



**HIGHWAYS APPRAISAL**  
Swangleys Farmhouse, Swangleys Lane, Knebworth, Herts. SG3 6AA

## Document History

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1	16 Nov 16	-	David Kemp	Howard Gell
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## 1.0 Introduction

- 1.1 Glanville Consultants have been commissioned to undertake a high level appraisal of vehicular access to a potential development site in Knebworth, Hertfordshire. The site is located on the eastern boundary of Knebworth and is one of four sites within the village that have been identified for future residential development within the North Hertfordshire Draft Local Plan 2011-2031.
- 1.2 The site on the eastern boundary of Knebworth, has been given the reference of Site KB4 within the Local Plan (see plan in Appendix A). It is approximately twenty hectares in size and has been identified for the provision of 200 dwellings. It is understood that there is concern that any potential vehicular access to the southern part of the site, most notably the part south of Swangleys Lane, is inappropriate and unsafe to accommodate an increase in likely residential traffic associated with the development. Consequently, Glanville have been asked to appraise these access routes to inform a representation to the Council.
- 1.3 To inform the assessment, a site visit was undertaken on Wednesday 9th November 2016 to investigate the highway around the site and the main road through Knebworth. The appraisal also refers to the national guidance 'Manual for Streets' and the Hertfordshire Design Guide.
- 1.4 The agreed scope of the assessment is as follows:
- This assessment looks at the southern part of Site KB4;
  - The potential number of dwellings within the southern part of the site and the potential traffic generated by the site has been identified;
  - The appraisal investigates the potential constraints to development at this location; and
  - Short technical report summarising the findings of the appraisal.
- 1.5 No traffic surveys, highway modelling, swept path assessments or liaison with the Highway Authority has been undertaken as part of this assessment. Likewise no potential solutions to the constraints have been identified.

## 2.0 North Hertfordshire Draft Local Plan Site KB4

- 2.1 Knebworth is a village situated in Hertfordshire and is located between Stevenage and Welwyn Garden City. As of the 2011 Census, the village had a population of 4,496 with 2,002 dwellings. The village is surrounded by Green Belt land and is listed by North Hertfordshire District Council as a Category A village.
- 2.2 The North Hertfordshire Draft Local Plan identifies three potential development sites on the edge of Knebworth and one within the centre of the village. These sites would provide an additional 598 dwellings within Knebworth.
- 2.3 One of these sites, referenced as Site KB4 within the Draft Local Plan, is situated within the Green Belt on the eastern edge of the village. It has been identified for the provision of 200 dwellings and is approximately twenty hectares in size. The location of these sites is shown within the plan provided within Appendix A.

### Site Background

- 2.4 Site KB4 is currently used as arable farmland and forms part of Swangleys Farm. It stretches from Oaklands Avenue in the north east of the village and encompasses Watton Road and Old Lane to the east of the village. The site then crosses Swangleys Lane to form a separate site to the south of Swangleys Farmhouse in the south east corner of Knebworth.
- 2.5 This appraisal focuses on the part of the site to the south of Watton Road and situated around Old Lane and in particular the site to the south of Swangleys Lane in the vicinity of Swangleys Farmhouse, hereafter known as the Swangleys Lane site.
- 2.6 The Swangleys Lane site is approximately 5.6 hectares in size. Appendix 2 of the North Hertfordshire Strategic Housing Land Allocation Assessment (SHLAA) - 2014 Update (November 2014) identifies this parcel of land (Site 57 within this report) for the provision of 112 dwellings. This equates to a housing density of twenty dwellings per hectare, which accords with the average North Hertfordshire housing density of eighteen dwellings per hectare in 2014<sup>1</sup>.
- 2.7 Vehicular access to the southern part of site KB4 and Knebworth village centre would be achieved via three routes. These routes are as follows:
- Swangleys Lane;
  - Old Lane; and
  - St Martin's Road.
- 2.8 Consequently this appraisal has assessed the suitability of these routes to provide access to the potential residential development at Site KB4.
- 2.9 In addition to these routes, an access to the site south of Swangleys Lane could potentially be implemented via Haygarth and so this route has also been assessed within this appraisal.

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<sup>1</sup> North Hertfordshire Annual Monitoring Report 2013 – 2014 and issued December 2014

### 3.0 Site KB4 Trip Generation

- 3.1 To understand the potential impact of the residential development of Site KB4, a high-level trip generation assessment has been undertaken to identify the potential volumes of traffic flows which would be generated by the development.
- 3.2 As part of this assessment four scenarios have been assessed. These are as follows:
- AM Peak 08:00 to 09:00;
  - School Peak 15:00 to 16:00;
  - PM Peak 17:00 to 18:00; and
  - Daily 07:00 to 19:00.
- 3.3 Knebworth Primary and Infant School is situated on Swangleys Lane in the vicinity of the site. Consequently, the afternoon school peak hour has been included within this assessment.
- 3.4 As the listing of the site within the Local Plan is currently being consulted on, firm plans as to the potential housing mix of the site is currently unknown. Whilst it is likely that a proportion of the dwellings will be affordable, for the purposes of this appraisal it has been assumed that all dwellings will be privately owned houses. This will represent a worst case scenario.
- 3.5 Trip rates have therefore been derived from the industry standard TRICS database based on the development being formed of Private Houses. This database contains trip survey results for similar developments around the country. These trip rates are shown in Table 1.

