

Dry Hill Park Road Junction with B245 London Road Improvements to Pedestrian Crossing Facilities

Options Report

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1 Introduction

Kent County Council (KCC), together with Tonbridge School, are considering the need for a safer pedestrian crossing facility on the B245 London Road to access the School's sporting facilities on the south side of the B245 close to the Dry Hill Park Road junction. Boarding accommodation for the school is located on the north side of the B245 in Dry Hill Park Road and hence there is a strong demand at times for crossing at the junction.

A number of options previously considered were rejected for reasons of safety or practical concerns. KCC have, however, requested a further review of the options, particularly in light of the new guidance now available to local authorities in relation to setting speed limits, and the associated measures that can be introduced.

This report, having considered previous proposals and the guidance in Department for Transport Circular 01/2013 Setting Local Speed Limits, provides a number of options for improving the safety for pedestrians wishing to cross the London Road.

2 Site Location

The site, shown in Figure 1, is located to the northwest of Tonbridge on the B245, the local route from Tonbridge to Hildenborough and Sevenoaks. The approximate post code is TN10 3BX and Ordnance Survey grid reference TQ 5864 4735.

The site is complex and compact, being a staggered cross roads with nearby bus stops and several schools close by. The Dry Hill Park Road / London Road junction is a skew junction of around 50°.

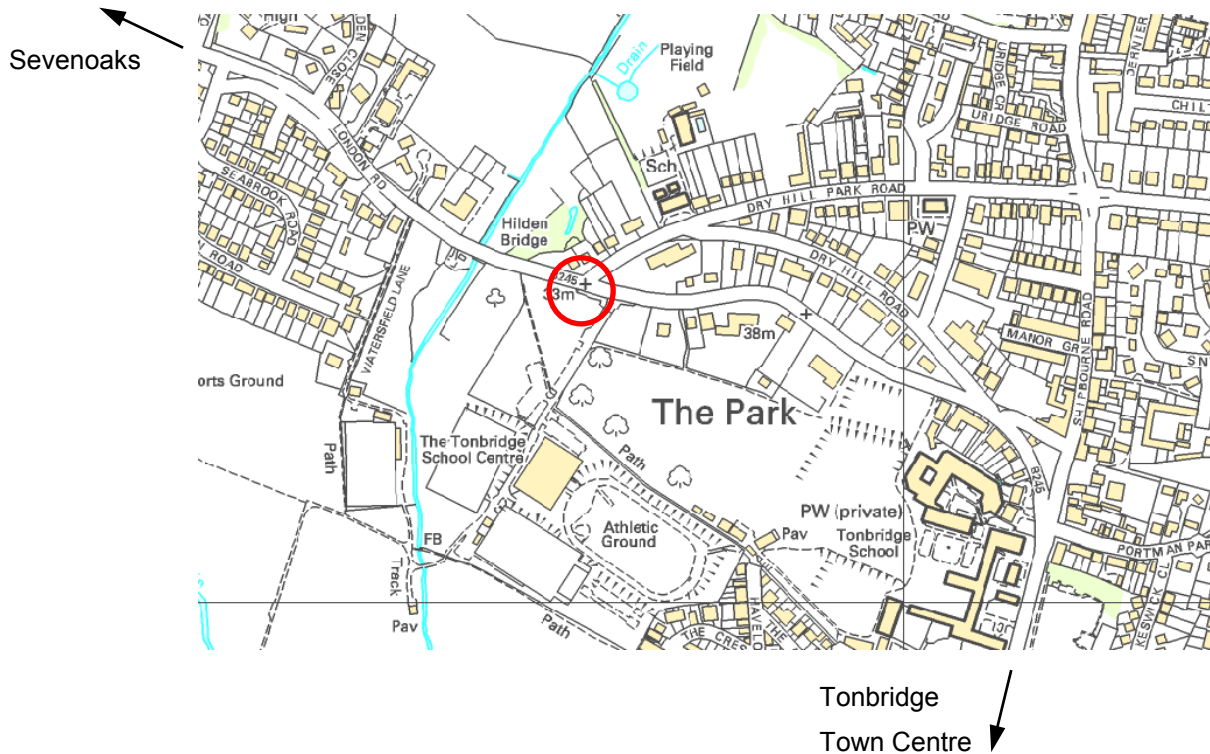


Figure 1: Location of B245 London Road junction with Dry Hill Park Road, Tonbridge (Crown Copyright. All rights reserved Kent County Council. 100019238)

3 Road Use

3.1 Traffic

There is data available from traffic counts carried out in 2002 and 2013. A summary of the data is included in Appendix A.

The data shows that there has been a slight increase in eastbound traffic (towards Tonbridge) and a small decrease in westbound traffic (towards Sevenoaks). Interpretation of the data also shows that there has been a slight decrease in the number of vehicles undertaking a turning manoeuvre at the junction / sports centre entrance. Although it would be expected that the turning manoeuvres would increase due to the opening of the sports centre in 2008, it is presumed that much of the additional traffic it generates is outside of the typical traffic count times (7am to 7pm).

The traffic counts support site observations that a significant volume of traffic turns into or out of Dry Hill Park Road which is signed as the route between B245 and A227 for traffic heading northbound out of Tonbridge (towards Shipbourne).

