black Cat interchange and uninterrupted flow at the A421/A428 junction.

3.5.2. The 2030 assessment suggests that the A421 corridor will be operating at around 60-70% Volume Capacity Ratio (VCR), with the junctions of A421/A600 at 70-90% (AM) and 60-90% (PM); and the junction of A421/A6 at 70-90% (AM) and 80-100% (PM). Mitigation is included within the model

assessments, but not at these junctions as they are considered to operate satisfactorily in the Future Case. A600 south of A421 indicates no congestion nor delays in 2030. Plots of VCR from the 2030 assessment are included in **Appendix A** of this Technical Note.

3.5.3. The junction of A421/Bedford Road/Cambridge Road is forecast to operate at over 100% in the AM peak and 90-100% in the PM peak, as a result of traffic exiting Priory Business Park. An improvement is suggested for this junction including a segregated left turn onto A421 from the business park, although the suggested mitigation doesn't alleviate the congestion to any great extent. Mitigation considered within the model identifies this junction as 'newly signalised'.

3.5.4. The TA also suggests that the following measures should be implemented to encourage mode shift away from the private car:

- Travel Planning and promotion of active modes;
- Reduced parking within new developments;
- Rail enhancements including East-West Rail and two new stations (north of Bedford and Wixams); and
- Park and Ride and bus priority measures.

3.5.5. The Local Plan modelling does not include within the Reference Case either the proposed station at Wixams or East West Rail, both of which are committed schemes that would provide a shift toward more sustainable travel modes.

3.5.6. The Local Plan modelling analysis also does not take account of the Oxford to Cambridge Expressway which subject to funding, is programmed to be delivered by Central Government at the end of the emerging Plan period 2030.

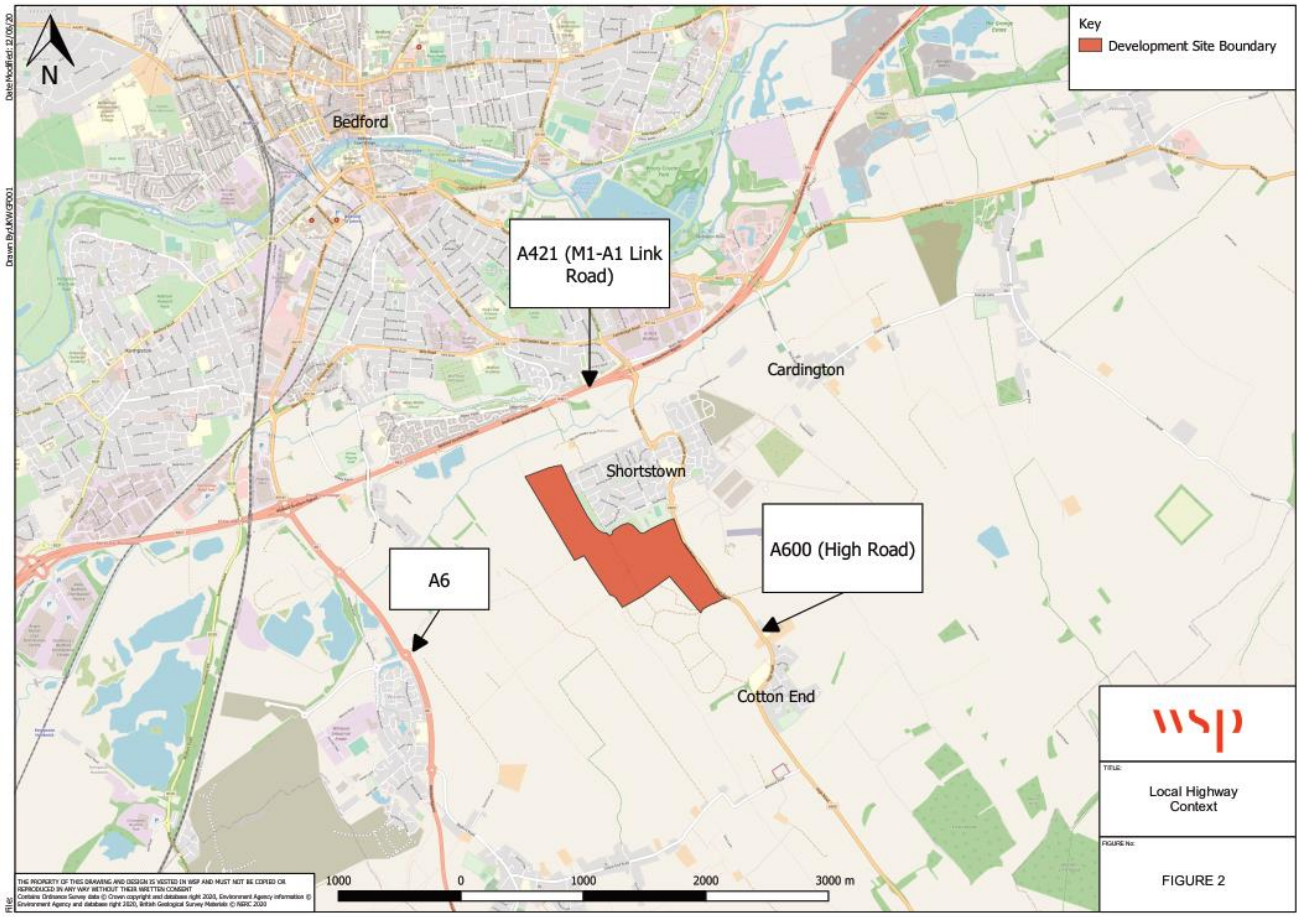
3.5.7. Development of the Site would therefore present little change in the spatial impact of traffic on the local area as determined by the Systra report.

4. BASELINE REVIEW

4.1. LOCAL & STRATEGIC HIGHWAY NETWORK

4.1.1. The local highway network comprises A600 High Road to the east and connects with Bedford to the north via A421 and Cotton End and Shefford further south. A600 is subject to a 30mph posted speed limit between Cotton End and 'New Cardington'. Further north, the posted limit changes to 40mph on the approach to the grade separated junction with A421 which provides a strategic link with M1 in the west and A1 in the east. Other local roads to the east are predominantly rural in nature and serve Cardington village.

Figure 4-1 - Local Highway Network



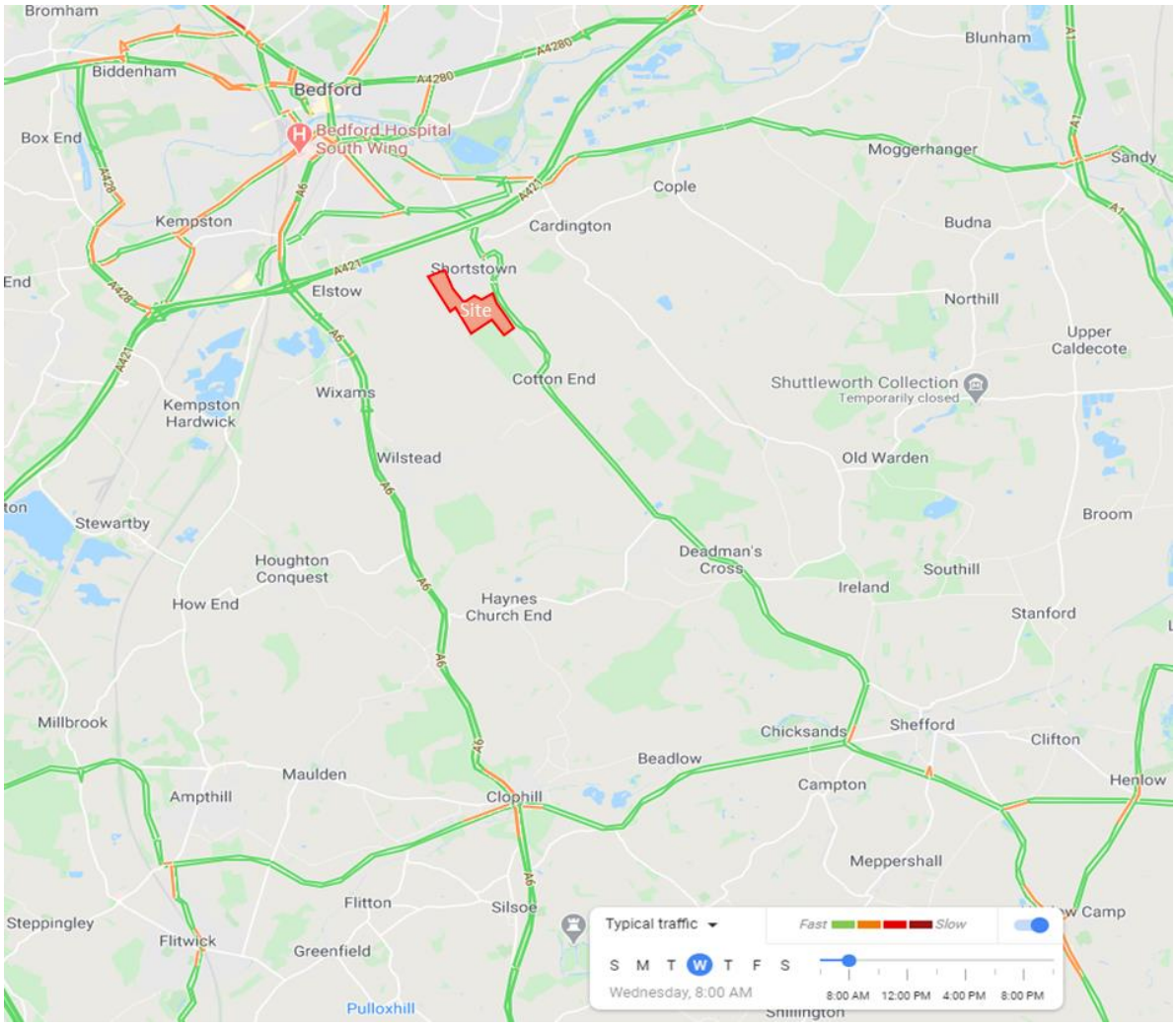
4.1.2. Traffic surveys completed in July 2019 show that the two-way traffic flow on A600 High Road is around 1,000 vehicles in the AM peak and 900-1,000 vehicles in the PM peak. A rural single carriageway like A600 High Road would have a theoretical link capacity of 1,700-2,000 vehicles per hour and is therefore operating well within existing link capacity.

