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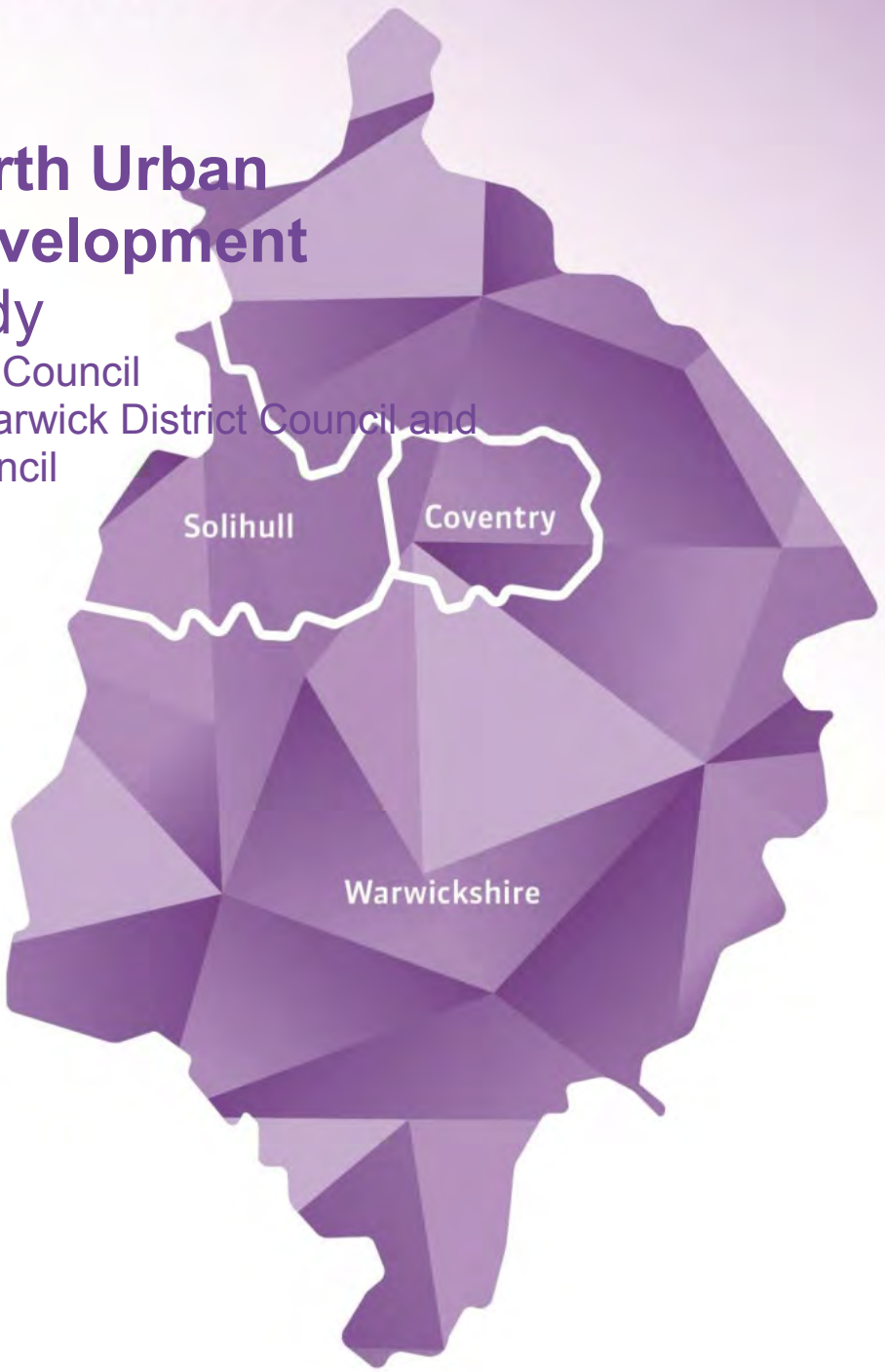
# West Midlands Shared Professional Services Contract

## East Kenilworth Urban Extension Development

## Transport Study

Warwickshire County Council
in conjunction with Warwick District Council and
Kenilworth Town Council

**9th August 2018**

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## Client signoff

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# Introduction

## Background

This document considers the transport impacts resulting from the development of land to the east of Kenilworth and other developments identified in the Kenilworth Local and Neighbourhood Plans. Warwickshire County Council (WCC), in conjunction with Warwick District Council (WDC) and Kenilworth Town Council (KTC), have appointed Atkins to undertake an assessment of the transport related impacts of the proposed development and consider potential transport infrastructure mitigation options.

In order to consider the transport impacts, the relevant policies have been reviewed and a summary is provided below.

## Warwick District Local Plan (2011-2029)

The Warwick District Local Plan sets out the Council's policies and proposals to support the development of the District through to 2029.

The vision for the area is 'to make Warwick District a Great Place to Live, Work and Visit.' This vision will be delivered by the Council and its partners through the Sustainable Community Strategy which has five key priorities; safer communities, health and wellbeing, housing, prosperity, and sustainability. The Local Plan is a key element of delivering the Sustainable Community Strategy therefore is focuses on three following strategic principles; supporting prosperity, providing the homes the District needs, and support sustainable communities.

These strategic priorities are supported by a Spatial Strategy which seeks to:

- Maximise use of brownfield sites;
- Only bring forward greenfield sites in sustainable locations;
- Avoid coalescence between settlements;
- Protect important heritage assets;
- Protect areas of high landscape value and important natural assets;
- Focus employment, retail, leisure and cultural activities in town centres; and
- Only develop sites in the Green Belt where exceptional circumstances can be justified.

The Local Plan Strategic Principles and Spatial Strategy are linked together by the Local Plan Objectives which provide the framework to deliver sustainable development by balancing social, economic and environmental imperatives. The objectives are as follows:

- Provide sustainable levels of growth in the District;
- Provide well-designed new developments that are in the right location and address climate change; and
- Enable the District's infrastructure to improve and support growth.

In the Local Plan, the land to the east of Kenilworth is allocated for 1,400 new dwellings and 8ha of employment land. It is stated that Kenilworth has experienced very little development during the past 20 years. The proposed development therefore provides the opportunity to deliver new housing and employment in a sustainable location along with the necessary supporting facilities of a primary school, secondary school, community facilities, local centre and open space.

## Warwick District Council Strategic Transport Assessment (2016)

The updated Strategic Transport Assessment (STA) document, published in February 2016, outlines the impacts of the allocation of housing and employment sites across the Warwick District. The updated STA builds upon a series of STA studies which have been subject to continuous refinement as the options for the allocation of housing and employment across the area have emerged and been considered during the Local Plan determination process. Other allocations, in addition to those to the eastern side of Kenilworth and western

Kenilworth considered by this report are H07 – Crackley Triangle (93 dwellings), H09 – Kenilworth School Site (250 dwellings), H12 – Kenilworth School Sixth Form (130 dwellings), H41 - East of Warwick Road (100 dwellings) and Land at Warwick Road (outdoor sports allocation). The report therefore focuses on the impacts identified as a result of the allocation of new housing sites across the district.

The objectives of the STA are as follows:

- To make use of the existing traffic models to assess the likely level of additional impact predicted to occur on the transport network as a result of the inclusion of development sites in the Local Plan; and
- To identify what, if any, additional mitigation measures can be delivered alongside the new housing to minimise any impacts identified.

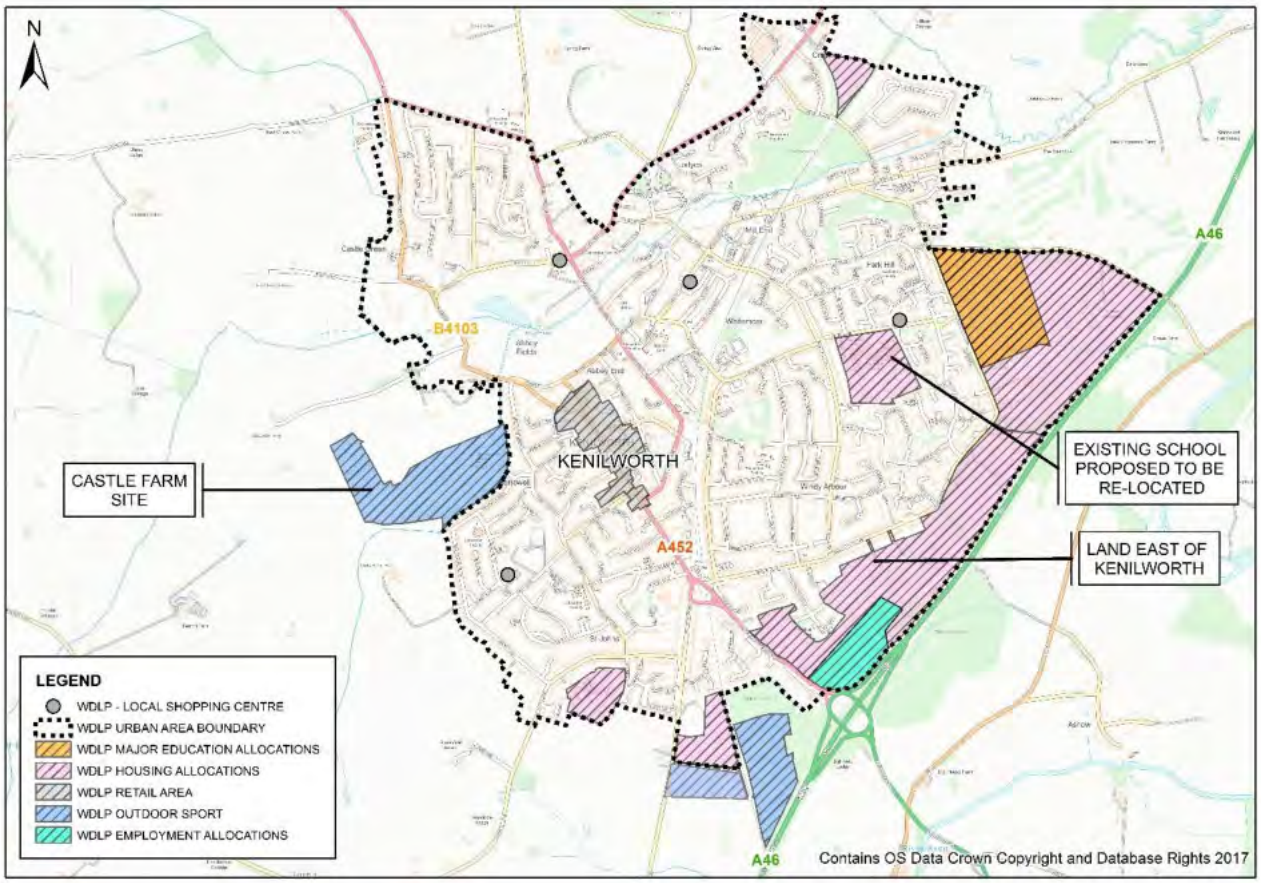
Following more detailed assessment of traffic modelling undertaken to support the STA, the following additional potential local impacts were identified for the land to the east of Kenilworth development which may require further mitigation:

- Crewe Lane as traffic from north Kenilworth and the new sites seek alternative routes to Leamington away from the A46;
- The Knowle Hill junction with Dalehouse Lane which may require signalisation for capacity/safety reasons once all of the sites to the east of Kenilworth come forward; and
- The Woodcote Lane/Warwick Road/Hill Wootton Road area in response to an increased prevalence of north/south trips across the study area. The preferred route for these additional north/south trips is the A46. At this stage, mitigation has not been proposed for alternative routes in the Woodcote Lane/Warwick Road/Hill Wootton area, as this would encourage additional traffic to use these routes rather than the strategic road network (A46). This approach will be subject to a further review at the planning application stage.

## Local Plan Allocation Sites

Figure i, illustrates the housing and employment sites that have been allocated in the Warwick District Local Plan. The plan also shows a range of other development allocations including large outdoor sports allocations to the west and south of Kenilworth and a large education allocation to the east. In addition, there has also been 8ha of employment land allocated for B1 and B2 uses to the east of Kenilworth.

**Figure i Local Plan Allocation Sites**




Policy DS15 of the Local Plan relates to the Comprehensive Development of Strategic Sites. Five sites have been covered in this policy including the Land East of Kenilworth/Thickthorn site.

The Local Plan states that proposals for all or part of the strategic allocated sites will be approved where they take full account of a comprehensive development scheme for the whole site. This should take the form of either a Development Brief or a Masterplan to be approved by the Local Authority. WDC will lead on the preparation of a Development Brief for the Land East of Kenilworth site, which would also cover H06 (strategic housing site), H40 (strategic housing site), E1 (employment site) and ED2 (education site). The purpose of a comprehensive development scheme is to ensure that the delivery of infrastructure and services (such as schools, open space, roads, transport facilities, community facilities and local centres) are guaranteed and properly integrated into the area.

## The land to the East of Kenilworth development

The land to the East of Kenilworth is one of many development sites that have been identified in the Warwick District Local Plan and specifically in Policy DS15 (part of the Thickthorn site). The site is bounded by the A46, A452 Leamington Road, Birches Lane, Glasshouse Lane, and Crewe Lane. The Kenilworth Local Plan identifies the development of 1,400 dwellings and eight hectares of B1 and B2 business use sites for the study area. The development will also accommodate a local centre and will require the relocation and consolidation of Kenilworth School and a new two-form entry primary school. Existing sports pitches will also need to be relocated.

Policy KP4 of the draft Kenilworth Neighbourhood Plan identifies the need for a Highways Strategy to provide independent access for individual land parcels by all modes for the benefit of new and existing communities. The draft Neighbourhood Plan has been submitted to the Local Planning Authority, undergone public consultation and is now in the process of being reviewed by an Inspector.

## Kenilworth Local and Neighbourhood Plan Transport Study

This study will consider the potential transport impacts resulting from the development of land to the east of Kenilworth and other developments identified in the Kenilworth Local and Neighbourhood Plan and present recommendations for transport infrastructure options to mitigate the impacts. It will assist WCC and WDC in the preparation of the Development Brief for the Thickthorn and Land East of Kenilworth site in order to meet the planning process requirements set out in Policy DS15 of the Local Plan.

Several transport issues have been identified in relation to the proposed development of Land to the East of Kenilworth. A summary of the key tasks considered is provided below:

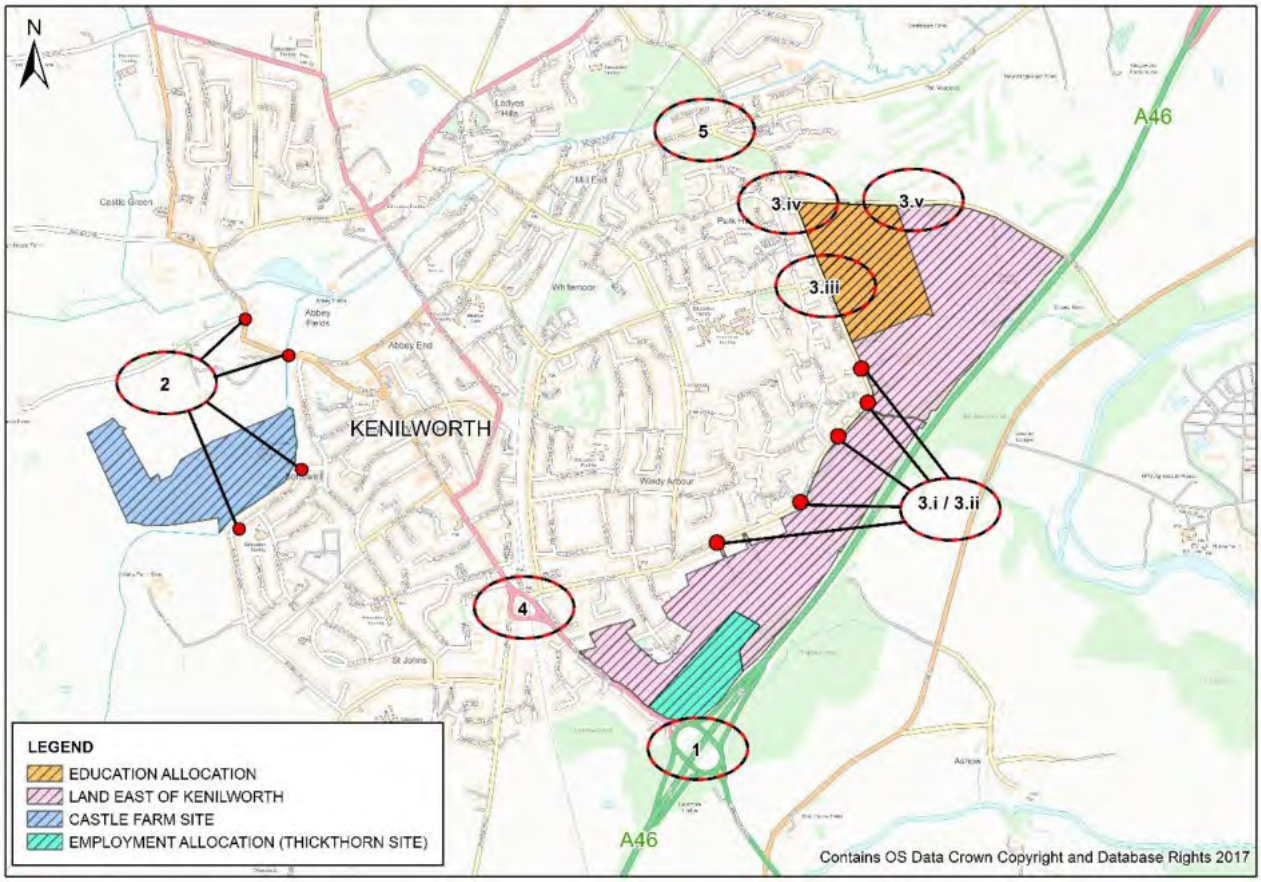
1. **Task 1 - Access to Thickthorn Site:** A feasibility study has been undertaken to consider the provision of a fifth arm from the Thickthorn site to and from the proposed A46/A452 signalised roundabout. Up to three options are considered and a short summary of issues is provided (Site 1);
2. **Task 2 - Castle Farm Recreation Centre:** A feasibility study of the access options to the relocated sports facilities from Thickthorn to Castle Farm Recreation Centre is provided (Site 2), in response to concerns raised through the Neighbourhood Plan process regarding site access;
3. **Task 3 - Glasshouse Lane/Spine Road/Crewe Lane:** A specification for the Spine Road has been developed. An assessment of the transport impacts where Spine Road joins Glasshouse Lane has been undertaken (Site 3i). Concept designs have been developed to consider junction location and form, with selected junction capacity analysis undertaken (Site 3.ii). Further assessment of the realignment of Leyes Lane at the junction with Dencer Drive/Rawnsley Drive (Site 3.iii) has been considered, as well as the downgrading or closing of the Crewe Lane/Hidcote Road/Knowle Hill junction (Site 3.iv) to facilitate sustainable travel. Finally, options for the downgrading or upgrading have Crewe Lane have been considered (Site 3.v);
4. **Task 4 - St Johns Gyratory:** A feasibility design of St John's Gyratory has been undertaken based on traffic flows provided by Vectos Microsim (VM) and principles from the STA (Site 4);
5. **Task 5 - Dalehouse Lane:** A junction capacity analysis of the Dalehouse Lane/Knowle Hill junction has been undertaken in PICADY using traffic flows from the KSWA model (Site 5);
6. **Task 6 - A46 Link Road Phase 3:** A review of the potential for the A46 Link Road Phase 3 to alleviate congestion in Kenilworth has been undertaken; and
7. **Task 7 - Kenilworth Cycle Network:** An assessment of proposed cycling improvements has been undertaken to demonstrate the opportunities which have been taken up, how they correspond with the proposed development and identify any further opportunities which could be pursued.

Figure ii shows the location of these scheme locations in relation to one another and the study site.

This report considers traffic flows, geometric constraints, junction capacity, accident data, and walking/cycling provision to identify and inform preferred options for transport infrastructure measures at each of these locations.

Further scheme refinement and optimisation will be required as the highway infrastructure needs associated with the allocated development sites are developed by the applicants and WCC through the planning process.

**Figure ii Scheme Locations**




## Data Sources

**Traffic Flows**
Vectos Microsim (VM) have provided traffic data from the 2029 Local Plan Model which includes forecast traffic generations from developments identified in the Local Plan. These traffic flows include assumptions on proposed changes to the highway network which form the future assessment year traffic flows for AM and PM peak hours. A flow diagram summarising these flows is provided in Appendix A.

**Site Visits**
A number of site visits have been undertaken as part of this study to observe existing conditions, constraints and traffic characteristics during AM (08:00 – 09:00) and PM (17:00 – 18:00) peak hours. The site visits undertaken are as follows:

- Wednesday 14th March – Inter-peak observations;
- Tuesday 20th March – AM peak observations; and
- Wednesday 18th April – PM peak observations.

During the site visits, photographs were taken of the scheme locations outlined previously. The observations made and photographs taken have been used to inform this study.

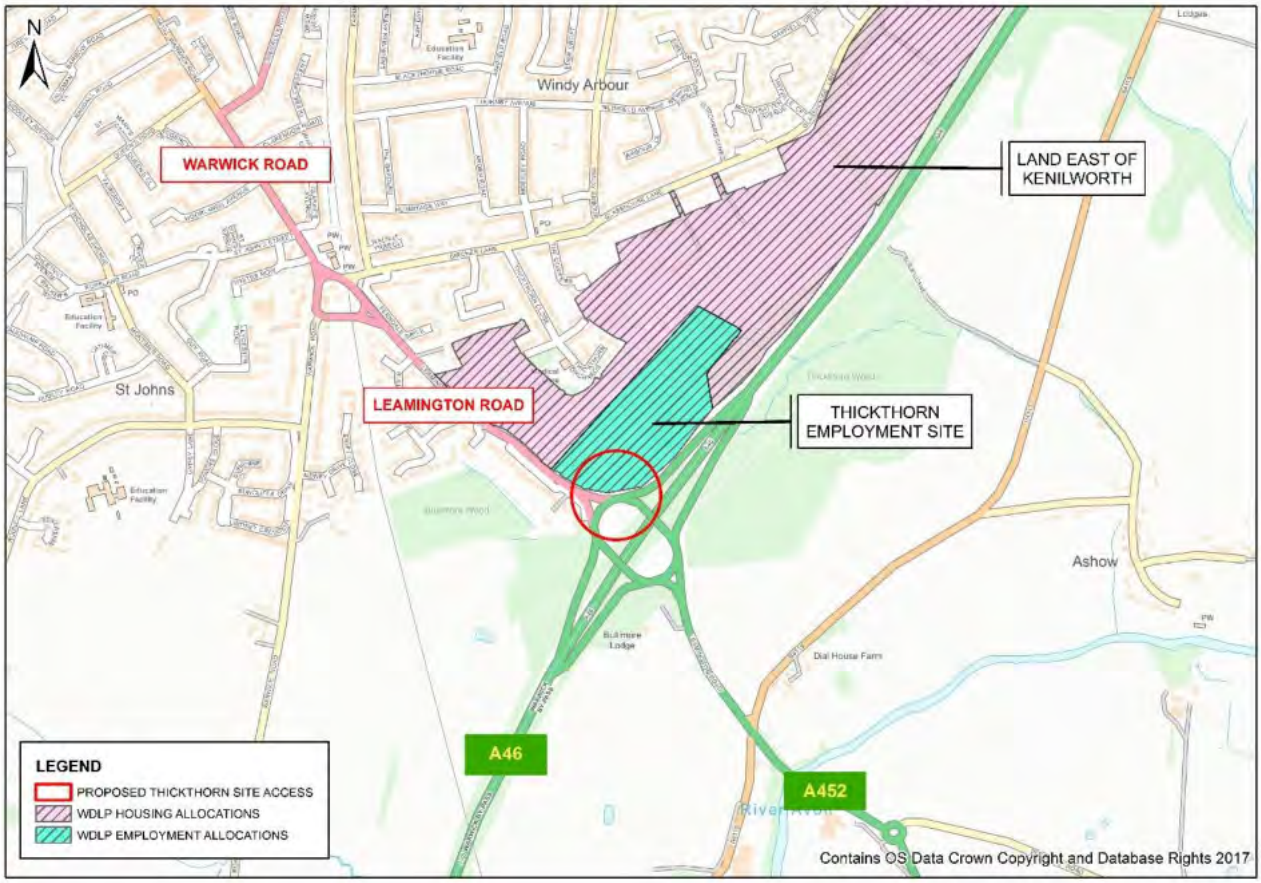
# 1. Access to Thickthorn Site

## 1.1. Introduction

This section of the report considers the feasibility study conducted in relation to access to the Thickthorn employment site. Geometric constraints, junction operation, and design standards have been considered to identify a preferred site access. The Thickthorn site has been identified and allocated within the Warwick District Local Plan 2011-2029 as employment land, adjacent to the residential development.

Three access options have been considered and discussed for the site, the site location and the existing layout are shown in Figure 1-1. A summary table of the benefits and constraints of the options considered for the Thickthorn Access is presented in Table 1.1 at the end of this section.

**Figure 1-1 Thickthorn Site Access Options**



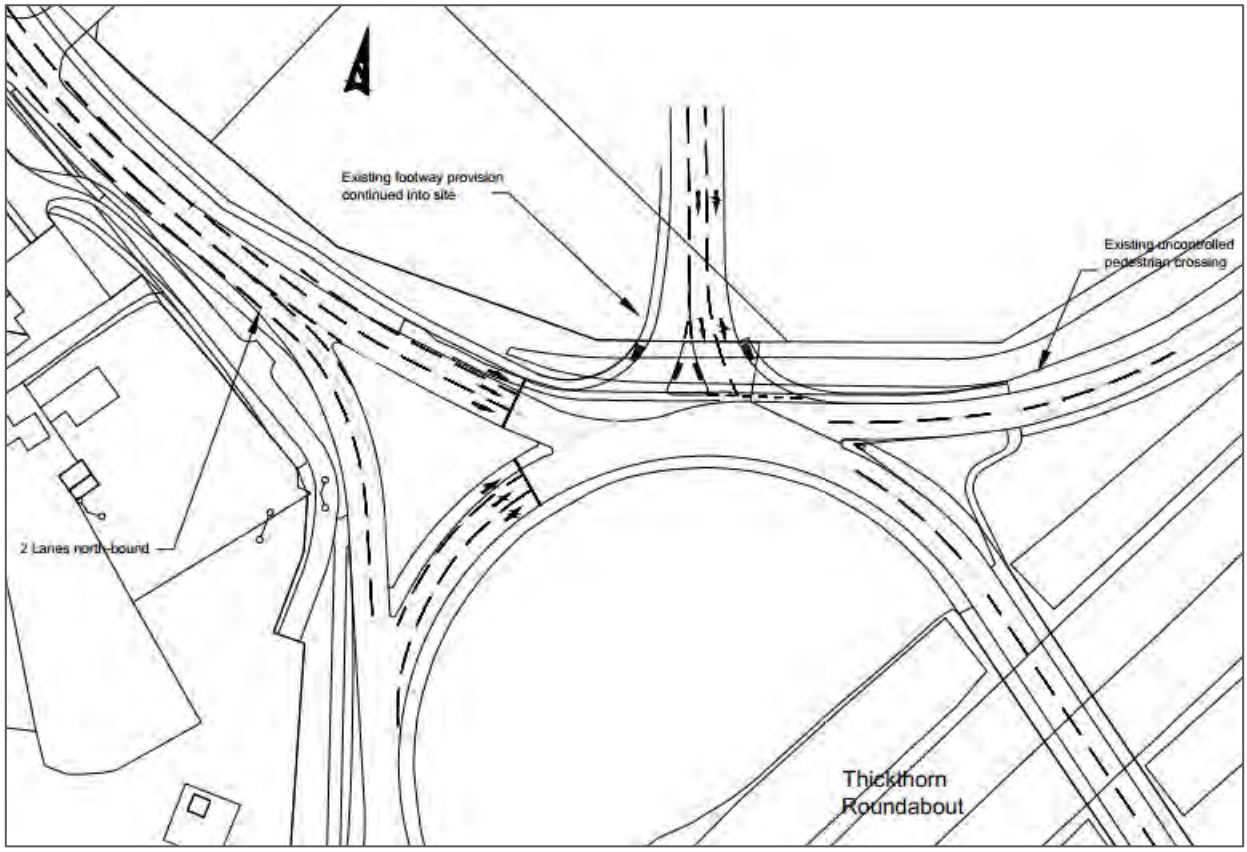

## 1.2. Design Feasibility

### Option 1 – Thickthorn to A46/A452 Roundabout Direct Access and Egress

There are existing plans to signalise the A46/A452 roundabout. Option 1 provides direct access and egress between the Thickthorn site and the A46/A452 roundabout via a signalised fifth arm on the roundabout.

The proposed arm would be located between the A452 (N) Leamington Road and the A46 northbound on-slip, consisting of one entry lane and two exit lanes onto the circulatory. An extract of drawing KEN-ATK-HGN-DR-D-002 is shown in Figure 1-2 illustrating the proposed layout of Option 1. The full drawing is provided in Appendix B.1.

**Figure 1-2 Thickthorn - Option 1 Drawing Extract**




Option 1 provides direct access and egress between the Thickthorn Employment site and the A46/A452 grade separated signalised roundabout, whilst having minimal impact upon the geometry of the existing roundabout and other arms. This option would also have minimal impact to the A452 (N) Leamington Road as it limits the need for additional access/egress points.

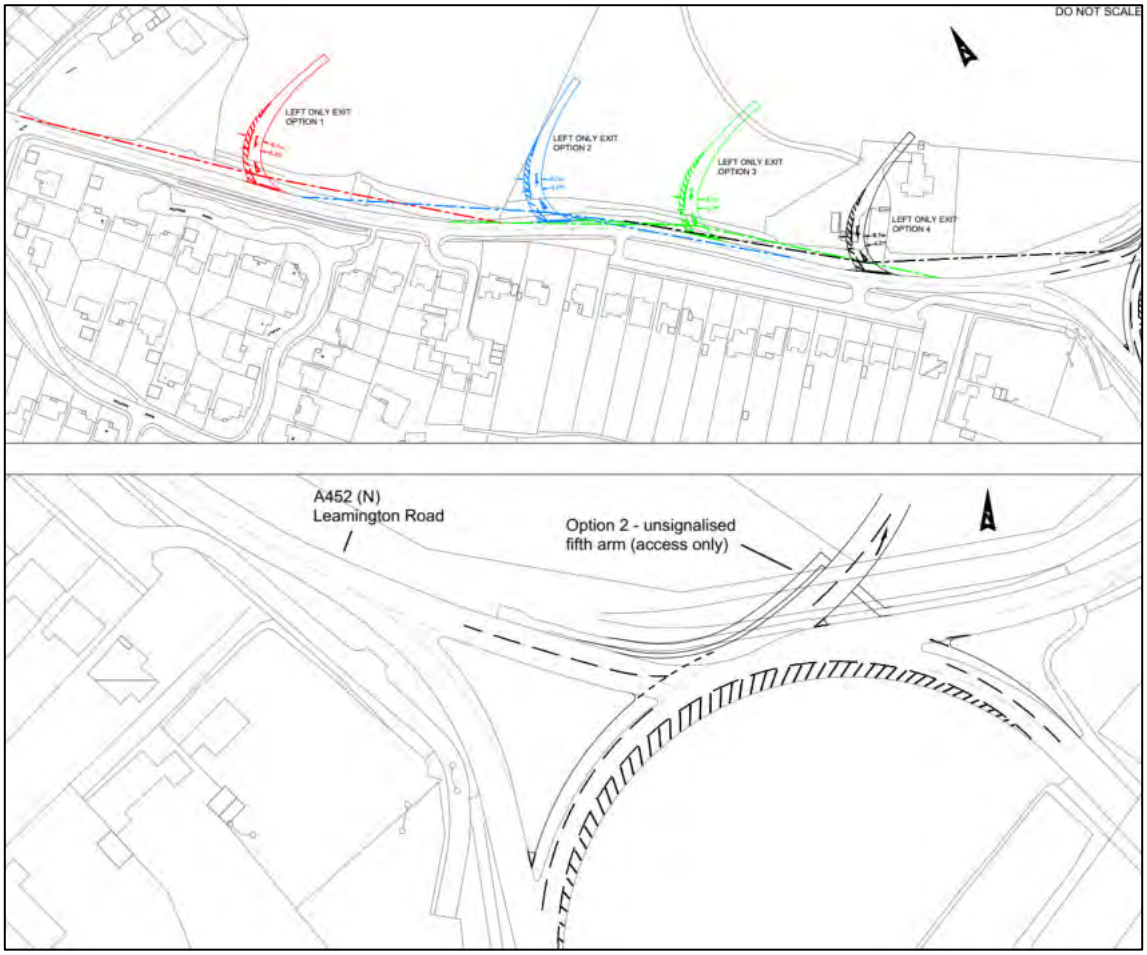
Subject to detailed design, Option 1 can be provided to standards based on the information available at this preliminary stage, accounting for lane alignment and carriageway requirements.

The proposed fifth arm would have an impact on the capacity of the roundabout, which will need to be considered further.

## Option 2 – Thickthorn to A46/A452 Roundabout Direct Access Only

Option 2 provides direct access only between the A46/A452 roundabout and the Thickthorn site via an un-signalised left-in fifth arm from the roundabout. The proposed arm would be located between the A452 (N) Leamington Road and the A46 northbound on-slip, consisting of two entry lanes from the circulatory which merge to form a single carriageway access road. In order to provide egress from the Thickthorn site, a left turn only junction between the site and the A452 (N) Leamington Road is proposed as part of this option. Options for the placement of the proposed left turn only junction onto the A452 (N) are provided as part of this option. An extract of drawing KEN-ATK-HGN-DR-D-003 is shown in Figure 1-3 illustrating the proposed layout of Option 2. The full drawing is provided in Appendix B.1.

**Figure 1-3 Thickthorn - Option 2 Drawing Extract**



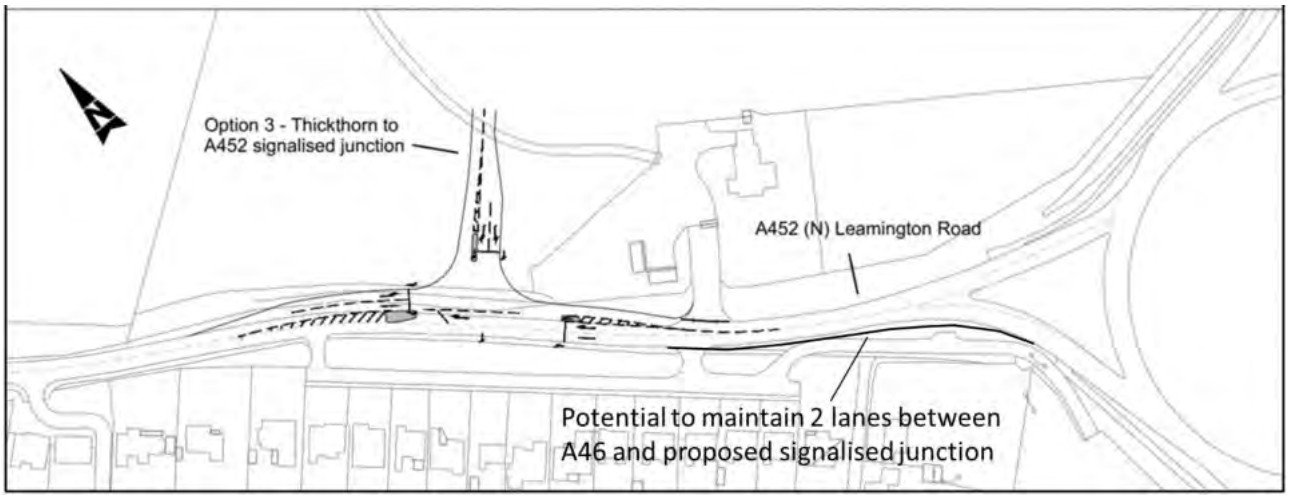

Option 2 would provide direct access between the Thickthorn site and the A46/A452 grade separated roundabout, whilst having minimal impact upon the geometry of the existing roundabout and other arms.

Option 2 would require an egress onto the A452 (N) Leamington Road (away from the roundabout), which will have an impact upon the operational capacity of the A46/A452 roundabout as additional traffic will be approaching the roundabout from the A452. Option 2 is not anticipated to require a departure from DMRB standards at the A46/A452 roundabout, subject to detailed design if this option is preferred.

## Option 3 – Thickthorn to A452 (Signalised Junction)

Option 3 provides a signalised T-junction arrangement between the Thickthorn site and the A452 (N) Leamington Road. The proposed junction would consist of one entry lane and two exit lanes (providing a right and left turn onto the A452 respectively), a ghost right turn island and dedicated left-in/right-in lanes on the A452. Option 3 proposes a signalised junction, which has been positioned to minimise any impact on existing junctions on the A452 (N) Leamington Road. An extract of drawing KEN-ATK-HGN-DR-D-004 is shown in Figure 1-4 illustrating the proposed layout of Option 3. The full drawing is provided in Appendix B.1.

**Figure 1-4 Option 3 Drawing Extract**




Option 3 does not provide direct access/egress to the Thickthorn site from the A46/A452 roundabout which could be provided by Option 1 and partially by Option 2.

The introduction of an additional signalised junction on the A452 as part of Option 3 could provide an opportunity to regulate traffic approaching the A46/A452 roundabout which could benefit journey times as a result of co-ordination with the proposed roundabout signalisation. Conversely, the addition of a signalised junction in this location may have an impact upon existing junctions during peak time queuing. This has not been assessed and will need to be considered further.

Option 3 does not have a geometrical impact on the A46/A452 roundabout and would not require any relaxations or departures from standard.

It should be noted a junction in the vicinity of Option 3 is likely to provide access for the Spine Road and therefore an access to the Thickthorn site in this location is not preferred due to the proximity of other proposed junctions.

## 1.3. Thickthorn Site Access Summary Table

**Table 1.1 Thickthorn Site Access Benefits and Constraints**

| Option | Benefits | Constraints |
|---|---|---|
| Option 1 | • Provides direct access and egress from the A46/A452 circulatory<br>• Provides direct access and egress for HGVs to the employment site without using Leamington Road<br>• Minimal impact upon the geometry of the existing roundabout and the A452 (N) Leamington Road<br>• Considered feasible and would work well with the proposed signalisation of the junction | • Detailed design using topographical surveys would be required to clarify if there would be any departures from standards<br>• The proposed fifth arm will have an impact on the capacity of the roundabout |
| Option 2 | • Provides direct access between the Thickthorn site and the A46/A452 grade separated roundabout<br>• Minimal impact upon the geometry of the existing roundabout and other arms | • Would require an egress onto the A452 (N) Leamington Road (away from the roundabout) which will have an impact upon the operational capacity of the A46/A452 roundabout<br>• May require a departure from DMRB standards at the A46/A452 roundabout (subject to detailed design) |

| Option | Benefits | Constraints |
|---|---|---|
| | | This option would prevent delivery of the signalised Spine Road access from Leamington Road |
| Option 3 | • The introduction of an additional signalised junction on the A452 as part of Option 3 could provide an opportunity to regulate traffic approaching the A46/A452 roundabout<br>• Does not have a geometrical impact on the A46/A452 roundabout and would not require any relaxations or departures from standard | • Option 3 does not provide direct access/egress to the Thickthorn site from the A46/A452 roundabout<br>• The addition of a signalised junction on the A452 may have an impact upon existing junctions during peak time queuing<br>• A junction in the vicinity of Option 3 is likely to provide access for the Spine Road. Two signalised junctions in close proximity on Leamington Road is not recommended |

### 1.3.1. Design Feasibility Summary

The preferred option for access to the Thickthorn site (employment) is Option 1 which provides direct access and egress from the A46/A452 circulatory. Option 1 is considered feasible and would work well with the proposed signalisation of the junction.

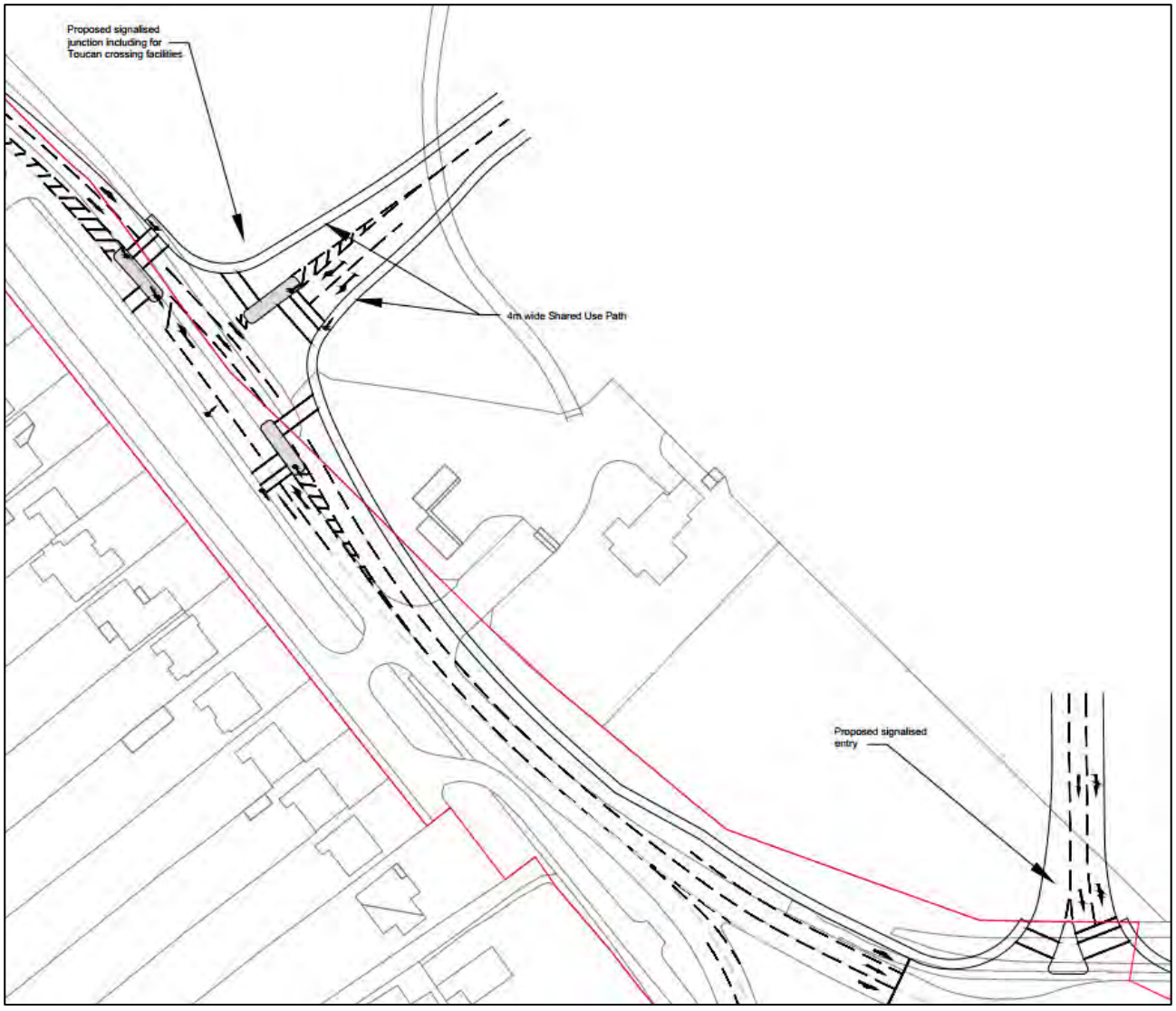
A preliminary drawing showing the preferred access option for the Thickthorn Employment Site along with the proposed Spine Road junction is shown in drawing KEN-ATK-HGN-A46-DR-D-006, in Appendix B.1, and an extract is provided in Figure 1-5.

Two lanes are proposed on the A452 Leamington Road northbound from the A46 roundabout, to accommodate storage for the right turn movements onto the Spine Road, and avoid queuing back to the A46 roundabout.

Moving forward with the preferred, or any of these options, Highways England will be consulted in relation to any impact upon the strategic road network and the proposed signalisation of the A46/A452 junction.

The impact of any level changes on the preferred access option would also need to be taken into consideration.

**Figure 1-5 Thickthorn Preferred Option with Spine Road junction**




## 1.3.2. Access through the Thickthorn Employment site

With the recommended Option 1, direct from the Thickthorn roundabout, and the preferred signalised junction for the Spine Road access to Leamington Road, there is opportunity to provide access to the Land East of Kenilworth residential site and Spine Road through the Thickthorn employment site. It is recommended that pedestrian and walking links are provided to ensure permeability into the employment site. However, HGVs and through traffic could take advantage of a vehicular link and 'rat run' through the site. It is therefore recommended that vehicle access is limited as any additional through traffic would be undesirable.

The proposed Spine Road / Leamington Road signalised junction is anticipated to be able to accommodate the Local Plan Model flows for the Spine Road, provided by VM. However, if junction capacity issues are identified at either access, opportunities to provide secondary vehicle routes through the employment site should be considered.

## 1.4. Vehicle Access HGV Swept Path Analysis

Swept Path Analysis has been undertaken for the preferred option outlined above. Tracking showing a max UK length HGV is provided in drawing number KEN-ATK-SPA-DR-D-006 included in Appendix B.1. This shows that the vehicle can suitably navigate the proposed junction arrangements and access the site without issues.

## 1.5. Pedestrian and Cycle Access

Pedestrian and cycling provision has been considered for the preferred access options for the Thickthorn site from the A46/A452 roundabout. KEN-ATK-HGN-A46-DR-D-006 shows that a pedestrian crossing could be accommodated on the Thickthorn site access, with retention of the existing footway on the north side of Leamington Road and the A46/A452 circulatory, providing access to the development site. However, use of the footway on the south side of Leamington Road will be encouraged, as it is higher quality provision, and accessed via the signalised crossing at the Leamington Road /Spine Road junction. There are no clear desire lines for pedestrians to use the north side of the junction. KEN-ATK-HGN- A46-DR-D-006 also shows Toucan crossings could be accommodated at the Leamington Road / Spine Road junction linking the proposed shared footway/cycleways on the Spine Road with the proposed shared footway/cycleway on the south of Leamington Road identified in the Kenilworth Cycle Network Plan. Further details of the cycle network are provided in Section 7 of this report. Pedestrian and cycle routes would be provided to connect the Thickthorn employment site and the Spine Road through the Land East of Kenilworth residential development site.

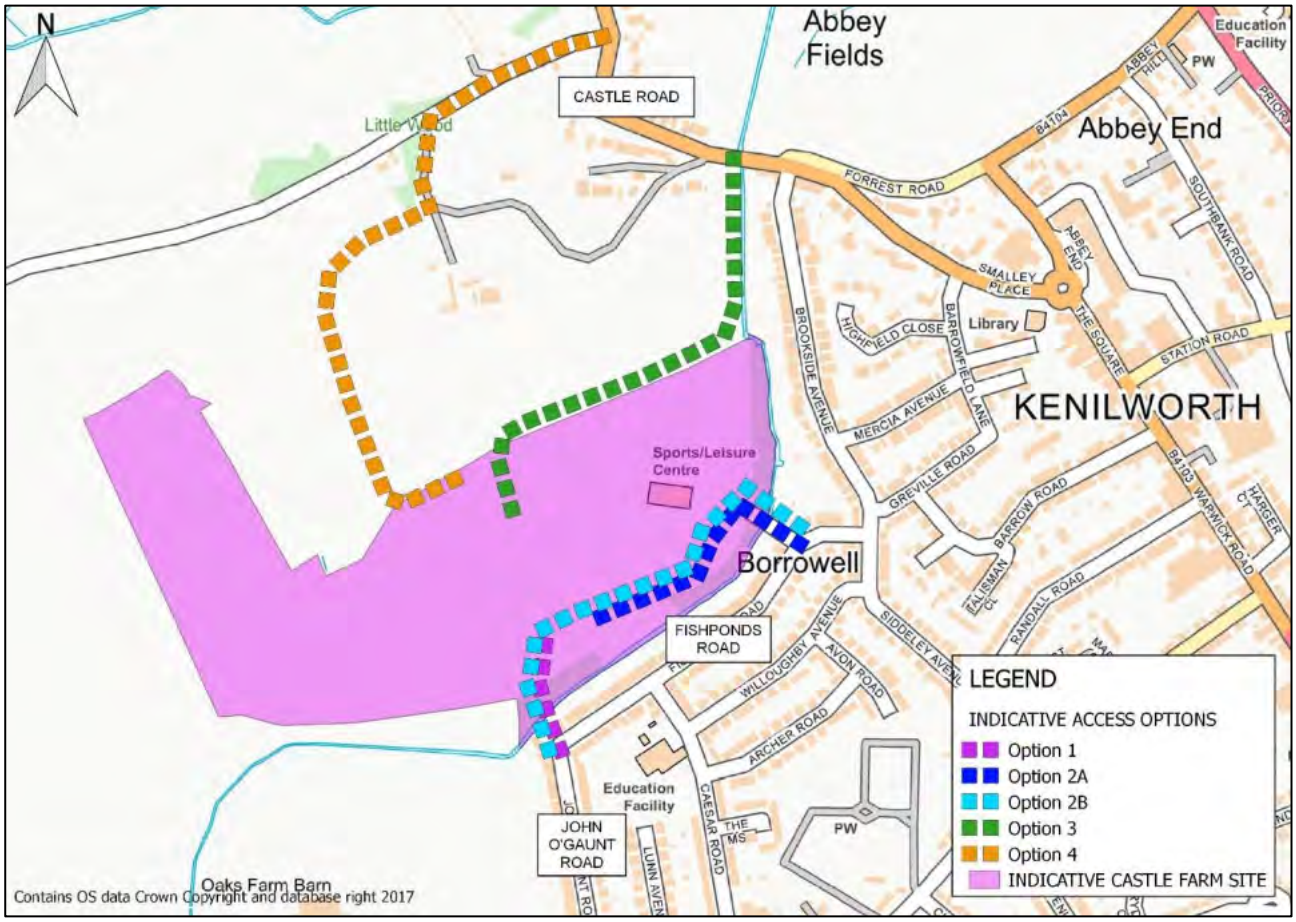
# 2. Castle Farm Site Access

## 2.1. Introduction

A feasibility study has been conducted in relation to access to the relocation of sports facilities and community centre from the land East of Kenilworth site to Castle Farm site, near the existing Castle Farm Recreation Centre. Existing constraints, junction capacity, and safety are all considered in order to determine the feasibility of options and identify a preferred option.

The access options and site surrounding the Castle Farm Recreation Centre are shown in Figure 2-1.

**Figure 2-1 Castle Farm Site Access – Location Plan**




## 2.2. Proposals

It is proposed to relocate Kenilworth Wardens (community sports and event venue) from the Thickthorn site to Castle Farm site. As part of the relocation, several options for access to Castle Farm site have been considered, as follows:

- Option 1: Access from John O'Gaunt Road;
- Option 2A: Retain existing access arrangements on Castle Farm Road;
- Option 2B: Retain existing access, with one-way system via John O'Gaunt Road
- Option 3: Access from Castle Road; and
- Option 4: Brays Car Park Access.

A summary table of the opportunities and constraints of the options considered for the Castle Farm access is presented in Table 2.8 at the end of this section.

As part of the relocation of Kenilworth Wardens, it is expected that the facilities available at the new site will be enhanced compared to those available at the current site. To account for this, the likely vehicle trip generation for the new site has been increased by 200% of the existing trip generation.

## 2.3. Traffic Flows and Vehicle Trip Generation/Distribution

### 2.3.1. Future Base Flows

To determine the maximum trip generation of the existing Castle Farm Recreation Centre, turning movements in and out of the Fishponds Road/Site Access junction were taken from turning counts conducted in October 2017 (07:00 – 19:00). From this information, it was calculated that the peak vehicle generation at this site is experienced between 18:00 and 19:00, forming the peak hour for the purposes of this assessment. WDC is committed to the improvement and expansion of facilities at this site. To account for this expansion, these movements into/out of the site during the peak hour have been increased by 100%. Therefore, the worst-case hourly peak vehicle trip generation (two-way) for the existing site is 212 vehicles.

VM have provided traffic data from the 2029 Local Plan Model for the AM and PM peak future year periods. Traffic flows for 18:00 to 19:00 from the 2029 Local Plan Model have been utilised in this assessment. Turning counts for the junctions between Fishponds Road/John O'Gaunt Road and Fishponds Road/Site Access were not available from the model so the through movements for these junctions have been calculated using flows from the Brookside Avenue/Siddeley Avenue junction (to the east of the site) by taking into account the turning movements in/out of the Castle Farm Recreation Centre from counts conducted in October 2017.

### 2.3.2. Development Vehicle Trip Generation

The vehicle generation for the existing Kenilworth Wardens site (located off Glasshouse Lane) has been calculated using trip generation information provided by WCC, adopting a first principles approach based on existing turning movements. The trip generation information provided consisted of vehicle generation for the existing Kenilworth Wardens site by day of the week (included in Appendix C.1).

The trip generation information was used to calculate the highest vehicle trip generation on any given day for the morning, afternoon, or evening. Based on the information provided, the worst-case peak vehicle trip generation for the existing Kenilworth Wardens site was calculated to be 62 vehicles during the busiest hour (Wednesday/Thursday evenings), based on the following assumptions, informed by details provided by Kenilworth Wardens:

- Where vehicle generation details were not provided, 50% of participants were assumed to travel by car;
- All vehicles arrive and depart in the same hour;
- Vehicle generation from functions and annual one-off events were not included; and
- Cricket and Football games do not occur simultaneously (due to seasonality) and so where these occur during the same period, the highest vehicle generation was included.

These flows have been increased by 200% to account for the proposed increase in facilities available at the proposed site, based on information provided by Kenilworth Wardens. Therefore, the worst-case hourly peak vehicle trip generation for the proposed relocated Kenilworth Wardens site is 186 vehicles.

WCC have indicated that an emergency link should be provided where there are 800 trips per day and a secondary access should be provided for 1600 daily trips. The proposals at Castle Farm are in the order of 1600 vehicles a day and therefore a secondary access would need to be considered.

### 2.3.3. Development Vehicle Trip Distribution

The vehicle trips generated by the development has been distributed based on existing traffic flows during the peak hour (18:00 – 19:00), as included in Table 2.1.

**Table 2.1 Development Vehicle Trip Distribution**

| Access Point | Arrivals | | Departures | |
|---|---|---|---|---|
| | From East | From West | To East | To West |
| **Fishponds Road*** | 73% | 27% | 81% | 19% |
| **Castle Road**** | 49% | 51% | 51% | 49% |

*Distribution based on 2017 turning counts **Distribution based on 2029 Local Plan Flows

### 2.3.4. Junction Capacity Modelling

For each of the access options outlined in Section 2.2, junction capacity modelling was undertaken using the trip generation identified above to understand the impact of the proposals on the local highway network.

These junctions have been modelled in future base (2029) plus development scenario for the peak period 18:00 – 19:00, which takes into account proposed growth at both the existing Castle Farm Recreation Centre and relocated Kenilworth Wardens.

The junctions were modelled using the PICADY module of Junctions 9. Junctions 9 software allows a range of traffic flow profiles to be adopted when undertaking peak period model runs. Generally, an RFC (Ratio of Flow to Capacity) of below 0.85 (for priority junctions) indicates that a junction operates within capacity for assessed flows. An RFC of over 1.0 indicates that a junction is operating over capacity. Junction geometries used in the model were measured from OS Base mapping.

The traffic flows for both scenarios is provided in Appendix C.2. Full model output data is provided in Appendix C.3.

## 2.4. Access Option Assessment

### 2.4.1. Option 1 – Access from John O'Gaunt Road

#### 2.4.1.1. Option Description

Option 1 proposes to provide access to the site from John O'Gaunt Road, via the priority junction between John O'Gaunt Road and Fishponds Road. There is currently a spur of John O'Gaunt Road that forms a dead-end. It is publicly adopted highway that provides access to one residential property and a substation, with no parking restrictions. This option would retain the existing junction layout presented in Figure 2-2. The carriageway would be continued across the area of vegetation and brook to the north, to provide access to the playing fields and Castle Farm Recreation Centre.

**Figure 2-2 John O'Gaunt Road/Fishponds Road Junction**

In this option, all vehicle trips generated by the relocation would travel in and out of the site using this access.

#### 2.4.1.2. Constraints

The existing highway arrangement could allow a potential access to the north of the existing spur. However, there would be potentially significant costs and environmental constraints of bridging the watercourse and finding suitable access through the area of woodland.

The potential access would also be located away from major highway links and the access route would be convoluted, navigating a number of turns along minor residential streets with on-street parking. During site visits it was observed that on-street parking on Fishponds Road and John O'Gaunt Road created situations where opposing vehicles had to give way to allow vehicles to pass parked cars. This may not provide a convenient access route and the estimated increase in trip generation may cause issues and localised delay.

#### 2.4.1.3. Junction Capacity Modelling

The results of the junction capacity modelling for this option is presented in Table 2.2.

**Table 2.2 Option 1 Junction Capacity Modelling Results - New Site Access / John O'Gaunt Road / Fishponds Road Priority Junction (18:00 – 19:00)**

| | Max RFC | Max Queue |
|---|---|---|
| **Future Base + Development** | | |
| (B) New Site Access | 0.28 | 0.4 |
| (C) Fishponds Road | 0.23 | 0.3 |

The results presented in Table 2.2 show that both junctions operate within acceptable thresholds of capacity in the future year scenario.

### 2.4.2. Option 2A – Retain existing access arrangements on Castle Farm Road

#### 2.4.2.1. Option Description

Option 2 proposes to provide access to the site via the existing priority junction on Fishponds Road. This provides the most efficient option in terms of infrastructure as the access already exists. The results from junction capacity modelling of the existing Castle Farm Sports Centre / Fishponds Road, and identification of existing constraints, are identified under the following headings.

### 2.4.2.2. Junction Capacity Modelling

The results of the junction capacity modelling for Option 2A are presented in Table 2.3.

**Table 2.3 Option 2A Junction Capacity Modelling Results - Castle Farm Sports Centre Access / Fishponds Road Priority Junction**

| | Max RFC | Max Queue |
|---|---|---|
| **Future Base + Development** | | |
| (B) Castle Farm Road | 0.55 | 1.2 |
| (C) Fishponds Road (East) | 0.40 | 0.7 |

The results presented in Table 2.3 show that the existing site access operates within acceptable thresholds of capacity in the future year scenario.

### 2.4.2.3. Option 2A Constraints

Existing properties and the bridge that provides access to the Castle Farm Recreation Centre is narrow with on-street parking. However, junction capacity modelling shows that the existing junction arrangement could accommodate the increase in traffic flows associated with the expanded use of the site.

In terms of parking constraints, existing parking areas were observed on the bridge and parking restrictions currently only exist on one side of the carriageway, shown in Figure 2-3.

**Figure 2-3 Castle Farm Access Road – Parking**

It is recommended that parking restrictions are introduced on both sides of the carriageway across the bridge on the access road to the existing Castle Farm Recreation Centre, to provide sufficient capacity.

Warwickshire County Highways are extending waiting restrictions on Fishponds Road and Brookside Avenue as shown on the plans in Appendix C.5 If an option that utilises the existing Castle Farm Recreation Centre access is taken forward, then it is recommended that waiting restrictions are further extended along this road.

Option 2A proposes a more convoluted access route from the wider area, along residential roads, compared to Castle Road access options. However, as an already operating access point, it provides a more feasible option.

## 2.4.3. Option 2B – John O'Gaunt Road access with internal connection to existing Castle Farm Recreation Centre access

### 2.4.3.1. Option Description

Option 2B provides one-way access to the site via a priority junction on John O'Gaunt Road outlined in Option 1, but potential for exit from the site will be via the existing site access to the Castle Farm Recreation Centre onto Fishponds Road. The existing Castle Farm Recreation Centre access junction with Fishponds Road is shown in the photographs presented in Figure 2-4.

**Figure 2-4 Castle Farm/Fishponds Road Junction**

### 2.4.3.2. Junction Capacity Modelling

The results of the junction capacity modelling for this option are presented in Table 2.4 and Table 2.5.

**Table 2.4 Option 2B Junction Capacity Modelling Results - New Site Access / John O'Gaunt Road / Fishponds Road Priority Junction Exit (One-Way System) (18:00 – 19:00)**

| | Max RFC | Max Queue |
|---|---|---|
| **Future Base + Development** | | |
| (B) New Site Access | 0.00 | 0.0 |
| (C) Fishponds Road | 0.23 | 0.3 |

**Table 2.5 Option 2B Junction Capacity Modelling Results - Castle Farm Recreation Centre Access / Fishponds Road Priority Junction (One-Way System) (18:00 – 19:00)**

| | Max RFC | Max Queue |
|---|---|---|
| **Future Base + Development** | | |
| (B) Castle Farm Road | 0.54 | 1.1 |
| (C) Fishponds Road (East) | 0.14 | 0.2 |

The results presented in Table 2.4 and Table 2.5 show that both junctions operate within acceptable thresholds of capacity in the future year scenario.

This option could also work in the reverse direction, using the existing Castle Farm Recreation Centre access as an entrance and John O'Gaunt Road as the exit, depending on operation preferences.

It should be noted that, given the size of the proposed development, a secondary emergency access would be beneficial, which this option would provide. The connection between the two accesses could be restricted to one-off events or emergencies.

## 2.4.4. Option 3 – Access on Castle Road

### 2.4.4.1. Option Description and Constraints

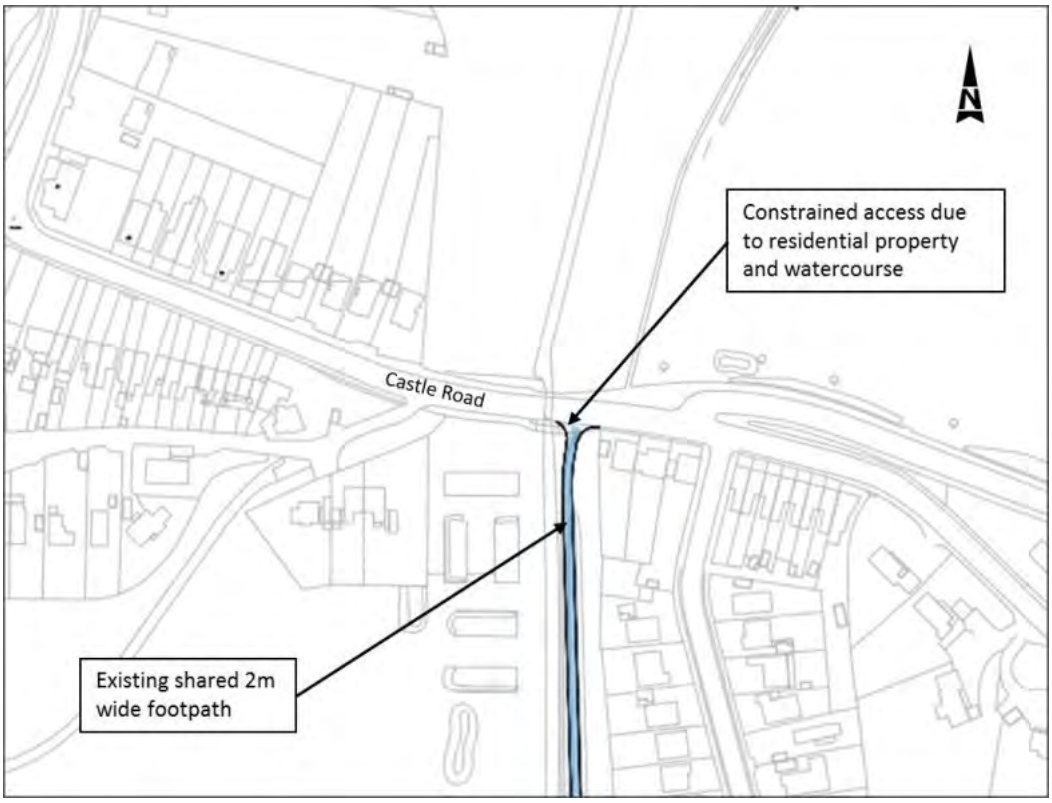
Option 3 proposes to provide access to the site via Castle Road, to the north of the existing Castle Farm Recreation Centre. Castle Farm Road, between its junction with Brookside Avenue and an unnamed road to the west providing access to residential properties, has a number constraining factors which have led to the development of five sub-options for this option, as summarised below.

#### Option 3A – Access onto Castle Road, utilising the existing shared footway cycle

Initial consideration was given to upgrading the existing shared footway/cycleway that runs along the east side of the brook, linking Castle Road and the Castle Farm site. However, following onsite observations during a site visit, it was identified that there are significant constraints to accommodating this access.

Figure 2-5 shows an indicative alignment of an access from Castle Road, along the existing shared footpath.

**Figure 2-5 Castle Road – Option 3A**




The existing footway/cycleway is only 2m wide and bounded by a residential property and a brook.

Figure 2-6, shows photographs of the existing footway/cycleway and the constraints of the residential property wall to the east and the stone bridge parapet to the west.