*Table 1: Trip Rates for Private Houses (per dwelling)*

	<b>Arrivals</b>	<b>Departures</b>	<b>Two-way</b>
AM Peak	0.154	0.325	0.479
School Peak	0.214	0.154	0.368
PM Peak	0.239	0.128	0.367
Daily	2.094	1.898	3.992

- 3.6 Utilising the trip rates identified in Table 1, the number of trips which would potentially be generated by 200 dwellings on Site KB4 have been calculated. These trips are shown in Table 2.

*Table 2: Potential Trip Generation for Site KB4*

	<b>Arrivals</b>	<b>Departures</b>	<b>Two-way</b>
AM Peak	31	65	96
School Peak	43	31	74
PM Peak	48	26	74
Daily	419	380	799

- 3.7 The potential trip generation shown in Table 2 indicates that the full KB4 site would generate around 96 two-way vehicular movements in the AM Peak hour and 73 two-way movements in the PM Peak. In total, 200 dwellings would generate 798 two-way flows in the twelve hour period between 7am and 7pm.
- 3.8 The North Hertfordshire SHLAA - 2014 Update (November 2014) identifies that this parcel of land (Site 57 within the SHLAA report) could provide 112 dwellings. The trip rates set out in Table 1 have been applied to the potential number of dwellings and the results are shown in Table 3.

*Table 3: Potential Trip Generation for the Swangleys Lane Site*

	<b>Arrivals</b>	<b>Departures</b>	<b>Two-way</b>
AM Peak	17	36	53
School Peak	24	17	41
PM Peak	27	14	41
Daily	235	213	448

- 3.9 The trip generation provided within Table 3 shows that the Swangleys Lane site would generate 448 daily two way movements. During the AM and PM Peak hours, there would be 53 and 41 two way traffic flows respectively. The school afternoon peak flows indicate that there would be an additional 41 two-way movements.

## 4.0 Highway Appraisal – Common Factors

- 4.1 Prior to assessing the three individual access routes to the southern part of Site KB4, this section assesses the highway aspects that are common to each of three options. This includes the operation of the main road through Knebworth and the availability of bus services to the site.

### Operation of the B197 London Road

- 4.2 The B197 London Road is the main road through the village of Knebworth and connects southern Stevenage to Welwyn Garden City and the A1(M). It is a single lane carriageway with a posted speed limit of 30mph through the village. This increases to a national speed limit (i.e. 60mph) between Knebworth and Stevenage.
- 4.3 It is understood that the B197 is the alternative route for A1(M) when the trunk road is closed between Stevenage and Welwyn Garden City and is also used by drivers when there are delays on the A1(M).
- 4.4 The site visit indicated that the mini-roundabout at the junction of London Road with Stevenage Road, Watton Road and Station Road appeared to be operating within capacity with limited queueing on each arm (see Photograph 1). The largest queues observed were on Stevenage Road and Watton Road. Each of these queues consisted of eight vehicles but it appeared that this queue was the result of platooning traffic generated by temporary roadworks on Stevenage Road.

*Photograph 1: Existing Mini-roundabout at the London Road / Watton Road Junction*



- 4.5 These roadworks were taking place at the B197 Stevenage Road railway bridge, between Knebworth and Stevenage, and were controlled by temporary signals. This temporary restriction had an impact on the flow of traffic to the junction by creating a platooning effect at the junction, thereby providing gaps for other turning movements to turn in.
- 4.6 To fully understand the capacity of the junction and whether this junction could accommodate the additional traffic generated by the potential development of Site KB4, a detailed traffic survey and junction capacity modelling would be required on a day following the completion of these roadworks.



- 4.7 The operation of the mini-roundabout was also affected by queueing vehicles on the B197 London Road through Knebworth village centre (see Photograph 2). This was due to the on-street parking which occurred between the roundabout and the junction with St Martin's Road.

*Photograph 2: Queueing at the Mini-roundabout Caused by On-street Parking*



- 4.8 The carriageway at this point is 8.8m wide, however there are 2m wide parking bays on either side of the carriageway. This reduces the available width for passing vehicles to 4.8m. As the parking bays are located outside the retail units within the Village Centre, the bays are continually in use.
- 4.9 The Hertfordshire Design Guide 'Roads in Hertfordshire' would class the B197 as a Secondary Distributor. Consequently, the width of the carriageway should be 7.3m to ensure that vehicles are not delayed. Whilst the carriageway would be considered wide enough if the parking bays were not provided, the presence of the bays results in the carriageway being of sub-standard width to allow for free-flowing traffic conditions.
- 4.10 Manual for Streets identifies that this width is acceptable for a car to pass a rigid truck, however this does not take into account the wing mirrors of parked cars. Consequently, the main road through Knebworth was restricted to one lane operation for approximately 70m and resulted in queues in both direction (see Photographs 3 and 4).

*Photograph 3: Queuing on London Road due to Parked Vehicles*



*Photograph 4: Further Queuing on London Road*



- 4.11 It was also noted that significant queuing occurred on London Road due to the presence of a Crossing Guard (Lollipop person) supervising Knebworth Primary School students using the zebra crossing at the junction of Swangleys Lane with London Road. This resulted in queuing back to the main high street which intermingled with the queues caused by the on-street parking (see photograph 5). This caused delays between approximately 8.45am and 9.10 am.

*Photograph 5: Queues on London Road Due to School Crossing Guard*



#### Highway Drainage

- 4.12 The site visit was undertaken on a rainy day. This highlighted that both Swangleys Lane and Old Lane have poor highway drainage. It was noted that there was a significant amount of standing water on the carriageway, with streams of water running down the sides of the carriageway. It was also noticed that some gullies were blocked (see Photograph 6).

