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# Land off Dilmore Lane, Fernhill Heath, Worcestershire

Lioncourt Strategic Land

Transport Assessment  
June 2023





## Document Control

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# 1 Introduction

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- 1.1 Rappor has been instructed by Lioncourt Strategic Land to prepare a Transport Assessment (TA) in support of a residential development on land off Dilmore Lane, Fernhill Heath, Worcestershire.
- 1.2 Outline planning permission is sought for up to 130 dwellings (Use Class C3), including vehicular access from Dilmore Lane, pedestrian and cycle links, public open space, car parking, drainage, landscaping and other associated infrastructure. All matters are reserved except for access.
- 1.3 A Transport Scoping Note (TSN) was submitted to Worcestershire County Council (WCC), as the local highway authority, in February 2023, to agree an approach for this TA, the TSN is contained in **Appendix A**. WCC provided a response to the TSN on Wednesday 17<sup>th</sup> May 2023, which is contained in **Appendix B**. Further discussions between Rappor and WCC have been ongoing since the issue of the pre-application advice, which are also included in **Appendix B**. In summary the following matters have been agreed with WCC:
- a) Site access arrangements off Dilmore Lane (including visibility splays based on DMRB calculations);
  - b) Trip generation based on TRICS database;
  - c) Trip Distribution and Assignment based on 2011 Census;
  - d) Traffic impact assessment at Site Access / Dilmore Lane junction and Dilmore Lane / Droitwich Road (A38) junction;
  - e) Active Travel Corridor through the site linking to Firlands Close;
  - f) Principle of relocating speed limit and provision of gateway feature;
  - g) Principle of covered cycle parking at the 'Dilmore Lane' bus stops on the Droitwich Road (A38);
  - h) Cycle connection to Dilmore Lane;
  - i) Provision of dropped kerbs and tactile paving at off-site junctions; and
  - j) Provision of a Residential Travel Plan (RTP).
- 1.4 It should be noted that following the pre-application with WCC the overall site area has reduced as shown by the illustrative Masterplan contained in **Appendix C**.
- 1.5 Based on the pre-application discussions, a TA is an appropriate form of assessment for the scale of the proposed development.
- 1.6 A RTP has been submitted under separate covers.



## Report Structure

- 1.7 Following pre-application discussions with WCC the key issues that need to be addressed / reviewed within this TA, with reference to the size and location of the development proposal, are as follows.

### Existing Conditions

- a) Review of the site location, composition and local highway network (LHN);
- b) Analysis of local highway safety data for the most recent five-year period available;
- c) Accessibility of the site reviewing pedestrian, cycle and public transport access to the site, plus any infrastructure available to promote travel by sustainable means; and
- d) A review of the relevant planning and transport policy.

### Proposed Conditions

- a) Description of the development proposal;
- b) Description and justification for the proposed access arrangement (vehicular and pedestrian/cycle), and access for fire tenders, service and delivery vehicles, including all necessary swept-path assessments and visibility splays;
- c) Overview of the potential internal layout, car and cycle parking provision;
- d) Forecast trip generation; and
- e) Assess significance of development impact associated with the proposals upon the surrounding transport infrastructure and any necessary mitigation.

- 1.8 The TA concludes that the proposed development, in highway and transportation terms is acceptable, and there are no highway and transportation reasons that should prevent WCC from recommending approval of this planning application.

## 2 The Site and Adjacent Highway Network

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- 2.1 The site is located within the northern extent of the village of Fernhill Heath, Worcestershire, approximately 4.5km north of Worcester City Centre. It is bound to the north by undeveloped land, to the east by residential dwellings associated with Firlands Close, Chestnut Close, Oak Apple Close and Station Road, to the south by a residential development, and to the west by Dilmore Lane.
- 2.2 A site location plan is contained in **Appendix C**.

### Local Highway Network

#### Dilmore Lane

- 2.1 Dilmore Lane is a two-way carriageway that runs in a broadly north to south alignment, along the western boundary of the site. **Photograph 2.1** illustrates the layout of Dilmore Lane, in the vicinity of the proposed site access.



**Photograph 2.1** Looking north on Dilmore Lane

- 2.2 The primary vehicular access to the site is proposed to be served to the east of Dilmore Lane. In the vicinity of the proposed site access location, Dilmore Lane is subject to the national speed limit (60mph). This decreases to 30mph approximately 70m south of the proposed site access location.
- 2.3 As part of the development proposals, it is proposed that the national speed limit will be relocated north of the site access, with the speed limit to the south being reduced to a 30mph speed limit and a gateway feature provided.



- 2.4 In the vicinity of the proposed site access, there is no existing formal footway provision or street lighting. An informal footpath is present along the western side of Dilmore Lane, within the grass verge.
- 2.5 Footway provision and street lighting commences along the eastern side of Dilmore Lane, at the Dilmore Lane / Suffolk Way junction, as shown in **Photograph 2.2**.



**Photograph 2.2** Looking south at the Dilmore Lane / Suffolk Way Junction

- 2.6 As part of the development proposals, the pedestrian facilities are to be improved, as detailed in **Section 5**.

### Suffolk Way

- 2.7 Suffolk Way is a two-way no-through residential access road, which serves approximately 120 dwellings. Suffolk Way is not currently adopted; however, it is understood that technical approval has been granted for the roads.
- 2.8 The dwellings associated with Suffolk Way form the southern border of the site, and it routes broadly east to west. It benefits from footway provision along either side of the carriageway, and street lighting along its extent.
- 2.9 To the west, it forms a priority junction with Dilmore Lane, and to the east, it routes north-east to provide a pedestrian and cycle connection into Firlands Close. At its eastern extent, the pedestrian / cycle connection between Suffolk Way and Firlands Close is fenced off because Suffolk Way is currently unadopted (adjacent to 46 Suffolk Way) and at the turning head at the western extent of Firlands Close, as illustrated in **Photograph 2.3**.





**Photograph 2.3 Looking west from Firlands Close**

#### Droitwich Road (A38)

2.10 Droitwich Road (A38) is an illuminated, approximately 7m wide, single carriageway with a 30mph speed limit. Droitwich Road (A38) provides a route northeast to Droitwich Spa and southwest to Worcester.

#### Public Rights of Way (PROWs)

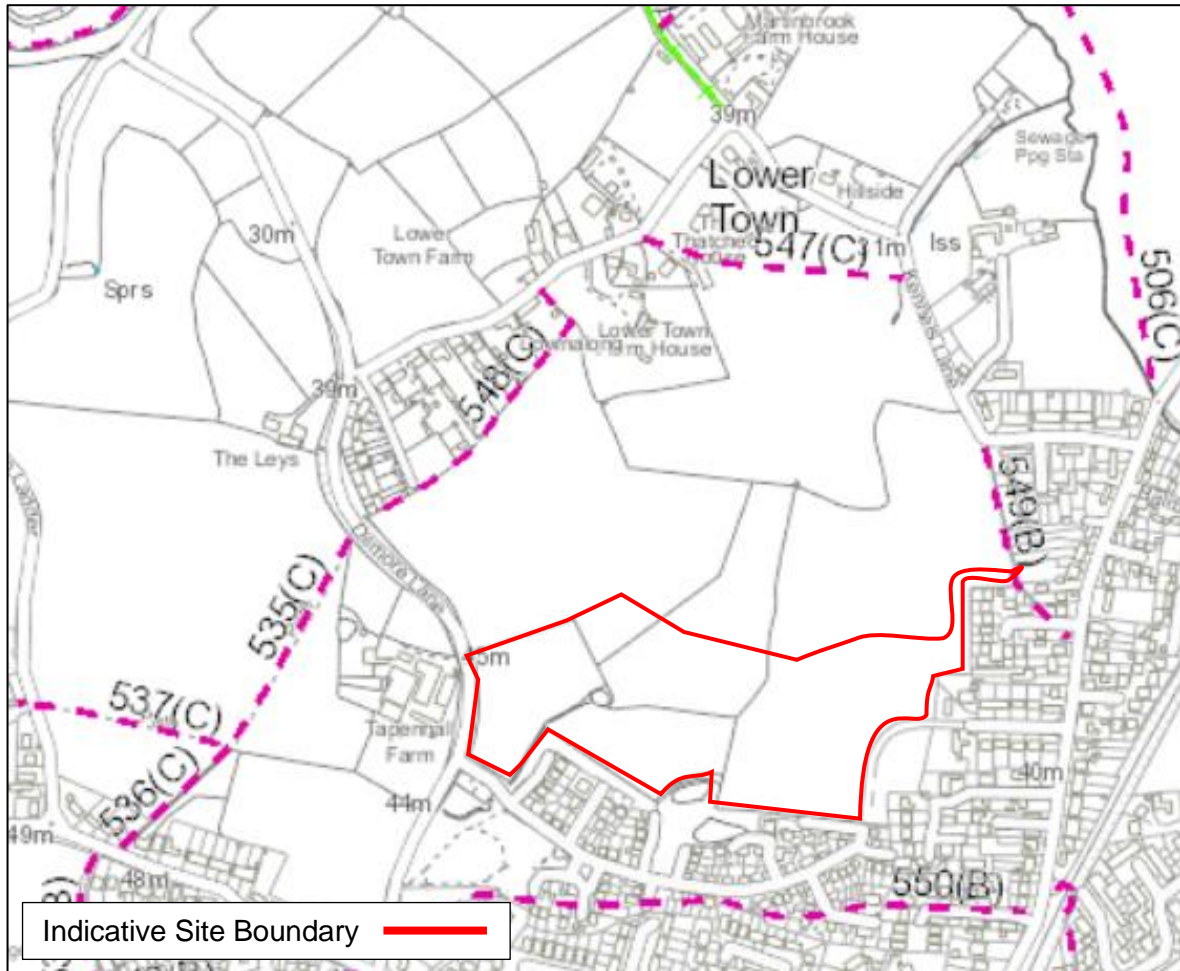
2.11 There are no PROWs crossing the site, however there are a number of PROWs in proximity of the site, as shown in **Figure 2.1**.

