

B4056 New Road / Springfield Road, Berkhamsted

Stage 1 Feasibility Report

Commission Title

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Produced for

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REPORT APPROVAL FORM

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Executive Summary

The Design Team of Hertfordshire Highways has undertaken an investigation into the provision of a new access road linking the B4506 New Road with Springfield Road, Berkhamsted.

Three options have been considered:

Option 1 – Springfield Road Link Road / B4506 New Road, T junction

In order to achieve the desired road geometry (minimum horizontal radius of 90m for a local distributor road) it is clear that the link road would not fit within the confines of the Tunnel Fields residential development without the removal of a number of properties. As planning permission was granted on the understanding that the link road could be added at a future date this rules out this alignment as a feasible option.

OPTION 1 – NOT FEASIBLE

Option 2 - Springfield Road Link Road / B4506 New Road, Sub standard geometry

If a small section of land from the adjoining area could be used/purchased then this option would fit around the arrangement of newly built properties. This alignment closely matches the existing access road layout and would therefore have minimal additional impact on the surrounding area.

However, the alignment radius would be sub-standard (40m) meeting only the criteria for a local access road classification. In addition to this, the alignment would be in close proximity to the most northern end property. This coupled with the steep gradient of the finished link road would mean that high vehicle noise would be expected as southbound vehicles from New Road would require a low gear to ascent through the area.

A retaining wall would be required along the eastern side adjacent to Crew Curve properties to accommodate the increase in road width and footway on either side.

Option 3 – Re-alignment of B4506 New Road into Springfield Road

This option would achieve the desired minimum horizontal radius of 90m for a local distributor road though considerable more land take/purchase would be required which would have an effect on the existing wildlife site adjacent to Tunnel Fields.

As with Option 2, a retaining wall would be required. This alignment is more sympathetic to the gradients of the surrounding area and so the ascent is expected to be flatter with lower level of vehicle noise.

The purpose of this study is to assess the feasibility of providing a link road and whether it is cost effective to be progressed. The estimated works cost (including design fees) for the preferred alignment (**Option 3**) is in the region of £715,000 - £840,000. This is to be used as a guide only.

All options would have the attendant problem of poor visibility, level issues and the resultant increase in risk of accidents. As such whilst Option 3 would be the preferred design if funds were available, after taking into account the likely increase in safety risk the land take required and the other associated impacts it is recommended that none of the options are implemented.

Contents

Contents	iv
Table of figures	vi
Tables	vii
1 Introduction	1
1.1 General.....	1
2 Background	2
2.1 Introduction.....	2
2.2 Dacorum Borough Local Plan (1991-2011).....	2
3 Study Area	4
4 Existing Environment/Study Area	7
4.1 Tunnel Fields/Access Road.....	7
4.2 B4506 New Road	8
4.3 Springfield Road.....	9
4.4 St Katherine's Way.....	10
5 Identification of Problems/Issues	11
5.1 Existing Access Road Construction/New Link Road.....	11
5.2 Land Ownership	11
5.3 Springfield Road.....	11
5.4 B4506 New Road	13
5.5 Consultation.....	14
6 Site Investigation	15
6.1 Traffic Data Analysis.....	15
6.2 Accident Analysis	16
6.3 Street Lighting	16
6.4 Statutory Undertakers Plant	16
7 Identification of Options	17
7.1 Introduction.....	17
7.2 Option 1 – Springfield Road Link Road / B4506 New Road, T junction.....	17
7.3 Option 2 - Springfield Road Link Road / B4506 New Road, Sub standard geometry.....	18

7.4	Option 3 – Re-alignment of B4506 New Road into Springfield Road	18
8	Preferred Option	21
8.1	General	21
8.2	Safety Advice.....	21
8.3	Environmental Impact.....	22
8.4	Maintenance Requirements	22
8.5	Statutory Undertakers Plant	22
8.6	Structures	22
8.7	Street Lighting	22
8.8	Project Design and Management	23
8.9	Legal Implications	23
9	Action Plan.....	24
9.1	Conclusion.....	24

Table of figures

Figure 1 – Dacorum Borough Local Plan	3
Figure 2 – Location Plan.....	4
Figure 3 – Site Layout Plan	5
Figure 4 – Northchurch Conservation Area.....	6
Figure 5 – Aerial View of Existing Site Layout.....	7
Figure 6 – Ground Elevation.....	13
Figure 7 – Indicative Link Road Alignments – Options 1 & 2	17
Figure 8 – Indicative Link Road Alignment – Option 3	20

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Tables

Table 1 – Automatic Traffic Counts – 18 th May 2010-24 th May 2010	15
Table 2 – Traffic Speed Data – 5 th December 2005-11 th December 2005	15

1 Introduction

1.1 General

The Design Team (DT) of Hertfordshire Highways has been appointed by the Strategic Management Team (SMT) to undertake an investigation into the provision of a new access road linking the B4506 New Road and Springfield Road, Berkhamsted.

The commission, issued in August 2010 by the SMT, is to fully assess the feasibility of providing the access road in this location. The assessment is to include a land survey to identify apparent level differences between the site and B4506 New Road. An estimated works cost estimate is to be provided including DT fees to allow for a recommendation on whether the scheme is cost effective to be progressed.

2 Background

2.1 Introduction

The idea of a link road connecting the B4506 New Road with Springfield Road has been mooted since the 80s and has attracted a number of views with regard to its purpose and benefit.