*Photograph 6: A Blocked Gully on Swangleys Lane*



- 4.13 It was also observed that there was a significant puddle of standing water situated adjacent to the existing zebra crossing on the B197 London Road. This puddle was situated adjacent to the pedestrian waiting area and consequently pedestrians walking on the footway in the vicinity of the zebra crossing had to be vigilant to avoid being splashed by passing vehicles (see Photograph 7).

*Photograph 7: Standing Water at the Zebra Crossing on London Road*



- 4.14 It is considered, therefore, that the surface water drainage in the vicinity of the site is either currently inadequate and unable to accommodate the existing requirements of the area or that the surface water sewers require significant maintenance. It is unlikely, therefore, that the current system would be able to accommodate any future development without significant improvements and capacity upgrades.

#### Highway Safety

- 4.15 An online review of the latest five years of accident records has been undertaken using the CrashMap website ([www.crashmap.co.uk](http://www.crashmap.co.uk)). This review indicates that three accidents have occurred on the B197 London Road between January 2011 and December 2015. Two of these accidents occurred outside the shops, with one involving a pedestrian. The third accident occurred at the zebra crossing at the Swangleys Lane junction and also involved a pedestrian.
- 4.16 This rate of accidents indicates that there is no inherent safety issue with the existing B197 London Road carriageway.

#### Sustainable Transport

##### *Walking and Cycling*

- 4.17 It is considered that Site KB4 is poorly served by existing pedestrian infrastructure. However the provision of sustainable infrastructure improves significantly within the centre of Knebworth.
- 4.18 There are two zebra crossings in the vicinity of Swangleys Lane which provide a controlled crossing point over the B197 London Road. The first crossing crosses London Road approximately 5m to the south of the Swangleys Lane junction. The second zebra crossing is situated the other side of the St Martin's Road junction.
- 4.19 On site observations showed that these crossings points worked well. The exception would be when the lollipop person was controlling the zebra at the Swangleys Lane junction, where significant queues were formed. However, it is considered that these

queues were exaggerated by the impact of the on-street parking outside of the shops. The queues formed by the crossing appeared to dissipate quickly.

4.20 There are no Public Rights of Way in the vicinity of Swangleys Lane or which pass through the southern part of site KB4. The nearest PROW is Footpath 4 and is situated to the west of the site, opposite Haygarth. This Footpath connects the B197 London road to Pondroft Road through a narrow alleyway.

4.21 There are no dedicated cycle facilities provided along Swangleys Lane or within the centre of Knebworth.

#### *Buses*

4.22 The nearest bus stops are situated on London Road.

4.23 The most regular routes are 300 and 301 with a service every fifteen minutes. These link Stevenage with Hemel Hempstead via Welwyn Garden City and St Albans. Other more infrequent services are routes 378 and 379 which connect Stevenage with Hertford (two services a day) and routes 44 and 45 which connect Stevenage to Luton (five services a day).

#### *Rail*

4.24 Knebworth Railway Station is situated along Station Road and provides regular services between London Kings Cross, Stevenage and Cambridge.

## 5.0 Highway Appraisal – Swangleys Lane

- 5.1 Swangleys Lane is a narrow residential / rural road approximately 1.2km in length which connects Knebworth to Datchworth. It is considered that Swangleys Lane will form an access route to Site KB4 and especially the site to the south of Swangleys Lane. It will also provide a route for development traffic to access southern Stevenage.
- 5.2 The western end of the road provides access to an existing 22 dwellings, Knebworth Primary and Nursery School and Swangleys Farm. Swangleys Farm is a working arable farm and the farm yard is accessed approximately 100m east of Swangleys Farmhouse. Consequently, vehicles associated with the operation of the farm utilise Swangleys Lane. Due to the presence of tight bends on Swangleys Lane to the east of the farmyard, large farm vehicles utilise the western residential part of Swangleys Lane to access the farmyard.
- 5.3 Swangleys Lane connects with the southern end of Old Lane approximately 270m east of its junction with London Road, whilst eastbound vehicles using St Martin's Road will also join Swangleys Lane at this junction.
- 5.4 The site to the south of Swangleys Lane and Swangleys Farmhouse and has been identified for the provision of 112 dwellings. For the purposes of this appraisal, this part of the site has been referred to as the Swangleys Lane site.
- 5.5 Access to the Swangleys Lane site could potentially be achieved via three locations. Two options would be situated on the northern boundary of the site and would provide access directly onto Swangleys Lane. One of these options would be located between 18 Swangleys Lane and Swangleys Farmhouse and the other to the east of number 26 Swangleys Lane.
- 5.6 The third option would be on the western boundary of the site linking the development to London Road via Haygarth. This is discussed further within Section 8 of this report.
- 5.7 It is considered, however, that the existing road has significant constraints which would need to be solved prior to this road providing any access to the development. This section of the appraisal identifies these constraints.