4.1.3. The Greycote Roundabout, at the southern end of Shortstown village, is currently operating well within capacity. In future years with the development to the east of A600 and the listed Sheds, the roundabout is forecast to continue to operate well within capacity[1].

CONGESTION HOTSPOTS

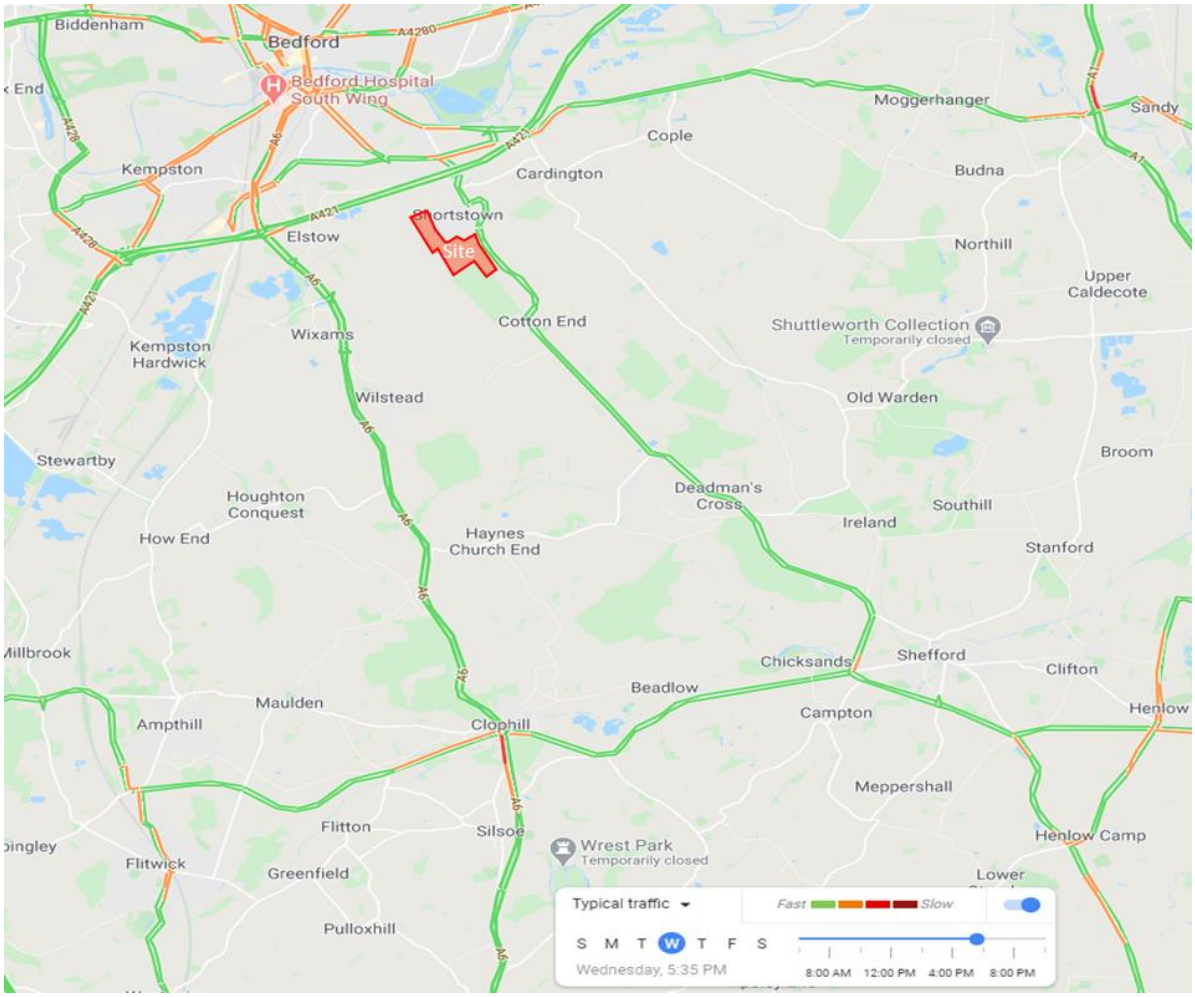
4.1.4. A high-level view of typical (pre- COVID-19) traffic conditions in peak hours has been completed using the Google Maps Traffic function, which gives typical information on the speed of traffic and therefore provides an indication of traffic congestion. Figure 4-2 and Figure 4-3 show typical traffic conditions during the AM and PM peak hours.

Figure 4-2 - Typical Network Conditions on a Wednesday at 0800



[1] WSP, 2020, Cardington Eastern/South Eastern Land Parcel, Transport Assessment

Figure 4-3 - Typical Network Condition on a Wednesday at 1735



4.1.5. These observations from Google Maps Traffic show that A600 High Road currently operates with little to no congestion during the peak hours. Some minor congestion does occur at junctions however queuing dissipates within a short period. A421 westbound and eastbound operates with little to no congestion during the AM and PM peaks.

HIGHWAY SAFETY

4.1.6. A600 has a good safety record in the vicinity of the Site, with no personal injury collisions recorded at the Greycote roundabout in the five-year period from 2014-2019. One collision occurred in that time period at the southernmost point of the Site frontage, as a result of a vehicle straddling the centre line and colliding with an oncoming vehicle. Since the time of that collision, the speed limit on A600 has been reduced from 60mph to 30mph. A speed camera is also in operation on A600, located outside the Cardington listed Sheds.

EXISTING SITE ACCESS

4.1.7. The Site is currently accessible via two field accesses from A600, located approximately 140m and 500m south of Greycote Roundabout. The existing Site accesses are shown in Figure 4-4.

Figure 4-4 - Existing Site Accesses

4.2. PUBLIC TRANSPORT

BUS TRAVEL

4.2.1. Bus routes 9A/9B operate along A600, directly passing the Site with services every 30 minutes in each direction between Bedford and Shefford/Hitchin. The nearest bus stop served by service 9A/9B is 'Cardington Hangers', which is located on the Site frontage approximately 150m south of Greycote roundabout in both directions. Journey time to Bedford Bus Station from the 'Cardington Hangers' bus stop is around 22 minutes.

4.2.2. Further connections are available within Shortstown with a high frequency circular route 9 operating every 15minutes Monday to Saturday from the 'De Haviland Avenue' bus stops 260m north of the Site's frontage on A600. Local bus stops are shown on Figure 4-5 and bus routes in Figure 4-6.