**Figure 2-6 Castle Road – Option 3A - Existing footway/cycleway access**

Assuming the minimum one-way access track of 3m, it would still require removal of the bridge parapet and it would not be possible to maintain existing pedestrian and cycle provision without enclosing the brook. Given the geometrical constraints at this location, access Option 3A is not considered feasible.

Indicative, high level assumptions, based on typical highway construction of this type, suggests a cost of approximately £200 per square metre (excluding any allowance for design, services, significant level changes or crossing watercourses). It is therefore estimated that an access onto Castle Road would require approximately 650m of new or upgraded access carriageway at approximately 5m wide (one-way vehicle access, plus footway) resulting in a cost of approximately £650,000 for this option.

### Option 3B – Access onto Castle Road, all movements permitted

Option 3B proposes to provide a priority junction on Castle Road, where an existing zebra crossing is located (shown in Drawing KEN-ATK-HGN-A46-DR-D-007 in Appendix C.4). This junction could accommodate all movements, however prescribed visibility splays to the east could not be achieved due to third party land ownership and an existing stone parapet wall at the bridge.

Figure 2-7 shows the existing zebra crossing and parapets of the bridge across the brook, looking east on Castle Road, west of the junction with Forrest Road.

**Figure 2-7 Castle Road – Existing Zebra Crossing**

It was identified that this option conflicts with a scheduled Ancient Monument, the Fishponds, 260m east of Castle Farm. This is a significant constraint and therefore restricts the feasibility of this option.

However, if the existing zebra crossing was removed, it is recommended to provide a signalised crossing point to the east of the bridge. This is an opportunity to improve existing pedestrian and cycle provision closer to the desire line of people accessing the public footway/cycleway adjacent to the brook, providing a link to the Castle Farm Recreation Centre.

### Option 3C – Access onto Castle Road, upgraded residential access with all movements permitted

Option 3C proposes to upgrade an existing priority junction on Castle Road, which currently provides access to residential properties. This junction could accommodate all movements, however prescribed visibility splays to the east cannot be achieved due to third party land ownership and an existing stone parapet wall at the bridge (shown in in Drawing KEN-ATK-HGN-A46-DR-D-009 in Appendix C.4). In order to upgrade this junction, an existing mature tree at the mouth of the junction would need to be removed. The residential access is not within the highway boundary. Third party land ownership would limit the feasibility of this option.

### Option 3D – Access onto Castle Road, upgraded residential access for entry only

Option 3D proposes to upgrade an existing priority junction on Castle Road, which currently provides access to a number of residential properties (shown in in Drawing KEN-ATK-HGN-A46-DR-D-010 in Appendix C.4). Due to visibility issues with Option 3C this arrangement accommodates entry to the site only, removing the need for junction visibility. Therefore, an alternative egress option would need to be provided which is likely to be the existing site access to Castle Farm via Fishponds Road. The residential access is not within the highway boundary. Third party land ownership would limit the feasibility of this option.

### 2.4.4.2. Junction Capacity Modelling

Junction capacity modelling has been undertaken for Options 3B, and 3D for a priority junction permitting entry to the site only from Castle Road (results shown in Table 2.6). The impact of providing exit from the site via the existing site access junction has been modelled in Option 2 (results shown in Table 2.5).

Modelling for the other options (Option 3A and 3C) has not been presented as these options do not meet prescribed visibility splays for all movements. However, in principle, these junction arrangements would operate within capacity with the estimated development flows.

**Table 2.6 Option 3 (B and D) Junction Capacity Modelling Results – New Access onto Castle Road (entry only) Priority Junction (18:00 – 19:00)**

| | Max RFC | Max Queue |
|---|---|---|
| **Future Base + Development** | | |
| (C) Castle Road (West) | 0.21 | 0.3 |

The results presented in Table 2.6 show that the proposed new site access, as an entry only junction, operates within acceptable thresholds of capacity in the future year scenario.

### 2.4.5. Option 4 – Brays Car Park Access

There is an existing access from Castle Farm Road serving Brays Car Park (for Kenilworth Castle) and a small number of residential properties approximately 500m north of the Castle Farm site. Feasibility of using this for a potential access to the Castle Farm Wardens Site was considered.

The main constraints associated with this access were identified as:

- Third party land issues gaining access to the proposed Castle Farm site, and
- The substantial level of civil engineering required to construct a suitable access route to the site.

Indicative, high level assumptions, based on typical highway construction of this type, suggests a cost of approximately £200 per square metre (excluding any allowance for design, services, significant level changes or crossing watercourses). It is therefore estimated that an access from Brays Car Park would require approximately 1.1km of new or upgraded access carriageway at approximately 5.5m wide, resulting in a cost of approximately £1.21 million for the access track. Pedestrian and cycle access would be provided by more direct routes.

It was also identified that, the internal arrangement of the carpark may cause some operational issues if peak castle visiting times coincide with peak Recreation Centre operating times, and there are significant topographical issues to overcome to obtain access to the proposed site. Therefore, it is not considered that this access option is feasible.

## 2.5. Parking Demand

The draft Warwick District Council Parking Standards SPD[1] (2018) provides standards for parking provision based on land use. For playing fields, 12 spaces per pitch should be provided plus a coach parking space per sports pitch. For swimming pools, sports halls, health clubs and gymnasia it states that 1 space should be provided per 10sqm plus 1 space per 4 spectator seats. The standards go on to state that where a particular land use does not have a defined parking standard, parking requirements should be considered on a case by case basis based on intended use, location of site, availability of parking in the vicinity and other relevant factors. The draft Warwick District Council Parking Standards SPD states that a minimum of 5% of total capacity should be provided for people with disabilities.

Table 2.7 presents the existing parking provision at each element of the site (Castle Farm Recreation Centre and re-located Kenilworth Wardens site), resultant pro-rata parking provision as a result of the development proposals and parking provision which would be required based on the parking standards set out above. For the purpose of this calculation, the existing Castle Farm Recreation Centre is assumed to be classified as a 'sports hall, health club' with an approximate gross floor area of 1,300sqm. It is also assumed, based on the information provided by the Kenilworth Wardens club, that 6 'sports pitches' will be provided.

[1] https://www.warwickdc.gov.uk/downloads/file/4783/draft_parking_standards

**Table 2.7 Parking Demand and Provision**

| | Existing Provision | Proposed Increase in Facilities | Resultant Pro Rata Parking Provision | Parking Standards |
|---|---|---|---|---|
| **Castle Farm Recreation Centre** | | | | |
| Vehicle Parking Provision | 73 | 100% | 146 | 260 * |
| Disabled Parking Provision (based on standards) | - | - | 7 | 13 |
| **Kenilworth Wardens** | | | | |
| Vehicle Parking Provision | 60 | 200% | 180 | 84** |
| Coach Parking Provision | - | - | - | 6** |
| Disabled Parking Provision (based on standards) | - | - | 9 | 4 |

*assuming Gross Floor Area (GFA) of 2,600sqm (assuming a 100% increase in existing provision (1,300sqm)) based on the above standards (for sports halls/health clubs/gymnasia)

**assuming utilisation of 6 grass pitches at any one time and an all-weather facility (approximately the size of a full football pitch) following the above standards (for playing fields), excluding the existing Pavilion building and facilities.

Based on the information presented in Table 2.7 it is initially recommended that 146 spaces be provided for use by the Castle Farm Recreation Centre, plus 7 spaces for use by disabled users of the site. This is less than set out in the standards.

Additional data on existing car park usage and proposed site usage should be assessed prior to confirming parking provision and development proposals.

For the relocated Kenilworth Wardens site, based on the existing provision and proposed increase to facilities the resultant parking provision is higher than that set out in the relevant standards for 6 'sports pitches'. Therefore, it is recommended that 84 parking spaces should be provided plus 4 spaces for disabled users, with the remaining 96 spaces provided in over-spill parking arrangement to accommodate larger events at the site. In addition, 6 coach spaces should be provided at the site. It should be noted that the level of parking from the parking standards, has been calculated using the rate for playing fields and sports pitches. The Pavilion building and facilities has not been included.

For one-off events and functions, consideration should be given to additional over-spill parking arrangements and coach provision. Additional data on proposed site usage should be assessed prior to confirming parking provision and development proposals.

## 2.6. Safety

Personal Injury Accident (PIA) analysis was undertaken for John O'Gaunt Road and Castle Road in the vicinity of the proposed access points using latest available data from the past five-year recording period, to determine if there are any existing road safety issue.

### 2.6.1. Accident data

The Local Highway Authority (LHA) WCC provided the most recent five years' worth of accident data, which was available for the period 1st January 2013 to the 14th February 2018.

#### 2.6.1.1. Terminology

The accident data obtained from the LHA identifies traffic accidents on the public highway which have been reported to the police and involve human injury or death.

The data is based on the STATS19 records collected by the police when attending a traffic accident. The accident data includes stationary vehicles and non-motorised users (NMUs). The data does not include:

- Confirmed suicides;
- Death from natural causes;
- Injuries to pedestrians with no vehicle involvement (e.g. a fall on the pavement); or
- Accidents in which no one is injured but a vehicle is damaged (damage only accidents).

The severity of an accident is determined by the most severely injured casualty involved in an accident, which is either categorised as slight, serious or fatal. The severity of an accident is defined as:

- Slight: injury resulting from an accident which is not deemed to be severe, for example neck whiplash injury. It can also include shock requiring roadside assistance;
- Serious: injury resulting from an accident for which a person is detained in hospital as an "in-patient" as well as a list of other more serious injuries including crushings, burns, severe cuts and general shock; and
- Fatal: death resulting from an accident within 30 days of the event, due to injuries received in the accident.

## 2.6.2. PIA Analysis

Figure 2-8 shows the location of accidents within the study area.

**Figure 2-8 PIA Analysis, Castle Farm**

One serious accident was identified in the vicinity of John O'Gaunt Road during the five-year period between 2013 and 2018. The accident does not appear to have been caused by the existing road environment and does not indicate an existing road safety issue. The causation factors provided include loss of control, and driver illness/disability.

Two slight accidents were identified on Castle Road during the five-year period between 2013 and 2018. Both accidents appear to be caused by driver error and the relevant data does not suggest that there is an existing road safety issue. The causation factors provided include failure to judge the path/speed of another vehicle, following too close, and nervousness/uncertainty/panic.

Therefore, the potential access options identified in this section are not anticipated to result in road safety issues.

## 2.7. Summary

Table 2.8 summarises the respective benefits and constraints of each of the options based on the assessment provided in this chapter.

**Table 2.8 Castle Farm Site Access Benefits and Constraints Summary**

| | | Benefits | Constraints |
|---|---|---|---|
| Option 1 (John O'Gaunts Road) | | • Existing Spur and junction from John O'Gaunt Road<br>• Located closest to the proposed relocated Wardens site<br>• Lowest cost of access track<br>• Can accommodate estimated capacity | • Civil engineering cost of crossing the watercourse and accessing the site<br>• Vegetation removal<br>• Convoluted route through residential area with on-street parking |
| Option 2 (Existing access onto Fishponds Road) | **A** | • Existing access, existing bridge over watercourse and infrastructure<br>• Can accommodate estimated capacity | • Potential conflict with users of the expanding Castle Farm Recreation Centre<br>• Access via residential roads<br>• Only one access point |
| | **B** | • Provides secondary access and opportunity for one-way system for traffic management, one-off events and provides emergency access<br>• Reduces the concentration of traffic flows, spreads impact over 2 junctions | • Additional costs of constructing 2 accesses<br>• Access via residential roads |
| Option 3 (Castle Road) | **A** | • Direct access from Castle Road, which is a more major road and a less convoluted route | • Constrained geometries accessing the site<br>• Third party land issues<br>• Close to Scheduled Ancient Monument and a watercourse<br>• High costs associated with negotiating/moving the bridge parapet<br>• High costs associated with bridging the watercourse and accessing the site<br>• Removal of existing footway and cycle provision |
| | **B** | • Direct access from Castle Road, which is a more major road and a less convoluted route<br>• Maintain and improve existing footway and cycle provision | • Crosses scheduled ancient monument - **therefore not considered feasible**<br>• High costs associated with access route to the site |
| | **C** | • Existing residential access Direct access from Castle Road | • Constrained visibility splays<br>• Not within highway boundary<br>• Third party land issues<br>• Constrained route crossing third party land to the site<br>• High cost<br>• Requires tree removal |
| | **D** | • Existing residential access<br>• Direct access from Castle Road | • One-way access only, would require exit using one of the other options<br>• Not within highway boundary<br>• Third party land issues<br>• High cost |
| Option 4 | | • Existing access on Castle Road | • Very high cost, and long route to site<br>• Third party land issues<br>**Not considered feasible** |

### 2.7.1. Preferred Option

Following a review of the access options presented in Section 2, the arrangements identified in Option 2 are considered to be the preferred and most feasible options.

Option 2A, uses the existing Castle Farm Recreation Centre access, and would route to the proposed Warden's Castle Farm site via a new access track to the south west of the existing car park. The existing junction would be able to accommodate the estimated trip generation of the expanded existing facilities and the relocation and increased provision of the Wardens facilities.

Option 2B would offer the benefit of a secondary access, which would be desirable to manage traffic flows during busy periods, one-off events and to provide emergency access. Option 2B also utilises the most direct access for the proposed new Wardens Site and a one-way system would reduce the concentration of traffic impacts at the two access points. Option 2B would require extension of the John O'Gaunt Road spur, via a new bridge over the adjacent watercourse. It is also recommended that parking restrictions are extended on both sides of the existing Castle Farm Recreation Centre access bridge and the proposed extension of on-street parking on Fishponds Road and Brookside Avenue is welcomed to improve traffic flows.

Although Option 2A can accommodate the anticipated traffic flows and benefits from existing infrastructure, it is concluded that Option 2B is the recommended option based on the development assumptions and trip generation information considered.

# 3. Glasshouse Lane/Spine Road/Crewe Lane

## 3.1. Introduction

This chapter focuses on the junctions in the immediate vicinity of the Land East of Kenilworth development site, associated with the following main highway links:

- **Glasshouse Lane** – Existing carriageway boarding the west side of the development site. A two-way carriageway subject to speed limits of 30mph on residential sections, and 50mph on sections sided by agricultural fields and more rural in characteristic. The southern section of Glasshouse Lane becomes Birches Lane and connects to Leamington Road via the St Johns Gyratory. North of Crewe Lane Glasshouse Lane connects with Knowle Hill providing access to Dalehouse Lane.
- **Crewe Lane** – Existing two-way carriageway to the north of the proposed development site, subject to national speed limit, with no centreline or road markings. It provides access to Kenilworth Golf Club and a small number of residential properties. Crewe Lane connects Glasshouse Lane and Stoneleigh via the B4115, passing under the A46 dual carriageway.
- **Spine Road** – The proposed main distributor road running through the proposed development site linking Leamington Road in the south to Crewe Lane in the north. The proposed specification and alignment of the Spine Road are discussed in Section 4.2 below. Figure 3-1 shows the location of these main highway links, indicative alignment of the Spine Road, and the existing/proposed junctions considered in this chapter.

Taking account of the likely traffic flows associated with the development, and the desired strategic movements of vehicles, pedestrians and cyclists throughout the site, this section considers the feasibility of junctions between the roads identified above and identifies preferred junction locations and arrangements.

## 3.2. Spine Road Specification

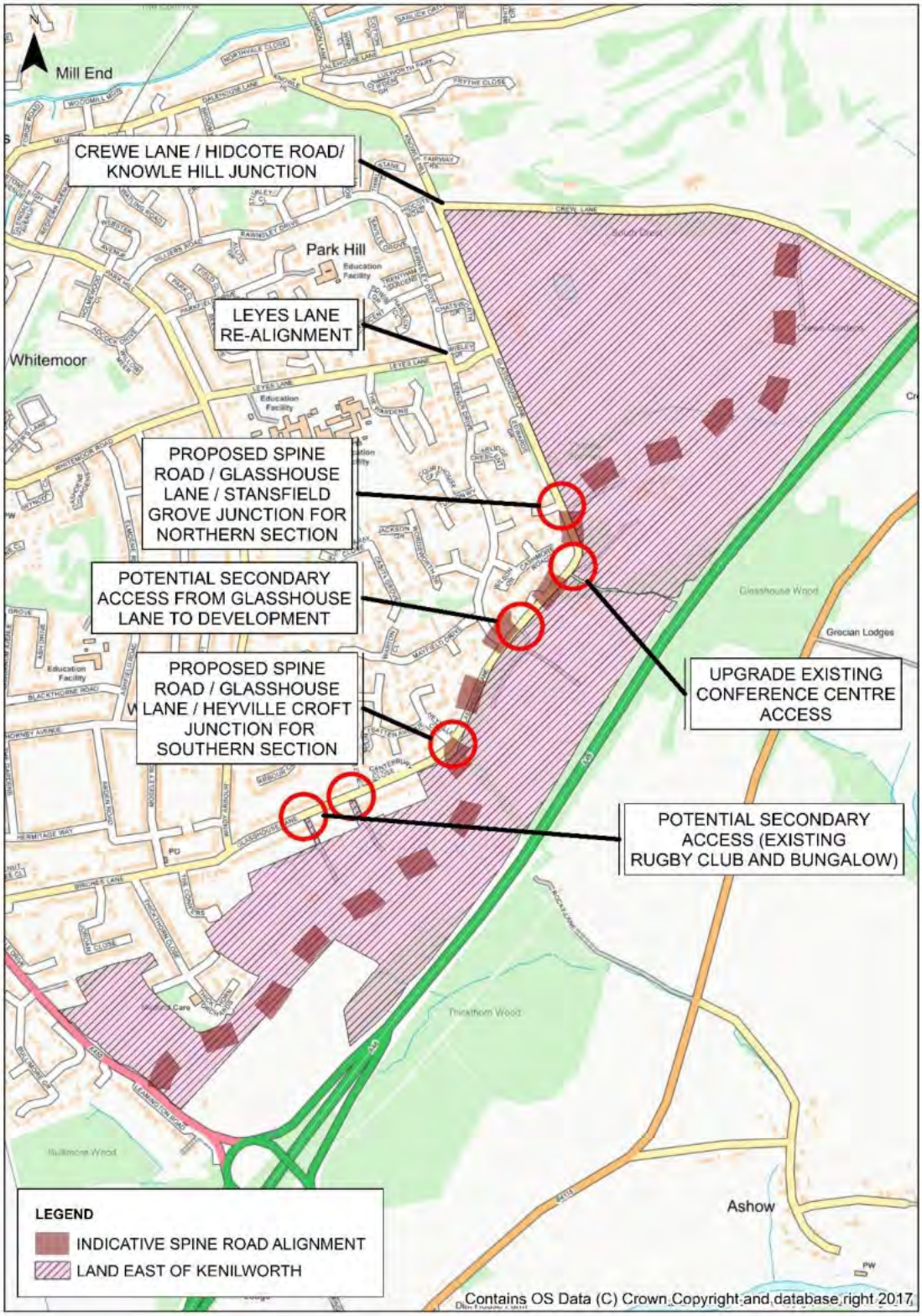
Following discussions with the WCC development manager, the following specification has been identified for the Spine Road through the site to ensure appropriate characteristics throughout the development:

- The carriageway width is 6.8m on the Spine Road and it will form the main distributor road through the site;
- It will have a speed limit of 30mph, with 20mph zones through the local centre;
- Off-street parking will be designed for residential properties, but some ad-hoc on-street parking is assumed and can be accommodated on the Spine Road;
- 2m grass verges will be provided on both sides of the carriageway;
- Space for 4m shared footway/cycleways on at least one side of the carriageway;
- The proposed alignment of the Spine Road runs through the northern and southern section of the development site, but joins Glasshouse Lane in the middle section of the development site;
- The southern section of the Spine Road will run from the Leamington Road at the south of the site to a junction with Glasshouse Lane in the vicinity of Heyville Croft. Secondary access points from existing access points onto Glasshouse Lane are proposed serving the residential development;
- The section of Glasshouse Lane between Heyville Croft and Stansfield Grove would be upgraded to the same specification as the Spine Road, but would only have footway provision on the east side of the carriageway; and
- The northern section of the Spine Road connects with Glasshouse Lane, north of the Woodside Conference Centre, to Crewe Lane to the north of the development site.

In order to mitigate potential delays to bus services at the Spine Road and Leamington Road junction, bus priority measures at this junction should be considered.

The indicative alignment of the Spine Road and the key junctions considered are shown in Figure 3-1.

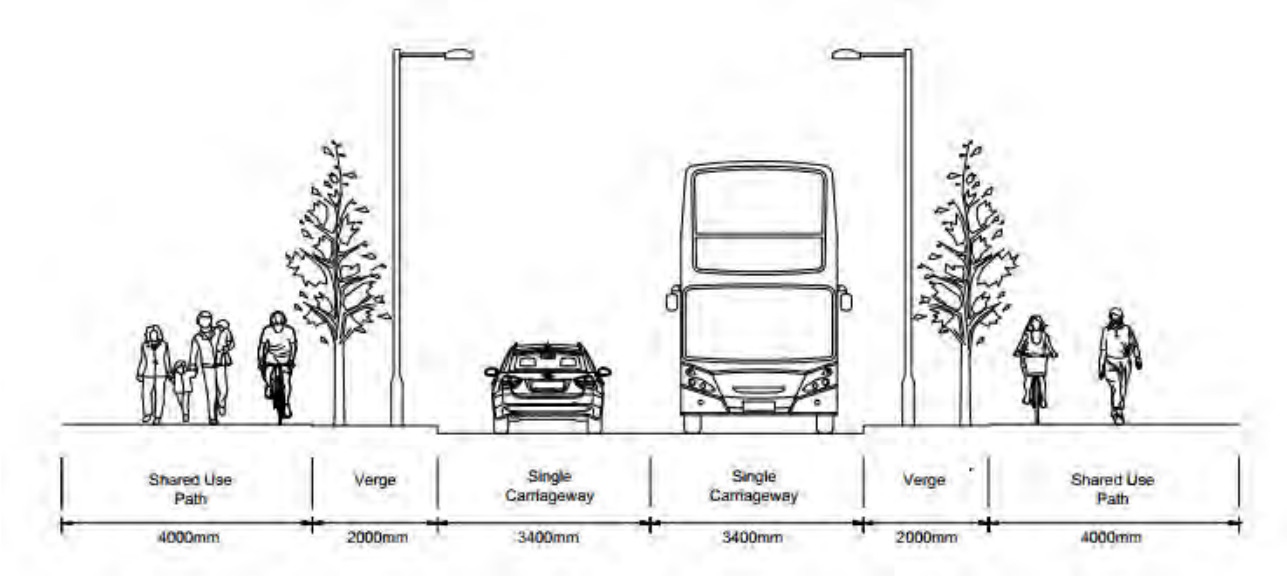
**Figure 3-1 Location Plan Key Roads and Junctions**




The indicative cross-section of the proposed Spine Road specification is presented in

Figure 3-2.

**Figure 3-2 Indicative Spine Road Cross-section**




It should be noted that, this cross-section is an indicative layout and final design will require discussion with WCC in the context of emerging design guidance and particular requirements for each section of the time road. It is considered that shared use paths are unlikely to be required on both sides of the carriageway, and segregated cycle provision is likely to be preferred. The section of Spine Road along Glasshouse Lane is a constrained section of highway therefore further consideration will have to be given to how the access arrangements work with the Dencer Drive junction and how required cycle facilities are delivered.

## 3.3. Spine Road and Glasshouse Lane junction assessments

This section outlines potential junction design at three junctions between the Spine Road and Glasshouse Lane indicating the results of junction modelling for each of the proposals. The junctions are required as the Spine Road can't run through the site due to the requirement to protect trees, biodiversity and public rights of way.

Using the 2029 Local Plan Model flows, network peak hours were determined to be:

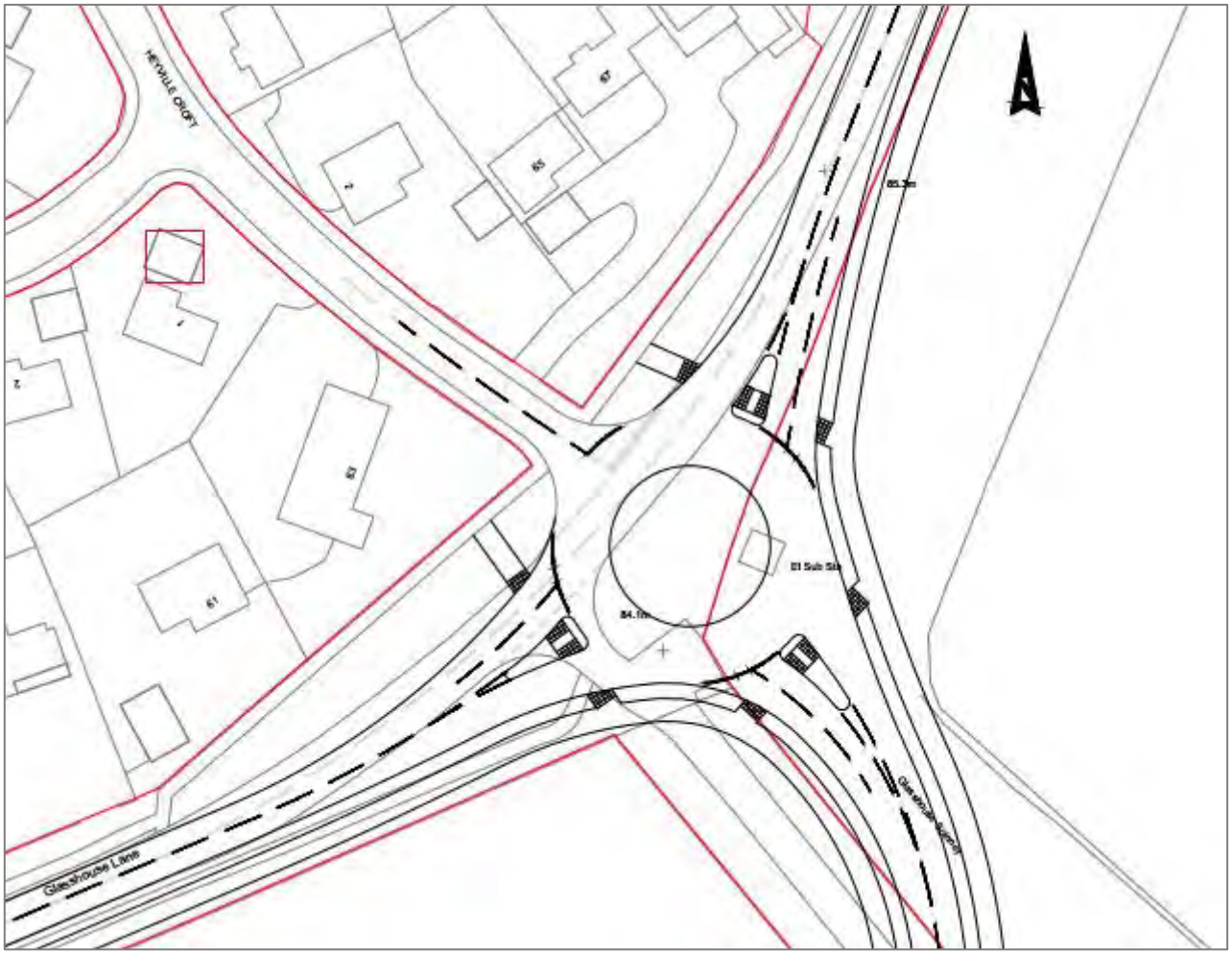
- AM Peak: 08:00 – 09:00
- PM Peak: 17:00 – 18:00

### Glasshouse Lane/Spine Road/Heyville Croft Junction

At present, Glasshouse Lane/Heyville Croft is a priority junction formed between Glasshouse Lane, which acts as the major arm and runs north to south, and Heyville Croft, which acts as the minor arm and serves a residential cul-de-sac to the northwest.

The feasibility of a roundabout junction was considered at this location. Initially a 4-arm roundabout was considered connecting Glasshouse Lane, the Spine Road Southern Section and Heyville Croft (an extract of drawing KEN-ATK-HGN-SPINE-DR-D-002 is shown in Figure 3-3). A variation of this option providing uncontrolled crossing facilities on Glasshouse Lane, rather than at the roundabout was also explored (provided in KEN-ATK-HGN-SPINE-DR-D-002 in Appendix D.1). However, these arrangements require a large area of vegetation removal on the east side of the junction and do not suitably maintain Rocky Lane access. Therefore, alternative locations and arrangements have been considered below.

**Figure 3-3 Glasshouse Lane/Spine Road/Heyville Croft (4-arm roundabout Spine Road Junction) Drawing Extract**

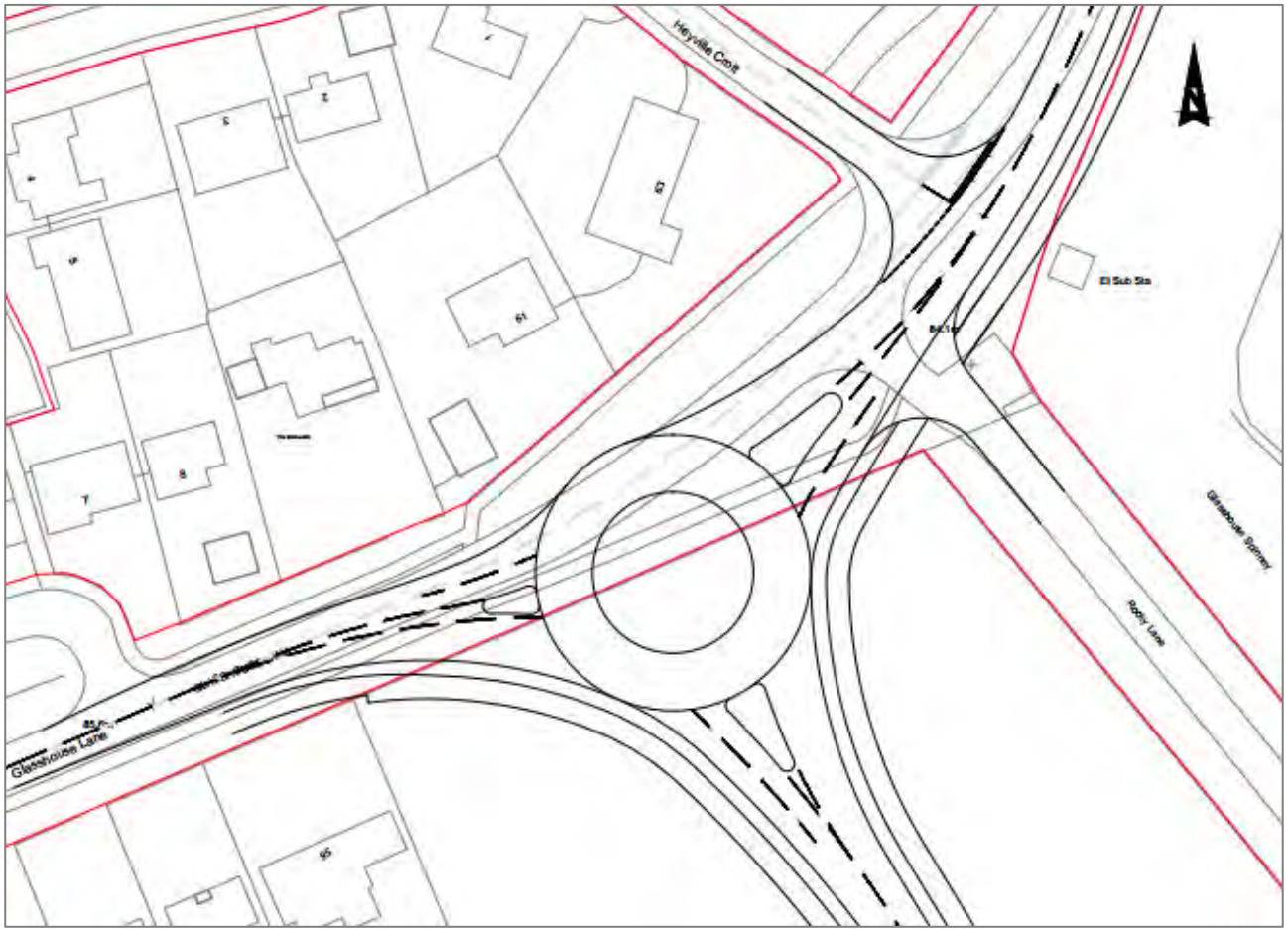



A 3-arm roundabout arrangement can be accommodated connecting the Spine Road with Glasshouse lane as shown in an extract from drawing KEN-ATK-HGN-SPINE-DR-D-001 is shown in Figure 3-4, below.

This option provides a separate priority junction for Heyville Croft, and maintains pedestrian and cycle access to Rocky Lane. Therefore, the 3-arm roundabout is the preferred arrangement at this location.

Pedestrian and cycle provision would continue on the east side of Glasshouse Lane with suitable crossing facilities at key junctions.

**Figure 3-4 Glasshouse Lane/Spine Road/Heyville Croft (3-arm roundabout Spine Road Junction) Drawing Extract**




Traffic flows for Glasshouse Lane/Spine Road/Heyville Croft roundabout options are provided in Appendix A. Table 3.1 summarises the junction capacity model outputs for Glasshouse Lane/Spine Road/Heyville Croft roundabout. All model output data is provided in Appendix D.2.

**Table 3.1 Glasshouse Lane / Spine Road Southern Section/ Roundabout Junction Capacity Results Summary Table**

| | AM | | | PM | | |
|---|---|---|---|---|---|---|
| | Queue (Veh) | Delay (S) | RFC | Queue (Veh) | Delay (S) | RFC |
| **Local Plan 2029 Model Flows** | | | | | | |
| Glasshouse Lane (E) | 0.3 | 3.18 | 0.23 | 0.2 | 3.05 | 0.17 |
| Spine Road Southern Section | 0.5 | 3.54 | 0.34 | 0.4 | 3.16 | 0.27 |
| Glasshouse Lane (W) | 0.2 | 3.62 | 0.19 | 0.5 | 4.42 | 0.33 |

Junction capacity modelling shows that the proposed junction options operate well within capacity on all arms during both peaks.

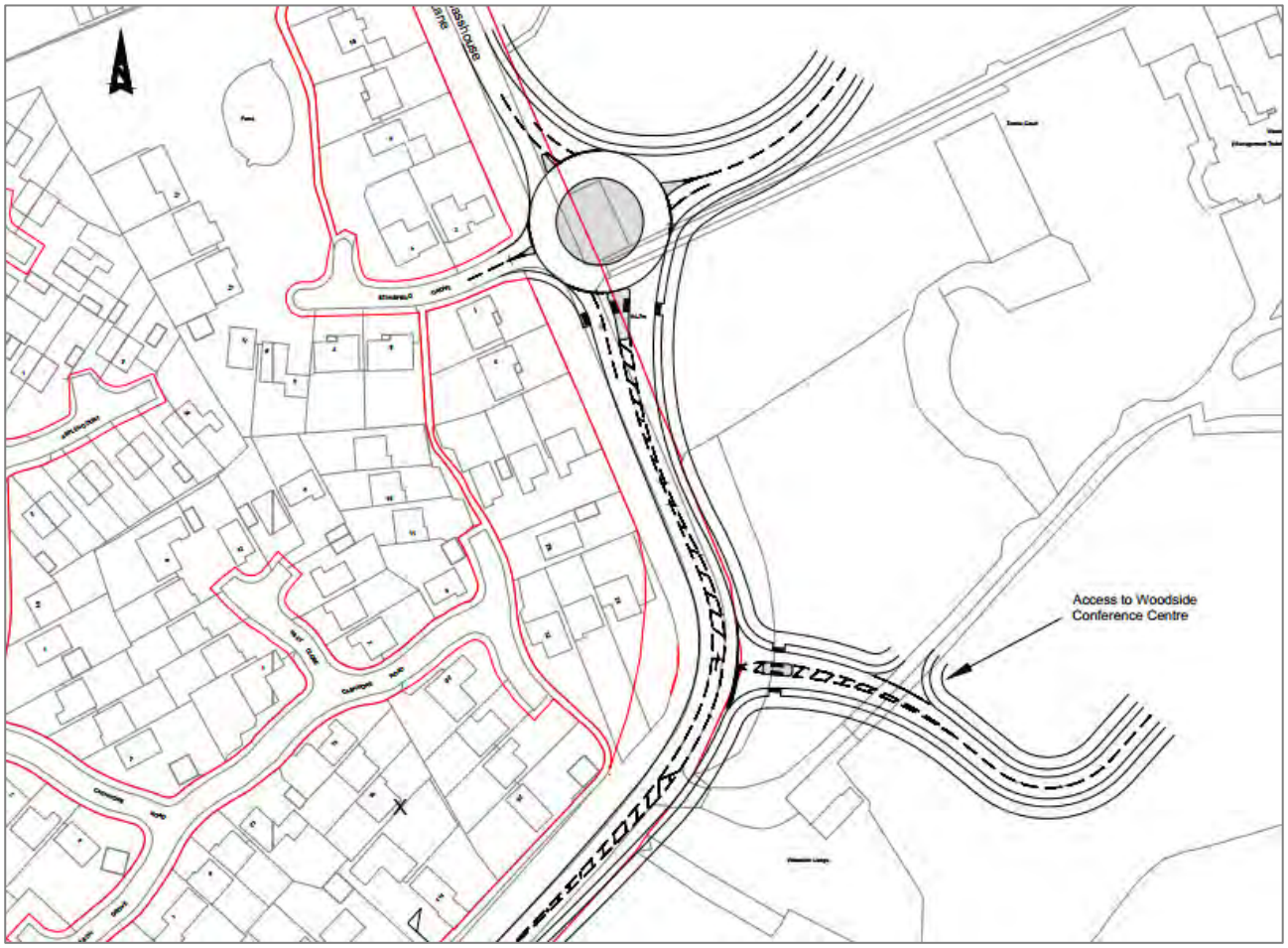
## Glasshouse Lane / Spine Road Northern Section / Stansfield Grove Junction

At present, Glasshouse Lane/Stansfield Grove is a priority junction formed between Glasshouse Lane, which acts as the major arm and runs north to south, and Stansfield Grove, which acts as the minor arm and serves a small residential cul-de-sac to the west. Opposite the Stansfield Grove arm to the east is a minor, unnamed road which provides secondary access to Woodside Hotel.

It is proposed that a 4-arm roundabout connecting Glasshouse Lane, Spine Road Northern Section and Stansfield Grove could be provided in this location. An indicative layout is presented in extract from drawing KEN-ATK-HGN-SPINE-DR-D-004, shown in Figure 3-5.

It is proposed to relocate the existing Woodside Conference Centre access approximately 25m north to achieve better visibility splays and provide a right turn lane. This would also form a secondary access to the residential development with a priority junction providing access to the conference centre, as shown in Figure 3-5.

**Figure 3-5 Glasshouse Lane/Spine Road Northern Section/Stansfield Grove junction and upgraded Conference Centre access**




Glasshouse Lane/ Spine Road Northern Section/Stansfield Grove roundabout has been modelled using the ARCADY module of Junctions 9.

Traffic flows for Glasshouse Lane/ H40 Spine Road Northern Section/Stansfield Grove roundabout are provided in Appendix A.

Table 3.2 summarises the junction capacity model outputs for Glasshouse Lane/ H40 Spine Road Northern Section/Stansfield Grove roundabout. Full model output data is provided in Appendix D.2.

**Table 3.2 Glasshouse Lane/ H40 Spine Road Northern Section/Stansfield Grove Roundabout Junction Capacity Results Summary Table**

| | AM | | | PM | | |
|---|---|---|---|---|---|---|
| | Queue (Veh) | Delay (S) | RFC | Queue (Veh) | Delay (S) | RFC |
| **Local Plan 2029 Model Flows** | | | | | | |
| Glasshouse Lane (N) | 0.9 | 7.00 | 0.46 | 0.5 | 5.69 | 0.35 |
| H40 Spine Road Northern Section | 0.4 | 4.47 | 0.28 | 0.4 | 4.44 | 0.27 |
| Glasshouse Lane (S) | 1.0 | 6.63 | 0.49 | 0.6 | 5.44 | 0.39 |
| Stansfield Grove | 0.0 | 0.00 | 0.00 | 0.0 | 0.00 | 0.00 |

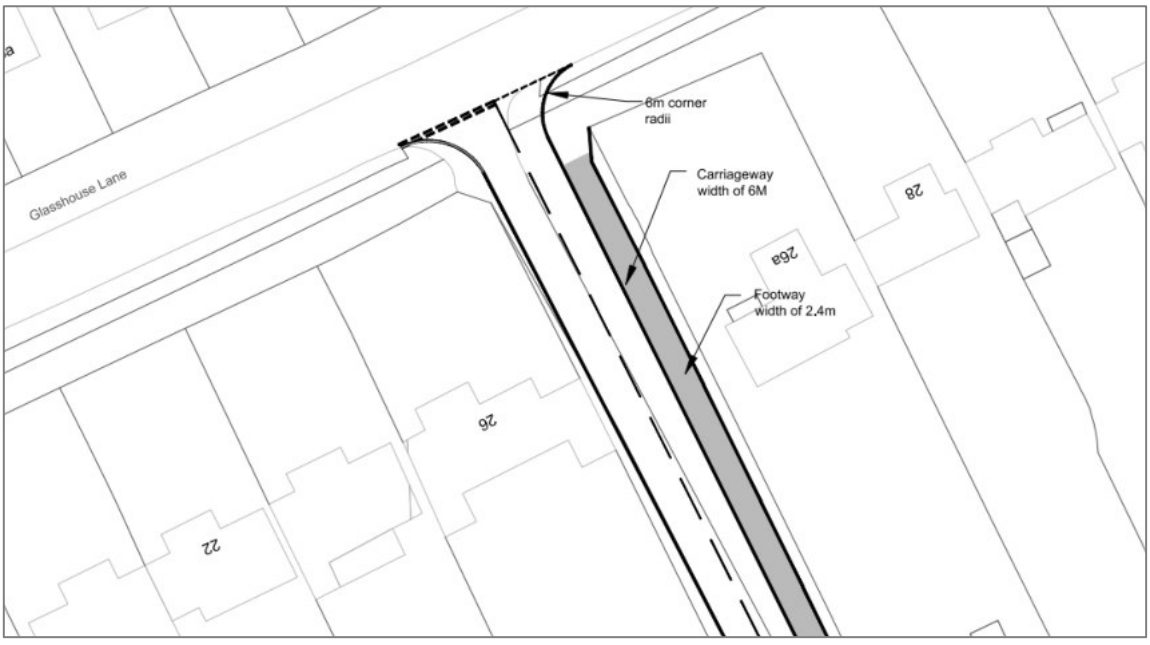
The results in Table 3.2 show that the proposed junction operates well within capacity on all arms during both peaks. The largest RFC across the junction is during the AM peak on the Glasshouse Lane (S) arm at 0.49.

## Glasshouse Lane/ Existing Rugby Club Access Junction

A secondary access to the southern section of the development site could be provided by the current Kenilworth Rugby Club as these facilities are to be relocated as part of the development. It is not proposed for this access to form a major access to the site, rather, a secondary access serving a small number of dwellings and for emergency and servicing vehicles. This access could also be utilised to enhance pedestrian/cycle connectivity into the southern section of the development site.

This option proposes to provide a priority junction between Glasshouse Lane and the development site, using the existing access for the Rugby Club. An indicative layout of the proposed junction is shown in Figure 3-6. A 6m carriageway and 2.4m footway on one side can be accommodated.

**Figure 3-6 Glasshouse Lane/Rugby Club Access Drawing Extract**




The junction has been modelled using the PICADY module of Junctions 9. Traffic flows for the Glasshouse Lane / Southern Spine Road are provided in Appendix A.

Table 3.3 summarises the junction capacity model outputs for the Glasshouse Lane / Southern Spine Road junction. Full model output data is provided in Appendix D.2.

**Table 3.3 Glasshouse Lane / Southern Spine Road Northern Section Junction Capacity Results Summary Table**

| | AM | | | PM | | |
|---|---|---|---|---|---|---|
| | Queue (Veh) | Delay (S) | RFC | Queue (Veh) | Delay (S) | RFC |
| **Local Plan 2029 Model Flows** | | | | | | |
| Spine Road (left turn out) | 0.1 | 8.09 | 0.12 | 0.0 | 8.99 | 0.01 |
| Spine Road (right turn out) | 0.6 | 13.20 | 0.37 | 1.2 | 16.95 | 0.55 |
| Glasshouse Lane (W) (right turn in) | 0.1 | 5.63 | 0.04 | 0.0 | 5.36 | 0.01 |

The results in Table 3.3 show the junction is operating well within acceptable thresholds of capacity on all arms across both peaks. The largest RFC across the junction is during the PM peak on the Spine Road arm at 0.55.

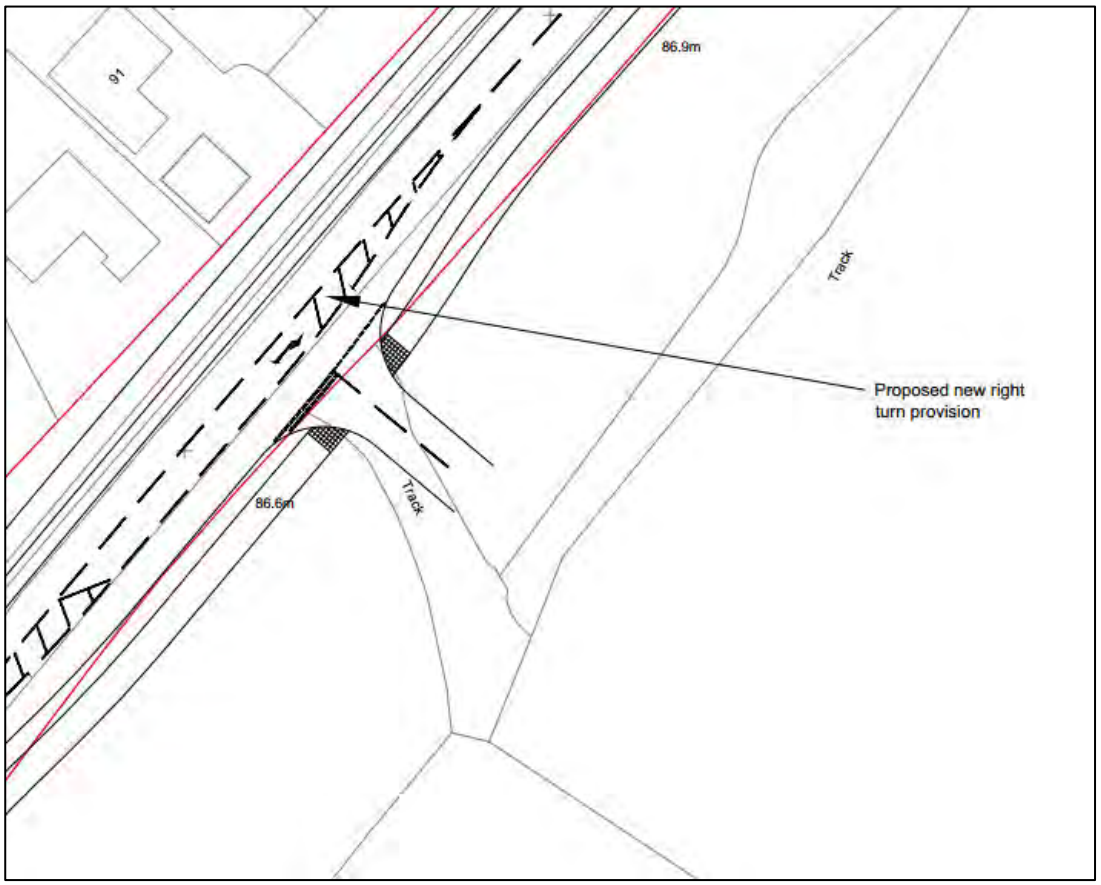
A potential alternative secondary access to the southern section of the development site could be provided opposite Orchard Lane via a track which currently provides access to a bungalow.

### Glasshouse Lane/ Central Site Access Junction

An access to the central section of the development site could be provided to the north of Dencer Drive, close to the position of the existing rugby club access.

This option proposes to provide a priority junction between Glasshouse Lane and the development site. An extract of drawing KEN-ATK-HGN-SPINE-DR-D-005 is shown in Figure 3-7 and indicates the layout of the proposed junction. The full drawing is provided in Appendix D.1.

**Figure 3-7 Glasshouse Lane/Central Access Drawing Extract**




The junction has been modelled by WCC using the PICADY module of Junctions 9.

Table 3.4 summarises the junction capacity model outputs for the Glasshouse Lane / Southern Spine Road junction. Full model output data is provided in Appendix D.2.

**Table 3.4 Glasshouse Lane / Central Access Junction Capacity Results Summary Table**

| | AM | | | PM | | |
|---|---|---|---|---|---|---|
| | Queue (Veh) | Delay (S) | RFC | Queue (Veh) | Delay (S) | RFC |
| **Local Plan 2029 Model Flows** | | | | | | |
| Central Access (left/right turn out) | 0.2 | 6.98 | 0.15 | 0.0 | 6.75 | 0.02 |
| Glasshouse Lane North (ahead/left turn) | 0.0 | 5.17 | 0.05 | 0.0 | 5.61 | 0.04 |

The results in Table 3.4 show the junction is operating well within acceptable thresholds of capacity on all arms across both peaks. The largest RFC across the junction is during the AM peak on the Central Access arm at 0.15.

## 3.4. Leyes Lane Realignment

Leyes Lane currently has a staggered crossroads arrangement that requires a right turn onto Dencer Drive for approximately 25m before continuing on Leyes Lane.

Figure 3-8 shows the existing Leyes Lane staggered crossroads arrangement with a grass area and trees in the middle.

**Figure 3-8 Leyes Lane Staggered Crossroad Photographs**

The feasibility of the following options has been considered to improve the highway alignment for anticipated increases in flows from the development and the relocated school. In addition, the following options seek to provide a more logical route to/from Kenilworth town centre to the west:

- Signalised crossroads arrangement; and
- Compact roundabout arrangement.

### 3.4.1. Leyes Lane Option 1 – Signalised Crossroads

The proposed alignment (presented in drawing KEN-ATK-HGN-LEYS-DR-D-001 P2 in Appendix D.1) shows that a signalised crossroads can be accommodated within the highway boundary. The realignment of the east section of Leyes Lane would result in vegetation loss and may require relocation of utilities and services. A new priority junction to the north of Leyes Lane would be required to provide access to Wisley Grove. Part of the existing Leyes Lane would be blocked off and a turning head would need to be created to provide residential access to properties on the south side of the carriageway. Three properties on the east end of Leyes Lane would retain access directly from the re-aligned carriageway.

Drawing KEN-ATK-HGN-LEYS-DR-D-001 P2 also shows a signalised arrangement at the Leyes Lane / Glasshouse Lane junction, with pedestrian and cycling facilities to improve access to the relocated school site.

### 3.4.2. Leyes Lane Option 2 – Compact Roundabout

A roundabout option is presented in drawing KEN-ATK-HGN-LEYS-DR-D-002 P2 in Appendix D.1. It shows that a roundabout with an ICD of 28m could be accommodated. The option would require re-alignment of Dencer Drive and the creation of a new access to Wisley Grove from Leyes Lane. Part of the existing Leyes Lane would be blocked off and a turning head created to provided residential access to properties on the south side of the carriageway. Five properties on the east end of Leyes Lane would retain access directly from the re-aligned carriageway.

Drawing KEN-ATK-HGN-LEYS-DR-D-002 P2 also shows a signalised arrangement at the Leyes Lane / Glasshouse Lane junction, with pedestrian and cycling facilities to improve access to the relocated school site.

Following a review of the feasibility of the options presented above, it is recommended that a signalised crossroads arrangement would provide more continuity between junctions and improved pedestrian and cycle crossing facilities. Given the location of this junction on the desire line for non-motorised users accessing the proposed secondary school, the provision of a compact roundabout arrangement would not be conducive to accommodating on-street cycle/pedestrian movements. However, it should be noted that WDC and WCC will need to consider what the preferred overall strategic role of Leyes Lane is and the desired levels of traffic using it as this may impact upon the desirability of implementing this option.

## 3.5. Crewe Lane/Hidcote Road/Knowle Hill junction

The existing arrangement of the Crewe Lane/Hidcote Road/Knowle Hill junction is a staggered right crossroads separated by approximately 20m. Figure 3-9, shows a photo of the existing junction from Hidcote Road looking south east.

**Figure 3-9 Crewe Lane/Hidcote Road/Knowle Hill Staggered Crossroad Photograph**

The junction is located at the crest of a hill and vegetation limits visibility at the Crewe Lane approach. The proposed development site and relocation of the school is likely to increase traffic flows passing through this junction. Therefore, the feasibility of the following junction improvements has been considered:

- Option 1 - Restricting right movements out of minor arms;
- Option 2 - Widening carriageway and re-alignment to improve visibility;
- Option 3 - Carriageway re-alignment and traffic calming in the form of a raised junction;
- Option 4 - Movements from Hidcote Road restricted to bus and cycles only; and
- Option 5 - Restricting movements on the minor arms to 'in-only'.

### 3.5.1. Option 1 - Restricting right movements out of minor arm (central islands)

This option (shown in drawing KEN-ATK-HGN-GLAS-DR-D-001, Appendix D.1) presents a reduction in allowable manoeuvres at junction. Widening, within highway land, would be required on western verge in order to provide sufficient width for refuge islands on the main line.

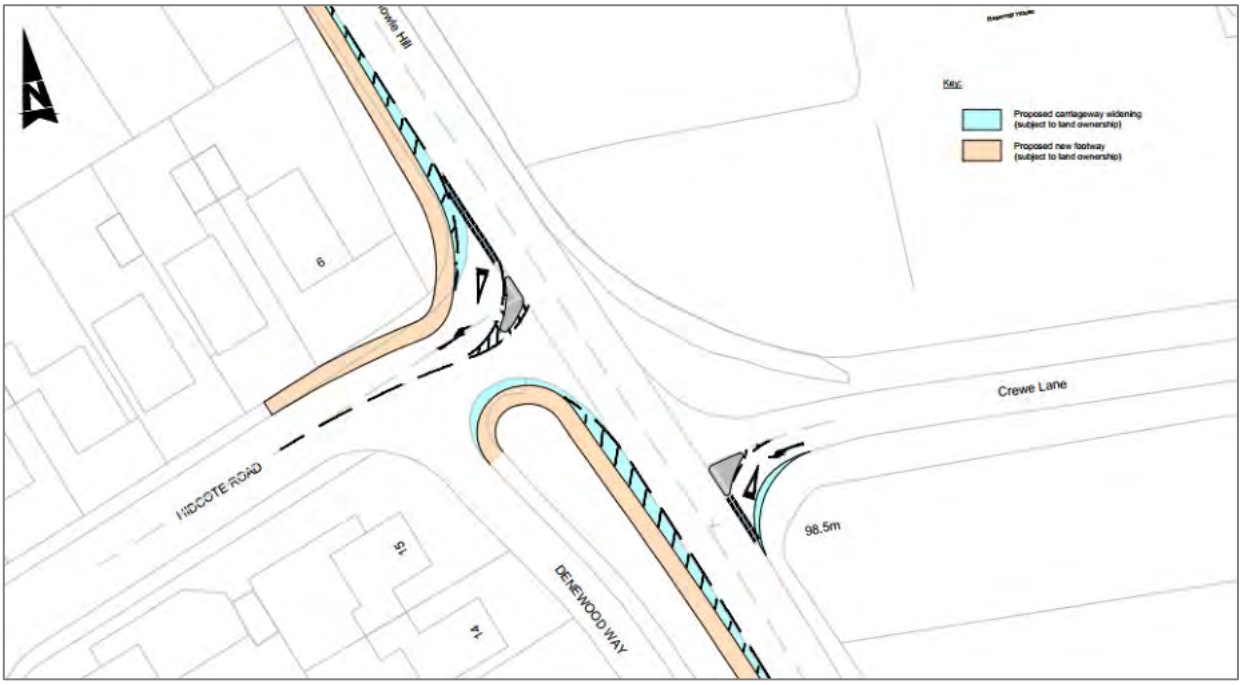
This option would provide benefits of simplifying traffic movements at the junction, but visibility would still be constrained from Crewe Lane, and the proposed islands could be a safety issue unless appropriately highlighted. However, this could be considered beneficial as traffic calming on Knowle Hill / Glasshouse Lane. The islands could be extended to provide pedestrian refuges and improve crossing facilities.

Swept path analysis has been undertaken to show that buses and service vehicles can still navigate the junction.

#### 3.5.1.1. Option 1b - Restricting Right movements out of minor arm (splitter island)

This option (shown in drawing KEN-ATK-HGN-GLAS-DR-D-001B, Appendix D.1) presents the same restrictions to movements as Option 1, but achieves this by the introduction of splitter island on the minor approach arms. An extract from drawing KEN-ATK-HGN-GLAS-DR-D-001B is show in Figure 3-10.

**Figure 3-10 Crewe Lane / Hidcote Road / Glasshouse Lane junction Option 1B**




This option would provide benefits of simplifying traffic movements at the junction, but visibility would still be constrained from Crewe Lane, and it would provide less traffic calming on the mainline than Option 1.

Swept path analysis has been undertaken to show that buses and service vehicles can still navigate the junction. Right turn movements can still be achieved by cars, but would be prohibited.

### 3.5.2. Option 2 - Widening carriageway and re-alignment to improve visibility

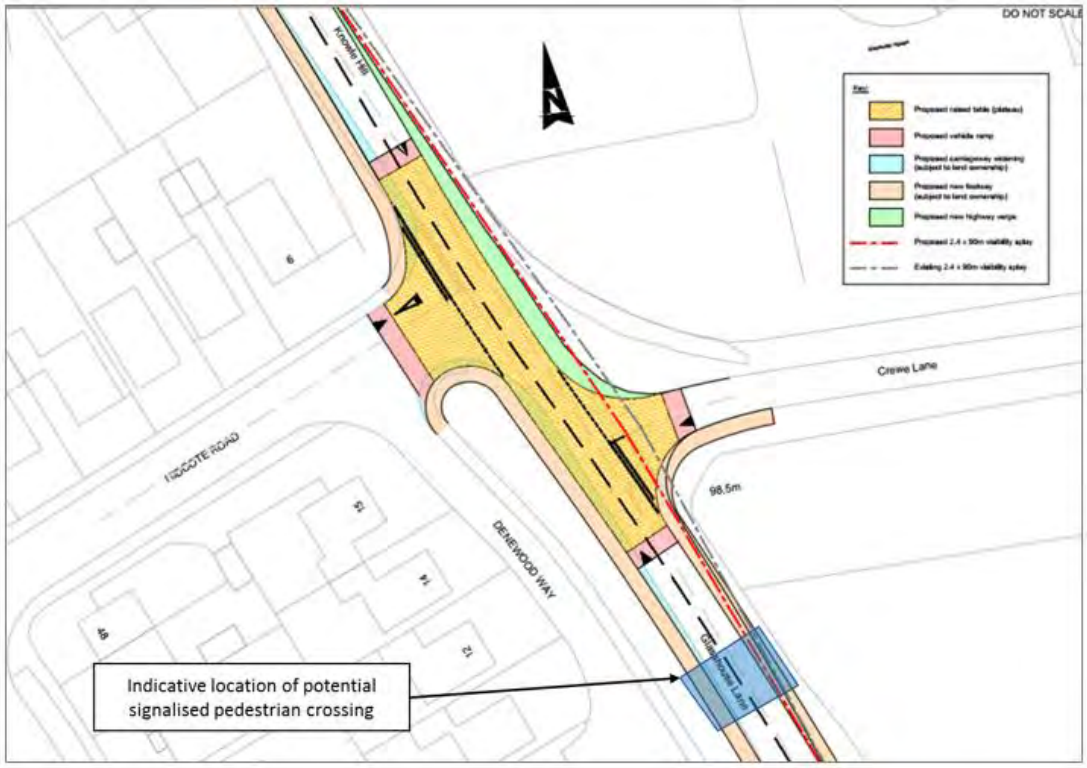
Option 2 provides horizontal re-alignment of the mainline carriageway and build out of the Crewe Lane approach to improve visibility splays (shown in drawing KEN-ATK-HGN-GLAS-DR-D-002, Appendix D.1). All junction movement would be maintained. There would only be limited traffic calming as a result of this option.

### 3.5.3. Option 3 - Carriageway re-alignment and traffic calming in the form of a raised junction

Option 3 (show in drawing KEN-ATK-HGN-GLAS-DR-D-003, Appendix D.1) provides horizontal re-alignment of the mainline carriageway and build out of the Crewe Lane approach to improve visibility splays, like option 2, but also proposes traffic calming in the form of a raised table top junction. This would provide traffic calming and reduce speeds across the junction on all arms, but there is potential for maintenance issues if the junction has high levels of HGV and bus movements.

An extract from drawing KEN-ATK-HGN-GLAS-DR-D-003 is in Figure 3-11 provided below.

**Figure 3-11 Crewe Lane / Hidcote Road / Glasshouse Lane junction Option 3**




## 3.5.4. Option 4 - Movements from Hidcote Road restricted to bus and cycles only

Option 4 proposes to restrict movement from Hidcote Road to buses and cycles only. Shown in drawing KEN-ATK-HGN-GLAS-DR-D-004 and 007, Appendix D.1, this could take the form of a bus gate and narrowing of the access to Hidcote Road, with retractable bollards or signage and camera enforcement.

Both bus gate options simplify vehicle movements at the junction and improve facilities for cyclist and public transport. This would support improvements to pedestrian crossing facilities on Glasshouse Lane, although not shown on the drawings.

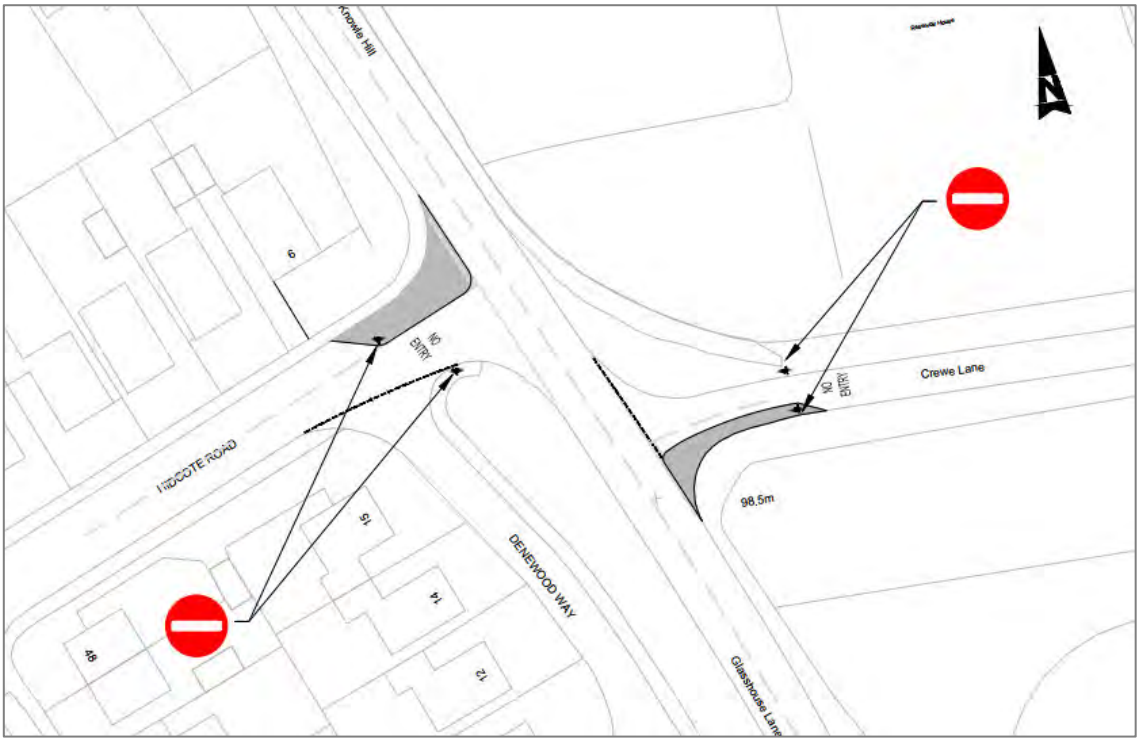
Swept path analysis has been undertaken to ensure that there is sufficient space for opposing bus movements on Hidcote Road without blocking Glasshouse Lane / Knowle Hill.

## 3.5.5. Option 5 - Restricting movements on the minor arms to 'in-only'

This option proposes to restrict movements from both Hidcote Road and Crewe Lane approaches incorporating kerbline buildouts as shown in drawing KEN-ATK-HGN-GLAS-DR-D-005, Appendix D.1. Figure 3-12 shows an extract from this drawing.

This option removes visibility concerns on the Crewe Lane approach and simplifies vehicle movements at the junction, but does not provide traffic calming on the mainline movements.