### Carriageway Width

- 5.8 Swangleys Lane is a narrow rural road, which varies in width along its length. In the vicinity of the school the width of the carriageway is 5m, but this narrows down to between 4.2m and 4.8m. Around Swangleys Farmhouse, the width is around 4.6m whilst this decreases further to 3.5m at the tight S-bends to the east of the farm. On these bends, the road widens to 4.6m to assist vehicles to pass each other.
- 5.9 There are no passing places along the entire length of Swangleys Lane.
- 5.10 Whilst it currently does not provide access to very many dwellings, it is considered that Swangleys Lane should be classified as either a Local Distributor or a Major Access within the Hertfordshire County Council road hierarchy. This is because it provides a direct link between the villages of Knebworth and Datchworth. Following the development of 112 dwellings on the Swangleys Lane site, Swangleys Lane

would need to be a Major Access and therefore would need to accord with the appropriate design standards for this type of road. Consequently, the carriageway width, in accordance with the Hertfordshire Design Guide should be at least 5.5m wide. Swangleys Lane, however, varies in width between 4.2m and 4.8. This would accord to a Shared Surface or a Minor Access road respectively.

- 5.11 Manual for Streets identifies that a carriageway width of 4.8m would allow for a car and a rigid truck to pass each other. This width, however, does not allow for a car and a large farm vehicle to pass, for example a John Deere tractor can measure between 2.5m and 3m in width and it is likely that a farm trailer is wider. It is also understood that occasionally Swangleys Farm requires the use of articulated vehicles. Consequently, if a car meets a large vehicle on Swangleys Lane they would have trouble passing each other and cars have been damaged in the past.
- 5.12 Swangleys Lane is bordered by trees and hedges. It is understood that the narrow carriageway width forces large vehicles to hit the adjacent vegetation thereby causing twigs and branches to fall onto the ground, occasionally blocking the road or causing damage to vehicles.

#### On-Street Parking

- 5.13 There are currently no parking restrictions on Swangleys Lane. During the site visit it was observed that a couple of vehicles were parked on the southern side of the carriageway before 8am. These are potentially commuters for the railway station who have parked on Swangleys Lane due to parking restrictions on other residential roads. No other cars were observed to be parked on street around this time.
- 5.14 Knebworth Primary and Nursery School is situated at the western end of Swangleys Lane. According to the 2013 Ofsted report, there are 420 pupils on the school roll. Whilst there is a small staff car park, there is no drop-off provision for students and their parents. Consequently, between 08:30 and 09:00 in the morning, there was a significant level of on-street parking in the vicinity of the school (see Photograph 8).

*Photograph 8: On-street Parking on Swangleys Lane*



- 5.15 It was observed on site that on-street parking stretched from the southern school boundary up to approximately number 12 Swangleys Lane. This equated to a distance of approximately 180m (circa thirty cars). Whilst there are 'School Keep Clear' markings outside the school premises, this was ignored by the parents due to the lack of alternative parking choices.
- 5.16 Due to the narrow carriageway width, this school related on-street parking reduced the capacity of Swangleys Lane to one-way operation for a significant period of time during the AM Peak hour. This was compounded by the school being located on a bend, thereby forward visibility around the bend was significantly restricted by the parked cars. This resulted in cars meeting an opposing vehicle and having to reverse back up Swangleys Lane (see Photographs 9 and 10) to enable the opposing car to pass.

*Photograph 9: On-street Parking in the Vicinity of the School*



*Photograph 10: Delays Caused by the On-street Parking*





- 5.17 Swangleys Farm is a working farm and therefore has a large number of farm associated vehicle movements. This includes tractors with trailers and Heavy Goods Vehicle (HGV) movements. The movement of these vehicles is severely restricted when the on-street parking occurs. It is understood that the day before the site visit, Swangleys Lane was gridlocked as a 40-foot container lorry was unable to pass the parked cars. A similar situation almost occurred during the site visit when a council road sweeper almost became stuck when passing the parked cars. This is shown in Photograph 11.

*Photograph 11: A Council Road Sweeper Attempting to Pass the Parked Cars*



- 5.18 It is considered that a similar problem occurs between 3pm and 3.30pm when the school finishes for the day. However, it is extremely likely that the impact on the operation of the road would be exacerbated and would occur for a longer period of time. This is because the school parents would arrive at the same time and would park for a longer duration as they wait for their children to leave the school premises. It is also considered likely that this would have more of an impact on the farm vehicles as the drivers would be travelling at a time to avoid the highway peak period.

#### Speed Limits

- 5.19 There are two speed limits on Swangleys Lane. Through the residential part between Swangleys Farmhouse and the junction with London Road, there is a posted speed limit of 30mph. It was observed on site, however, that vehicles appeared to travel faster than the speed limit within the residential part of Swangleys Lane when there was no on-street parking.
- 5.20 The 30mph speed limit changes to a national speed limit, adjacent to Swangleys Farmhouse, and continues on to Datchworth. However, it is considered that due to the tight bends further east on Swangleys Lane, vehicles would not be able to travel at the national speed limit of 60mph.
- 5.21 To fully understand the 85%ile of speeds on Swangleys Lane, an Automatic Traffic Counter survey or a radar speed survey would need to be undertaken.