Tunnel Fields is a site that has been blighted by issues and complaints both during its planning application and throughout its construction. The intention of original planning consent was to link the elongated Springfield Road through the site to New Road. Final planning permission was granted for 15 dwellings served by a cul-de-sac located off an extended Springfield Road with an additional property served via Swallowfields Walk off Springfield Road. The approved cul-de-sac comprises a centralised roadway without a link to New Road on the understanding the levels would allow a technically feasible link road to be developed at a future date if agreed.

At present there is an unprogrammed long term proposal retained in the Local Plan referring to the completion of the link road (see **2.2**). This has attracted a number of opposing views with Northchurch Parish Council naturally in favour of the link road being progressed and aggrieved that it has not already been completed and Berkhamsted Town Council taking the opposite view.

2.2 Dacorum Borough Local Plan (1991-2011)

The Local Plan Inquiry Inspector recommended in 2002 that the link road proposal be deleted unless the review of the long term transport proposals concluded that it should be retained, having regard to the policy framework and the environmental considerations. In 2003 the council decided to retain the scheme in the Local Plan however it is now planning ahead for the next 20 years and must now review the situation. The aim of this study is to help shape that decision.

The new link road is listed in the Dacorum Borough Local Plan (1991-2011) document under the heading of 'Long Term Schemes and Area Traffic Management Schemes' as reference Tiii (see **Figure 1**) which states:

'Tunnel Fields, link to New Road, Northchurch, Berkhamsted and associated work to junction of New Road/A4251.

Road link will provide a through route from New Road to Billet Lane via Springfield Road, bypassing Northchurch Conservation Area. Careful integration into landscape required. Impact on the ecology of the Wildlife Site (at the edge of Tunnel Fields) to be taken into account as far as possible.'

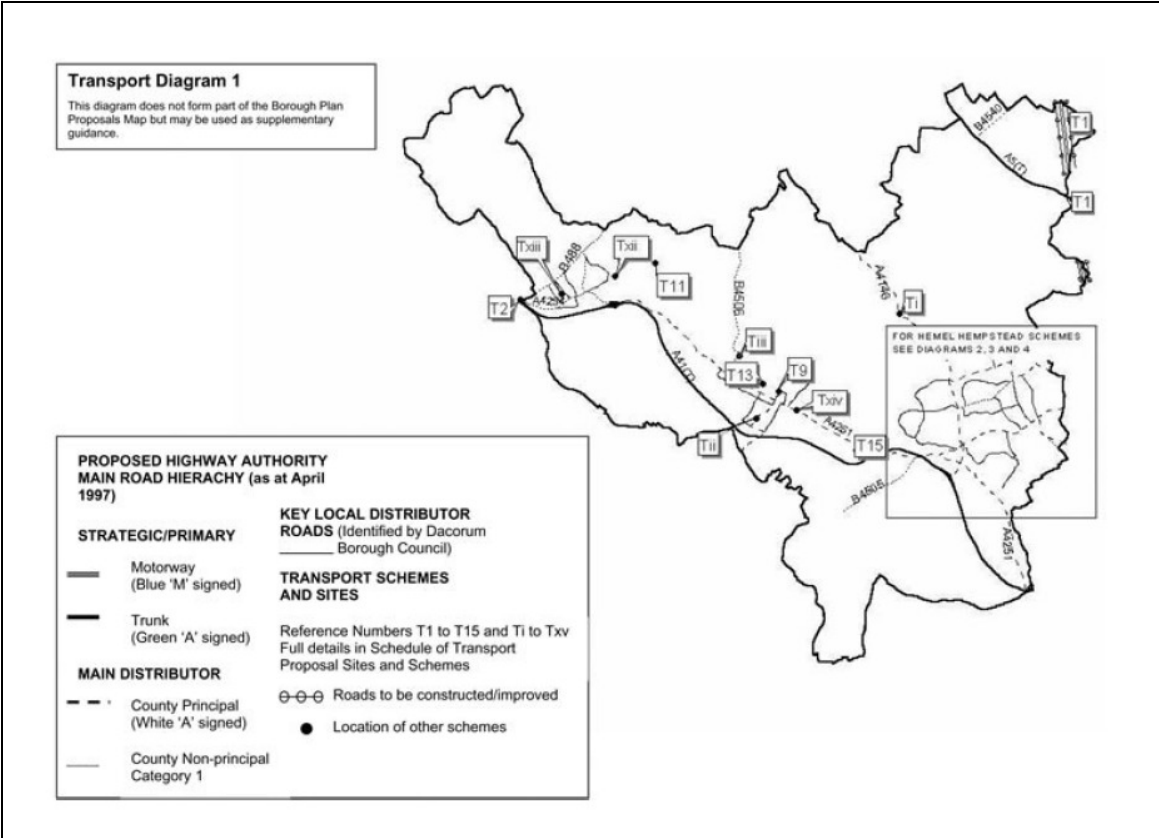


Figure 1 – Dacorum Borough Local Plan

3 Study Area

The link road under consideration would extend from the current turning facility at the northern end of Springfield Road at its junction with St Katherine's Way through the residential area to the north and tie-in to the B4506 New Road. The location of the site can be seen in **Figure 2**.