Figure 4-5 - Local Bus Stops

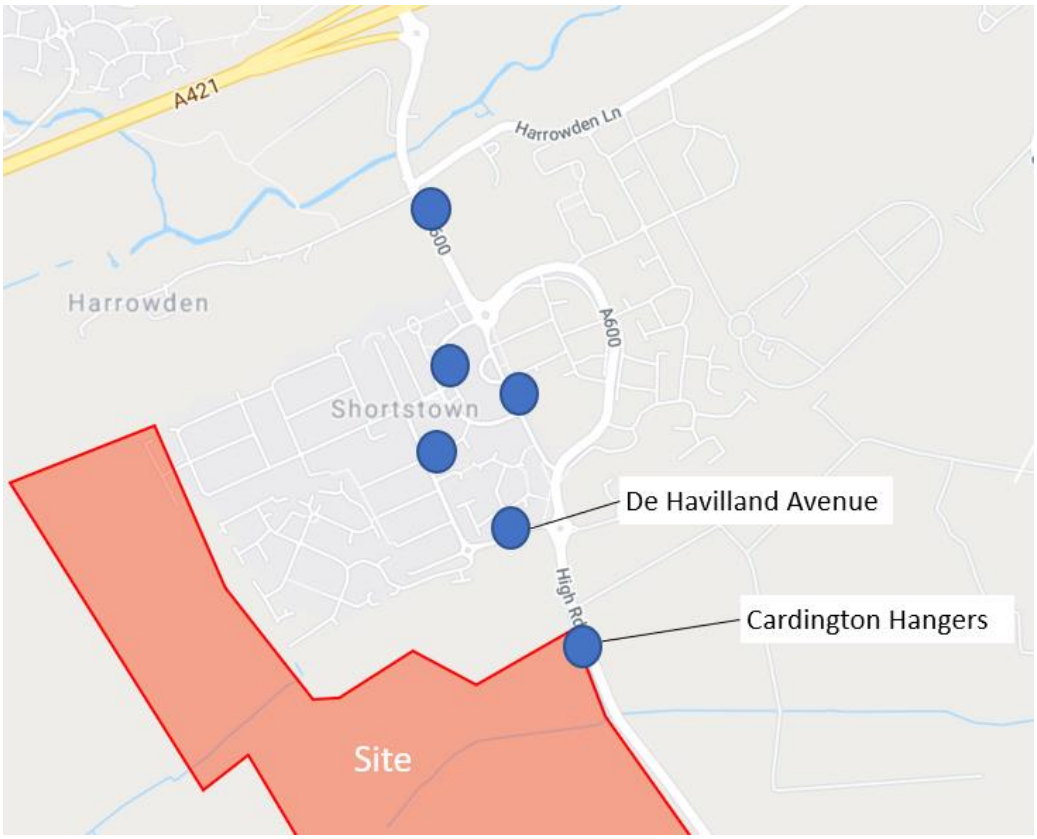
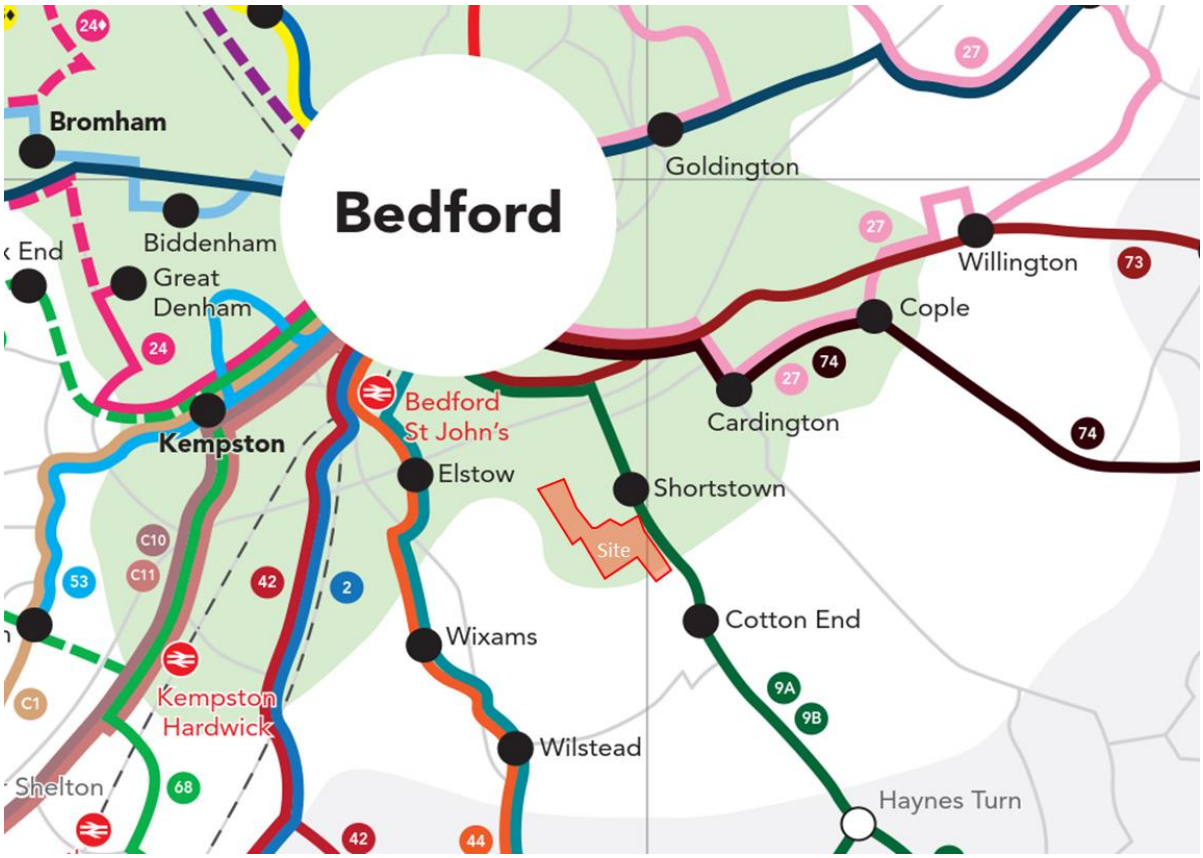


Figure 4-6 - Local Bus Routes[2]



RAIL TRAVEL

4.2.3. The nearest rail connection is at Bedford approximately 4.6km to the north, on the Midland Mainline, with frequent rail services operated by Thameslink between Bedford and London, Brighton, and Kent. Services are also provided from Bedford to Bletchley (for connections to Milton Keynes) on the Marston Vale Line.

4.2.4. A new railway station will be created at Wixams, approximately 3.75km to the west of the Site. When operational, which is currently targeted to be late 2023[3]l, it will provide an alternative to Bedford Station. The Wixams station would be accessed via A421 for vehicles and via the rural road network and the village of Wilstead for cyclists.

4.3. PEDESTRIAN AND CYCLE ROUTES

4.3.1. All roads within Shortstown include footways on one or both sides, connecting the Site with local facilities including convenience shops, the village hall and a doctor's surgery.

4.3.2. A shared use footway/cycleway is available between Shortstown and the village of Cotton End, as shown in Figure 4-7. A signalised pedestrian crossing and horizontal deflection chicanes along A600 High Road ensures safety for local residents walking/cycling between Shortstown and Cotton End.

[2] Bedford Borough Council Public Transport Map, July 2019

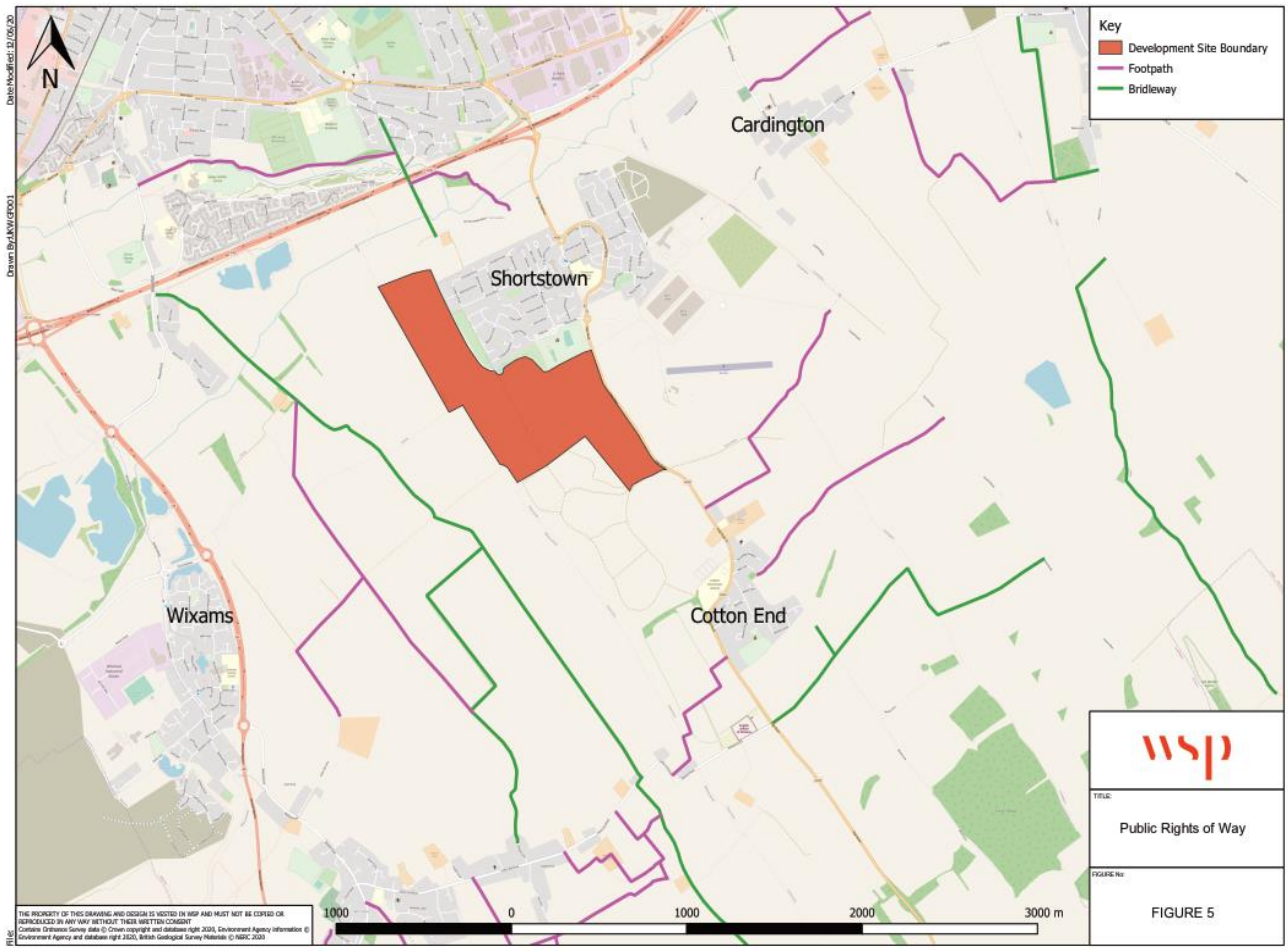
[3] A Rail Strategy for Bedford, BBC, December 2019