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### Visibility Requirements

- 5.22 To provide an access to the Swangleys Lane site, a new junction would need to be provided onto Swangleys Lane. There are two potential locations for this junction. One of these options would be located between 18 Swangleys Lane and Swangleys Farmhouse and the other to the east of number 26 Swangleys Lane.
- 5.23 The access adjacent to Swangleys farmhouse would be located in an existing gap in the dwellings. This access is situated adjacent to the point where the speed limit changes from 30mph to 60mph. Consequently there would need to be at least 43m of visibility to the left and 160m to the right of the junction.
- 5.24 Based on aerial photographs, visibility to the left appears to be substandard with a splay of 2.4m x 25m (20mph) when compared to the required 2.4m x 43m (30mph). To the right, a visibility splay of 160m is not achievable due to the sharp bend next to Swangleys farm, however an initial assessment indicates that a 2.4m x 30m could be achieved. This equates to a speed limit of around 25mph. To achieve adequate visibility for a 30mph road, the splays in both directions would need to cross third party land which is unlikely to be considered acceptable by Hertfordshire County Council.
- 5.25 The second location for the access junction is situated approximately 30m east of number 26 Swangleys Lane. The posted speed limit at this location is 60mph, consequently a visibility splay of 2.4m x 160m would be required. However, aerial photographs indicate that a visibility splay of only 2.4m x 30m would be achievable in each direction. This is due to third party land boundaries and a high embankment near the adjacent S-bend.
- 5.26 A visibility distance of 30m would equate to a speed of 20mph. Whilst it is considered that vehicles are unlikely to be travelling at 60mph in this location, the access would be situated on a relatively straight section of road and therefore vehicles are likely to be going faster than 20mph.
- 5.27 The visibility requirements set out in this section of the appraisal are based on the posted speed limits. To undertake a full visibility assessment, the 85%ile speeds at various points along Swangleys Lane would need to be measured.

### Forward Visibility

- 5.28 Forward Visibility along the western residential section of Swangleys Lane appears to be good, although visibility around the bend outside the school is restricted to approximately 40m. Whilst this is sub-standard, on site observations indicate that this only causes a significant safety issue when there is on-street school parking around the bend.
- 5.29 Visibility becomes an issue near Swangleys Farm. At the farm entrance, the corner of a farm building juts out into the carriageway. This reduces forward visibility to approximately 10m to 15m (10mph). The corner of the building also creates a safety hazard especially at night or in times of reduced visibility. Currently there is a reflective bollard and iron girder in front of the building, but it is not known how effective this bollard is at warning drivers of the obstruction (see Photograph 12).

*Photograph 12: Corner of Building at Swangleys Farm*



- 5.30 To the east of the farm are two tight S-bends. These have a high hedge on one side of the carriageway and a 2m high embankment on the other (see Photograph 13). These bends have restricted forward visibility of approximately 15m. This equates to a speed of approximately 15mph when compared to the posted speed limit of 60mph.
- 5.31 These tight bends and the associated limited forward visibility significantly reduce the speed of vehicles along Swangleys Lane.

*Photograph 13: S-bend on Swangleys Lane*



#### Junction Separation

- 5.32 The potential access to the Swangleys Lane Site which is located adjacent to Swangleys Farmhouse, is situated approximately 20m centreline to centreline from the junction with Old Lane. It is considered that Swangleys Lane would be classed as either a Local Distributor or a Major Access for the reasons stated in paragraph

5.10. Following the provision of 122 dwellings on the site to the south of Swangleys Lane, a spacing of at least 20m would be required between the junctions. This would increase to 30m if the road was classed as a Local Distributor.

- 5.33 This spacing would need to be checked using a topographical survey and would be dependent on the exact location of the access junction.

#### Level Differences

- 5.34 To the east of Swangleys Farm, the fields on the southern side of the road are located significantly higher (approximately 2m) than the level of the carriageway. This level difference is shown in Photograph 14 and is likely to cause difficulties to connect the site to the existing carriageway. It also increases the potential for landslips following heavy rain which could block the road. This is considered a potential safety risk if the landslip occurs on the bends where there is limited forward visibility.

*Photograph 14: 2m High Embankment on Swangleys Lane*



#### Highway Safety

- 5.35 An online review of the latest five years of accident records has been undertaken using the CrashMap website ([www.crashmap.co.uk](http://www.crashmap.co.uk)). This review indicates that two accidents have occurred on Swangleys Lane between January 2011 and December 2016. One of these accidents occurred near the school and involved a pedestrian. The second collision occurred at the S-bends on Swangleys Lane.
- 5.36 This rate of accidents indicates that there is currently no safety issue with the existing highway layout.

#### Sustainable Transport

##### *Walking and Cycling*

- 5.37 Swangleys Lane has a footway at its western end. This footway is situated on the southern side of the carriageway and provides access to the local Primary and

Nursery School. It is around 1.5m wide but increases in width to 2m and 4m outside the school.

- 5.38 The footway terminates outside number 2 Swangleys Lane, and for the remaining length of Swangleys Lane, there is no footway provision on either side of the road. Consequently pedestrians, including school children, have to walk in the carriageway whilst mixing with school and farm traffic. It is considered that this is a significant safety risk, especially when vehicles were observed to break the 30mph speed limit.
- 5.39 There are no Public Rights of Way in the vicinity of Swangleys Lane or which pass through the southern part of site KB4. The nearest PROW is Footpath 4 and is situated to the west of the site, opposite Haygarth. This Footpath connects the B197 London Road to Pondroft Road through a narrow alleyway.
- 5.40 There are no dedicated cycle facilities provided along Swangleys Lane or within the centre of Knebworth.
- 5.41 The nearest bus stops are situated on London Road.

## 6.0 Highway Appraisal – Old Lane

- 6.1 Old Lane connects Swangleys Lane with Watton Road and is approximately 530m in length. Watton Road connects Knebworth Village centre to the south of Stevenage and Bragbury End.
- 6.2 Old Lane is a rural road which skirts around the eastern edge of Site KB4 and provides vehicular access to six existing dwellings. This road would form the boundary to any potential development at Site KB4, and consequently it is likely to be considered a distributor road or a major access road for the development. However, the existing road has significant constraints which would need to be solved prior to it providing vehicular access to the development. This section of the appraisal identifies these constraints.