3.2 Speed

The 2013 count also measured traffic speeds. A summary of the mean and 85th percentile speeds is included in Appendix B. The overall mean speed for the B245 is 31.1mph and the 85th percentile speed is 34.9mph.

Most vehicles are travelling between 30 and 35mph, which appears to be typical for a 30 mph speed limit. However, the number of vehicles travelling westbound (towards Sevenoaks) that are exceeding the limit is almost double the national average (recorded in 2011 – Department of Transport Free Flow Vehicle Speeds). Over 30% of vehicles travelling in this direction (recorded to the west of the junction) are travelling faster than 35mph. This has had an impact on the overall 85th percentile speed calculated for the road. If the 85th percentile speeds are calculated using only the figures on the approaches to the crossing location, the figure is 33.9mph.

3.3 Pedestrians

A pedestrian count was undertaken in June 2011 and a copy is included in Appendix A. No information is available to indicate the duration of the survey, but the results do indicate where people are choosing to cross the London Road, and in particular the high percentage choosing to cross immediately to the east of the junction. Recent site observations and video evidence has confirmed this.

4 Crash Data

Information about crashes at the junction over the last 10 years was obtained from the KCC crash database and summarised in Table 1. This database only provides information on accidents that have been reported to the Police.

The following points are of note:

- 5 of the 7 recorded accidents involved motorbikes. All of these accidents involve cars pulling out of Dry Hill Park Road into the path of motorbikes.
- There have been no recorded accidents involving pedestrian casualties

Table 1: Percentage of traffic exceeding 30mph and 35mph

Date	Severity	Time / Weather / Conditions	Surface	Vehicles Involved	Direction	Left or Right Turn Out	Notes
04/06/2007	Slight	08:30; Fine; Light	Dry	V1 – Car V2 - Car	N to E E to W	Left	V1 pulled out in front of V2. V2 swerved to avoid V1 and hit pavement. V1 did not stop and was chased by V2. V1 eventually stopped and passed over details.
23/06/2007	Serious	22:20; Fine; Dark	Dry	V1 – M/C V2 - Car	N to E E to W	Left	V1 pulled out from Dry Hill Park Road without giving way, pulling into path of V2.
08/02/2011	Slight	09:05; Fine; Light	Dry	V1 – Car V2 – M/C	N to W E to W	Right	V1 pulled out from Dry Hill Park Road into the path of V2.
18/06/2011	Slight	19:28; Fine; Light	Dry	V1 – Car V2 – M/C	N to W W to E	Right	V1 pulled out into path of V2. Driver of V2 braked hard and fell from M/C, V1 collided with V2 lying in road.
22/09/2011	Slight	14:25; Fine; Light	Dry	V1- Car V2 – M/C	N to W W to E	Right	V1 pulled out into path of V2 causing collision.
19/09/2012	Slight	17:45; Fine; Light	Dry	V1 – Car V2 – M/C	N to W W to E	Right	V2 overtaking stationary vehicles when V1 edged out of Dry Hill Park Road into the path of V2, causing collision.
07/02/2013	Slight	13:00; Fine; Light	Dry	V1 – Car V2 – Car V3 – Car	W to E W to E W to E	N/A	V2 stopped at the junction to let traffic out of Dry Hill Park Road. V3 stopped behind V2. V1 collided with the rear of V3 who was then pushed into the rear of V2.

5 Junction Layout

5.1 Geometry

The Dry Hill Park Road approach to the London Road is not perpendicular, leading to visibility difficulties at the junction. There is a raised asphalt area at the junction which encourages drivers to stop at the junction as close to a right angle as possible.

The London road is 7.6m wide, with a 3m wide lane in each direction and 1.6m wide central hatching. There are regular pedestrian refuge islands along its length although no refuge island is present between the junction with Dry Hill Park Road and the sports access. The residences along London Road have boundaries with tall vegetation which overhangs the highway in places, giving it an enclosed and semi-rural feel.

Dry Hill Park Road is a residential road with a number of schools on the northern side. There are marked parking bays and build outs at junctions to narrow the carriageway. Despite these factors, as previously noted, the road is the signed route for traffic between the B245 and A227.

5.2 Visibility

Visibility standards at the junction are, in the main, consistent with the minimum requirements for a 30mph speed limit as set out in KCC's adopted design standard TD42/95, although the skewed approach of Dry Hill Park Road, makes it awkward for some drivers to see easily in both directions.

6 Junction Operation Observations

6.1 Site Visit

The site was visited on Monday 1st July 2013 during the AM peak. Victoria Soames from Amey met with Anthony Moore and Mark Organ, Bursar and Assistant Bursar at Tonbridge School. The use of the school facilities was discussed and observations on the junction operation made.

6.2 Video Footage

The school made a video recording of the use of the junction, there is no date on the footage, but it is noted that it was taken on a weekday during the early afternoon. The recording was taken over the period of an hour.