2.12 PROW 547 (C) is situated to the north of the site, routing from Kennels Lane to the east, to an unnamed road to the west.

2.13 PROW 549 (B) borders the site in the northeast corner, and routes south from Kennels Lane to Oak Apple Close.

2.14 PROW 548 (C) is to the northwest of the site and connects to an unnamed road to the north, and Dilmore Lane to the south.





**Figure 2.1 PROW Map Extract**

Source: WCC Online Portal

## Existing Traffic Data

2.15 In order to establish the existing traffic conditions along Dilmore Lane, two Automatic Traffic Count (ATC) surveys were undertaken by Paul Castle Associates, an independent traffic surveyor. The ATCs were carried out at two locations:

- a) Along Dilmore Lane, approximately 200m north of the Dilmore Lane / Suffolk Way junction (Northern Dilmore Lane ATC), between Thursday 26th January 2023 and Wednesday 1st February 2023; and
- b) Along Dilmore Lane, in the vicinity of the speed limit change from 30mph to national speed limit, approximately 40m north of the Dilmore Lane / Suffolk Way junction (Southern Dilmore Lane ATC) between Thursday 26th January 2023 and Wednesday 1st February 2023.

2.16 The location and full results of each ATC are contained in **Appendix D**.



- 2.17 Based on the Northern Dilmore Lane ATC survey, Dilmore Lane had an average weekday speed of 30.3mph northbound and 30.7mph southbound, and an 85th percentile speed of 36.5mph northbound and 37.1mph southbound.
- 2.18 Based on the Southern Dilmore Lane ATC survey, Dilmore Lane had an average weekday speed of 30.7mph northbound and 29.5mph southbound, and an 85th percentile speed of 37.4mph northbound and 35.0mph southbound.
- 2.19 The speeds referenced above are utilised later in this TSN to derive visibility splay requirements, to demonstrate to WCC that the access arrangements are safe and suitable to serve the development proposal.
- 2.20 The ATC demonstrated peak hours of 08:00 – 09:00 and 15:00 – 16:00.
- 2.21 Following pre-application discussions, WCC set out that they required a classified traffic count survey of the Droitwich Road (A38) / Dilmore Lane junction with the results being used to assess the traffic impact of the proposed development at that junction. In addition, WCC set out that consideration should be given to undertaking a survey of the Suffolk Way residential development to provide a first principles approach to trip generation in order to validate the TRICS assessment.
- 2.22 Manual classified count (MCC) surveys were undertaken by Auto Surveys Ltd, an independent traffic surveyor, on Wednesday 24<sup>th</sup> May 2023 between 07:00 – 10:00 and 16:00 – 19:00, at the Droitwich Road (A38) / Dilmore Lane junction and the Dilmore Lane / Suffolk Way. An ATC survey could not be undertaken along Suffolk Way given that the road is not yet adopted.
- 2.23 The Droitwich Road (A38) / Dilmore Lane MCC demonstrated peak hours of 07:45 – 08:45 and 16:30 – 17:30. The MCC at Dilmore Lane / Suffolk Way demonstrated peak Suffolk Way inbound and outbound movements at 07:30 – 08:30 and 16:45 – 17:45, respectively.
- 2.24 The location and full results of each MCC are contained in **Appendix D**.

### **Local Highway Safety**

- 2.25 Personal Injury Collision (PIC) data has been obtained from WCC for the most recent five-year period available to the end of December 2022. The study area consists of Dilmore Lane along the site frontage to its junction with Droitwich Road (A38) and Droitwich Road (A38) between its junctions with Hurst Lane (A4536) and Hindlip Lane.



2.26 The review indicates no PICs have been recorded along Dilmore Lane, but five PICs have been recorded to the south of the site, along Droitwich Road (A38) between its junctions with Hurst Lane (A4536) and Hindlip Lane junction, in the most recent five-year period. The five collisions resulted in one serious injury and seven slight injuries. The full PIC data obtained from WCC is contained in **Appendix E**.

#### Serious

2.27 The PIC (Ref: 221202301) occurred on Tuesday 19<sup>th</sup> July 2022 at 02:30 in fine weather conditions with a dry road surface, during the hours of darkness with street lighting lit. The PIC occurred on Droitwich Road (A38) approximately 30m west of its junction with Dilmore Lane. A motorcycle scooter rider travelling eastbound on Droitwich Road (A38) lost control of their scooter and hit an object in the carriageway. The rider was under the influence of drugs and alcohol and sustained serious injuries. The recorded causation factor was 'loss of control'.

#### Slight

2.28 The first PIC (Ref: 18287285) occurred on Monday 23<sup>rd</sup> April 2018 at 14:30 in fine weather conditions with a dry road surface. The PIC occurred on Droitwich Road (A38) approximately 350m southwest of its junction with Dilmore Lane. A car on Droitwich Road (A38) was waiting to and indicating to turn right onto a private drive when they were rear shunted by a car travelling northeast on Droitwich Road (A38). The two drivers sustained 'slight' injuries. The recorded causation factor was 'failed to look properly'.

2.29 The second PIC (Ref: 19848743) occurred on Saturday 15<sup>th</sup> June 2019 at 10:30 in fine weather conditions with a dry road surface. The PIC occurred at the Station Road / Droitwich Road (A38) junction. Two cars were approaching the junction on the Droitwich Road (A38) arms, when one vehicle drifted onto the opposite side of the carriageway, colliding into another vehicle, which span out of control. Both drivers sustained slight injuries. The recorded causation factors were 'Illness or disability, mental or physical' and 'loss of control'.

2.30 The third PIC (Ref: 20922667) occurred on Thursday 2<sup>nd</sup> January 2020 at 07:36 in fine weather conditions but with a wet / damp road surface. The PIC occurred at the Hurst Lane / Droitwich Road (A38) junction. A car has attempted to turn right from Droitwich Road (A38) southwestern arm onto Hurst Lane when they have collided with a cyclist travelling southwest on Droitwich Road (A38). The cyclist sustained slight injuries. The recorded causation factor was the car driver 'failed to look properly'.



2.31 The fourth PIC (Ref: 20937326) occurred on Monday 24<sup>th</sup> February 2020 at 18:45 in fine weather conditions with a dry road surface, during the hours of darkness with street lighting lit. The PIC occurred on Droitwich Road (A38) approximately 45m from the Droitwich Spa (A38) / Grange Lane junction. Temporary traffic lights were in place due to road works. Two cars travelling southwest on Droitwich Road (A38) were stationary at the temporary traffic lights, when a third car rear shunted the back of the stationary vehicle, resulting in a secondary rear shunt collision between the two stationary cars. The drivers of the stationary vehicles sustained slight injuries. The recorded causation factors were 'failed to look properly', 'failed to judge other persons path or speed', and 'careless / reckless / in a hurry'.

#### Summary

2.32 A record of no PICs along Dilmore Lane, over a five-year period, does not suggest that there are any discernible patterns of highway safety concern within the vicinity of the site. There have been five recorded PICs within vicinity to the Dilmore Lane / Droitwich Road (A38) junction. Given the low number of collisions and the absence of any patterns of clustering, it is concluded that there are currently no existing inherent highway safety issues that would be exacerbated by traffic associated with the development proposal. The PIC data obtained from WCC determined that the collisions that have occurred were due to user driver error, and not the geometry of the carriageways.



### **3 Site Accessibility and Opportunities for Sustainable Travel**

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- 3.1 Fernhill Heath is a large village located in Worcestershire; Worcester City Centre is located approximately 4.5km south of the site. The application site is located within the northern extent of Fernhill Heath. Fernhill Heath offers a number of services and amenities typical of such settlements.
- 3.2 When considering the overall sustainability of the site, with regard to transport and highways, it is important that a site can be demonstrated to be accessible for all potential residents without resulting in a heavy reliance on travel by car, particularly single occupancy journeys. Within the local context of the site, this can be assessed having regard to the proximity to local services and amenities, which future residents and / or visitors may require access to on a day-to-day basis. Equally, it can be assessed based on the access to sustainable (non-car) transport modes, which provide alternative options for travelling to any services or amenities located further afield from the site.

#### **Proximity to Local Services and Amenities**

- 3.3 In order to ensure that the proposed residential development can operate sustainably in terms of minimising the overall level of daily vehicular trips to and from the site, particularly single-occupancy vehicle trips, it is necessary to identify what local services and amenities are located within proximity to the site.
- 3.4 The application site benefits from being in proximity to a number of services, amenities, and facilities that are predominantly located to the south of the site, together with a recently constructed residential development with similar accessibility credentials.
- 3.5 **Table 3.1** details walking and cycling distances to typical services, amenities, and facilities along actual walking and cycling routes (and not as ‘the crow flies’). This has been undertaken to demonstrate the ‘average’ distance required for future residents / visitors to travel via walking or cycling.
- 3.6 The routes from the site have considered the proposed pedestrian connection to the footway abutting the eastern side of Dilmore Lane.