### Carriageway Width

- 6.3 Old Lane is a two-way road however it appears significantly too narrow for two lane operation. The width of Old Lane has been measured on site and these measurements show that the carriageway is between 3.8m and 4m wide between St Martin's Road and Swangleys Lane. Between, St Martin's Road and Watton Road, however, the carriageway narrows even further to approximately 2.7m to 2.9m wide (see Photograph 15). No passing places are provided for the entire length of Old Lane.

*Photograph 15: Narrow Carriageway Along Old Lane*



- 6.4 Manual for Streets indicates that for adequate two-way movement for cars, a road would need to be at least 4.1m wide. However, even for a road of this width, two cars passing would be tight and would require the wing mirrors to overhang the verge. There is, however, a high verge on the northern side of the carriageway and a high hedge on the southern side (see Photograph 16), thereby there is no flexibility for two vehicles to pass. This is highlighted by tyre tracks which were observed to run up the verge, thereby indicating that vehicles have difficulty passing each other (see Photograph 17).
- 6.5 It is considered that Old Lane is classed as a Minor Access within the Hertfordshire County Council Road Hierarchy. Consequently, the Hertfordshire Design Guide

states that this type of road should be at least 4.8m wide. Therefore Old Lane is currently of sub-standard width.

*Photograph 16: Verges on Old Lane*



*Photograph 17: Evidence of Vehicles Riding up onto Verge*



- 6.6 The development would require this road to be re-classed as a Major Access or Local Distributor and consequently a width of 5.5m would be required. The Hertfordshire Design Guide states that for a Local Distributor road, a minimum carriageway width of 6.75m would be required, whilst for a major access it can be decreased to 5.5m. Therefore, improvements would need to be made if this road was to be accommodate an increase in traffic.

#### Restricted Turning Movements and Rat-Running

- 6.7 The junction of Old Lane and Watton Road contains restricted movements. The right turn from Old Lane into Watton Road and the left turn from Watton Road into Old

Lane have both been restricted. To implement this restriction, there are warning signs on both roads and a buildout has been constructed at the junction to influence driver's behaviour (see Photograph 18). It was observed on site, however, that someone did manage to make a banned right turn from Old Lane.

*Photograph 18: Buildout to Restrict Turning Movements at Old Lane / Watton Road Junction*



- 6.8 It is understood that these turning restrictions were implemented to restrict the rat running which was occurring on Swangleys Lane and Old Lane following the implementation of the bus only link on Hertford Road in southern Stevenage. This resulted in vehicles from South Stevenage using Old Lane and Swangleys Lane to avoid Watton Road and Knebworth village centre when accessing the A1.
- 6.9 There is a concern, therefore, that any development within Site KB4 would require the removal of these restrictions thereby opening up these roads for rat-running. As Old Lane and Swangleys Lane are very narrow with poor forward visibility, it is considered that rat-running should not be encouraged along this route for safety reasons.

#### Speed Limit

- 6.10 The majority of Old Lane has a national speed limit i.e. 60mph. The narrowness of the carriageway in this location and the restricted forward visibility around the bends means that to drive at this speed would be unsafe and therefore it was observed that most vehicles drove at between 20mph and 30mph, although some drove in excess of these speeds on the straight sections.
- 6.11 This speed limit changes to 30mph between St Martin's Road and Swangleys Lane. It is considered that due to the narrowness of the carriageway and the presence of driveways, it would be unsafe to travel at this speed.
- 6.12 To fully understand the 85%ile of speeds on Old Lane, then an Automatic Traffic Counter survey or a radar speed survey would need to be undertaken.



### Horizontal Alignment

- 6.13 At three points along Old Lane, there are tight bends which have significant limited forward visibility. These bends are located at the junction with St Martin's Road, halfway between St Martin's Road and Long Dene and outside the driveway access to Long Dene. These bends have a forward visibility of between 10m and 15m which, according to Manual for Streets, would equate to a speed limit of between 10mph and 15mph (see Photograph 19). This is a significant restriction when the road has a national speed limit of 60mph.

*Photograph 19: Bend on Old Lane*



- 6.14 Table 4.1.1.1 of the Hertfordshire Design Guide states that the minimum forward visibility which would be required for a major access would be 33m. Whilst the existing forward visibility of 15m is an acceptable visibility requirement for a shared surface within a development. It is also considered that the minimum horizontal curve of Old Lane is also substandard when compared to the requirements of the Hertfordshire Design Guide.

### Vertical Alignment

- 6.15 In the vicinity of Swangleys Lane and St Martin's Road, Old Lane is relatively flat. However, the section between Long Dene and Watton Road has significant vertical alignment constraints. This impacts on drainage and forward visibility and would significantly hinder the potential for providing a safe access into any potential residential development on the adjacent land (see Photograph 20).

*Photograph 20: Old Lane Vertical Alignment with Standing Water*



- 6.16 To undertake a full assessment of the impact that the vertical alignment of Old Lane would have on the potential for development, a long section would need to be developed based on a topographical survey. However, the Hertfordshire Design Guidance provides minimum vertical curves for each type of road. Based on site observations it is considered that the current alignment would not meet these requirements.