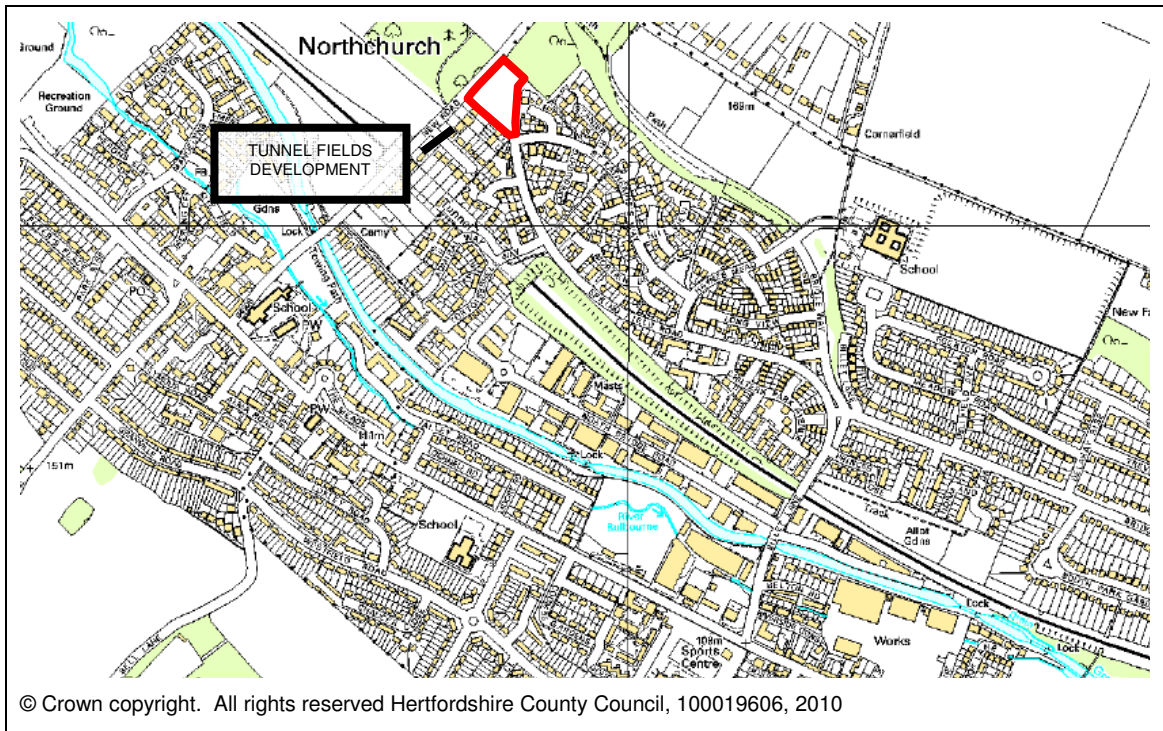


Figure 2 – Location Plan

The new link road would be approximately 150m in length and extend through a newly developed residential area 'Tunnel Fields' housing 16 properties. The extent of this can be seen in **Figure 3**.

The lower end of B4506 New Road falls within the Northchurch Conservation Area. The extent of this is shown in **Figure 4**.