| Service/Amenity                                | Access         | Approx. Distance | Approx. Walking Time |         | Approx. Cycling Time |         |
|--|----------------|------------------|----------------------|---------|----------------------|---------|
|  |                |                  | IHT                  | Google  | RB                   | Google  |
| <b>Within 2km Walking Distance</b>             |                |                  |                      |         |                      |         |
| Convenience Store – Premier Express            | Dilmore Lane   | 600m             | 7 mins               | 7 mins  | 3 mins               | 2 mins  |
| Convenience Store – SPAR*                      | Firlands Close | 860m             | 10 mins              | 10 mins | 4 mins               | 3 mins  |
| Post Office*                                   | Firlands Close | 860m             | 10 mins              | 10 mins | 4 mins               | 3 mins  |
| Public House – The Swan*                       | Firlands Close | 860m             | 10 mins              | 10 mins | 4 mins               | 3 mins  |
| War Memorial Club*                             | Firlands Close | 860m             | 10 mins              | 10 mins | 4 mins               | 3 mins  |
| Hindlip Church of England First School*        | Firlands Close | 930m             | 10 mins              | 10 mins | 4 mins               | 3 mins  |
| Barbers – Portia's*                            | Firlands Close | 930m             | 10 mins              | 10 mins | 4 mins               | 3 mins  |
| Bus Stops 'Creswell Close'                     | Dilmore Lane   | 880m             | 10 mins              | 10 mins | 4 mins               | 3 mins  |
| Public House – The White Hart                  | Firlands Close | 1.0km            | 13 mins              | 13 mins | 5 mins               | 4 mins  |
| Public House – The Bull Inn                    | Firlands Close | 1.0km            | 16 mins              | 16 mins | 5 mins               | 5 mins  |
| RGS The Grange School                          | Dilmore Lane   | 1.1km            | 13 mins              | 13 mins | 5 mins               | 4 mins  |
| Claines Church of England Primary School       | Dilmore Lane   | 1.5km            | 18 mins              | 18 mins | 6 mins               | 4 mins  |
| Worcester City Football Club                   | Dilmore Lane   | 1.6km            | 19 mins              | 19 mins | 7 mins               | 7 mins  |
| Worcester Garden Centre                        | Dilmore Lane   | 2km              | 24 mins              | 25 mins | 8 mins               | 7 mins  |
| <b>Within 8km Cycling Distance</b>             |                |                  |                      |         |                      |         |
| North Worcester Primary Academy and Pre-School | Dilmore Lane   | 2.5km            | 30 mins              | 29 mins | 10 mins              | 8 mins  |
| Lidl Store                                     | Dilmore Lane   | 2.5km            | 30 mins              | 29 mins | 10 mins              | 8 mins  |
| Gym – Nuffield Health                          | Dilmore Lane   | 2.8km            | 33 mins              | 34 mins | 12 mins              | 9 mins  |
| Ten Pin Bowling                                | Dilmore Lane   | 2.8km            | 33 mins              | 34 mins | 12 mins              | 9 mins  |
| Claines Pharmacy                               | Dilmore Lane   | 3.2km            | 38 mins              | 38 mins | 13 mins              | 10 mins |
| Bhandal Dental Practice                        | Dilmore Lane   | 3.2km            | 38 mins              | 38 mins | 13 mins              | 10 mins |
| Barbourne Health Centre                        | Dilmore Lane   | 3.4km            | 40 mins              | 41 mins | 14 mins              | 12 mins |
| Perdiswell Leisure Centre                      | Dilmore Lane   | 3.5km            | 42 mins              | 41 mins | 15 mins              | 11 mins |

**Table 3.1 Local Facilities and Amenities**

*\*Routes via a railway bridge*



- 3.7 For robustness, the distances and their corresponding journey times have been measured indicatively from the centre of the application site, noting that the layout is a matter reserved for future consideration and therefore internal walking routes have not been determined. Journey times have been calculated in accordance with Institution of Highways and Transportation (IHT) and 'Road Bike' (RB) guidelines for walking speed (1.4m/s) and cycling speed (4m/s).
- 3.8 The availability of local services and amenities will minimise the need for future residents to travel by car, in favour of sustainable travel choices, for short trips from the site.
- 3.9 **Table 3.1** indicates there is a range of facilities located within 2km (approximately a 25-minute walk or a 7-minute cycle). There are also further facilities accessible by bike, within 8km of the site. **Table 3.1** considers the quickest route from the centre of the site to the service / amenity, via either Dilmore Lane or via Firlands Close. It should be noted that some of the routes via Firlands Close make use of a railway bridge which provides the shortest route to local facilities. Users unable to use the railway bridge would be required to use Station Road or Dilmore Lane which extends the route by approximately 400m – 600m.

## Walking and Cycling

### Walking

- 3.10 Paragraph 4.4.1 of Manual for Streets (MfS) states that walkable neighbourhood are typically characterised as having a range of facilities within 10 minutes walking distance (around 800m). However, it states that this is not an upper limit, and that walking offers the greatest potential to replace short car trips, particularly those under 2km.
- 3.11 The IHT guidance document 'Providing for Journeys on Foot' (published 2000) suggests an acceptable walking distance of 1km for commuting purposes and a preferred maximum walking distance of 2km.
- 3.12 This guidance is supported by the National Travel Survey (NTS) which found that over the past three years 80% (2019), 82% (2020) and 82% (2021) of trips under a mile (1.6km) are undertaken on foot. It should be noted that the NTS for 2020 which was undertaken during the COVID-19 pandemic, had less than half the response rate and experienced substantial missing data, the highway conditions could not be classed as 'normal' which is likely to have impacted on how people travel. However, the 2020 NTS journeys on foot under a mile is validated by the 2021 NTS, released in August 2022, and demonstrates a 2-percentage point increase in journeys by foot under a mile since 2019.

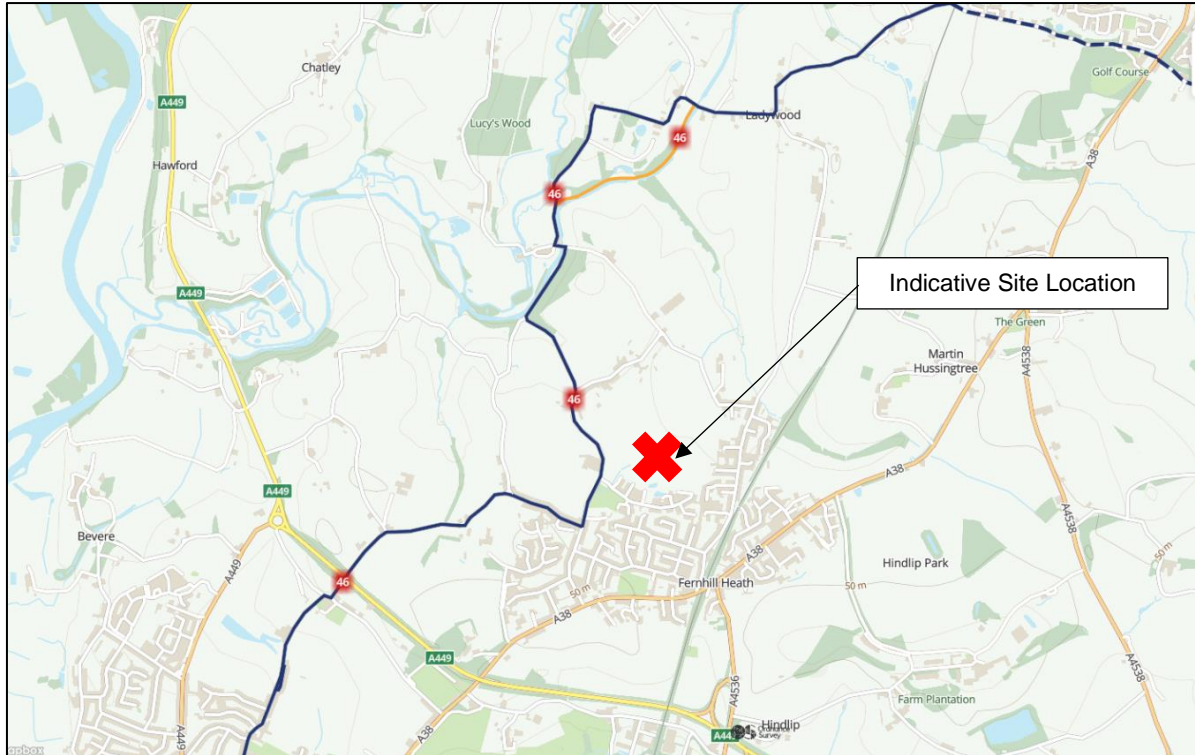




- 3.13 The information set out in **Table 3.1** demonstrates that there are numerous key facilities located within a 2km walking distance.
- 3.14 In the immediate vicinity of the site access, there are no existing pedestrian facilities.
- 3.15 As part of the development proposals, a 3.5m shared cycleway / footway is proposed to abut the eastern side of Dilmore Lane, which will route south and connect into the infrastructure on Suffolk Way. When travelling south towards Droitwich Road (A38), there are several crossings in the form of dropped kerbs with tactile paving across junctions.
- 3.16 The majority of the facilities aforementioned in **Table 3.1** are located to the south of the site and are either along Droitwich Road (A38) or would route via Droitwich Road (A38). Droitwich Road (A38) benefits from footway provision either side of the carriageway, street lighting, and several crossings comprising dropped kerbs, dropped kerbs with tactile paving across junctions and signal controlled crossings.

### Cycling

- 3.17 The Local Transport Note (LTN) 1/20: Cycle Infrastructure Design, produced by the Department for Transport (DfT), states the following at paragraph 2.2.2:
- ‘Two out of every three personal trips are less than five miles in length – an achievable distance to cycle for most people’.*
- 3.18 Cycling has the potential to substitute for short car trips, further facilitating sustainable travel, particularly those trips under five miles (i.e., 8km) and trips of 30 to 40 minutes are considered acceptable for commuting purposes. The growth of electric bikes is also increasing people’s propensity to cycle and reducing journey times.
- 3.19 Whilst there are no formal cycling facilities, the National Cycle Route (NCR) 46 borders the site to the west and routes along Dilmore Lane, as shown in **Figure 3.1**.