81 people / students crossed the London Road at the point between Dry Hill Park Road and the Sports Facility access during the filming. Generally, all the pedestrians that crossed here did so with limited delay as the off peak traffic provides sufficient crossing opportunities. As is typical of teenagers, several were observed accepting a higher level of risk by crossing in smaller gaps in the traffic than adults might. The video indicates one near miss, as two boys were seen to step off the footway when a car was turning left out of Dry Hill Park Road. The vehicle had been indicating and the boys stepped back onto the pavement as the car pulled round the corner.

A copy of the video can be provided for viewing if required.

6.3 Tonbridge School Sports Facility Use

Tonbridge School has around 800 pupils, all boys age 13 – 18, around 250 of who will access the sports facility from Dry Hill Park Road. The remainder come along London Road and generally use the existing crossing facilities.

The pupils tend to arrive as individuals or in small groups (up to 4 or 5 boys). Whilst not observed on site, the video footage also shows a number of boys arriving by bicycle.

The facility is open to the community. As well as members of the public having membership of the centre, the car park is used by parents to park and walk their children to the 2 preparatory schools in Dry Hill Park Road and a number of local sports clubs also use the facilities.

The facility often deals with significant volumes of traffic. If there are team sports matches, up to 15 coaches and over 600 vehicles can be expected. In the evenings, when the site is used by the local sports clubs, there are regularly 200 vehicles in and out of the site.

6.4 Junction Operation and Observations

The London Road is a busy link between Tonbridge and Sevenoaks. Dry Hill Park Road, although appearing to be a residential street is an important, well used and sign posted link between the B245 and A227 (to / from Shipbourne).

During the site visit in the morning peak, the junction was very busy, with a consistent queue on Dry Hill Park Road waiting to turn out. The majority of the waiting vehicles turned right out of Dry Hill Park Road towards Sevenoaks. Most drivers turning right had to lean forwards to get a good view of the London Road to the left to make the turning and this seemed particularly difficult for larger vehicles.

Drivers were observed to be pulling out of Dry Hill Park Road, or turning right into Dry Hill Park Road in some very small gaps in the traffic. That being said, there was an observed level of courtesy shown by drivers to both other drivers and pedestrians, letting other vehicles out and pedestrians cross the road. This was observed more frequently during particularly busy periods when there were far fewer gaps in the traffic. That said, this can lead to confusion/hesitation by drivers and pedestrians and potentially lead to accidents.

A definite desire line was seen for pedestrians crossing London Road between the junction with Dry Hill Park Road and the sports facility access. At the time of the site visit there were significant numbers observed crossing who were arriving or leaving the sports centre or taking their children to the preparatory schools in Dry Hill Park Road, having parked at the sports facility. The numbers crossing at this point exceeded those who were prepared to walk a little further along the road to use the existing pedestrian refuge islands.

There are a lot of vehicles stopping in Dry Hill Park Road on the double yellow lines during school drop off time. This is adding to difficulties at the junction, as vehicles cannot always turn into Dry Hill Park Road from London Road.

The London Road does not feel like a typical 30mph road; it feels like it should have a higher limit. Although eastbound speeds are typical for a 30mph speed limit, west bound speeds are higher as previously noted.. Despite how busy the junction was and the presence of pedestrians, vehicles generally appeared not to be reducing their speed.

The London Road is a bus route and is served by 6 different routes.

These observations reflect the observations from previous studies.

7 Previous Proposals and Recommendations

7.1 Zebra Crossing

A Zebra crossing was proposed on the London Road between the junctions of Dry Hill Park Road and the sports access in 2011, this being on the predominant desire line, and is shown in Appendix C. When the proposals were put to safety audit, it was strongly recommended that the proposals were not pursued and a full signalisation of the junction be carried out. A copy of the audit is included in Appendix D and the key issue summarised below for ease of reference.

Problem Summary: Proximity of zebra crossing to junctions with Dry Hill Park Road and the entrance to the Tonbridge school play fields will result in late recognition of the crossing

The proposed crossing will be placed immediately east of the junction with Dry Hill Park Road. The proximity of the junction and the presence of the junction to playing fields on the southern side will require drivers to be aware of these junctions particularly the junction of Dry Hill Park Road where vehicles struggle to pull out. This problem is exacerbated by high vehicle speeds through this area; certainly in excess of the 30mph speed limit. Any pedestrian stepping out onto the crossing is at serious risk of being struck by a vehicle pulling out of either junction, often at high speed due to the need to pull out quickly into a gap in the traffic.

7.2 Full Signalisation

A full signalisation scheme was prepared in 2012. The modelling of the junction demonstrated that there would be significant delay to vehicles as a result of the introduction of the lights. This delay was not acceptable to KCC Members and the scheme was not pursued.

7.3 Signal controlled Crossings

Two stand-alone signal controlled crossings have been considered. The first was at a location off the predominant desire line, which was not an acceptable solution to KCC Members who were of the opinion that it would not be used and as such not address any of the real concerns. The second was located on the predominant desire line between Dry Hill Park Road and the sports access, but safety concerns were raised due to the close proximity of these junctions to the crossing which, in any case, was not in accordance with current guidance, and therefore not pursued.

8 Crossing Proposals

It is clear that a new crossing off the predominant desire line is not going to be an acceptable or worthwhile solution. Therefore, this report does not consider off line options.