To the north of Greycote roundabout, there are also walking and cycling routes that link with local community facilities at 'New Cardington'.

Figure 4-7 - A600 High Road Shared Footway/Cycleway

4.3.3. The local Public Rights of Way (PRoW) in the vicinity of the Site are shown on Figure 4-8. Public footpaths/bridleways are located to the east/south east, linking to Southill Road. To the west of A600 High Road, there are footpaths connecting to Wilstead village. Cycle connections to the Wixams new villages are available via Wilstead Road/Cotton End Road/Bedford Road, providing access to the new major employment areas to the south west of Bedford.

Figure 4-8 - Public Rights of Way



4.4. ACCESS TO LOCAL FACILITIES

4.4.1. Local facilities are available within walking/cycling distance of the Site, including pre-school and primary education, healthcare and retail. Public transport connections also provide access to key destinations within Bedford Town Centre. The local facilities and their distances from the Site are shown in Table 4-1 and on Figure 4-9.

Table 4-1 – Access to Facilities

Amenity	Facility	Distance (km)
Education	Shortstown Primary School Cotton End Primary School	800m 1,500m
Community	Shortstown Village Hall Cotton End Village Hall	390m 1,950m
Retail	Tesco Express, Shortstown McColls, Shortstown	920m 740m
Health	Shortstown Surgery	720m

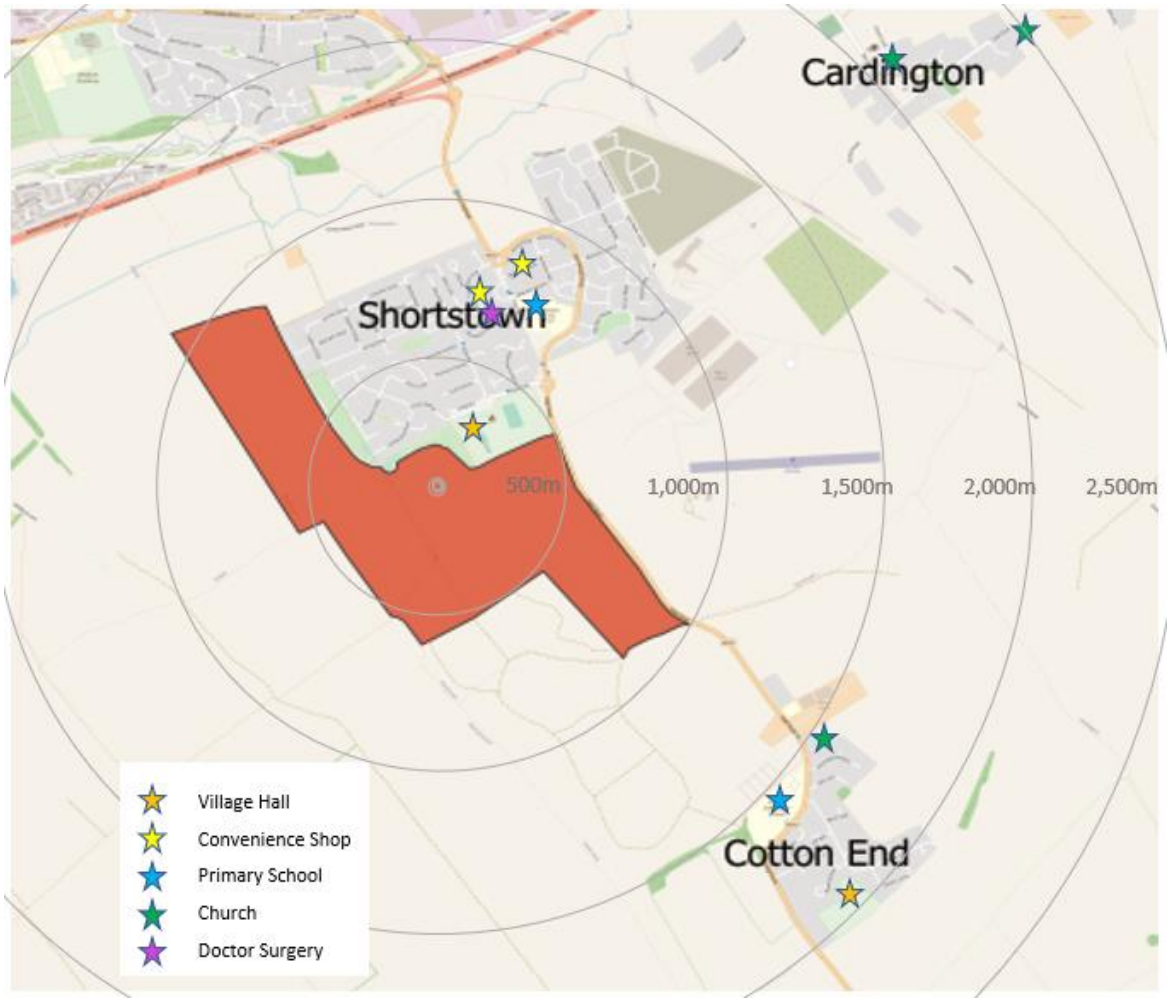
4.4.2. The distances to local facilities in Table 4-1 show that each types of facility is available within a walkable catchment of 800m[4] or 10 minutes' walk, and with attractive, safe and stimulating routes, the walkable catchment increases ensuring that the distances from the Site to the local facilities are sustainable, and is fully accessible on foot as well as by bicycle, thereby reducing the dependence on the car.

4.4.3. The nearest primary schools to the Site are at either Shortstown or Cotton End. In this regard, the proposed development would include a new 2 form entry primary school within the Site to serve new residents and to accommodate future education demands[5].

4 CIHT, Planning for Walking, 2015,

5 If required by BBC, expansion space to 3FE could be provided

Figure 4-9 - Access to Local Facilities



5. PROPOSED MOVEMENT STRATEGY

5.1.1. The overarching principles of movement are predicated on the provision of high quality sustainable links to serve development areas within the Site and to improve accessibility to the wider area. The Site is well placed to provide enhanced connections for all modes of travel for the development.