**Figure 3.1 NCR Map Extract**

Source: NCR Online Portal

- 3.20 NCR 46 routes from Bromsgrove (England) to Neath (Wales) via Droitwich, Worcester, Hereford and through Wales.
- 3.21 Given the nature and geometry of the LHN, and the NCR 46, it is determined suitable for cyclists to travel along the carriageway. This is further supported by the minimal number of PICs that have occurred within the most recent five-year period, which indicates existing conditions are generally safe for cyclists.
- 3.22 As part of the development proposals, a 3.5m shared cycleway / footway is proposed to abut the eastern side of Dilmore Lane, which will route south and connect into the infrastructure on Suffolk Way.
- 3.23 From the development site, the entirety of Fernhill Heath, as well as the surrounding areas, including Droitwich and Worcester City Centre are within 8km, providing future residents the opportunity to cycle to the services, amenities and employment opportunities located therein, in accordance with LTN 1/20.



## Public Transport Provision

- 3.24 The nearest bus stops are located along Dilmore Avenue, 'Creswell Close', approximately 880m from the centre of the site. From a desktop assessment, the northbound and southbound bus stops operate as a 'Hail and Ride' service, where no formal facilities are present. Both bus stops serve the 355-bus service, which operates between Worcester and Droitwich Spa, three - four times a day, six days a week.
- 3.25 Further bus stops are situated along Droitwich Road (A38), the 'Dilmore Lane' bus stops, which are located approximately 1.1km to the south of the site (measured from the centre of the site). Both the eastbound and westbound stops benefit from a shelter, seating, printed timetable information, a flag and pole, and a dedicated bus lay-by. To promote the use of the bus stops, it is proposed to provide cycle parking facilities at the bus stops, which is discussed later in this report.
- 3.26 The 'Dilmore Lane' stops primarily serves the 144 'Salt Road' service between Worcester, Bromsgrove, and Upper Catshill, which operates every 20-30 minutes, six days a week. The S2 and S4 services are school bus services that operate once a day to Blessed Edward Oldcome Catholic College.
- 3.27 A summary of the bus services is provided in **Table 3.2** with full timetable information provided in **Appendix F**.

| No.                         | Operator               | Route                                  | Days      | First Service | Frequency             | Last Service |
|-----------------------------|------------------------|--|-----------|---------------|-----------------------|--------------|
| <b>Creswell Close Stops</b> |                        |  |           |               |                       |              |
| 355                         | Kev's Cars and Coaches | Droitwich – Fernhill Heath - Worcester | Mon – Fri | 09 51         | Every 2 hours         | 15 51        |
|                             |                        |  | Sat       | 09 51         | Every 2 hours         | 13 51        |
|                             |                        |  | Sun       | No Services   |                       |              |
|                             |                        | Worcester – Fernhill Heath - Droitwich | Mon – Fri | 08 00         | Every 2 hours         | 14 34        |
|                             |                        |  | Sat       | 10 34         | Every 2 hours         | 14 43        |
|                             |                        |  | Sun       | No Services   |                       |              |
| <b>Dilmore Lane Stops</b>   |                        |  |           |               |                       |              |
| 144                         | First Worcestershire   | Worcester – Droitwich – Catshill       | Mon – Fri | 06 48         | Every 20 - 30 minutes | 18 25        |
|                             |                        |  | Sat       | 06 43         | Every 20 - 30 minutes | 18 13        |
|                             |                        |  | Sun       | No Services   |                       |              |
|                             |                        | Catshill – Droitwich – Worcester       | Mon – Fri | 07 05         | Every 20 - 30 minutes | 18 55        |
|                             |                        |  | Sat       | 07 40         | Every 20 - 30 minutes | 18 50        |
|                             |                        |  | Sun       | No Services   |                       |              |

**Table 3.2 Local Bus Route Timetables**

Note: Information taken from [www.travelinesw.co.uk](http://www.travelinesw.co.uk) May 2023



- 3.28 The number 355 bus service, from the Creswell Close bus stops, provides a service throughout the week between Droitwich and Worcester. The 355 service has a journey time of 19 minutes to Worcester and 21 minutes to Droitwich.
- 3.29 Services are also provided from the Dilmore Lane bus stops, which serves the 144 bus service, that operates a service between Catshill and Worcester every half an hour. From the Dilmore Lane bus stops, the 144 has a journey time of 15 minutes to Worcester, 11 minutes to Droitwich, 28 minutes to Bromsgrove, and 45 minutes to Catshill.
- 3.30 The S2 and S4 provide a weekday school bus service to Blessed Edwards Oldcorne Catholic College.
- 3.31 The bus services provide a reasonable level of service for residents and visitors to travel to / from the development to the surrounding areas for commuting and recreational purposes throughout the week.

#### Rail Services

- 3.32 The site benefits from access to Droitwich Spa Railway Station, Worcester Foregate Street Railway Station, and Worcester Shrub Hill Railway Station.
- 3.33 Droitwich Spa Railway Station can be accessed via the 144 Salt Road bus service from the Dilmore Lane bus stops, with a journey time of 30-minutes. The station provides direct services to Birmingham, Dorridge, Worcester, Hereford and Worcester, whilst stopping at other destinations on-route.
- 3.34 Worcester Foregate Street Railway Station can be accessed via the 144 Salt Road bus service from Dilmore Lane bus stops, with a journey time of 23-minutes. The station provides direct access to Great Malvern, London Paddington, Birmingham, Hereford and Leamington Spa, whilst stopping at other destinations on route.
- 3.35 The majority of the routes which pass Worcester Foregate Street Railway Station, also stop at Worcester Shrub Hill Railway Station. Worcester Shrub Hill Railway Station can be accessed via the 144 Salt Road bus service from Dilmore Lane bus stops, with a journey time of 40-minutes.



## Summary

3.36 The application site benefits from being in proximity to a selection of services, facilities and amenities, supplied by suitable pedestrian linkages and a reasonable level of bus services for the size of the village in which the application site is located, which provide access to further services, facilities, amenities and employment opportunities within Fernhill Heath and Worcester. Future residents will therefore be afforded the opportunity to use non-car modes of travel as genuine alternatives. This has been confirmed through the approval of a residential development to the south, which has similar accessibility credentials as the application site.



## 4 Transport Planning Policy and Guidance

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4.1 The relevant transportation policies are set out in the following National and Local documents:

- a) National Planning Policy Framework (2021);
- b) Planning Practice Guidance Travel Plans, Transport Assessment and Statements in Decision Taking (2014);
- c) Manual for Streets (2007);
- d) Manual for Streets 2 (2010);
- e) WCC Streetscape Design Guide (July 2022);
- f) South Worcestershire Development Plan (2016);
- g) South Worcestershire Development Plan Review (Emerging).

4.2 The main thrust of recent national and local policy guidance is to:

- a) Make effective and efficient reuse of land;
- b) Reduce car dependency;
- c) Make walking and cycling trips easier; and
- d) Encourage public transport trips.

### National Planning Policy Framework (2021)

4.3 National guidance on planning is set out in the updated National Planning Policy Framework (NPPF) published in July 2021 by the Ministry of Housing, Communities and Local Government. It sets out the Government's planning policies for England and how these should be applied. At the heart of the NPPF is a presumption in favour of sustainable development.

4.4 Chapter 9 of the NPPF deals with '*Promoting sustainable transport*' and Paragraph 104 of the NPPF states that "*transport issues should be considered from the earliest stages of plan-making and development proposals, so that:*

- a) *the potential impacts of development on transport networks can be addressed;*
- b) *opportunities from existing or proposed transport infrastructure, and changing transport technology and usage, are realised - for example in relation to the scale, location or density of development that can be accommodated;*
- c) *opportunities to promote walking, cycling and public transport use are identified and pursued;*



- d) *the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and*
- e) *patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places.”*

4.5 Paragraph 110 states that *“In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:*

- a) *appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;*
- b) *safe and suitable access to the site can be achieved for all users;*
- c) *the design of streets, parking areas, and other transport elements and content of associated standards reflects current national guidance, including the National Design Guide and National Model Design Code; and*
- d) *any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.”*

4.6 Paragraph 111 states that *“Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe”.*

4.7 Paragraph 112 states that ‘applications for development should:

- a) *“give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment areas for bus or other public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;*
- b) *address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- c) *create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- d) *allow for the efficient delivery of goods, and access by services and emergency vehicles; and*
- e) *be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.”*





## **National Planning Practice Guidance (March 2014)**

- 4.8 The National Planning Practice Guidance (NPPG) provides the link between the National Planning Policy Framework (NPPF) and relevant planning practice guidance, as well as between different categories of guidance.
- 4.9 In respect of transport, the NPPG provides advice on what Transport Assessments (TA), Transport Statements (TS) and Travel Plans (TP) are, when they are required, and the information that should be included when preparing the document. The key overarching principles included in the NPPG for TP's, TA's and TS's state that documents should be:
- a) Proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;
  - b) Established at the earliest practicable possible stage of a development proposal;
  - c) Tailored to particular local circumstances (other locally determined factors and information beyond those which are set out in this guidance may need to be considered in these studies provided there is robust evidence for doing so locally); and
  - d) Brought forward through collaborative ongoing working between the Local Planning Authority/Transport Authority, transport operators, Rail Network operators, Highways England where there may be implications for the strategic road network and other relevant bodies. Engaging communities and local businesses in Travel Plans, Transport Assessments and Statements can be beneficial in supporting higher levels of walking and cycling (which in turn can encourage greater social inclusion, community cohesion and healthier communities).

## **Manual for Streets (2007)**

- 4.10 Manual for Streets (MfS) is a Department for Transport (DfT) publication which provides guidance for planning and designing new streets. It aims to increase the quality of life through good design, which creates more people-orientated streets.
- 4.11 The guidance contains principles in the design of suitable pedestrian and cyclist facilities to encourage and facilitate travel via these modes. Making the local environment convenient and attractive to walk in can help prioritise walking and cycling and reduce reliance on motor transport.