8.1 Review of Department for Transport Circular 01/2013

The Department for Transport recognises that effective speed management is part of creating a safe road environment and therefore this guidance has been published following an extensive consultation. The updated guidance will help local councils implement more consistent speed limits on local roads and incorporates recent changes that create more flexibility for authorities to implement 20 miles per hour limits.

The objectives of the guidance are:

- to improve clarity and therefore greater consistency of approach when setting speed limits across the country
- to enable the setting of more appropriate local speed limits, including lower and higher limits where conditions dictate
- to achieve local speed limits that better reflect the needs of all road users
- to ensure improved quality of life for local communities and a better balance between road safety, accessibility and environmental objectives, especially in rural communities

The circular is only relevant in this situation for Option 4 discussed below.

8.2 Crossing Options

8.2.1 Option 1 - Do Nothing

It is clear that there is a desire line for pedestrians to cross London Road between the junction with Dry Hill Park Road and the sports centre access.

However, there have been no reported pedestrian casualties in the last 5 years based on the crash data and the school is not aware of any accidents involving pupils and the video shows that only one incident of pupils making poor crossing decisions.

There are existing pedestrian facilities in the vicinity of the junction. There are refuge islands 42m to the west and 57m to the east of the desired crossing location. Vulnerable pedestrians (for example parents with small children or pushchairs) are making use of these facilities, but those who feel they are able, cross at the desired crossing location with reasonable ease.

During the non-peak hours, there are plenty of opportunities to cross, and as observed on site, vehicles showed courtesy to pedestrians, allowing them to cross during the peak hours. However, as previously noted, this can lead to confusion/hesitation by drivers and pedestrians and potentially lead to accidents

Caution should however be exercised that in improving access for pedestrians, the accident potential is not made worse by installing more formal type crossings

8.2.2 Option 2 - Zebra with banned Left Turn out of Dry Hill Park Road

The previous Zebra design was rejected due to concerns regarding visibility of the crossing and the risk of vehicles pulling out of the junctions in small gaps in the traffic. Local Transport Note 2/95 suggests that a minimum 'safe' distance of 5m should be provided to a zebra crossing from where a driver is waiting at the give-way line. This is not possible at the Dry Hill Park Road junction without compromising, in a similar fashion, the left turn out of the sports access (i.e. the 5m 'rule')

It is therefore proposed to ban (by TRO) and physically discourage the left turn out of Dry Hill Park Road and locate the zebra crossing as close as possible to this junction to allow an acceptable safe distance from the sports access.

The overall 85th percentile speed for London Road of 34.9mph brings it just inside the guidance of 35mph for a Zebra crossing although, realistically, the 85th percentile speed is likely to be slightly less on the approaches to the crossing. This would however need to be monitored once opened, although a slight reduction in speed might be expected due to a more conspicuous crossing.

8.2.3 Option 3 – Pedestrian Refuge Island with banned Left Turns out of Dry Hill Park Road and restricted left turn for large vehicles out of the sports centre

The zebra crossing proposed under option 2 will result in a degree of disruption to traffic flow at times. Option 3 serves to limit this disruption by introducing an uncontrolled crossing including a central refuge island. As for option 2, the left turn out of Dry Hill Park Road will need to be banned on safety grounds.

The position of the refuge island has been dictated, to a degree, by the need to provide sufficient space for the right turn into Dry Hill Park Road (i.e. deceleration/turning space) and as a result makes it difficult for larger vehicles to turn left out of the sports facility safely. It is therefore proposed to further discourage the left turn out of the sports facility for large vehicles and coaches by elongating the island. This makes the crossing point more apparent to vehicles and also makes it obvious that the restricted left turn is unachievable for large vehicles.

8.2.4 Option 4 - Variable Speed Limit

Although London Road is posted as a 30mph limit, few drivers are travelling below the limit. A key aspect for improving safety for pedestrians should therefore be to slow down traffic. The site is already a mobile speed camera site although visits are very infrequent and therefore additional measures should be considered.

Whilst variable speed limits are not regularly seen in Kent, reducing the speed limit to 20mph during periods of heavy pedestrian use should help reduce the speed vehicles are travelling at. Despite the junction seeming to be difficult to negotiate as a driver or pedestrian, there does not seem to be any impact on driving speeds. Whilst a variable 20mph speed limit is unlikely to actually mean drivers travel at 20mph, it should reduce the 85th percentile speeds to levels that would improve crossing opportunities. The full effectiveness of this may however diminish slightly over time.

The speed limit would need to be very clearly signed on both London Road and Dry Hill Park Road using interactive signs. Based on LTN 01/13, a minimum length of speed limit of 300m could be adopted (i.e. 150m on each approach to the junction).

A permanent 20mph zone is believed inappropriate as this would need to be self-enforcing and is unlikely to have the support of the local community or the Police and is unlikely to have the desired effect. It is suggested however, that gateway features should be installed to highlight the start and end of the variable limit. These may have a small traffic calming effect.

A local education / advertising campaign would be required as part of this option, to enable people to understand why the 20mph limit was in place. It requires acceptance by local people to have any impact.

This option could be used in conjunction with any of the other options. It could also be installed at a later date once any impact of the constructed option had been assessed.