**Figure 3-12 Crewe Lane / Hidcote Road / Glasshouse Lane junction Option 5**

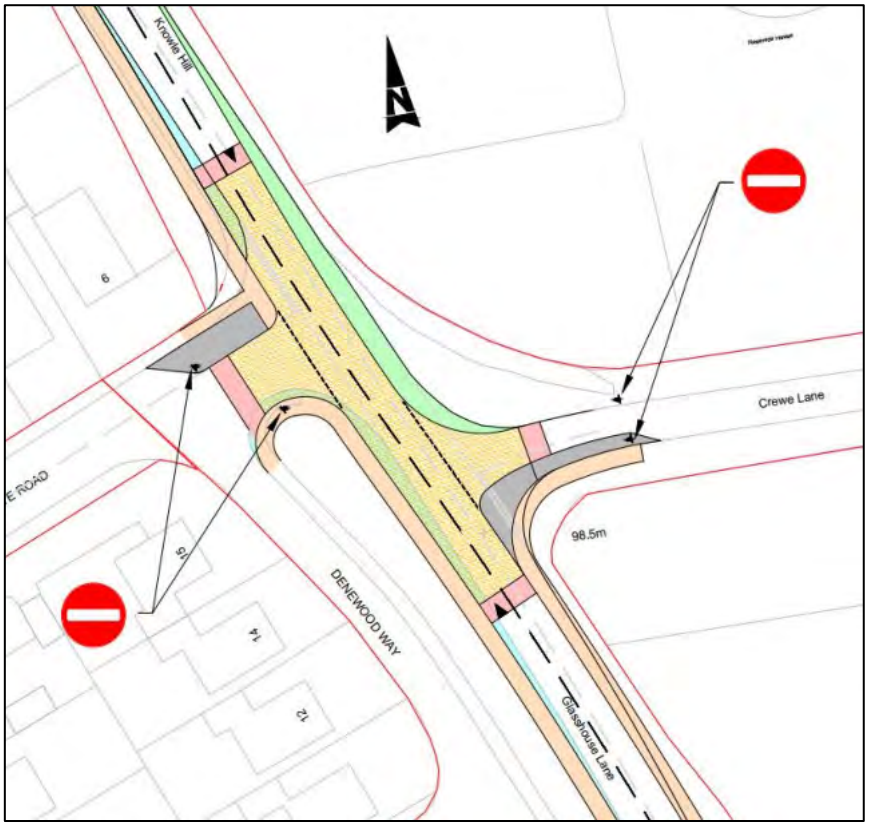



## 3.5.6. Preferred Option

A combination of the options identified above should be considered for the Crewe Lane/Hidcote Road/Knowle Hill junction. Restricting access from Crewe Lane as well as traffic calming measures are recommended at this junction. Combining Option 3 and elements of Option 5, would improve junction visibility, simplify junction movements, calm traffic approaching the development site and improve pedestrian and cycle provision. Access to the golf club would be as existing but traffic exiting the golf club would have to travel east on Crewe Lane and then use the Spine Road avoiding the poor visibility at the junction of Crewe Lane with Glasshouse Lane.

The combination of Options 3 and 5 is shown in drawing KEN-ATK-HGN-GLAS-DR-D-008, Appendix D.1. Figure 3-13 shows an extract from this drawing.

**Figure 3-13 Crewe Lane / Hidcote Road / Glasshouse Lane junction Options 3 and 5**




The traffic 2029 Local Plan flows provided by VM consider restricted access on Crewe Lane and account for redistribution of traffic to Glasshouse Lane via the Spine Road and have been considered in the other junction capacity modelling presented below in this section.

## 3.6. Crewe Lane

Crewe Lane is currently a two-way single carriageway road providing access to Kenilworth Golf Course and a small number of residential properties. It currently has no footway provision, centreline or road markings. Section 3.5 of this report presents options to downgrade access to Crewe Lane from the Crewe Lane / Hidcote Road / Knowle Hill junction.

The proposed development of the Land East of Kenilworth site is likely to increase use of Crewe Lane. This section of the report considers the feasibility of upgrading Crewe Lane to connect with the Spine Road, providing footway provision, and considering the impact of down grading the access junction from Glasshouse Lane.

Traffic flows obtained from VM 2029 Reference Case (without the proposed development flows) suggest that in the AM peak there are 353 vehicle movements into Crewe Lane (287 turning left in and 66 turning right in), and 55 vehicles out of Crewe Lane onto Glasshouse Lane (3 turning left out and 52 turning right out). In the PM peak there are 72 vehicle movements into Crewe Lane (61 turning left in and 11 turning right in), and 84 vehicles out of Crewe Lane onto Glasshouse Lane (4 turning left out and 81 turning right out).

Given the restricted visibility exiting Crewe Lane onto Glasshouse Lane, it is recommended that access at this junction is restricted to in only. This would act as a one-way system on the west section of Crewe Lane, although access to the Golf Course and residential properties would be maintained from east side of Crewe Lane and the Spine Road. 'No Through Route' signs are proposed at the junction of Crewe Lane and the Spine Road.

It is recommended that the section of Crewe Lane between the northern end of the Spine Road and the Golf Course access would be retained as an informal access road, without a centreline, to encourage vehicle use of the Spine Road. Footway provision on the south side of the carriageway is recommended.

Drawing KEN-ATK-HGN-GLAS-DR-D-006 P2 shows the feasibility of this amended layout. Third party land take could be avoided if the carriageway width is reduced in some areas to accommodate footway.

By downgrading the section of Crewe Lane between Glasshouse Lane and the Spine Road, it would make it a more attractive route for cyclists, improve pedestrian links and encourage vehicles to route via the Spine Road, whilst retaining access.

A formalised pedestrian/cycle crossing, such as a Toucan crossing on Glasshouse Lane, south of the junction with Crewe Lane is recommended, to connect into the wider pedestrian/cycle network.

## Crewe Lane / Spine Road Junction

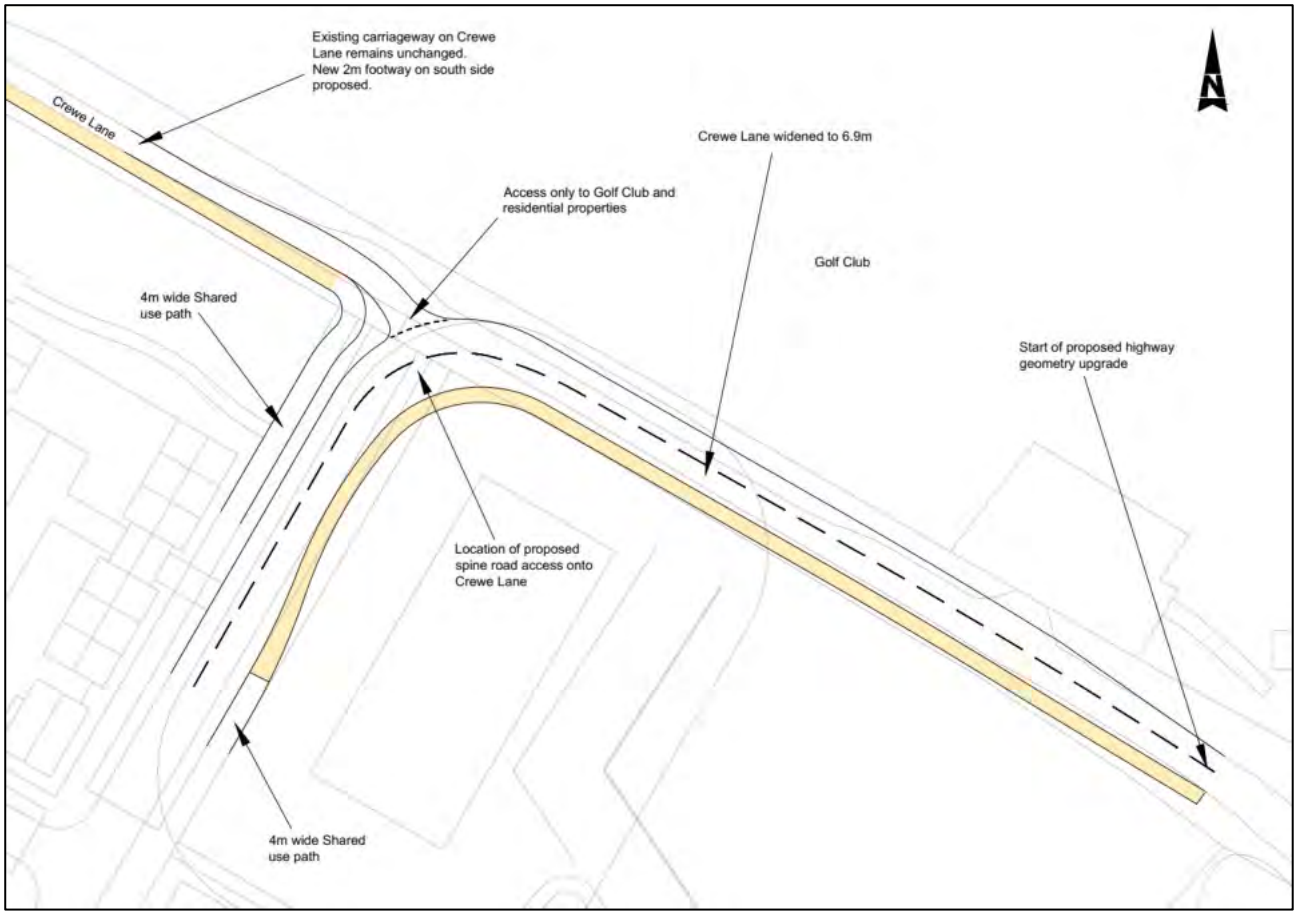
It is recommended that the Crewe Lane / Spine Road junction takes the form of a priority junction, but with the north-west section of Crewe Lane forming the minor arm, as shown in drawing KEN-ATK-HGN-CREW-DR-D-001 extract shown in Figure 3-14, below.

The Spine Road / Crewe Lane (east) would provide the mainline, and encourage through traffic to use the Spine Route to access Stoneleigh / Leamington Road. The east section of Crewe Lane is proposed to be upgraded to a formalised two-way carriageway, although the feasibility of this beyond the A46 bridge is limited.

Appropriate signage such as ‘No Through Route’ and ‘Access Only’ for Crewe Lane is recommended at the junction of Crewe Lane and the Spine Road.

The west section of Crewe Lane would provide a pedestrian and cycle link to Glasshouse Lane and facilities from the Spine Road would connect to this.

**Figure 3-14 Crewe Lane/Spine Road Junction**

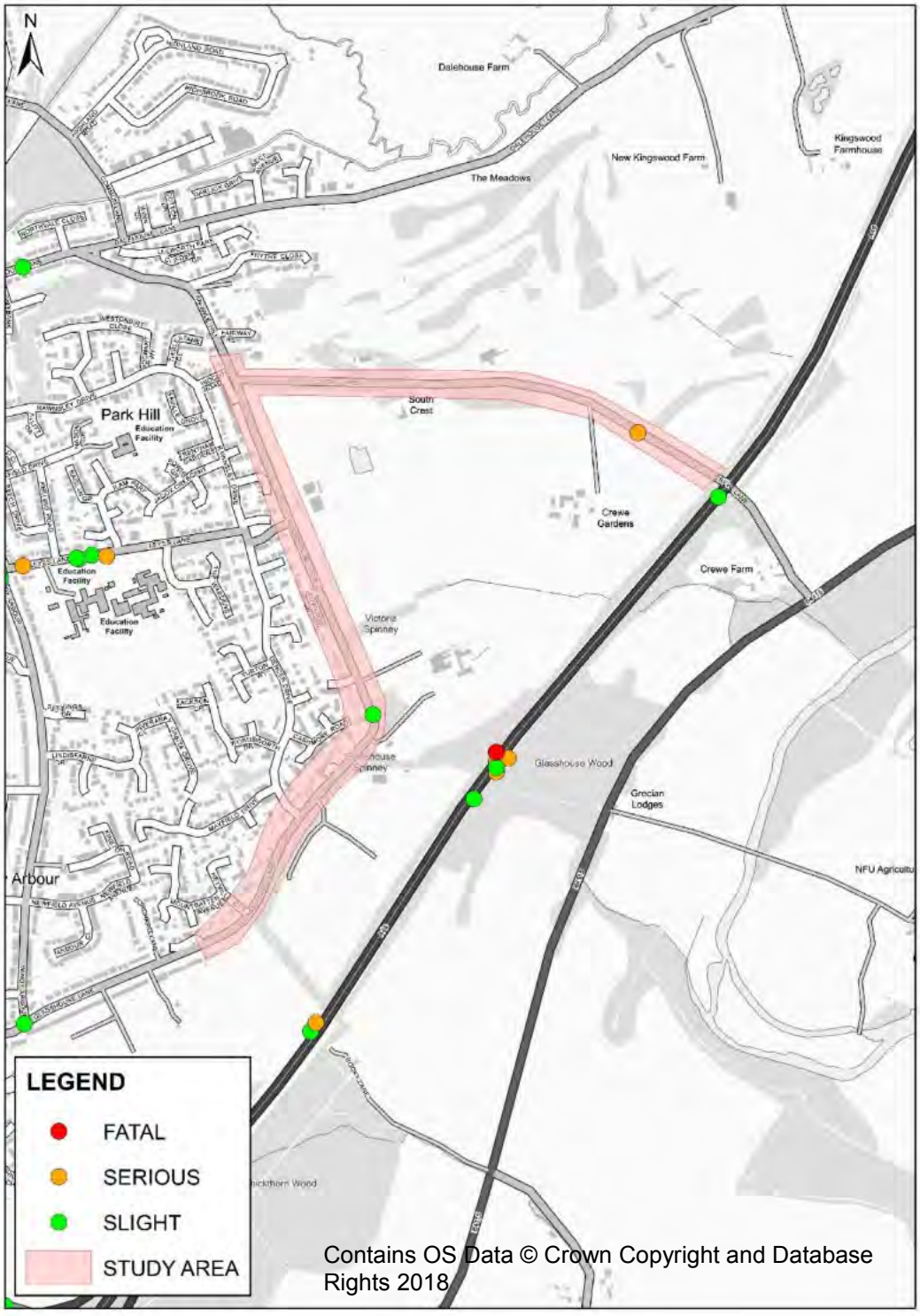



## 3.7. Safety

### 3.7.1. PIA Analysis

PIA analysis, as per the details available in Section 2 of this report, was undertaken for Glasshouse Lane and Crewe Lane over the latest available recording period. A plot of the PIA data and study area is presented in Figure 3-15.

**Figure 3-15 PIA Analysis, Glasshouse Lane/Spine Road**




One serious accident was recorded on Crewe Lane during the five-year period between 2013 and 2018. The accident appears to be caused by driver error and does indicate an existing road safety issue. The causation factors provided include loss of control and carelessness/recklessness/in a hurry.

One slight accident was recorded on Glasshouse Lane during the five-year period between 2013 and 2018. Although driver error was a contributing factor, the police reports suggest the current road layout could have

also contributed to the incident. The vehicle was negotiating the left-hand bend south of Stansfield Grove before veering to the offside to avoid an accident with an oncoming vehicle's wing mirror.

Following a review of the accident data, it is not considered that are any considerable existing road safety issues within the study area. Although the number of accidents on the link does not suggest an ongoing road safety issue, measures are proposed at the Glasshouse Lane/Hidcote Road/Crewe Lane junction and a new signalised junction is proposed at the junction of Glasshouse Lane and Leyes Lane, to facilitate the proposed school relocation. Measures, such as traffic calming, could also be considered to minimise safety risks on the aforementioned bend on Glasshouse Lane.

# 4. St Johns Gyratory

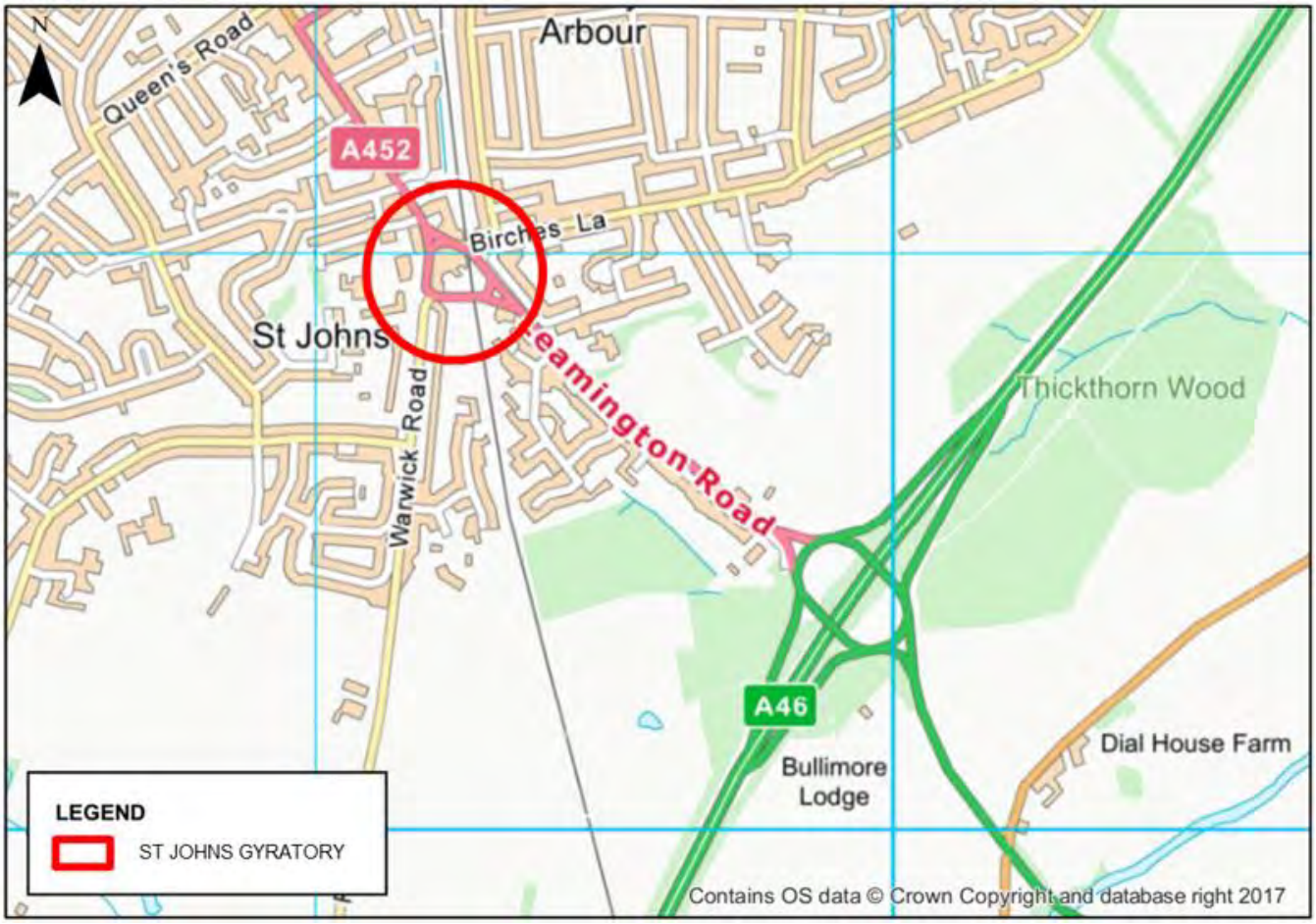
## 4.1. Existing Highway Network

The feasibility of junction improvements to the St Johns Gyratory has been considered in the section below, taking account of geometric constraints, junction capacity, accident data, and pedestrian and cycle facilities to determine a preferred option.

St Johns Gyratory is located south of Kenilworth town centre and approximately 750m north of the A46 Warwick Bypass (see Figure 4-1). The gyratory is formed of four arms; the A452 (N), Birches Lane, A452 (S), and Warwick Road. Each approach arm has two lanes apart from Warwick Road which has one, and the gyratory which has two lanes on approach to each arm.

The southern arm of St Johns Gyratory, the A452 (S), provides access to the A46 which serves Coventry to the north and Warwick to the south.

**Figure 4-1 St Johns Gyratory Location**




## 4.2. Junction Capacity Analysis

St Johns Gyratory has been modelled with the 2029 Local Plan Model flows using the ARCADY module of Junctions 9. The purpose of the junction capacity analysis was to quantify and understand issues raised with regard to the existing layout of the junction. 2029 Local Plan traffic flows for St Johns Gyratory are provided in Appendix A.

Table 4.1 summarises the junction capacity model outputs for St Johns Gyratory. Full model output data is provided in Appendix E.1.

**Table 4.1 St Johns Gyratory Junction Capacity Results Summary Table**

| | AM | | | PM | | |
|---|---|---|---|---|---|---|
| | Queue (Veh) | Delay (S) | RFC | Queue (Veh) | Delay (S) | RFC |
| **Local Plan 2029 Model Flows** | | | | | | |
| A452 (N) | 1.5 | 5.55 | 0.61 | 1.8 | 6.25 | 0.65 |
| Birches Lane | 1.2 | 8.98 | 0.55 | 1.5 | 9.72 | 0.60 |
| A452 (S) | 1.1 | 3.70 | 0.51 | 2.2 | 5.79 | 0.69 |
| Warwick Road | 7.7 | 52.76 | 0.91 | 72.6 | 454.64 | 1.32 |

Table 4.1 shows that the Warwick Road arm operates over capacity in both peaks, with an RFC of 0.91 during the AM peak and an RFC of 1.32 during the PM Peak.

All other arms on St Johns Gyratory are shown to operate within capacity during both the AM and PM peak hours. However, queuing back from upstream junctions, the petrol station and Camden House all have an impact on the operation of the gyratory.

## 4.3. Potential Improvement Options

The junction capacity assessment has been used to inform potential junction improvement options. The feasibility of the following options has been considered:

- Option 1 - Changing the priority so that the gyratory gives way to the approach arms;
- Option 2 - Full signalisation;
- Option 3 - Roundabouts on the three main approach arm junctions; and
- Option 4 - Localised improvements on the Warwick Road approach.

A summary table of the benefits and constraints of the options considered for St Johns Gyratory is presented in Table 4.3 at the end of this section.

### Option 1 – Changing the priority

This option proposes to change priority of the gyratory so that vehicles on the circulatory give way to the approach arms. This would improve traffic flow of the straight-ahead movements of Warwick Road and Leamington Road, but might cause increased queuing on the circulatory particularly in the PM peak on movements from Leamington Road traveling north.

Drawing KEN-ATK-HGN-GYRA-DR-D-001, (Appendix E.2) shows the indicative layout and white lining of the amended priority arrangement. Only minor changes to the carriageway would be required and access to the existing petrol station for Warwick Road and Leamington Road would be retained, but there would be no increase opportunities for pedestrian and cycle provision.

### Option 2 – Full signalisation

Drawing KEN-ATK-HGN-GYRA-DR-D-002 (Appendix E.2) shows full signalisation of the gyratory at the Warwick Road and Leamington Road junctions. Birches Lane would remain un-signalled. This option could be accommodated within the existing layout with only minor geometrical changes to kerbs and lining. The footway adjacent to the petrol station on Warwick Road would however be lost which could have an impact on visibility requirements for vehicles exiting the petrol station which will need to be considered further by applicants of the development sites. It is likely to provide minor improvements to traffic flows during peak times and would

provide increased control to manage queuing and delay. Integration with proposed signalised junctions further south on Leamington Road and at the A46/A452 junction could improve vehicle flow during peak times.

Access to the existing petrol station from Warwick Road could be retained, and there would be increased opportunities to provide controlled pedestrian and cycle crossing points.

## Option 3 – Roundabouts on the three main approach arm junctions

Drawing KEN-ATK-HGN-GYRA-DR-D-003 (Appendix E.2) shows mini and compact roundabout junctions on the Warwick Road and Leamington Road junctions. This would require two-way movements on all arms of the existing gyratory. This arrangement is likely to reduce vehicle speeds across the gyratory, but may improve the overall flow of traffic. There is potential for minimal improvements to pedestrian and cycling facilities by introducing uncontrolled crossing provision. The existing access to the petrol station can be retained but loadings on bridge structures may need to be considered further subject to two-way traffic flow changes.

## Option 4 – Localised improvements on the Warwick Road approach

The junction capacity assessment presented above identified that the main capacity issues are modelled to be on the Warwick Road approach at the south of the gyratory. Therefore, Option 4 focuses on localised improvements at this location. An extract from drawing KEN-ATK-HGN-GYRA-DR-D-004 is presented in Figure 4-2 below. The drawing itself is provided in Appendix E.2.

**Figure 4-2 Warwick Road access to St John Gyratory**

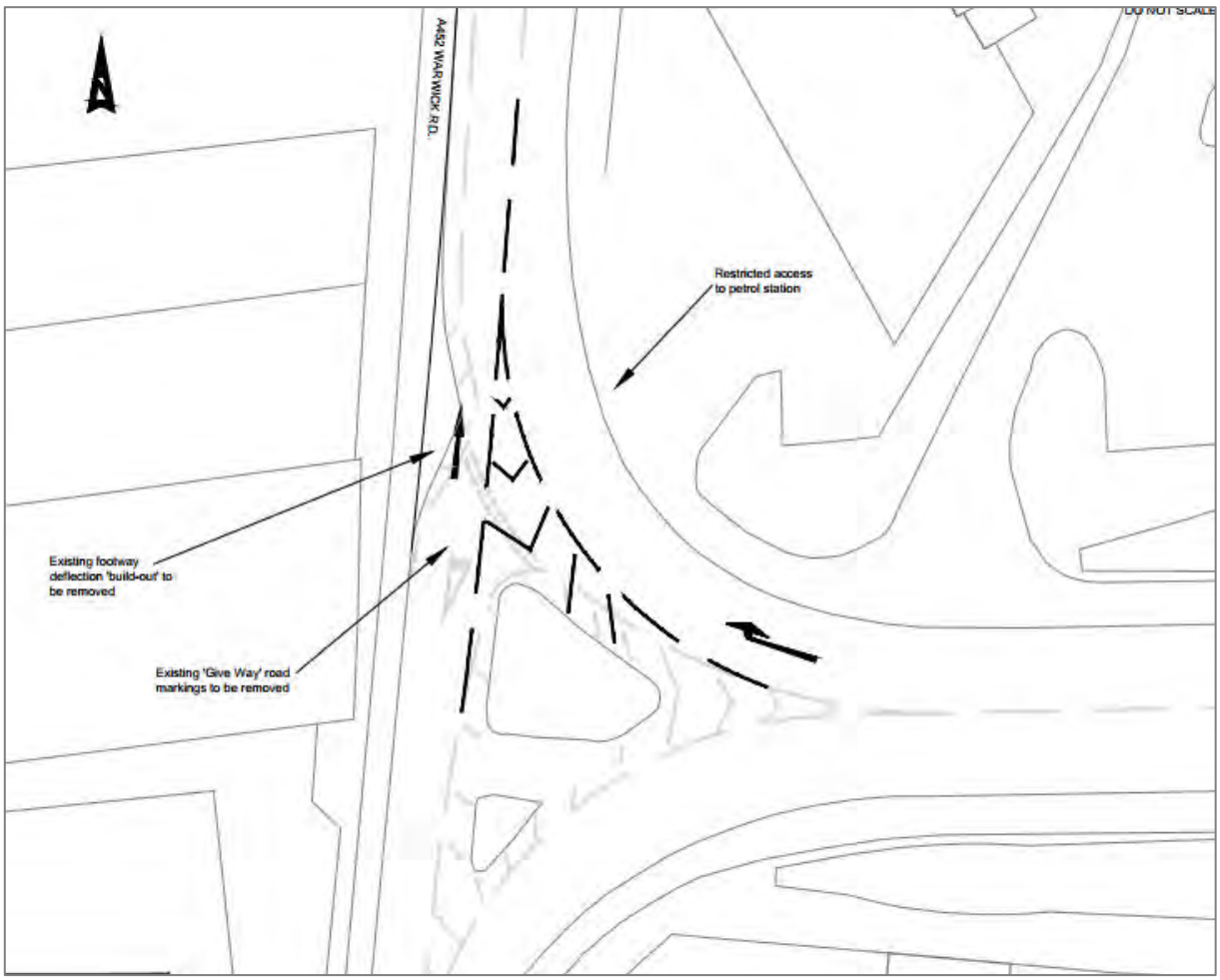



Figure 4-2 shows a potential arrangement where the give way markings for Warwick Road are removed and the splitter island/hatching is extended to remove priority junction. This would mean that vehicles on the circulatory and entering from Warwick Road would merge north of this junction. This would only require minor changes to the carriageway and road markings and could improve capacity for Warwick Road. However, it

would restrict access to the existing petrol station and safety concerns may be raised by the merging and diverging movements.

## 4.4. PIA analysis

The same PIA analysis as detailed in Section 2 of the report was undertaken for St Johns Gyratory. This includes any accidents on the approaches to the gyratory.

Six slight accidents have been identified during the five-year period identified. Table 4.2 provides details of the number and severity of accidents by year recorded at the site. The analysis demonstrates that the majority of accidents occurred in 2014, with an uneven distribution of accidents across the recording period.

**Table 4.2 Accident Severity by Year**

| Severity | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | Total |
|---|---|---|---|---|---|---|---|
| **Fatal** | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| **Serious** | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| **Slight** | 0 | 3 | 2 | 0 | 1 | 0 | **6** |
| **Total** | **0** | **3** | **2** | **0** | **1** | **0** | **6** |

Records demonstrate that all accidents were caused by driver error. One accident involved a pedestrian crossing Birches Lane whilst another accident involved a cyclist on the circulatory opposite the A452/Warwick Road. Two accidents involved queueing and stationary traffic. Another accident was caused by a driver failing to see a slowing bus approaching the bus stop on the exit onto the A452/Leamington Road.

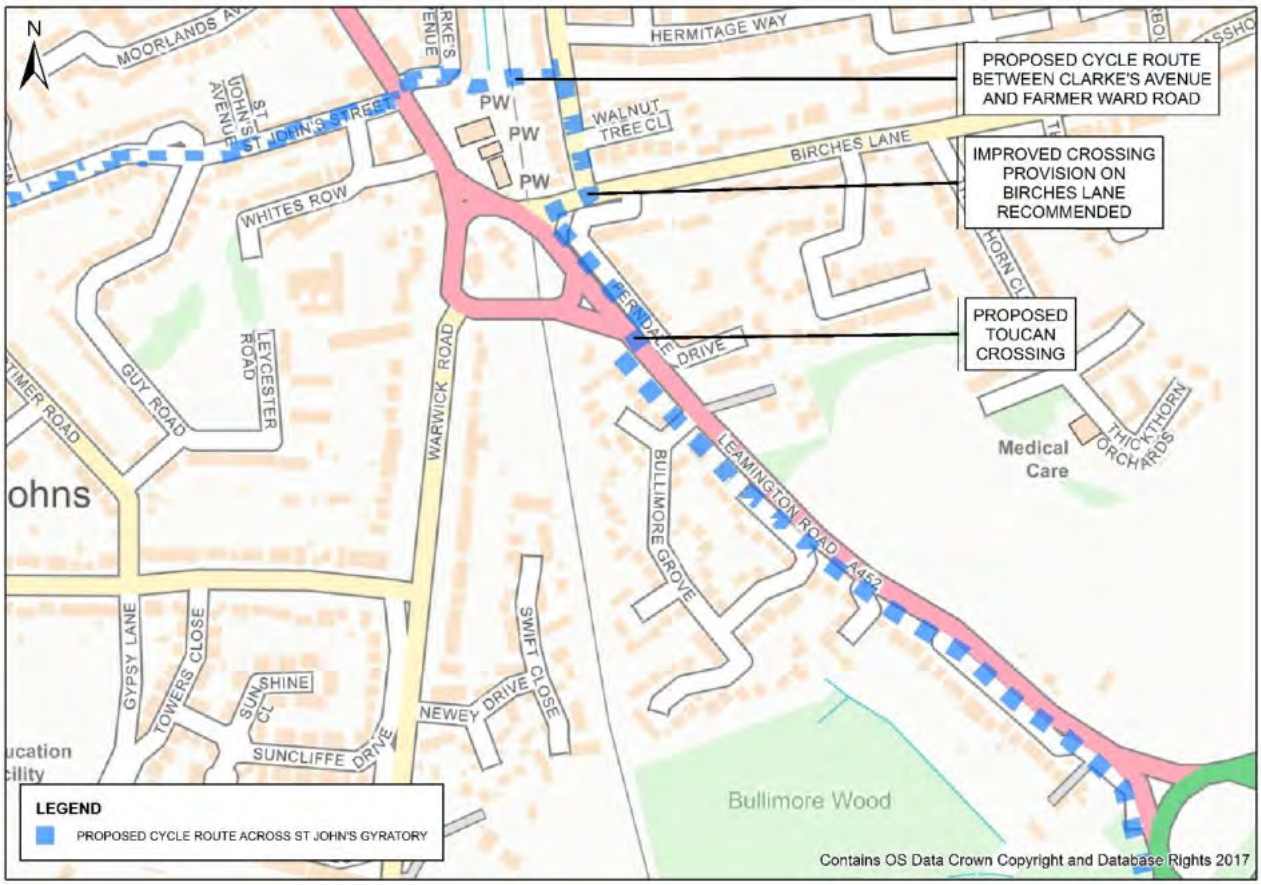
Causation factors provided include alcohol impairment, failure to judge path/speed of another vehicle, following too close, carelessness/recklessness/in a hurry, failing to look properly, travelling too fast for conditions, exceeding speed limit, using a mobile phone whilst driving, and failing to signal / giving a misleading signal.

The data does not suggest an ongoing road safety issue; however, the above examples have informed design work.

## 4.5. Pedestrian and cycling provision

The St Johns Gyratory is difficult to negotiate for cyclists and pedestrians. As discussed in the limitations section above, opportunities to accommodate pedestrian and cycling crossings are limited. Following a review of the Kenilworth Cycle Network Plan, discussed further in Section 7 of this report, the proposed cycle network bypasses St Johns Gyratory by utilising the proposed footway / cycleway on Leamington Road south of the gyratory, routing to the east of the gyratory, crossing Birches Lane to Farmer Ward Road before crossing the railway line and connecting to Kenilworth High Street. Improvements of this route are considered more feasible than on the gyratory, but would require improved crossing facilities on Birches Lane. This route and suggested improvements are shown in Figure 4-3.

**Figure 4-3 Cycle route across St Johns Gyratory**




## 4.6. St Johns Gyratory Summary Table

**Table 4.3 St Johns Gyratory Benefits and Constraints**

| Option | Benefits | Constraints |
|---|---|---|
| Option 1 (changing priority) | • Would improve traffic flow of the straight-ahead movements of Warwick Road and Leamington Road<br>• Only minor changes to the carriageway would be required<br>• Access to the existing petrol station for Warwick Road and Leamington Road would be retained | • May cause increased queuing on the circulatory particularly in the PM peak on movements from Leamington Road traveling north<br>• No increase opportunities for pedestrian and cycle provision |
| Option 2 (signalisation) | • This option could be accommodated within the existing layout with only minor geometrical changes to kerbs and lining<br>• Likely to provide minor improvements to traffic flows during peak times and would provide increased control to manage queuing and delay<br>• Integration with proposed signalised junctions further south on Leamington Road and at the A46/A452 junction could improve vehicle flow during peak times | • High cost<br>• Constraint on carriageway width results in footway adjacent to petrol station being removed |

| Option | Benefits | Constraints |
|---|---|---|
| | • Access to the existing petrol station from Warwick Road could be retained<br>• Increased opportunities to provide controlled pedestrian and cycle crossing points | |
| Option 3 (roundabout on 3 main approaches) | • May improve the overall flow of traffic and reduce speeds<br>• Potential for minimal improvements to pedestrian and cycling facilities by introducing uncontrolled crossing provision<br>• The existing access to the petrol station can be retained | • Likely to reduce capacity across the gyratory<br>• Loadings on bridge structures may need to be considered further subject to two-way traffic flow changes |
| Option 4 (localised improvements on Warwick Road approach) | • Would only require minor changes to the carriageway and road markings and could improve capacity for Warwick Road | • Would restrict access to the existing petrol station and safety concerns may be raised by the merging and diverging movements |

Option 2 is the recommended improvement for the gyratory as it provides the most benefits with the only constraint being the cost and loss of footway adjacent to the petrol station.

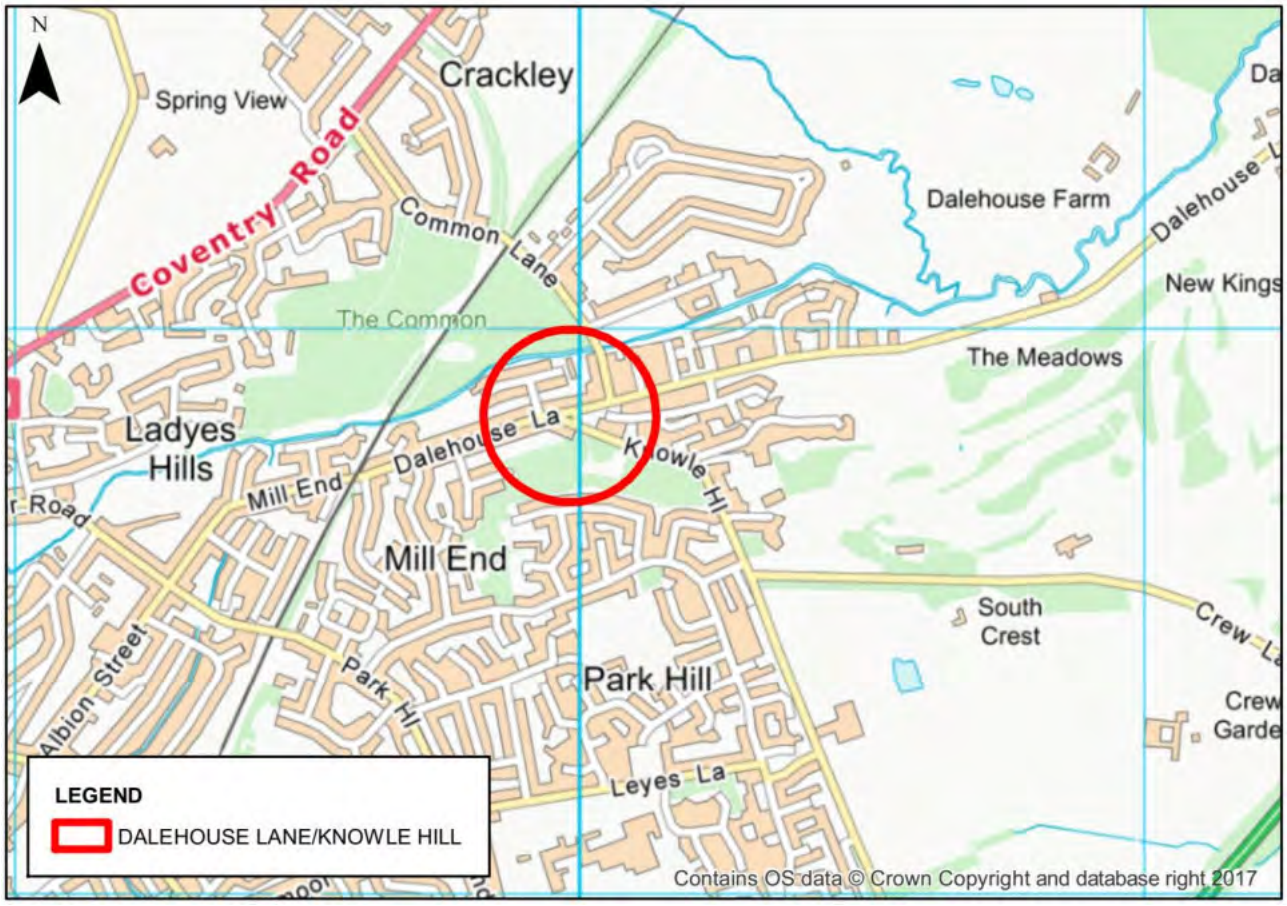
# 5. Dalehouse Lane

## 5.1. Existing Highway Network

The Dalehouse Lane/Knowle Hill priority junction is located in the northeast of Kenilworth. The priority junction is formed by Dalehouse Lane, which runs east to west, and Knowle Hill, which runs north to south. The approach arm from Knowle Hill is split by an island for left and right turners respectively. Figure 5-1 shows the location of Dalehouse Lane/Knowle Hill priority junction in relation to the local area.

This section assesses the impact of the proposed 2029 Local Plan flows on the operation of the junction and considers feasibility of potential mitigation measures, accounting for pedestrian movements.

**Figure 5-1 Dalehouse Lane Priority Junction Location**




## 5.2. Junction Capacity Analysis

Dalehouse Lane / Knowle Hill priority junction has been modelled using the PICADY module of Junctions 9. Traffic flow data was obtained from the VM 2029 Local Plan model. Junction geometries used in the model have been measured from OS Base mapping. Traffic flows for the Dalehouse Lane / Knowle Hill priority junction are provided in Appendix A.

Due to the way in which Knowle Hill splits into two separate lanes on approach to Dalehouse Lane, this junction has been modelled in two separate junction models – one representing the left turn movement from Knowle Hill to Dalehouse Lane and the other representing the right turn movements from Knowle Hill to Dalehouse Lane and Dalehouse Lane to Knowle Hill respectively.

Table 5.1 summarises the junction capacity model outputs for the left turn movement from Knowle Hill to Dalehouse Lane, full model output data is provided in Appendix F.1.

**Table 5.1 Dalehouse Lane / Knowle Hill Left Turn Junction Capacity Results Summary Table**

| | AM | | | PM | | |
|---|---|---|---|---|---|---|
| | Queue (Veh) | Delay (S) | RFC | Queue (Veh) | Delay (S) | RFC |
| **Local Plan 2029 Model Flows** | | | | | | |
| Left Turn – Dalehouse Lane (W) | 0.2 | 5.58 | 0.14 | 0.2 | 5.74 | 0.14 |

Table 5.1 shows that the left turn movement between Knowle Hill and Dalehouse Lane is operating well within capacity during both the AM and PM peak.

Table 5.2 summarises the junction capacity model outputs for the right turn and ahead movements from Knowle Hill to Dalehouse Lane, full model output data is provided in Appendix F.1.

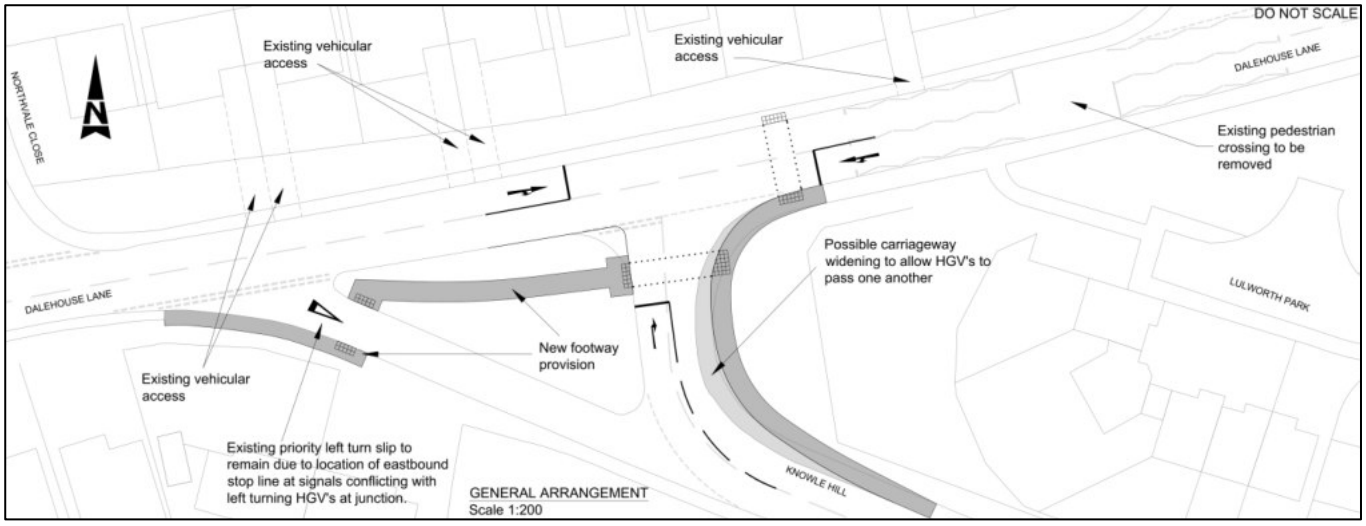
**Table 5.2 Dalehouse Lane / Knowle Hill Left Turn Junction Capacity Results Summary Table**

| | AM | | | PM | | |
|---|---|---|---|---|---|---|
| | Queue (Veh) | Delay (S) | RFC | Queue (Veh) | Delay (S) | RFC |
| **Local Plan 2029 Model Flows** | | | | | | |
| Right Turn | 30.5 | 262.53 | 1.13 | 1.4 | 23.12 | 0.59 |
| Ahead | 0.6 | 5.46 | 0.26 | 0.3 | 6.09 | 0.18 |

Table 5.2 shows that the ahead movement on Dalehouse Lane is operating well within capacity during both the AM and PM peak, it also shows that the right turn movement is not operating within capacity during the AM Peak with an RFC of 1.13.

As per the model results, there is potential to signalise Dalehouse Lane / Knowle Hill in order to improve the performance of the junction. An extract from drawing KEN-ATK-HGN_DALE-DR-D-001 is presented in Figure 5-2 and shows an indicative drawing of a potential signalised arrangement at this junction. The full drawing is provided in Appendix F.2.

**Figure 5-2 Dalehouse Lane / Knowle Hill Signalised Priority Junction Arrangement**




Signalisation of Dalehouse Lane/Knowle Hill would improve performance of the junction. It also presents the added opportunity to incorporate the existing pedestrian crossing on Dalehouse Lane, which would improve connectivity across the junction for pedestrians and cyclists, and minimise delay through the junction for motorists.

It is therefore recommended that a signalised arrangement is considered for this junction to accommodate proposed development flows.

# 6. A46 Link Road

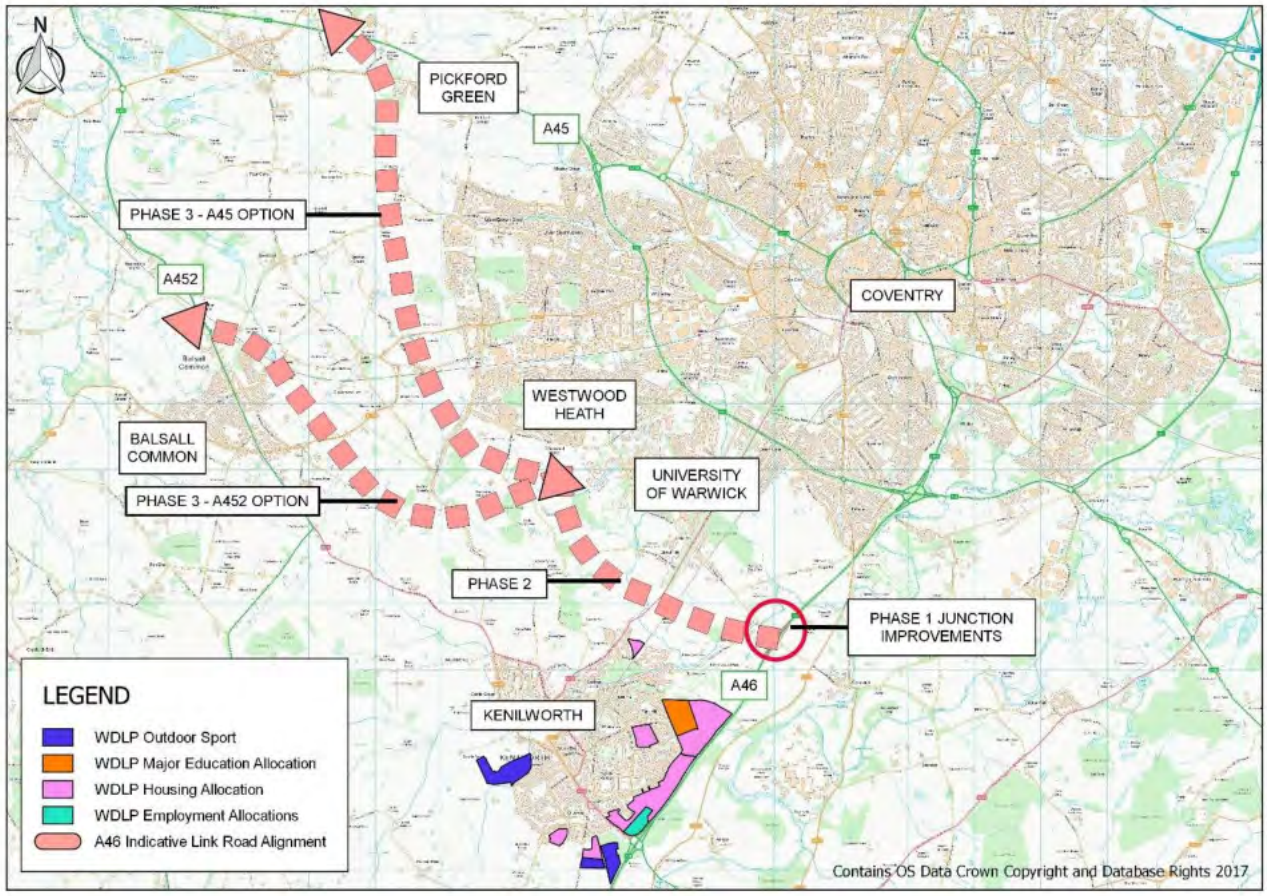
This chapter considers the development of the A46 at Stoneleigh and the proposed new dual carriageway link to connect the University of Warwick, and potentially the A452 or the A45 west of Coventry. Three phrases are being proposed in order to alleviate issues on the A46 at Stoneleigh, support housing and employment growth in the area, and provide strategic access to the HS2 Interchange, Birmingham Airport, Jaguar Land Rover (JLR) Solihull, and Strategic Road Network links. The proposed phases are summarised below, and the potential impact of traffic flows through Kenilworth are considered.

The development phases are as follows:

- Phase 1 - upgrade of A46 Stoneleigh junction through provision of second overbridge, circulatory carriageway, reconfiguration of slip roads, relocation of Dalehouse Lane junction, a new bridge over Finham Brook and pedestrian/cycle facilities. This phase is planned to be delivered by summer 2020, in advance of the planned peak of HS2 construction movements using the Stoneleigh compound.
- Phase 2 - provision of a new dual carriageway link from the A46 at Stoneleigh to the University of Warwick/Westwood Heath, with associated improvements to the local road network. The estimated completion date is 2023/24. This Phase is currently undergoing business case development, with business case submission to the Department for Transport due in summer 2018.
- Phase 3 - extension of the dual carriageway provided by Phase 2 to link to either the A452 near Balsall Common or A45 near Pickford's Green, providing strategic connectivity to the HS2 Interchange, Birmingham and the Strategic Road Network including the M40, M42 and M6. The expected delivery date is 2027. This phase in currently in early development stage.

Figure 6-1 shows an indicative plan of Phases 1 to 3, showing the approximate route the link road will take to the north of Kenilworth, joining either the A45 near Pickford's Green or the A452 near Balsall Common.

**Figure 6-1 Indicative Plan of the A46 Link Road Phases 1 to 3**




Several options are being considered for Phases 2 and 3; confirmation of the preferred route development has not been provided at this time. Nevertheless, all options have been considered in the CASM strategic model which is considered in general terms below.

## 6.1. Traffic Impacts of Proposed A46 Link Road

The A46 Corridor is key for movement and growth in the area, both in terms of housing and employment. Performance of the corridor is critical to the local and sub-regional economy of Coventry and Warwickshire.

Development of the corridor could allow greater connectivity to key existing/planned employment site at Whitley (JLR World Headquarters), Ansty, Ryton, Stoneleigh Park, University of Warwick, and associated business parks. It may also support major housing growth at King's Hill, Westwood Heath, Tile Hill, and Kenilworth, along with further safeguarded land at Westwood Heath (to be confirmed in the next Local Plan).

According to WCC[2], Phase 1 will help residents of Kenilworth gain more efficient access to the A46, as well as improving facilities for pedestrians and cyclists. It will also help to reduce the risk of accidents at the junction, by removing queueing on the A46 and reducing conflicts between turning traffic at the top of the slip roads. Phase 2 will help mitigate HS2 construction traffic impacts on communities in the Kenilworth area. It will also present opportunities to downgrade the A452 through Kenilworth, allowing public realm and environmental enhancements to be implemented. Phase 3 could also provide further traffic relief to the area, functioning as a Kenilworth bypass and reducing flows on the A452. This could help unlock further development in Warwickshire and to the west and north west of Coventry.

[2] https://www.warwickshire.gov.uk/a46linkroad

Phase 1 and 2 have been considered in the VM 2029 Local Plan Model, and are included in the assessment flows used in this report. However, the exact impact of improvements to A46 Stoneleigh junction on traffic using in Kenilworth and the Thickthorn junction is still unknown.

Phases 2 and 3 were assessed, including the various route options currently being considered, under the CASM 2034 Very High Growth scenario. There are likely to be many tangible benefits for the Kenilworth area due to the development of the A46 at Stoneleigh. Many of the route options under the 2034 Very High Growth scenario are expected to result in increases in network speed and reduced journey times, delay and queuing. When compared to the Do Minimum scenario, there are expected to be positive impacts from the vast majority of route options presented. However, it should be noted that Phases 2 and 3 have not been confirmed and route alignments are yet to be agreed. Likely timescales for completion of all phases may be after the development of sites outlined in this report.

# 7. Cycle Network

This chapter outlines the proposed improvements to be included in a Kenilworth cycle network plan, such as enhancing cycle corridors linking new development sites to the town centre and other key destinations, and completing missing sections of the National Cycle Network. Consultation was undertaken with Lisa Jones (WCC) and the following recommendations are proposed in the work undertaken to inform the East Kenilworth Development Brief.

The proposed cycle routes and relevant design guidance is summarised below, and how these cycle routes would interact with the proposed mitigation and junction improvements has been considered.

Provision for cycling in Kenilworth should adhere to the core quality principles as identified in the Local Transport Note (LTN) 2/08 'Cycle Infrastructure Design' and the West Midland Cycling Design Guidance published in 2017. According to the recommendations of the work to inform the East Kenilworth Development Brief, the proposed development 'should prioritise wherever practical continuity, accessibility and permeability by active travel modes'. This should endeavour to make pedestrian and cycle journeys more convenient and attractive than using a car.

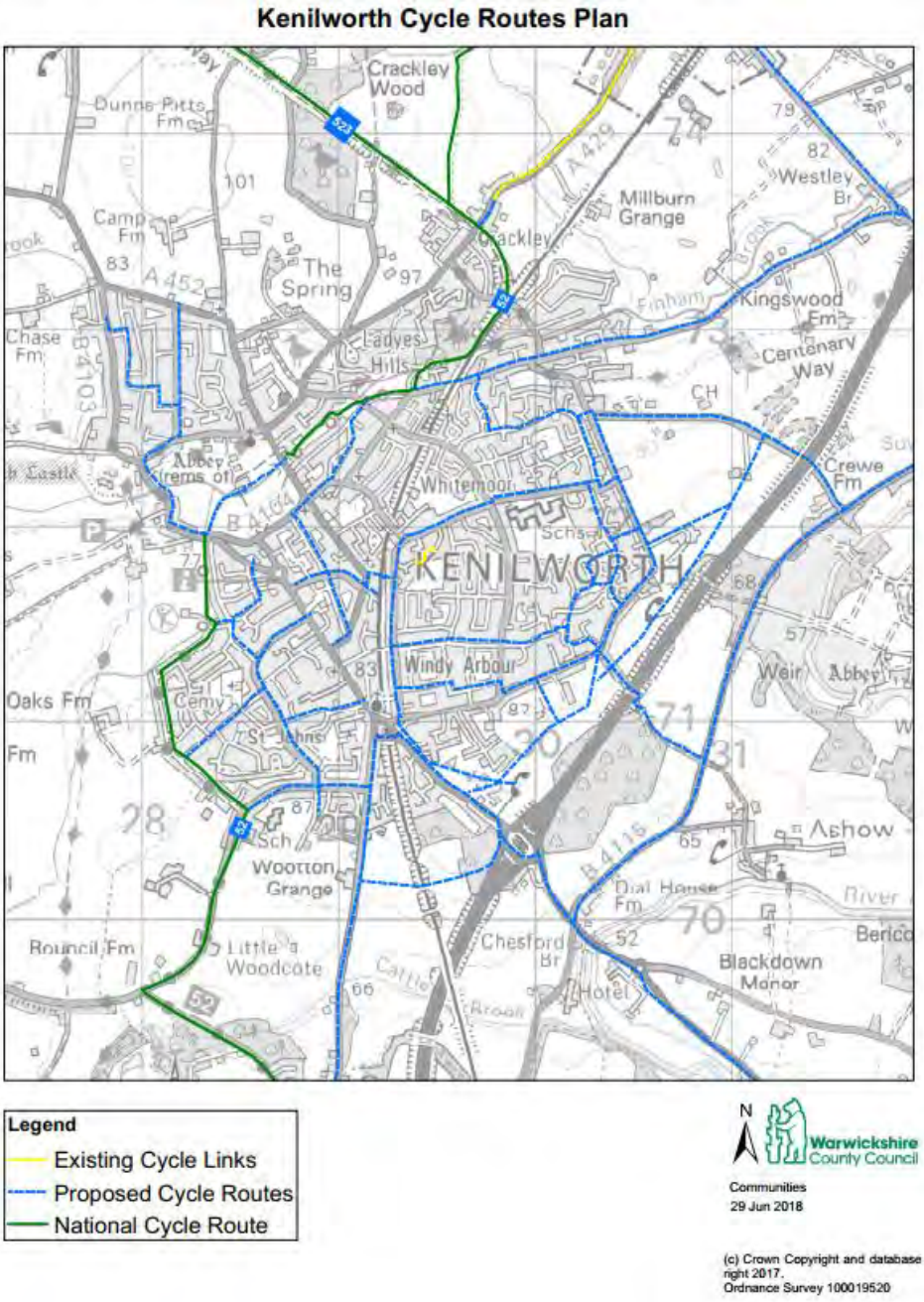
The design of cycleways should adhere to the principles of the Manual for Streets. Cyclists should be safely accommodated with the road network, with dedicated cycling provision where traffic levels and speeds are higher. Short, direct links for pedestrians and cyclists will be required to connect streets and different areas of the development and to make short trips more convenient. Provision of cycling infrastructure should reflect the Core Planning Principles of the National Planning Policy Framework, which states that: 'developments should be located and designed where practical to… give priority to pedestrian and cycle movements'.

It is recommended that a comprehensive cycle network is provided to support the proposed development sites considered in this study, which would connect key destinations within Kenilworth and beyond, to promote sustainable travel.

## 7.1. Kenilworth Cycle Network Plan

The Kenilworth cycle network plan provides a number of indicative cycle links to serve development sites and key destinations in Kenilworth. An extract from the plan is provided in Figure 7-1.

**Figure 7-1 Kenilworth Cycle Network Plan**




The aim of the proposed cycle network is to provide convenient and attractive links to the town centre, rail station, secondary schools, employment sites, leisure facilities, and the wider cycle network.

It is acknowledged that retro-fitting dedicated cycling infrastructure is difficult due to the constraints of existing road layouts and highway widths. However, many residential roads have relatively low traffic flows and speed, making many routes suitable for on-carriageway cycling. Other barriers to cycling provision include the design of the A452 (and St Johns Gyratory) and railway line that separates east Kenilworth from the town centre.

A plan of the proposed cycle network developments has been included in Appendix G.1. The links shown on the plan are a mixture of the following infrastructure improvements to the existing highway network:

- New off-carriageway shared use footways / cycleways adjacent to busier roads and upgrade existing footpaths across open space and connecting cul-de-sacs, where feasible;

- Where opportunities for shared footpaths are limited, focus provision on on-carriageway cycle links via quieter residential streets (where only signing, lining and/or minor infrastructure improvements may be required), utilising short sections of off-carriageway routes where possible to provide connectivity;
- Upgrade traffic-free links that provide short-cuts for cyclists or avoid busy roads;
- Enhancements to the crossing points over the railway line, which currently creates a barrier to east-west cycling movements; and
- Informal crossing points, zebra crossings and signalised crossings where required to overcome barriers to active travel created by busy roads.

The following sections provide information on the key elements of the existing and proposed cycling facilities in and around Kenilworth. Recommendations have been informed by work undertaken to inform the East Kenilworth Development Brief.

## 7.2. National Cycle Route 52 and Abbey Fields Cycle Path

National Cycle Route (NCR) 52 runs north to south through Kenilworth. The route passes through Kenilworth Common, joining the A452/Bridge Street via a largely traffic free route with small on-road sections. There is no route across Abbey Fields; the route continues to the south of the B4103/Castle Road, joining Fishponds Road and running along the carriageway to the south. Cycle access is currently prohibited through Abbey Fields and the surrounding roads are often busy which may inhibit cycle movements.

Priorities include connecting both sections of NCR 52 either side of Abbey Fields. It is recommended that high quality shared use paths are provided, where feasible, to complete the route through Kenilworth whilst avoiding busy sections of the highway network. Providing access via Abbey Fields should be investigated.

There are opportunities to tie the existing NCR with the proposed Castle Farm Recreation Centre access route off Castle Road. There is a zebra crossing within the vicinity of the site which could be upgraded to a Toucan crossing to facilitate cycle crossing movements.

## 7.3. East-West Cycle Corridors

A number of suggested routes have been put forward in order to improve cycle connectivity between development sites and Kenilworth town centre. There is a need to provide safe, direct, and attractive routes to make walking and cycling the natural choice and avoid reliance on the car for short journeys.

The suggested routes are constrained by cul-de-sac developments and narrow pavements which will not support shared use. Opportunities to enhance cycling facilities along these routes should be considered where possible. On road routes should use quiet streets whilst maintaining east to west connectivity, with minimal crossings to not inhibit cycle movements. To allow connectivity and continuity of routes, utilising short sections of off-carriageway cycling provision should be considered in the design process.

The feasibility of providing high quality shared use paths through open spaces should be investigated. These links should offer greater permeability for pedestrians and cyclists for east-west movements. These routes should have a total minimum usable width of 4m, be hard surfaced, have an open aspect, be appropriately lit, and be overlooked. A secondary network may be included where usable width can be reduced to 2m (maintaining total minimum usable width of 4m) and may be softer surfaced.

## 7.4. Improved Crossing and Cycleway Facilities

A number of locations in Kenilworth have been identified which could facilitate new or enhanced crossing and cycleway facilities thereby improving connectivity, safety, and ease of travel on the proposed cycle network. The following locations include recommendations provided in the East Kenilworth Development Brief.

### 7.4.1. A452 Leamington Road/Spine Road

A signalised T-junction is being proposed to link Spine Road with the A452/Leamington Road south of the Thickthorn site. It is recommended that a Toucan crossing is provided to facilitate cycle movements and to allow greater access with the Kenilworth to Leamington Spa (K2L) Route identified in Appendix G.2 and Rocky

Lane. Options should also be considered for ease of access on the A46 Thickthorn junction that enable continuity of routes for both pedestrians and cyclists.

### 7.4.2. St Johns Gyratory

Proposed routes aim to improve navigation of St Johns Gyratory for cyclists. A Toucan crossing has been proposed for the southern A452/Leamington Road arm to allow cyclists travelling to and from Warwick Road to the west to access Kenilworth town centre. The crossing will also tie into a cycling route just to the east which will accessed via Ferndale Drive, with connectivity provided to Kenilworth town centre via Farm Warden Road. This route would require a crossing just to the east of the Gyratory on Birches Lane. The final design should consider ease of access and the continuity of cycle routes.

The proposed crossings will also allow connectivity with the proposed K2L cycle route, discussed in Section 7.5 below.

### 7.4.3. Birches Lane

A cycle route is proposed that will allow cyclists to travel from the Thickthorn site towards Kenilworth town centre via Ferndale Drive and Farmer Ward Road to the east of St Johns Gyratory. If this route is to go forward, it is recommended that a crossing is provided on Birches Lane to provide safe and easy access. Any crossings would need to consider traffic travelling to and from the gyratory and whether there will be any adverse impacts to traffic flow. Other options include tying the cycle route into the gyratory design with shared use of the north-east segment to access Birches Lane and Farmer Ward Road. The feasibility and potential impacts of this option need to be assessed.

### 7.4.4. Spine Road

Development of this new link should include provision for cycle movements. Dedicated cycling infrastructure would be required on Spine Road as it will have higher traffic flows and speeds than other roads on site.

WCC's preferred approach for the Spine Road within the site is for cycling facilities which have some degree of separation from pedestrians, where appropriate. This will require a total width of 4m for pedestrians and cyclists. Depending on the layout of the residential area, alternative options for cycling infrastructure may be possible, subject to agreement with WCC.

Provision for pedestrians will require a 2m wide footway segregated from the carriageway, preferably by a verge no less than 1m in width. The design of the footways and cycleways should ensure minimal crossing of side streets and / or driveways as to not inhibit cycle movements. Where Spine Road crosses minor side roads, priority should be given to cycling and pedestrian facilities.

The Spine Road should be designed in such a way as to segregate the various users and transport modes into safe corridors. The carriageway is proposed to join Glasshouse Lane through the central section of the development site due to the area of woodland around Rocky Lane. It is considered that a continuous cycle and pedestrian link should be provided between the two sections of Spine Road.

### 7.4.5. Improvement of the Central Glasshouse Lane

Drawing KEN-ATK-HGN-SPINE-DR-D-003 shows that it is feasible to upgrade Glasshouse Lane to include carriageway improvements and a verge and 4m footway / cycleways within the site/highway boundary. The drawing shows specification consistent with the Spine Road for the section of Glasshouse Lane that runs between the Glasshouse Lane / Spine Road / Heyville Croft Junction and the Glasshouse Lane / Spine Road Northern Section / Stansfield Grove junction.