#### Highway Safety

- 6.17 The online review of the latest five years of accident records indicates that no accidents have occurred on Old Lane. However, any increase of traffic on this route, is liable to increase the risk of accidents due to the narrow carriageway and the poor forward visibility around the bends.

#### Sustainable Transport

- 6.18 There are no footways situated on Old Lane or in the vicinity of the junction on Watton Road. Likewise, there are no cycle facilities. Whilst the existing traffic flows on Old Lane are currently low, it is considered that the limited forward visibility around the bends of the road makes walking and cycling on the carriageway unsafe. There are verges on one side of the carriageway which could potentially provide a refuge for pedestrians. In several locations, however, the verges are significantly higher than the level of the carriageway which makes them inaccessible.
- 6.19 There are no Public Rights of Way in the vicinity of Old Lane. The nearest routes would be Bridleways 3 and 24 which connect Watton Road to Bragbury Lane. This bridleway is situated approximately 620m to the east of Old Lane.

## 7.0 Highway Appraisal – St Martin’s Road

- 7.1 A further option for accessing the KB4 site, would be via St Martin’s Road. For the first 100m from London Road, it is a 7m wide public road which narrows down to 5.5m. This publicly adopted carriageway provides vehicular access to the local Post Office, the Public Library, the Village’s short stay car park and St Martin’s Church and Parish Centre. Therefore, it is likely to be heavily used by the community especially on the weekends.
- 7.2 This section of the carriageway includes 10 marked parallel parking bays. These bays are 2m wide and reduce St Martin’s Road to one lane operation. Consequently, any additional traffic associated with the development of Site KB4 would interact with the existing vehicles accessing the aforementioned community facilities and is liable to cause additional delays to road users at the locations where the parking bays are situated.
- 7.3 After approximately 100m, the road turns into a 190m long, 5.5m wide kerbless Private Road providing access to 21 dwellings (see Photograph 21). Consequently, any vehicular access to the site would need to be agreed with the land owners. Issues could also arise if the increase in traffic along this route results in increased maintenance issues. This could result in any access agreement being lost and public access being restricted.

*Photograph 21: St Martin’s Road*



- 7.4 The private section of St Martin’s Road connects with Old Lane at its eastern end and therefore access via this route is further restricted by the same constraints as those identified for Old Lane and Swangleys Lane. This connection is via a priority T-junction and links into Old Lane on the outside of the bend. Consequently, there are no issues with the visibility splays at the junction and 2.4m x 43m is achievable in both directions. This would be dependent, however, on no vehicles being parked on the verges outside the nearby Old Lane dwellings.

- 7.5 There are no footways provided along the private section of St Martin's Road, however there is a single 1.5m wide footway on the northern side of the adopted carriageway. This footway is separated from the carriageway by a 0.5m grass verge.
- 7.6 The online review of accidents indicated that there have been no accidents recorded along this road for the latest five-year period. However, the aforementioned community facilities are likely to attract vulnerable users including the elderly and children, consequently any increase in traffic along this route is liable to increase the accident risk for these road users and pedestrians.

## 8.0 Highway Appraisal – Haygarth

- 8.1 Haygarth is currently a small residential cul-de-sac which provides access to 34 four floor narrow terrace houses. Access to the southern part of Site KB4 could potentially be accessed via a 15m gap between two sets of garages, although some garages would need to be purchased and demolished to provide a wider gap suitable to create an access junction of reasonable width.

*Photograph 22: Potential Site Access Along Haygarth*



- 8.2 Haygarth is a 4.8m wide road with tight bends, although this increases to 7m on the approach to London Road. Accessibility is not helped by significant on-street parking throughout the cul-de-sac. Consequently, it is considered that access would not be suitable for a 67 dwelling development via this location. The extent of on-street parking also limits the potential of using this access as an emergency access into the site (see Photograph 23).

*Photograph 23: On-street Parking Along Haygarth*



- 8.3 There is a 2m wide footway provided throughout Haygarth. Consequently, this route could provide a safe pedestrian / cycling link between the site and London Road which would avoid the need for pedestrians to use Swangleys Lane.

Highway Safety

- 8.4 The online review of the accident records indicates that no accidents have occurred on Haygarth or at its junction with London Road in the last five years.

## 9.0 Summary and Conclusions

9.1 Glanville consultants have been commissioned to assess the potential access routes to the southern part of Site KB4 in Knebworth, Hertfordshire, as identified within the North Hertfordshire Draft Local Plan 2011-2031. This site is located within the current Green Belt on the eastern boundary of Knebworth and has been identified as the potential location for 200 dwellings.

9.2 The principal findings of the appraisal are summarised below:

- Site KB4 has been identified for 200 dwellings, of which it is considered that 112 would be located on the part of the site south of Swangleys Lane;
- 200 dwellings would result in 96 and 74 two-way traffic movements during the AM and PM Peak hours, whilst 112 dwellings would generate 54 and 41 two way movements respectively;
- Parking on both sides of the B197 London Road through the village centre reduces the main road through Knebworth to one-way operation and results in queueing and delays to traffic;
- Highway drainage is currently inadequate resulting in large areas of standing water and blocked gullies;
- Swangleys Lane is a very narrow road with restricted forward visibility at certain locations;
- Knebworth Primary and Nursery School is located on Swangleys Lane and this results in significant on-street parking during the school peak hours. This parking reduces Swangleys Lane to one-way operation and reduces forward visibility around the bend outside the school. Consequently this causes delays to vehicular traffic and occasionally results in large vehicles associated with Swangleys Farm to be unable to get through causing delays to other vehicles;
- There are no footways along Swangleys Lane, Old Lane or St Martin's Road. The exception would be between the School and London Road. This results in pedestrians having to walk in the carriageway. This is considered unsafe when there is significant on-street school parking along Swangleys Lane;
- Visibility splays at the potential access junction locations to the site south of Swangleys Lane are inadequate and pass over third party land;
- Old Lane is extremely narrow for two-way operation. There is also limited forward visibility around the bends;
- Turning movements at the Old Lane / Watton Road junction are restricted. This was implemented to stop rat-running. It is considered that removing these restrictions might encourage rat running along Old Lane and Swangleys Lane to resume;
- St Martin's Road is a private road. Consequently, access rights would need to be agreed prior to any development within the area;