## Manual for Streets 2 (2010)

4.12 Manual for Streets 2 (MfS2) takes the principles set out in MfS and demonstrates through guidance and case studies how they can be extended beyond residential streets to encompass both urban and rural situations. MfS2 does not supersede MfS, rather it explains how the principles of MfS can be applied more widely, exploring in greater detail how and where its key principles can be applied to busier streets and roads.

## WCC Streetscapes Design Guide (July 2022)

4.13 WCC's Streetscapes Design Guide (SDG) was adopted in July 2022 and provides local guidance on how new developments within Worcestershire can contribute to the provision of a safe and sustainable transport network.

4.14 The aims of WCC's SDG are to:

- *'Ensure that new development relates to its context, with transport links integrating seamlessly within the built and natural environment to the benefit of new residents, adjacent occupiers and existing communities alike;*
- *Ensure that transport infrastructure is designed to encourage alternatives to the private car, by providing convenient, safe and attractive provision for pedestrians, cyclists and passenger transport users to key trip attractors, permeating both new developments and existing communities;*
- *Ensure the design of streets within new developments continues to accommodate necessary vehicle movements, and facilitate car parking, but seeks to encourage traffic speeds of 20mph or less;*
- *Ensure new development is intuitive in its approach, providing easy and safe access between highways, car parking areas and dwellings for everyone, including those with visual and mobility impairment;*
- *Ensure that new developments are designed to provide a safe, secure and sustainable environment, including embracing sustainable green infrastructure throughout the design process, recognising the central role that such infrastructure plays in delivering liveable, attractive communities and improving public health;*
- *Secure a movement network which is adoptable, with an extensive design life and easily maintained.'*



### **South Worcestershire Development Plan (2016)**

- 4.15 The South Worcester Development Plan (SWDP) was formally adopted in 2016 and sets out the strategic objectives and overall principles for future development across Malvern Hills District Council, Wychavon District Council and Worcester City Council up to 2030.
- 4.16 SWDP 4 relates to moving around Worcestershire and states that *“proposals must demonstrate that: the layout of development will minimise demand for travel, they offer genuinely sustainable travel choices, they address road safety and they are consistent with the delivery of the Worcestershire Transport Plan objectives”*.
- 4.17 It goes on to state that *“new development should have regard to the design criteria and principles set out in Manual for Streets, Worcestershire County Council’s Local Transport Plan, and Worcestershire County Council’s Highways Design Guide”*.

### **South Worcestershire Development Plan Review (Emerging)**

- 4.18 The South Worcestershire Councils, including Wychavon District Council started a review of the SWDP in 2017. The SWDP is currently at the Regulation 19 stage.
- 4.19 The review will provide an updated plan up to 2041, and will update the existing SWDP and where necessary its vision, objectives, spatial strategy and policies for the future development of the South Worcestershire area.
- 4.20 The second part of the plan includes site allocations, policies and policy designations that will provide for the development needs of the area up to 2041. This site does not have a draft allocation for development in the SWDPR but it still has further stages to progress before adoption. Land to the west of Dilmore Lane at the junction with Danes Green has a draft allocation for 40 dwellings and currently has a planning application pending for this quantum of development.



## 5 Development Proposals

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- 5.1 Outline planning permission is sought for up to 130 dwellings (Use Class C3), including vehicular access from Dilmore Lane, pedestrian and cycle links, public open space, car parking, drainage, landscaping and other associated infrastructure. All matters are reserved except for access.
- 5.2 The illustrative site Masterplan is provided in **Appendix G**.

### Access Strategy

- 5.3 There are two main accesses to the proposed residential development. The access strategy is summarised below:
- a) To the southwest of the site, a vehicular, pedestrian and cyclist access onto Dilmore Lane; and
  - b) To the southeast of the site, an emergency vehicle, pedestrian and cyclist access onto the existing connection between Suffolk Way and Firlands Close.

### Pedestrian and Cyclist Access

- 5.4 In terms of pedestrian access, there are four links proposed as part of the scheme, which are as follows:
- a) A new 3.5m footway/cycleway 'active travel corridor' will be incorporated into the vehicular access onto Dilmore Lane. This will continue along the eastern side of Dilmore Lane and connect into existing infrastructure at the Dilmore Lane / Suffolk Way junction;
  - b) A new 4m wide 'active travel corridor' from the proposed 3.5m 'active travel corridor' along Dilmore Lane in the southwest corner of the site to provide a separate route away from vehicular traffic as requested by WCC during pre-application discussions;
  - c) A connection into the existing link in the south-eastern extent of the site, which is currently used as a pedestrian / cyclist / emergency vehicle access to Firlands Close; and
  - d) A pedestrian connection to the existing PROW 549 (B) which borders the site in the northeast corner, and routes south from Kennels Lane to Oak Apple Close.



### Vehicular Access

- 5.5 The vehicular access is proposed to be from Dilmore Lane, in the form of a simple priority junction, at the south-western extent of the site. The dimensions of the junction will comply with the WCC Streetscape Design Guide. The access has been designed as follows:
- a) A 5.5m carriageway width;
  - b) 10m radii;
  - c) 2m footway along the northern side; and
  - d) A 3.5m 'active travel corridor' along the southern side, extending south.
- 5.6 The proposed site access arrangements are demonstrated on the drawing contained in **Appendix H**.
- 5.7 In addition, an emergency vehicle access is proposed to serve the application site from the existing connection between Suffolk Way and Firlands Close.

### Swept-Path Analysis

- 5.8 Swept-path analysis has been undertaken of the proposed site access arrangements which is contained in **Appendix I**. The swept-path analysis demonstrates:
- a) Two-way movements of an estate car;
  - b) That a refuse vehicle can access and egress the site in a forward gear, with sufficient room for two-way movement with an estate car or sufficient intervisibility to enable one vehicle to wait and pass each other; and
  - c) A fire tender is able to access and egress the application site in a forward gear from the Dilmore Lane access.

### Dilmore Lane Visibility Assessment

- 5.9 Any new vehicle access should be demonstrated as being able to provide suitable visibility splays in accordance with the relevant national guidance i.e., Manual for Streets (MfS) & Manual for Streets 2 (MfS2) and the Design Manual for Roads and Bridges (DMRB), or local guidance as appropriate.
- 5.10 A new access is proposed to serve the application site from Dilmore Lane in the form of a priority junction. On this basis, a visibility assessment has been undertaken to demonstrate suitable visibility splays in accordance with recorded speeds on Dilmore Lane. The ATC surveys undertaken along Dilmore Lane as set out in **Section 2**, have been utilised to derive the visibility splay requirements.



- 5.11 Two ATC surveys were undertaken by Paul Castle Associates, an independent traffic surveyor, along Dilmore Lane to provide an assessment of the current vehicle speeds at the northern and southern extents of the visibility splays from the proposed site access given the change in speed limit and character / road alignment along Dilmore Lane. This is a robust assessment as it is proposed to reduce the speed limit to 30mph along the western boundary of the site and provide a new gateway feature. The commissioning of new traffic surveys, at the extent of each achievable visibility is also an extremely robust assessment.
- 5.12 The visibility splays have been calculated using the southbound speed (travelling towards the site access) from the northern ATC survey and the northbound speed (travelling towards the site access) from the southern ATC. The relevant speeds are summarised in **Table 5.1**.

| Direction of Traffic Flow | Average Speeds (mph) | 85 <sup>th</sup> Percentile Speed (mph) |
|---------------------------|----------------------|---|
| Northbound                | 30.7mph              | 37.4mph                                 |
| Southbound                | 30.7mph              | 37.1mph                                 |

**Table 5.1 Summary of Vehicle Speeds on Dilmore Lane**

- 5.13 For design purposes, the 85th percentile vehicle speeds shall be used to assess the visibility requirement for the proposed access.
- 5.14 As the recorded 85th percentile speeds are below 40mph, but above narrowly above 37mph, two visibility assessments have been undertaken based on MfS / MfS2 standards and based on DMRB standards.
- 5.15 It was set out by WCC during pre-application discussions that they would prefer the DMRB visibility splays to be provided, however the MfS2 assessment has been retained as it is deemed that the splays based on MfS2 parameters can be justified. Notwithstanding this, the DMRB standards have been demonstrated from the site access.

#### MfS2 Assessment

- 5.16 A MfS2 deceleration rate visibility parameter of 3.68m/s and a 2 second reaction time have been reviewed, in accordance with Table 10.1 of MfS2 for recorded speeds above 37mph.
- 5.17 A summary of the MfS2 criteria used to calculate the emerging visibility splays from the proposed site access onto Dilmore Lane are provided below:

#### *Northbound*

- a) 85th Percentile (Design Speed): 37.4mph
- b) Reaction Time: 2 seconds; and



- c) Deceleration Time: 3.68m/s

*Southbound*

- a) 85th Percentile (Design Speed): 37.1mph
- b) Reaction Time: 2 seconds; and
- c) Deceleration Time: 3.68m/s

5.18 With regard to the 'X' distance, the standard 2.4m has been used.

5.19 On this basis, the following visibility splays are required:

- a) Junction visibility of 2.4m x 70.6m to the north (85th percentile speeds of 37.1mph southbound);
- b) Junction visibility of 2.4m x 71.5m to the south (85th percentile speeds of 37.4mph northbound);
- c) Forward visibility of 73m to the north for right turning vehicles (85th percentile speeds of 37.1mph southbound); and
- d) Forward visibility of 73.9m to the north to the rear of right turning vehicles (85th percentile speeds of 37.4mph northbound).

5.20 An access arrangement drawing, contained in **Appendix J**, demonstrates the required emerging visibility splays can be achieved based on MfS2 parameters from the proposed access within land controlled by the applicant and the highway boundary, the highway record data obtained from WCC is contained in **Appendix K**.