8.2.5 Additional Considerations

Depending on the priorities, other measures that could be considered include additional traffic calming features or Speed Indicator Devices. These may be preferable as an initial measure and monitored for their effectiveness. This draws on the consideration that sometimes new crossing facilities can introduce greater potential for accidents, depending on demand and site circumstances.

Traffic calming schemes on these types of road are not generally received well by the public, however some of the options already discussed should provide a traffic calming effect and additional features could be designed to complement the chosen option if vehicle speeds increase to an unacceptable level.

The Speed Indicator Devices may have a better impact, but experience has shown that this will only be achieved over short periods of time, as these devices have been shown to become less effective after 2 – 3 weeks. Consequently, this type of device would need to be included in a mobile programme where the signs are moved to new locations on a regular basis.

There are also currently no warning signs of children crossing the road or a school (TSRGD sign 545 with plate 546) on London Road. Installation of these signs, with or without flashing amber signs as appropriate, should be considered as part of the design of the chosen option.

9 Stage 1 Safety Audit (Options 2 and 3)

A stage 1 Safety Audit has been carried out by an independent consultant for KCC. A full copy of the report is included in Appendix H and summarised in Table 2 with the Designer's comments for ease of reference.

Table 2: Stage 1 Safety Audit			
Comment	Option	Recommendation	Designer Comment
<p>Location: Junction of Dry Hill Park Road and London Road</p> <p>Summary: The proposed build out to deter vehicles turning left will play a significant part in preventing illegal turns but not assist turning positions.</p> <p>Opportunity should be taken when building the kerb build out to realign the junction straightening out the eastern corner of Dry Hill Park Road and curving the centre line marking to the west. This will allow vehicles to align better for the right turn. It was observed during the site visit that vehicles often positioned themselves incorrectly causing a delay in the turning movement.</p>	2 and 3	<p>It is recommended that the junction be modified aligning traffic in the southbound lane at an increased angle by about 10-20 degrees.</p>	<p>We believe that the auditor's comments suggest that an increased skewed approach to the junction will provide a better turning position. However, we do not believe this to be the case due to increased difficulties of seeing approaching vehicles from the right, particularly large vehicles and suggest that moving the centreline slightly to the east to create a better perpendicular approach to the junction should be adopted. This follows the guidance in TD42/95 for having perpendicular approaches to junctions.</p>
<p>Location: London Road east of junction</p> <p>Summary: The proposed pedestrian island is not shown as having high visibility beacon.</p> <p>The new pedestrian island will play an important part in preventing illegal turns. However no information is given as to its construction. Due to the location and speed of vehicles it is important that this facility is highly visible to all motorists.</p>	3	<p>It is recommended that the pedestrian island is constructed to current KCC standard design with high visibility beacon and reflectorized keep left arrows on the far end of the island itself.</p>	<p>The islands will be designed and constructed to current standard including high visibility beacons and keep left arrows.</p>

10 Points for Consideration

This report provides a number of options for improving pedestrian movement/facilities at the junction of Dry Hill Park Road with London Road. The issues in Table 3 and subsequent bullet points should be considered when determining the preferred option to progress.

Table 3: Points for Consideration				
Point to consider	Do Nothing	Zebra	Refuge	20mph
Pedestrians	Unlikely to be well received. The perception would be that it does nothing to reduce the risk of pedestrians being involved in a collision when compared to other options. Pedestrians are however in complete control of when to cross which may be the safer option.	Likely to be the favoured option by pedestrians as it allows them to cross with limited delay	Allows the pedestrians to cross each lane separately, but without any priority over traffic	Improvement for pedestrians in terms of opportunities for crossing
Traffic delay	No impact on traffic	Delays likely at peak hours when there are regular groups of pedestrians crossing the road	No impact on traffic	Very minor delay if speed limit is adhered to.

Table 3: Points for Consideration				
Traffic Speed	No impact	May reduce speed locally to the junction. Speed of traffic (85 th percentile) is already close to limit for installing a zebra crossing and would need to be monitored post construction to determine if further measures were necessary	May reduce speed locally to the junction	May reduce speed locally to the junction
Local views	It is clear that the people crossing the road are very much in favour of a crossing at this location and therefore would not support this option	Tonbridge School have suggested that a banned left turn out of Dry Hill Park Road would not be very well received by the local community.	Tonbridge School have suggested that a banned left turn out of Dry Hill Park Road would not be very well received by the local community. The prevention of a left turn out of the sports facility for large vehicles is unlikely to be welcomed.	Given the speeds that people travel at along London Road, this will be more difficult to get accepted and followed. A local advertising campaign may help compliance.

- Introduction of a crossing facility may create the potential for accidents that doesn't currently exist
- There is no ideal solution. There will need to be a compromise for any of these options and the chosen option will depend on the priorities of KCC and the school.

- Whilst there is a desire from pedestrians for a crossing to be installed, the junction currently operates well with opportunities for pedestrians to cross and facilities a short distance away for those who are vulnerable or less confident.
- There is no statistical evidence to suggest that any of these options would be safer than the others. There is however evidence that supports Zebra crossings being safer than signal controlled pedestrian crossings.
- There is a risk of vehicles failing to stop at zebra crossings.
- There is unlikely to be an improvement in accident statistics at the junction and the additional conflict may increase the accidents
- Costs for options 2 and 3 are likely to be similar

11 Recommendations

The crossing option to be taken forward depends on the priorities of KCC and Tonbridge School.