Cycle provision is proposed at the existing Kenilworth Wardens and Rugby Club sites to connect with Rocky Lane and the A46 footbridge, allowing cycle movements between Kenilworth and Leamington Spa. A roundabout has been proposed at the Glasshouse Lane / Heyville Croft junction; it is recommended that a Toucan crossing or an uncontrolled crossing with pedestrian and cycle refuge is provided. The suitability of each crossing needs to be considered.

If an uncontrolled crossing in considered, traffic lane widths between 3.1m and 3.9m at refuges should be avoided, as they can create pinch-points for cyclists where drivers may try to overtake when there is not enough room. Toucan crossings should be considered if they provide continuity of cycle routes.

### 7.4.6. Leyes Lane / Glasshouse Lane

Provision for cycle movements should be considered to allow connectivity with Kenilworth town centre and the new school site in the development, which requires crossing provision on Glasshouse Lane. Cycling crossing facilities should be considered to maintain the continuity of cycle routes.

There is a proposed shared use footway / cycleway on Leyes Lane that will connect the development with the new school site. The design includes a Toucan crossing over Glasshouse Lane. There is no existing cycling provision between Dencer Drive and Glasshouse Lane, so any schemes should accommodate the proposed cycle route. Providing a continuous cycle route is essential to provide safe access to the school. A suitable crossing should be provided over Dencer Drive, and staggered Toucan crossings should be avoided where possible.

### 7.4.7. Crewe Lane / Hidcote Road / Glasshouse Lane

A number of options are being proposed for junction improvements in the vicinity of Crewe Lane / Hidcote Road / Glasshouse Lane as detailed in Section 3 of this report. Developments should consider cycle movements. The following measures have been proposed:

- Traffic calming options at Crewe Lane/Hidcote Road could include allowing entry only movements and restricting movement from Hidcote Road. A bus gate arrangement is also considered at this location to access the school site. Bus and cycle priority could be provided at this junction to allow cycle movements in both directions; and
- Other measures included developing a raised table top on the junction with Crewe Lane.

In terms of access controls, the following recommendations have been provided for cycling movements:

- The design of the road layout on the approach to crossing points should ensure that the motorised traffic slows or stops;
- Path geometry should also be designed to incorporate deflection for cyclists;
- Where there is a requirement for slowing cyclists, this should be undertaken through geometric alignment and the use of strategically located bollards; and
- All access control should remain permeable for pedestrians and cyclists, including the use of non-standard or adapted bicycle designs.

## 7.5. Connections to the Wider Cycle Network

Providing safe, attractive, and direct routes to connect with existing cycle routes to Coventry, Warwick University, and Warwick will enable residents to cycle to places of work, education and leisure rather than depending on the car. It is also important to provide connections to and from the proposed K2L cycle route. This route will directly serve the development sites and provide a convenient route to Leamington Spa.

Initial proposals for the K2L route includes cycling provision on the southern side of the A452 between Thickthorn and St Johns Gyratory, with connections to Farmers Ward Road and Kenilworth town centre. This requires crossings in the vicinity of St Johns Gyratory.

There is a proposed Toucan crossing on the A452 / Leamington Road to the south of the gyratory, which would tie into a cycling route accessed via Ferndale Drive. This could provide connectivity to Kenilworth town centre via Farmers Ward Road, which would require a crossing on Birches Lane. This should be Toucan standard and should support cycling movements to and from the town centre and Kenilworth Railway Station. Alternative measures include cycling provision to the south of the gyratory, with a crossing over the Warwick Road. This will offer a more direct route to the town centre, although off-carriageway provision to the north of the gyratory will be limited by constrained width. However, it may benefit other pedestrian and cycling journeys.

The Kenilworth Greenway, located in the north of the town, provides an attractive recreational route as well as offering connections to Warwick University, via NCR 52. Good connections should be provided to this route from east Kenilworth.

## 7.6. Wayfinding and Parking

Signing of pedestrian and cycle networks should ensure that key locations within the development sites are easily accessible. Signing should also highlight key destinations beyond the site boundaries, such as the town centre, high schools, the railway station, and leisure facilities. This signing should include direction, destination, and distance information as appropriate to raise awareness of the pedestrian and cycle links. Locations for signage could include crossing and access points along the proposed links.

Secure and conveniently located cycle parking should be provided throughout the development sites to accommodate short and longer stay use by visitors and residents. Covered and secure cycle parking facilities should be incorporated into car parking facilities, especially for properties that do not have off-street parking facilities.

# 8. Summary

This report has considered the potential transport impacts of the Kenilworth Local and Neighbourhood Plan developments. Using traffic flows provided by VM, junctions capacity assessments have been undertaken to understand the impact of the proposed development at key junctions, feasible improvement options have been considered and preferred schemes have been identified. Opportunities for improvements to pedestrian, cycling and public transport provision have been considered to inform sustainable travel links throughout the development. A summary map showing the Transport Development Plan is shown in Figure 8-1. A key is shown in Table 8.1 provided by WCC.

**Table 8.1 Transport Development Plan Map Key**

| Map Ref | Scheme | Scheme Description | Estimated Delivery Date | Estimated Cost | Funding Source |
|---|---|---|---|---|---|
| 1 | Thickthorn Junction Improvements | Provision of a signalised roundabout with widening of approaches to 3 lanes and potential for roundabout arm to access employment site. | 2023 | £17m to include dualling to Bericote and improvement to Bericote roundabout | Potential MRN Funding/Growth Deal/s106 Agreement/HE RIS |
| 2 | A46 Link Road Ph 1; Stoneleigh Junction Improvements | Major upgrade to junction of A46 with C32 Stoneleigh Road & Dalehouse Lane will enable future delivery of A46 Link Road Phase 2 and 3. Junction improvement involves reconfiguration of slips, construction of a new bridge and formation of a gyratory layout to junction. | 2021 | £36m | County Infrastructure Fund/DfT Major Scheme Funding. WMCA Devolution Deal |
| 3 | Thickthorn Development Site Access | Three options being considered for access to the Thickthorn development involving either access from the Thickthorn roundabout or an additional signalised junction on the A452 west of Thickthorn. Direct access/egress onto the Thickthorn circulatory is the preferred option. | 2021 | Developer-led scheme | S278 |

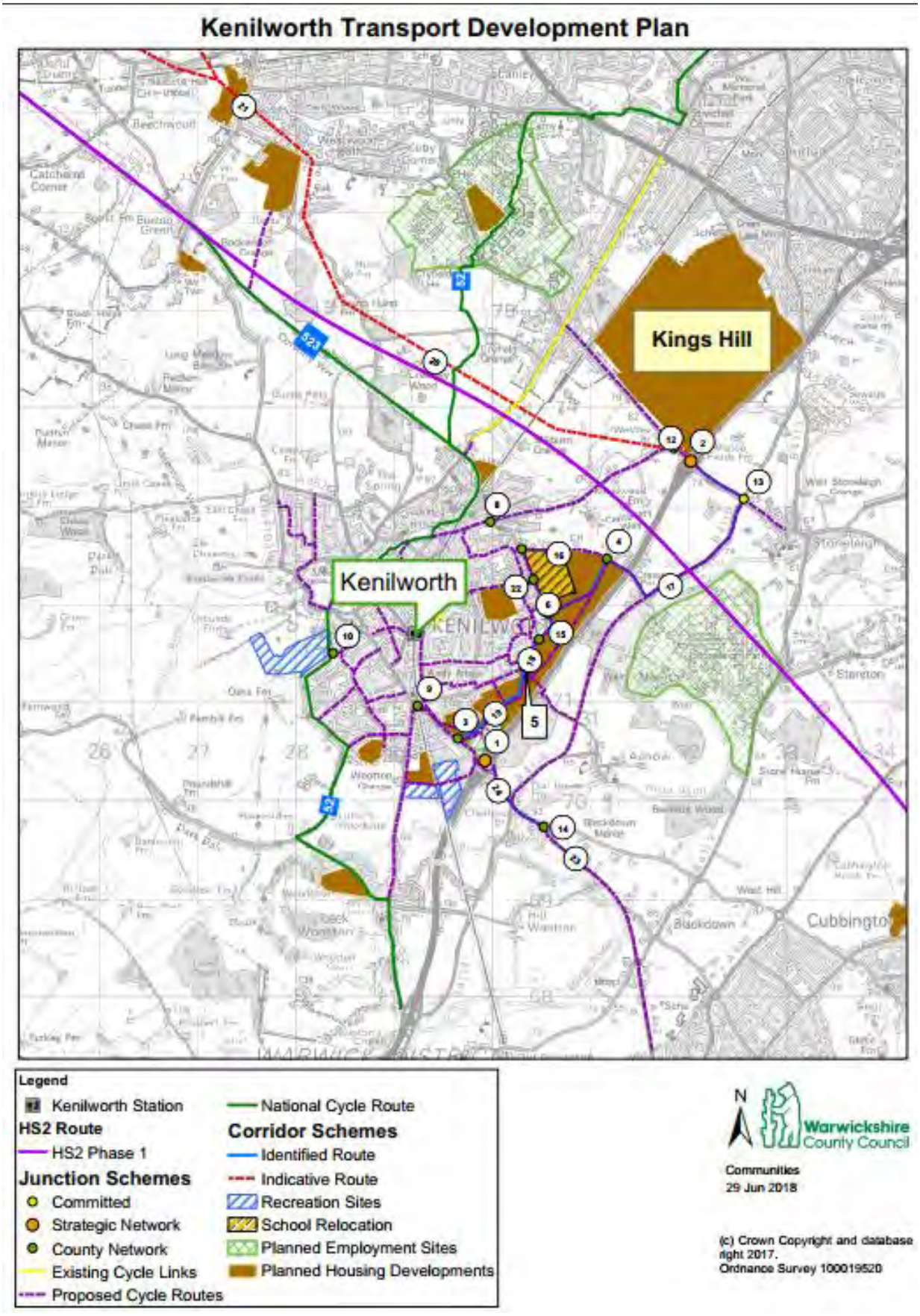
| Map Ref | Scheme | Scheme Description | Estimated Delivery Date | Estimated Cost | Funding Source |
|---|---|---|---|---|---|
| 4 | Crewe Lane Development Site Access | Priority junction between Crewe Lane and development spine road with the western section of Crewe Lane becoming the minor arm | 2020 | Developer-led scheme | S278 |
| 5 | Glasshouse Lane Development Access South | Potential for 3 or 4-arm roundabout serving Glasshouse Lane, Thickthorn development spine road and Heyville Croft | 2023 | Developer-led scheme | S278 |
| 6 | Glasshouse Lane Development Access North | Proposed 4-arm roundabout serving Glasshouse Lane, Woodside Farm development spine road and Stansfield Grove. Relocation of Woodside Conference Centre access to provide improved visibility. | 2020 | Developer-led scheme | S278 |
| 7 | Crewe Lane Restricted Vehicle Movement | Options being explored for realignment of junction, installation of traffic calming measures and restricted vehicle movements | 2023 | Developer-led scheme | s106 Agreement |
| 8 | Knowle Hill/Dalehouse Lane Junction Improvement | Signalisation of junction incorporating the existing pedestrian crossing to improve connectivity for pedestrians and cyclists | 2023 | £300,000 | s106 or CIL |
| 9 | A452 St Johns Gyratory Improvement | Signalisation of the four entry arms onto the junction | 2021 | £500,000 | s106 or CIL |
| 10 | Fishponds Road/Castle Farm Junction Improvement | Existing junction to provide access to Castle Farm Recreation Development | | | s278 |

| Map Ref | Scheme | Scheme Description | Estimated Delivery Date | Estimated Cost | Funding Source |
|---|---|---|---|---|---|
| 11 | Leyes Lane Access to School Site | Signalisation of realigned Leyes lane junction and provision of pedestrian and cycle facilities to improve access to proposed school site | 2021 | £500,000 | s278 |
| 12 | Dalehouse Lane Junction Improvement | Realignment and expansion of Dalehouse Lane/Stoneleigh Road junction as part of A46 Link Road Scheme Phase 1. | 2023 | Developer-led scheme | County Infrastructure Fund/DfT Major Scheme Funding. WMCA Devolution Deal |
| 13 | B4115 Stoneleigh Junction Improvement | Signalisation of junction of B4115 and Birmingham Road, Stoneleigh to facilitate link between A452 Leamington Road at Thickthorn and A46 Stoneleigh junction. | 2021 | Developer-led scheme | s106 |
| 14 | A452 Bericote Roundabout | Signalisation of the roundabout and provision of Toucan crossing to contribute to K2L cycle scheme | 2023 | £17m to include dualling from Thickthorn and improvement to Thickthorn roundabout | Potential MRN Funding/Growth Deal/s106 Agreement/HE RIS |
| 15 | Secondary Access from Glasshouse Lane to Thickthorn Development | Upgrading of existing Rugby Club access to form priority junction access to Thickthorn development | 2023 | Developer-led scheme | s278 |
| 16 | Crewe Lane Pedestrian and Cycle Improvements | Creation of a pedestrian and cycle link between junction with development spine road and Glasshouse Lane/Knowle Hill | 2021 | | s106 |
| 17 | Woodside Farm A452/B4115 Link Road Ph1 | Spine road through Woodside Farm development to connect Glasshouse Lane to B4115 and ultimately forming connection to A46 Stoneleigh junction. | 2021 | Developer-led scheme | s106 |

| Map Ref | Scheme | Scheme Description | Estimated Delivery Date | Estimated Cost | Funding Source |
|---|---|---|---|---|---|
| | | Will include shared pedestrian/cycle provision | | | |
| 18 | Glasshouse Lane Improvements (A452/B4115 Link Road) | Upgrading of Glasshouse Lane to meet standard of Thickthorn and Woodside Farm development spine roads. Ultimately forming part of A452 to B4115 link. | 2020 | Developer-led scheme | s106 |
| 19 | Thickthorn A452/B4115 Link Road Ph2 | Spine road through Thickthorn development to connect A452 Leamington Road in the south to the Woodside Farm development spine road via Glasshouse Lane. Will ultimately form a connection between the A452 and A46 Stoneleigh junction via B4115 | 2024 | Developer-led scheme | Developer |
| 20 | A46 Link Road Ph2 | New dual carriageway link from A46 Stoneleigh junction to Westwood Heath via A429 Kenilworth Road will improve accessibility to University of Warwick and surrounding Business Parks and facilitate development. | 2024 | £70m | DfT Major Scheme Funding/WMCA/Potential MRN |
| 21 | A46 Link Road Ph3 | Continuation of A46 Link Road. Two alternatives being considered to connect to either A452 ot A45 with the aim of enhancing connectivity between the Coventry and Warwickshire sub-region and the economic opportunities offered by UKC. Significant | 2028 | £100m | DfT Major Scheme Funding/WMCA/Potential MRN |

| Map Ref | Scheme | Scheme Description | Estimated Delivery Date | Estimated Cost | Funding Source |
|---|---|---|---|---|---|
| | | funding from WMCA Devolution Deal | | | |
| 22 | Leyes Lane Realignment | Straightening of Leyes Lane and proviiosn of either a signalised junction or compact roundabout where it meets Dencer Drive | 2023 | £750,000 | s106 |
| 23 | K2L Kenilworth to Leamington Cycle Scheme | Delivery of Kenilworth to Leamington Cycle Route | 2023 | £2m for Leamington to Bericote section. Remainder delivered as part of A452 dualling scheme | HS2 Road Safety Fund/Communities Fund/HE funding/CIL |
| 24 | A452 Dualling | Dual carriageway between Thickthorn and Bericote junctions | 2023 | £17m to include improvements to Thickthorn and Bericote roundabouts | Potential MRN Funding/Growth Deal/s106 Agreement/HE RIS |
| -- | Cycle Network Improvements | Improvements to Kenilworth Cycle Network to be delivered early to encourage modal shift | TBC | | CIL or s106 |

**Figure 8-1 Transport Development Plan**



## 8.1. Next Steps

A range of options have been developed, assessed and recommended to accommodate the transport impacts of the Kenilworth Local and Neighbourhood Plans. The key existing and future trip generators in Kenilworth are shown in Figure 8-2. A summary of the required infrastructure to accommodate the transport impacts is provided in Figure 8-3.

The recommended options should be used as a basis for developers to provide transport access to the east of Kenilworth site and provide improvements to the local transport network. The options should be provided and enhanced where possible to maximise connectivity as the masterplans evolve.

Further scheme refinement and optimisation will be required as the highway infrastructure needs associated with the allocated development sites are developed by the applicants and WCC through the planning process.

As the schemes are developed, further detailed design, Road Safety Audits and junction capacity assessments will be required.

The culmination of the work identified in this Transport Study with further refinement from the applicants will ensure that the Local Plan impact is mitigated effectively, ensuring comprehensive sustainable travel options are provided and appropriate highway capacity achieved.

**Figure 8-2 Trip Generators in Kenilworth**

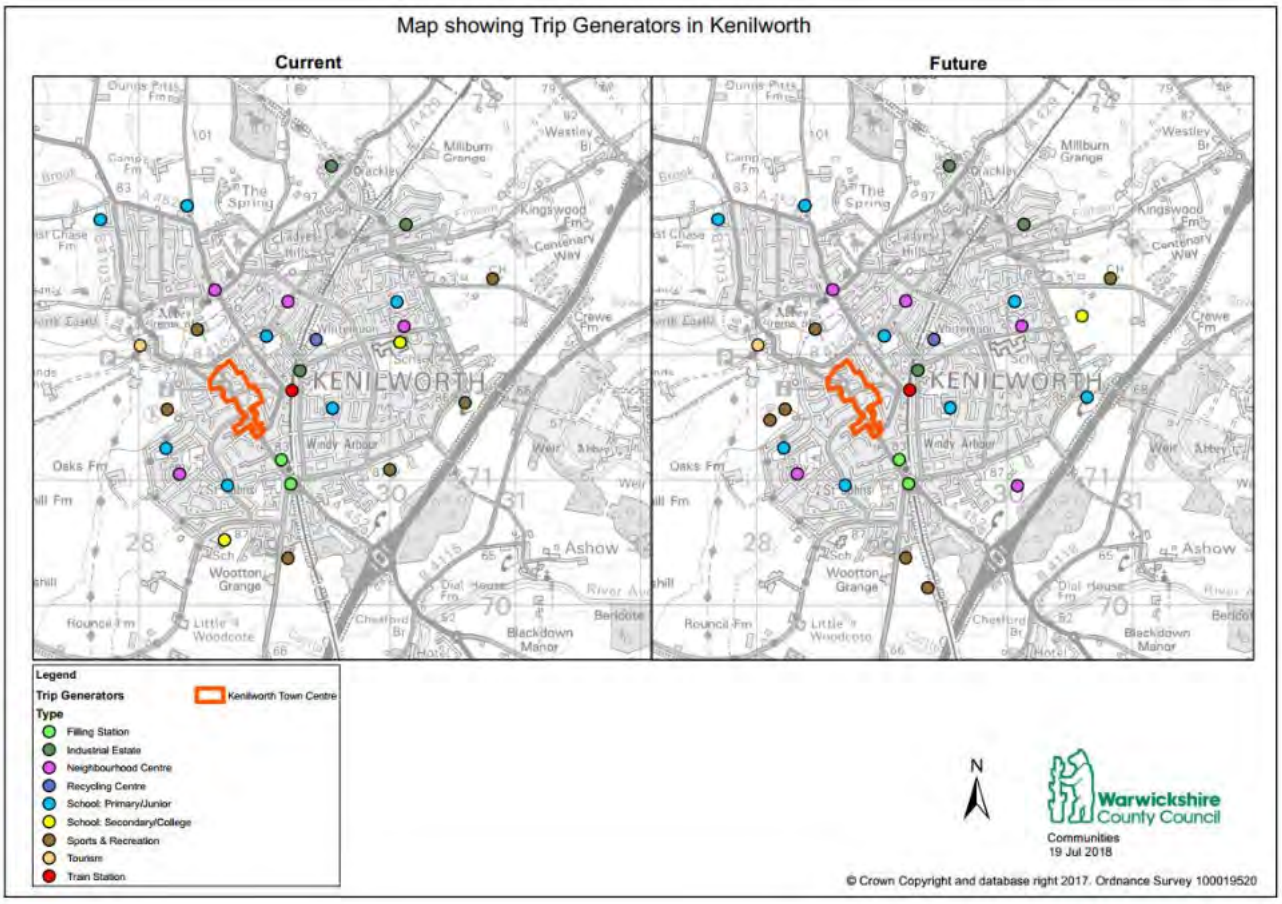
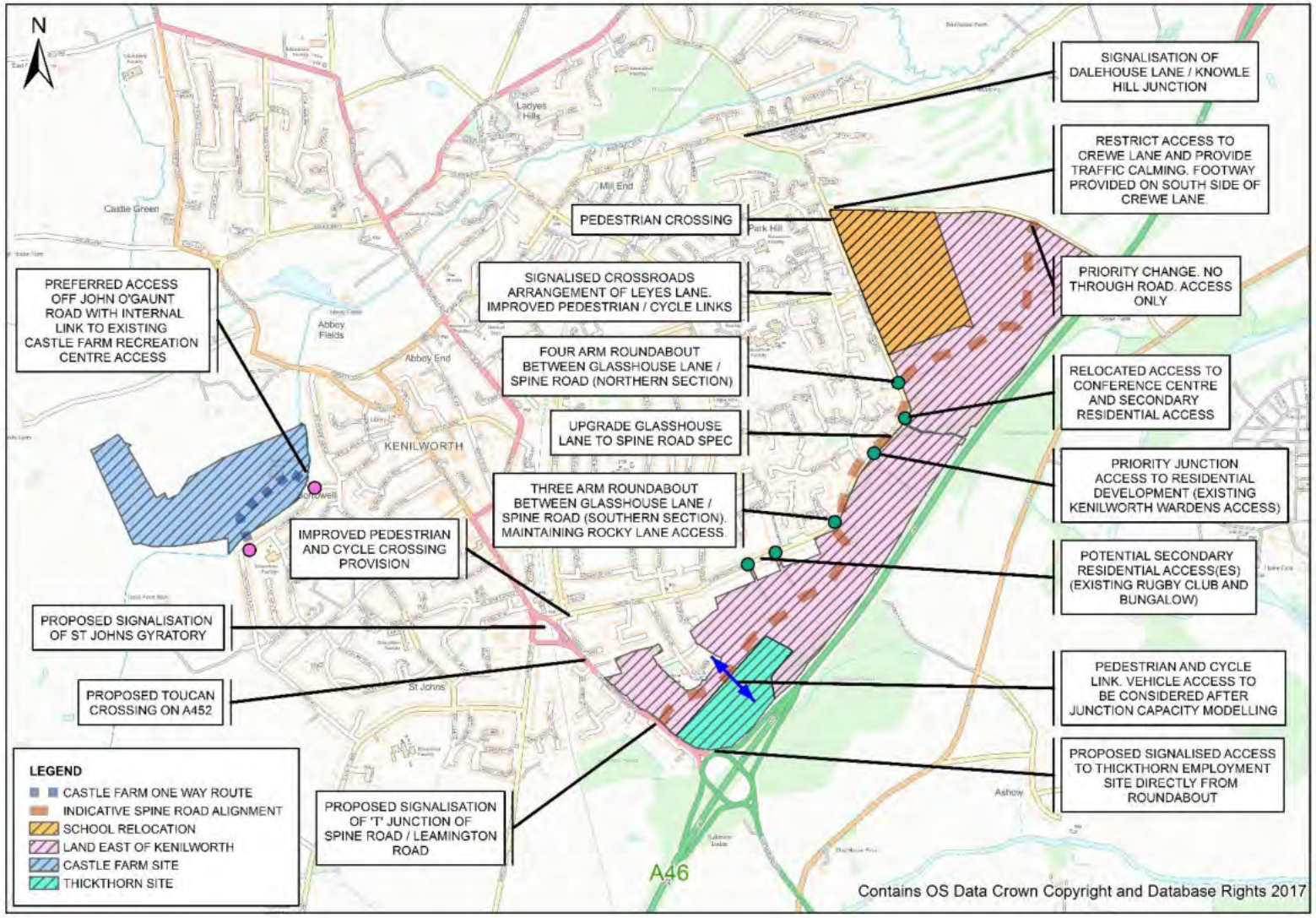



**Figure 8-3**, presents a summary of the recommended highway infrastructure mitigation options.

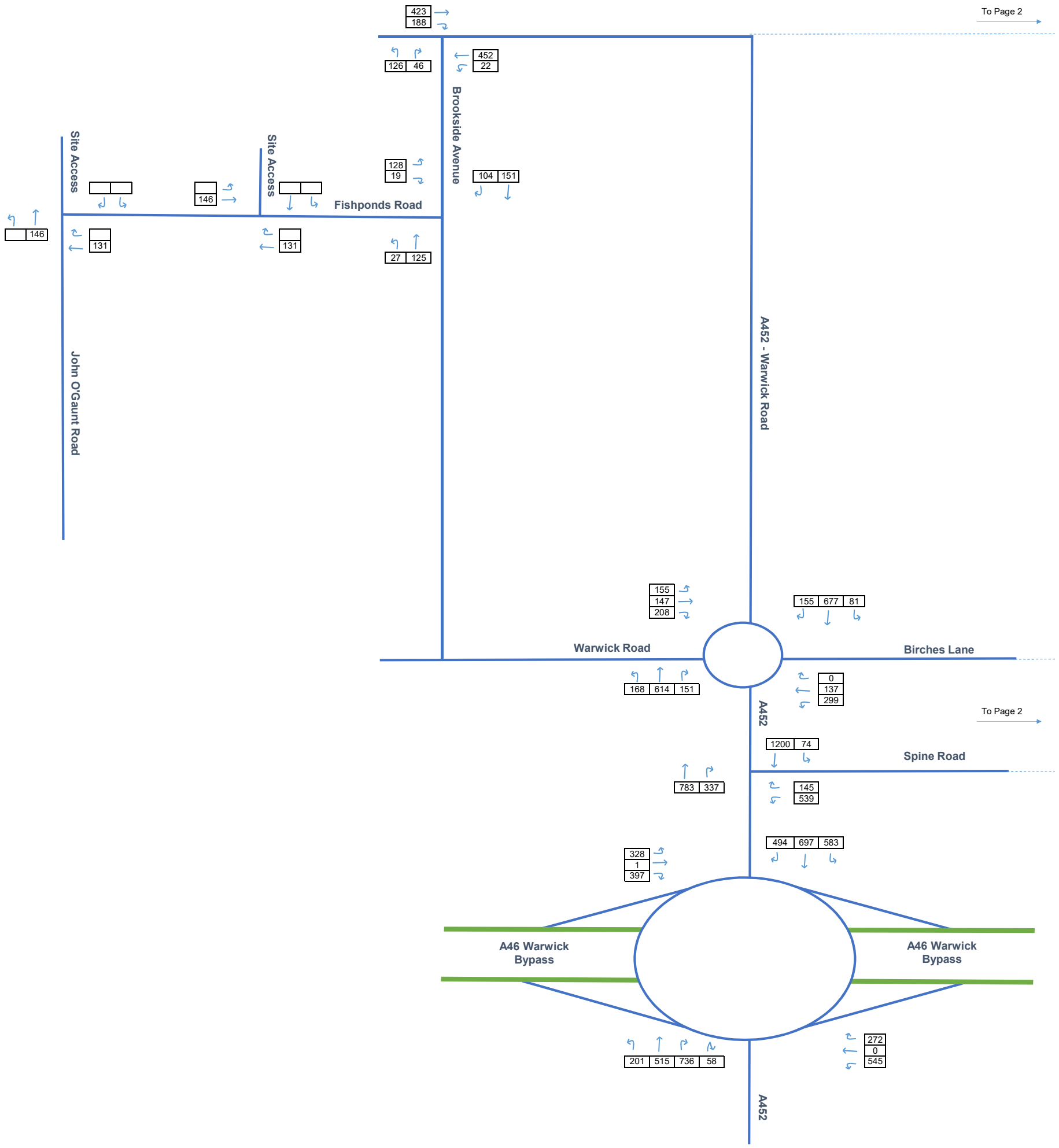
**Figure 8-3 Summary map of Highways Recommendations**



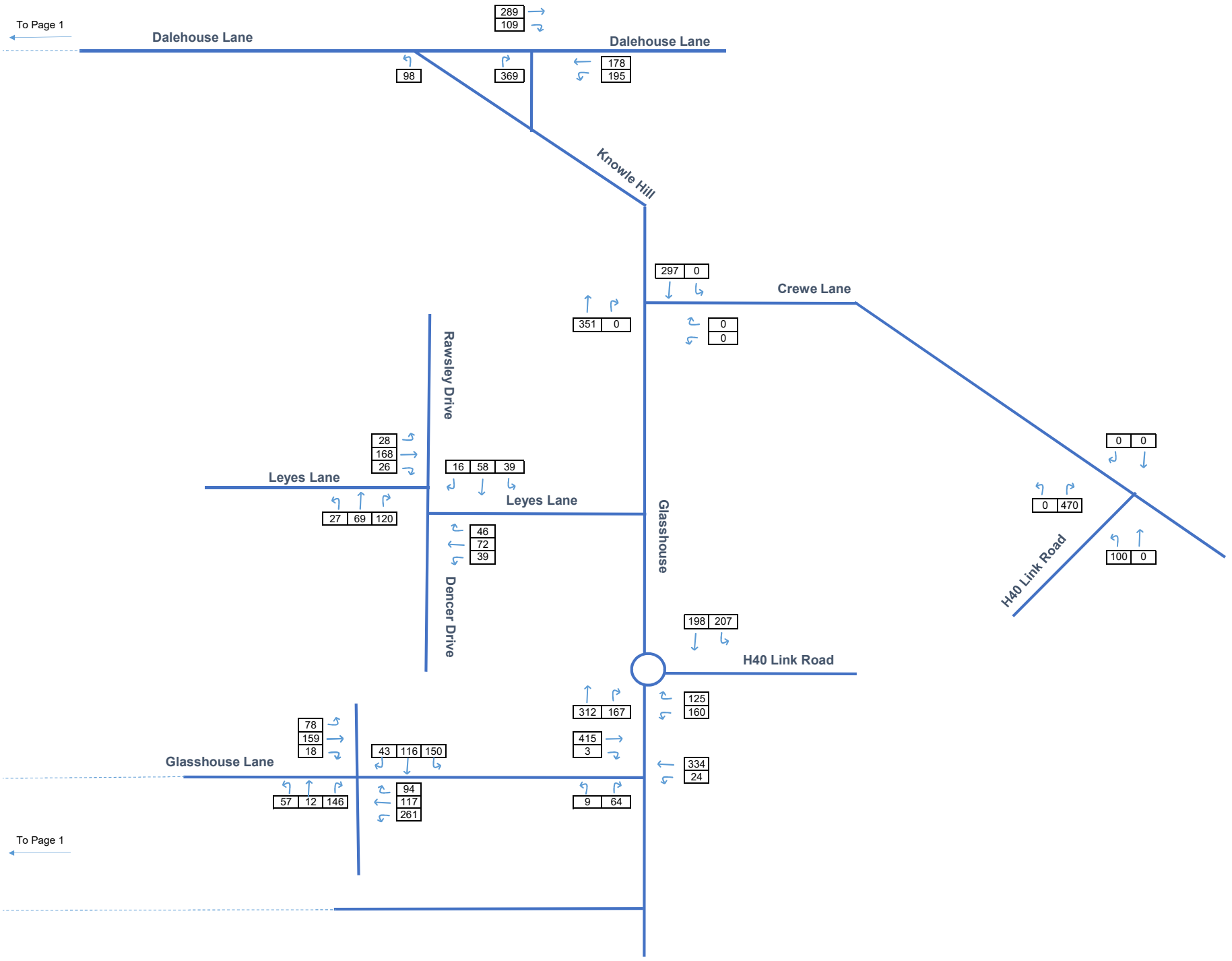
# Appendices

# Appendix A. Kenilworth Local Plan Traffic Flows (2029)

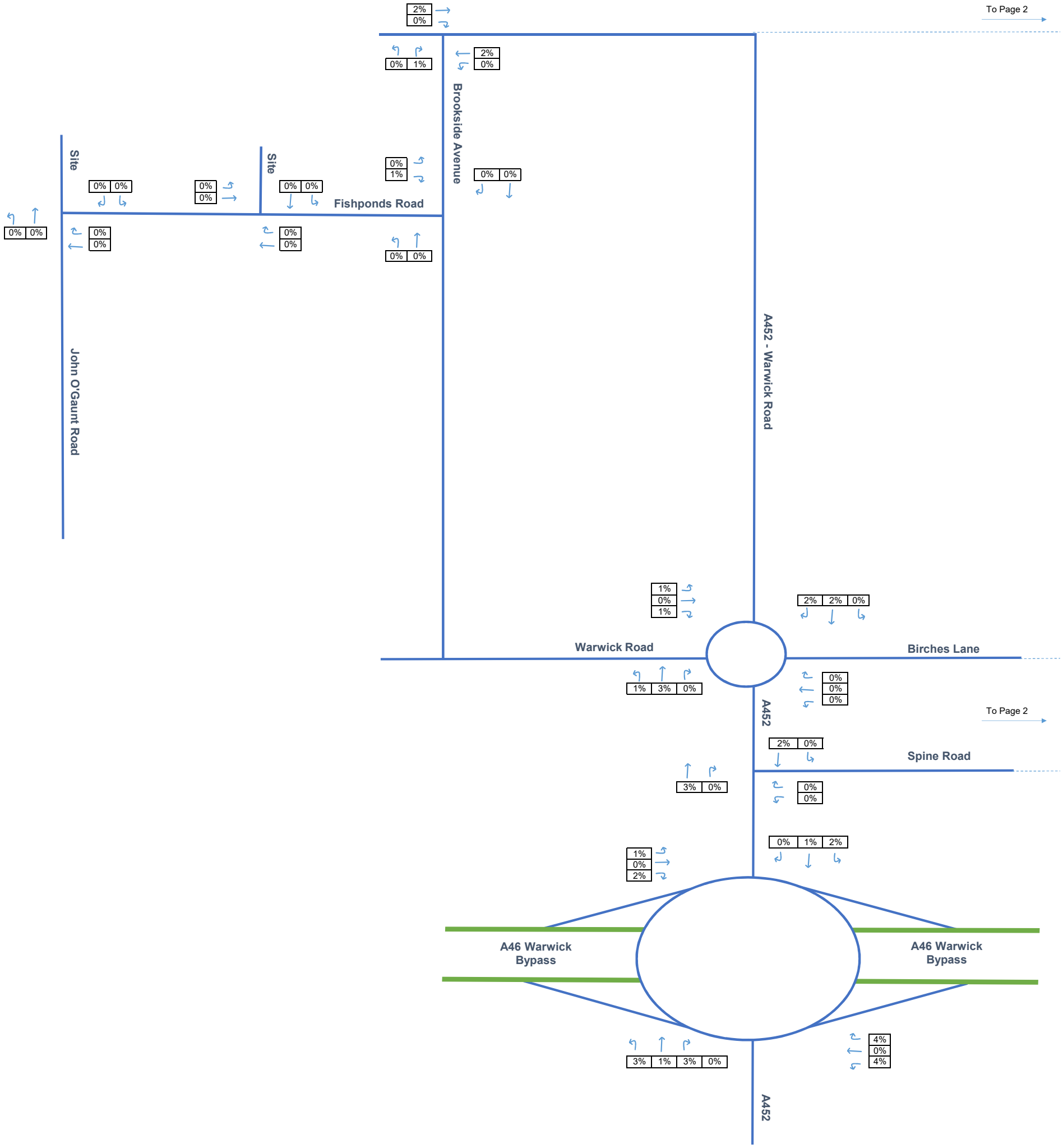
**Kenilworth Local and Neighbourhood Plan: All Vehicle flows AM Peak (2029)**



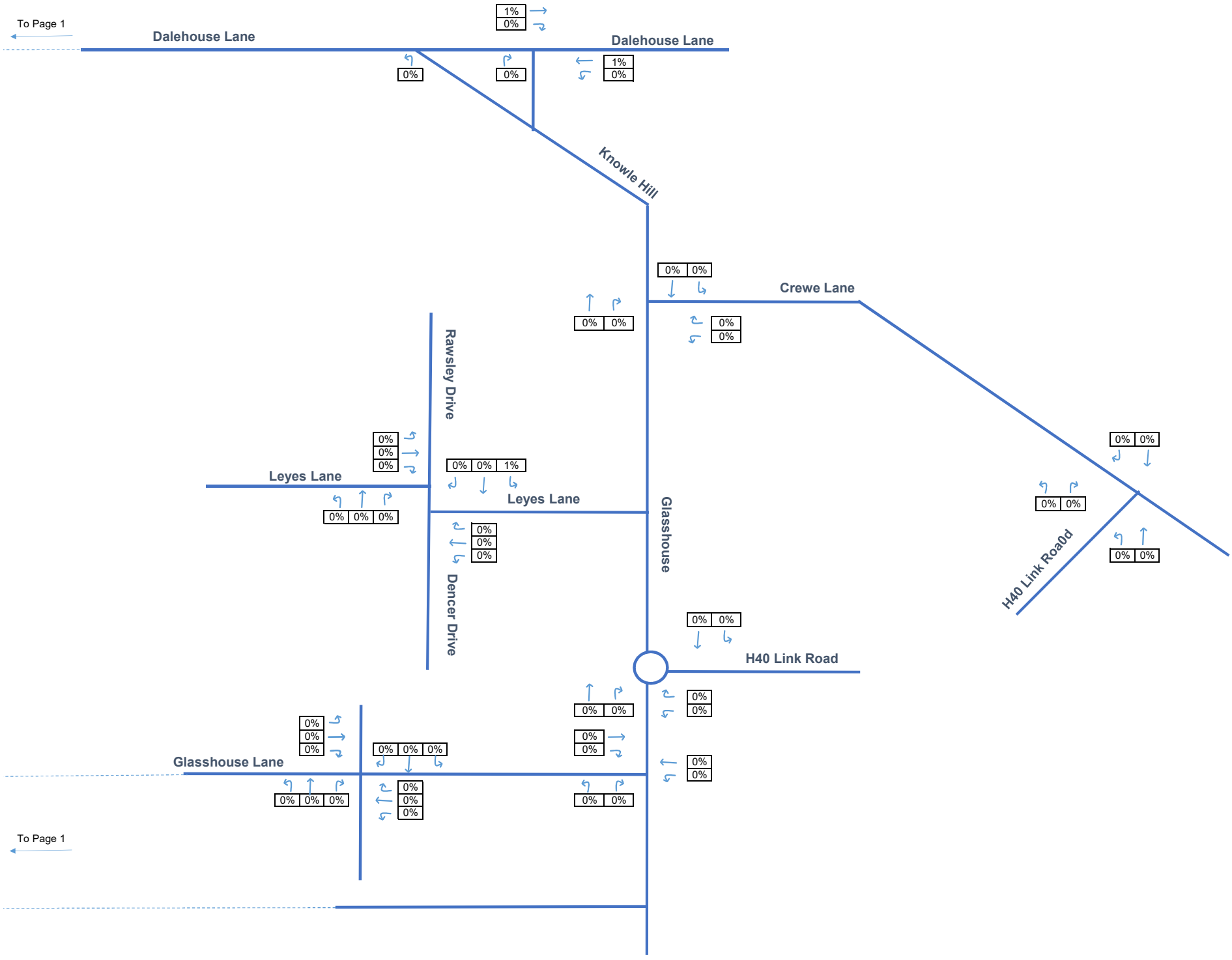
**Kenilworth Local and Neighbourhood Plan: All Vehicle flows AM Peak (2029)**



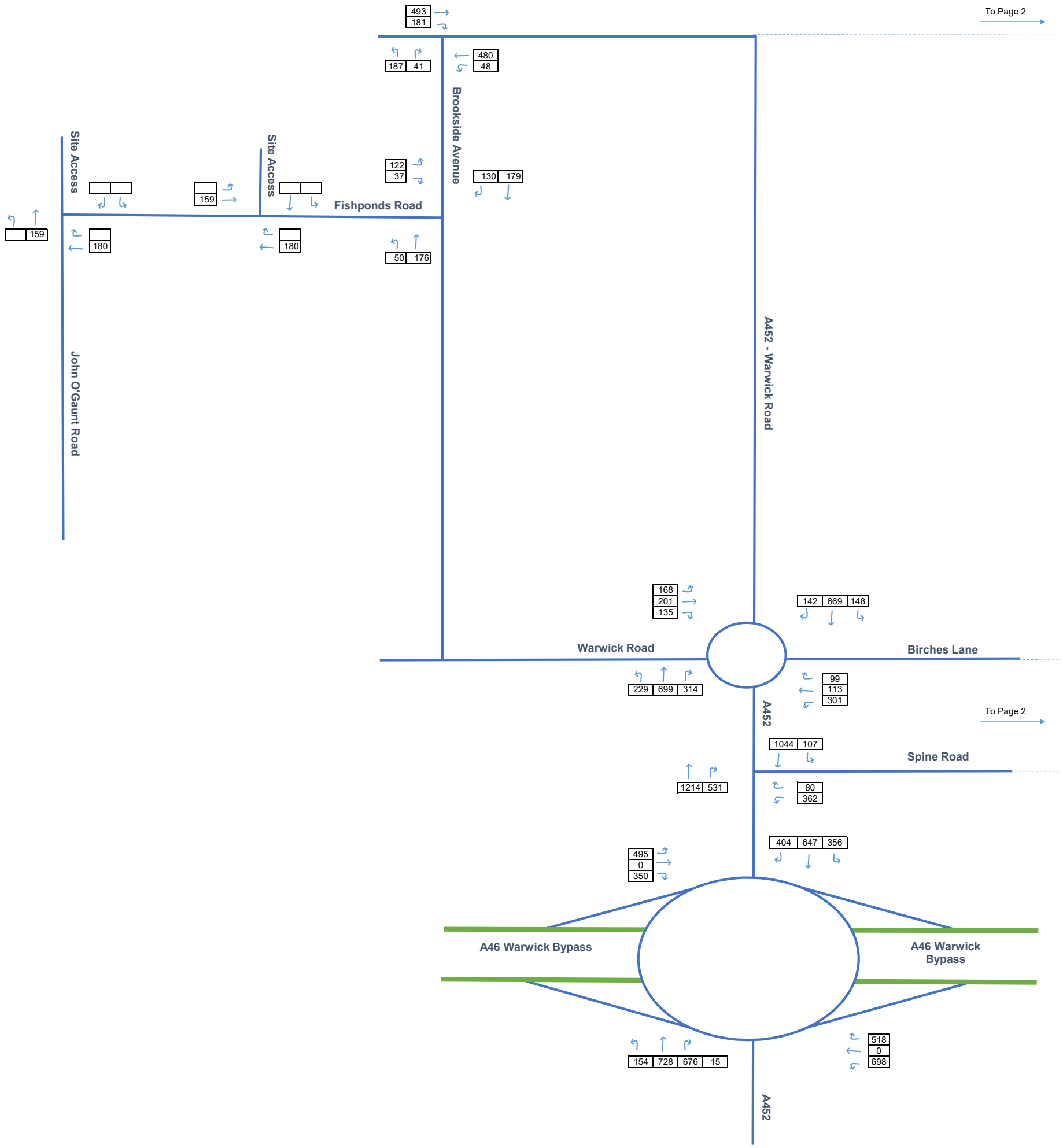
**Kenilworth Local and Neighbourhood Plan: HGV Percentages AM Peak (2029)**



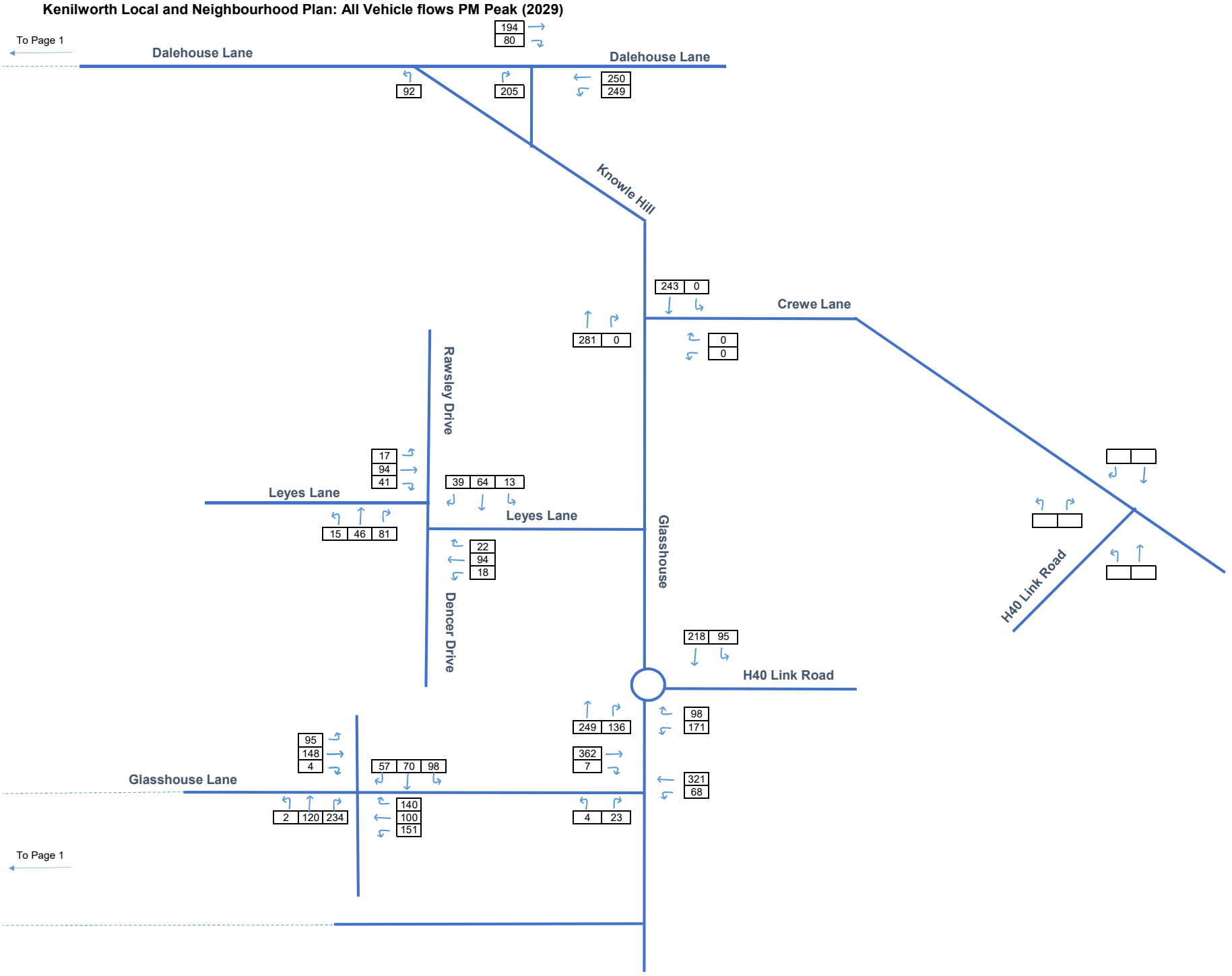
**Kenilworth Local and Neighbourhood Plan: HGV Percentages AM Peak (2029)**



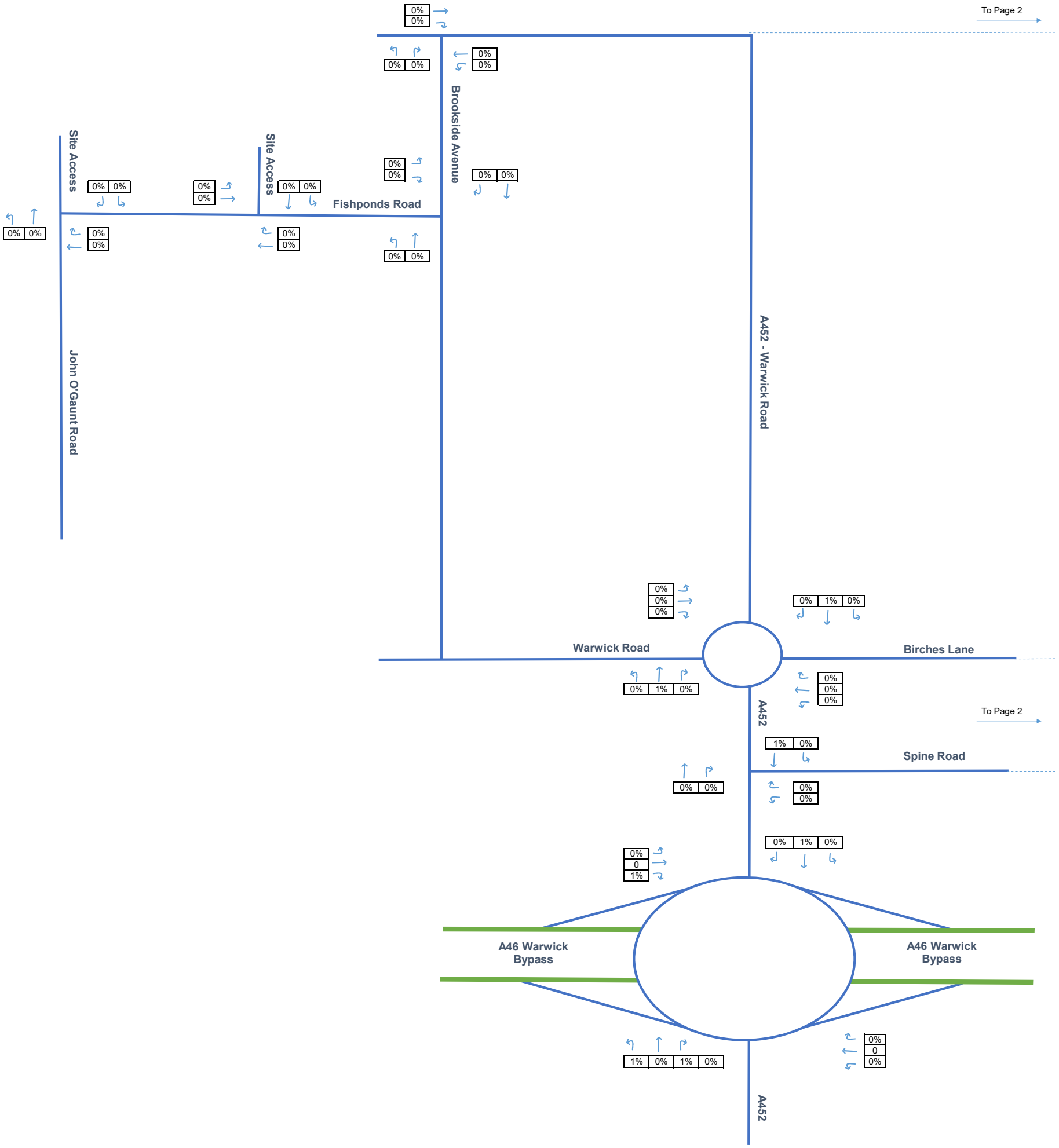
**Kenilworth Local and Neighbourhood Plan: All Vehicle flows PM Peak (2029)**



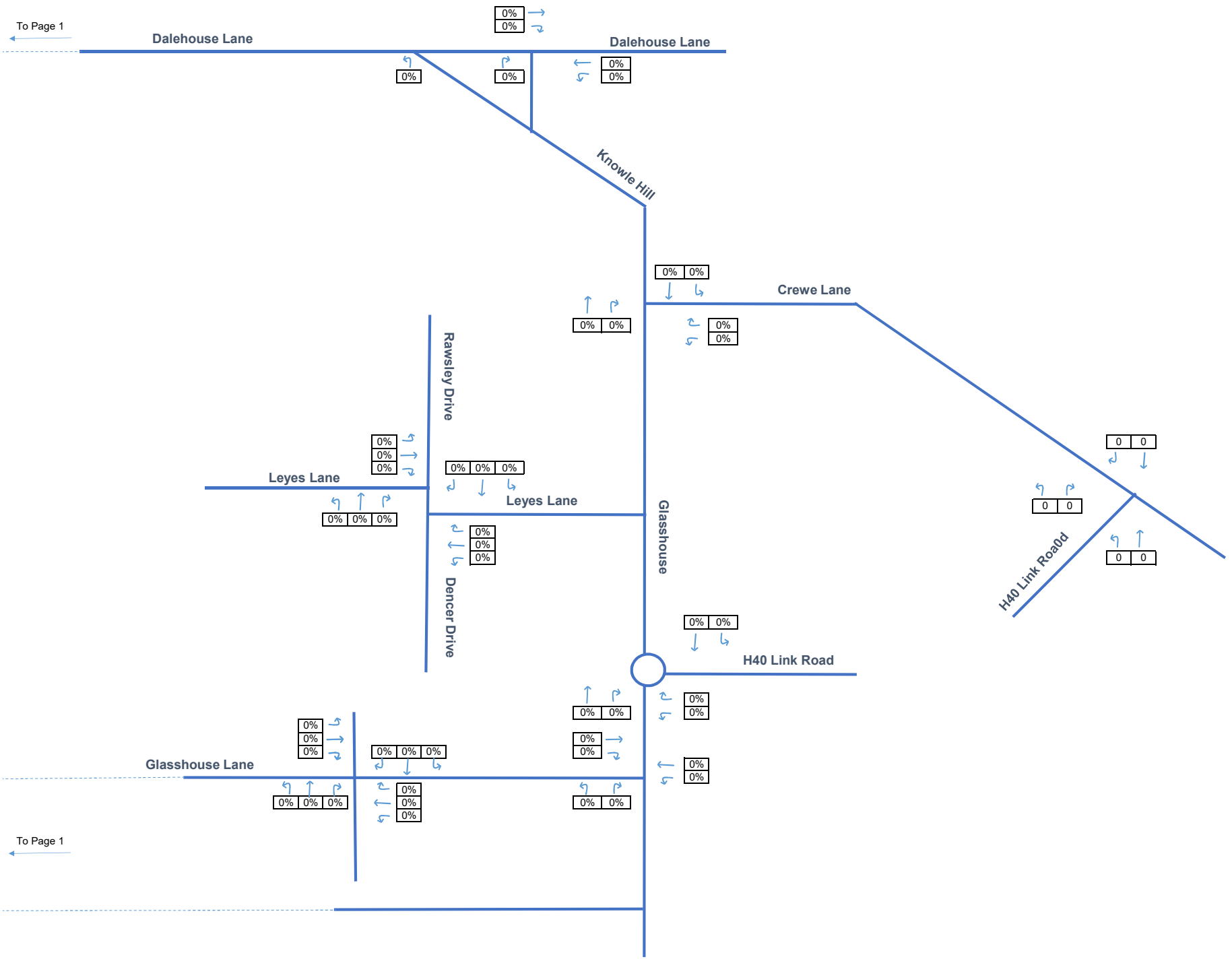
**Kenilworth Local and Neighbourhood Plan: All Vehicle flows PM Peak (2029)**



**Kenilworth Local and Neighbourhood Plan: HGV percentages PM Peak (2029)**



**Kenilworth Local and Neighbourhood Plan: HGV Percentages PM Peak (2029)**

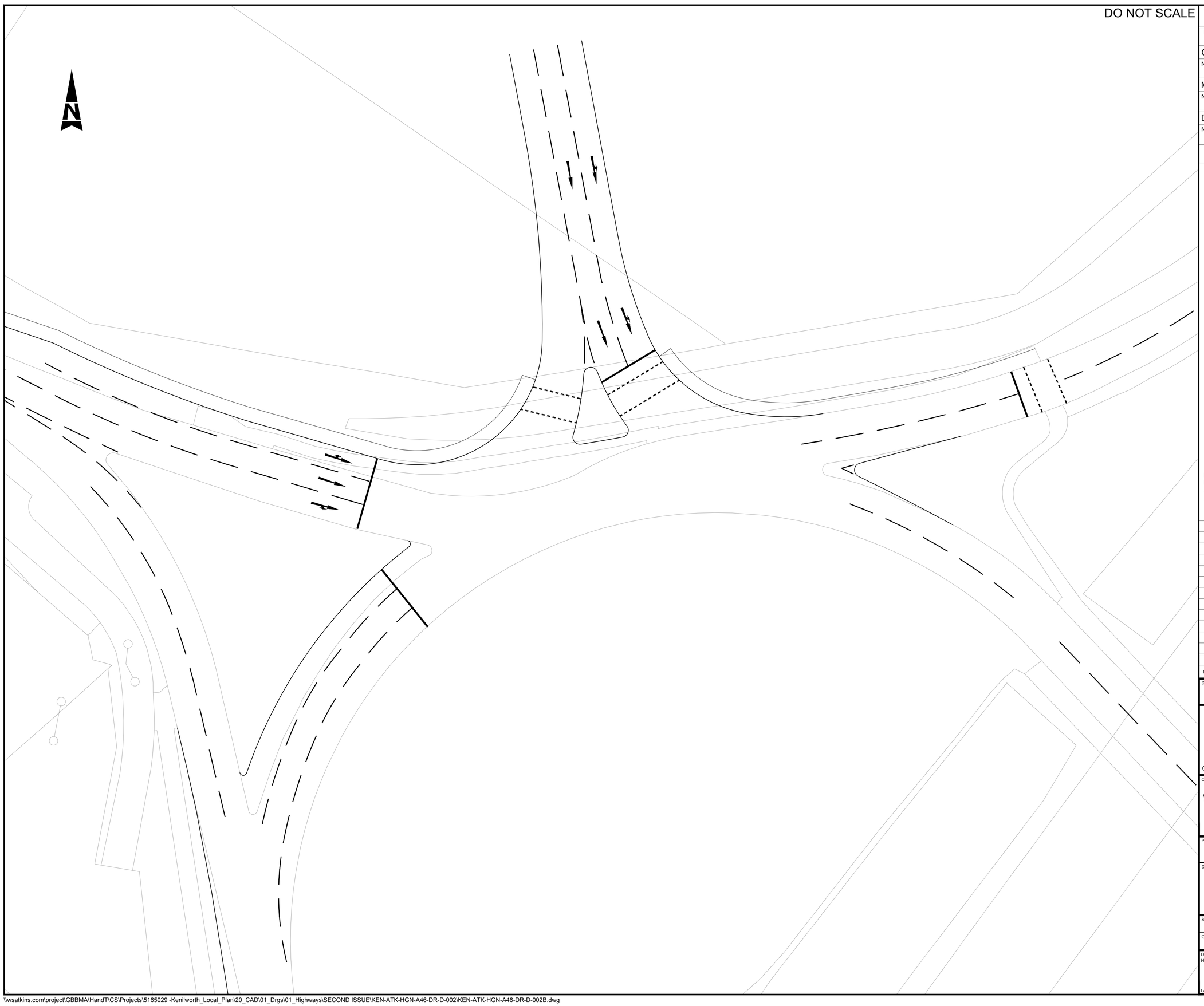


# Appendix B. Access to Thickthorn Site

## B.1. Option Drawings

Millimetres 0 10 100

DO NOT SCALE



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

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### MAINTENANCE/CLEANING

NONE

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NONE

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| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 28.06.17 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH
THICKTHORN ACCESS FEASIBILITY

Drawing Title: THICKTHORN ACCESS
SIGNALISED 5th ARM
SIGNALISED ROUNDABOUT

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| NTS | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 28/06/17 | 28/06/17 | 28/06/17 | 28/06/17 |

Drawing Number: KEN A46 - ATK - HGN - DR - D - 002
(HA PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 5155624

Revision: P1

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DO NOT SCALE

Millimetres 0 10 100

LEFT ONLY EXIT
OPTION 1

LEFT ONLY EXIT
OPTION 2

LEFT ONLY EXIT
OPTION 3

LEFT ONLY EXIT
OPTION 4

8.7m
6.2m

BULLMORE GROVE

N

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

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**DECOMMISSIONING/DEMOLITION**

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Key:

- 4.5m x 120m Visibility Splay
- 4.5m x 120m Visibility Splay
- 4.5m x 120m Visibility Splay
- 4.5m x 120m Visibility Splay

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

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|---|---|---|---|---|---|
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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH
THICKTHORN ACCESS FEASIBILITY

Drawing Title: THICKTHORN ACCESS
LEFT IN - LEFT OUT OPTIONS
EXISTING SITUATION

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| NTS | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
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Drawing Number: KEN - ATK - HGN - A46 - DR - D - 003
(HA PIN | Originator | Volume | Location | Type | Role | Number)

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Revision: P1

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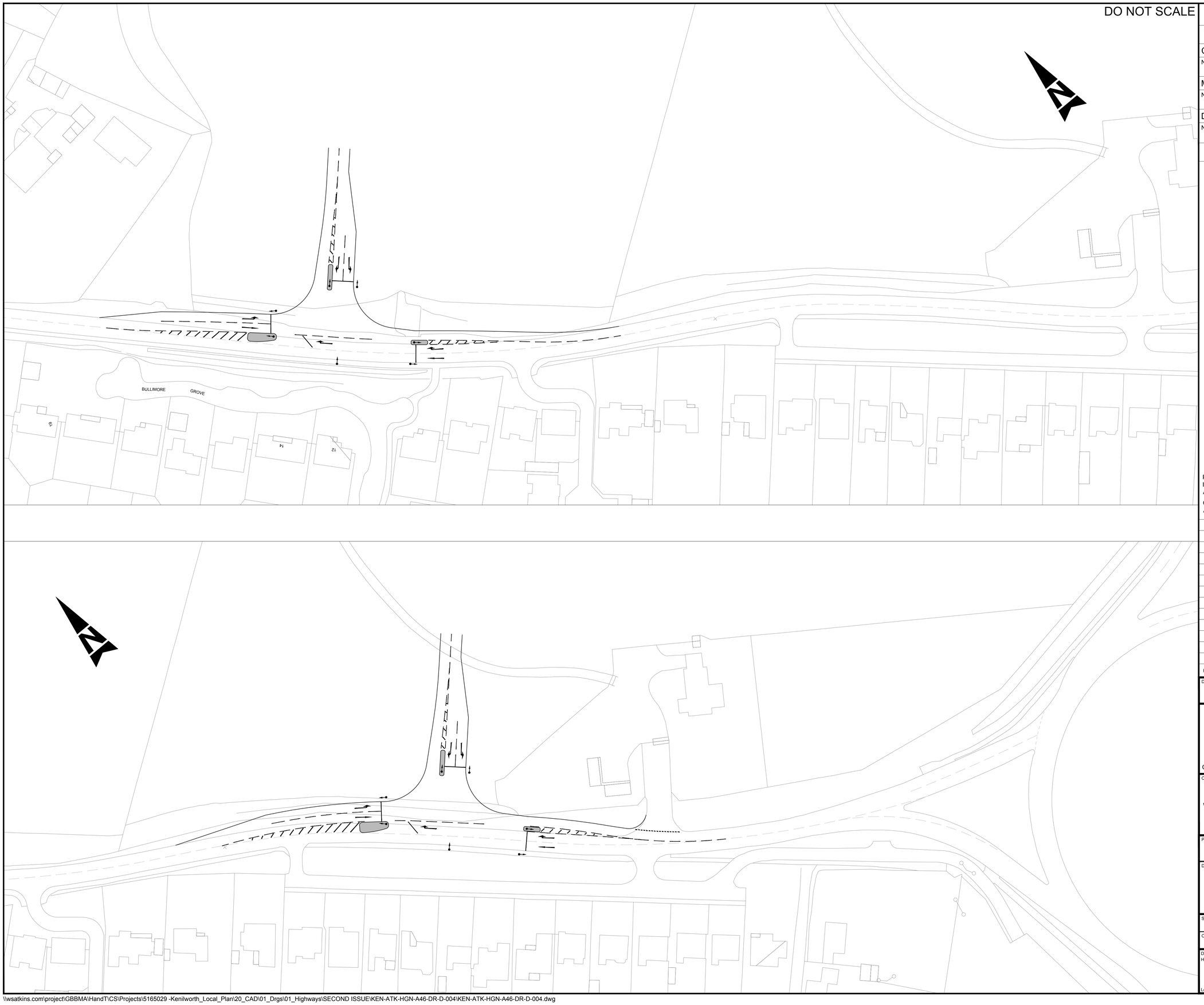


## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 28.06.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH
THICKTHORN ACCESS FEASIBILITY

Drawing Title: THICKTHORN ACCESS
A452 SIGNALISED JUNCTION OPTIONS

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| NTS | AE | AE | PDE | TC |
| Original Size | Date | Date | Date | Date |
| A1 | 28/06/18 | 28/06/18 | 28/06/18 | 28/06/18 |

Drawing Number
HA PIN: KEN - ATK - HGN - A46 - DR - D - 004
Location | Originator | Volume | Type | Role | Number