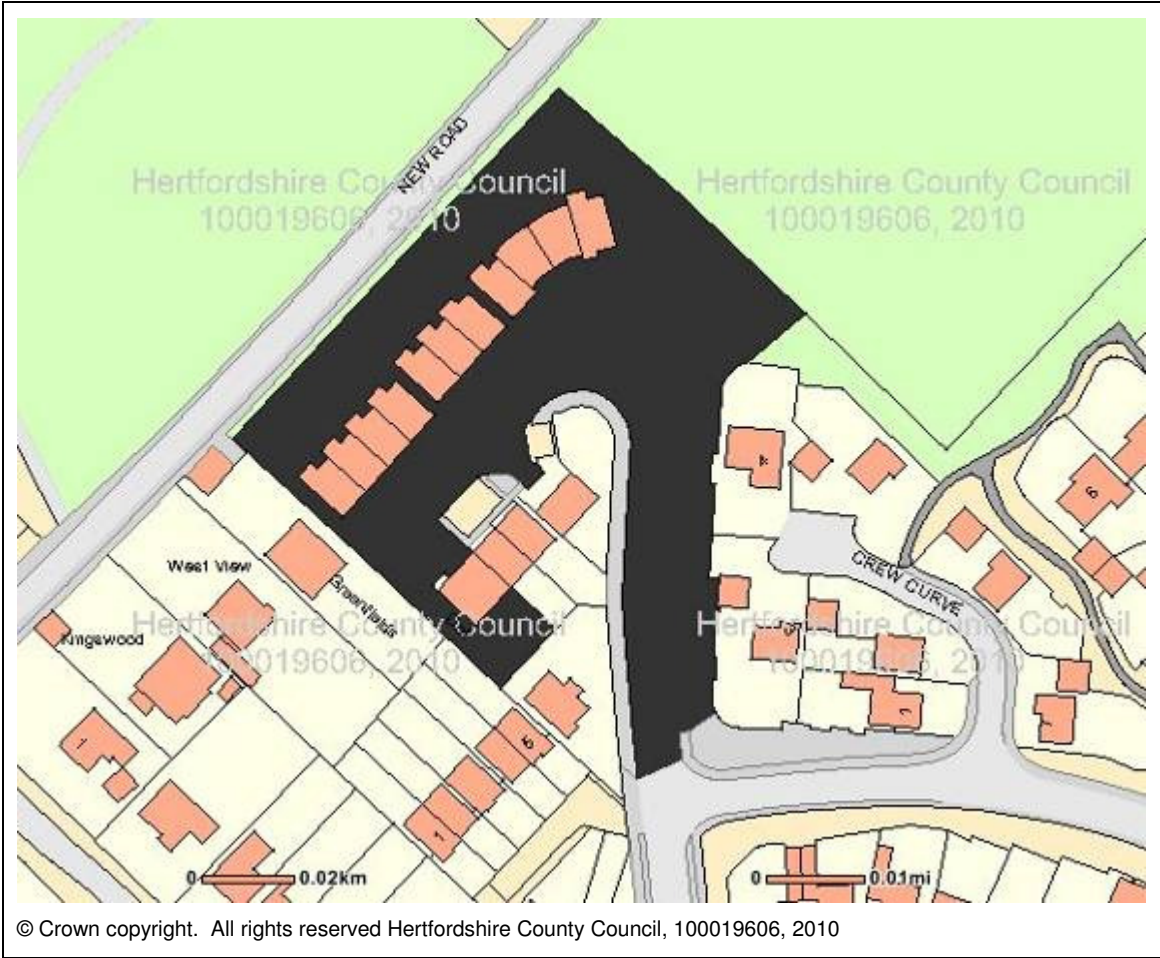


Figure 3 – Site Layout Plan

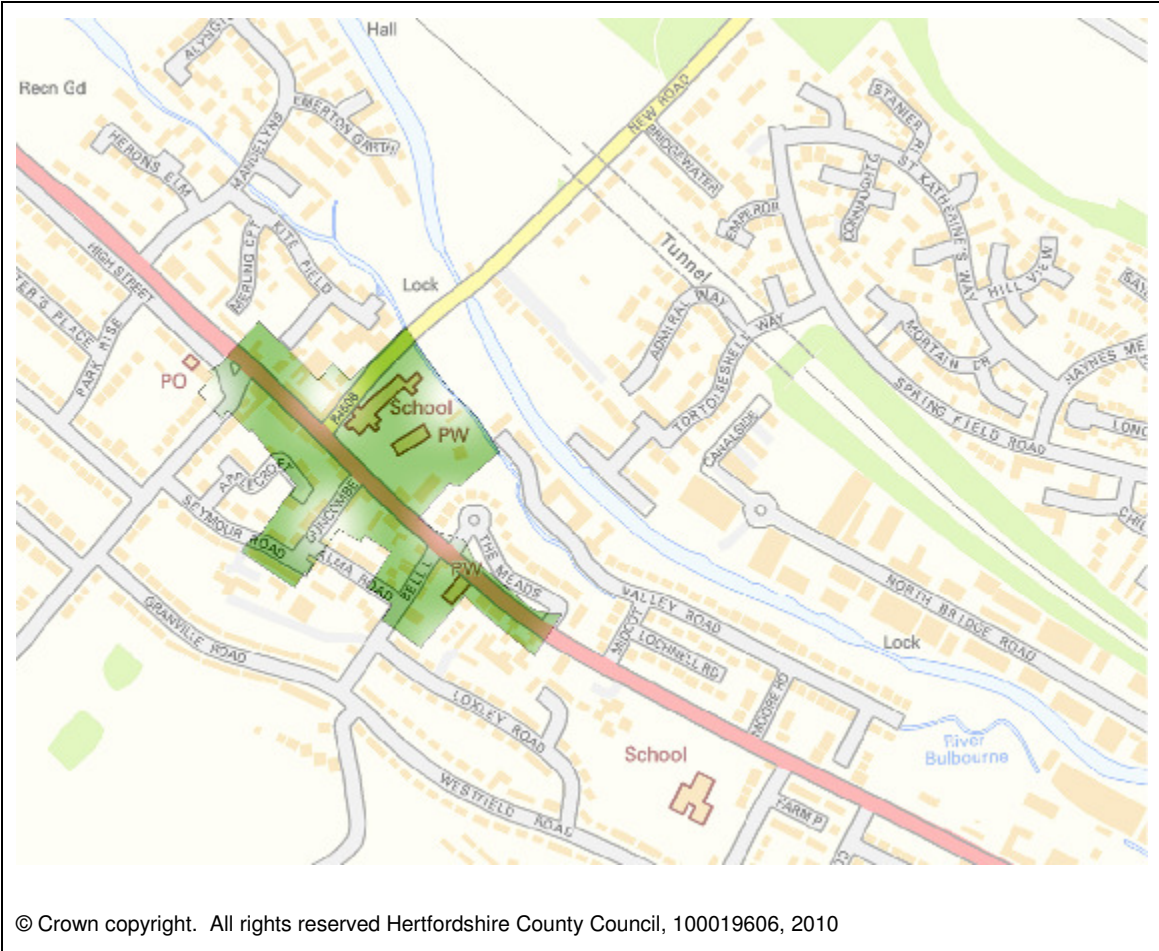


Figure 4 – Northchurch Conservation Area

4 Existing Environment/Study Area

4.1 Tunnel Fields/Access Road

The layout of the study area can be seen in **Figure 5**. This gives an indication of the 16 properties that have been constructed on the site and the existing access road arrangement. 15 of the properties are accessed via the access road and one off Springfield Road via Swallowfields Walk.