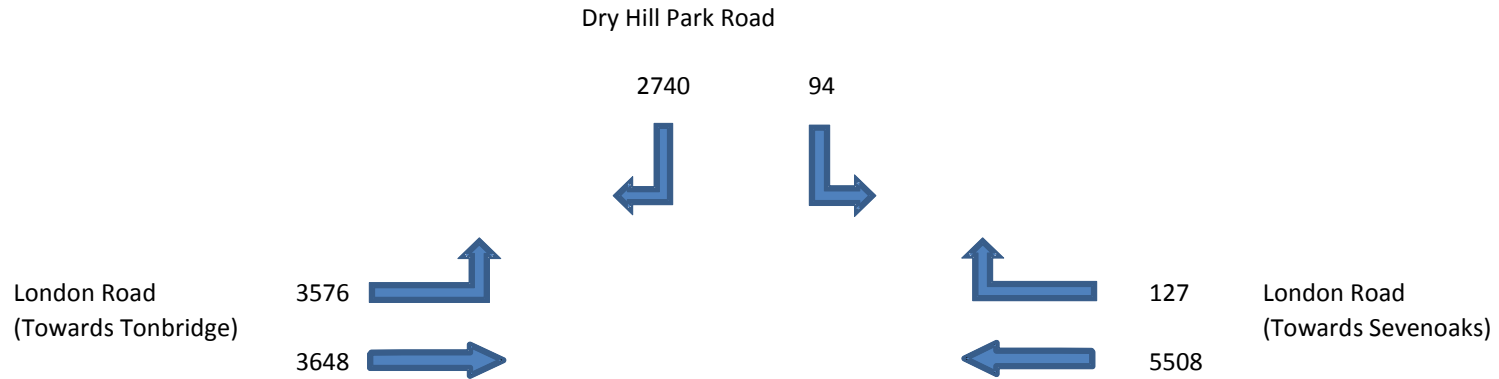
If the decision for preferred solution is to be based purely on improving the crossing opportunities for pedestrians, it is believed that the uncontrolled crossing provides a better option. This is on the basis that teenagers are more likely to pay attention to the traffic when using an uncontrolled crossing than making an assumption that traffic will stop when using a Zebra crossing.

If the decision needs to accommodate traffic, do nothing should be the preferred solution in conjunction with other measures discussed in section 8.2.5

Appendix A Traffic and Pedestrian Count Data

Traffic Count Data Summary

2002 Manual Turning Count 7am to 7pm



2002 Interpreted Manual Count 7am to 7pm
(for comparison with 2013 count)



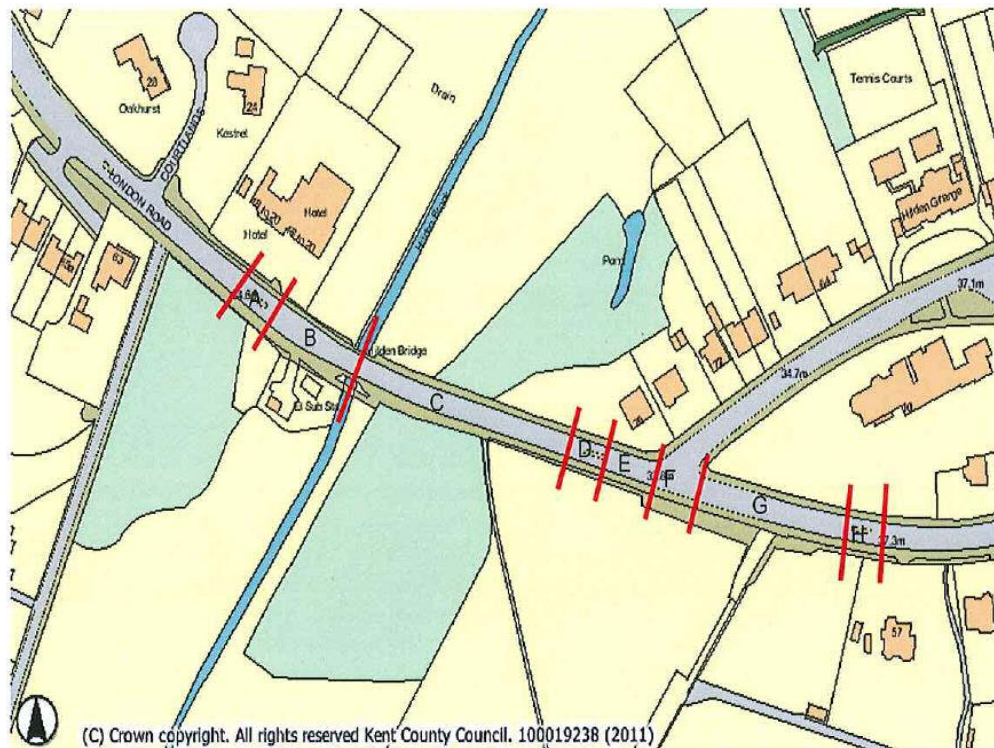
2013 Automatic Count Average 7am to 7pm weekday figures for comparison
(Site 1 West of junction with Dry Hill Park Road, Site 2 East of Dry Hill Park Road)