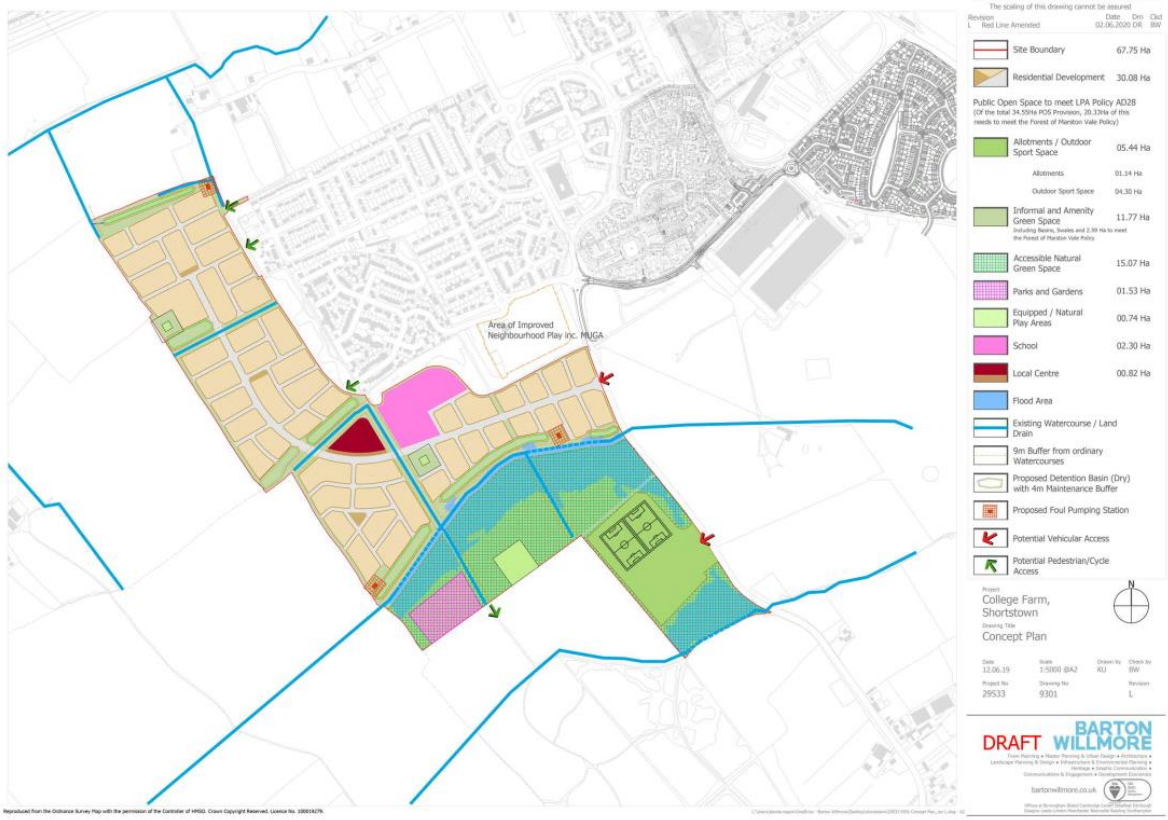
5.1.2. The Movement Strategy aims to create a sustainable transport network which is less reliant on the private car and accessible to all modes of travel. The Strategy will be implemented in the context of a Site wide Travel Plan (TP) to influence travel behaviour. Provision on-Site for local services and facilities (local centre, education, sport, open space) will allow a strong focus on internalisation to minimise unnecessary external trips.

5.2. VEHICLE ACCESS

5.2.1. The proposed development would be served by a new junction on A600, located south of the access that currently serves the listed airship Sheds at Cardington and south of the existing northern field access. The proposed access would most likely take the form of an 'at grade' roundabout with a controlled combined crossing to cater for pedestrians and cyclists.

5.2.2. The initial length of the proposed Spine Road leading from A600 would be a 'boulevard' style that would be sufficiently wide for access by local bus services and also 'off road' cycle provision connected to the proposed controlled crossing on A600. Further into the Site, the road network would comprise access roads and 'shared areas' that would serve the development areas and connect with the community facilities.

Figure 5-1 – Concept Plan



5.2.3. The proposed primary school would be centrally located along the Spine Road to provide connectivity with the development areas for pedestrians and cyclists and permeability along safe and secure routes. A public transport 'node' with Real Time Passenger Information (RTPI) would also be provided in close proximity to the school and local centre for ease of access for parents and students.

5.2.4. An additional emergency access, combined as 'green' corridor to accommodate pedestrians and cyclists, would also be located along the A600 at a point south of the existing southern field access. The 'green' corridor would connect the development areas with the proposed community public open space and formal playing fields.

5.3. BUS & RAIL TRAVEL

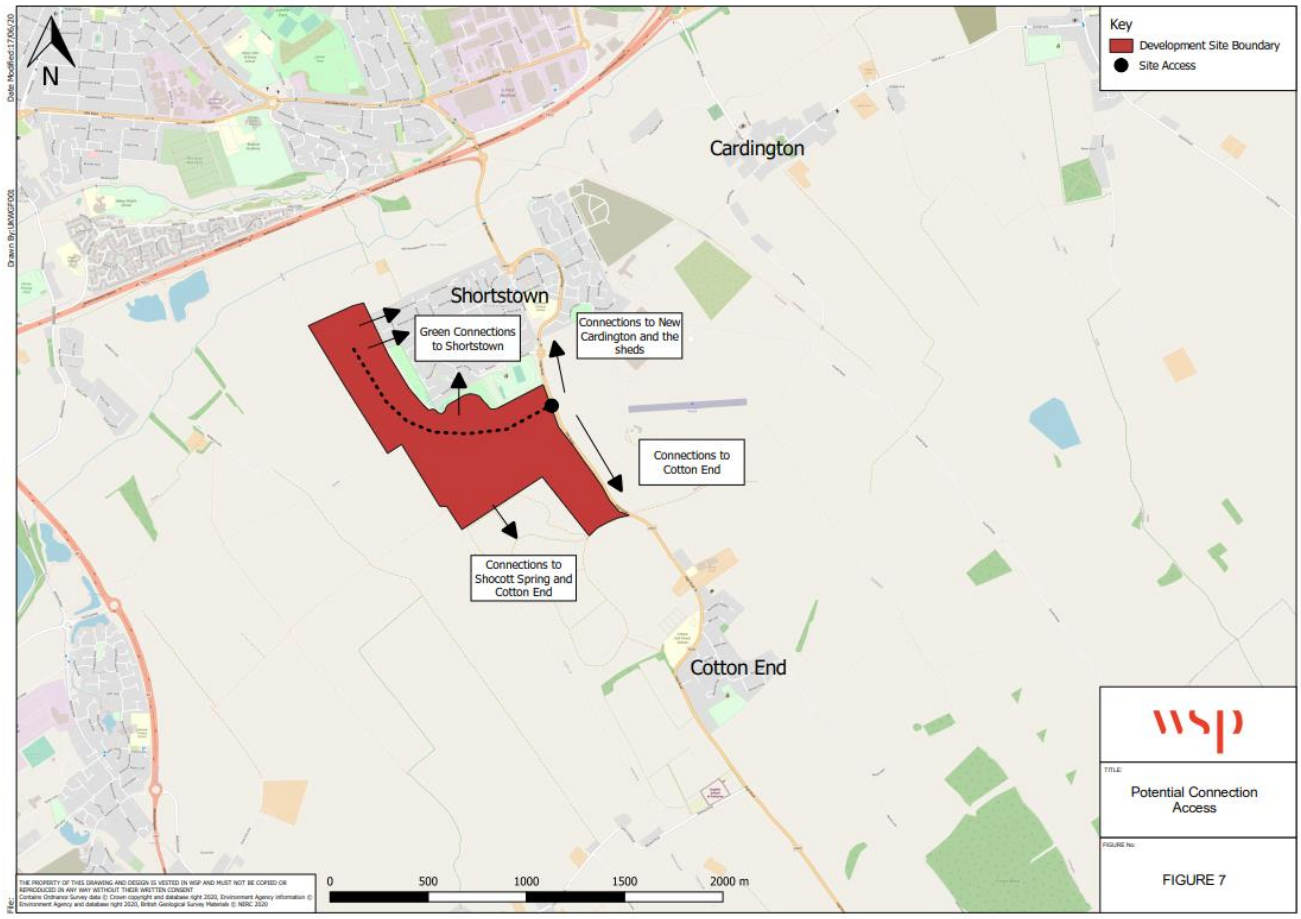
5.3.1. Connections to public transport would be made through enhancing existing bus services into Shortstown and beyond to Bedford. The proposed masterplan will focus on 'placemaking' to accommodate either extended or new viable bus services into the Site and serve a central bus hub that would be accessible by future residents within a 400m walking distance of dwellings and other community facilities. It is likely that any new/extended bus service would also serve the partially implemented development at 'New Cardington' and the land east of the listed Sheds. The service specification and scheduled timings of any new/extended service would be agreed with the primary operator at some future point, but the intention would be to the link the Site with the local rail stations at Bedford for rail travel towards London and the north, and for future connections to East West Rail for travel to Oxford and Cambridge.

5.4. PEDESTRIANS AND CYCLISTS

5.4.1. Connections will be made to the existing network of footways in Shortstown via the main Site access and via other appropriate links, to serve the proposed community services located within the Site and other facilities further afield, including the local centre at 'New Cardington'. Connections to the existing cycle routes in Shortstown will also be made and enhanced to ensure that the routes are attractive and safe for cyclists. A controlled crossing will be provided across A600 High Road and would provide access to the combined footway/cycleway on the eastern side of A600 that extends between 'New Cardington and Cotton End.

5.4.2. Additional secure and covered cycle parking could be provided at appropriate locations such as local community facilities, subject to need, to encourage short distance trips.

Figure 5-2 - Potential Site Connectivity



5.5. SUMMARY

5.5.1. The Site Movement Strategy aims to create a sustainable network that would cater for all travel modes, with enhanced connectivity and permeability for pedestrians, cyclists and public transport services between development areas and community facilities. The strategy would be implemented in the context of a Site wide TP that would apply to all land uses. The delivery of sustainable travel options within the site and the local area will positively influence sustainable travel behaviours from the first occupation of the proposed development, which will help to minimise the transport impacts of the development on the local area.