Figure 5 – Aerial View of Existing Site Layout

The Tunnel Fields residential development is still under construction. None of the properties are occupied and the access road still appears to be unfinished and temporary in nature.

Any works that are proposed to be adopted and maintained by the local authority as public highway will be subject to a S38 agreement. At present the new cul-de-sac cannot be adopted by HCC due to its design/levels. It will only be adopted by HCC if the full highway link between Springfield Road and New Road is completed.



Plate 1 – northbound view of Tunnel Fields existing access road



Plate 2 – southbound view of Tunnel Fields existing access road



Plate 3 – southbound view of Tunnel Fields access road showing steep embankment on eastern side



Plate 4 – southbound view of Tunnel Fields development from New Road showing steep terrain

A section of access road has been constructed (**Plate 1**) but it is incomplete (**Plates 2** and **3**). There is a steep embankment on the eastern side of the access road up to the rear of properties in the adjacent Crew Drive cul-de-sac.

The extent of the existing gradient of the site can be seen in **Plate 4**.

4.2 B4506 New Road

New Road is located to the north of the Tunnel Fields site. It is a B class secondary distributor with a 40mph speed limit in place past Tunnel Fields and runs northeast-southwest. It is fairly rural in nature with a narrow footway on the eastern side of the carriageway only.



Plate 5 – northbound view of B4506 New Road adjacent to Tunnel Fields



Plate 6 – southbound view of B4506 New Road showing start of the 30mph speed limit

The lower section of New Road, south of Tunnel Fields has a 30mph speed limit in place.

4.3 Springfield Road

Springfield Road is a 7.3m wide two-way single carriageway local access road 765m in length and benefits from grass verges and footways on both sides of the carriageway. It runs in a northwest-southeast direction and is covered by a 30mph speed limit. It connects Billet Lane with St Katherine's Way forming an almost circular route via Haynes Mead. Billet Lane is a local distributor road extending just over 400m and connects to Berkhamsted High Street (A4251).



Plate 7 – eastbound view of Springfield Road



Plate 8 – westbound view of Springfield Road

4.4 St Katherine's Way



Plate 9 – eastbound view of St Katherine's Way



Plate 10 – westbound view of St Katherine's Way towards Springfield Road

St Katherine's Way is a single two-way carriageway local access road. It is approximately 434m in length and is covered by a 30mph speed limit. It runs in an east- west direction between Springfield Road and Haynes Road and forms a t-junction with Springfield Road at its western end.

5 Identification of Problems/Issues

5.1 Existing Access Road Construction/New Link Road

It can be seen from the aerial photography shown in **Figure 5** that the existing road geometry does not tie-into Springfield Road and is noticeably narrower at only 5m in width. The existing access road layout cannot simply be extended and would need to be altered.

5.2 Land Ownership

The proposed alignment of the link road needs to be clarified with Dacorum Borough Council Planning Department. It is unclear at this stage as to whether there is sufficient land available within the study area in which to construct the link road.

The Local Plan states that the edge of Tunnel Fields is a Wildlife Site. It is understood that protected species on the site were due to be translocated prior to the commencement of development however the precipitous actions of the developer resulted in the habitat being destroyed. Remedial landscaping measures have been proposed and are to be implemented in an attempt to try to re-establish the habitat and encourage the return of species.

The land, outside of the current development footprint to the northeast and northwest of Stanier Rise, currently supports a population of common lizards. This is located beyond a hawthorn hedge which separates the development from the adjacent area. There are signs, see **Figure 5**, that this adjacent land has been encroached during the construction stage of Tunnel Fields.

Early indications are that additional land from the adjoining plot of land will be required to construct the link road access junction at the northern end. It is understood that this adjoining land is owned by the same developer of the Tunnel Fields site. It is unclear whether this area of land (whole or partial) could be purchased to accommodate some or the entire link.

5.3 Springfield Road

Discussions with officers of the Development Control Team have indicated that during the construction phase of Tunnel Fields there were discussions between the developer and officers to agree the extent of the S278 agreement works. Outline designs were drawn up by the developer and a stage 2 safety audit was undertaken. Intervisibility between vehicle drivers approaching on Springfield Road and St Katherine's Way is restricted by the boundary wall and adjacent trees. The developers proposed layout did not provide improvement to the existing road camber at this junction and this problem was raised in the safety audit. Fairly minor recommendations were raised in the safety audit to make the road layout as conspicuous as possible to approaching drivers. However, discussions between development control officers and the developer resulted in the developer refusing to undertake the required works. Consequently no works have been undertaken to construct a junction which meets HCC standards.

On site observations indicate that there is considerable level differences between Springfield Road and the access road. Due to the unfinished nature of the site it has not been possible to undertake a small scale level survey to assess the level difference though it is clear from a visual inspection that considerable level differences exist. A full land survey is required to ascertain the complete scale of the issues in this location if the link road is to be progressed.

If the existing access road is to be converted to a link road between New Road and Springfield Road further works would need to be undertaken to ensure that the requirements for forward visibility are met. The junctions form the brow of the hill and it is considered that this level would need to be reduced by approximately 1m and tied-in over a considerable length which would possibly affect surrounding established properties/driveways/kerblines etc. Changes to the existing ground levels of this extent would require an element of cut and fill and associated retaining structures to existing properties. It is likely that statutory plant would be exposed and alterations would be required.

Figure 6 demonstrates the existing ground elevation from Springfield Road through Tunnel Fields on the alignment of the new link road.