Project Ref. No.: 5155624

Revision: P1

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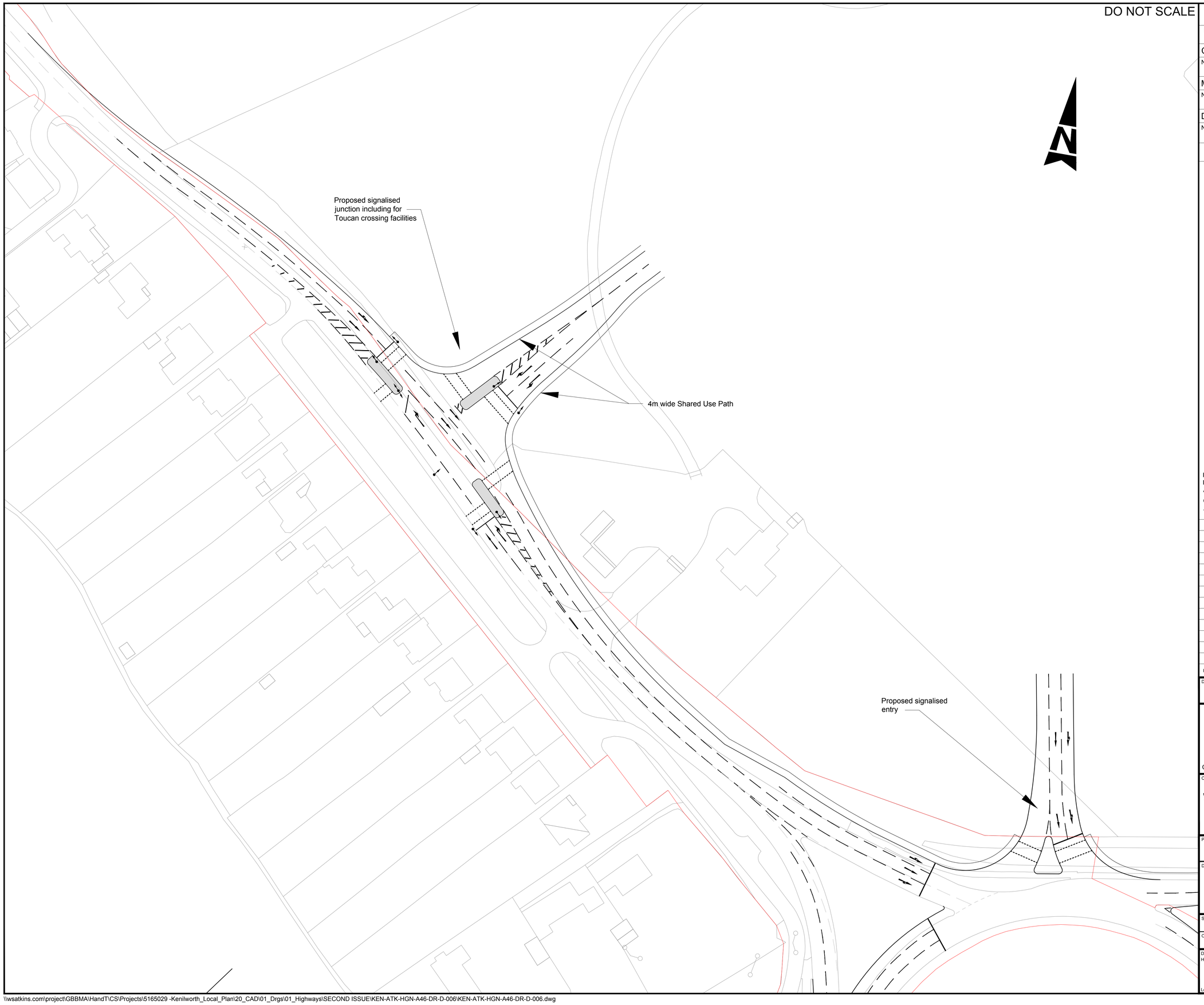


## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

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Key:

Highway boundary

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

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| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH THICKTHORN ACCESS FEASIBILITY

Drawing Title: THICKTHORN ACCESS SIGNALISED ROUNDABOUT AND SIGNALISED JUNCTION ON LEAMINGTON ROAD

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| 1:500 | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: KEN - ATK - HGN - A46 - DR - D - 006

HA PIN: Location - Originator - Type - Volume - Role - Number

Project Ref. No.: 5165029

Revision: P1

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Millimetres 0 10 100

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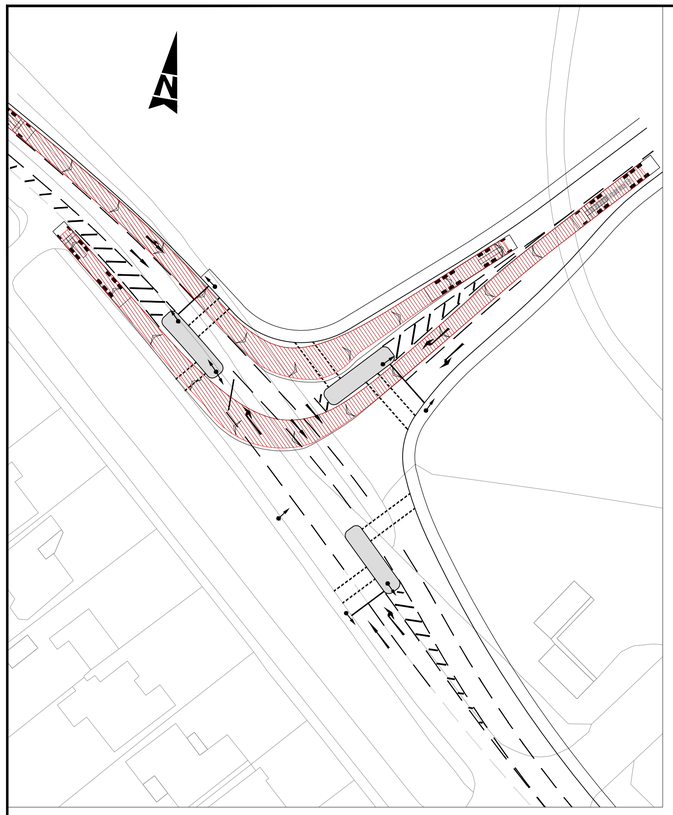

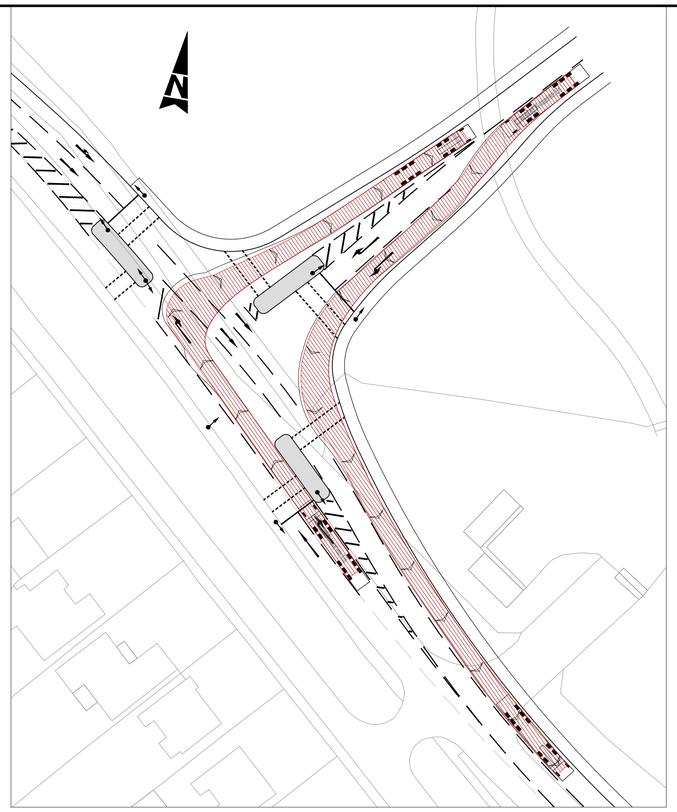

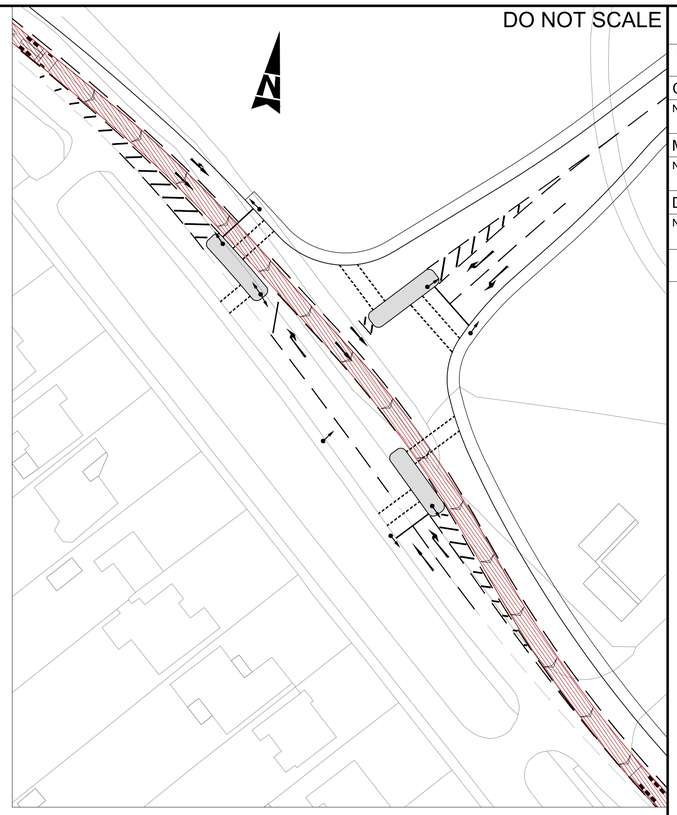

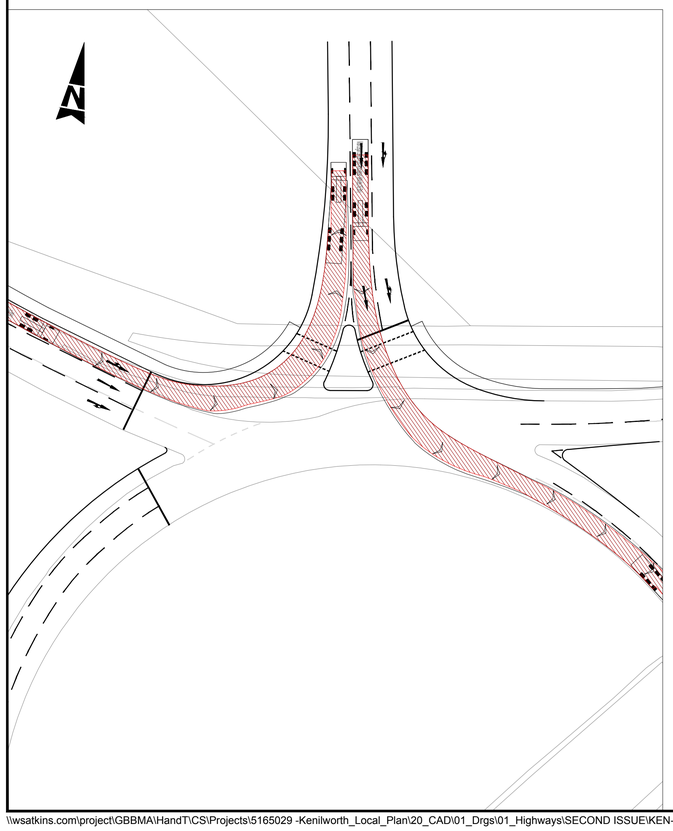

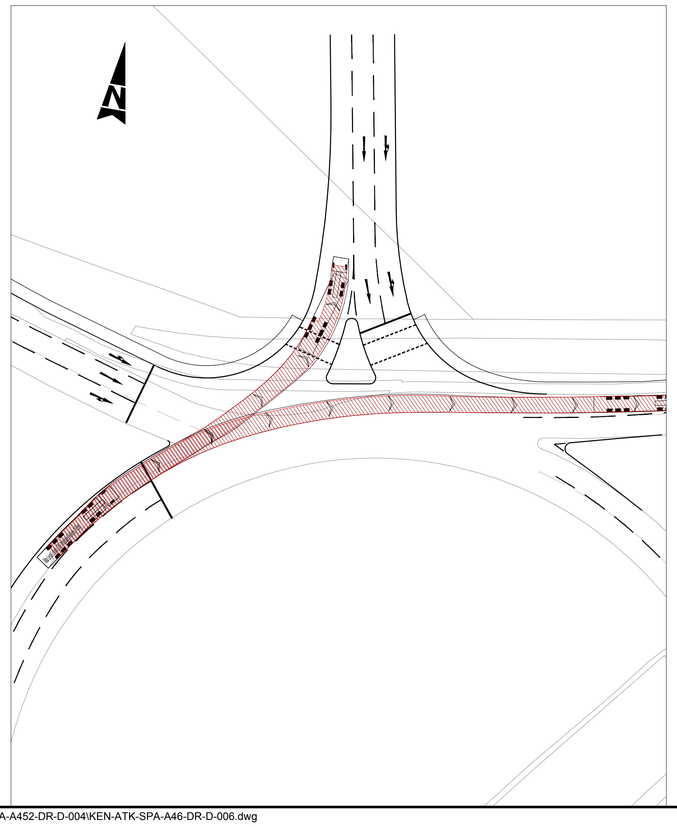

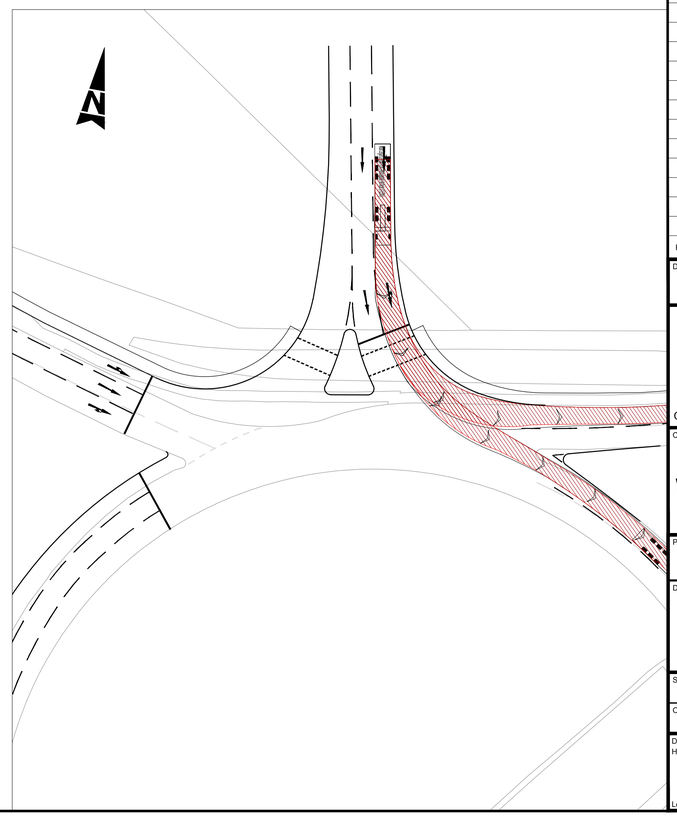

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

### CONSTRUCTION

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NONE

### DECOMMISSIONING/DEMOLITION

NONE

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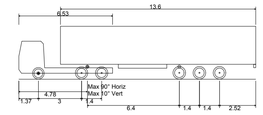


Max Legal Length (UK) Articulated Vehicle (16.5m)

| | |
|---|---|
| Overall Length | 16.500m |
| Overall Width | 2.550m |
| Overall Body Height | 3.681m |
| Min Body Ground Clearance | 0.411m |
| Max Track Width | 2.500m |
| Lock to Lock Time | 6.00s |
| Kerb to Kerb Turning Radius | 6.530m |

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH THICKTHORN ACCESS FEASIBILITY

Drawing Title: THICKTHORN ACCESS SIGNALISED ROUNDABOUT AND SIGNALISED JUNCTION SWEPT PATH ANALYSIS

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| 1:500 | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: HA PIN KEN A46 | Originator ATK | Volume SPA | Location DR | Type D | Role | Number 006

Project Ref. No.: 5165029

Revision: P1

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# Appendix C. Castle Farm Recreation Centre

## C.1. Trip Generation Data

## C.2. Traffic Flow Data

## C.3. Junction Modelling Outputs

## C.4. Option Drawings

## C.5. WCC Parking Restrictions Plan

# Usage Information based on diary for 2017 – January to October.

**Indoor cricket Nets -** Mid-January to Mid-April – Sunday afternoon, Monday to Thursday evening – usually 2 x 2 hour sessions. Maximum attending per session 20. Cars 10/12.

**Table tennis** – monthly meeting (usually Wednesday evening) 10/15. Cars 10.

**Darts** – Monday (usually bi-weekly) – attending 20. Cars 12.

**Simply Social (elderly singles club)** – weekly - Wednesday evening - attending 30/35. Cars 20.

**Art Class** – Thursday morning - weekly - attending 12. Cars 12.

**Dance Class** – Thursday – late afternoon – 2 x 1 hour sessions – 20/25. Cars - few (often younger age group drop and collected by parents).

**Steel pan band** – Sunday morning – monthly training session – attending 10/12. Cars 6.

**Functions** – (generally very few attended by more than 100 people these days). Mainly club social evenings, birthday parties (adult and children), Christenings, occasional wedding. Usually held on Friday or Saturday evening or Sunday lunchtime/early afternoon. Small number of funeral wakes (mid-week daytime).

This year – Large (attending 80 to 100) – 14
Medium (attending 50 to 80) – 16
Small (attending 30 to 50) – 13

Would suggest that car usage is normally about 50% maximum of those attending and it is noticeable that with larger functions, which are normally Friday or Saturday evenings, the number of cars is often much lower, with people using taxis.

**Runners** – Sunday morning (attending 15/20), Tuesday and Thursday evenings (attending 40/50). Car usage low, would think less than 50% as a number run to the club.

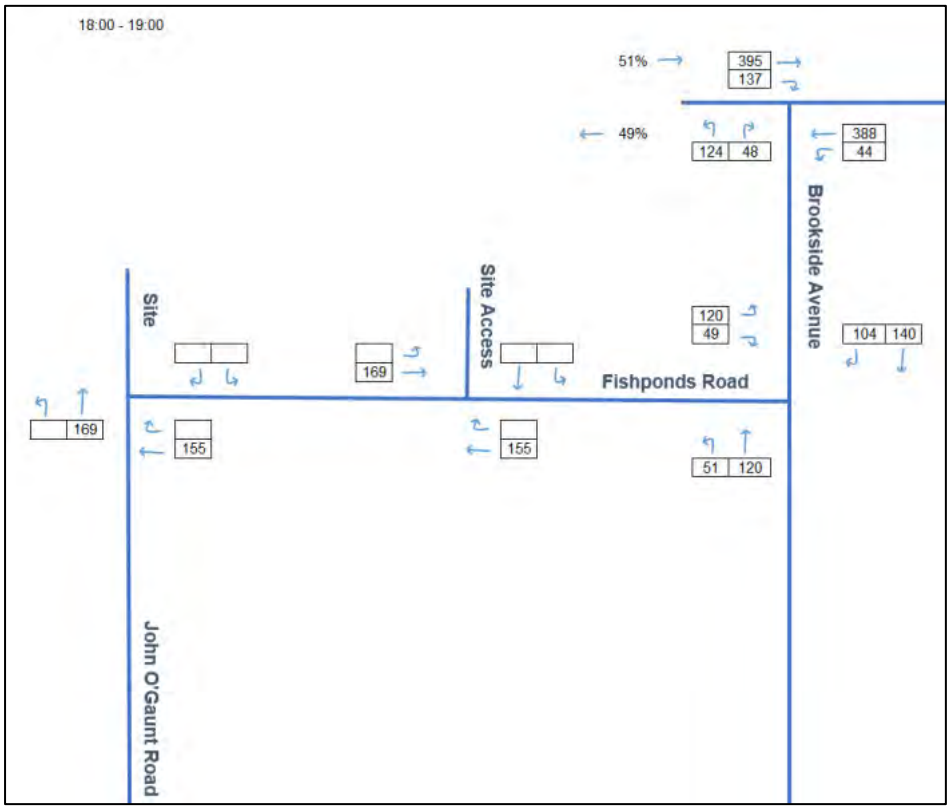
**Cricket** – 2 games every Saturday afternoon from late April to early September (both played at the same time) – generally 60 to 70 people attending depending on spectators – Cars usually 35/40.
1 or 2 games Sunday afternoon, (usually slightly fewer in number – not so many spectators and fewer cars as a consequence).
Sunday mornings (May to August) usually 1 junior age group game – 30/35 attending. Cars 15 maximum.
Monday & Tuesday evenings (May to mid-July) – 1 (or occasionally 2) age group games. Numbers similar to Sunday morning.
Wednesday evenings (May to end of July) – Mid-week league – 1 (very occasionally 2) usually 30 attending and 15/20 cars.
Thursday evenings (late April to end of August) – club training – attending 30/40. Cars 25.
Friday evenings (March to mid-July) junior coaching evening – attending 60. Cars 30 (many parents drop and collect).

**Football** (September to April) – Saturday morning, usually 2 junior games – attending 50/60.
Sunday morning – similar to Saturday morning.
Sunday morning – junior (age 7 & 8) training – attending 20/25. Cars – few (many youngsters dropped and collected by parents.
Sunday afternoon – Senior football – attending 40. Cars 20.

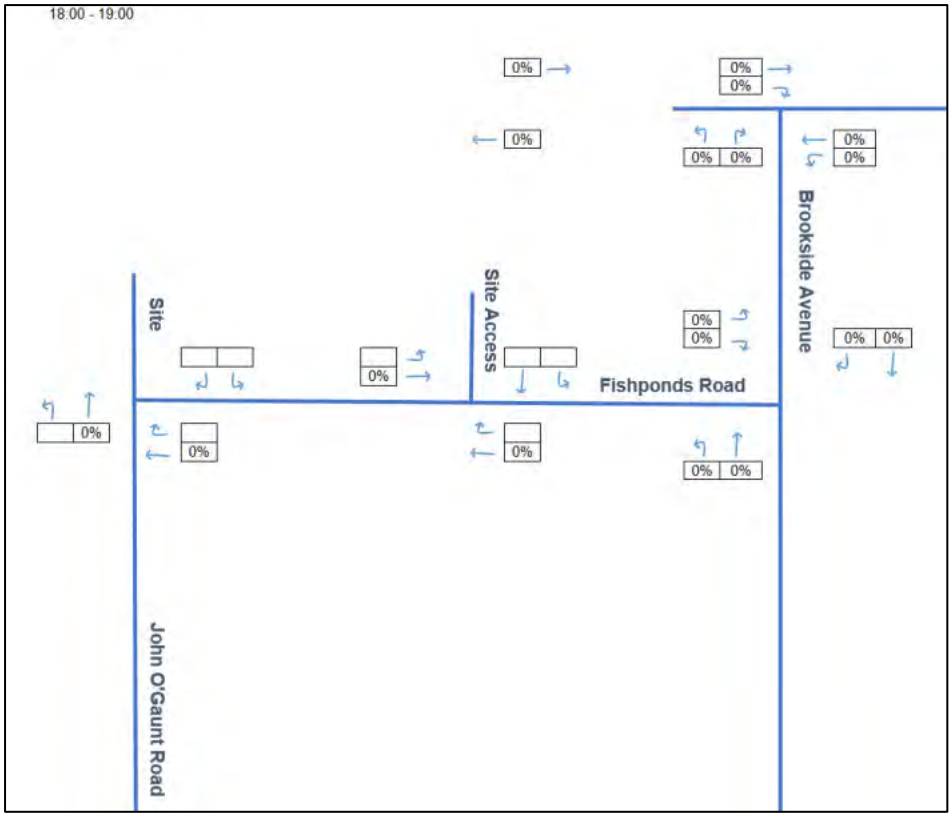
**Annual one-off event – Cricket** – Floodlit 20/20 week (usually last fully week in August, immediately before the Bank Holiday). Floodlit tournament held over 5 nights (Monday to Friday) – Attending about 200 each evening. Cars 75/80 (use rugby club car-park, adjoining our ground, as well as our own).

**Annual one-off event – Football – Junior Festival** – May Bank Holiday Monday – attending 400/500.
Cars 150 (use rugby club car-park adjoining our ground, as well as our own).

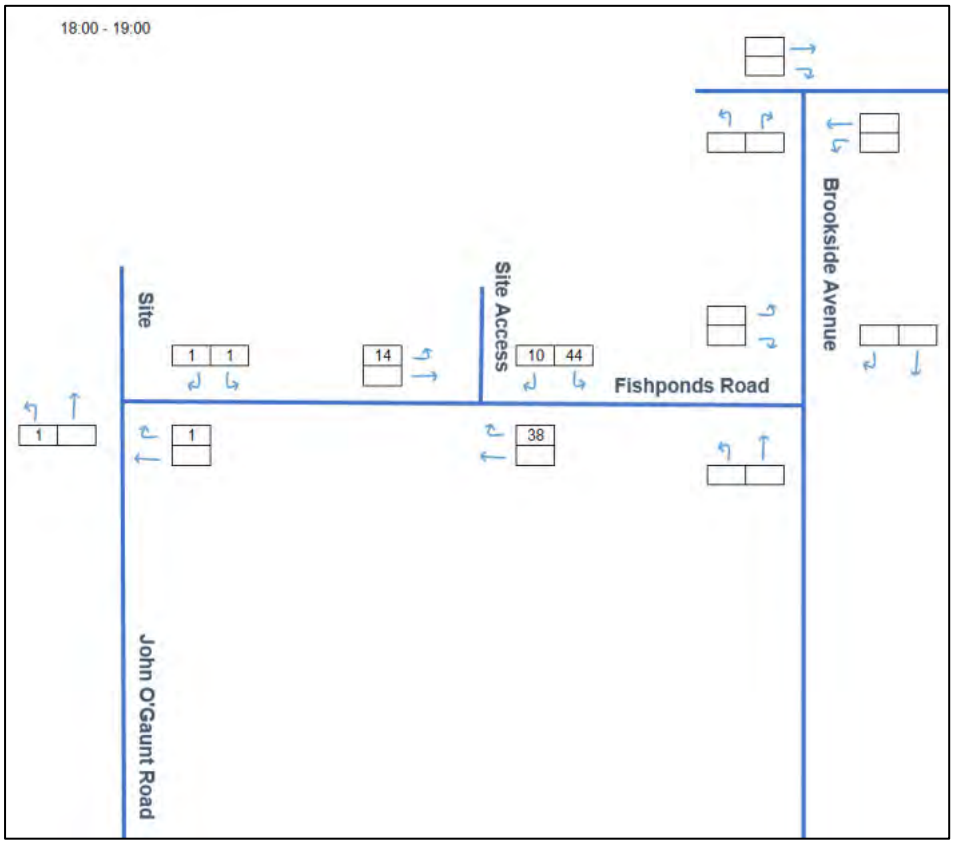
## Local Plan All Vehicles Flows for 18:00-19:00 (2029)



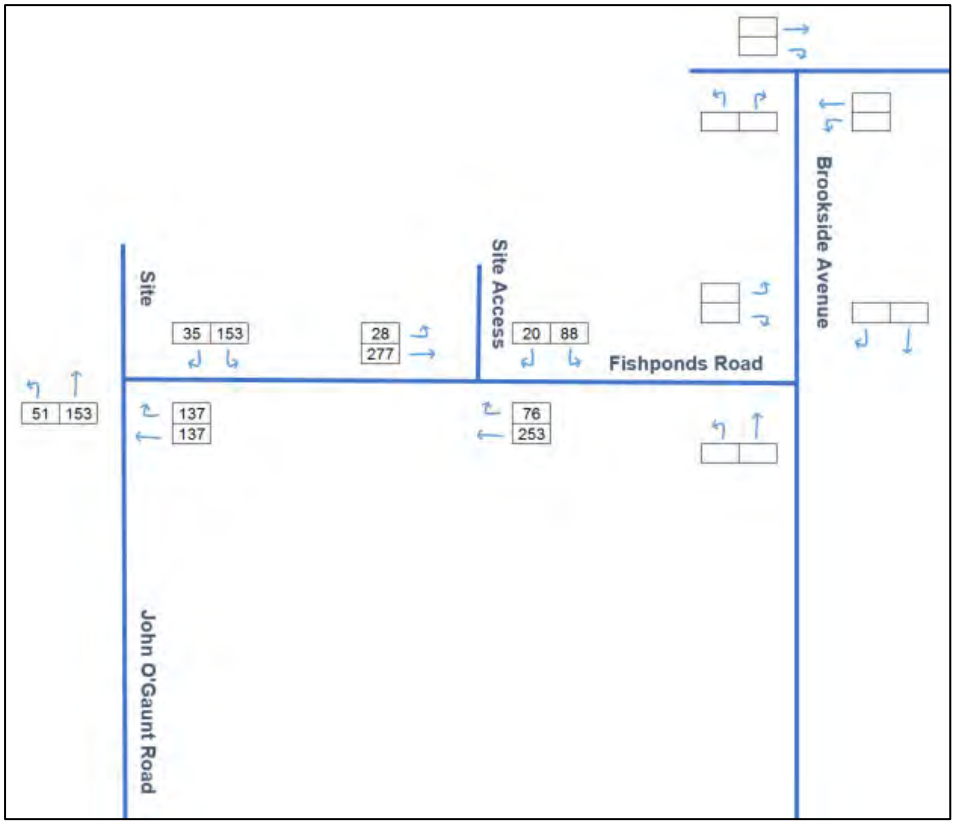

## Local Plan HGV Percentage Flows for 18:00-19:00 (2029)



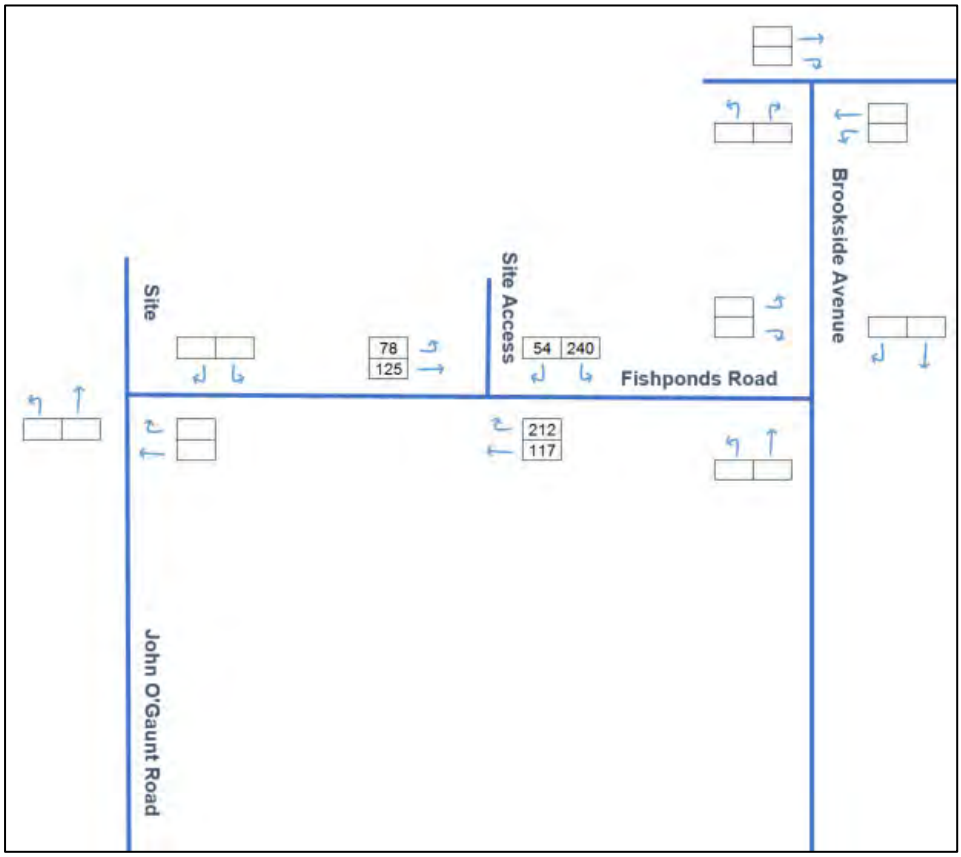
**Castle Farm Peak All Vehicles flows (2017)**



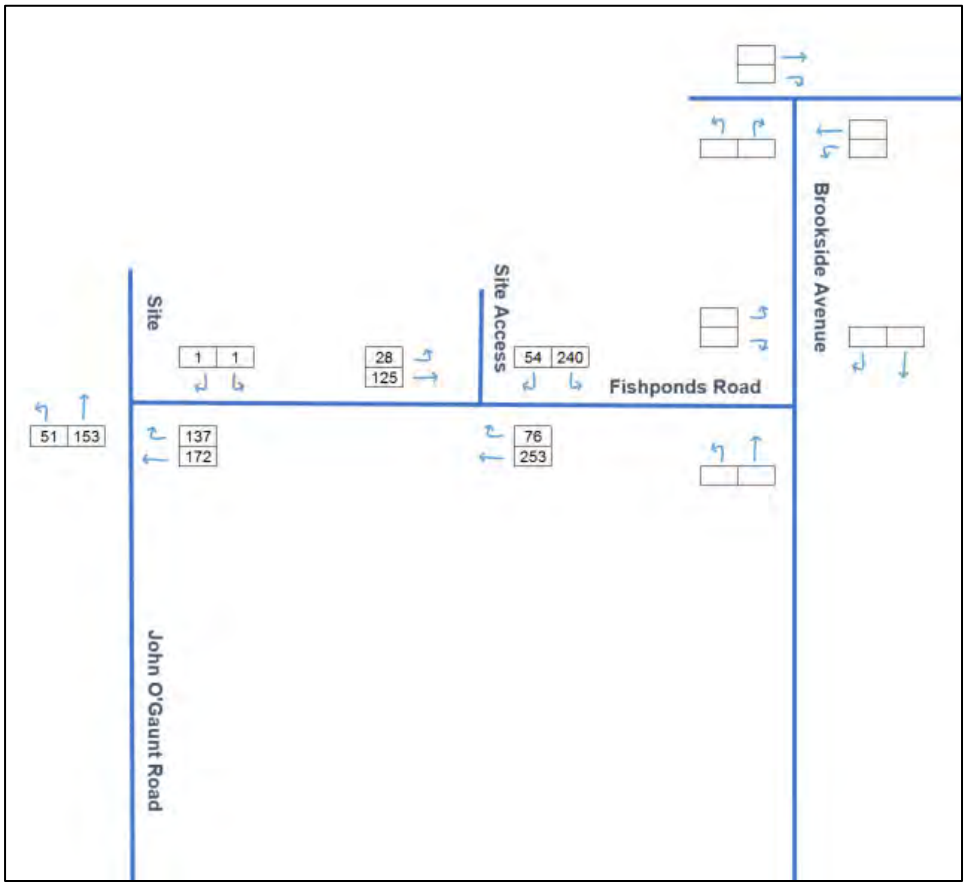

**Option 1: Future Baseline (2029) + Development (Peak Hour)**



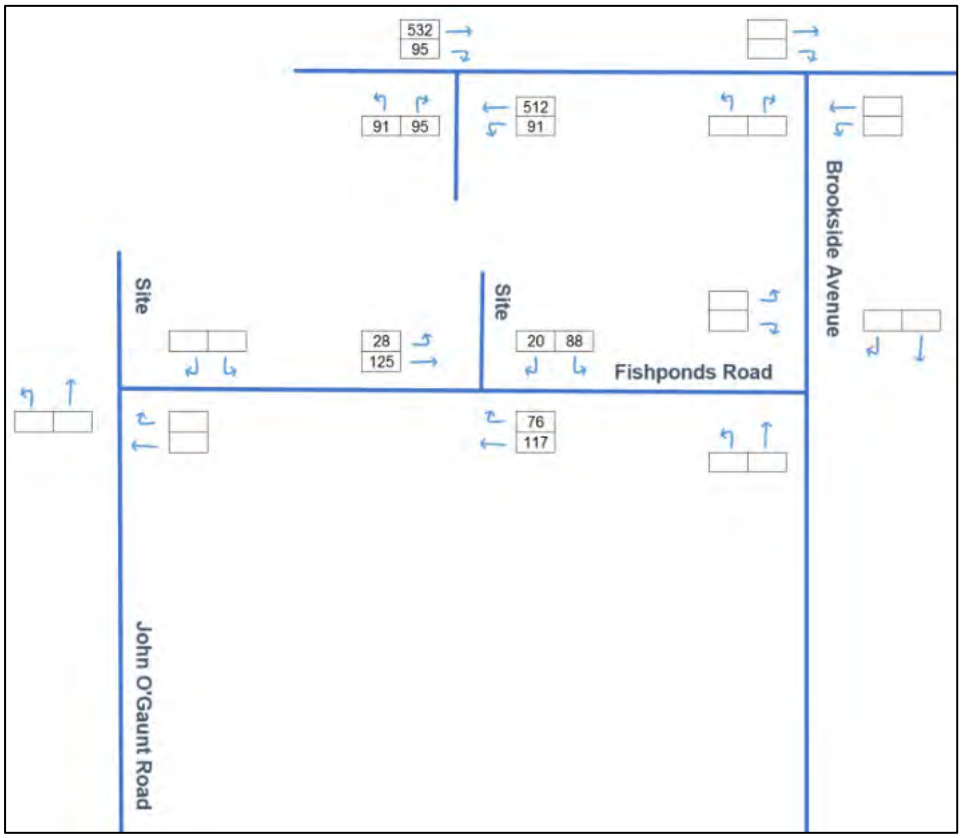
**Option 2A: Future Baseline (2029) + Development (Peak Hour)**



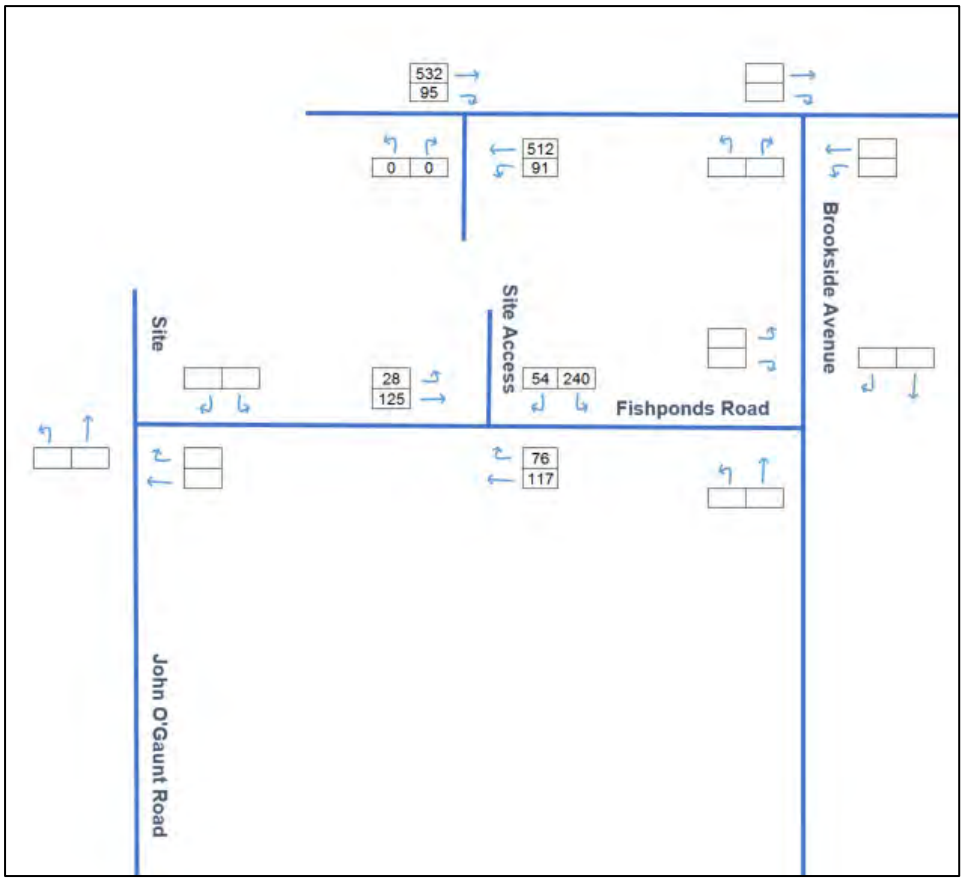

**Option 2B: Future Baseline (2029) + Development (Peak Hour)**



**Option 3AC: Future Baseline (2029) + Development (Peak Hour)**




**Option 3BD: Future Baseline (2029) + Development (Peak Hour)**



# Junctions 9

## PICADY 9 - Priority Intersection Module



**Filename:** 180517_Junction 1-Castle Farm - Fishponds road.j9
**Path:** P:\GBBMA\HandT\CS\Projects\5165029 -Kenilworth_Local_Plan\08_Technical\Task 2_Castle_Farm_Sports_Centre\02_Junction_Capacity_Assessment
**Report generation date:** 22/05/2018 14:27:19

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## Summary of junction performance

| | PM | | | |
|---|---|---|---|---|
| | Queue (Veh) | Delay (s) | RFC | LOS |
| | **Option 2A Future Base + Development** | | | |
| Stream B-AC | 1.2 | 13.80 | 0.55 | B |
| Stream C-AB | 0.7 | 9.62 | 0.40 | A |
| | **Option 2B Future Base + Development** | | | |
| Stream B-AC | 1.1 | 12.89 | 0.54 | B |
| Stream C-AB | 0.2 | 6.65 | 0.14 | 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** | Kenilworth Picady |
| **Location** | Fishponds Road- Castle Farm junction |
| **Site number** | |
| **Date** | 08/03/2018 |
| **Version** | 1 |
| **Status** | (new file) |
| **Identifier** | |
| **Client** | |
| **Jobnumber** | |
| **Enumerator** | WSATKINS\kios1158 |
| **Description** | Junction assessment for the castle Farm development. Option 1 - Allowing both junctions as exit as well. Option 2- Allowing only junction 2 as exit. |

## 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 | Veh | Veh | perHour | s | -Min | perMin |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|---|---|---|---|---|
| | | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D10 | Option 2A Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |
| D11 | Option 2B Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |

## Analysis Set Details

| ID | Network flow scaling factor (%) |
|---|---|
| A1 | 100.000 |

# Option 2A Future Base + Development, PM

## Data Errors and Warnings

| Severity | Area | Item | Description |
|---|---|---|---|
| Warning | Major arm width | Arm C - Major arm geometry | For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m. |
| Warning | Vehicle Mix | | HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. |

# Junction Network

## Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | Castle farm - Fishponds road juntion | T-Junction | Two-way | 7.55 | A |

## Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

# Arms

## Arms

| Arm | Name | Description | Arm type |
|---|---|---|---|
| A | Fishponds Road (West) | | Major |
| B | Castle Farm Road | | Minor |
| C | Fishponds Road (East) | | Major |

## Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
|---|---|---|---|---|---|---|
| C | 4.75 | | | 105.0 | ✓ | 1.00 |

*Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.*

## Minor Arm Geometry

| Arm | Minor arm type | Lane width (m) | Visibility to left (m) | Visibility to right (m) |
|---|---|---|---|---|
| B | One lane | 3.92 | 93 | 24 |

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

| Junction | Stream | Intercept (Veh/hr) | Slope for A-B | Slope for A-C | Slope for C-A | Slope for C-B |
|---|---|---|---|---|---|---|
| 1 | B-A | 567 | 0.109 | 0.275 | 0.173 | 0.393 |
| 1 | B-C | 698 | 0.113 | 0.285 | - | - |
| 1 | C-B | 635 | 0.259 | 0.259 | - | - |

*The slopes and intercepts shown above do NOT include any corrections or adjustments.*

*Streams may be combined, in which case capacity will be adjusted.*

*Values are shown for the first time segment only; they may differ for subsequent time segments.*

# Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D10 | Option 2A Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| A | | ✓ | 203 | 100.000 |
| B | | ✓ | 294 | 100.000 |
| C | | ✓ | 329 | 100.000 |

# Origin-Destination Data

### Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 78 | 125 |
| | B | 54 | 0 | 240 |
| | C | 117 | 212 | 0 |

# Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 0 | 0 |
| | B | 0 | 0 | 0 |
| | C | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| B-AC | 0.55 | 13.80 | 1.2 | B |
| C-AB | 0.40 | 9.62 | 0.7 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

### 17:45 - 18:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 221 | 613 | 0.361 | 219 | 0.6 | 9.083 | A |
| C-AB | 166 | 619 | 0.268 | 164 | 0.4 | 7.900 | A |
| C-A | 82 | | | 82 | | | |
| A-B | 59 | | | 59 | | | |
| A-C | 94 | | | 94 | | | |

### 18:00 - 18:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 264 | 601 | 0.440 | 263 | 0.8 | 10.627 | B |
| C-AB | 202 | 622 | 0.324 | 201 | 0.5 | 8.557 | A |
| C-A | 94 | | | 94 | | | |
| A-B | 70 | | | 70 | | | |
| A-C | 112 | | | 112 | | | |

### 18:15 - 18:30

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 324 | 584 | 0.554 | 322 | 1.2 | 13.626 | B |
| C-AB | 255 | 629 | 0.405 | 254 | 0.7 | 9.580 | A |
| C-A | 108 | | | 108 | | | |
| A-B | 86 | | | 86 | | | |
| A-C | 138 | | | 138 | | | |

### 18:30 - 18:45

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 324 | 584 | 0.554 | 324 | 1.2 | 13.802 | B |
| C-AB | 255 | 629 | 0.405 | 254 | 0.7 | 9.623 | A |
| C-A | 108 | | | 108 | | | |
| A-B | 86 | | | 86 | | | |
| A-C | 138 | | | 138 | | | |

### 18:45 - 19:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 264 | 601 | 0.440 | 266 | 0.8 | 10.794 | B |
| C-AB | 202 | 622 | 0.324 | 203 | 0.5 | 8.613 | A |
| C-A | 94 | | | 94 | | | |
| A-B | 70 | | | 70 | | | |
| A-C | 112 | | | 112 | | | |

### 19:00 - 19:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 221 | 613 | 0.361 | 222 | 0.6 | 9.233 | A |
| C-AB | 166 | 619 | 0.268 | 166 | 0.4 | 7.970 | A |
| C-A | 82 | | | 82 | | | |
| A-B | 59 | | | 59 | | | |
| A-C | 94 | | | 94 | | | |

# Option 2B Future Base + Development, PM

### Data Errors and Warnings

| Severity | Area | Item | Description |
|---|---|---|---|
| Warning | Major arm width | Arm C - Major arm geometry | For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m. |
| Warning | Vehicle Mix | | HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. |

## Junction Network

### Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | Castle farm - Fishponds road juntion | T-Junction | Two-way | 5.57 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Traffic Demand

### Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D11 | Option 2B Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

### Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| A | | ✓ | 153 | 100.000 |
| B | | ✓ | 294 | 100.000 |
| C | | ✓ | 329 | 100.000 |

## Origin-Destination Data

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 28 | 125 |
| | B | 54 | 0 | 240 |
| | C | 253 | 76 | 0 |

## Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 0 | 0 |
| | B | 0 | 0 | 0 |
| | C | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| B-AC | 0.54 | 12.89 | 1.1 | B |
| C-AB | 0.14 | 6.65 | 0.2 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

### 17:45 - 18:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 221 | 625 | 0.354 | 219 | 0.5 | 8.830 | A |
| C-AB | 59 | 623 | 0.095 | 58 | 0.1 | 6.374 | A |
| C-A | 189 | | | 189 | | | |
| A-B | 21 | | | 21 | | | |
| A-C | 94 | | | 94 | | | |

### 18:00 - 18:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 264 | 616 | 0.429 | 264 | 0.7 | 10.200 | B |
| C-AB | 71 | 625 | 0.114 | 71 | 0.1 | 6.500 | A |
| C-A | 224 | | | 224 | | | |
| A-B | 25 | | | 25 | | | |
| A-C | 112 | | | 112 | | | |

### 18:15 - 18:30

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 324 | 603 | 0.537 | 322 | 1.1 | 12.755 | B |
| C-AB | 89 | 631 | 0.142 | 89 | 0.2 | 6.647 | A |
| C-A | 273 | | | 273 | | | |
| A-B | 31 | | | 31 | | | |
| A-C | 138 | | | 138 | | | |

**18:30 - 18:45**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 324 | 603 | 0.537 | 324 | 1.1 | 12.890 | B |
| C-AB | 89 | 631 | 0.142 | 89 | 0.2 | 6.651 | A |
| C-A | 273 | | | 273 | | | |
| A-B | 31 | | | 31 | | | |
| A-C | 138 | | | 138 | | | |

**18:45 - 19:00**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 264 | 616 | 0.429 | 266 | 0.8 | 10.335 | B |
| C-AB | 71 | 625 | 0.114 | 71 | 0.1 | 6.507 | A |
| C-A | 224 | | | 224 | | | |
| A-B | 25 | | | 25 | | | |
| A-C | 112 | | | 112 | | | |

**19:00 - 19:15**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 221 | 625 | 0.354 | 222 | 0.6 | 8.962 | A |
| C-AB | 59 | 623 | 0.095 | 59 | 0.1 | 6.387 | A |
| C-A | 189 | | | 189 | | | |
| A-B | 21 | | | 21 | | | |
| A-C | 94 | | | 94 | | | |

# Junctions 9

## PICADY 9 - Priority Intersection Module



**Filename:** 180517_Junction 2- Proposed new access.j9
**Path:** P:\GBBMA\HandT\CS\Projects\5165029 -Kenilworth_Local_Plan\08_Technical\Task 2_Castle_Farm_Sports_Centre\02_Junction_Capacity_Assessment
**Report generation date:** 22/05/2018 14:28:55

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## Summary of junction performance

| | PM | | | |
|---|---|---|---|---|
| | Queue (Veh) | Delay (s) | RFC | LOS |
| | **Option 1 Future Base + Development** | | | |
| **Stream B-AC** | 0.4 | 6.91 | 0.28 | A |
| **Stream C-AB** | 0.3 | 6.79 | 0.23 | A |
| | **Option 2B Future Base + Development** | | | |
| **Stream B-AC** | 0.0 | 0.00 | 0.00 | A |
| **Stream C-AB** | 0.3 | 6.71 | 0.23 | 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** | Kenilworth Picady |
| **Location** | Flashponds Road-New access- John OGaunt Road |
| **Site number** | |
| **Date** | 09/03/2018 |
| **Version** | 1 |
| **Status** | (new file) |
| **Identifier** | |
| **Client** | |
| **Jobnumber** | |
| **Enumerator** | WSATKINS\kios1158 |
| **Description** | Junction assessment for the castle Farm development. Option 1 - Allowing both junctions as exit as well. Option 2- Allowing only junction 2 as exit. |

## 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 | Veh | Veh | perHour | s | -Min | perMin |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|---|---|---|---|---|
| | | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D2 | Option 1 Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |
| D4 | Option 2B Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |

## Analysis Set Details

| ID | Network flow scaling factor (%) |
|---|---|
| A1 | 100.000 |

# Option 1 Future Base + Development, PM

## Data Errors and Warnings

| Severity | Area | Item | Description |
|---|---|---|---|
| Warning | Major arm width | Arm C - Major arm geometry | For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m. |
| Warning | Vehicle Mix | | HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. |

# Junction Network

## Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | untitled | T-Junction | Two-way | 3.40 | A |

## Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

# Arms

## Arms

| Arm | Name | Description | Arm type |
|---|---|---|---|
| A | John O'Gaunt Road | | Major |
| B | New access road | | Minor |
| C | Fishponds Road | | Major |

## Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
|---|---|---|---|---|---|---|
| C | 5.25 | | | 250.0 | ✓ | 1.00 |

*Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.*

## Minor Arm Geometry

| Arm | Minor arm type | Lane width (m) | Visibility to left (m) | Visibility to right (m) |
|---|---|---|---|---|
| B | One lane | 4.13 | 29 | 250 |

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

| Junction | Stream | Intercept (Veh/hr) | Slope for A-B | Slope for A-C | Slope for C-A | Slope for C-B |
|---|---|---|---|---|---|---|
| 1 | B-A | 679 | 0.128 | 0.323 | 0.203 | 0.461 |
| 1 | B-C | 870 | 0.138 | 0.348 | - | - |
| 1 | C-B | 719 | 0.288 | 0.288 | - | - |

*The slopes and intercepts shown above do NOT include any corrections or adjustments.*

*Streams may be combined, in which case capacity will be adjusted.*

*Values are shown for the first time segment only; they may differ for subsequent time segments.*

# Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D2 | Option 1 Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| A | | ✓ | 204 | 100.000 |
| B | | ✓ | 188 | 100.000 |
| C | | ✓ | 274 | 100.000 |

# Origin-Destination Data

### Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 51 | 153 |
| | B | 35 | 0 | 153 |
| | C | 137 | 137 | 0 |

# Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 0 | 0 |
| | B | 0 | 0 | 0 |
| | C | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| B-AC | 0.28 | 6.91 | 0.4 | A |
| C-AB | 0.23 | 6.79 | 0.3 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

### 17:45 - 18:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 142 | 760 | 0.186 | 141 | 0.2 | 5.799 | A |
| C-AB | 106 | 690 | 0.153 | 105 | 0.2 | 6.140 | A |
| C-A | 101 | | | 101 | | | |
| A-B | 38 | | | 38 | | | |
| A-C | 115 | | | 115 | | | |

### 18:00 - 18:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 169 | 747 | 0.226 | 169 | 0.3 | 6.222 | A |
| C-AB | 127 | 689 | 0.185 | 127 | 0.2 | 6.409 | A |
| C-A | 119 | | | 119 | | | |
| A-B | 46 | | | 46 | | | |
| A-C | 138 | | | 138 | | | |

### 18:15 - 18:30

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 207 | 728 | 0.284 | 207 | 0.4 | 6.896 | A |
| C-AB | 159 | 689 | 0.231 | 159 | 0.3 | 6.785 | A |
| C-A | 143 | | | 143 | | | |
| A-B | 56 | | | 56 | | | |
| A-C | 168 | | | 168 | | | |

### 18:30 - 18:45

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 207 | 728 | 0.284 | 207 | 0.4 | 6.908 | A |
| C-AB | 159 | 689 | 0.231 | 159 | 0.3 | 6.794 | A |
| C-A | 143 | | | 143 | | | |
| A-B | 56 | | | 56 | | | |
| A-C | 168 | | | 168 | | | |

### 18:45 - 19:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 169 | 747 | 0.226 | 169 | 0.3 | 6.239 | A |
| C-AB | 127 | 689 | 0.185 | 128 | 0.2 | 6.422 | A |
| C-A | 119 | | | 119 | | | |
| A-B | 46 | | | 46 | | | |
| A-C | 138 | | | 138 | | | |

### 19:00 - 19:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 142 | 760 | 0.186 | 142 | 0.2 | 5.821 | A |
| C-AB | 106 | 690 | 0.153 | 106 | 0.2 | 6.159 | A |
| C-A | 101 | | | 101 | | | |
| A-B | 38 | | | 38 | | | |
| A-C | 115 | | | 115 | | | |

# Option 2B Future Base + Development, PM

### Data Errors and Warnings

| Severity | Area | Item | Description |
|---|---|---|---|
| Warning | Major arm width | Arm C - Major arm geometry | For two-way major roads, please interpret results with caution if the total major carriageway width is less than 6m. |
| Warning | Vehicle Mix | | HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. |

## Junction Network

### Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | untitled | T-Junction | Two-way | 1.88 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Traffic Demand

### Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D4 | Option 2B Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

### Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| A | | ✓ | 204 | 100.000 |
| B | | ✓ | 2 | 100.000 |
| C | | ✓ | 309 | 100.000 |

## Origin-Destination Data

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 51 | 153 |
| | B | 1 | 0 | 1 |
| | C | 172 | 137 | 0 |

## Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 0 | 0 |
| | B | 0 | 0 | 0 |
| | C | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| B-AC | 0.00 | 0.00 | 0.0 | A |
| C-AB | 0.23 | 6.71 | 0.3 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

### 17:45 - 18:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 669 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 106 | 694 | 0.153 | 105 | 0.2 | 6.105 | A |
| C-A | 126 | | | 126 | | | |
| A-B | 38 | | | 38 | | | |
| A-C | 115 | | | 115 | | | |

### 18:00 - 18:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 650 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 128 | 695 | 0.185 | 128 | 0.2 | 6.355 | A |
| C-A | 149 | | | 149 | | | |
| A-B | 46 | | | 46 | | | |
| A-C | 138 | | | 138 | | | |

### 18:15 - 18:30

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 623 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 161 | 698 | 0.231 | 161 | 0.3 | 6.698 | A |
| C-A | 179 | | | 179 | | | |
| A-B | 56 | | | 56 | | | |
| A-C | 168 | | | 168 | | | |

**18:30 - 18:45**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 623 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 161 | 698 | 0.231 | 161 | 0.3 | 6.705 | A |
| C-A | 179 | | | 179 | | | |
| A-B | 56 | | | 56 | | | |
| A-C | 168 | | | 168 | | | |

**18:45 - 19:00**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 650 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 128 | 695 | 0.185 | 129 | 0.2 | 6.366 | A |
| C-A | 149 | | | 149 | | | |
| A-B | 46 | | | 46 | | | |
| A-C | 138 | | | 138 | | | |

**19:00 - 19:15**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 669 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 106 | 694 | 0.153 | 106 | 0.2 | 6.126 | A |
| C-A | 126 | | | 126 | | | |
| A-B | 38 | | | 38 | | | |
| A-C | 115 | | | 115 | | | |

# Junctions 9

## PICADY 9 - Priority Intersection Module



**Filename:** 180417_Site Access_Castle Road_Vehicles.j9
**Path:** P:\GBBMA\HandT\CS\Projects\5165029 -Kenilworth_Local_Plan\08_Technical\Task 2_Castle_Farm_Sports_Centre\02_Junction_Capacity_Assessment
**Report generation date:** 22/05/2018 14:31:27

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»Option 3B/D - Future Base + Development, PM
»Option 3A/C - Future Base + Development , PM

## Summary of junction performance

| | PM | | | |
|---|---|---|---|---|
| | Queue (Veh) | Delay (s) | RFC | LOS |
| | **Option 3B/D - Future Base + Development** | | | |
| **Stream B-AC** | 0.0 | 0.00 | 0.00 | A |
| **Stream C-AB** | 0.3 | 7.45 | 0.21 | A |
| | **Option 3A/C - Future Base + Development** | | | |
| **Stream B-AC** | 1.8 | 33.73 | 0.66 | D |
| **Stream C-AB** | 0.3 | 7.45 | 0.21 | 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** | (untitled) |
| **Location** | |
| **Site number** | |
| **Date** | 17/04/2018 |
| **Version** | |
| **Status** | (new file) |
| **Identifier** | |
| **Client** | |
| **Jobnumber** | |
| **Enumerator** | WSATKINS\kosk1699 |
| **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 | Veh | Veh | perHour | s | -Min | perMin |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|---|---|---|---|---|
| | | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D2 | Option 3B/D - Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |
| D6 | Option 3A/C - Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |

## Analysis Set Details

| ID | Network flow scaling factor (%) |
|---|---|
| A1 | 100.000 |

# Option 3B/D - Future Base + Development, 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. |

## Junction Network

### Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | untitled | T-Junction | Two-way | 0.68 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Arms

### Arms

| Arm | Name | Description | Arm type |
|---|---|---|---|
| A | Castle Road (East) | | Major |
| B | Site Access | | Minor |
| C | Castle Road (West) | | Major |

### Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
|---|---|---|---|---|---|---|
| C | 7.65 | | | 121.3 | ✓ | 1.00 |

*Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.*

### Minor Arm Geometry

| Arm | Minor arm type | Lane width (m) | Visibility to left (m) | Visibility to right (m) |
|---|---|---|---|---|
| B | One lane | 2.25 | 19 | 17 |

### Slope / Intercept / Capacity

#### Priority Intersection Slopes and Intercepts

| Junction | Stream | Intercept (Veh/hr) | Slope for A-B | Slope for A-C | Slope for C-A | Slope for C-B |
|---|---|---|---|---|---|---|
| 1 | B-A | 455 | 0.077 | 0.195 | 0.122 | 0.278 |
| 1 | B-C | 587 | 0.083 | 0.211 | - | - |
| 1 | C-B | 644 | 0.232 | 0.232 | - | - |

*The slopes and intercepts shown above do NOT include any corrections or adjustments.*

*Streams may be combined, in which case capacity will be adjusted.*

*Values are shown for the first time segment only; they may differ for subsequent time segments.*

# Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D2 | Option 3B/D - Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| A | | ✓ | 603 | 100.000 |
| B | | ✓ | 0 | 100.000 |
| C | | ✓ | 627 | 100.000 |

# Origin-Destination Data

### Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 91 | 512 |
| | B | 0 | 0 | 0 |
| | C | 532 | 95 | 0 |

# Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 0 | 0 |
| | B | 0 | 0 | 0 |
| | C | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| B-AC | 0.00 | 0.00 | 0.0 | A |
| C-AB | 0.21 | 7.45 | 0.3 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

### 17:45 - 18:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 380 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 79 | 592 | 0.133 | 78 | 0.2 | 6.996 | A |
| C-A | 393 | | | 393 | | | |
| A-B | 69 | | | 69 | | | |
| A-C | 385 | | | 385 | | | |

### 18:00 - 18:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 352 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 98 | 597 | 0.165 | 98 | 0.2 | 7.210 | A |
| C-A | 465 | | | 465 | | | |
| A-B | 82 | | | 82 | | | |
| A-C | 460 | | | 460 | | | |

### 18:15 - 18:30

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 313 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 131 | 615 | 0.213 | 131 | 0.3 | 7.434 | A |
| C-A | 559 | | | 559 | | | |
| A-B | 100 | | | 100 | | | |
| A-C | 564 | | | 564 | | | |

### 18:30 - 18:45

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 313 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 131 | 615 | 0.213 | 131 | 0.3 | 7.446 | A |
| C-A | 559 | | | 559 | | | |
| A-B | 100 | | | 100 | | | |
| A-C | 564 | | | 564 | | | |

### 18:45 - 19:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 352 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 98 | 597 | 0.165 | 99 | 0.2 | 7.229 | A |
| C-A | 465 | | | 465 | | | |
| A-B | 82 | | | 82 | | | |
| A-C | 460 | | | 460 | | | |

### 19:00 - 19:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 0 | 379 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 79 | 592 | 0.133 | 79 | 0.2 | 7.019 | A |
| C-A | 393 | | | 393 | | | |
| A-B | 69 | | | 69 | | | |
| A-C | 385 | | | 385 | | | |

# Option 3A/C - Future Base + Development , 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. |

## Junction Network

### Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | untitled | T-Junction | Two-way | 5.02 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Traffic Demand

### Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D6 | Option 3A/C - Future Base + Development | PM | ONE HOUR | 17:45 | 19:15 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

### Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| A | | ✓ | 603 | 100.000 |
| B | | ✓ | 186 | 100.000 |
| C | | ✓ | 627 | 100.000 |

## Origin-Destination Data

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 91 | 512 |
| | B | 95 | 0 | 91 |
| | C | 532 | 95 | 0 |

## Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 0 | 0 |
| | B | 0 | 0 | 0 |
| | C | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| B-AC | 0.66 | 33.73 | 1.8 | D |
| C-AB | 0.21 | 7.45 | 0.3 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

### 17:45 - 18:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 140 | 378 | 0.371 | 138 | 0.6 | 14.869 | B |
| C-AB | 79 | 592 | 0.133 | 78 | 0.2 | 6.996 | A |
| C-A | 393 | | | 393 | | | |
| A-B | 69 | | | 69 | | | |
| A-C | 385 | | | 385 | | | |

### 18:00 - 18:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 167 | 350 | 0.478 | 166 | 0.9 | 19.431 | C |
| C-AB | 98 | 597 | 0.165 | 98 | 0.2 | 7.210 | A |
| C-A | 465 | | | 465 | | | |
| A-B | 82 | | | 82 | | | |
| A-C | 460 | | | 460 | | | |

### 18:15 - 18:30

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 205 | 310 | 0.660 | 201 | 1.8 | 31.953 | D |
| C-AB | 131 | 615 | 0.213 | 131 | 0.3 | 7.434 | A |
| C-A | 559 | | | 559 | | | |
| A-B | 100 | | | 100 | | | |
| A-C | 564 | | | 564 | | | |

**18:30 - 18:45**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 205 | 310 | 0.660 | 204 | 1.8 | 33.729 | D |
| C-AB | 131 | 615 | 0.213 | 131 | 0.3 | 7.446 | A |
| C-A | 559 | | | 559 | | | |
| A-B | 100 | | | 100 | | | |
| A-C | 564 | | | 564 | | | |

**18:45 - 19:00**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 167 | 350 | 0.478 | 171 | 1.0 | 20.479 | C |
| C-AB | 98 | 597 | 0.165 | 99 | 0.2 | 7.229 | A |
| C-A | 465 | | | 465 | | | |
| A-B | 82 | | | 82 | | | |
| A-C | 460 | | | 460 | | | |