6. IMPACT OF DEVELOPMENT

6.1.1. The impact of residential development for around 1,000 dwellings on the Site would need to be reviewed in detail within a TA that would accompany a subsequent planning application. Within this TN, a broad vehicle trip generation, distribution and assignment has been estimated to provide an idea of the impact of the proposed development on the local highway network.

6.2. TRAVEL MODE

6.2.1. Census 2011 data shows that residents within Shortstown travel to work mainly by car, although with a relatively high proportion of train users and pedestrians, as shown in Table 6-1.

Table 6-1 - Travel Mode of Residents of Shortstown, Census 2011

Travel Mode	Census 2011
Driving a car or van	71%
On foot	11%
Passenger in a car or van	6%
Bicycle	4%
Bus, minibus or coach	4%
Train	2%
Motorcycle, scooter or moped	1%
Underground, metro, light rail, tram	0%
Taxi	0%

6.2.2. It is important that good quality, attractive links are made between the Site and Bedford Town Centre/the rail station by bus, cycle and walking to encourage the use of sustainable modes of transport. This includes connecting the Site with the local footway and cycle network via the main Site access point, as described in Section 5. By making these connections, the current levels of sustainable travel within Shortstown can be replicated and improved upon for new residents at the Site through the implementation of a comprehensive Sustainable Movement Strategy and TP as previously explained.

6.3. VEHICLE TRIP GENERATION

6.3.1. At this stage, a broad vehicle trip rate of 0.5 trips per dwelling in the peak hours has been assumed, split between arrivals and departures on a 20%/80% basis in the tidal direction. The number of trips estimated for 1,000 dwellings is shown in Table 6-2.

Table 6-2 - Potential Site Trip Generation – 1,000 dwellings

Time Period	Arrivals	Departures	Total
AM Peak (0800-0900)	100	400	500
PM Peak (1700-1800)	400	100	500

6.4. TRIP DISTRIBUTION

6.4.1. The distribution of the potential peak-hour trips has been determined from 2011 Census data on location of usual residence and place of work. This has been extracted from the Nomis (official labour market statistics) website for Bedford, for travel to work from Bedford by the mode 'driving a car or van':

6.4.2. The commuting outflows along the main routes from the Shortstown area are shown in Figure 6-5.

Figure 6-1 - Workplace Destinations of Bedford Residents

6.4.3. In order to consider the impact of the traffic generated by the Site, the routes to the workplace destinations have been reviewed with the proportion and potential trips using each of the main local links identified in Table 6-3.

Table 6-3 - Potential Additional Peak Hour Traffic

Route	Proportion of Traffic	Potential Trips
A600 north	64%	320
A600 south	15%	75
A421 eastbound	5%	25
A421 westbound	15%	75

6.4.4. The additional development trips on the local and strategic highway network during the peak hours will be accommodated within existing capacity or through minor improvement to junctions to the north of the Site. Through the delivery of the Travel Plan, trips by private car will be discouraged in favour or more sustainable and active modes of travel to further reduce any impact of the development on the local and strategic highway network.

6.4.5. A more detailed assessment of trip distribution and assignment to routes will be included within a TA to support a subsequent planning application. Notwithstanding, the predominant distribution of traffic that would be generated by the Site would be towards A421 and further north into Bedford, which is consistent with previous studies of 'New Cardington' and the land surrounding the listed Sheds.

7. POTENTIAL MITIGATION

7.1.1. The provision of community facilities on-Site within walking and cycling distance of homes would assist in internalising trips. In addition, a new/extended bus service would provide a high frequency link with Bedford and the local rail stations and create a sustainable community and minimise the impact of trips off-Site.

7.1.2. Based on the 2030 analysis contained within the Systra TA in support of the BBC Local Plan, there would be sufficient capacity in the local road network to accommodate the potential trip demand generated by the proposed development of the Site. Should there be a need to implement any highway improvements off Site to the junction of A600/A421 to accommodate future demand then further provision could be made to either enhance roundabout entry flares or introduce peak hour traffic signals.

7.1.3. Other junctions along A421 including A428 Marsh Leas, and A6/A421 would be under less pressure from generated traffic and are unlikely to require further improvement.

7.1.4. Further south from A421, the A600 Carmichael Drive roundabout has ample capacity as there is limited access to High Road, which effectively restricts opposing movements to accommodate buses only. A600 through the heart of 'New Cardington' may require some minor modification to traffic signal phasing and possibly the introduction of a MOVA controller to enhance junction capacity.

7.1.5. Greycote roundabout was originally designed to accommodate planned growth in the area, including development to the west of A600, New Cardington and the land surrounding the listed Sheds.

7.1.6. Overall, subject to the implementation of appropriate and proportionate highway improvements, it is considered that the local and strategic highway networks would have sufficient capacity to accommodate development at the Site for circa 1,000 dwellings within the emerging Plan period through to 2036 and beyond. Access improvements would be completed under a section 278 Agreement. The enhancement of public transport services, pedestrian/cycle routes would be secured by way of a Section 106 planning obligation to ensure that the cumulative residual impact of the development is not severe, in accordance with paragraph 109 of the NPPF.

8. NEXT STEPS

8.1.1. A comprehensive TA would be completed in support of any subsequent planning application in accordance with the requirements of the NPPF. This would comprise modelling of both the local and strategic highway networks at specific junctions to identify any appropriate mitigation in consultation with BBC and Highways England.

8.1.2. Discussions with public transport operators, public rights of way officers and cycling officers will also be undertaken to ensure that suitable options are planned to accommodate and influence sustainable travel options. Public transport services and pedestrian and cycle networks will be enhanced and developed in consultation with the key stakeholders to ensure that local infrastructure is both suitable and attractive to new and existing residents of Shortstown.

8.1.3. The proposed Movement Strategy included within this TN would be developed further in consultation with key stakeholders and focus on the need to minimise the number of private car trips to/from the Site (i.e. particularly single occupancy vehicle trips), and to increase travel by sustainable modes.

9. SUMMARY

9.1.1. In summary, the Site is available and deliverable and offers a great opportunity to enhance local transport infrastructure across Shortstown and in doing so, generate wider benefits by creating a sustainable integrated community for existing and future residents.

9.1.2. This TN identifies the benefits of the proposed development including potential extended/new bus routes, pedestrian/cycle improvements, and junction capacity enhancements. The proposed development would also encourage sustainable travel through the implementation of a Travel Plan, and provision of a 2 form entry primary school ,local centre, sports pitches and open spaces to reduce the need to travel off-Site and reduce the need to travel by car.

9.1.3. A broad review of the existing and proposed transport conditions has been completed, which indicates that there are no significant technical transport/highway constraints that would prevent the Site from progressing. The Site is policy compliant, available, deliverable, and therefore suitable for new residential development to be brought forward as an appropriate allocation within the emerging BBC Local Plan.