Pedestrian Count Summary (22 June 2011)

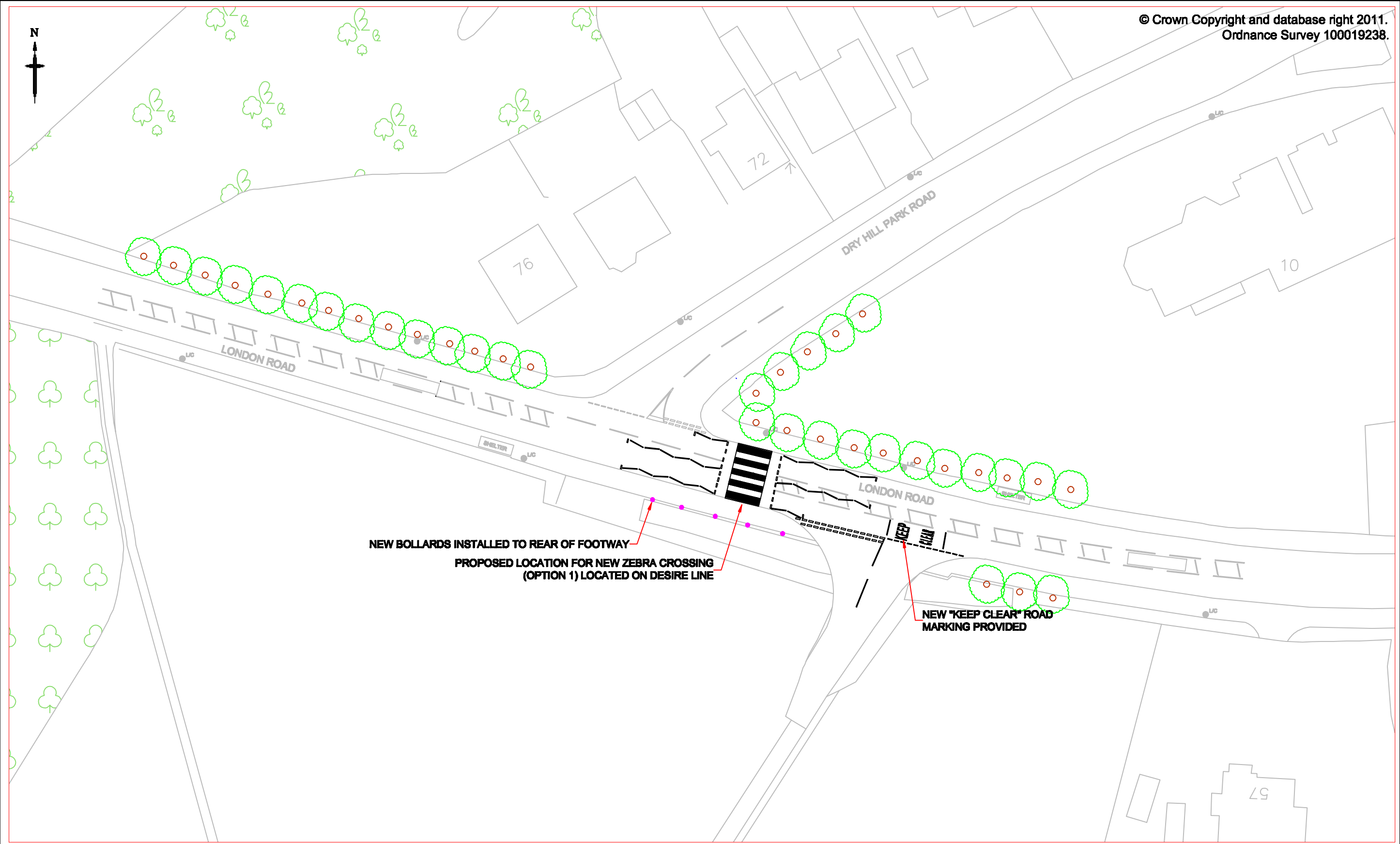
Total movements

A – 34, B – 14, C – 10, D – 62, E – 2, F – 11, G – 89, H – 92



Appendix B Speed Summary

Appendix C Previous Proposals - Zebra Crossing



0	DD/MM/YY				
Rev	Revision Date	Purpose of revision	Drawn	Check'd	App'd
<p>This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.</p>					



Kent County Council
Ashford Highway Depot
Herwood Industrial Estate
Ashford TN24 8AD
Tel: 08458 247 800

Project
LONDON ROAD TONBRIDGE
IMPROVED PEDESTRIAN FACILITIES

Drawing title
PROVISION OF ZEBRA CROSSING
LOCATED ON EXISTING
PEDESTRIAN DESIRE LINE
(OPTION 1)

Drawing status
OUTLINE DESIGN FOR RSA STAGE 1

Scale 1:500 at A3 **Do not scale**

Drawing number TON/CRM/DRYHILL/RSA/OPT 1 **Rev** 0

Appendix D Historic Proposals – Zebra Crossing Safety Audit

London Road, Tonbridge

Proposed Zebra Crossing

Stage 1 Road Safety Audit



October 2012

1 INTRODUCTION

1.1 Auditor and Audit process

1.2 This report results from a Stage 1 Road Safety Audit carried out on the proposed zebra crossing along London Road east of the junction with Dry Hill Park Road, Tonbridge.