*DMRB Assessment*

5.21 To provide a robust assessment, a DMRB deceleration rate visibility parameter of 2.45m/s and a 2 second reaction time have been applied.

5.22 A summary of the criteria used to calculate the emerging visibility splays from the proposed site access onto Dilmore Lane are provided below:

*Northbound*

- a) 85th Percentile (Design Speed): 37.4mph
- b) Reaction Time: 2 seconds; and
- c) Deceleration Time: 2.45m/s

*Southbound*

- a) 85th Percentile (Design Speed): 37.1mph
- b) Reaction Time: 2 seconds; and





- c) Deceleration Time: 2.45m/s

5.23 With regard to the 'X' distance, the standard 2.4m has been used.

5.24 On this basis, the following visibility splays are required:

- a) Junction visibility of 2.4m x 89.4m to the north (85<sup>th</sup> percentile speeds of 37.1mph southbound);
- b) Junction visibility of 2.4m x 90.5m to the south (85<sup>th</sup> percentile speeds of 37.4mph northbound);
- c) Forward visibility of 91.8m to the north for right turning vehicles (85<sup>th</sup> percentile speeds of 37.1mph southbound); and
- d) Forward visibility of 92.2m to the north to the rear of right turning vehicles (85<sup>th</sup> percentile speeds of 37.4mph northbound).

5.25 The visibility assessment drawing, contained in **Appendix L**, demonstrates the higher emerging visibility splays can be achieved from the proposed access within land controlled by the applicant and the highway boundary. The DMRB visibility splays have been confirmed as suitable by WCC and these splays will be provided, should planning permission be granted.

### Summary

5.26 The two visibility splay assessments demonstrate that safe and suitable visibility splays can be provided in accordance with MfS or DMRB. The visibility splays can be provided in accordance with the DMRB standards as set out in WCC pre-application comments.

5.27 On this basis, in the context of Paragraph 110 of the NPPF a safe and suitable access can be provided for all users of the application site onto Dilmore Lane.

### Dilmore Lane Mitigation Measure

5.28 It is proposed that the existing change in speed limit is relocated to the north of the proposed application site access, along with a new village gateway feature as shown on the drawing contained in **Appendix M**. The speed limit was previously relocated in association with the Suffolk Way development, and therefore this principle is established. These proposals have been agreed in principle with WCC during pre-application discussions.

5.29 The relocation of the change in speed limit will reduce the speed on the approach to the new site access to 30mph.



5.30 Based on the relocation of the speed limit, together with the provision of a new gateway feature and footway / cycleway along Dilmore Lane, it is anticipated that vehicle speeds approaching the site access will reduce compared to existing speeds. On this basis, the assessment utilising the MfS2 parameters is robust, with the DMRB assessment providing a sensitivity test.

## Internal Arrangements

### Layout

5.31 The internal site layout is not being presented for detailed approval as part of this planning application, however the illustrative Masterplan is contained in **Appendix G**.

5.32 The illustrative Masterplan demonstrates a layout consisting of 'primary residential streets' or 'shared surface streets, courtyards and mews' in line with WCC SDG.

5.33 Subsequent reserved matters applications, subject to any updates in design policy, will follow the key design guidelines set out within the WCC SDG, as well as comments provided by WCC as part of the pre-application discussions.

### Car and Cycle Parking

5.34 At this stage, detailed parking provision is not being provided due to the outline nature of the planning application.

5.35 Future reserved matters applications will provide parking in accordance with WCC's SDG minimum car and cycle parking provision, subject to any updates in design policy. This shall include a provision of electric vehicle charging points for all dwellings.

## Summary

5.36 A safe and suitable access strategy is provided to serve the application site. The internal layout will prioritise pedestrian and cycle movements and create a safe, secure and attractive place designed to allow access for delivery and access by service and emergency vehicles.

5.37 Overall, the access of the application site is safe and suitable for all users, in accordance with Paragraph 110 of the NPPF.



## 6 Forecast Trip Generation and Distribution

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- 6.1 When considering a residential development, it is generally accepted that the critical periods in terms of traffic impact are the AM and PM peak hours, when traffic flows associated with the development combined with the traffic flows on the adjacent highway network are at their greatest.
- 6.2 It follows that should the impact of development traffic on the local road network be considered acceptable during these periods then it would also be acceptable during other, less busy, periods of the week.

### Forecast Trip Generation

- 6.3 To determine the number of vehicle trips estimated to be associated with the proposed 130 residential dwellings, the TRICS database has been interrogated for Privately Owned Dwellings. This is a robust assessment given that a proportion of the dwellings will be affordable.
- 6.4 Following pre-application discussions, WCC set out that consideration should be given to undertaking surveys of the Suffolk Way residential development to provide a first principles approach to trip generation and validate the TRICS results. As set out in **Section 2** an MCC was undertaken at the Dilmore Lane / Suffolk Way junction, the full results are contained in **Appendix D**. The survey has been used to validate the TRICS surveys.

### Forecast Trip Generation - TRICS

- 6.5 Available sites from the database were selected to forecast vehicle trip rates based on the following selection criteria:
- a) Sites located in England (excluding Greater London), Wales and Scotland;
  - b) Sites in suburban and edge of town areas;
  - c) Sites between 50 to 200 dwellings;
  - d) Sites that were surveyed during the week; and
  - e) Population within five miles less than 250,000.
- 6.6 A summary of the trip rates and forecast trip generation of the development proposal is provided below in **Table 6.1**, whilst the full TRICS output report is provided in **Appendix N**.



| Peak Period                | Forecast Trip Generation |            |         |                                |            |         |
|----------------------------|--------------------------|------------|---------|--------------------------------|------------|---------|
|                            | Trip Rate (per dwelling) |            |         | Forecast Trips (130 dwellings) |            |         |
|                            | Arrivals                 | Departures | Two-way | Arrivals                       | Departures | Two-way |
| AM Peak<br>(08:00 - 09:00) | 0.141                    | 0.352      | 0.493   | 18                             | 46         | 64      |
| PM Peak<br>(17:00 - 18:00) | 0.322                    | 0.152      | 0.474   | 42                             | 20         | 62      |

**Table 6.1 TRICS Vehicle Trip Rates and Forecast Trip Generation**

*\*Subject to cumulative rounding*

6.7 **Table 6.1** indicates that a development of up to 130 residential dwellings is expected to generate approximately 64 two-way vehicular trips during the typical AM peak period (08:00 – 09:00) and 62 two-way vehicular trips during the typical PM peak period (17:00 – 18:00).

#### Trip Generation – Suffolk Way Validation

6.8 A MCC survey was carried out at the Dilmore Lane / Suffolk Way junction on Wednesday 24<sup>th</sup> May across the extended peak hours (07:00 – 10:00 and 16:00 – 19:00). The MCC demonstrated peak hours of 07:30 – 08:30 and 16:45 – 17:45.

6.9 Suffolk Way is a two-way no-through residential access road, which serves approximately 120 dwellings. Suffolk Way is not currently adopted; however, it is understood that technical approval has been granted for the roads.

6.10 **Table 6.2** sets out the observed number of trips during the peak hours associated with Suffolk Way and the subsequent trip rates based on 120 dwellings.

| Peak Period                | Suffolk Way Trips |            |         |   |            |         |
|----------------------------|-------------------|------------|---------|---|------------|---------|
|                            | Observed Trips    |            |         | Forecast Trip Rate per dwelling<br>(based on 120 dwellings) |            |         |
|                            | Arrivals          | Departures | Two-way | Arrivals  | Departures | Two-way |
| AM Peak<br>(07:30 - 08:30) | 15                | 70         | 85      | 0.125   | 0.583      | 0.708   |
| PM Peak<br>(16:45 - 17:45) | 60                | 32         | 92      | 0.500   | 0.267      | 0.767   |

**Table 6.2 Observed Suffolk Way Vehicle Trips and Forecast Trip Rates**

6.11 The forecast trip rates set out in **Table 6.2** do not validate well against the TRICS trip rates set out in **Table 6.1**, with over 0.2 additional trips per dwelling forecast in the AM and PM peak hours.



- 6.12 It should be noted that this is a single survey of a site, whereas the TRICS trip rates are derived from a number of surveyed sites across multiple days. This assists in avoiding individual survey days not being typical of the trip generation of a development based on the filtering parameters.
- 6.13 However, due to the proximity of the Suffolk Way site to the development site and in order to provide a robust assessment, the forecast trip rates set out in **Table 6.2** have been applied to the development site and are set out in **Table 6.3**.

| Peak Period                | Forecast Trip Generation |            |         |                                |            |         |
|----------------------------|--------------------------|------------|---------|--------------------------------|------------|---------|
|                            | Trip Rate (per dwelling) |            |         | Forecast Trips (130 dwellings) |            |         |
|                            | Arrivals                 | Departures | Two-way | Arrivals                       | Departures | Two-way |
| AM Peak<br>(07:30 - 08:30) | 0.125                    | 0.583      | 0.708   | 16                             | 76         | 92      |
| PM Peak<br>(16:45 -17:45)  | 0.500                    | 0.267      | 0.767   | 65                             | 35         | 100     |

**Table 6.3 Development Vehicle Trip Rates and Forecast Trip Generation – Based on Suffolk Way Trip Rates**

- 6.14 **Table 6.3** indicates that a development of up to 130 residential dwellings, based on the Suffolk Way trip rates, is expected to generate approximately 92 two-way vehicular trips during the AM peak hour (07:30 – 08:30) and 100 two-way vehicular trips during the PM peak hour (16:45 – 17:45).
- 6.15 In order to provide a robust assessment the forecast vehicle trips set out in **Table 6.3** shall be used to assess the impact of the proposed development.