Appendix A

VCR PLOTS, BEDFORD LOCAL PLAN TRANSPORT ASSESSMENT

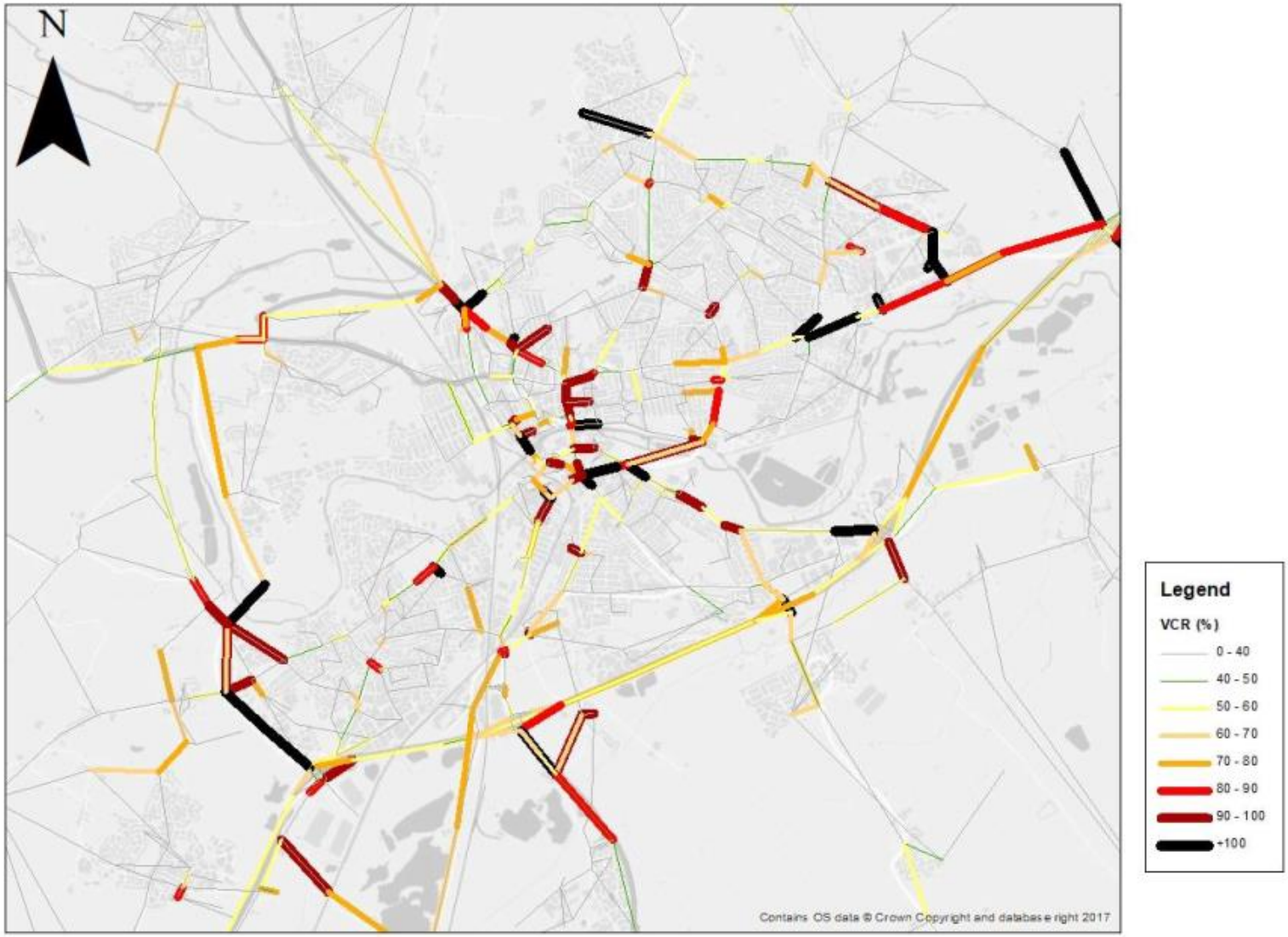


Figure 12. 2021 Reference Case – VCR (%) – AM

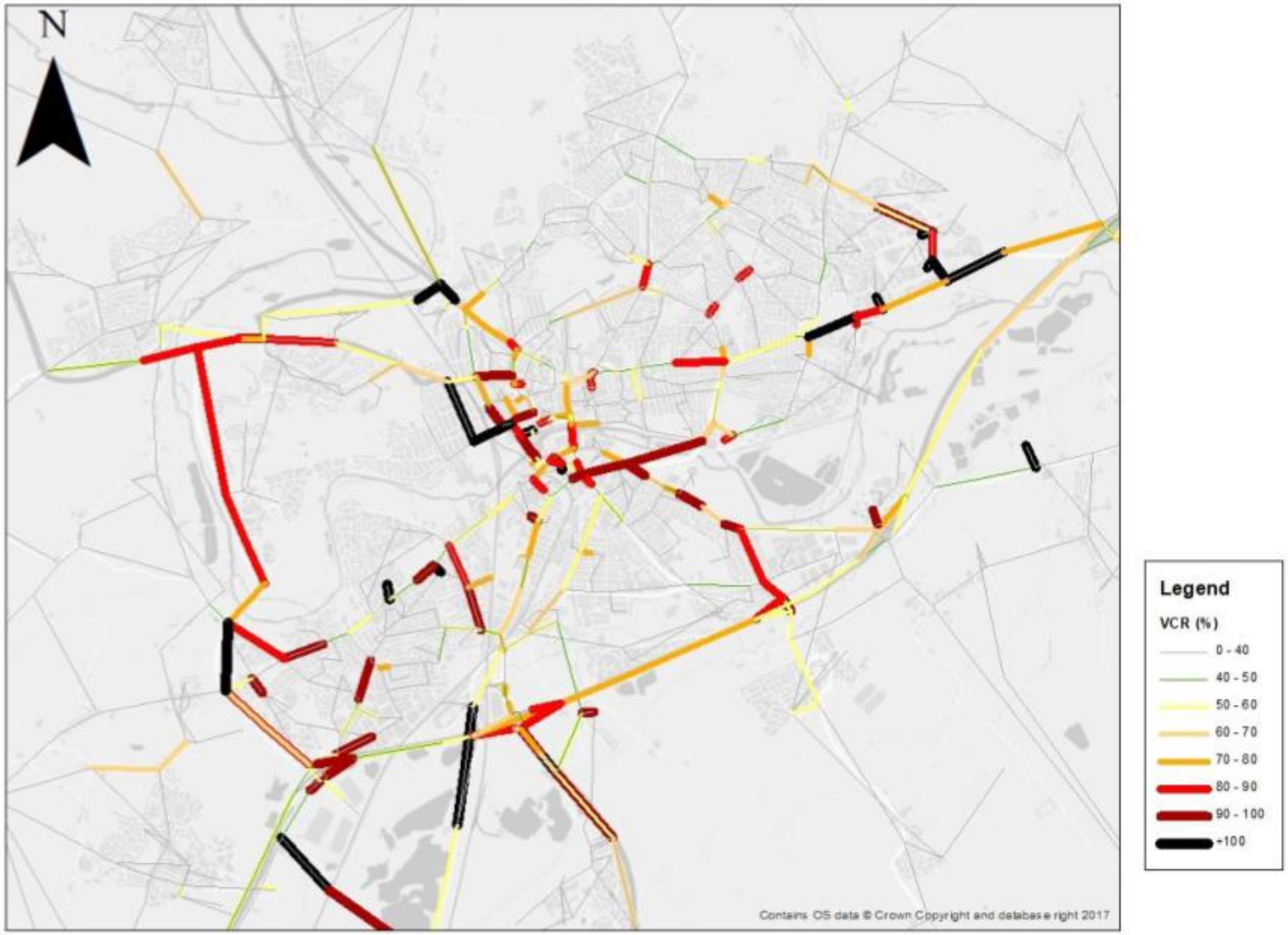


Figure 13. 2021 Reference Case – VCR (%) – PM

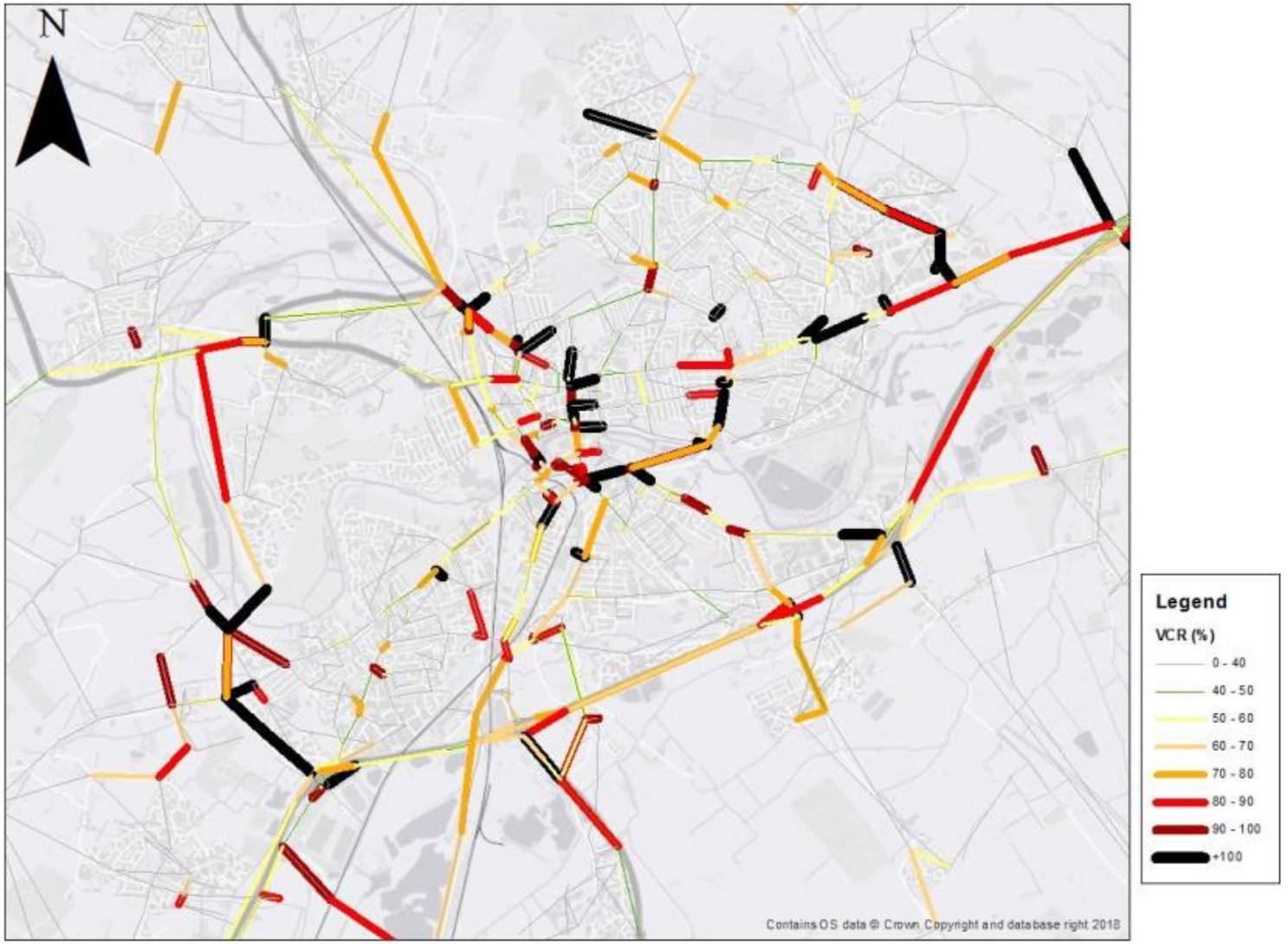