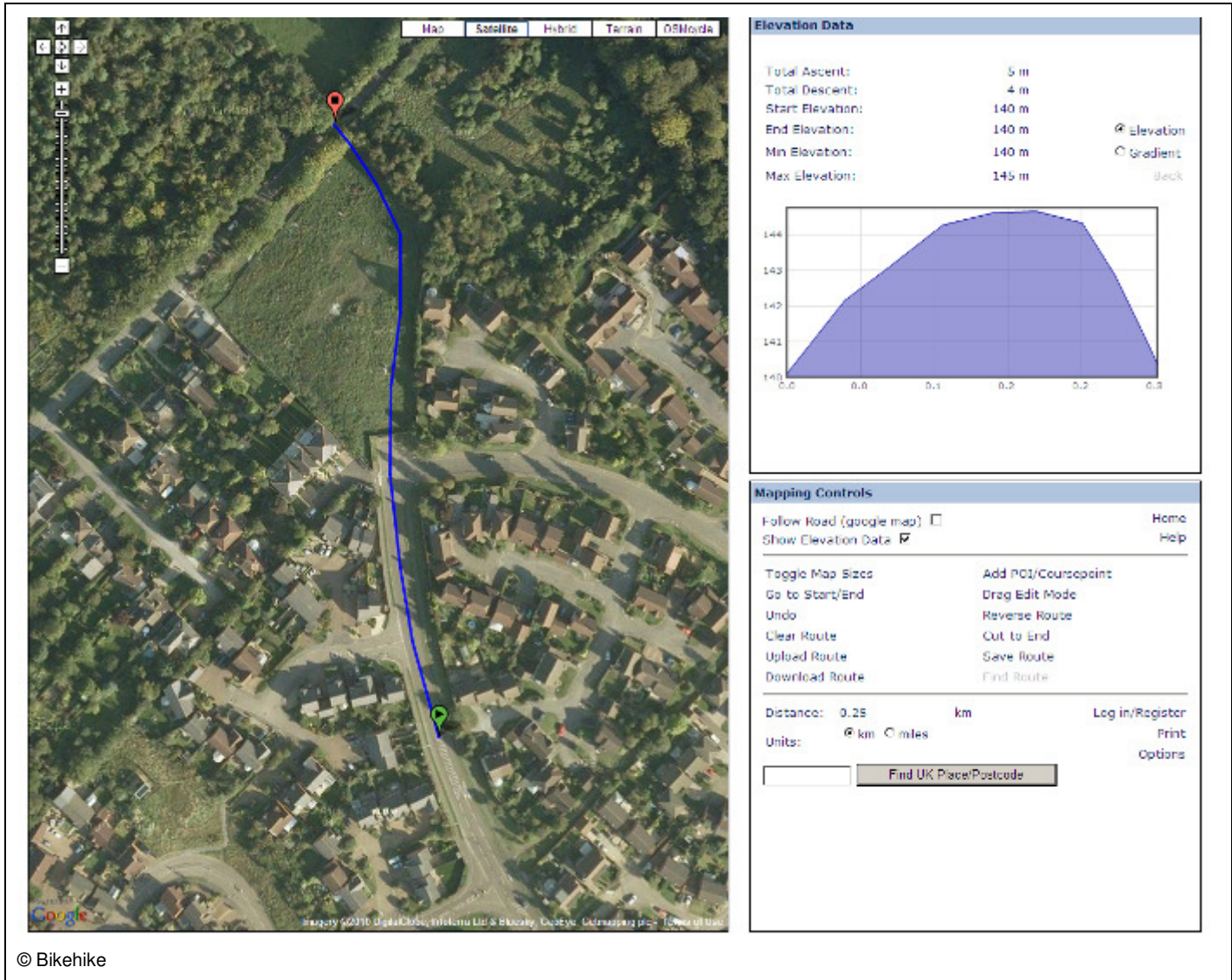


Figure 6 – Ground Elevation

Springfield Road is currently classified as a local access road. Implementation of the link road would require the road to be reclassified as a local distributor to tie-into Billet Lane. An assessment would need to be undertaken to determine if the geometry of Springfield Road is suitable for this classification.

5.4 B4506 New Road

There is a significant level difference between the carriageway level of New Road and Tunnel Fields as can be seen in **Plate 9**. A full land survey will need to be undertaken to ascertain the full extent of this issue.



*Plate 9 –level difference from New Road
carriageway into Tunnel Fields site*

The point of access from B4506 New Road needs to be clarified. Early indications are that there is insufficient space within the boundary of the residential site to accommodate the link road junction.

5.5 Consultation

If the link road is to be progressed then extensive consultation will be required with appropriate stakeholders and affected residents in the surrounding area such as those from Crew Curve.

6 Site Investigation

6.1 Traffic Data Analysis

Traffic speed and volume surveys have not been undertaken for this study. Previous automatic traffic speed and volume counts carried out on New Road have been used for the purposes of this study.

Table 1 shows the average 24 hour 7 day average flows north of Tunnel Fields together with the morning and evening peak hour traffic volume. Peak hours have been found to occur between 0800-0900 for the morning peak and 1700-1800 for the evening peak.

Table 1 – Automatic Traffic Counts – 18th May 2010-24th May 2010

B4506 New Road	7 day average	7 day average	7 day average
North of Tunnel Fields	24 hours	AM Peak	PM Peak
Northeastbound	2320	179	263
Southwestbound	2267	233	192

Table 2 shows the 85th %ile¹ and mean speeds within the 30mph section south of Tunnel Fields.