### Trip Distribution

- 6.16 For the purpose of assessing the off-site impact of the proposed development the forecast vehicular trips have been distributed and assigned to the LHN based on the 2011 Census Journey to Work Travel data.
- 6.17 The DataShine Census which maps the 2011 Census data has been interrogated. The car driver method of travel to work from the DataShine Travel to Work Flows interactive map has been used to distribute traffic across the LHN.



- 6.18 The proposed development site is situated within the MSOA of Wychavon 006. The interactive flow maps on DataShine Commute demonstrate the employment locations of people that live within Wychavon 006. Within this data, the exact number of those residing within Wychavon 006 and travelling to other locations for employment purposes are set out. For example, 40 people who live in Wychavon 006 (Fernhill Heath) work in Worcester 001 (Northwick) and travel by car.
- 6.19 MSOA's that attract 20 or more 'travel to work' vehicle trips from Wychavon 006 have been considered, which provides distribution data for 17 super output employment locations, and it is considered to be an extremely robust assessment.

### Trip Assignment

- 6.20 In order to assign the development trips to the LHN, the quickest, and most likely route, from Wychavon 006 to all 17 super output areas has been reviewed. For each destination MSOA, an employment centre has been identified as the 'most likely' destination for employees, and the quickest route, and most likely route, to this location has been assessed according to Google Maps (May, 2023). Where there is no clear large employment area the centre of the MSOA has been used. Applying this trip assignment methodology, a total of four route choices have been identified within the study area for destinations outside the Wychavon 006 MSOA.
- 6.21 A total of 130 residents live and work within Wychavon 006. The site is located to the north of the MSOA. On this basis all trips associated with working within Wychavon 006 have been assigned to travel south out of the site, and then east at the Dilmore Lane / Droitwich Road (A38) junction.

### Route Choice

- 6.22 Assessment of the quickest routes, and the most likely route, to be taken from Wychavon 006 to the 17 MSOA's demonstrates there are four main routes, which vehicles will use to travel to the employment locations within the study area.
- 6.23 The industry standard method of 'reversing' the distribution and assignment of trips between the AM and PM peak hours has been applied. This is considered suitable as routes are not generally influenced by 'restricted' roads (i.e. one-way systems).
- 6.24 **Table 6.4** sets out the quickest route, and most likely route, from Wychavon 006 to each employment MSOA within the study area, these have been grouped into four main routes within the study area. The routes are demonstrated on the route map contained in **Appendix O**, and have also been summarised below for ease of reference:



- a) Route A – South on Dilmore Lane to the to the Dilmore Lane / Danes Green junction, then west on Danes Green;
- b) Route B – South on Dilmore Lane to the Dilmore Lane / Droitwich Road (A38) junction, then west on Droitwich Road (A38);
- c) Route C – South on Dilmore Lane to the Dilmore Lane / Droitwich Road (A38), then east on Droitwich Road (A38) to the Droitwich Road (A38) / Hurst Lane junction, then south along Hurst Lane; and
- d) Route D – South on Dilmore Lane to the Dilmore Lane / Droitwich Road (A38), then east on Droitwich Road (A38) to the Droitwich Road (A38) / Hurst Lane junction, then continuing east along Droitwich Road (A38).

| From Wychavon 006 To | No. of Trips | % of Trips              | Route       |
|----------------------|--------------|-------------------------|-------------|
| Wychavon 006         | 130          | 13.0%                   | Route D     |
| Worcester 003        | 112          | 11.2%                   | Route C     |
| Worcester 011        | 102          | 10.2% (5.1% each route) | Route B / C |
| Worcester 007        | 100          | 10.0%                   | Route B     |
| Wychavon 001         | 83           | 8.3%                    | Route D     |
| Worcester 010        | 74           | 7.4%                    | Route C     |
| Wychavon 003         | 60           | 6.0%                    | Route D     |
| Worcester 013        | 57           | 5.7%                    | Route B     |
| Wychavon 002         | 53           | 5.3%                    | Route B     |
| Worcester 001        | 40           | 4.0%                    | Route B     |
| Worcester 004        | 32           | 3.2%                    | Route B     |
| Malvern Hills 002    | 31           | 3.1%                    | Route A     |
| Wychavon 012         | 31           | 3.1%                    | Route C     |
| Wyre Forest 013      | 28           | 2.8%                    | Route A     |
| Malvern Hills 004    | 26           | 2.6%                    | Route B     |
| Wyre Forest 004      | 24           | 2.4%                    | Route A     |
| Worcester 005        | 20           | 2.0%                    | Route B     |
| -                    | <b>1,003</b> | <b>100%</b>             | -           |

**Table 6.4 Trip Assignment**

6.25 **Table 6.5** provides the associated percentage of trips on each route and number of vehicle trips associated with the development.





| Route  | Trip Assignment | Development Two-way Trips |                |
|--|-----------------|---------------------------|----------------|
|  |                 | AM Peak Period            | PM Peak Period |
| Route A - South on Dilmore Lane to the Dilmore Lane / Danes Green junction, then west on Danes Green   | 8.3%            | 8                         | 8              |
| Route B - South on Dilmore Lane to the Dilmore Lane / Droitwich Road (A38) junction, then west on Droitwich Road (A38)   | 37.8%           | 35                        | 38             |
| Route C - South on Dilmore Lane to the Dilmore Lane / Droitwich Road (A38), then east on Droitwich Road (A38) to the Droitwich Road (A38) / Hurst Lane junction, then south along Hurst Lane                     | 26.7%           | 25                        | 27             |
| Route D - South on Dilmore Lane to the Dilmore Lane / Droitwich Road (A38), then east on Droitwich Road (A38) to the Droitwich Road (A38) / Hurst Lane junction, then continuing east along Droitwich Road (A38) | 27.2%           | 25                        | 27             |
| <b>Total</b>   | <b>100%</b>     | <b>93*</b>                | <b>100</b>     |

**Table 6.5 Summary of Proposed Trip Assignment**

*\*Subject to cumulative rounding*

6.26 Based on the information summarised in **Table 6.5**, the AM and PM trip distribution and assignment is set out in **Appendix O**.

6.27 Given the low volume of vehicles generated by the development and distribution of trips onto the LHN, the development proposals will not result in a significant impact on any particular link. On this basis, a traffic impact assessment has been undertaken for the application site access and no further assessment of off-site junctions is required.

## Summary

6.28 Given the volume of vehicles generated by the development, and the associated assignment and distribution of traffic across the highway network, it can be determined that the development proposals will not result in a significant or severe impact on the adjacent highway network, as such Rappor believe that the level of additional trips associated with the development proposal will not result in the need for any off-site traffic modelling or traffic impact analysis.



## 7 Traffic Impact Assessment

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### Introduction

- 7.1 A traffic impact assessment of the proposed site access junction has been undertaken to ensure that it is appropriate to serve the application site.
- 7.2 In addition, as requested by WCC during their pre-application response, a traffic impact assessment has been undertaken at the Droitwich Road (A38) / Dilmore Lane junction.

### Base Traffic Flow Conditions

- 7.3 In order to determine the existing traffic conditions at the proposed site access location, ATCs were undertaken, as set out in **Section 2**, by Paul Castle Associates, an independent traffic surveyor, on Dilmore Road between Thursday 26th January 2023 and Wednesday 1st February 2023. The full results of the traffic surveys are contained in **Appendix D**.
- 7.4 The ATCs establish an AM peak hour of 08:00 – 09:00 and a PM peak hour of 15:00 – 16:00. For the purpose of this assessment the peak hour trip generation has been applied to the observed AM and PM peak hours to provide a robust assessment.
- 7.5 The southbound traffic flow has been based on the weekday average from the Northern Dilmore Lane ATC and the northbound traffic flow has been based on the weekday average from the Southern Dilmore Lane ATC
- 7.6 On this basis, a traffic flow diagram (TFD) illustrating the Base 2023 peak hours is provided in **Appendix P**.
- 7.7 In order to determine the existing traffic conditions at the Droitwich Road (A38) / Dilmore Lane junction, an MCC survey was undertaken, by Auto Surveys, an independent traffic surveyor, on Wednesday 24<sup>th</sup> May 2023 between 7am – 10 am and 4pm – 7pm. The full results of the traffic surveys are contained in **Appendix D**.
- 7.8 The MCC's establish an AM peak hour of 07:45 – 08:45 and a PM peak hour of 16:30 – 17:30. For the purpose of this assessment the peak hour trip generation has been applied to the observed AM and PM peak hours to provide a robust assessment.
- 7.9 On this basis, a traffic flow diagram (TFD) illustrating the Base 2023 peak hours is provided in **Appendix P**.



7.10 In order to assess the impact on the LHN, the following scenarios have been assessed:

- a) The base year (2023); and
- b) Five years post base year (2028).

### TEMPro Growth Rates

7.11 In order to establish traffic flows in the future year of assessment (2026), growth rates have been calculated using the software package TEMPro 8.0 (RTF 2018 Scenario 1 - Reference datasets).

The TEMPro growth rates have been sourced for minor roads in the MSOA of 'Wychavon 006'. A summary of calculated growth rates is set out in **Table 7.1**, with a copy of the TEMPro outputs provided in **Appendix Q**.

| Growth Period                 | 2023 – 2028  |              |
|-------------------------------|--------------|--------------|
|                               | AM Peak Hour | PM Peak Hour |
| Wychavon 006 – Minor Road     | 1.0184       | 1.0197       |
| Wychavon 006 – Principal Road | 1.0180       | 1.0194       |

**Table 7.1 TEMPro Growth Rates**

7.12 Based on the growth rates set out above, TFD's for a 2028 base year have been calculated and are included in **Appendix P**.

### Forecast Development Traffic Flows

7.13 Forecast development traffic flows and the distribution at the proposed site access are set out within the TA, whilst a TFD demonstrating the development traffic flows is included in **Appendix P**.