**19:00 - 19:15**

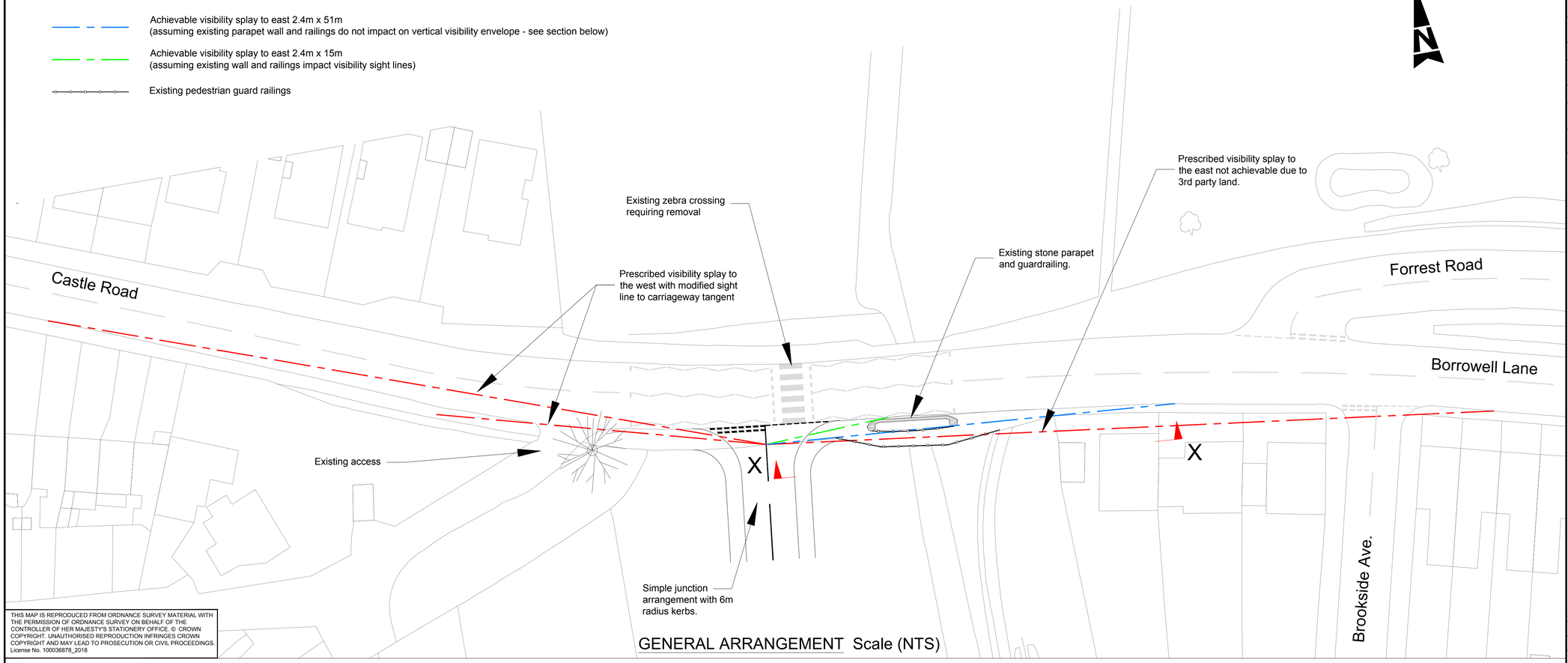
| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 140 | 377 | 0.371 | 141 | 0.6 | 15.339 | C |
| C-AB | 79 | 592 | 0.133 | 79 | 0.2 | 7.019 | A |
| C-A | 393 | | | 393 | | | |
| A-B | 69 | | | 69 | | | |
| A-C | 385 | | | 385 | | | |

DO NOT SCALE

Key:

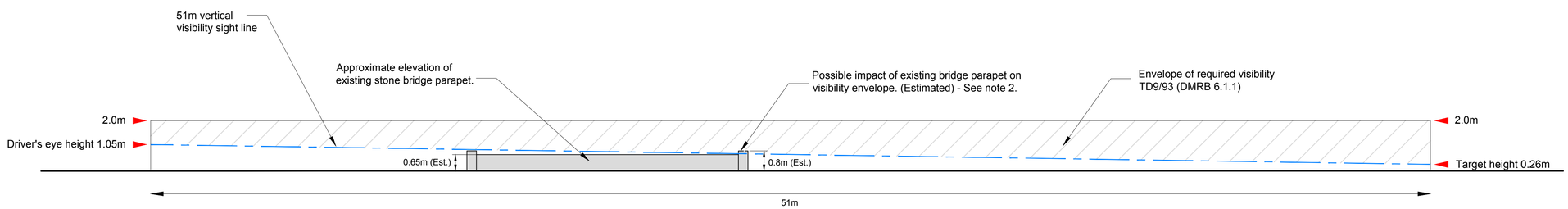
- Prescribed visibility splay 2.4m x 90m (30mph on Castle Road)
- Achievable visibility splay to east 2.4m x 51m (assuming existing parapet wall and railings do not impact on vertical visibility envelope - see section below)
- Achievable visibility splay to east 2.4m x 15m (assuming existing wall and railings impact visibility sight lines)
- Existing pedestrian guard railings

Millimetres 0 10 100






GENERAL ARRANGEMENT Scale (NTS)




SECTION X - X Scale 1:100

Notes:

1. Due to presumed antiquity of existing stone wall parapet, no modifying works are likely to be permitted in order to reduce impact on visibility sight lines.
2. Proposed cross section based on estimated dimensions for existing stone parapet and assuming level ground profile. Further detailed design and topographical survey data required to ascertain if the bridge parapet will actually affect the vertical visibility envelope.
3. If the 51m visibility splay is achievable this will represent a 2 step reduction in the prescribed standard for 30mph
4. Plan shows a simple junction arrangement with no provision made for large goods vehicles
5. Existing 'Zebra' crossing to be removed and possibly relocated.
6. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Fax: +44 (0121) 483 5252
www.atkinsglobal.com



Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH
CASTLE FARM ACCESS FEASIBILITY

Drawing Title: CASTLE ROAD
PRIORITY JUNCTION
OPTION 1

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: KEN - ATK - HGN - B4103 - DR - D - 007
(HA PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 5165029

Revision: P1

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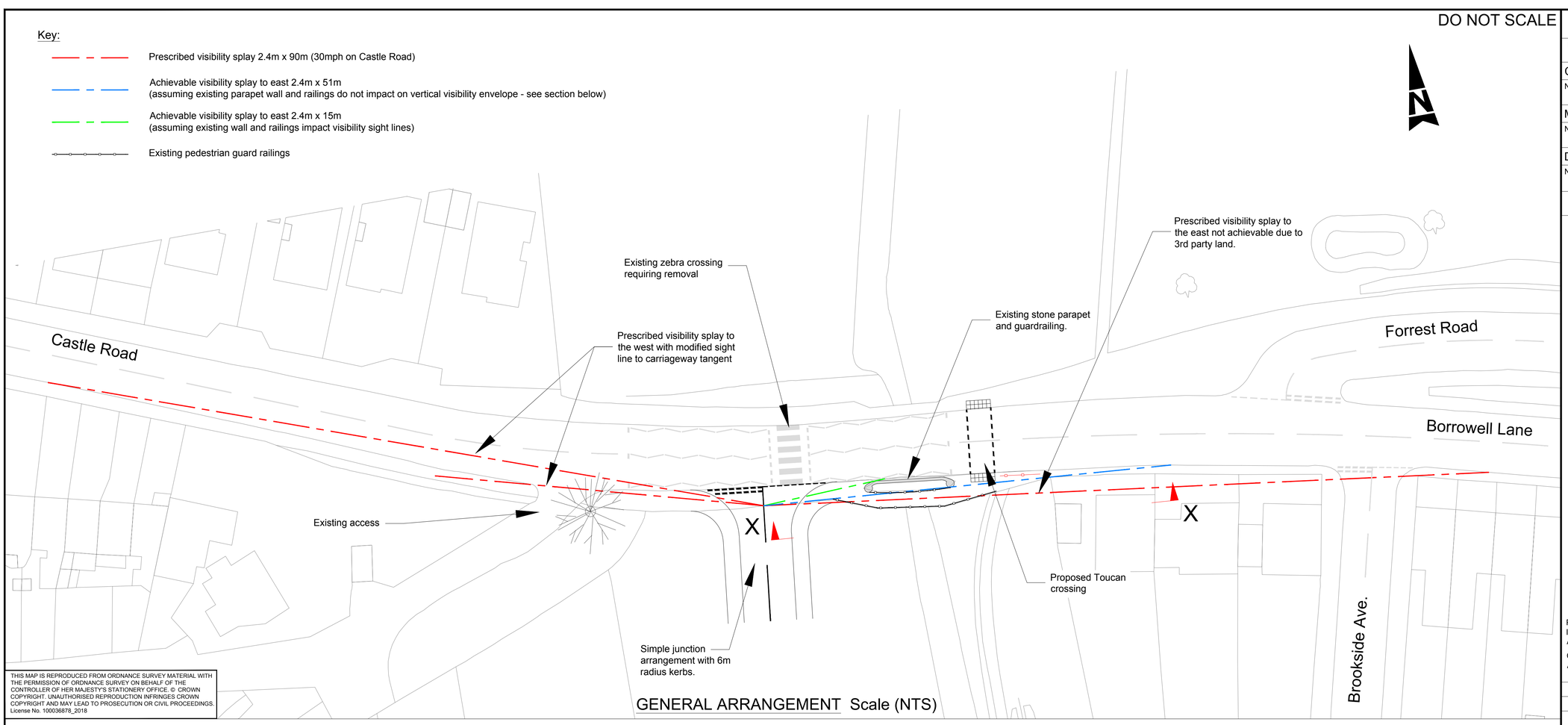
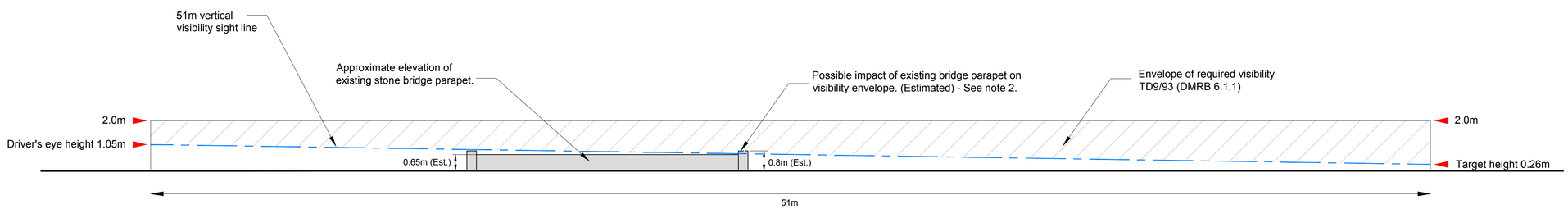
DO NOT SCALE

Key:

- Prescribed visibility splay 2.4m x 90m (30mph on Castle Road)
- Achievable visibility splay to east 2.4m x 51m (assuming existing parapet wall and railings do not impact on vertical visibility envelope - see section below)
- Achievable visibility splay to east 2.4m x 15m (assuming existing wall and railings impact visibility sight lines)
- Existing pedestrian guard railings




GENERAL ARRANGEMENT Scale (NTS)




SECTION X - X Scale 1:100

Notes:

1. Due to presumed antiquity of existing stone wall parapet, no modifying works are likely to be permitted in order to reduce impact on visibility sight lines.
2. Proposed cross section based on estimated dimensions for existing stone parapet and assuming level ground profile. Further detailed design and topographical survey data required to ascertain if the bridge parapet will actually affect the vertical visibility envelope.
3. If the 51m visibility splay is achievable this will represent a 2 step reduction in the prescribed standard for 30mph
4. Plan shows a simple junction arrangement with no provision made for large goods vehicles
5. Existing 'Zebra' crossing to be removed and possibly relocated.
6. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

Key:

- Proposed Guard Railing



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P2 | 26.04.18 | TOUCAN CROSSING ADDED | HM | PDE | TC |
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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www.atkinsglobal.com



Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH
CASTLE FARM ACCESS FEASIBILITY

Drawing Title: CASTLE ROAD
PRIORITY JUNCTION
OPTION 1

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 26/04/18 | 26/04/18 | 26/04/18 | 26/04/18 |

Drawing Number: KEN - ATK - HGN - B4103 - DR - D - 007
(HA PIN - Originator - Volume - Location - Type - Role - Number)

Project Ref. No.: 5165029

Revision: P2

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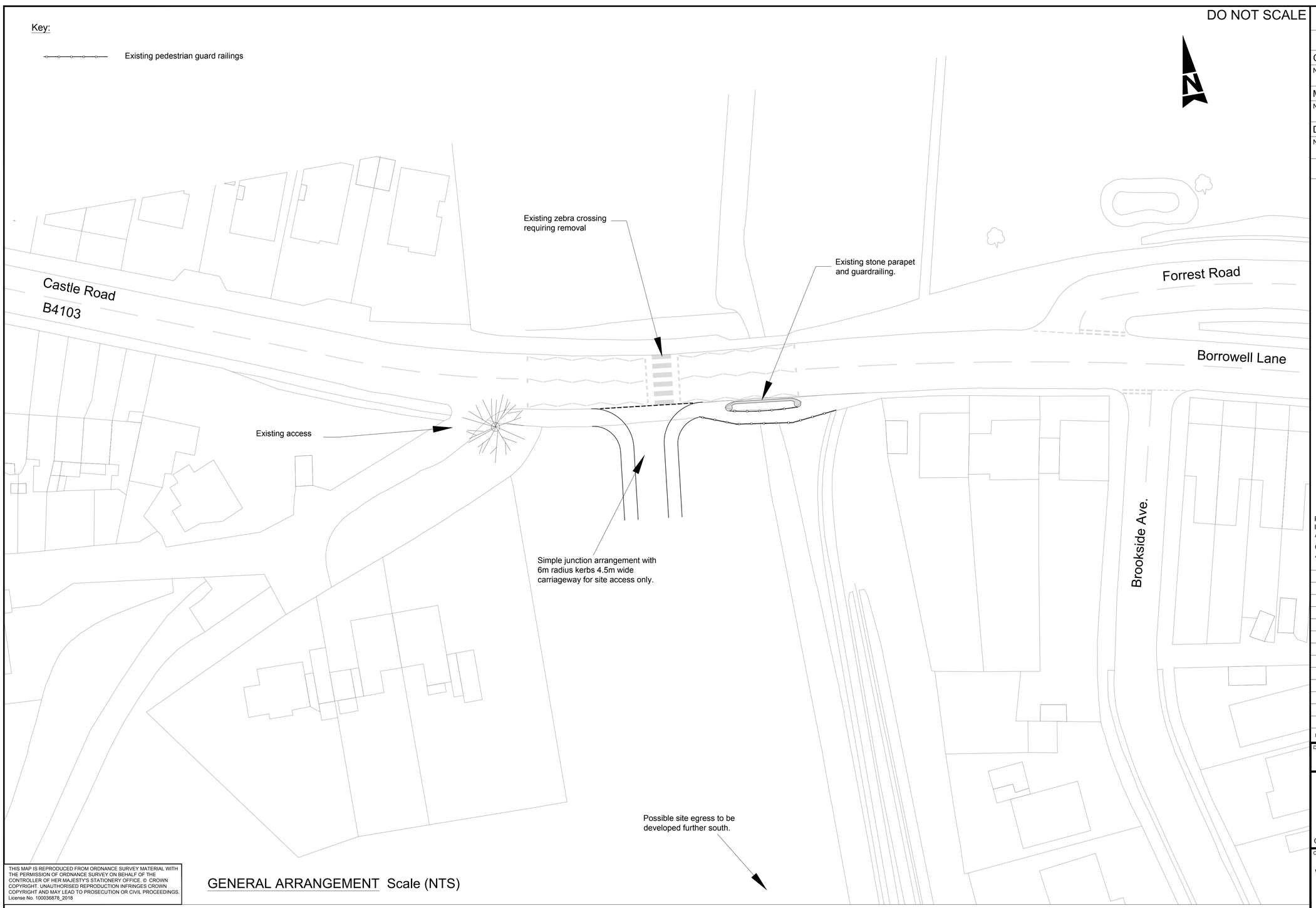
DO NOT SCALE

Key:

Existing pedestrian guard railings

Millimetres 0 10 100






GENERAL ARRANGEMENT Scale (NTS)

Notes:

1. Junction operates as 'in only' access to site.
2. Junction visibility not required as no vehicles will egress the site at this location.
3. Egress from site to be developed at available existing nodes on Fishponds Road.
4. Plan shows a simple junction arrangement with no provision made for large goods vehicles
5. Existing 'Zebra' crossing to be removed and possibly relocated.
6. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH
CASTLE FARM ACCESS FEASIBILITY

Drawing Title: CASTLE ROAD
PRIORITY JUNCTION
OPTION 2
ACCESS IN ONLY

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: KEN - ATK - HGN - B4103 - DR - D - 008
(HA PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 5165029

Revision: P1

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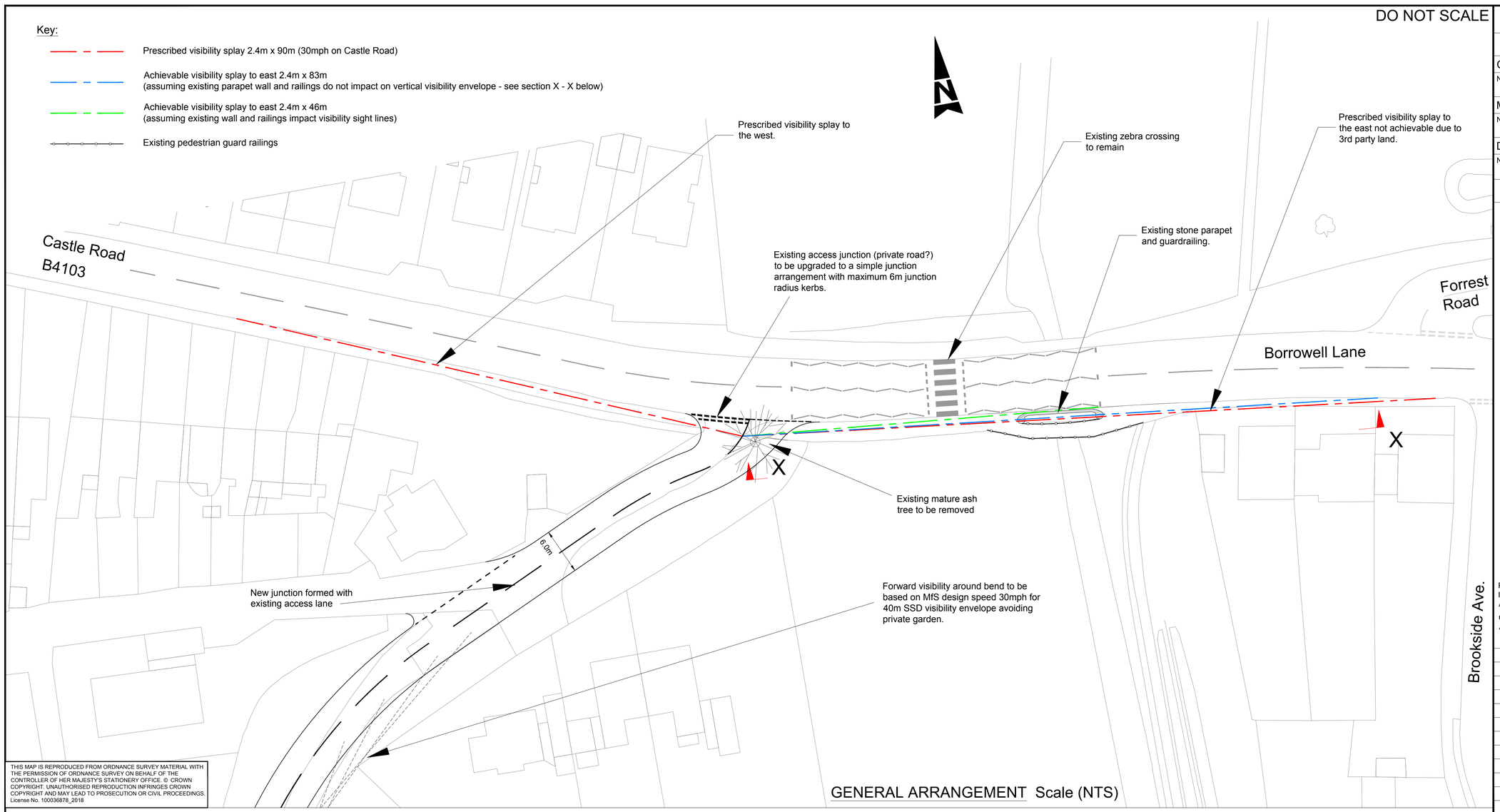
DO NOT SCALE

Key:

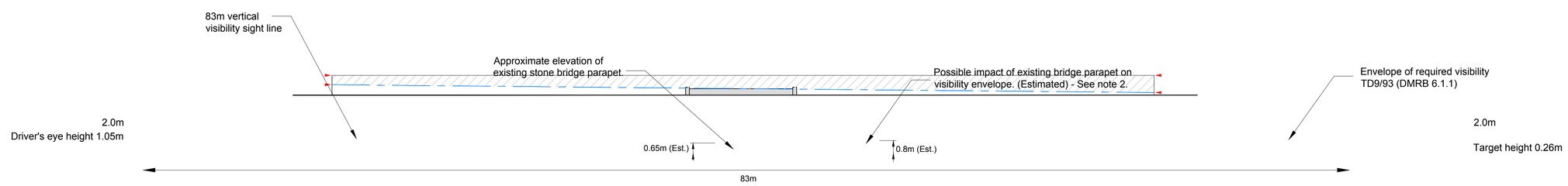
- Prescribed visibility splay 2.4m x 90m (30mph on Castle Road)
- Achievable visibility splay to east 2.4m x 83m (assuming existing parapet wall and railings do not impact on vertical visibility envelope - see section X - X below)
- Achievable visibility splay to east 2.4m x 46m (assuming existing wall and railings impact visibility sight lines)
- Existing pedestrian guard railings

Millimetres 0 10 100






GENERAL ARRANGEMENT Scale (NTS)




SECTION X - X Scale 1:150

Notes:

1. Due to presumed antiquity of existing stone wall parapet, no modifying works are likely to be permitted to the wall in order to reduce impact on visibility sight lines.
2. Proposed cross section based on estimated dimensions for existing stone parapet and assuming level ground profile. Further detailed design and topographical survey data required to ascertain if the bridge parapet will actually affect the vertical visibility envelope.
3. If the 83m visibility splay is achievable this will be 7m less than the prescribed standard for 30mph.
4. Plan shows a simple junction arrangement with no provision made for large goods vehicles.
5. Insufficient space is available to provide any footway access with the new site entry road. (but see note 9)
6. Existing mature tree required to be removed.
7. Existing 'Zebra' crossing could remain.
8. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.
9. Layout has been produced without detailed land ownership plan.

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH
CASTLE FARM ACCESS FEASIBILITY

Drawing Title: CASTLE ROAD
PRIORITY JUNCTION
OPTION 3
UPGRADE OF EXISTING ACCESS

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: KEN - ATK - HGN - B4103 - DR - D - 009
(HA PIN | Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 5165029

Revision: P1

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DO NOT SCALE

Key:

Existing pedestrian guard railings

Millimetres 0 10 100

Castle Road
B4103

Existing zebra crossing

Existing stone parapet and guardrailing.

Existing access junction (private road?) to be upgraded to a simple junction arrangement 'in only' with maximum 6m junction radius kerbs.

Forrest Road

Borrowell Lane

Brookside Ave.

1.5m

4.0m

Existing mature ash tree to remain

New junction formed with existing access lane

Forward visibility around bend to be based on MfS design speed 30mph for 40m SSD visibility envelope avoiding private garden.

Possible site egress to be developed further south.



GENERAL ARRANGEMENT Scale (NTS)

Notes:

1. Junction operates as 'in only' access to site.
2. Junction visibility not required as no vehicles will egress the site at this location.
3. Egress from site to be developed at available existing nodes on Fishponds Road.
4. Plan shows a simple junction arrangement with no provision made for large goods vehicles.
5. Proposed carriageway width of 4m insufficient to allow passing of broken down vehicles.
6. Available space sufficient to provide 1.5m wide footway on one side only for the new site entry road. (but see note 9)
7. Existing 'Zebra' crossing could remain.
8. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.
9. Layout has been produced without detailed land ownership plan.
10. Existing mature tree remains unaffected.
11. Footway provision is not possible around the new junction due to insufficient space.

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH
CASTLE FARM ACCESS FEASIBILITY

Drawing Title: CASTLE ROAD
PRIORITY JUNCTION - OPTION 5
UPGRADE OF EXISTING ACCESS
IN ONLY (AVOIDING MATURE TREE)

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: HA PIN KEN - ATK - HGN - B4103 - DR - D - 011
(Location - Originator - Volume - Type - Role - Number)

Project Ref. No.: 5165029

Revision: P1

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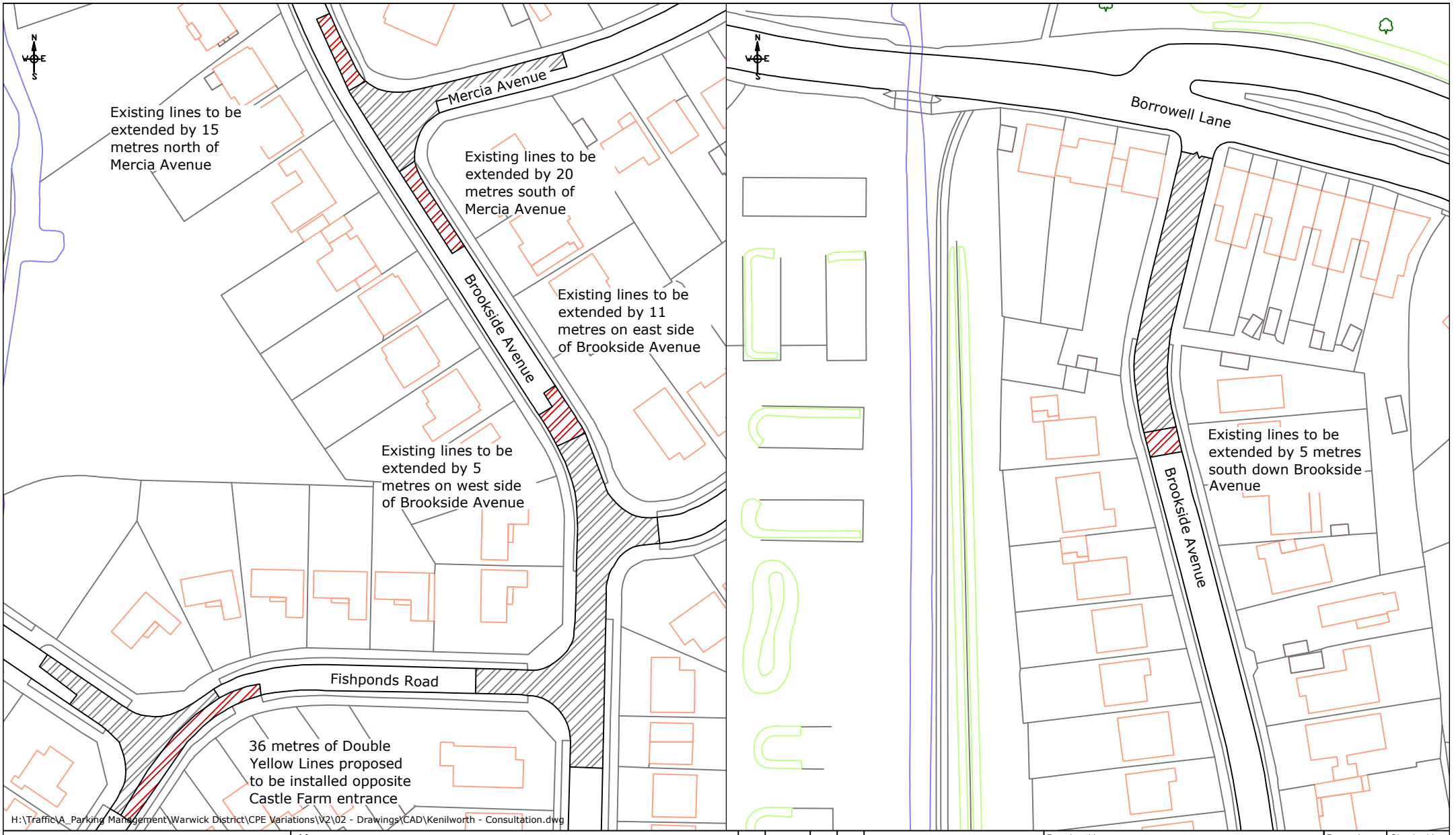


H:\Traffic\A_Parking Management\Warwick District\CPE Variations\V2\02 - Drawings\CAD\Kenilworth - Consultation.dwg

Warwickshire County Council
TRANSPORT AND ECONOMY

Traffic & Road Safety
Communities, Shire Hall Post Room
Warwick, CV34 4SP
Tel : 01926 410410

www.warwickshire.gov.uk
mailto:communities@warwickshire.gov.uk

Key

- Existing No Waiting at Any Time restrictions (Double yellow lines)
- Proposed No Waiting at Any Time restrictions (Double yellow lines)

| REV | DATE | BY | CHK | AMENDMENT |
|---|---|---|---|---|
| - | --/--/-- | - | - | - |
| - | --/--/-- | - | - | - |
| - | --/--/-- | - | - | - |
| - | --/--/-- | - | - | - |
| - | --/--/-- | - | - | - |

Drawing title
**Proposed Waiting Restrictions Fishponds Road & Brookside Avenue Kenilworth Warwick District**

Project title
**Warwick CPE Variation 2**

Drawn by **BD**

Checked by

Date **March 2017**

Scale **1:1000 @ A4_L**

Drawing number **TR/10195-02**

# Appendix D. Glasshouse Lane/Spine Road/Crewe Lane

## D.1. Option Drawings

## D.2. Junction Modelling Outputs

DO NOT SCALE

Millimetres 0 10 100

Heyville Croft

Glasshouse Spinney

Glasshouse Lane

GLASSHOUSE LANE

84.1m

85.6m

El Sub Sta

The Cotswold

7 8 4 3 2 5 63 61 56

N

GENERAL ARRANGEMENT Scale 1:250



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

Highway boundary

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 23.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: GLASSHOUSE LANE / HEYVILLE CROFT ACCESS TO SOUTHERN SITE ROUNDABOUT - CONCEPT - OPTION 1

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 23/04/18 | 23/04/18 | 23/04/18 | 23/04/18 |

Drawing Number: HA PIN KEN - ATK - HGN - SPINE - DR - D - 001 (Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 5165029

Revision: P1

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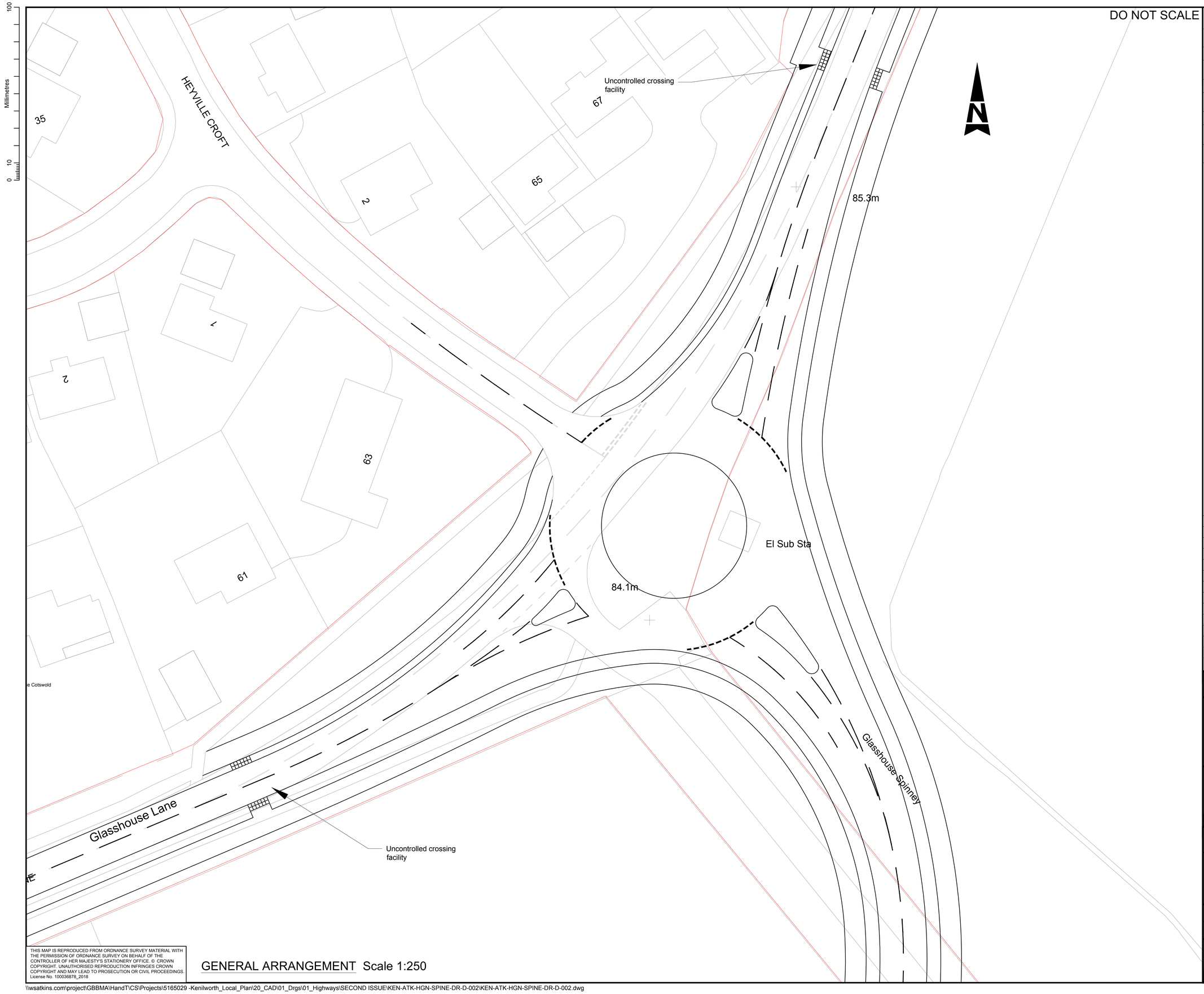




GENERAL ARRANGEMENT Scale 1:250

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

Highway boundary

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 23.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Fax: +44 (0121) 483 5252
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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: GLASSHOUSE LANE / HEYVILLE CROFT ACCESS TO SOUTHERN SITE ROUNDABOUT - CONCEPT - OPTION 2

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 23/04/18 | 23/04/18 | 23/04/18 | 23/04/18 |

Drawing Number: HA PIN KEN SPINE - Originator ATK - Volume HGN - Location - Type DR - Role D - Number 002

Project Ref. No.: 5165029

Revision: P1

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DO NOT SCALE

Millimetres 0 10 100

HEYVILLE CROFT

35

67

65

2

1

2

63

61

Uncontrolled crossing facility

85.3m

84.1m

El Sub Sta

Glasshouse Spinney

Glasshouse Lane

Uncontrolled crossing facility

e Cotswold

NE

N



GENERAL ARRANGEMENT Scale 1:250

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

Highway boundary

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P2 | 21.05.18 | WESTERN FOOTWAY REMOVED | AE | PDE | TC |
| P1 | 23.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: GLASSHOUSE LANE / HEYVILLE CROFT ACCESS TO SOUTHERN SITE ROUNDABOUT - CONCEPT - OPTION 2

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| Original Size | Date | Date | Date | Date |
| A1 | 21/05/18 | 21/05/18 | 21/05/18 | 21/05/18 |

Drawing Number: HA PIN KEN - Originator ATK - Volume HGN - Location SPINE - Type DR - Role D - Number 002

Project Ref. No.: 5165029

Revision: P2

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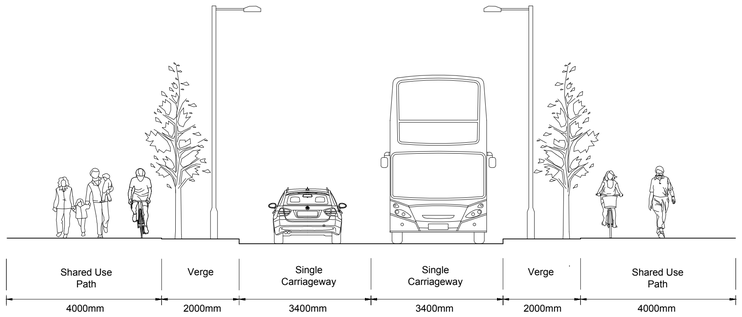
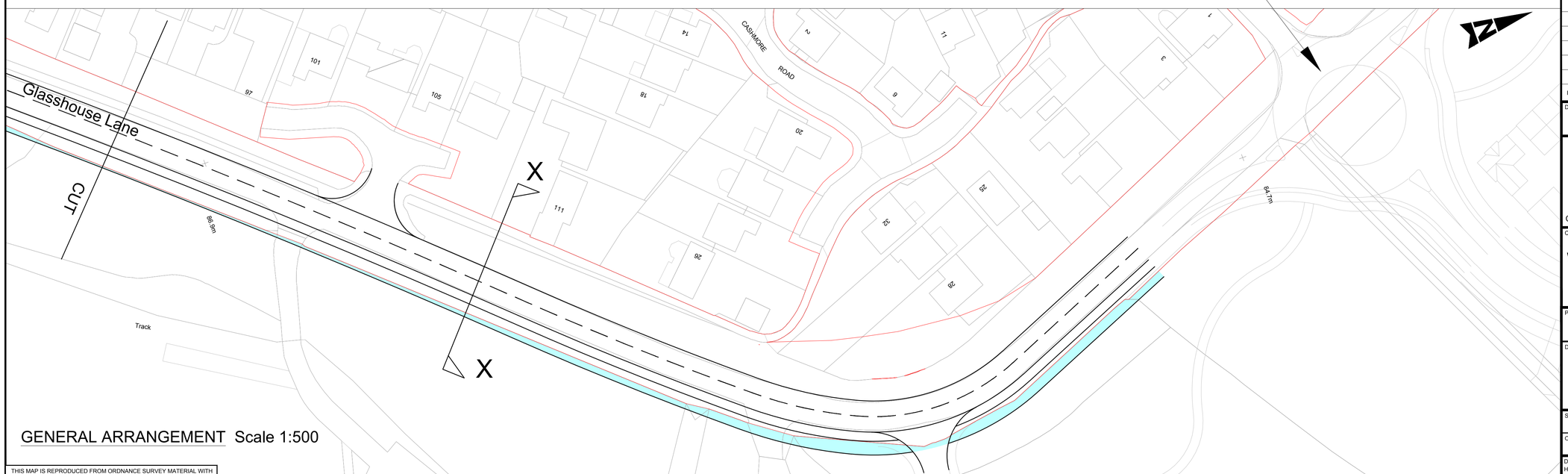
DO NOT SCALE


GENERAL ARRANGEMENT Scale 1:500




SPINE ROAD TYPICAL SECTION X - X
Scale (NTS)

Proposed access to northern site




GENERAL ARRANGEMENT Scale 1:500



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**
NONE

**MAINTENANCE/CLEANING**
NONE

**DECOMMISSIONING/DEMOLITION**
NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

- Highway boundary
- Additional land required for upgraded highway geometry

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P4 | 25.07.18 | SECTION REVISED | AE | PDE | TC |
| P3 | 13.06.18 | PROPOSED SUP INDICATED AS 4m WIDE | AE | PDE | TC |
| P2 | 21.05.18 | WESTERN FOOTWAY REMOVED | AE | PDE | TC |
| P1 | 23.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION
Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: GLASSHOUSE LANE / HEYVILLE CROFT GLASSHOUSE LANE UPGRADE TO SPINE ROAD GEOMETRY - CONCEPT

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| Original Size: A1 | Date: 13/06/18 | Date: 13/06/18 | Date: 13/06/18 | Date: 13/06/18 |

Drawing Number: HA PIN KEN - ATK - HGN - SPINE - DR - D - 003 (Location - Originator - Volume - Type - Role - Number)
Project Ref. No.: 5165029
Revision: P4

P:\GBBMA\HandT\CS\Projects\5165029 -Kenilworth_Local_Plan\20_CAD\01_Drgs\01_Highways\SECOND ISSUE\KEN-ATK-HGN-SPINE-DR-D-003\KEN-ATK-HGN-SPINE-DR-D-003_P4.dwg

DO NOT SCALE

Millimetres 0 10 100

Glasshouse Lane

Pond

STANSFIELD GROVE

POTTS CLOSE

ASPLEN COURT

RILEY CLOSE

CASHMORE ROAD

DENCER DRIVE

WILSON GROVE

84.7m

Tennis Court

Woodsi

(Management Training

Access to Woodside Conference Centre

Woodside Lodge

Glasshouse Spinney

Pond

Path (um)

GENERAL ARRANGEMENT Scale 1:500



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

Highway boundary

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 15.05.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: STANSFIELD LANE ROUNDABOUT WOODSIDE CONFERENCE CENTRE PRIORITY JUNCTION

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 15/05/18 | 15/05/18 | 15/05/18 | 15/05/18 |

Drawing Number: HA PIN KEN - ATK - HGN - SPINE - DR - D - 004 (Location - Originator - Volume - Type - Role - Number)

Project Ref. No.: 5165029

Revision: P1

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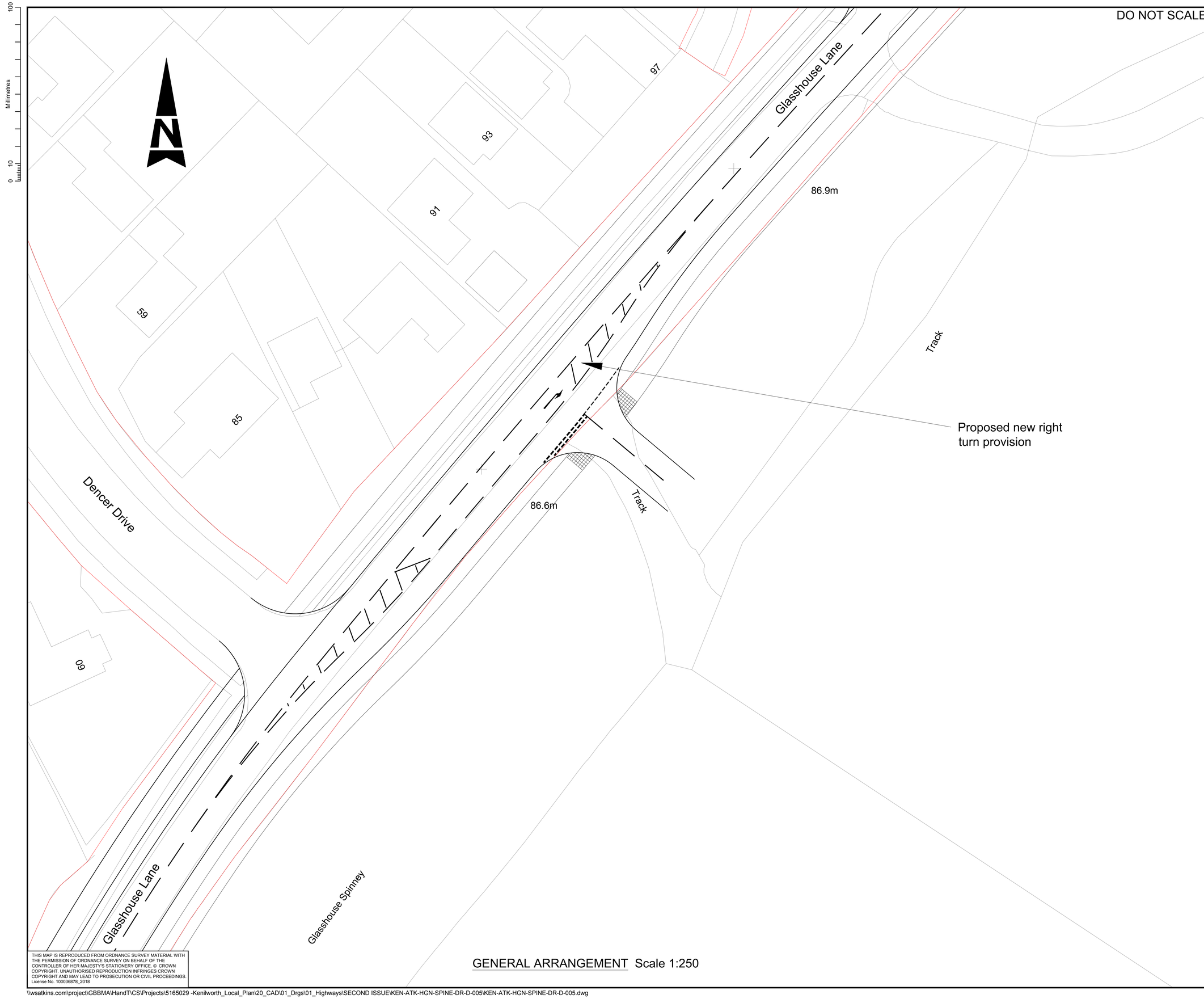
DO NOT SCALE




GENERAL ARRANGEMENT Scale 1:250



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

Highway boundary

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 11.06.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: PROPOSED RIGHT TURN PROVISION

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 11/06/18 | 11/06/18 | 11/06/18 | 11/06/18 |

Drawing Number: HA PIN KEN - ATK - HGN - SPINE - DR - D - 005 (Originator | Volume | Location | Type | Role | Number)

Project Ref. No.: 5165029

Revision: P1

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DO NOT SCALE

Millimetres 0 10 100

DENCER DRIVE

GLASSHOUSE LANE

LEYES LANE

WISLEY GROVE

LEYES LANE

CORNHILL GROVE

DENCER DRIVE

LB

4m Shared Use Path

New Access for Wisley Grove

'Toucan' pedestrian / cycle crossing

The Knoll House

'Toucan' pedestrian / cycle crossing

Wisley Grove closed to Dencer Drive

New turning head

New signalised junction with Glasshouse Lane

4m Shared Use Path

New Signalised Junction

New turning head

'Toucan' pedestrian / cycle crossing

Driveway access maintained to new road alignment

TCB



GENERAL ARRANGEMENT Scale (NTS)

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P2 | 26.04.18 | GLASSHOUSE JUNCTION DESIGN ADDED | AE | PDE | TC |
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: LEYES LANE / DENCER DRIVE SIGNALISED JUNCTION GLASSHOUSE LANE / SCHOOL ACCESS SIGNALISATION - CONCEPT

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| Original Size: A1 | Date: 26/04/18 | Date: 26/04/18 | Date: 26/04/18 | Date: 26/04/18 |

Drawing Number HA PIN: KEN - ATK - HGN - LEYS - DR - D - 001
(Location | Originator | Volume | Type | Role | Number)

Project Ref. No.: 5165029

Revision: P2

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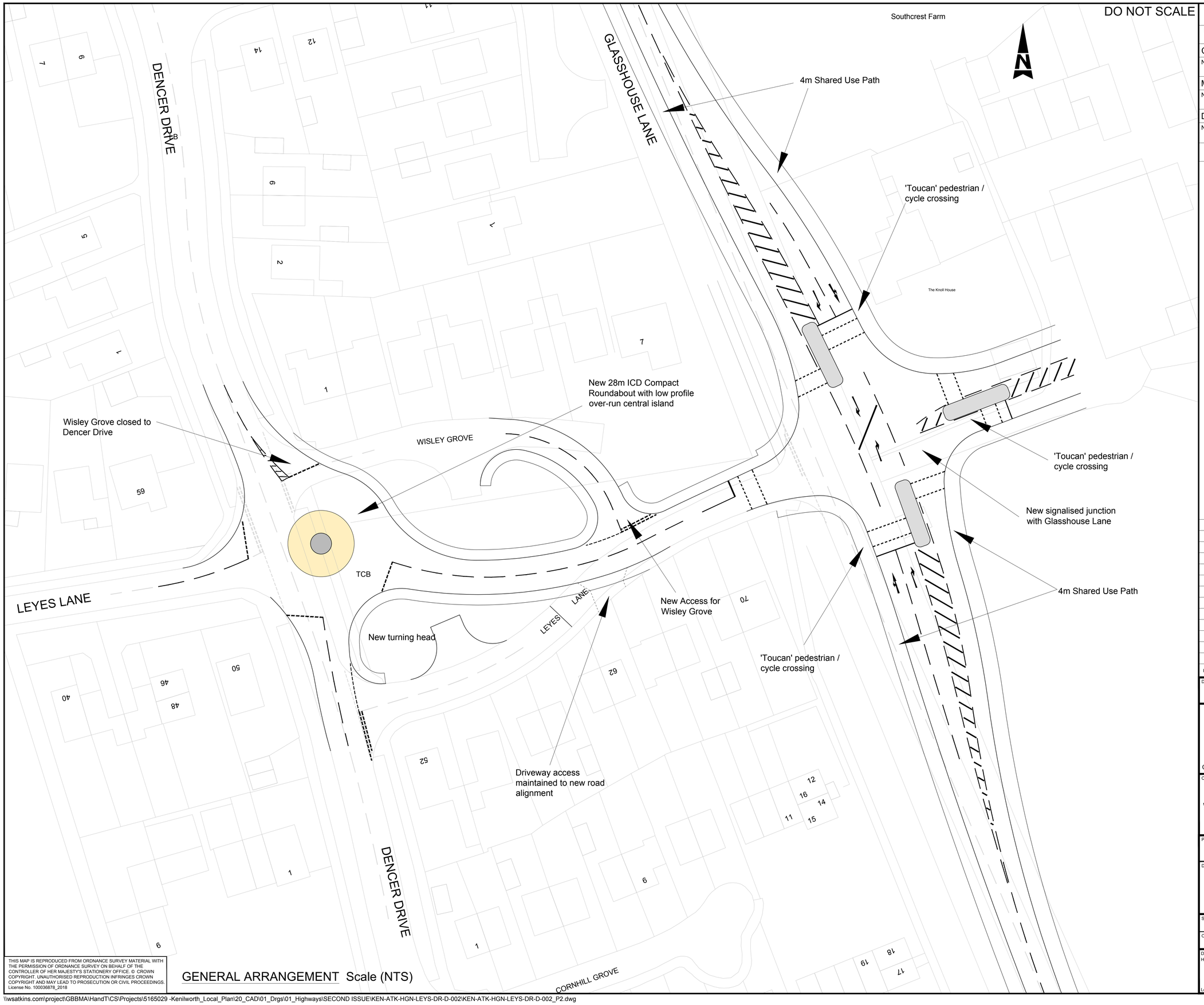
DO NOT SCALE

Millimetres 0 10 100

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GENERAL ARRANGEMENT Scale (NTS)

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P2 | 26.04.18 | GLASSHOUSE JUNCTION DESIGN ADDED | AE | PDE | TC |
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: LEYES LANE / DENCER DRIVE ROUNDABOUT JUNCTION GLASSHOUSE LANE / SCHOOL ACCESS SIGNALISATION

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 26/04/18 | 26/04/18 | 26/04/18 | 26/04/18 |

Drawing Number: HA PIN KEN - Originator ATK - Volume HGN - Location LEYS - Type DR - Role D - Number 002

Project Ref. No.: 5165029

Revision: P2

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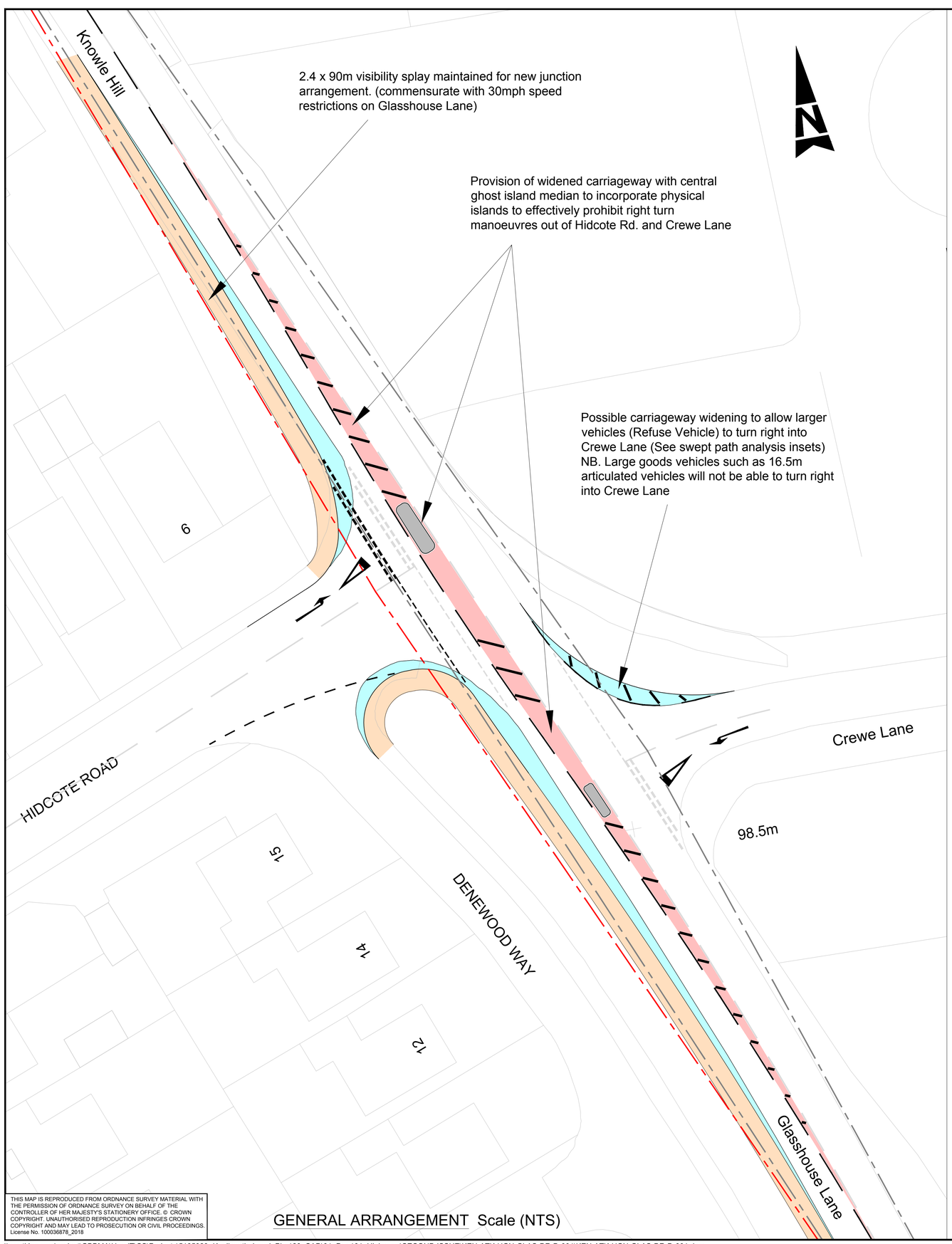
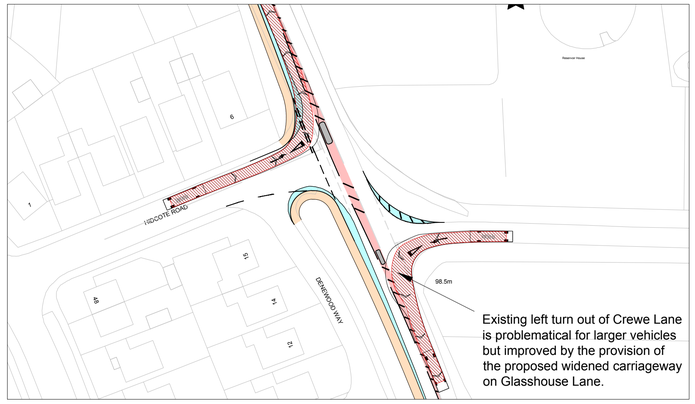
DO NOT SCALE

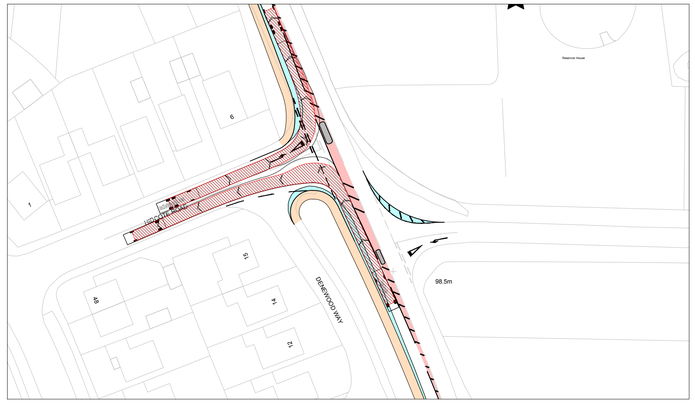



GENERAL ARRANGEMENT Scale (NTS)

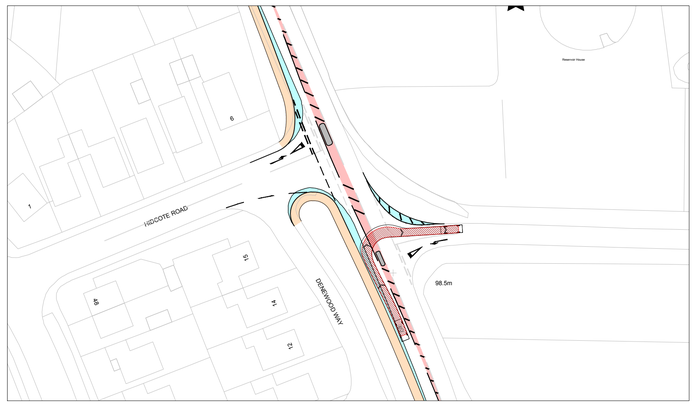





Swept path analysis - Single Deck Bus - Scale (NTS)




Swept path analysis - Refuse Vehicle - Scale (NTS)




Swept path analysis - Car - Scale (NTS)

Key:

- Proposed carriageway widening (subject to land ownership)
- Proposed new footway (subject to land ownership)
- Proposed central hatched ghost island with coloured surfacing
- Proposed 2.4 x 90m visibility splay
- Existing 2.4 x 90m visibility splay
- Highway boundary

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

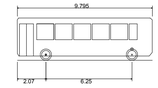
**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

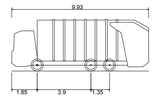



Single Deck Bus

| | |
|---|---|
| Overall Length | 9.795m |
| Overall Width | 2.500m |
| Overall Body Height | 3.070m |
| Min Body Ground Clearance | 0.306m |
| Track Width | 2.322m |
| Lock to Lock Time | 6.00s |
| Kerb to Kerb Turning Radius | 10.111m |


Large Car

| | |
|---|---|
| Overall Length | 4.988m |
| Overall Width | 1.793m |
| Overall Body Height | 1.502m |
| Min Body Ground Clearance | 0.287m |
| Track Width | 1.700m |
| Lock to Lock Time | 4.00s |
| Kerb to Kerb Turning Radius | 6.200m |




Vulture 2225 (with Mercedes Econic 2628LL 6x4 chassis)

| | |
|---|---|
| Overall Length | 9.930m |
| Overall Width | 2.490m |
| Overall Body Height | 3.749m |
| Min Body Ground Clearance | 0.302m |
| Track Width | 2.490m |
| Lock to Lock Time | 4.00s |
| Wall to Wall Turning Radius | 9.100m |

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: KNOWLE HILL / CREWE LANE JUNCTION CONCEPT - OPTION 1 LEFT OUT ONLY ARRANGEMENT

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 17/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: HA PIN KEN - Originator ATK - Volume HGN - Location GLAS - Type DR - Role D - Number 001

Project Ref. No.: 5165029

Revision: P1

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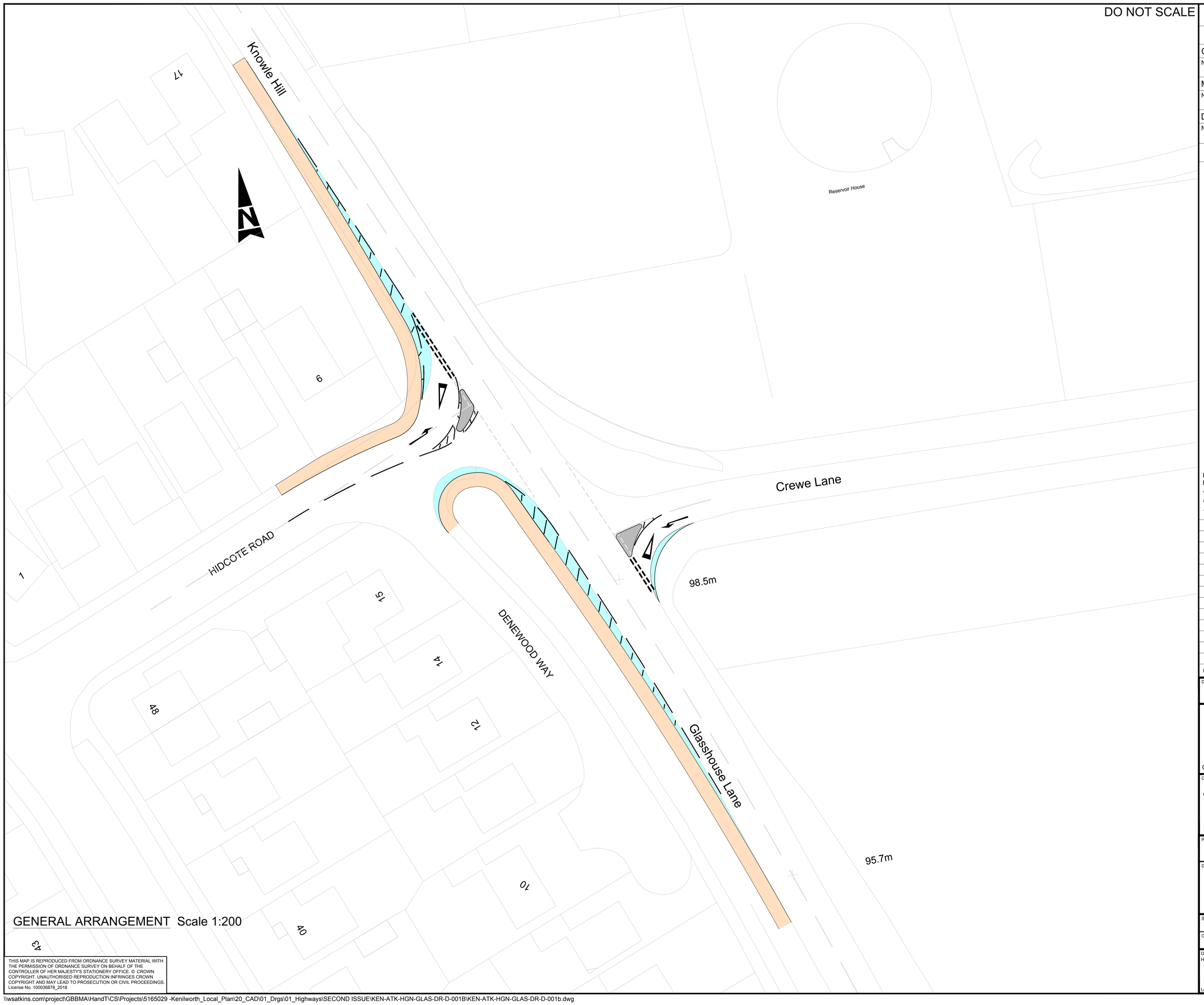
DO NOT SCALE

Millimetres 0 10 100




GENERAL ARRANGEMENT Scale 1:200



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

- Proposed carriageway widening (subject to land ownership)
- Proposed new footway (subject to land ownership)

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: KNOWLE HILL / CREWE LANE JUNCTION CONCEPT - OPTION 1B LEFT OUT ONLY ALTERNATIVE ARRANGEMENT

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: HA PIN KEN - ATK - HGN - GLAS - DR - D - 001B (Location | Originator | Volume | Type | Role | Number)

Project Ref. No.: 5165029

Revision: P1

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DO NOT SCALE

Millimetres 0 10 100


GENERAL ARRANGEMENT Scale 1:200



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

- Proposed carriageway widening (subject to land ownership)
- Proposed new footway (subject to land ownership)
- Proposed new highway verge

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: KNOWLE HILL / CREWE LANE JUNCTION CONCEPT - OPTION 2 IMPROVED VISIBILITY OUT OF CREWE LANE

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| Original Size: A1 | Date: 10/04/18 | Date: 10/04/18 | Date: 10/04/18 | Date: 10/04/18 |

Drawing Number: HA PIN KEN - ATK - HGN - Location GLAS - DR - D - 002 (Originator - Volume - Type - Role - Number)