Table 2 – Traffic Speed Data – 5th December 2005-11th December 2005

Location	Direction	Data	
		85th %tile	mean
South of Tunnel Fields (30mph section)	northeastbound	38.7	31.9
	southwestbound	33.6	28.4

HCCs Speed Management Strategy states that within a 30mph speed limit 85%ile speeds should not exceed 35mph and mean speeds should not exceed 29mph. The speed survey data indicates that speeds exceed these figures (shaded cells) and as such traffic management measures such as traffic calming should be implemented to reduce the speeds at this location or increasing the speed limit to 40mph along the whole section should be considered. New traffic speed surveys should be undertaken to assess whether these speeds are still relevant.

¹ 85%ile - speed at which 85% of vehicles are travelling at or below

6.2 Accident Analysis

A full accident analysis has not been undertaken as part of this study however, initial investigations have shown that there have been no accidents within the immediate vicinity of the site on B4506 New Road or Springfield Road/St Katherine's Way in the last 3 years.

6.3 Street Lighting

The residential development does not currently have any lighting columns in place. A lighting survey on the existing section of Springfield Road has not been conducted as part of this assessment. It is recommended that a full lighting survey is undertaken to ascertain whether lighting levels meet existing standards and determine if upgrades are necessary along this section. Lighting requirements for the new link road section will need to be established as part of the design.

6.4 Statutory Undertakers Plant

A review of statutory undertakers' plant in the area has not been undertaken. However, it is clear that alterations to existing plant would be required. Consequently, a thorough desktop and on-site study of undertakers' plant will need to be undertaken if the design is progressed.

7 Identification of Options

7.1 Introduction

Various options have been considered and are indicated on the following indicative plans (**Figures 7 and 8**). The advantages and disadvantages of each of the options are discussed in the following paragraphs.



Figure 7 – Indicative Link Road Alignments – Options 1 & 2

7.2 Option 1 – Springfield Road Link Road / B4506 New Road, T junction

(indicated in orange)

It is clear that in order to achieve the desired road geometry (minimum horizontal radius of 90m for a local distributor road) the link road would not fit within the confines of the Tunnel Fields site (indicated by the red line on the plan) without the removal of some of the properties. As planning permission was granted on the understanding that the link road could be added at a future date this rules out this alignment as a feasible option.

OPTION 1 – NOT FEASIBLE

7.3 Option 2 - Springfield Road Link Road / B4506 New Road, Sub standard geometry

(indicated in blue)

It is understood that the adjoining plot of land is owned by the same developer as the Tunnel Fields site. If the plot or section of it is available and could be used/purchased then a suitable alignment could be achieved if a sub-standard radius is used (minimum horizontal radius of 40m for a local access road).

This option would fit around the arrangement of properties and would not require any to be removed.

This alignment closely matches the existing access road layout and would therefore have minimal additional impact on the surrounding area – in particular the wildlife area on the northeastern side.

A retaining wall would be required on the eastern side along the length of Crew Curve properties to accommodate an increase in road width from 5m to 7.3m and a 1.8m footway on either side.

The alignment is in close proximity to the most northern end property. This, coupled with the steep gradient of the finished link road, would mean that high vehicle noise would be expected as southbound vehicles from New Road would require a low gear to ascend through the area.

It is expected that due to the likely finished gradient of the link road this option would have poor forward visibility which may not meet HCC design standards. There is also likely to be issues with levels where the link road ties into the current Springfield Road/St Katherine's Way junction which may not be able to be rectified through further design. These issues were already raised in the previous safety audit (**Section 5.3**) undertaken as part of the S278 agreement process.

ESTIMATE RANGE £300,000 - £400,000 (construction cost only)

7.4 Option 3 – Re-alignment of B4506 New Road into Springfield Road

(indicated in green)

This option would achieve the desired minimum horizontal radius of 90m for a local distributor road though considerable more land take/purchase would be required which would have an impact on the existing wildlife area. See **Figure 8**

As with Option 2, a retaining wall would be required along the eastern side to accommodate the increased road width and footways on both sides.

Additional vehicle noise is inevitable with this option as with Option 2 due to the close proximity to properties however this alignment is more sympathetic to the gradients of the surrounding area and so the ascent from New Road is expected to be flatter.

At present there is a footway on the southern side of New Road. Although it is narrow it does provide a direct facility for pedestrians whom would be taken off their desire line in this arrangement. It is unclear at this stage what type of junction between New Road and the new link road would be suitable or could be accommodated within available land however a crossing facility for pedestrians would need to be incorporated.

For the purposes of the cost estimate a simple T-junction design has been assumed. It is not known at this stage what type of junction (T-junction, roundabout) would be appropriate however it is expected that there would be an increase in accident risk associated with either which may not be possible to design out during further design stages. In addition, the previous issues raised in the safety audit for the S278 agreement would still be relevant (see **Section 5.3**).

ESTIMATE RANGE £650,000 - £750,000k (construction cost only)



Figure 8 – Indicative Link Road Alignment – Option 3

8 Preferred Option

8.1 General

Based on the discussions in **Section 7**, the preferred alignment is **Option 3** as it meets the desired minimum horizontal radius for a local distributor road. However, the following needs to be taken into account when considering its suitability for implementation.