7.14 2023 and 2028 assessment year traffic flows for the AM and PM weekday peaks have been created with the addition of the development traffic flows and are demonstrated on TFD's included in **Appendix P**.

### Traffic Impact Assessment

7.15 As set out in the TA, for the purpose of assessing the impact of the proposed development on the LHN at the proposed site access, the following traffic flow scenarios have been assessed for the weekday AM and PM peak hours:

- a) 2023 Base + Development; and
- b) 2028 Base + Development.



7.16 As set out in the TA, for the purpose of assessing the impact of the proposed development on the LHN at the Droitwich Road (A38 / Dilmore Lane junction, the following traffic flow scenarios have been assessed for the weekday AM and PM peak hours:

- a) 2023 Base;
- b) 2028 Base;
- c) 2023 Base + Development; and
- d) 2028 Base + Development.

7.17 Given the Droitwich Road (A38 / Dilmore Lane junction is in the form of a priority junction with ghost island right turn, the junction capacity assessment has been undertaken using the PICADY module within the TRL software package JUNCTIONS 10, which is an appropriate tool to assess the impact of the development at the junction.

#### Dilmore Lane / Site Access

7.18 A summary of the results of the PICADY model under the loading of the 2023 and 2028 traffic flow scenarios is presented in **Table 7.2**. The full PICADY output report is provided in **Appendix R**.

| Time Period                | Arm  | 2023 Base + Development         |             |           | 2028 Base + Development |             |           |
|----------------------------|------|---------------------------------|-------------|-----------|-------------------------|-------------|-----------|
|                            |      | Ratio of Flow to Capacity (RFC) | Queue (Veh) | Delay (s) | RFC                     | Queue (Veh) | Delay (s) |
| AM Peak<br>(08:00 - 09:00) | B-AC | 0.13                            | 0           | 6.31      | 0.13                    | 0           | 6.31      |
|                            | C-AB | 0.03                            | 0           | 5.85      | 0.03                    | 0           | 5.85      |
| PM Peak<br>(15:00 - 16:00) | B-AC | 0.06                            | 0           | 5.82      | 0.06                    | 0           | 5.82      |
|                            | C-AB | 0.12                            | 0           | 6.37      | 0.12                    | 0           | 6.36      |

**Table 7.2 Summary of PICADY Assessment (Site Access Junction – 2023 and 2028 Scenarios)**

*Arm A = Dilmore Lane (N). Arm B = Site Access. Arm C = Dilmore Lane (S).*

7.19 **Table 7.2** indicates that the proposed site access arrangements in the form of a priority junction, is forecast to operate within capacity in both the 2023 Base + Development and 2028 Base + Development scenarios.

7.20 The proposed junction is forecast to have a maximum RFC of 0.08, a maximum delay of 6.1 seconds and no vehicles queuing.



Droitwich Road (A38) / Dilmore Lane

7.21 A summary of the results of the PICADY model under the loading of the 2023 and 2028 traffic flow scenarios is presented in **Table 7.2**. The full PICADY output report is provided in **Appendix S**.

| Time Period                | Arm  | 2023 Base |             |           | 2023 Base + Development |             |           |
|----------------------------|------|-----------|-------------|-----------|-------------------------|-------------|-----------|
|                            |      | RFC       | Queue (Veh) | Delay (s) | RFC                     | Queue (Veh) | Delay (s) |
| AM Peak<br>(08:15 - 09:15) | B-AC | 0.54      | 1           | 21.42     | 0.75                    | 3           | 38.05     |
|                            | C-AB | 0.10      | 0           | 7.06      | 0.12                    | 0           | 7.25      |
| PM Peak<br>(16:30 - 17:30) | B-AC | 0.29      | 0           | 13.20     | 0.39                    | 1           | 15.85     |
|                            | C-AB | 0.18      | 0           | 7.52      | 0.25                    | 0           | 8.33      |
| Time Period                | Arm  | 2028 Base |             |           | 2028 Base + Development |             |           |
| AM Peak<br>(08:15 - 09:15) | B-AC | 0.55      | 1           | 22.49     | 0.76                    | 3           | 40.41     |
|                            | C-AB | 0.11      | 0           | 7.12      | 0.12                    | 0           | 7.31      |
| PM Peak<br>(16:30 - 17:30) | B-AC | 0.30      | 0           | 13.51     | 0.40                    | 1           | 16.30     |
|                            | C-AB | 0.19      | 0           | 7.60      | 0.26                    | 0           | 8.43      |

**Table 7.2 Summary of PICADY Assessment (Droitwich Road (A38) / Dilmore Lane Junction – 2023 and 2028 Scenarios)**

*Arm A = Droitwich Road (A38) (W). Arm B = Dilmore Lane. Arm C = Droitwich Road (A38) (E).*

7.22 **Table 7.2** indicates that the proposed Droitwich Road (A38) / Dilmore Lane junction in the form of a ghost island, operates well within capacity across both the AM and PM peak hours. The junction is forecast to continue to operate well within capacity with the addition of the proposed development across in both the 2023 Base + Development and 2028 Base + Development scenarios.

7.23 The addition of the proposed development is forecast to result in a maximum increase in RFC of 0.21, delay of 17.92 seconds and queuing of two vehicles. On this basis the residual cumulative impact is not severe or significant.



## Summary

- 7.24 The results of the modelling indicate that the proposed site access junction and the existing Droitwich Road (A38) / Dilmore Lane junction is forecast to operate well within capacity with the addition of the development traffic. Both junctions are suitable to accommodate the existing traffic demand and forecast traffic demand and will not result in a significant or severe impact on the LHN.
- 7.25 In the context of the NPPF, paragraph 111 states that development should only be prevented or refused on highway grounds where there will be an unacceptable impact on highway safety or a severe residual cumulative impact on the road network, the assessment has demonstrated that an unacceptable safety impact, nor a severe residual cumulative impact will occur as a result of the development proposals.



## 8 Mitigation Measures

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- 8.1 There are a number of mitigation measures proposed to support the proposed development and existing community. These include mitigation by design, off-site mitigation and travel planning mitigation.
- 8.2 Mitigation measures by design include a new 'active travel corridor' along Dilmore Lane which will assist in connecting residents to existing facilities on Dilmore Lane. In addition, following consultation with WCC a separate 'active travel corridor' shall be provided from the south-west corner of the site. It is proposed that these 'active travel corridors' shall link through the development site to Firlands Close, improving the accessibility and permeability of the site. Details of the active travel corridors through the site shall be confirmed during the reserved matters stage. In addition, a pedestrian connection to the existing PROW 549 (B) which borders the site in the northeast corner, and routes south from Kennels Lane to Oak Apple Close shall be provided.
- 8.3 It is proposed that the existing change in speed limit is relocated to the north of the proposed application site access, along with a new village gateway feature as shown on the drawing contained in **Appendix M**. The speed limit was previously relocated in association with the Suffolk Way development, and therefore this principle is established. These proposals have been agreed in principle with WCC during pre-application discussions.
- 8.4 The relocation of the change in speed limit will reduce the speed on the approach to the new site access to 30mph.
- 8.5 It is proposed that to assist residents in accessing the Dilmore Avenue bus stops on Droitwich Road (A38), off-site mitigation, in the form of sheltered cycle storage, is provided adjacent to the westbound bus stop. This will assist future residents and existing residents in accessing bus services through multimodal travel and reducing the travel time to the bus stops. This approach has been agreed with WCC.
- 8.6 Following consultation with WCC, it is proposed that improved crossing facilities including new dropped kerbs with tactile paving shall be provided at the existing junctions as follows:
- a) Firlands Close / Station Road;
  - b) Rossendale Close / Station Road;
  - c) Shrawley Close / Station Road; and
  - d) Station Road / Droitwich Road.





- 8.7 A drawing demonstrating the proposed sheltered cycle storage and improved crossing facilities is contained in **Appendix T**.
- 8.8 To assist in reducing the level of car use from the application site and changing travel behaviour a Residential Travel Plan has been produced and submitted under separate cover.
- 8.9 The Residential Travel Plan includes several measures including the availability of Personal Journey Planning, Green Travel Vouchers up to a value of £150 per dwelling and Travel Information Packs.

### **Summary**

- 8.10 The proposed mitigation includes mitigation by design including pedestrian and cycle connections, off-site mitigation to assist with multi-modal travel and Residential Travel Planning measures. It is considered that the contributions and mitigation proposed as part of the application is appropriate and commensurate with the scale of development.



## 9 Summary

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- 9.1 Rappor has been instructed by Lioncourt Strategic Land to prepare a TA in support of a residential development on land off Dilmore Lane, Fernhill Heath, Worcestershire.
- 9.2 Outline planning permission is sought for up to 130 dwellings (Use Class C3), including vehicular access from Dilmore Lane, pedestrian and cycle links, public open space, car parking, drainage, landscaping and other associated infrastructure. All matters are reserved except for access.
- 9.3 This report has demonstrated the following:
- a) A review of the LHN and collision data in the vicinity of the site indicates that there are no apparent problems in relation to the current operation or safety of the LHN;
  - b) The site is well located in relation to a range of services and amenities in addition to public transport linkages to additional facilities further afield;
  - c) The proposed development is compliant with local and national planning policy and guidance;
  - d) The proposed site access arrangements are suitable to serve the proposed development and are safe and suitable in accordance with the NPPF;
  - e) Forecast trip generation indicates that the development proposals will not result in a significant increase in vehicle trips during the AM and PM network peak periods;
  - f) Measures are proposed to facilitate and encourage travel by sustainable modes to reduce private car travel; and
  - g) The traffic impact assessment indicated that the site access and A38 / Dilmore Lane junction will operate in a suitable manner.

### Conclusions

- 9.4 Rappor conclude that approval of this planning application will not result in a severe impact upon the safety or operation of the LHN; as such, there are no highways and transportation matters that should preclude WCC from recommending approval this planning application.