Figure 17. 2030 Local Plan – VCR (%) – AM

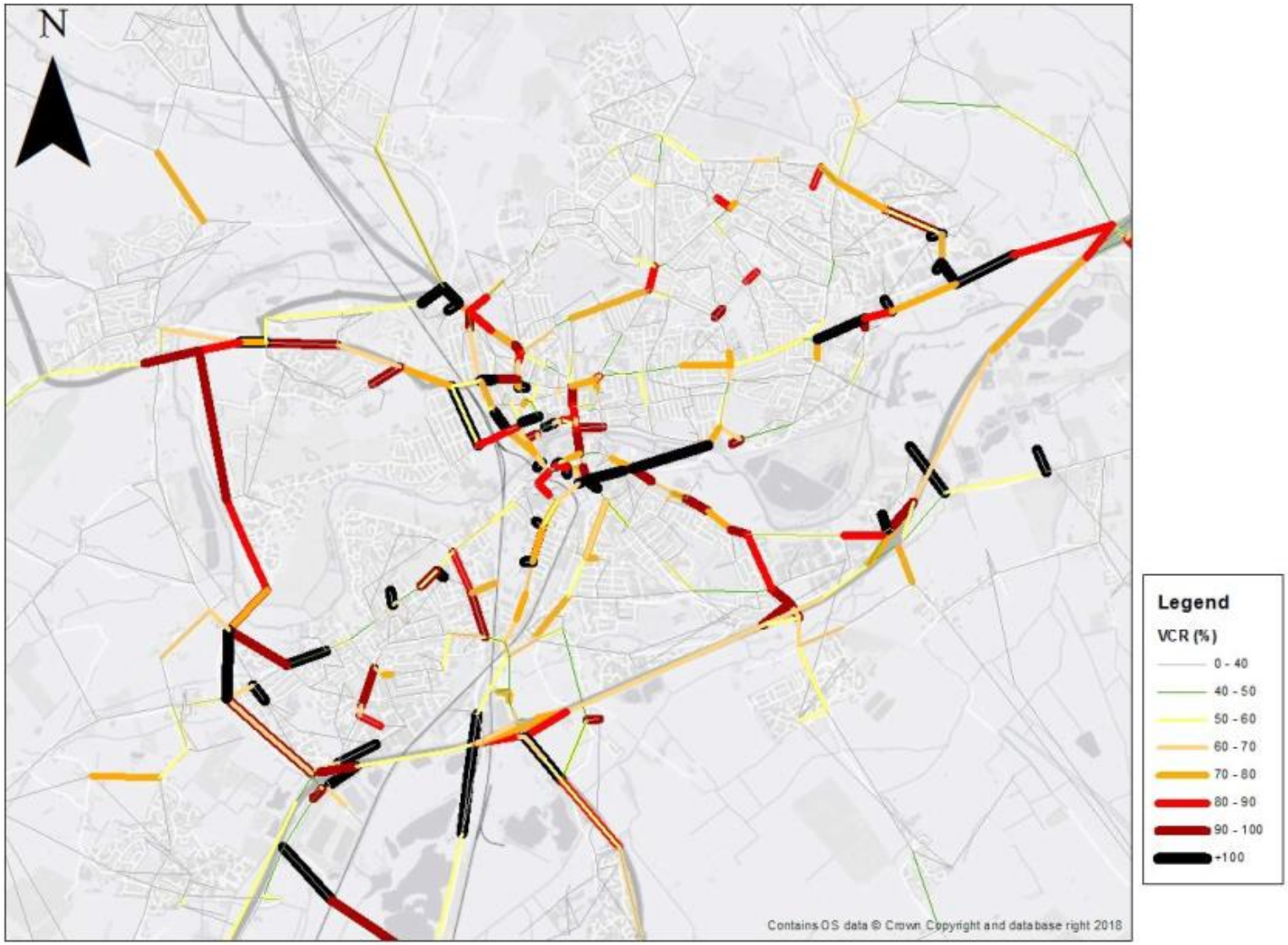


Figure 20. 2030 Local Plan – VCR – PM

Figure 27. 2030 Mitigation Options – VCR (%) – AM

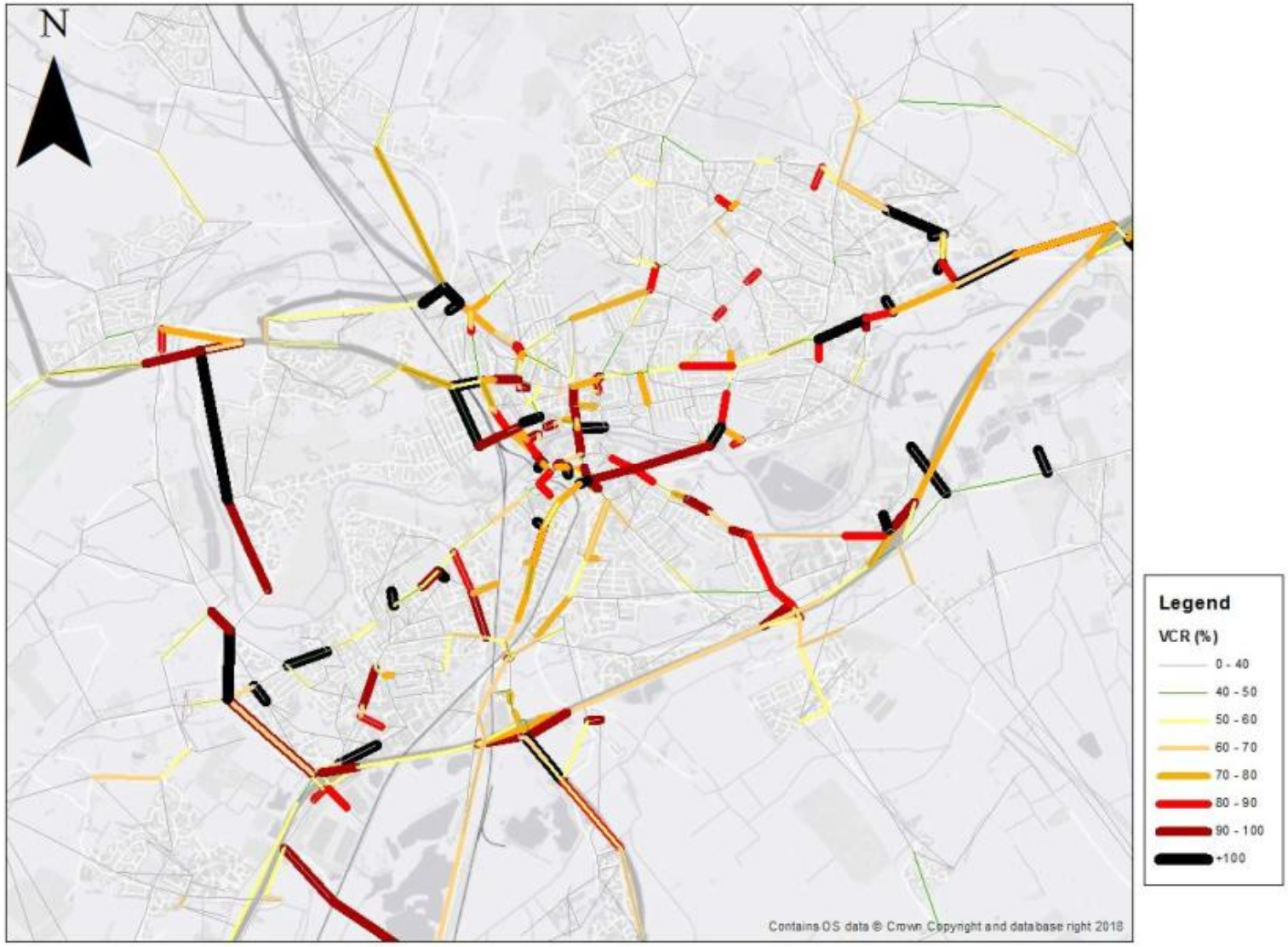


Figure 30. 2030 Mitigation Options – VCR – PM

2 London Square
Cross Lanes
Guildford, Surrey
GU1 1UN

wsp.com