8.2 Safety Advice

Safety advice has been given by the Hertfordshire Highways Safety Team on the preferred option as discussed in **Section 7**. A series of comments were provided as summarised below:

- There is likely to be a fundamental issue with the vertical geometry of the link road provided between Springfield Road and New Road as a result of the large difference in levels between each end of the Link. It is unlikely that any suitable values to comply with current standards could be achieved.
- The downhill section of the link road from St Katherine's Way towards New Road beyond the existing crest at St Katherine's Way will create visibility sight line issues at the side road junction; it is unlikely that a suitable visibility splay to the right from St Katherine's Way side road junction into the link road could be achieved because of the vertical geometry of the link road. A lack of appropriate intervisibility between a driver attempting to emerge from St Katherine's Way and an on-coming vehicle driver on the link road is likely to increase the risk of conflict between them, with the attendant risk of a collision occurring as a result.
- The proposed link road as a distributor road subject to higher traffic flows would increase the prevalence of conflicts at this side road junction.
- It is proposed to realign New Road so that the north eastern arm would align with the Link Road, where the south western arm of New Road would form the minor arm of a junction with this new alignment. It is not known what type of junction would be provided.

T-junction: The downhill approaches to the new junction from both the Link Road and the south westbound approach along New Road would leave those vehicles manoeuvring on the junction vulnerable to conflict with vehicles approaching along the main road, because of the severe road geometry. Those southbound vehicles on the main road waiting to turn right into the New Road side road would be particularly vulnerable to following through vehicle(s), with the attendant risk of a prevalence of 'shunt-type' accidents as a result. Similarly, those vehicles waiting to turn right that misjudged a gap in the on-coming traffic would be susceptible to 'head-on' conflicts, which could result in more severe injuries to the occupants of the vehicles, should a collision occur. Consequently, any attempt to provide a T-junction layout for such a junction should incorporate a right turning lane in an attempt to mitigate the risks of shunt-type and head-on type accidents occurring. However, this would

require greater land-take and may be difficult to achieve with regard to the severe changes in levels between Springfield Road and New Road.

Roundabout: Although the downhill approaches might be more favourable for a roundabout the severity of the vertical elements of the approaches are likely to make it difficult to achieve a layout that complies with current standards and guidelines. Furthermore, the amount of land-take required to provide a roundabout of a suitable size with suitable approach geometry on each of the three-arm roundabout may result in prohibitive costs. The introduction of a smaller roundabout with poor approach geometry is likely to be problematic, and lead to a layout that would result in a higher risk of accidents occurring.

Additional feedback from the Safety Team as well as safety audits will be required during further stages of the design process if the scheme is developed further.

8.3 Environmental Impact

The environmental impact of the implementation of the preferred option would be substantial.

8.4 Maintenance Requirements

If the link road is implemented the extent of the works would need to be adopted and maintained by the local authority as public highway subject to a S38 agreement. This would have long term maintenance implications for the additional length of carriageway and footway surfaces and the retaining wall as well as lighting/signage maintenance and gully clearance etc

8.5 Statutory Undertakers Plant

Changes to the ground levels to accommodate a link road and tie it in at either end to New Road and Springfield Road will require alterations to existing statutory undertakers' plant.

8.6 Structures

As part of the construction costs it has been assumed that a retaining wall will be required to support the embankment along the eastern side of the link road along the length of properties of Crew Curve. The estimate has included for a 130m long x 1m high reinforced concrete retaining wall along this section. The full extent of retaining structure required would need to be investigated in further detail if the design is progressed.

8.7 Street Lighting

There is at present no street lighting throughout the extent of the existing cul-de-sac though it is expected that minimal lighting columns would be provided as part of the completed development works. These would need to be relocated as part of the widened link road alignment. Lighting levels along the link road as well as the existing lighting in Springfield Road would need to be assessed to ensure that it is appropriate for re-classification as a local distributor.

8.8 Project Design and Management

Based on experience from similar schemes of this nature it is anticipated that the design fees likely to be incurred would be in the region of 10-12% of the construction costs. This would bring the estimated cost of implementing **Option 3** to £715,000 - £840,000.

8.9 Legal Implications

Removal, 'stopping-up', of the existing length of highway along B4506 New Road would require an associated order to be advertised. This would be open to objections from the public and other affected parties which would need to be overcome or over-ruled for the works to be carried-out.

9 Action Plan

9.1 Conclusion

The purpose of this study is to assess the feasibility of providing a link road between B4506 New Road and Springfield Road, Berkhamsted. The estimated works cost (including design fees) of £715,000 - £840,000 for Option 3 is to be used as a guide only as to whether the scheme would be cost effective to progress. As such, a number of assumptions have been made - traffic surveys, modelling, street lighting assessments and land survey have not been undertaken as part of this feasibility report.

The cost estimate assumes a simple T-junction layout. It does not allow for major alterations to statutory undertakers' plant, land purchase or any environmental works.

The Safety Team input for this study has been advice only. Progression of the design would require safety audits at various stages to be undertaken which may raise further safety implications. It may not be possible to rectify these during the design which may rule out the scheme at a later stage.

All options would have the attendant problem of poor visibility, level issues and the resultant increase in risk of accidents. As such whilst Option 3 would be the preferred design if funds were available, after taking into account the likely increase in safety risk, the land take required and the other associated impacts it is recommended that none of the options are implemented.