Project Ref. No.: 5165029

Revision: P1

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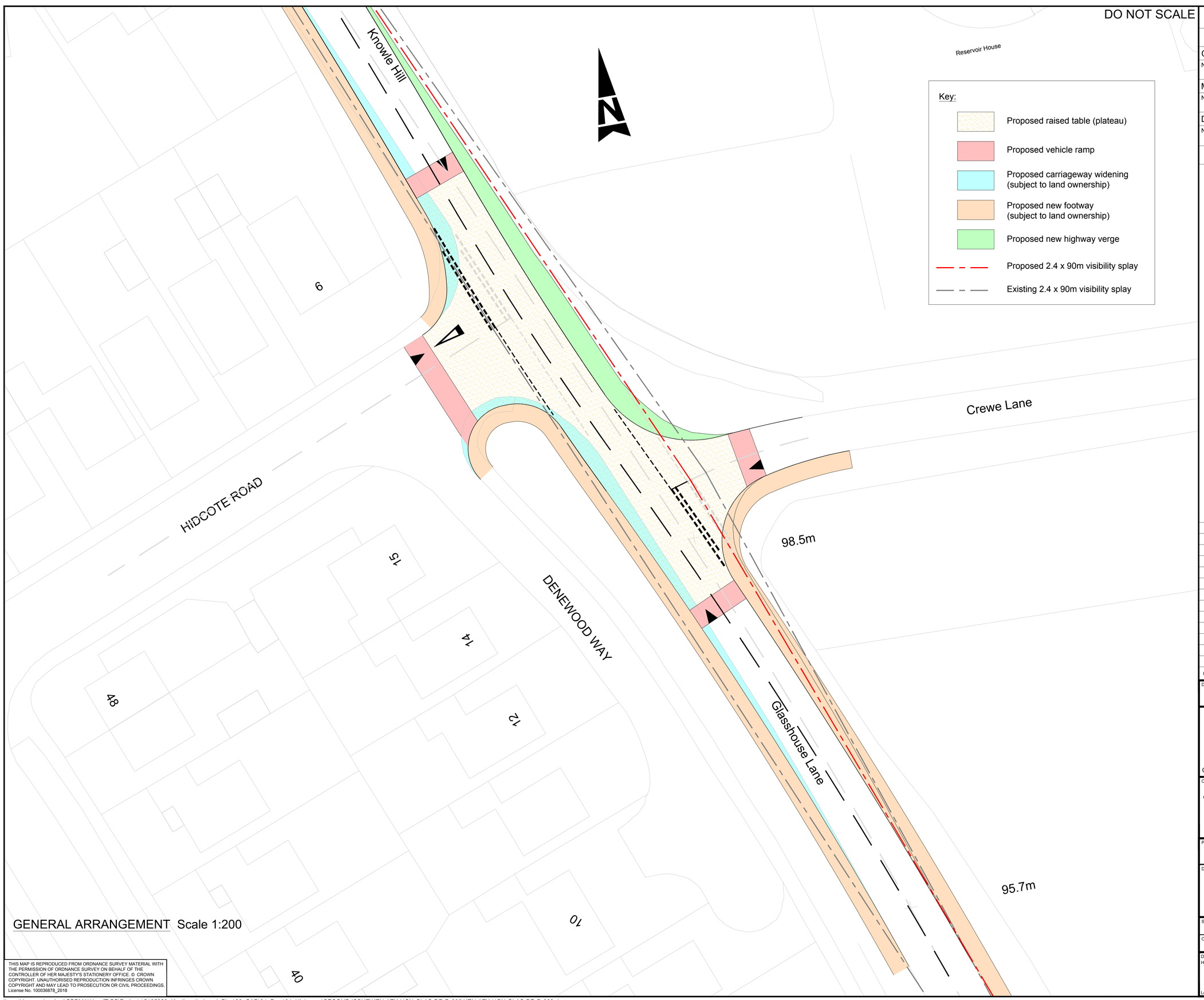
DO NOT SCALE




GENERAL ARRANGEMENT Scale 1:200



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: KNOWLE HILL / CREWE LANE JUNCTION CONCEPT - OPTION 3 TRAFFIC CALMED JUNCTION

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| Original Size: A1 | Date: 10/04/18 | Date: 10/04/18 | Date: 10/04/18 | Date: 10/04/18 |

Drawing Number: HA PIN KEN GLAS - Originator ATK - Volume HGN - Location - Type DR - Role D - Number 003

Project Ref. No.: 5165029

Revision: P1

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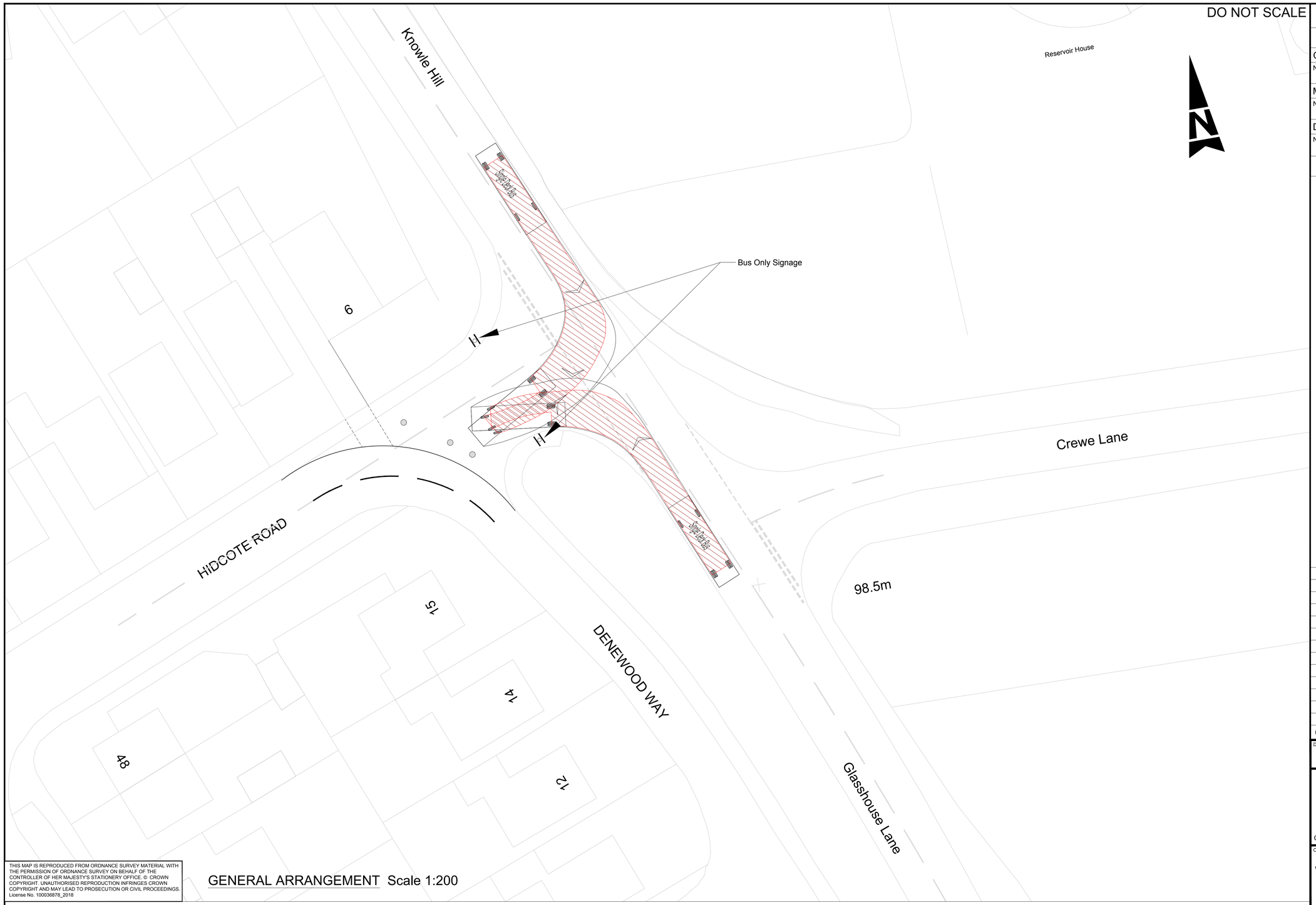
DO NOT SCALE






GENERAL ARRANGEMENT Scale 1:200

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

Key:

Bus Gate Bollards

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

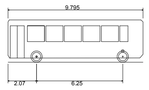
**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement




Single Deck Bus

| | |
|---|---|
| Overall Length | 9.795m |
| Overall Width | 2.500m |
| Overall Body Height | 3.070m |
| Min Body Ground Clearance | 0.308m |
| Track Width | 2.322m |
| Lock to Lock Time | 6.00s |
| Kerb to Kerb Turning Radius | 10.111m |

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: KNOWLE HILL / CREWE LANE JUNCTION CONCEPT - OPTION 4 BUS & CYCLE ONLY

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: HA PIN KEN GLAS - Originator ATK - DR - Volume HGN - D - 004 (Location | Type | Role | Number)

Project Ref. No.: 5165029

Revision: P1

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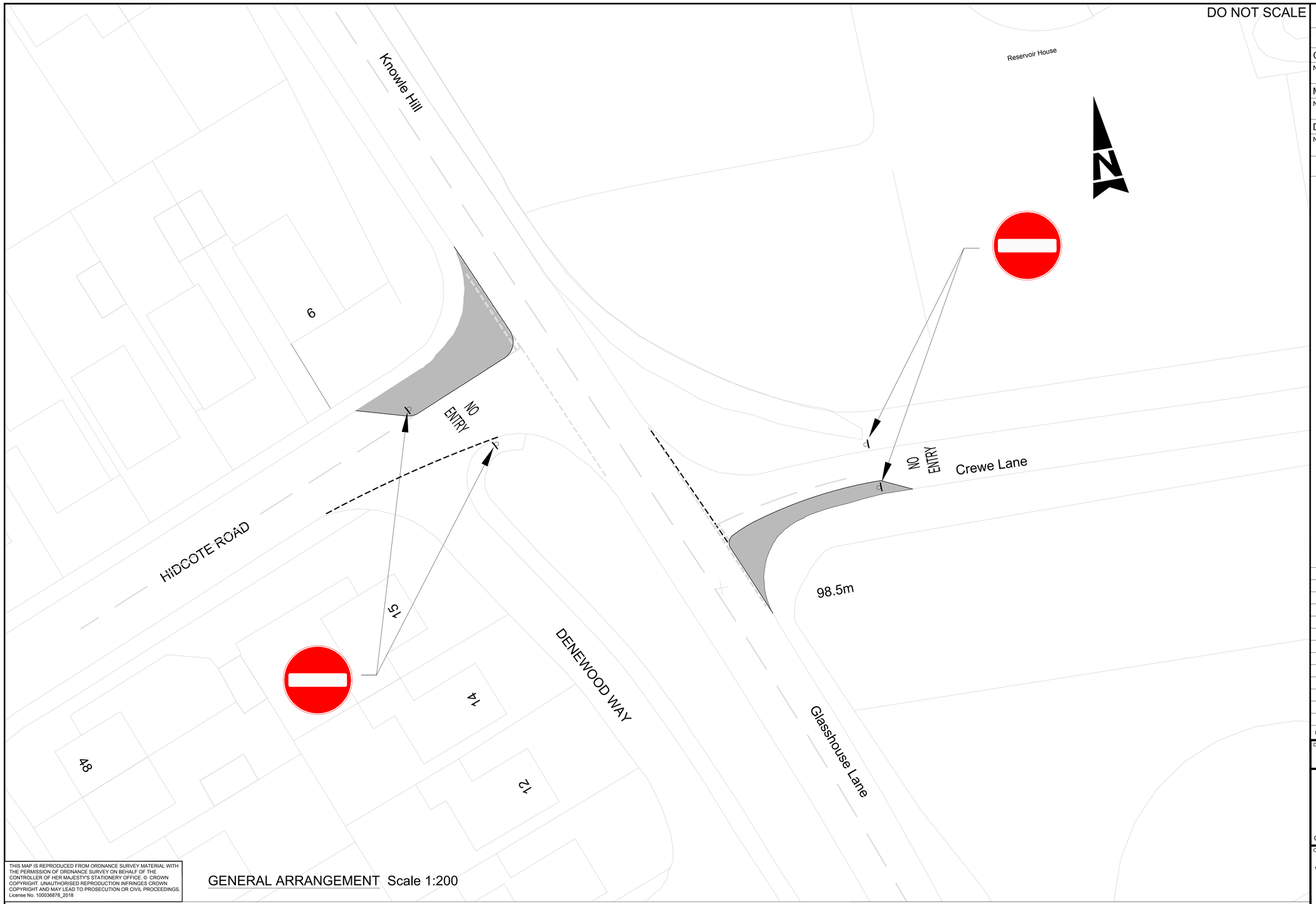
DO NOT SCALE






GENERAL ARRANGEMENT Scale 1:200

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

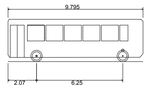
**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement




Single Deck Bus

| | |
|---|---|
| Overall Length | 9.795m |
| Overall Width | 2.500m |
| Overall Body Height | 3.070m |
| Min Body Ground Clearance | 0.306m |
| Track Width | 2.322m |
| Lock to Lock Time | 6.00s |
| Kerb to Kerb Turning Radius | 10.111m |

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: KNOWLE HILL / CREWE LANE JUNCTION CONCEPT - OPTION 5 IN ONLY FROM GLASSHOUSE LANE

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: HA PIN KEN - ATK - HGN - GLAS - DR - D - 005 (Location | Originator | Volume | Type | Role | Number)

Project Ref. No.: 5165029

Revision: P1

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DO NOT SCALE

Millimetres 0 10 100

N

CUT

Crewe Lane

CYCLES ONLY

98.5m

GENERAL ARRANGEMENT Scale 1:500

Golf Club

Access only for westbound traffic from Golf Club entrance -
No entry to Knowle Hill except for cyclists/pedestrians

Proposed Development
Masterplan

Start of proposed 2m
footway provision

4m wide Shared
use path

Location of proposed
spine road access onto
Crewe Lane



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

2.0m Footway provision

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P2 | 16.05.18 | LAYOUT CHANGED | AE | PDE | TC |
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: KNOWLE HILL / CREWE LANE JUNCTION CONCEPT - OPTION 6 CREWE LANE UPGRADE

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| Original Size: A1 | Date: 16/05/18 | Date: 16/05/18 | Date: 16/05/18 | Date: 16/05/18 |

Drawing Number: HA PIN KEN GLAS - Originator ATK - DR - Volume HGN - D - Location - Type - Role - 006 - Number

Project Ref. No.: 5165029

Revision: P2

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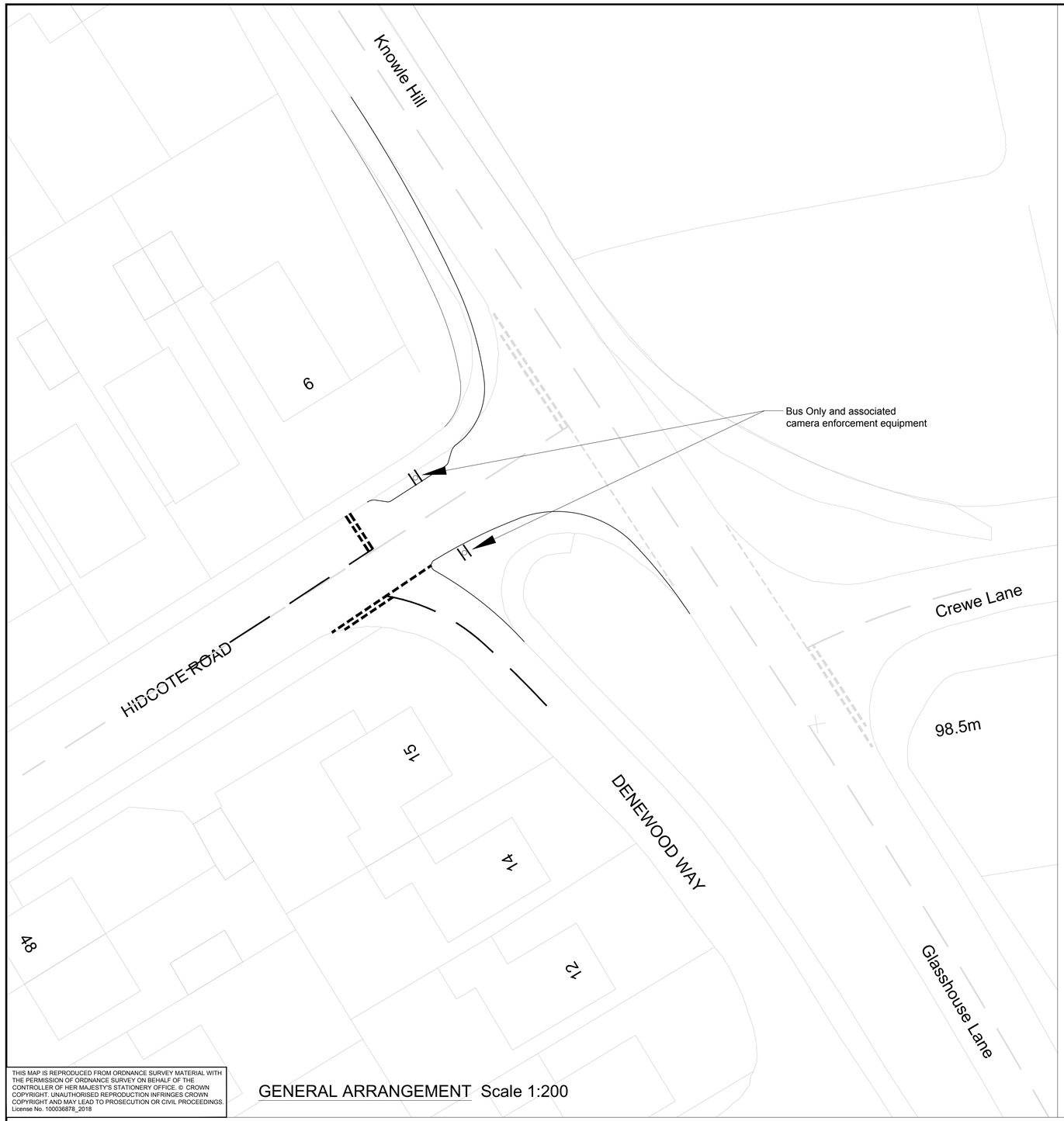
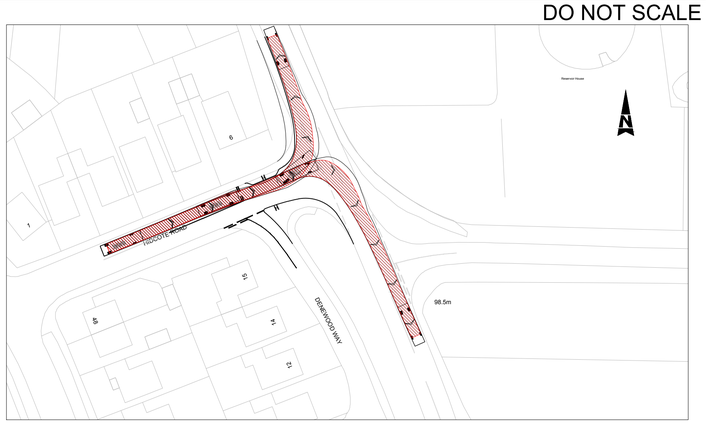
DO NOT SCALE

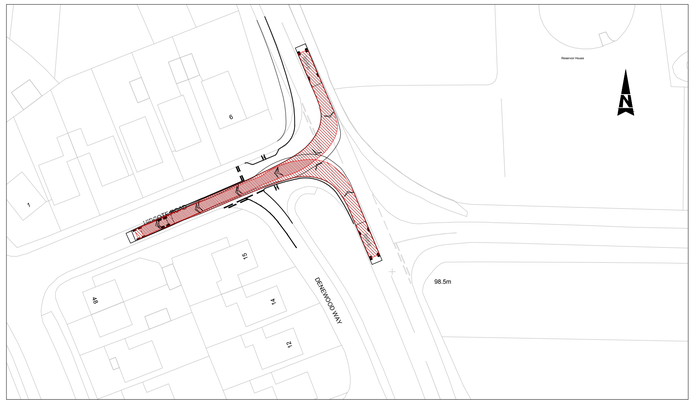





GENERAL ARRANGEMENT Scale 1:200




Swept path analysis - Single Deck Bus - Scale (NTS)




Swept path analysis - Single Deck Bus - Scale (NTS)

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

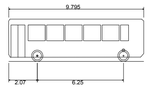
**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement




Single Deck Bus

| | |
|---|---|
| Overall Length | 9.795m |
| Overall Width | 2.500m |
| Overall Body Height | 3.070m |
| Min Body Ground Clearance | 0.306m |
| Track Width | 2.322m |
| Lock to Lock Time | 6.00s |
| Kerb to Kerb Turning Radius | 10.111m |

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Tel: +44 (0121) 483 5000
Fax: +44 (0121) 483 5252
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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: KNOWLE HILL / CREWE LANE JUNCTION CONCEPT - OPTION 7 BUS & CYCLE ONLY

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| Original Size: A1 | Date: 10/04/18 | Date: 10/04/18 | Date: 10/04/18 | Date: 10/04/18 |

Drawing Number: HA PIN KEN GLAS - ATK - HGN - DR - D - 007 (Location - Originator - Volume - Type - Role - Number)

Project Ref. No.: 5165029

Revision: P1

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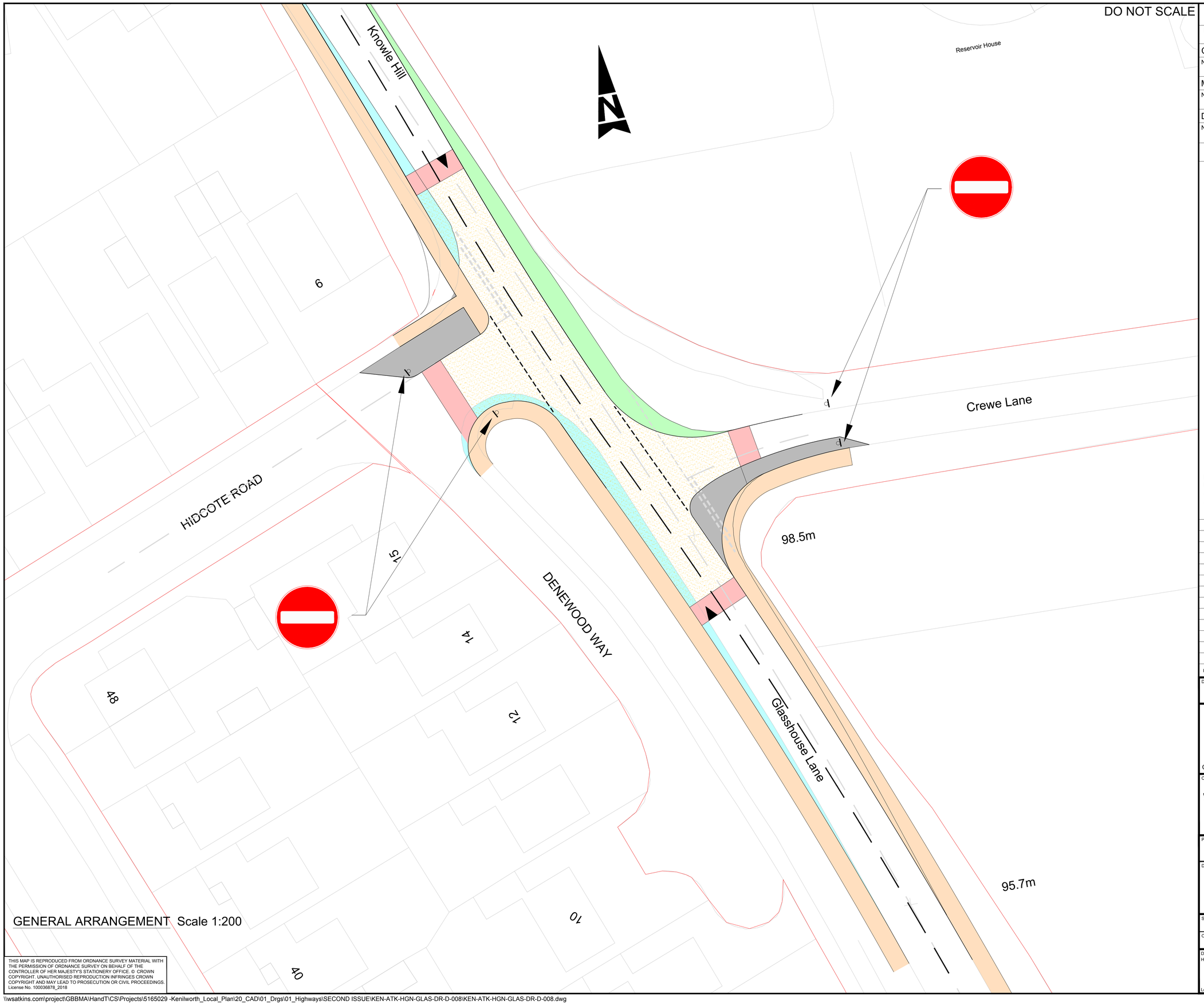
DO NOT SCALE

Millimetres 0 10 100




GENERAL ARRANGEMENT Scale 1:200



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

Key:

- Proposed raised table (plateau)
- Proposed vehicle ramp
- Proposed carriageway widening (subject to land ownership)
- Proposed new footway (subject to land ownership)
- Proposed new highway verge
- Proposed new build-out
- Highway boundary

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 13.06.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: KNOWLE HILL / CREWE LANE JUNCTION CONCEPT - OPTION 3b TRAFFIC CALMED JUNCTION

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 13/06/18 | 13/06/18 | 13/06/18 | 13/06/18 |

Drawing Number: HA PIN KEN GLAS - Originator ATK - DR - Volume HGN - D - Number 008

Project Ref. No.: 5165029

Revision: P1

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DO NOT SCALE

Millimetres 0 10 100

Existing carriageway on Crewe Lane remains unchanged. New 2m footway on south side proposed.

Crewe Lane

Crewe Lane widened to 6.9m

Access only to Golf Club and residential properties

Golf Club

4m wide Shared use path

Start of proposed highway geometry upgrade

Location of proposed spine road access onto Crewe Lane

4m wide Shared use path

N



GENERAL ARRANGEMENT Scale 1:250

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

- 2.0m Footway provision
- Highway boundary

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 15.05.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH SPINE ROAD (NORTHERN SECTION)

Drawing Title: CREWE LANE / SITE ACCESS JUNCTION

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 15/05/18 | 15/05/18 | 15/05/18 | 15/05/18 |

Drawing Number: HA PIN KEN - ATK - HGN - CREW - DR - D - 001 (Location - Originator - Volume - Type - Role - Number)

Project Ref. No.: 5165029

Revision: P1

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# Junctions 9

## ARCADY 9 - Roundabout Module



**Filename:** Task 3_Glasshouse Lane Southern Section (2029).j9
**Path:** \\wsatkins.com\project\GBBMA\HandT\CS\Projects\5165029 - Kenilworth_Local_Plan\08_Technical\Task 3_Glasshous Lane Junctions
**Report generation date:** 26/04/2018 15:38:13

---



## Summary of junction performance

| | AM | | | | PM | | | |
|---|---|---|---|---|---|---|---|---|
| | Queue (Veh) | Delay (s) | RFC | LOS | Queue (Veh) | Delay (s) | RFC | LOS |
| | Local Plan (2029) | | | | | | | |
| Arm 1 | 0.3 | 3.18 | 0.23 | A | 0.2 | 3.05 | 0.17 | A |
| Arm 2 | 0.5 | 3.54 | 0.34 | A | 0.4 | 3.16 | 0.27 | A |
| Arm 3 | 0.2 | 3.62 | 0.19 | A | 0.5 | 4.42 | 0.33 | A |
| Arm 4 | 0.6 | 7.70 | 0.38 | A | 0.8 | 10.04 | 0.43 | B |

*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** | (untitled) |
| **Location** | |
| **Site number** | |
| **Date** | 26/04/2018 |
| **Version** | |
| **Status** | (new file) |
| **Identifier** | |
| **Client** | |
| **Jobnumber** | |
| **Enumerator** | WSATKINS\DALE3752 |
| **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 | Veh | Veh | perHour | s | -Min | perMin |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|---|---|---|---|---|
| | | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D1 | Local Plan (2029) | AM | ONE HOUR | 08:00 | 09:30 | 15 |
| D2 | Local Plan (2029) | PM | ONE HOUR | 17:00 | 18:30 | 15 |

## Analysis Set Details

| ID | Network flow scaling factor (%) |
|---|---|
| A1 | 100.000 |

# Local Plan (2029), AM

### 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. |

## Junction Network

### Junctions

| Junction | Name | Junction Type | Arm order | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | Glasshouse Lane / Spine Road Southern Section | Standard Roundabout | 1, 2, 3, 4 | 4.31 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Arms

### Arms

| Arm | Name | Description |
|---|---|---|
| 1 | Glasshouse Lane (E) | |
| 2 | Spine Road Southern Section | |
| 3 | Glasshouse Lane (W) | |
| 4 | Heyville Croft | |

### Roundabout Geometry

| Arm | V - Approach road half-width (m) | E - Entry width (m) | I' - Effective flare length (m) | R - Entry radius (m) | D - Inscribed circle diameter (m) | PHI - Conflict (entry) angle (deg) | Exit only |
|---|---|---|---|---|---|---|---|
| 1 | 3.43 | 6.66 | 28.0 | 34.2 | 36.0 | 45.0 | |
| 2 | 3.51 | 7.13 | 18.2 | 24.8 | 36.0 | 45.0 | |
| 3 | 2.91 | 6.79 | 19.5 | 8.8 | 36.0 | 51.0 | |
| 4 | 3.01 | 4.13 | 1.3 | 10.8 | 36.0 | 55.0 | |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm | Final slope | Final intercept (PCU/hr) |
|---|---|---|
| 1 | 0.640 | 1699 |
| 2 | 0.629 | 1660 |
| 3 | 0.545 | 1384 |
| 4 | 0.443 | 871 |

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

# Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D1 | Local Plan (2029) | AM | ONE HOUR | 08:00 | 09:30 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| 1 | | ✓ | 309 | 100.000 |
| 2 | | ✓ | 472 | 100.000 |
| 3 | | ✓ | 215 | 100.000 |
| 4 | | ✓ | 255 | 100.000 |

# Origin-Destination Data

### Demand (Veh/hr)

| | | To | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 150 | 116 | 43 |
| | 2 | 94 | 0 | 261 | 117 |
| | 3 | 12 | 146 | 0 | 57 |
| | 4 | 78 | 159 | 18 | 0 |

# Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 0 |
| | 3 | 0 | 0 | 0 | 0 |
| | 4 | 0 | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| 1 | 0.23 | 3.18 | 0.3 | A |
| 2 | 0.34 | 3.54 | 0.5 | A |
| 3 | 0.19 | 3.62 | 0.2 | A |
| 4 | 0.38 | 7.70 | 0.6 | A |

## Main Results for each time segment

### 08:00 - 08:15

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 233 | 242 | 1544 | 0.151 | 232 | 0.2 | 2.743 | A |
| 2 | 355 | 133 | 1577 | 0.225 | 354 | 0.3 | 2.942 | A |
| 3 | 162 | 191 | 1280 | 0.126 | 161 | 0.1 | 3.216 | A |
| 4 | 192 | 189 | 788 | 0.244 | 191 | 0.3 | 6.019 | A |

### 08:15 - 08:30

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 278 | 290 | 1513 | 0.184 | 278 | 0.2 | 2.913 | A |
| 2 | 424 | 159 | 1560 | 0.272 | 424 | 0.4 | 3.168 | A |
| 3 | 193 | 228 | 1260 | 0.153 | 193 | 0.2 | 3.375 | A |
| 4 | 229 | 226 | 771 | 0.297 | 229 | 0.4 | 6.635 | A |

### 08:30 - 08:45

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 340 | 355 | 1471 | 0.231 | 340 | 0.3 | 3.181 | A |
| 2 | 520 | 195 | 1538 | 0.338 | 519 | 0.5 | 3.532 | A |
| 3 | 237 | 279 | 1232 | 0.192 | 236 | 0.2 | 3.617 | A |
| 4 | 281 | 277 | 749 | 0.375 | 280 | 0.6 | 7.672 | A |

### 08:45 - 09:00

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 340 | 356 | 1471 | 0.231 | 340 | 0.3 | 3.183 | A |
| 2 | 520 | 195 | 1538 | 0.338 | 520 | 0.5 | 3.535 | A |
| 3 | 237 | 280 | 1231 | 0.192 | 237 | 0.2 | 3.618 | A |
| 4 | 281 | 277 | 748 | 0.375 | 281 | 0.6 | 7.697 | A |

### 09:00 - 09:15

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 278 | 291 | 1512 | 0.184 | 278 | 0.2 | 2.919 | A |
| 2 | 424 | 159 | 1560 | 0.272 | 425 | 0.4 | 3.172 | A |
| 3 | 193 | 229 | 1259 | 0.153 | 194 | 0.2 | 3.380 | A |
| 4 | 229 | 227 | 771 | 0.297 | 230 | 0.4 | 6.662 | A |

### 09:15 - 09:30

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 233 | 244 | 1543 | 0.151 | 233 | 0.2 | 2.748 | A |
| 2 | 355 | 133 | 1576 | 0.225 | 356 | 0.3 | 2.949 | A |
| 3 | 162 | 191 | 1280 | 0.127 | 162 | 0.1 | 3.221 | A |
| 4 | 192 | 190 | 787 | 0.244 | 192 | 0.3 | 6.057 | A |

# Local Plan (2029), 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. |

## Junction Network

### Junctions

| Junction | Name | Junction Type | Arm order | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | Glasshouse Lane / Spine Road Southern Section | Standard Roundabout | 1, 2, 3, 4 | 4.90 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Traffic Demand

### Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D2 | Local Plan (2029) | PM | ONE HOUR | 17:00 | 18:30 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

### Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| 1 | | ✓ | 225 | 100.000 |
| 2 | | ✓ | 391 | 100.000 |
| 3 | | ✓ | 356 | 100.000 |
| 4 | | ✓ | 247 | 100.000 |

## Origin-Destination Data

**Demand (Veh/hr)**

| | | To | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 98 | 70 | 57 |
| | 2 | 140 | 0 | 151 | 100 |
| | 3 | 120 | 234 | 0 | 2 |
| | 4 | 95 | 148 | 4 | 0 |

## Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 0 |
| | 3 | 0 | 0 | 0 | 0 |
| | 4 | 0 | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| 1 | 0.17 | 3.05 | 0.2 | A |
| 2 | 0.27 | 3.16 | 0.4 | A |
| 3 | 0.33 | 4.42 | 0.5 | A |
| 4 | 0.43 | 10.04 | 0.8 | B |

## Main Results for each time segment

### 17:00 - 17:15

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 169 | 289 | 1514 | 0.112 | 169 | 0.1 | 2.677 | A |
| 2 | 294 | 98 | 1598 | 0.184 | 293 | 0.2 | 2.758 | A |
| 3 | 268 | 223 | 1262 | 0.212 | 267 | 0.3 | 3.613 | A |
| 4 | 186 | 371 | 707 | 0.263 | 185 | 0.4 | 6.870 | A |

### 17:15 - 17:30

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 202 | 346 | 1477 | 0.137 | 202 | 0.2 | 2.823 | A |
| 2 | 352 | 118 | 1586 | 0.222 | 351 | 0.3 | 2.915 | A |
| 3 | 320 | 267 | 1238 | 0.258 | 320 | 0.3 | 3.918 | A |
| 4 | 222 | 444 | 675 | 0.329 | 222 | 0.5 | 7.932 | A |

### 17:30 - 17:45

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 248 | 424 | 1427 | 0.174 | 248 | 0.2 | 3.051 | A |
| 2 | 430 | 144 | 1570 | 0.274 | 430 | 0.4 | 3.159 | A |
| 3 | 392 | 327 | 1206 | 0.325 | 391 | 0.5 | 4.417 | A |
| 4 | 272 | 543 | 631 | 0.431 | 271 | 0.7 | 9.978 | A |

### 17:45 - 18:00

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 248 | 425 | 1427 | 0.174 | 248 | 0.2 | 3.053 | A |
| 2 | 430 | 144 | 1569 | 0.274 | 430 | 0.4 | 3.159 | A |
| 3 | 392 | 327 | 1206 | 0.325 | 392 | 0.5 | 4.423 | A |
| 4 | 272 | 544 | 630 | 0.431 | 272 | 0.8 | 10.041 | B |

**18:00 - 18:15**

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 202 | 348 | 1476 | 0.137 | 202 | 0.2 | 2.829 | A |
| 2 | 352 | 118 | 1586 | 0.222 | 352 | 0.3 | 2.917 | A |
| 3 | 320 | 267 | 1238 | 0.258 | 321 | 0.4 | 3.925 | A |
| 4 | 222 | 445 | 674 | 0.329 | 223 | 0.5 | 7.995 | A |

**18:15 - 18:30**

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 169 | 291 | 1512 | 0.112 | 170 | 0.1 | 2.680 | A |
| 2 | 294 | 99 | 1598 | 0.184 | 295 | 0.2 | 2.763 | A |
| 3 | 268 | 224 | 1262 | 0.212 | 268 | 0.3 | 3.626 | A |
| 4 | 186 | 372 | 706 | 0.263 | 186 | 0.4 | 6.930 | A |

# Junctions 9

## ARCADY 9 - Roundabout Module



**Filename:** Task 3_Glasshouse Lane Northern Section (2029).j9
**Path:** \\wsatkins.com\project\GBBMA\HandT\CS\Projects\5165029 - Kenilworth_Local_Plan\08_Technical\Task 3_Glasshous Lane Junctions
**Report generation date:** 26/04/2018 11:57:04

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## Summary of junction performance

| | AM | | | | PM | | | |
|---|---|---|---|---|---|---|---|---|
| | Queue (Veh) | Delay (s) | RFC | LOS | Queue (Veh) | Delay (s) | RFC | LOS |
| | Local Plan (2029) | | | | | | | |
| Arm 1 | 0.9 | 7.00 | 0.46 | A | 0.5 | 5.69 | 0.35 | A |
| Arm 2 | 0.4 | 4.47 | 0.28 | A | 0.4 | 4.44 | 0.27 | A |
| Arm 3 | 1.0 | 6.63 | 0.49 | A | 0.6 | 5.44 | 0.39 | A |
| Arm 4 | 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** | (untitled) |
| **Location** | |
| **Site number** | |
| **Date** | 26/04/2018 |
| **Version** | |
| **Status** | (new file) |
| **Identifier** | |
| **Client** | |
| **Jobnumber** | |
| **Enumerator** | WSATKINS\DALE3752 |
| **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 | Veh | Veh | perHour | s | -Min | perMin |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|---|---|---|---|---|
| | | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D1 | Local Plan (2029) | AM | ONE HOUR | 08:00 | 09:30 | 15 |
| D2 | Local Plan (2029) | PM | ONE HOUR | 17:00 | 18:30 | 15 |

## Analysis Set Details

| ID | Network flow scaling factor (%) |
|---|---|
| A1 | 100.000 |

# Local Plan (2029), AM

## 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. |

## Junction Network

### Junctions

| Junction | Name | Junction Type | Arm order | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | Glasshouse Lane / H40 Spine Road Northern Section | Standard Roundabout | 1, 2, 3, 4 | 6.23 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Arms

### Arms

| Arm | Name | Description |
|---|---|---|
| 1 | Glasshouse Lane (N) | |
| 2 | H40 Spine Road | |
| 3 | Glasshouse Lane (S) | |
| 4 | Stansfield Grove | |

### Roundabout Geometry

| Arm | V - Approach road half-width (m) | E - Entry width (m) | I' - Effective flare length (m) | R - Entry radius (m) | D - Inscribed circle diameter (m) | PHI - Conflict (entry) angle (deg) | Exit only |
|---|---|---|---|---|---|---|---|
| 1 | 3.09 | 5.68 | 2.7 | 20.1 | 35.9 | 50.0 | |
| 2 | 3.45 | 5.11 | 4.0 | 20.7 | 35.9 | 36.0 | |
| 3 | 2.89 | 5.05 | 8.1 | 15.3 | 35.9 | 46.0 | |
| 4 | 2.45 | 4.00 | 3.9 | 10.2 | 35.9 | 69.0 | |

### Slope / Intercept / Capacity

#### Roundabout Slope and Intercept used in model

| Arm | Final slope | Final intercept (PCU/hr) |
|---|---|---|
| 1 | 0.498 | 1051 |
| 2 | 0.551 | 1238 |
| 3 | 0.516 | 1141 |
| 4 | 0.408 | 777 |

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

# Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D1 | Local Plan (2029) | AM | ONE HOUR | 08:00 | 09:30 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| 1 | | ✓ | 405 | 100.000 |
| 2 | | ✓ | 285 | 100.000 |
| 3 | | ✓ | 479 | 100.000 |
| 4 | | ✓ | 0 | 100.000 |

# Origin-Destination Data

### Demand (Veh/hr)

| | | To | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 207 | 198 | 0 |
| | 2 | 125 | 0 | 160 | 0 |
| | 3 | 312 | 167 | 0 | 0 |
| | 4 | 0 | 0 | 0 | 0 |

# Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 0 |
| | 3 | 0 | 0 | 0 | 0 |
| | 4 | 0 | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| 1 | 0.46 | 7.00 | 0.9 | A |
| 2 | 0.28 | 4.47 | 0.4 | A |
| 3 | 0.49 | 6.63 | 1.0 | A |
| 4 | 0.00 | 0.00 | 0.0 | A |

## Main Results for each time segment

### 08:00 - 08:15

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 305 | 125 | 989 | 0.308 | 303 | 0.4 | 5.233 | A |
| 2 | 215 | 148 | 1157 | 0.185 | 214 | 0.2 | 3.813 | A |
| 3 | 361 | 94 | 1093 | 0.330 | 359 | 0.5 | 4.890 | A |
| 4 | 0 | 452 | 592 | 0.000 | 0 | 0.0 | 0.000 | A |

### 08:15 - 08:30

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 364 | 150 | 977 | 0.373 | 364 | 0.6 | 5.864 | A |
| 2 | 256 | 178 | 1141 | 0.225 | 256 | 0.3 | 4.068 | A |
| 3 | 431 | 112 | 1083 | 0.397 | 430 | 0.7 | 5.503 | A |
| 4 | 0 | 542 | 556 | 0.000 | 0 | 0.0 | 0.000 | A |

### 08:30 - 08:45

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 446 | 183 | 960 | 0.464 | 445 | 0.9 | 6.972 | A |
| 2 | 314 | 217 | 1119 | 0.281 | 313 | 0.4 | 4.468 | A |
| 3 | 527 | 137 | 1070 | 0.493 | 526 | 1.0 | 6.600 | A |
| 4 | 0 | 664 | 506 | 0.000 | 0 | 0.0 | 0.000 | A |

### 08:45 - 09:00

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 446 | 184 | 960 | 0.465 | 446 | 0.9 | 7.002 | A |
| 2 | 314 | 218 | 1118 | 0.281 | 314 | 0.4 | 4.473 | A |
| 3 | 527 | 138 | 1070 | 0.493 | 527 | 1.0 | 6.630 | A |
| 4 | 0 | 665 | 506 | 0.000 | 0 | 0.0 | 0.000 | A |

### 09:00 - 09:15

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 364 | 151 | 977 | 0.373 | 365 | 0.6 | 5.899 | A |
| 2 | 256 | 179 | 1140 | 0.225 | 257 | 0.3 | 4.077 | A |
| 3 | 431 | 113 | 1083 | 0.398 | 432 | 0.7 | 5.538 | A |
| 4 | 0 | 544 | 555 | 0.000 | 0 | 0.0 | 0.000 | A |

### 09:15 - 09:30

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 305 | 126 | 989 | 0.308 | 306 | 0.4 | 5.274 | A |
| 2 | 215 | 149 | 1156 | 0.186 | 215 | 0.2 | 3.827 | A |
| 3 | 361 | 94 | 1093 | 0.330 | 361 | 0.5 | 4.926 | A |
| 4 | 0 | 456 | 591 | 0.000 | 0 | 0.0 | 0.000 | A |

# Local Plan (2029), 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. |

## Junction Network

### Junctions

| Junction | Name | Junction Type | Arm order | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | Glasshouse Lane / H40 Spine Road Northern Section | Standard Roundabout | 1, 2, 3, 4 | 5.24 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Traffic Demand

### Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D2 | Local Plan (2029) | PM | ONE HOUR | 17:00 | 18:30 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

### Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| 1 | | ✓ | 313 | 100.000 |
| 2 | | ✓ | 269 | 100.000 |
| 3 | | ✓ | 385 | 100.000 |
| 4 | | ✓ | 0 | 100.000 |

## Origin-Destination Data

#### Demand (Veh/hr)

| | | To | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 95 | 218 | 0 |
| | 2 | 98 | 0 | 171 | 0 |
| | 3 | 249 | 136 | 0 | 0 |
| | 4 | 0 | 0 | 0 | 0 |

## Vehicle Mix

### Heavy Vehicle Percentages

| | To | | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 0 | 0 | 0 |
| | 2 | 0 | 0 | 0 | 0 |
| | 3 | 0 | 0 | 0 | 0 |
| | 4 | 0 | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| 1 | 0.35 | 5.69 | 0.5 | A |
| 2 | 0.27 | 4.44 | 0.4 | A |
| 3 | 0.39 | 5.44 | 0.6 | A |
| 4 | 0.00 | 0.00 | 0.0 | A |

## Main Results for each time segment

### 17:00 - 17:15

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 236 | 102 | 1001 | 0.235 | 234 | 0.3 | 4.689 | A |
| 2 | 203 | 163 | 1149 | 0.176 | 202 | 0.2 | 3.798 | A |
| 3 | 290 | 73 | 1103 | 0.263 | 288 | 0.4 | 4.411 | A |
| 4 | 0 | 362 | 629 | 0.000 | 0 | 0.0 | 0.000 | A |

### 17:15 - 17:30

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 281 | 122 | 991 | 0.284 | 281 | 0.4 | 5.070 | A |
| 2 | 242 | 196 | 1131 | 0.214 | 242 | 0.3 | 4.048 | A |
| 3 | 346 | 88 | 1096 | 0.316 | 346 | 0.5 | 4.797 | A |
| 4 | 0 | 434 | 600 | 0.000 | 0 | 0.0 | 0.000 | A |

### 17:30 - 17:45

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 345 | 149 | 977 | 0.353 | 344 | 0.5 | 5.682 | A |
| 2 | 296 | 240 | 1106 | 0.268 | 296 | 0.4 | 4.438 | A |
| 3 | 424 | 108 | 1086 | 0.390 | 423 | 0.6 | 5.428 | A |
| 4 | 0 | 531 | 560 | 0.000 | 0 | 0.0 | 0.000 | A |

### 17:45 - 18:00

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 345 | 150 | 977 | 0.353 | 345 | 0.5 | 5.692 | A |
| 2 | 296 | 240 | 1106 | 0.268 | 296 | 0.4 | 4.443 | A |
| 3 | 424 | 108 | 1086 | 0.390 | 424 | 0.6 | 5.439 | A |
| 4 | 0 | 532 | 560 | 0.000 | 0 | 0.0 | 0.000 | A |

**18:00 - 18:15**

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 281 | 123 | 991 | 0.284 | 282 | 0.4 | 5.086 | A |
| 2 | 242 | 196 | 1130 | 0.214 | 242 | 0.3 | 4.056 | A |
| 3 | 346 | 88 | 1096 | 0.316 | 347 | 0.5 | 4.810 | A |
| 4 | 0 | 435 | 600 | 0.000 | 0 | 0.0 | 0.000 | A |

**18:15 - 18:30**

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 236 | 103 | 1000 | 0.236 | 236 | 0.3 | 4.711 | A |
| 2 | 203 | 164 | 1148 | 0.176 | 203 | 0.2 | 3.808 | A |
| 3 | 290 | 74 | 1103 | 0.263 | 290 | 0.4 | 4.432 | A |
| 4 | 0 | 364 | 628 | 0.000 | 0 | 0.0 | 0.000 | A |

# Junctions 9

## PICADY 9 - Priority Intersection Module



**Filename:** Glasshouse Access.j9
**Path:** H:\TransprtPlanGrp\Paul Kinsella\S&D Mapping\Kenilworth Development Plan\Thickthorn PICADY
**Report generation date:** 28/06/2018 13:47:24

---



## Summary of junction performance

| | AM | | | | | | PM | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Queue (Veh) | Delay (s) | RFC | LOS | Junction Delay (s) | Junction LOS | Queue (Veh) | Delay (s) | RFC | LOS | Junction Delay (s) | Junction LOS |
| | 2029 | | | | | | | | | | | |
| Stream B-AC | 0.2 | 6.98 | 0.15 | A | 3.73 | A | 0.0 | 6.75 | 0.02 | A | 2.39 | A |
| Stream C-AB | 0.0 | 5.17 | 0.05 | A | | | 0.0 | 5.61 | 0.04 | 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. Junction LOS and Junction Delay are demand-weighted averages.*

## File summary

### File Description

| | |
|---|---|
| **Title** | (untitled) |
| **Location** | |
| **Site number** | |
| **Date** | 27/06/2018 |
| **Version** | |
| **Status** | (new file) |
| **Identifier** | |
| **Client** | |
| **Jobnumber** | |
| **Enumerator** | WCC-CORP\Pkin2 |
| **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 | Veh | Veh | perHour | s | -Min | perMin |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|---|---|---|---|---|
| | | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) |
|---|---|---|---|---|---|---|---|
| D1 | 2029 | AM | DIRECT | 07:00 | 10:00 | 180 | 15 |
| D2 | 2029 | PM | DIRECT | 16:00 | 19:00 | 180 | 15 |

## Analysis Set Details

| ID | Network flow scaling factor (%) |
|---|---|
| A1 | 100.000 |

# 2029, AM

## 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. |

# Junction Network

## Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | Glasshouse Access | T-Junction | Two-way | 3.73 | A |

## Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

# Arms

## Arms

| Arm | Name | Description | Arm type |
|---|---|---|---|
| A | Glasshouse Lane South | | Major |
| B | Development Access | | Minor |
| C | Glasshouse Lane North | | Major |

## Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Width for right turn (m) | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
|---|---|---|---|---|---|---|---|
| C | 6.81 | | ✓ | 2.99 | 190.0 | ✓ | 5.00 |

*Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.*

## Minor Arm Geometry

| Arm | Minor arm type | Lane width (m) | Visibility to left (m) | Visibility to right (m) |
|---|---|---|---|---|
| B | One lane | 3.52 | 93 | 70 |

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

| Junction | Stream | Intercept (Veh/hr) | Slope for A-B | Slope for A-C | Slope for C-A | Slope for C-B |
|---|---|---|---|---|---|---|
| 1 | B-A | 571 | 0.100 | 0.254 | 0.160 | 0.362 |
| 1 | B-C | 703 | 0.104 | 0.263 | - | - |
| 1 | C-B | 743 | 0.278 | 0.278 | - | - |

*The slopes and intercepts shown above do NOT include any corrections or adjustments.*

*Streams may be combined, in which case capacity will be adjusted.*

*Values are shown for the first time segment only; they may differ for subsequent time segments.*

# Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) |
|---|---|---|---|---|---|---|---|
| D1 | 2029 | AM | DIRECT | 07:00 | 10:00 | 180 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|---|---|---|
| HV Percentages | 2.00 | ✓ |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|---|---|---|---|
| A | | ✓ | 100.000 |
| B | | ✓ | 100.000 |
| C | | ✓ | 100.000 |

# Origin-Destination Data

**07:00 - 07:15**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 1 | 10 |
| | B | 7 | 0 | 10 |
| | C | 4 | 1 | 0 |

**07:15 - 07:30**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 1 | 13 |
| | B | 13 | 0 | 18 |
| | C | 6 | 1 | 0 |

**07:30 - 07:45**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 6 | 11 |
| | B | 12 | 0 | 17 |
| | C | 11 | 4 | 0 |

**07:45 - 08:00**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 7 | 14 |
| | B | 9 | 0 | 13 |
| | C | 13 | 5 | 0 |

**08:00 - 08:15**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 15 | 10 |
| | B | 38 | 0 | 30 |
| | C | 24 | 20 | 0 |

**08:15 - 08:30**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 27 | 19 |
| | B | 38 | 0 | 30 |
| | C | 15 | 34 | 0 |

**08:30 - 08:45**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 17 | 21 |
| | B | 52 | 0 | 41 |
| | C | 19 | 21 | 0 |

**08:45 - 09:00**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 14 | 16 |
| | B | 25 | 0 | 19 |
| | C | 25 | 18 | 0 |

**09:00 - 09:15**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 4 | 11 |
| | B | 7 | 0 | 6 |
| | C | 19 | 4 | 0 |

**09:15 - 09:30**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 5 | 9 |
| | B | 9 | 0 | 9 |
| | C | 10 | 5 | 0 |

**09:30 - 09:45**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 4 | 8 |
| | B | 8 | 0 | 8 |
| | C | 6 | 5 | 0 |

**09:45 - 10:00**

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 4 | 18 |
| | B | 9 | 0 | 9 |
| | C | 12 | 5 | 0 |

# Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 0 | 0 |
| | B | 0 | 0 | 0 |
| | C | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| B-AC | 0.15 | 6.98 | 0.2 | A |
| C-AB | 0.05 | 5.17 | 0.0 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

### 07:00 - 07:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 17 | 639 | 0.027 | 17 | 0.0 | 5.790 | A |
| C-AB | 1 | 740 | 0.001 | 0.99 | 0.0 | 4.872 | A |
| C-A | 4 | | | 4 | | | |
| A-B | 1 | | | 1 | | | |
| A-C | 10 | | | 10 | | | |

### 07:15 - 07:30

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 31 | 637 | 0.049 | 31 | 0.1 | 5.942 | A |
| C-AB | 1 | 739 | 0.001 | 1.00 | 0.0 | 4.878 | A |
| C-A | 6 | | | 6 | | | |
| A-B | 1 | | | 1 | | | |
| A-C | 13 | | | 13 | | | |

### 07:30 - 07:45

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 29 | 636 | 0.046 | 29 | 0.0 | 5.928 | A |
| C-AB | 4 | 738 | 0.005 | 4 | 0.0 | 4.903 | A |
| C-A | 11 | | | 11 | | | |
| A-B | 6 | | | 6 | | | |
| A-C | 11 | | | 11 | | | |

### 07:45 - 08:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 22 | 636 | 0.035 | 22 | 0.0 | 5.864 | A |
| C-AB | 5 | 737 | 0.007 | 5 | 0.0 | 4.917 | A |
| C-A | 13 | | | 13 | | | |
| A-B | 7 | | | 7 | | | |
| A-C | 14 | | | 14 | | | |

**08:00 - 08:15**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 68 | 611 | 0.111 | 68 | 0.1 | 6.619 | A |
| C-AB | 20 | 736 | 0.027 | 20 | 0.0 | 5.028 | A |
| C-A | 24 | | | 24 | | | |
| A-B | 15 | | | 15 | | | |
| A-C | 10 | | | 10 | | | |

**08:15 - 08:30**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 68 | 605 | 0.112 | 68 | 0.1 | 6.702 | A |
| C-AB | 34 | 730 | 0.047 | 34 | 0.0 | 5.171 | A |
| C-A | 15 | | | 15 | | | |
| A-B | 27 | | | 27 | | | |
| A-C | 19 | | | 19 | | | |

**08:30 - 08:45**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 93 | 608 | 0.153 | 93 | 0.2 | 6.980 | A |
| C-AB | 21 | 732 | 0.029 | 21 | 0.0 | 5.064 | A |
| C-A | 19 | | | 19 | | | |
| A-B | 17 | | | 17 | | | |
| A-C | 21 | | | 21 | | | |

**08:45 - 09:00**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 44 | 609 | 0.072 | 44 | 0.1 | 6.385 | A |
| C-AB | 18 | 734 | 0.025 | 18 | 0.0 | 5.024 | A |
| C-A | 25 | | | 25 | | | |
| A-B | 14 | | | 14 | | | |
| A-C | 16 | | | 16 | | | |

**09:00 - 09:15**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 13 | 619 | 0.021 | 13 | 0.0 | 5.944 | A |
| C-AB | 4 | 739 | 0.005 | 4 | 0.0 | 4.902 | A |
| C-A | 19 | | | 19 | | | |
| A-B | 4 | | | 4 | | | |
| A-C | 11 | | | 11 | | | |

**09:15 - 09:30**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 18 | 625 | 0.029 | 18 | 0.0 | 5.927 | A |
| C-AB | 5 | 739 | 0.007 | 5 | 0.0 | 4.904 | A |
| C-A | 10 | | | 10 | | | |
| A-B | 5 | | | 5 | | | |
| A-C | 9 | | | 9 | | | |

**09:30 - 09:45**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 16 | 626 | 0.026 | 16 | 0.0 | 5.903 | A |
| C-AB | 5 | 739 | 0.007 | 5 | 0.0 | 4.901 | A |
| C-A | 6 | | | 6 | | | |
| A-B | 4 | | | 4 | | | |
| A-C | 8 | | | 8 | | | |

**09:45 - 10:00**

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 18 | 623 | 0.029 | 18 | 0.0 | 5.951 | A |
| C-AB | 5 | 737 | 0.007 | 5 | 0.0 | 4.919 | A |
| C-A | 12 | | | 12 | | | |
| A-B | 4 | | | 4 | | | |
| A-C | 18 | | | 18 | | | |

# 2029, PM

## Data Errors and Warnings

*No errors or warnings*

## Junction Network

### Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | Glasshouse Access | T-Junction | Two-way | 2.39 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Traffic Demand

### Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time period length (min) | Time segment length (min) |
|---|---|---|---|---|---|---|---|
| D2 | 2029 | PM | DIRECT | 16:00 | 19:00 | 180 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) | O-D data varies over time |
|---|---|---|
| HV Percentages | 2.00 | ✓ |

### Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Scaling Factor (%) |
|---|---|---|---|
| A | | ✓ | 100.000 |
| B | | ✓ | 100.000 |
| C | | ✓ | 100.000 |

## Origin-Destination Data

**16:00 - 16:15**

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 10 | 14 |
| | B | 5 | 0 | 3 |
| | C | 14 | 15 | 0 |

**16:15 - 16:30**

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 8 | 6 |
| | B | 5 | 0 | 3 |
| | C | 16 | 12 | 0 |

**16:30 - 16:45**

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 13 | 16 |
| | B | 4 | 0 | 3 |
| | C | 22 | 20 | 0 |

**16:45 - 17:00**

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 11 | 12 |
| | B | 6 | 0 | 4 |
| | C | 20 | 16 | 0 |

**17:00 - 17:15**

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 11 | 13 |
| | B | 5 | 0 | 3 |
| | C | 18 | 19 | 0 |

**17:15 - 17:30**

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 15 | 11 |
| | B | 7 | 0 | 4 |
| | C | 19 | 25 | 0 |

**17:30 - 17:45**

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 12 | 11 |
| | B | 5 | 0 | 3 |
| | C | 19 | 21 | 0 |

**17:45 - 18:00**

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 15 | 9 |
| | B | 6 | 0 | 4 |
| | C | 19 | 25 | 0 |

**18:00 - 18:15**

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 19 | 14 |
| | B | 6 | 0 | 5 |
| | C | 15 | 25 | 0 |

**18:15 - 18:30**

**Demand (Veh/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 9 | 8 |
| | B | 4 | 0 | 3 |
| | C | 17 | 11 | 0 |

18:30 - 18:45

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 8 | 5 |
| | B | 4 | 0 | 3 |
| | C | 7 | 10 | 0 |

18:45 - 19:00

Demand (Veh/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 11 | 15 |
| | B | 5 | 0 | 4 |
| | C | 14 | 14 | 0 |

# Vehicle Mix

Heavy Vehicle Percentages

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 10 | 10 | 10 |
| | B | 10 | 10 | 10 |
| | C | 10 | 10 | 10 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| B-AC | 0.02 | 6.75 | 0.0 | A |
| C-AB | 0.04 | 5.61 | 0.0 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

16:00 - 16:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 8 | 548 | 0.015 | 8 | 0.0 | 6.662 | A |
| C-AB | 15 | 669 | 0.022 | 15 | 0.0 | 5.507 | A |
| C-A | 14 | | | 14 | | | |
| A-B | 10 | | | 10 | | | |
| A-C | 14 | | | 14 | | | |

### 16:15 - 16:30

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 8 | 551 | 0.015 | 8 | 0.0 | 6.627 | A |
| C-AB | 12 | 671 | 0.018 | 12 | 0.0 | 5.459 | A |
| C-A | 16 | | | 16 | | | |
| A-B | 8 | | | 8 | | | |
| A-C | 6 | | | 6 | | | |

### 16:30 - 16:45

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 7 | 552 | 0.013 | 7 | 0.0 | 6.608 | A |
| C-AB | 20 | 667 | 0.030 | 20 | 0.0 | 5.561 | A |
| C-A | 22 | | | 22 | | | |
| A-B | 13 | | | 13 | | | |
| A-C | 16 | | | 16 | | | |

### 16:45 - 17:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 10 | 551 | 0.018 | 10 | 0.0 | 6.656 | A |
| C-AB | 16 | 669 | 0.024 | 16 | 0.0 | 5.515 | A |
| C-A | 20 | | | 20 | | | |
| A-B | 11 | | | 11 | | | |
| A-C | 12 | | | 12 | | | |

### 17:00 - 17:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 8 | 547 | 0.015 | 8 | 0.0 | 6.682 | A |
| C-AB | 19 | 669 | 0.028 | 19 | 0.0 | 5.541 | A |
| C-A | 18 | | | 18 | | | |
| A-B | 11 | | | 11 | | | |
| A-C | 13 | | | 13 | | | |

### 17:15 - 17:30

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 11 | 544 | 0.020 | 11 | 0.0 | 6.754 | A |
| C-AB | 25 | 668 | 0.037 | 25 | 0.0 | 5.597 | A |
| C-A | 19 | | | 19 | | | |
| A-B | 15 | | | 15 | | | |
| A-C | 11 | | | 11 | | | |

### 17:30 - 17:45

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 8 | 547 | 0.015 | 8 | 0.0 | 6.683 | A |
| C-AB | 21 | 669 | 0.031 | 21 | 0.0 | 5.558 | A |
| C-A | 19 | | | 19 | | | |
| A-B | 12 | | | 12 | | | |
| A-C | 11 | | | 11 | | | |

### 17:45 - 18:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 10 | 549 | 0.018 | 10 | 0.0 | 6.679 | A |
| C-AB | 25 | 669 | 0.037 | 25 | 0.0 | 5.592 | A |
| C-A | 19 | | | 19 | | | |
| A-B | 15 | | | 15 | | | |
| A-C | 9 | | | 9 | | | |

### 18:00 - 18:15

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 11 | 554 | 0.020 | 11 | 0.0 | 6.624 | A |
| C-AB | 25 | 666 | 0.038 | 25 | 0.0 | 5.614 | A |
| C-A | 15 | | | 15 | | | |
| A-B | 19 | | | 19 | | | |
| A-C | 14 | | | 14 | | | |

### 18:15 - 18:30

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 7 | 557 | 0.013 | 7 | 0.0 | 6.547 | A |
| C-AB | 11 | 671 | 0.016 | 11 | 0.0 | 5.461 | A |
| C-A | 17 | | | 17 | | | |
| A-B | 9 | | | 9 | | | |
| A-C | 8 | | | 8 | | | |

### 18:30 - 18:45

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 7 | 559 | 0.013 | 7 | 0.0 | 6.518 | A |
| C-AB | 10 | 672 | 0.015 | 10 | 0.0 | 5.442 | A |
| C-A | 7 | | | 7 | | | |
| A-B | 8 | | | 8 | | | |
| A-C | 5 | | | 5 | | | |

### 18:45 - 19:00

| Stream | Total Demand (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-AC | 9 | 557 | 0.016 | 9 | 0.0 | 6.574 | A |
| C-AB | 14 | 668 | 0.021 | 14 | 0.0 | 5.503 | A |
| C-A | 14 | | | 14 | | | |
| A-B | 11 | | | 11 | | | |
| A-C | 15 | | | 15 | | | |

# Appendix E. St John's Gyratory

## E.1. Junction Modelling Outputs

## E.2. Option Drawings

# Junctions 9

## ARCADY 9 - Roundabout Module

Version: 9.0.2.5947


**Filename:** Task 4_St_Johns_Gyratory (2029) v1.0.j9
**Path:** \\wsatkins.com\project\GBBMA\HandT\CS\Projects\5165029 - Kenilworth_Local_Plan\08_Technical\Task 4_St_Johns_Gyratory
**Report generation date:** 02/05/2018 09:45:40

---



## Summary of junction performance

| | AM | | | | PM | | | |
|---|---|---|---|---|---|---|---|---|
| | Queue (Veh) | Delay (s) | RFC | LOS | Queue (Veh) | Delay (s) | RFC | LOS |
| | Local Plan 2029 | | | | | | | |
| Arm 1 | 1.5 | 5.55 | 0.61 | A | 1.8 | 6.25 | 0.65 | A |
| Arm 2 | 1.2 | 8.98 | 0.55 | A | 1.5 | 9.72 | 0.60 | A |
| Arm 3 | 1.1 | 3.70 | 0.51 | A | 2.2 | 5.79 | 0.69 | A |
| Arm 4 | 7.7 | 52.76 | 0.91 | F | 72.6 | 454.64 | 1.32 | F |

*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** | (untitled) |
| **Location** | |
| **Site number** | |
| **Date** | 16/04/2018 |
| **Version** | |
| **Status** | (new file) |
| **Identifier** | |
| **Client** | |
| **Jobnumber** | |
| **Enumerator** | WSATKINS\DALE3752 |
| **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 | Veh | Veh | perHour | s | -Min | perMin |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|---|---|---|---|---|
| | | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D1 | Local Plan 2029 | AM | ONE HOUR | 08:00 | 09:30 | 15 |
| D2 | Local Plan 2029 | PM | ONE HOUR | 17:00 | 18:30 | 15 |