- Access via Haygarth is considered unfeasible due to the narrow, twisting nature of the carriageway. Significant existing on-street parking would also restrict the amount of traffic able to utilise this route;
- There are limited Public Rights of Way within the vicinity of the southern part of Site KB4; and
- There are no significant accident clusters which would indicate a deficiency within the highway.

9.3 In conclusion, it is considered that there are significant highway constraints in the vicinity of the southern part of site KB4. This restricts the free-flow of traffic and would prevent the current highway network providing adequate access to a 200 dwelling residential development at site KB4 and 112 dwellings to the south of Swangleys Lane..

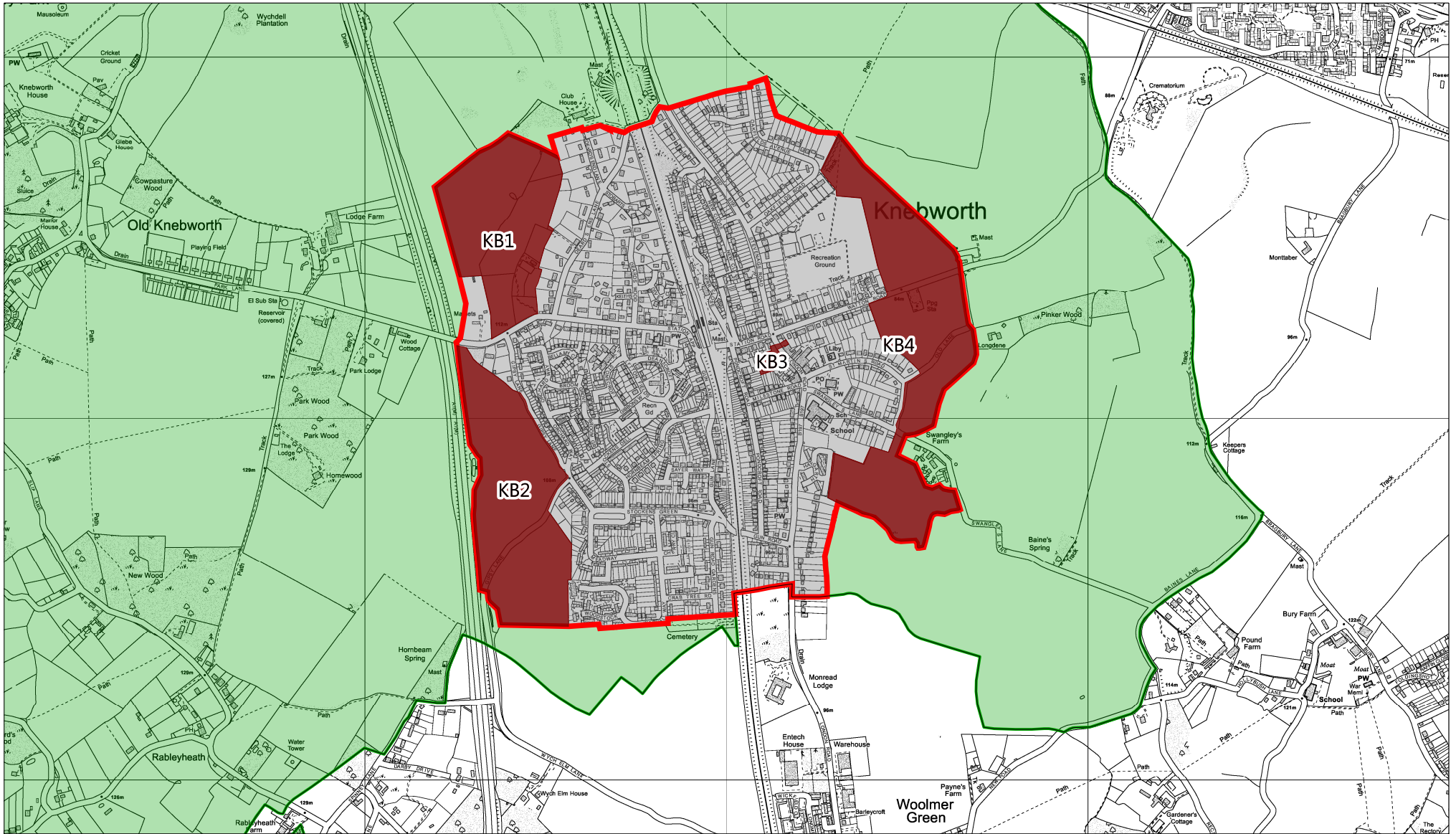


## Appendices

**Appendix A**  
**Draft Emerging Allocations Plan July 2016**



Draft Emerging Allocations July 2016 - Knebworth



Scale: 1:15000  
Date: 26.06.16





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