## Analysis Set Details

| ID | Network flow scaling factor (%) |
|---|---|
| A1 | 100.000 |

# Local Plan 2029, AM

## Data Errors and Warnings

| Severity | Area | Item | Description |
|---|---|---|---|
| Warning | Geometry | Arm 1 - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |
| Warning | Geometry | Arm 2 - Roundabout Geometry | Roundabout diameter is over 130m; roundabout should be treated as a Grade Separated and/or Large Roundabout |
| Warning | Geometry | Arm 3 - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

# Junction Network

## Junctions

| Junction | Name | Junction Type | Arm order | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | St Johns Gyratory | Standard Roundabout | 1, 2, 3, 4 | 14.02 | B |

## Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

# Arms

## Arms

| Arm | Name | Description |
|---|---|---|
| 1 | A451 (N) | |
| 2 | Birches Lane | |
| 3 | A452 (S) | |
| 4 | Warwick Road | |

## Roundabout Geometry

| Arm | V - Approach road half-width (m) | E - Entry width (m) | I' - Effective flare length (m) | R - Entry radius (m) | D - Inscribed circle diameter (m) | PHI - Conflict (entry) angle (deg) | Exit only |
|---|---|---|---|---|---|---|---|
| 1 | 3.63 | 6.99 | 45.0 | 81.6 | 65.2 | 27.0 | |
| 2 | 2.98 | 10.21 | 9.1 | 14.4 | 137.7 | 67.0 | |
| 3 | 3.77 | 7.78 | 46.4 | 46.7 | 60.7 | 15.0 | |
| 4 | 3.01 | 5.17 | 1.1 | 20.0 | 40.3 | 4.0 | |

## Slope / Intercept / Capacity

### Roundabout Slope and Intercept used in model

| Arm | Final slope | Final intercept (PCU/hr) |
|---|---|---|
| 1 | 0.592 | 2013 |
| 2 | 0.359 | 1299 |
| 3 | 0.671 | 2261 |
| 4 | 0.548 | 1095 |

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

# Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D1 | Local Plan 2029 | AM | ONE HOUR | 08:00 | 09:30 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| 1 | | ✓ | 913 | 100.000 |
| 2 | | ✓ | 436 | 100.000 |
| 3 | | ✓ | 933 | 100.000 |
| 4 | | ✓ | 510 | 100.000 |

# Origin-Destination Data

### Demand (Veh/hr)

| | | To | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 81 | 677 | 155 |
| | 2 | 0 | 0 | 299 | 137 |
| | 3 | 614 | 151 | 0 | 168 |
| | 4 | 155 | 147 | 208 | 0 |

# Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 0 | 2 | 2 |
| | 2 | 0 | 0 | 0 | 0 |
| | 3 | 3 | 0 | 0 | 1 |
| | 4 | 1 | 0 | 1 | 0 |

# Results

## Results Summary for whole modelled period

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| 1 | 0.61 | 5.55 | 1.5 | A |
| 2 | 0.55 | 8.98 | 1.2 | A |
| 3 | 0.51 | 3.70 | 1.1 | A |
| 4 | 0.91 | 52.76 | 7.7 | F |

## Main Results for each time segment

### 08:00 - 08:15

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 687 | 378 | 1756 | 0.391 | 685 | 0.6 | 3.351 | A |
| 2 | 328 | 779 | 1014 | 0.324 | 326 | 0.5 | 5.225 | A |
| 3 | 702 | 219 | 2069 | 0.340 | 700 | 0.5 | 2.628 | A |
| 4 | 384 | 574 | 767 | 0.501 | 380 | 1.0 | 9.214 | A |

### 08:15 - 08:30

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 821 | 453 | 1712 | 0.479 | 820 | 0.9 | 4.027 | A |
| 2 | 392 | 933 | 958 | 0.409 | 391 | 0.7 | 6.346 | A |
| 3 | 839 | 262 | 2040 | 0.411 | 838 | 0.7 | 2.994 | A |
| 4 | 458 | 687 | 704 | 0.651 | 455 | 1.8 | 14.279 | B |

### 08:30 - 08:45

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 1005 | 544 | 1659 | 0.606 | 1003 | 1.5 | 5.464 | A |
| 2 | 480 | 1135 | 884 | 0.543 | 478 | 1.2 | 8.838 | A |
| 3 | 1027 | 320 | 2001 | 0.513 | 1026 | 1.0 | 3.686 | A |
| 4 | 562 | 841 | 618 | 0.908 | 542 | 6.5 | 40.142 | E |

### 08:45 - 09:00

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 1005 | 554 | 1653 | 0.608 | 1005 | 1.5 | 5.553 | A |
| 2 | 480 | 1143 | 881 | 0.545 | 480 | 1.2 | 8.981 | A |
| 3 | 1027 | 321 | 2001 | 0.514 | 1027 | 1.1 | 3.698 | A |
| 4 | 562 | 842 | 618 | 0.909 | 557 | 7.7 | 52.757 | F |

### 09:00 - 09:15

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 821 | 471 | 1702 | 0.482 | 823 | 0.9 | 4.110 | A |
| 2 | 392 | 946 | 953 | 0.411 | 394 | 0.7 | 6.464 | A |
| 3 | 839 | 264 | 2039 | 0.411 | 840 | 0.7 | 3.005 | A |
| 4 | 458 | 689 | 703 | 0.652 | 481 | 2.0 | 17.725 | C |

### 09:15 - 09:30

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 687 | 384 | 1753 | 0.392 | 689 | 0.6 | 3.388 | A |
| 2 | 328 | 786 | 1011 | 0.325 | 329 | 0.5 | 5.285 | A |
| 3 | 702 | 220 | 2068 | 0.340 | 703 | 0.5 | 2.639 | A |
| 4 | 384 | 577 | 766 | 0.501 | 388 | 1.0 | 9.614 | A |

# Local Plan 2029, PM

### Data Errors and Warnings

| Severity | Area | Item | Description |
|---|---|---|---|
| Warning | Geometry | Arm 1 - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |
| Warning | Geometry | Arm 2 - Roundabout Geometry | Roundabout diameter is over 130m; roundabout should be treated as a Grade Separated and/or Large Roundabout |
| Warning | Geometry | Arm 3 - Roundabout Geometry | Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution. |

## Junction Network

### Junctions

| Junction | Name | Junction Type | Arm order | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | St Johns Gyratory | Standard Roundabout | 1, 2, 3, 4 | 76.55 | F |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Traffic Demand

### Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D2 | Local Plan 2029 | PM | ONE HOUR | 17:00 | 18:30 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

### Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (Veh/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| 1 | | ✓ | 959 | 100.000 |
| 2 | | ✓ | 513 | 100.000 |
| 3 | | ✓ | 1242 | 100.000 |
| 4 | | ✓ | 504 | 100.000 |

## Origin-Destination Data

**Demand (Veh/hr)**

| | | To | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 148 | 669 | 142 |
| | 2 | 99 | 0 | 301 | 113 |
| | 3 | 699 | 314 | 0 | 229 |
| | 4 | 168 | 201 | 135 | 0 |

# Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | | |
|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 |
| From | 1 | 0 | 0 | 1 | 0 |
| | 2 | 0 | 0 | 0 | 0 |
| | 3 | 1 | 0 | 0 | 0 |
| | 4 | 0 | 0 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Arm | Max RFC | Max delay (s) | Max Queue (Veh) | Max LOS |
|---|---|---|---|---|
| 1 | 0.65 | 6.25 | 1.8 | A |
| 2 | 0.60 | 9.72 | 1.5 | A |
| 3 | 0.69 | 5.79 | 2.2 | A |
| 4 | 1.32 | 454.64 | 72.6 | F |

## Main Results for each time segment

### 17:00 - 17:15

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 722 | 485 | 1714 | 0.421 | 719 | 0.7 | 3.609 | A |
| 2 | 386 | 708 | 1042 | 0.371 | 384 | 0.6 | 5.449 | A |
| 3 | 935 | 265 | 2072 | 0.451 | 932 | 0.8 | 3.148 | A |
| 4 | 379 | 834 | 635 | 0.598 | 374 | 1.4 | 13.510 | B |

### 17:15 - 17:30

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 862 | 577 | 1660 | 0.519 | 861 | 1.1 | 4.499 | A |
| 2 | 461 | 846 | 992 | 0.465 | 460 | 0.9 | 6.749 | A |
| 3 | 1117 | 318 | 2037 | 0.548 | 1115 | 1.2 | 3.898 | A |
| 4 | 453 | 998 | 544 | 0.832 | 442 | 4.1 | 32.417 | D |

### 17:30 - 17:45

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 1056 | 622 | 1633 | 0.647 | 1053 | 1.8 | 6.178 | A |
| 2 | 565 | 1002 | 936 | 0.603 | 562 | 1.5 | 9.568 | A |
| 3 | 1367 | 388 | 1990 | 0.687 | 1364 | 2.2 | 5.713 | A |
| 4 | 555 | 1221 | 422 | 1.316 | 417 | 38.7 | 204.617 | F |

### 17:45 - 18:00

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 1056 | 625 | 1631 | 0.647 | 1056 | 1.8 | 6.254 | A |
| 2 | 565 | 1005 | 935 | 0.604 | 565 | 1.5 | 9.719 | A |
| 3 | 1367 | 390 | 1989 | 0.688 | 1367 | 2.2 | 5.790 | A |
| 4 | 555 | 1224 | 420 | 1.322 | 419 | 72.6 | 454.640 | F |

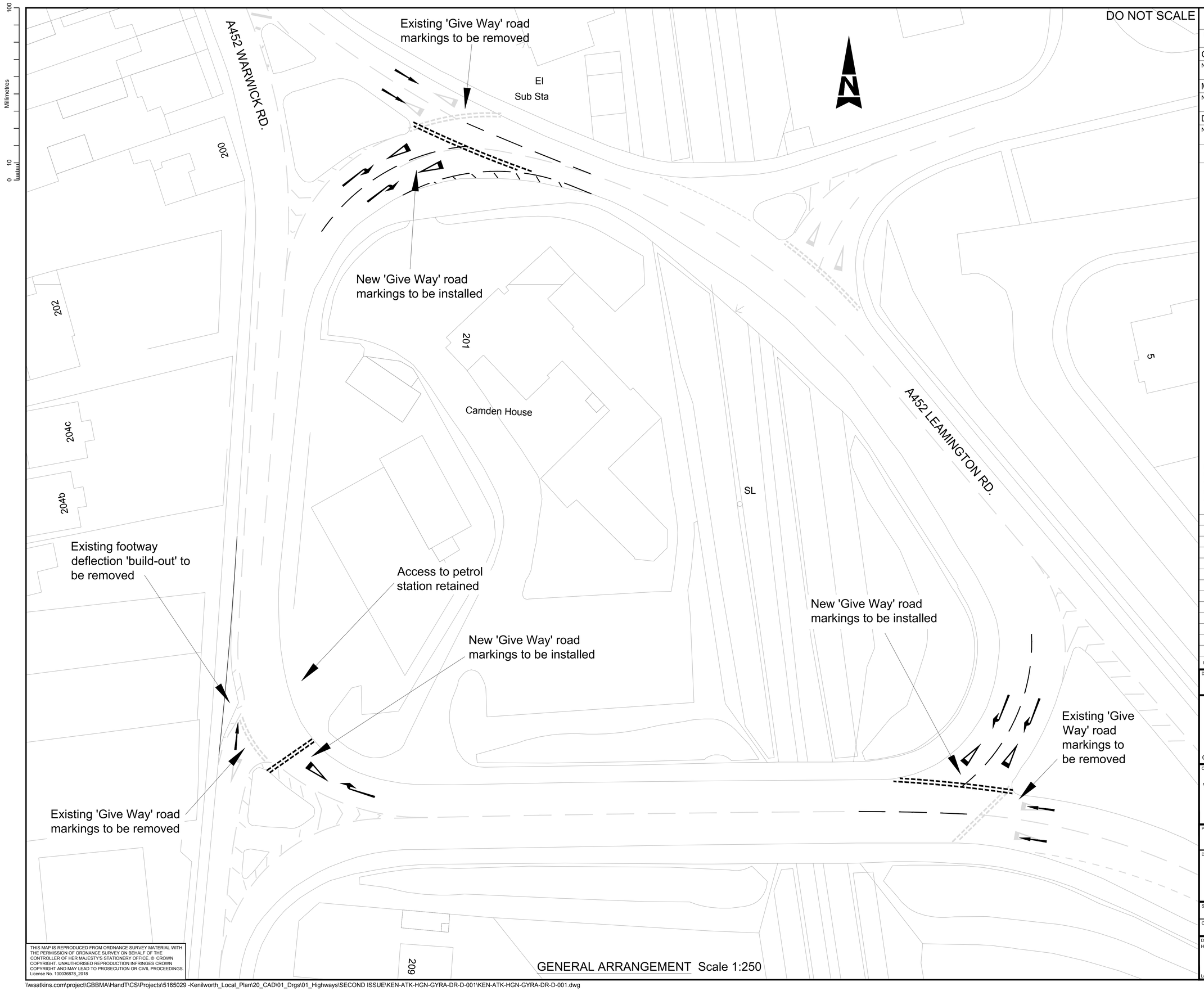
### 18:00 - 18:15

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 862 | 639 | 1623 | 0.531 | 865 | 1.1 | 4.765 | A |
| 2 | 461 | 874 | 982 | 0.469 | 464 | 0.9 | 6.971 | A |
| 3 | 1117 | 320 | 2036 | 0.548 | 1120 | 1.2 | 3.950 | A |
| 4 | 453 | 1003 | 542 | 0.837 | 534 | 52.3 | 411.045 | F |

### 18:15 - 18:30

| Arm | Total Demand (Veh/hr) | Circulating flow (Veh/hr) | Capacity (Veh/hr) | RFC | Throughput (Veh/hr) | End queue (Veh) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|---|
| 1 | 722 | 625 | 1632 | 0.443 | 723 | 0.8 | 3.969 | A |
| 2 | 386 | 768 | 1021 | 0.378 | 387 | 0.6 | 5.690 | A |
| 3 | 935 | 267 | 2071 | 0.452 | 937 | 0.8 | 3.178 | A |
| 4 | 379 | 839 | 632 | 0.600 | 582 | 1.7 | 141.648 | F |

DO NOT SCALE




GENERAL ARRANGEMENT Scale 1:250



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH ST. JOHN'S GYRATORY

Drawing Title: CHANGED PRIORITIES CONCEPT

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| Original Size | Date | Date | Date | Date |
| A1 | 10/04/18 | 17/04/18 | 10/04/18 | 10/04/18 |

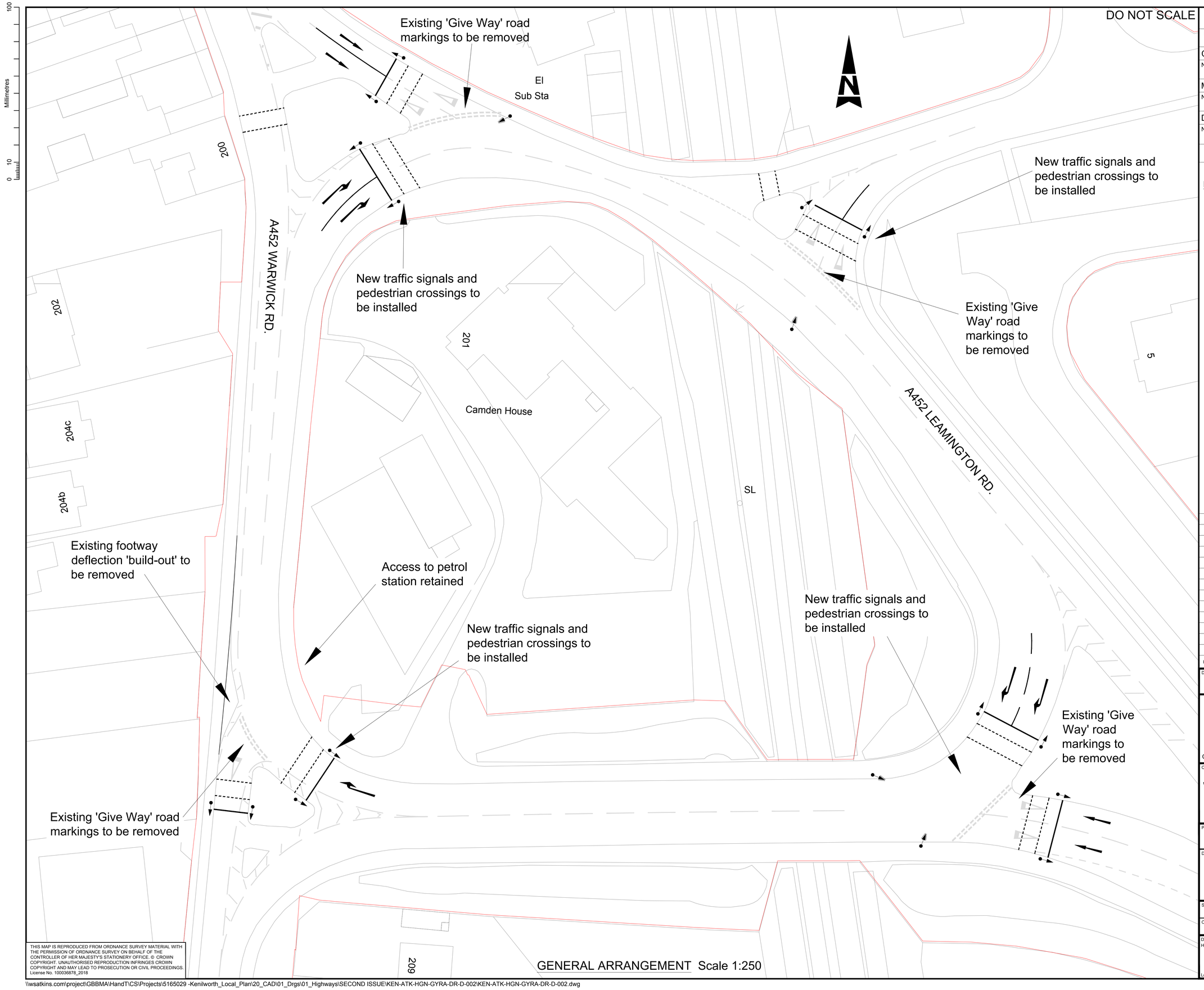
Drawing Number: KEN - ATK - HGN - GYRA - DR - D - 001

HA PIN Location | Originator | Volume | Type | Role | Number

Project Ref. No.: 5165029

Revision: P1

\\wsatkins.com\project\GBBMA\HandT\CS\Projects\5165029 -Kenilworth_Local_Plan\20_CAD\01_Drgs\01_Highways\SECOND ISSUE\KEN-ATK-HGN-GYRA-DR-D-001\KEN-ATK-HGN-GYRA-DR-D-001.dwg




DO NOT SCALE

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

Highway boundary

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH ST. JOHN'S GYRATORY

Drawing Title: SIGNALISATION CONCEPT

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| Original Size: A1 | Date: 10/04/18 | Date: 10/04/18 | Date: 10/04/18 | Date: 10/04/18 |

Drawing Number: HA PIN KEN - ATK - HGN - GYRA - DR - D - 002 (Location - Originator - Volume - Type - Role - Number)

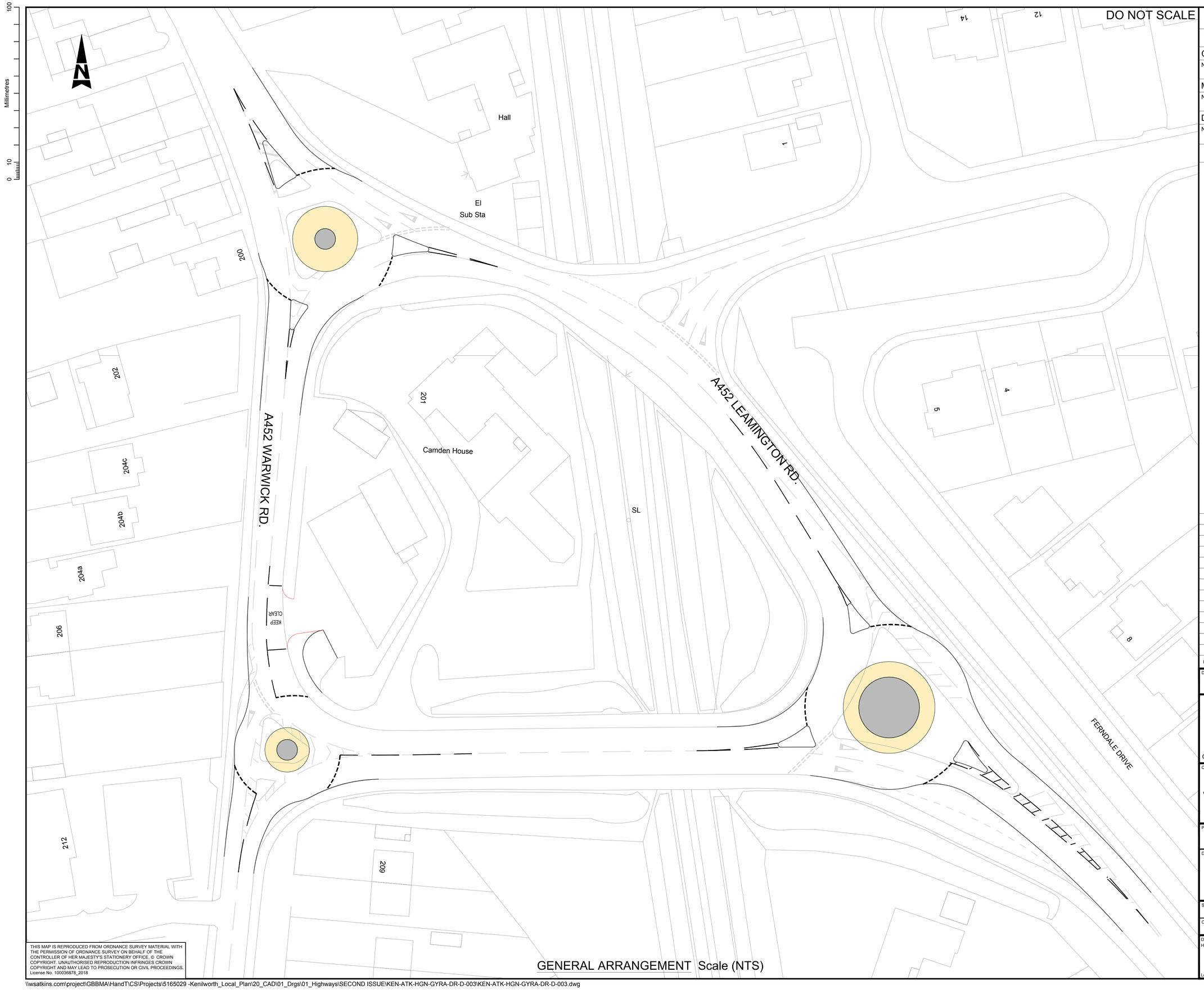
Project Ref. No.: 5165029

Revision: P1



GENERAL ARRANGEMENT Scale 1:250

\\wsatkins.com\project\GBBMA\HandT\CS\Projects\5165029 -Kenilworth_Local_Plan\20_CAD\01_Drgs\01_Highways\SECOND ISSUE\KEN-ATK-HGN-GYRA-DR-D-002\KEN-ATK-HGN-GYRA-DR-D-002.dwg




DO NOT SCALE

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

ATKINS
The AXIS
10, Holliday Street
Birmingham
West Midlands
B1 1TF
Tel: +44 (0121) 483 5000
Fax: +44 (0121) 483 5252
www.atkinsglobal.com



Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH
ST. JOHN'S GYRATORY

Drawing Title: ROUNDABAOUT AND
2 - WAY ROAD CONCEPT

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: HA PIN KEN - ATK - HGN - GYRA - DR - D - 003
(Location | Originator | Volume | Type | Role | Number)

Project Ref. No.: 5165029

Revision: P1

GENERAL ARRANGEMENT Scale (NTS)

Millimetres 0 10 100

DO NOT SCALE

A452 WARWICK RD.

Restricted access to petrol station

Existing footway deflection 'build-out' to be removed

Existing 'Give Way' road markings to be removed

GENERAL ARRANGEMENT Scale 1:100



## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**

NONE

**MAINTENANCE/CLEANING**

NONE

**DECOMMISSIONING/DEMOLITION**

NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 10.04.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION

Suitability: S2

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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH ST. JOHN'S GYRATORY

Drawing Title: CHANGED PRIORITIES CONCEPT MERGE OPTION FOR WARWICK ROAD

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| **Original Size** | **Date** | **Date** | **Date** | **Date** |
| A1 | 10/04/18 | 10/04/18 | 10/04/18 | 10/04/18 |

Drawing Number: HA PIN KEN GYRA - Originator ATK - Volume HGN - Location - Type DR - Role D - Number 004

Project Ref. No.: 5165029

Revision: P1

\\wsatkins.com\project\GBBMA\HandT\CS\Projects\5165029 -Kenilworth_Local_Plan\20_CAD\01_Drgs\01_Highways\SECOND ISSUE\KEN-ATK-HGN-GYRA-DR-D-004\KEN-ATK-HGN-GYRA-DR-D-004.dwg

# Appendix F. Dalehouse Lane

## F.1. Junction Modelling Outputs

## F.2. Option Drawing

# Junctions 9

## PICADY 9 - Priority Intersection Module



**Filename:** Task 5_Dalehouse_Lane_Left Turn.j9
**Path:** \\wsatkins.com\project\GBBMA\HandT\CS\Projects\5165029 - Kenilworth_Local_Plan\08_Technical\Task 5_Dalehouse_Knowle Hill
**Report generation date:** 06/04/2018 10:45:37

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## Summary of junction performance

| | AM | | | | PM | | | |
|---|---|---|---|---|---|---|---|---|
| | Queue (PCU) | Delay (s) | RFC | LOS | Queue (PCU) | Delay (s) | RFC | LOS |
| | 2029 Local Plan (Demand) | | | | | | | |
| Stream B-C | 0.2 | 5.71 | 0.14 | A | | | | |
| Stream B-A | 0.0 | 0.00 | 0.00 | A | | | | |
| Stream C-AB | 0.0 | 0.00 | 0.00 | A | | | | |
| | 2029 Local Plan (Demand) | | | | | | | |
| Stream B-C | | | | | 0.2 | 6.21 | 0.16 | A |
| Stream B-A | | | | | 0.0 | 0.00 | 0.00 | A |
| Stream C-AB | | | | | 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** | (untitled) |
| **Location** | |
| **Site number** | |
| **Date** | 06/04/2018 |
| **Version** | |
| **Status** | (new file) |
| **Identifier** | |
| **Client** | |
| **Jobnumber** | |
| **Enumerator** | WSATKINS\DALE3752 |
| **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 |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|---|---|---|---|---|
| | | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D1 | 2029 Local Plan (Demand) | AM | ONE HOUR | 08:00 | 09:30 | 15 |
| D2 | 2029 Local Plan (Demand) | PM | ONE HOUR | 17:00 | 18:30 | 15 |

## Analysis Set Details

| ID | Network flow scaling factor (%) |
|---|---|
| A1 | 100.000 |

# 2029 Local Plan (Demand), AM

## Data Errors and Warnings

| Severity | Area | Item | Description |
|---|---|---|---|
| Warning | Minor arm flare | Arm B - Minor arm geometry | Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed. |

# Junction Network

## Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | untitled | T-Junction | Two-way | 0.72 | A |

## Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

# Arms

## Arms

| Arm | Name | Description | Arm type |
|---|---|---|---|
| A | untitled | | Major |
| B | untitled | | Minor |
| C | untitled | | Major |

## Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
|---|---|---|---|---|---|---|
| C | 6.32 | | | 250.0 | ✓ | 0.00 |

*Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.*

## Minor Arm Geometry

| Arm | Minor arm type | Width at give-way (m) | Width at 5m (m) | Width at 10m (m) | Width at 15m (m) | Width at 20m (m) | Estimate flare length | Flare length (PCU) | Visibility to left (m) | Visibility to right (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| B | One lane plus flare | 10.00 | 4.31 | 4.31 | 4.31 | 4.30 | ✓ | 1.00 | 81 | 138 |

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

| Junction | Stream | Intercept (PCU/hr) | Slope for A-B | Slope for A-C | Slope for C-A | Slope for C-B |
|---|---|---|---|---|---|---|
| 1 | B-A | 688 | 0.124 | 0.313 | 0.197 | 0.446 |
| 1 | B-C | 814 | 0.123 | 0.311 | - | - |
| 1 | C-B | 719 | 0.275 | 0.275 | - | - |

*The slopes and intercepts shown above do NOT include any corrections or adjustments.*

*Streams may be combined, in which case capacity will be adjusted.*

*Values are shown for the first time segment only; they may differ for subsequent time segments.*

# Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D1 | 2029 Local Plan (Demand) | AM | ONE HOUR | 08:00 | 09:30 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (PCU/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| A | | ✓ | 384 | 100.000 |
| B | | ✓ | 92 | 100.000 |
| C | | ✓ | 258 | 100.000 |

# Origin-Destination Data

### Demand (PCU/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 236 | 148 |
| | B | 0 | 0 | 92 |
| | C | 258 | 0 | 0 |

# Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 0 | 0 |
| | B | 0 | 0 | 0 |
| | C | 1 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (PCU) | Max LOS |
|---|---|---|---|---|
| B-C | 0.14 | 5.71 | 0.2 | A |
| B-A | 0.00 | 0.00 | 0.0 | A |
| C-AB | 0.00 | 0.00 | 0.0 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

### 08:00 - 08:15

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 69 | 757 | 0.091 | 69 | 0.1 | 5.227 | A |
| B-A | 0 | 593 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 0 | 639 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-A | 194 | | | 194 | | | |
| A-B | 178 | | | 178 | | | |
| A-C | 111 | | | 111 | | | |

### 08:15 - 08:30

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 83 | 746 | 0.111 | 83 | 0.1 | 5.424 | A |
| B-A | 0 | 575 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 0 | 624 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-A | 232 | | | 232 | | | |
| A-B | 212 | | | 212 | | | |
| A-C | 133 | | | 133 | | | |

### 08:30 - 08:45

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 101 | 731 | 0.139 | 101 | 0.2 | 5.712 | A |
| B-A | 0 | 550 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 0 | 603 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-A | 284 | | | 284 | | | |
| A-B | 260 | | | 260 | | | |
| A-C | 163 | | | 163 | | | |

### 08:45 - 09:00

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 101 | 731 | 0.139 | 101 | 0.2 | 5.715 | A |
| B-A | 0 | 550 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 0 | 603 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-A | 284 | | | 284 | | | |
| A-B | 260 | | | 260 | | | |
| A-C | 163 | | | 163 | | | |

### 09:00 - 09:15

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 83 | 746 | 0.111 | 83 | 0.1 | 5.426 | A |
| B-A | 0 | 575 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 0 | 624 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-A | 232 | | | 232 | | | |
| A-B | 212 | | | 212 | | | |
| A-C | 133 | | | 133 | | | |

**09:15 - 09:30**

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| **B-C** | 69 | 757 | 0.091 | 69 | 0.1 | 5.233 | A |
| **B-A** | 0 | 593 | 0.000 | 0 | 0.0 | 0.000 | A |
| **C-AB** | 0 | 639 | 0.000 | 0 | 0.0 | 0.000 | A |
| **C-A** | 194 | | | 194 | | | |
| **A-B** | 178 | | | 178 | | | |
| **A-C** | 111 | | | 111 | | | |

# 2029 Local Plan (Demand), PM

### Data Errors and Warnings

| Severity | Area | Item | Description |
|---|---|---|---|
| Warning | Minor arm flare | Arm B - Minor arm geometry | Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed. |

## Junction Network

### Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | untitled | T-Junction | Two-way | 0.77 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Traffic Demand

### Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D2 | 2029 Local Plan (Demand) | PM | ONE HOUR | 17:00 | 18:30 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

### Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (PCU/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| A | | ✓ | 534 | 100.000 |
| B | | ✓ | 100 | 100.000 |
| C | | ✓ | 168 | 100.000 |

## Origin-Destination Data

**Demand (PCU/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 282 | 252 |
| | B | 0 | 0 | 100 |
| | C | 168 | 0 | 0 |

## Vehicle Mix

### Heavy Vehicle Percentages

| | To | | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 0 | 2 |
| | B | 0 | 0 | 0 |
| | C | 1 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (PCU) | Max LOS |
|---|---|---|---|---|
| B-C | 0.16 | 6.21 | 0.2 | A |
| B-A | 0.00 | 0.00 | 0.0 | A |
| C-AB | 0.00 | 0.00 | 0.0 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

### 17:00 - 17:15

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 75 | 729 | 0.103 | 75 | 0.1 | 5.502 | A |
| B-A | 0 | 578 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 0 | 608 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-A | 126 | | | 126 | | | |
| A-B | 212 | | | 212 | | | |
| A-C | 190 | | | 190 | | | |

### 17:15 - 17:30

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 90 | 712 | 0.126 | 90 | 0.1 | 5.784 | A |
| B-A | 0 | 557 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 0 | 587 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-A | 151 | | | 151 | | | |
| A-B | 254 | | | 254 | | | |
| A-C | 227 | | | 227 | | | |

### 17:30 - 17:45

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 110 | 689 | 0.160 | 110 | 0.2 | 6.212 | A |
| B-A | 0 | 527 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 0 | 557 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-A | 185 | | | 185 | | | |
| A-B | 310 | | | 310 | | | |
| A-C | 277 | | | 277 | | | |

### 17:45 - 18:00

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 110 | 689 | 0.160 | 110 | 0.2 | 6.214 | A |
| B-A | 0 | 527 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 0 | 557 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-A | 185 | | | 185 | | | |
| A-B | 310 | | | 310 | | | |
| A-C | 277 | | | 277 | | | |

### 18:00 - 18:15

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 90 | 712 | 0.126 | 90 | 0.1 | 5.788 | A |
| B-A | 0 | 557 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 0 | 587 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-A | 151 | | | 151 | | | |
| A-B | 254 | | | 254 | | | |
| A-C | 227 | | | 227 | | | |

### 18:15 - 18:30

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 75 | 729 | 0.103 | 75 | 0.1 | 5.511 | A |
| B-A | 0 | 578 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-AB | 0 | 608 | 0.000 | 0 | 0.0 | 0.000 | A |
| C-A | 126 | | | 126 | | | |
| A-B | 212 | | | 212 | | | |
| A-C | 190 | | | 190 | | | |

# Junctions 9

## PICADY 9 - Priority Intersection Module



**Filename:** Task 5_Dalehouse_Lane_Right Turn.j9
**Path:** \\wsatkins.com\project\GBBMA\HandT\CS\Projects\5165029 - Kenilworth_Local_Plan\08_Technical\Task 5_Dalehouse_Knowle Hill
**Report generation date:** 06/04/2018 10:32:02

---



## Summary of junction performance

| | AM | | | | PM | | | |
|---|---|---|---|---|---|---|---|---|
| | Queue (PCU) | Delay (s) | RFC | LOS | Queue (PCU) | Delay (s) | RFC | LOS |
| **2029 Local Plan (Demand)** | | | | | | | | |
| Stream B-C | 0.0 | 0.00 | 0.00 | A | | | | |
| Stream B-A | 46.9 | 386.44 | 1.20 | F | | | | |
| Stream C-AB | 0.4 | 5.98 | 0.24 | A | | | | |
| **2029 Local Plan (Demand)** | | | | | | | | |
| Stream B-C | | | | | 0.0 | 0.00 | 0.00 | A |
| Stream B-A | | | | | 1.3 | 22.76 | 0.57 | C |
| Stream C-AB | | | | | 0.4 | 6.96 | 0.25 | 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** | (untitled) |
| **Location** | |
| **Site number** | |
| **Date** | 06/04/2018 |
| **Version** | |
| **Status** | (new file) |
| **Identifier** | |
| **Client** | |
| **Jobnumber** | |
| **Enumerator** | WSATKINS\DALE3752 |
| **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 |

## Analysis Options

| Calculate Queue Percentiles | Calculate residual capacity | RFC Threshold | Average Delay threshold (s) | Queue threshold (PCU) |
|---|---|---|---|---|
| | | 0.85 | 36.00 | 20.00 |

## Demand Set Summary

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D1 | 2029 Local Plan (Demand) | AM | ONE HOUR | 08:00 | 09:30 | 15 |
| D2 | 2029 Local Plan (Demand) | PM | ONE HOUR | 17:00 | 18:30 | 15 |

## Analysis Set Details

| ID | Network flow scaling factor (%) |
|---|---|
| A1 | 100.000 |

# 2029 Local Plan (Demand), AM

## Data Errors and Warnings

| Severity | Area | Item | Description |
|---|---|---|---|
| Warning | Minor arm flare | Arm B - Minor arm geometry | Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed. |

# Junction Network

## Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | untitled | T-Junction | Two-way | 139.72 | F |

## Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

# Arms

## Arms

| Arm | Name | Description | Arm type |
|---|---|---|---|
| A | untitled | | Major |
| B | untitled | | Minor |
| C | untitled | | Major |

## Major Arm Geometry

| Arm | Width of carriageway (m) | Has kerbed central reserve | Has right turn bay | Visibility for right turn (m) | Blocks? | Blocking queue (PCU) |
|---|---|---|---|---|---|---|
| C | 6.84 | | | 250.0 | ✓ | 0.00 |

*Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.*

## Minor Arm Geometry

| Arm | Minor arm type | Width at give-way (m) | Width at 5m (m) | Width at 10m (m) | Width at 15m (m) | Width at 20m (m) | Estimate flare length | Flare length (PCU) | Visibility to left (m) | Visibility to right (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| B | One lane plus flare | 8.82 | 3.36 | 2.76 | 2.76 | 2.76 | ✓ | 1.00 | 81 | 26 |

## Slope / Intercept / Capacity

### Priority Intersection Slopes and Intercepts

| Junction | Stream | Intercept (PCU/hr) | Slope for A-B | Slope for A-C | Slope for C-A | Slope for C-B |
|---|---|---|---|---|---|---|
| 1 | B-A | 534 | 0.094 | 0.237 | 0.149 | 0.338 |
| 1 | B-C | 693 | 0.102 | 0.259 | - | - |
| 1 | C-B | 719 | 0.268 | 0.268 | - | - |

*The slopes and intercepts shown above do NOT include any corrections or adjustments.*

*Streams may be combined, in which case capacity will be adjusted.*

*Values are shown for the first time segment only; they may differ for subsequent time segments.*

# Traffic Demand

## Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D1 | 2029 Local Plan (Demand) | AM | ONE HOUR | 08:00 | 09:30 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

## Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (PCU/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| A | | ✓ | 384 | 100.000 |
| B | | ✓ | 422 | 100.000 |
| C | | ✓ | 368 | 100.000 |

# Origin-Destination Data

### Demand (PCU/hr)

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 236 | 148 |
| | B | 422 | 0 | 0 |
| | C | 258 | 110 | 0 |

# Vehicle Mix

### Heavy Vehicle Percentages

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 0 | 0 |
| | B | 0 | 0 | 0 |
| | C | 1 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (PCU) | Max LOS |
|---|---|---|---|---|
| B-C | 0.00 | 0.00 | 0.0 | A |
| B-A | 1.20 | 386.44 | 46.9 | F |
| C-AB | 0.24 | 5.98 | 0.4 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

### 08:00 - 08:15

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 527 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 318 | 434 | 0.733 | 308 | 2.4 | 26.900 | D |
| C-AB | 111 | 766 | 0.145 | 110 | 0.2 | 5.496 | A |
| C-A | 166 | | | 166 | | | |
| A-B | 178 | | | 178 | | | |
| A-C | 111 | | | 111 | | | |

### 08:15 - 08:30

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 487 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 379 | 414 | 0.916 | 364 | 6.3 | 58.872 | F |
| C-AB | 141 | 778 | 0.182 | 141 | 0.3 | 5.672 | A |
| C-A | 190 | | | 190 | | | |
| A-B | 212 | | | 212 | | | |
| A-C | 133 | | | 133 | | | |

### 08:30 - 08:45

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 468 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 465 | 387 | 1.200 | 381 | 27.2 | 180.826 | F |
| C-AB | 189 | 794 | 0.238 | 189 | 0.4 | 5.969 | A |
| C-A | 216 | | | 216 | | | |
| A-B | 260 | | | 260 | | | |
| A-C | 163 | | | 163 | | | |

### 08:45 - 09:00

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 468 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 465 | 387 | 1.201 | 386 | 46.9 | 357.935 | F |
| C-AB | 189 | 794 | 0.238 | 189 | 0.4 | 5.980 | A |
| C-A | 216 | | | 216 | | | |
| A-B | 260 | | | 260 | | | |
| A-C | 163 | | | 163 | | | |

### 09:00 - 09:15

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 477 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 379 | 414 | 0.917 | 405 | 40.5 | 386.438 | F |
| C-AB | 141 | 778 | 0.182 | 142 | 0.3 | 5.693 | A |
| C-A | 189 | | | 189 | | | |
| A-B | 212 | | | 212 | | | |
| A-C | 133 | | | 133 | | | |

**09:15 - 09:30**

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 484 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 318 | 433 | 0.733 | 423 | 14.2 | 240.446 | F |
| C-AB | 111 | 766 | 0.145 | 112 | 0.2 | 5.520 | A |
| C-A | 166 | | | 166 | | | |
| A-B | 178 | | | 178 | | | |
| A-C | 111 | | | 111 | | | |

# 2029 Local Plan (Demand), PM

### Data Errors and Warnings

| Severity | Area | Item | Description |
|---|---|---|---|
| Warning | Minor arm flare | Arm B - Minor arm geometry | Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed. |

## Junction Network

### Junctions

| Junction | Name | Junction Type | Major road direction | Junction Delay (s) | Junction LOS |
|---|---|---|---|---|---|
| 1 | untitled | T-Junction | Two-way | 5.35 | A |

### Junction Network Options

| Driving side | Lighting |
|---|---|
| Left | Normal/unknown |

## Traffic Demand

### Demand Set Details

| ID | Scenario name | Time Period name | Traffic profile type | Start time (HH:mm) | Finish time (HH:mm) | Time segment length (min) |
|---|---|---|---|---|---|---|
| D2 | 2029 Local Plan (Demand) | PM | ONE HOUR | 17:00 | 18:30 | 15 |

| Vehicle mix source | PCU Factor for a HV (PCU) |
|---|---|
| HV Percentages | 2.00 |

### Demand overview (Traffic)

| Arm | Linked arm | Use O-D data | Average Demand (PCU/hr) | Scaling Factor (%) |
|---|---|---|---|---|
| A | | ✓ | 534 | 100.000 |
| B | | ✓ | 192 | 100.000 |
| C | | ✓ | 280 | 100.000 |

## Origin-Destination Data

**Demand (PCU/hr)**

| | | To | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 282 | 252 |
| | B | 192 | 0 | 0 |
| | C | 168 | 112 | 0 |

## Vehicle Mix

### Heavy Vehicle Percentages

| | To | | | |
|---|---|---|---|---|
| | | A | B | C |
| From | A | 0 | 0 | 2 |
| | B | 0 | 0 | 0 |
| | C | 1 | 0 | 0 |

# Results

## Results Summary for whole modelled period

| Stream | Max RFC | Max delay (s) | Max Queue (PCU) | Max LOS |
|---|---|---|---|---|
| B-C | 0.00 | 0.00 | 0.0 | A |
| B-A | 0.57 | 22.76 | 1.3 | C |
| C-AB | 0.25 | 6.96 | 0.4 | A |
| C-A | | | | |
| A-B | | | | |
| A-C | | | | |

## Main Results for each time segment

### 17:00 - 17:15

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 569 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 145 | 421 | 0.343 | 143 | 0.5 | 12.818 | B |
| C-AB | 103 | 694 | 0.148 | 102 | 0.2 | 6.086 | A |
| C-A | 108 | | | 108 | | | |
| A-B | 212 | | | 212 | | | |
| A-C | 190 | | | 190 | | | |

### 17:15 - 17:30

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 542 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 173 | 399 | 0.432 | 172 | 0.7 | 15.742 | C |
| C-AB | 129 | 692 | 0.187 | 129 | 0.3 | 6.411 | A |
| C-A | 123 | | | 123 | | | |
| A-B | 254 | | | 254 | | | |
| A-C | 227 | | | 227 | | | |

### 17:30 - 17:45

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 504 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 211 | 369 | 0.573 | 209 | 1.3 | 22.203 | C |
| C-AB | 169 | 688 | 0.245 | 168 | 0.4 | 6.942 | A |
| C-A | 139 | | | 139 | | | |
| A-B | 310 | | | 310 | | | |
| A-C | 277 | | | 277 | | | |

### 17:45 - 18:00

| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 503 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 211 | 369 | 0.573 | 211 | 1.3 | 22.755 | C |
| C-AB | 169 | 689 | 0.246 | 169 | 0.4 | 6.956 | A |
| C-A | 139 | | | 139 | | | |
| A-B | 310 | | | 310 | | | |
| A-C | 277 | | | 277 | | | |

### 18:00 - 18:15

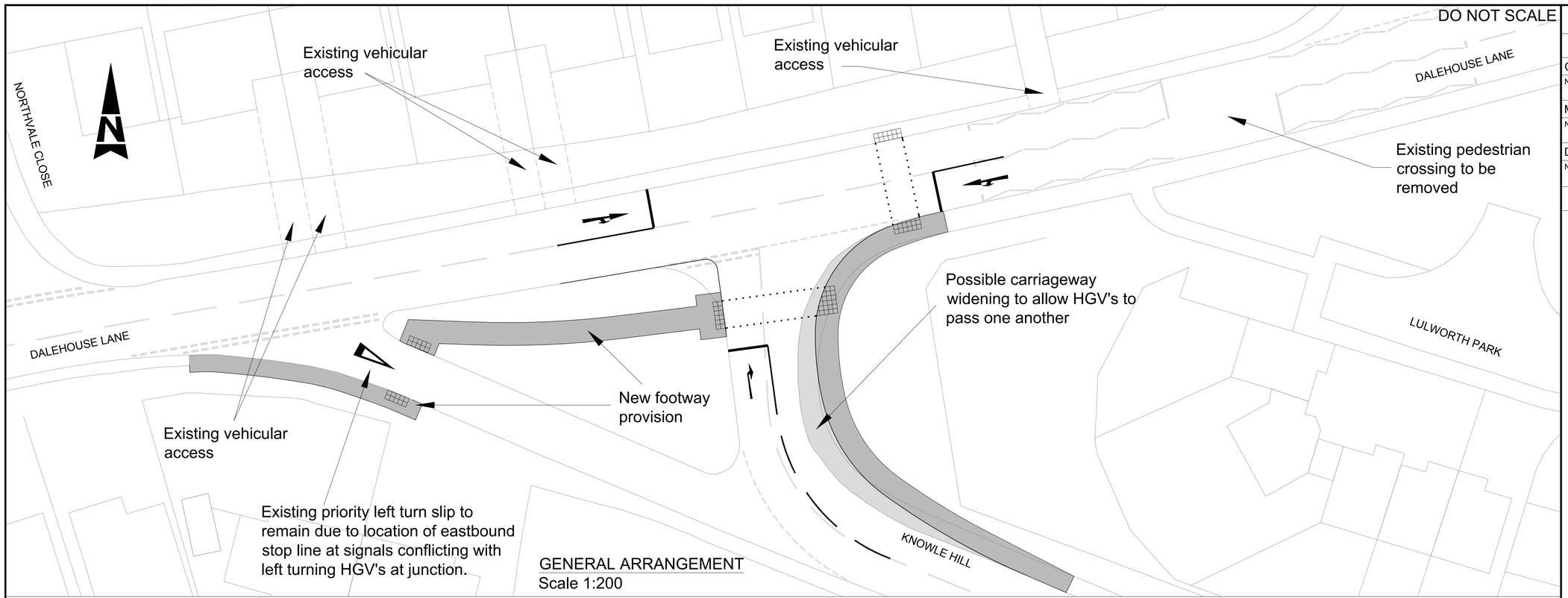
| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 540 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 173 | 399 | 0.432 | 175 | 0.8 | 16.179 | C |
| C-AB | 129 | 692 | 0.187 | 130 | 0.3 | 6.431 | A |
| C-A | 123 | | | 123 | | | |
| A-B | 254 | | | 254 | | | |
| A-C | 227 | | | 227 | | | |

### 18:15 - 18:30

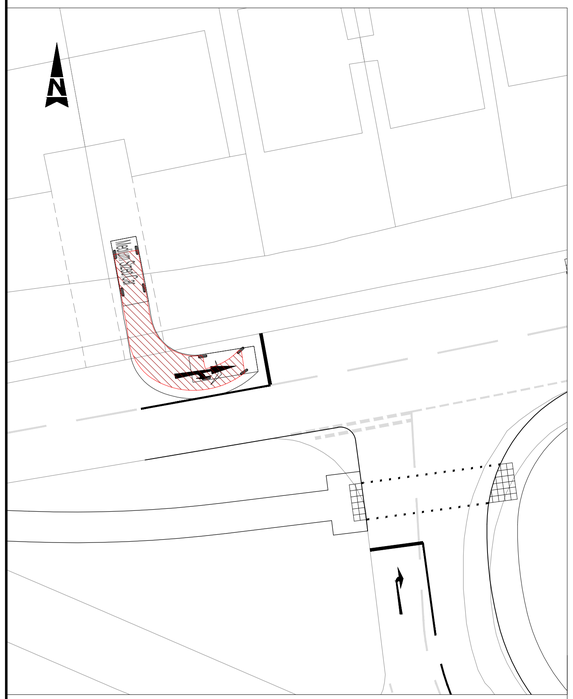
| Stream | Total Demand (PCU/hr) | Capacity (PCU/hr) | RFC | Throughput (PCU/hr) | End queue (PCU) | Delay (s) | LOS |
|---|---|---|---|---|---|---|---|
| B-C | 0 | 567 | 0.000 | 0 | 0.0 | 0.000 | A |
| B-A | 145 | 421 | 0.343 | 146 | 0.5 | 13.112 | B |
| C-AB | 103 | 695 | 0.149 | 104 | 0.2 | 6.111 | A |
| C-A | 107 | | | 107 | | | |
| A-B | 212 | | | 212 | | | |
| A-C | 190 | | | 190 | | | |

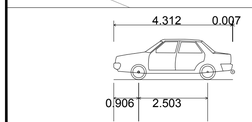
DO NOT SCALE

Millimetres 0 10 100




GENERAL ARRANGEMENT
Scale 1:200

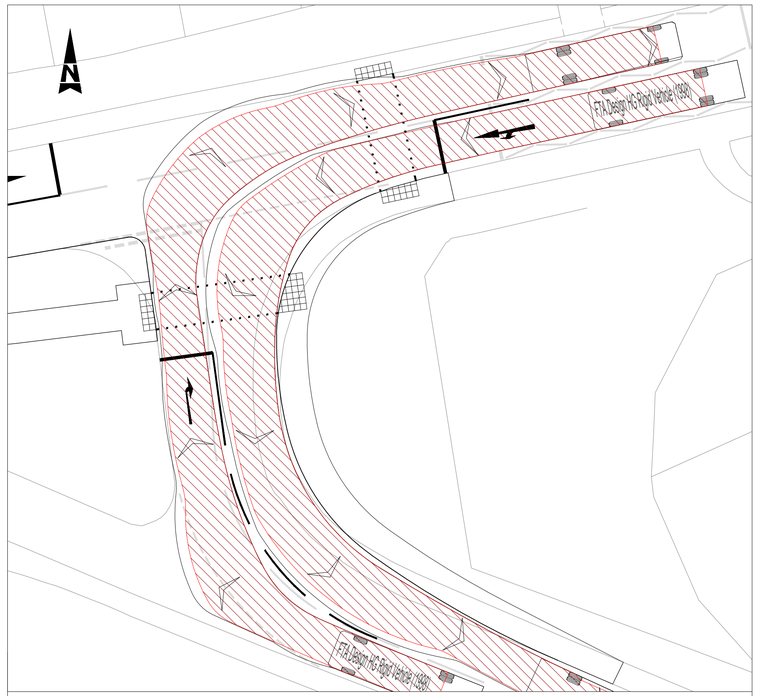


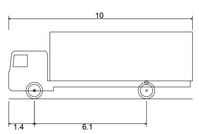




Medium Sized Car

| | |
|---|---|
| Overall Length | 4.319m |
| Overall Width | 1.686m |
| Overall Body Height | 1.466m |
| Min Body Ground Clearance | 0.228m |
| Max Track Width | 1.591m |
| Lock to Lock Time | 4.00s |
| Kerb to Kerb Turning Radius | 5.042m |

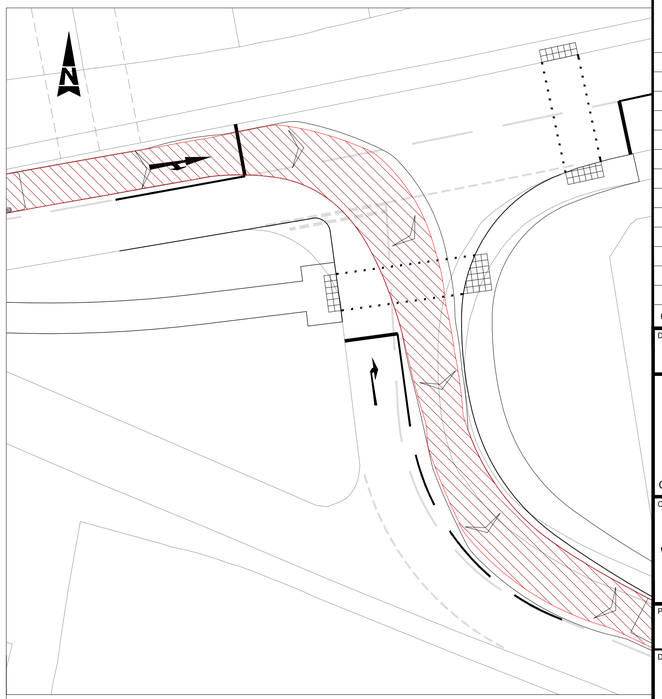


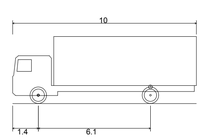



FTA Design HG Rigid Vehicle (1998)

| | |
|---|---|
| Overall Length | 10.000m |
| Overall Width | 2.500m |
| Overall Body Height | 3.645m |
| Min Body Ground Clearance | 0.440m |
| Track Width | 2.470m |
| Lock to Lock Time | 3.00s |
| Kerb to Kerb Turning Radius | 11.000m |




FTA Design HG Rigid Vehicle (1998)

| | |
|---|---|
| Overall Length | 10.000m |
| Overall Width | 2.500m |
| Overall Body Height | 3.645m |
| Min Body Ground Clearance | 0.440m |
| Track Width | 2.470m |
| Lock to Lock Time | 3.00s |
| Kerb to Kerb Turning Radius | 11.000m |

## SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION

In addition to the hazards/risks normally associated with the types of work detailed on this drawing, note the following:

**CONSTRUCTION**
NONE

**MAINTENANCE/CLEANING**
NONE

**DECOMMISSIONING/DEMOLITION**
NONE

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

Key:

- Denotes swept wheel tracks (red) and transporter body (black)
- Denotes forward movement
- Denotes reverse movement
- 2.4m x 120m Junction Visibility Splay
- New Carriageway Construction
- New Footway Construction
- New Tactile Paving

Notes:

1. Layout is based on Ordnance Survey data only. Topographical survey required for detail design.

PEDESTRIAN AND CYCLE REQUIREMENTS TO BE INCORPORATED INTO THE SCHEME AS REQUIRED, SUBJECT TO FURTHER ASSESSMENT.

CONCEPT SCHEME - SUBJECT TO FURTHER MODELLING AND ASSESSMENT.

| Rev. | Date | Description | By | Chk'd | App'd |
|---|---|---|---|---|---|
| P1 | 14.05.18 | DRAWING CREATED | AE | PDE | TC |

Drawing Status: FOR INFORMATION
Suitability: S2

ATKINS
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10, Holliday Street
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Client: WARWICKSHIRE COUNTY COUNCIL (WCC)

Project Title: KENILWORTH GLASSHOUSE LANE

Drawing Title: DALEHOUSE LANE / KNOWLE HILL PROPOSED SIGNALISED JUNCTION

| Scale | Designed | Drawn | Checked | Authorised |
|---|---|---|---|---|
| AS SHOWN | AE | AE | PDE | TC |
| Original Size: A1 | Date: 14/05/18 | Date: 14/05/18 | Date: 14/05/18 | Date: 14/05/18 |

Drawing Number: HA PIN KEN - Originator ATK - Volume HGN - Location DALE - Type DR - Role D - Number 001
Project Ref. No.: 5165029
Revision: P1

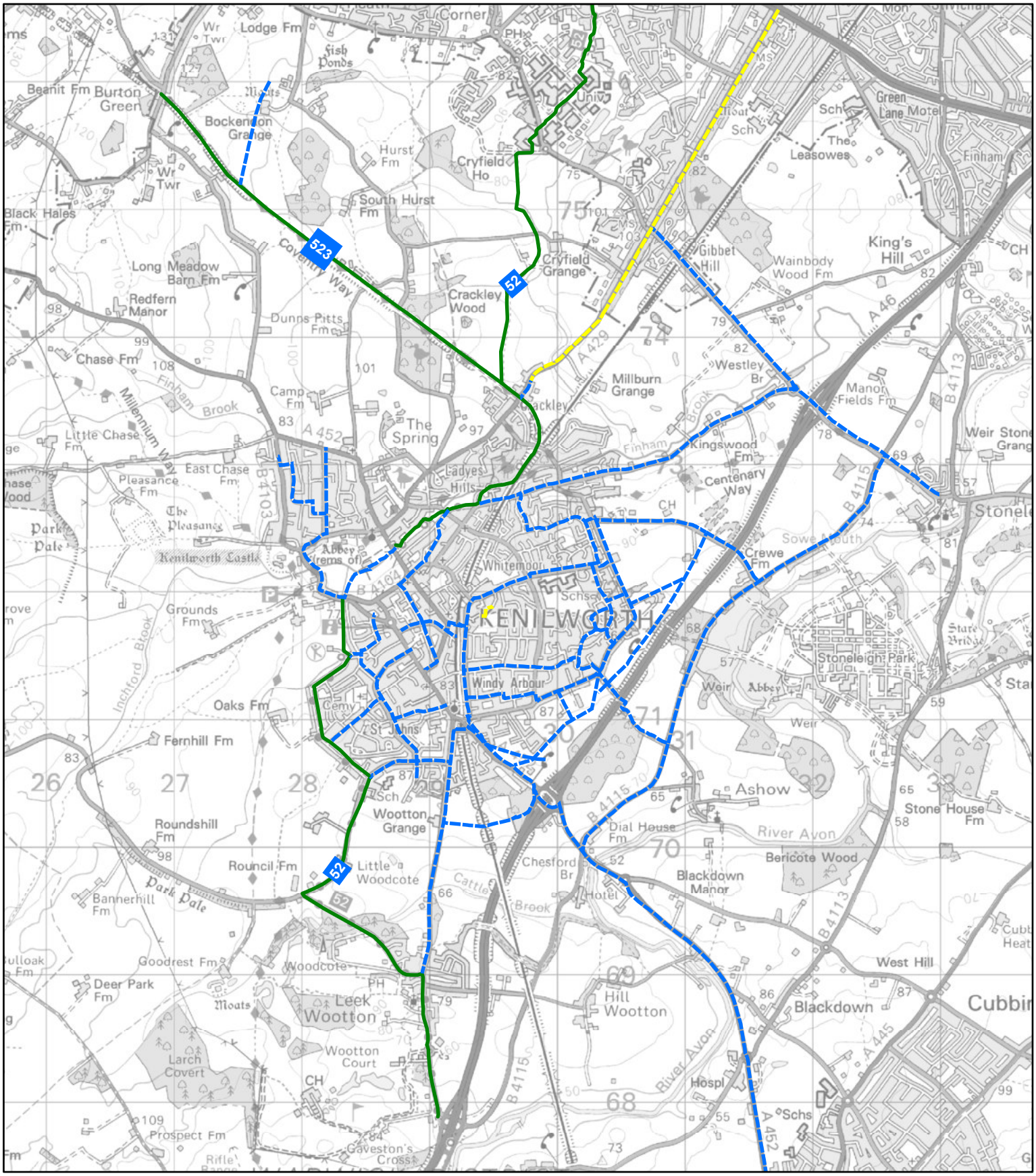
\\wsatkins.com\project\GBBMA\HandT\CS\Projects\5165029 -Kenilworth_Local_Plan\20_CAD\01_Drgs\01_Highways\SECOND ISSUE\KEN-ATK-HGN-DALE-DR-D-001\KEN-ATK-HGN-DALE-DR-D-001.dwg

# Appendix G. Kenilworth Cycle Network

## G.1. Proposed Cycle Routes

## G.2. Kenilworth to Leamington (K2L) Route

# Kenilworth Cycle Routes Plan




**Legend**

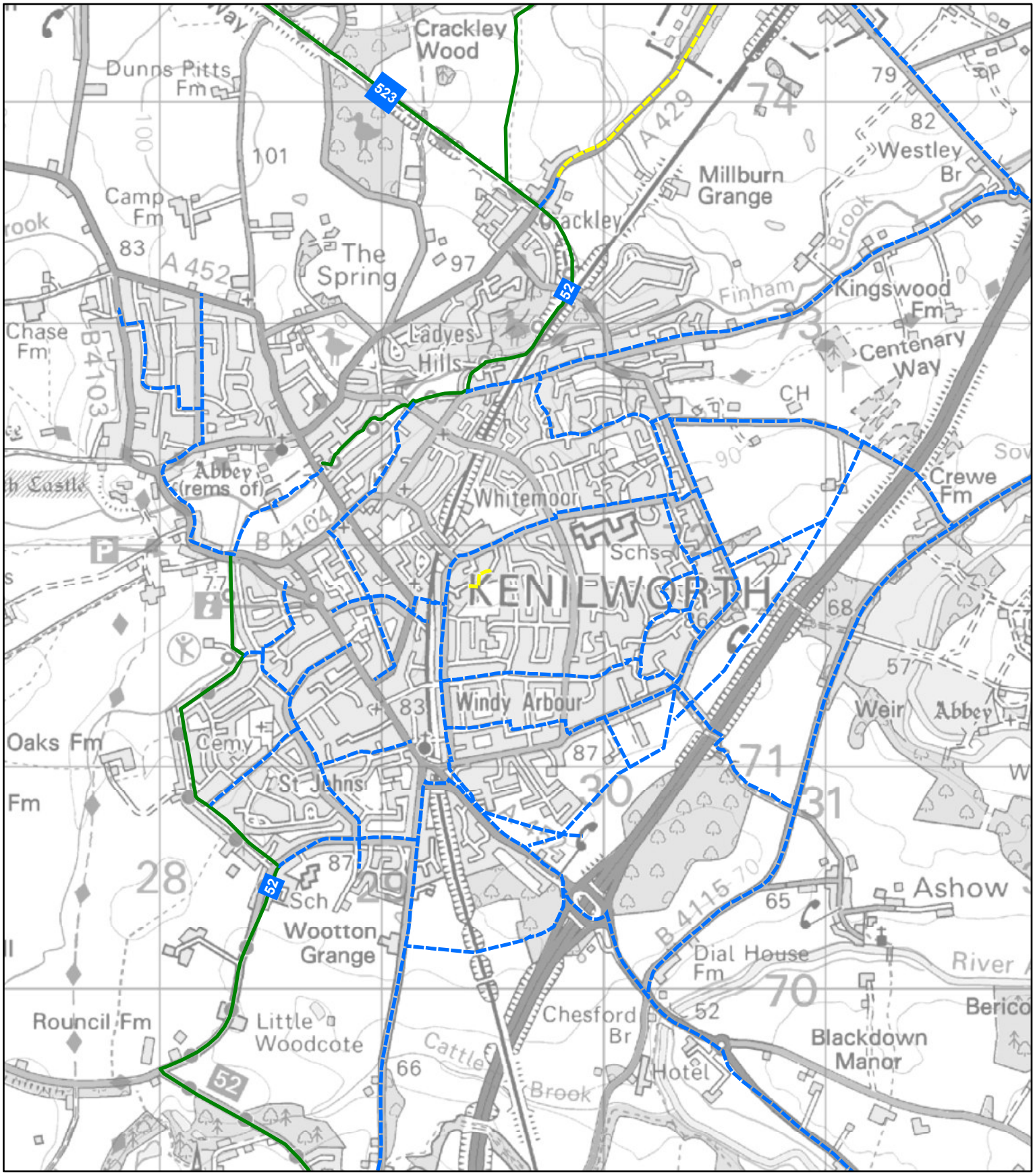
- Existing Cycle Links
- Proposed Cycle Routes
- National Cycle Route

N

Warwickshire County Council

Communities
29 Jun 2018

# Kenilworth Cycle Routes Plan




**Legend**

- Existing Cycle Links
- Proposed Cycle Routes
- National Cycle Route

N

Warwickshire County Council

Communities
29 Jun 2018

# K2L Cycle Route Plan

**Tim Colles**
Atkins Transportation
**Tim.Colles@atkinsglobal.com**