The existing carriageway at this location consists of a two laned single carriageway road subject to a 30mph speed limit by virtue of a system of street lights.

The junction is extremely busy with traffic queuing along Dry Hill Park Road for a considerable distance. Vehicles were observed having a significant problem pulling out from the junction due to vehicle speed along London Road which are significantly over the 30mph speed limit.

1.3 The audit was carried out by:

Gareth Williams MCIHT, Independent Consultant
CMILT, MSoRSA

1.4 The audit took place on Saturday 13th October 2012, and comprised of an inspection of the drawings listed below and a site visit during daylight hours in fine weather conditions.

1.5 The audit has been carried out following the procedures set out in the Kent County Council Guidance note for the provision of Safety Audit 2004.

The team has examined the scheme with the sole purpose of identifying features of the design which could be altered or removed to improve its safety. The team has not examined or verified the compliance of the design features to any other criteria.

1.6 Departures from Standards

No Relaxations or Departures from Standards have been notified

1.7 Drawings and documents provided

TON/CRM/DRYHHILL/RSA/OPT1

1.8 Classification of Safety Issues

Safety issues or concerns have been classified as follows:

- **PROBLEM:** feature requiring the most effort to resolve to reduce the potential of contributing to crashes or causing injury to road users.
- **COMMENT:** feature not considered as severe as a PROBLEM but still requiring some action by the design engineer.

1.9 Recommended solutions for problems identified during the audit are not absolute. There may be alternatives that will be applicable to produce the same or desired safety effect.

1.10 Where applicable, references to sign diagram numbers relate to sign reference numbers in the Traffic Sign Regulations and General Directions 2002.

2	ITEMS RAISED AT THIS STAGE 1 AUDIT
2.1	<p>PROBLEM</p> <p>Location: Area of zebra crossing itself</p> <p>Summary: Proximity of zebra crossing to junctions with Dry Hill Park Road and the entrance to the Tonbridge school play fields will result in late recognition of the crossing</p> <p>The proposed crossing will be placed immediately east of the junction with Dry hill Park Road. The proximity of the junction and the presence of the junction to playing fields on the southern side will require drivers to be aware of these junctions particularly the junction of Dry Hill Park Road where vehicles struggle to pull out. This problem is exacerbated by high vehicle speeds through this area; certainly in excess of the 30mph speed limit. Any pedestrian stepping out onto the crossing is at serious risk of being struck by a vehicle pulling out of either junction, often at high speed due to the need to pull out quickly into a gap in the traffic.</p> <p>RECOMMENDATION</p> <p><i>It is recommended</i> that provision of a zebra crossing at this location be seriously reconsidered. An alternative might be to signalise the junction itself with an associated pedestrian phase in the sequencing. This would improve safety for pedestrians as well as improving traffic flow through the junction.</p>

AUDIT TEAM STATEMENT

I have examined the design drawings and documents provided. I have inspected the site. The audit has been carried out in accordance with Kent County Council Guidance note for the provision of Safety Audit 2004 I have not been involved in the scheme design. The identified issue(s) has/have been noted in this report with the accompanying recommendation(s) put forward for you to consider for implementation

AUDIT TEAM LEADER

Gareth Williams MCIHT, CMILT,
MSoRSA
Independent Consultant

Signed:

Date:13th October 2012

4 AUDIT RESPONSE SHEET

AUDIT STAGE: Stage 1

PROJECT TITLE: New Zebra crossing – London Road, Tonbridge



Item No.	Issues Identified and Their Recommendations	Design Project Manager Response	Scheme Promoters Decision And Proposed Action
2.1	<p>PROBLEM</p> <p>Location: Area of zebra crossing itself</p> <p>Summary: Proximity of zebra crossing to junctions with Dry Hill Park Road and the entrance to the Tonbridge school play fields will result in late recognition of the crossing</p> <p>The proposed crossing will be placed immediately east of the junction with Dry Hill Park Road. The proximity of the junction and the presence of the junction to playing fields on the southern side will require drivers to be aware of these junctions particularly the junction of Dry Hill Park Road where vehicles struggle to pull out. This problem is exacerbated by high vehicle speeds through this area; certainly in excess of the 30mph speed limit. Any pedestrian stepping out onto the crossing is at serious risk of being struck by a vehicle pulling out of either junction, often at high speed due to the need to pull out quickly into a gap in the traffic.</p>		

	<p>RECOMMENDATION</p> <p><i>It is recommended</i> that provision of a zebra crossing at this location be seriously reconsidered. An alternative might be to signalise the junction itself with an associated pedestrian phase in the sequencing. This would improve safety for pedestrians as well as improving traffic flow through the junction.</p>			
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Audit Team Leader: Gareth Williams

Signed:

Date: 13th October 2012

Design Project Manager:

Signed:

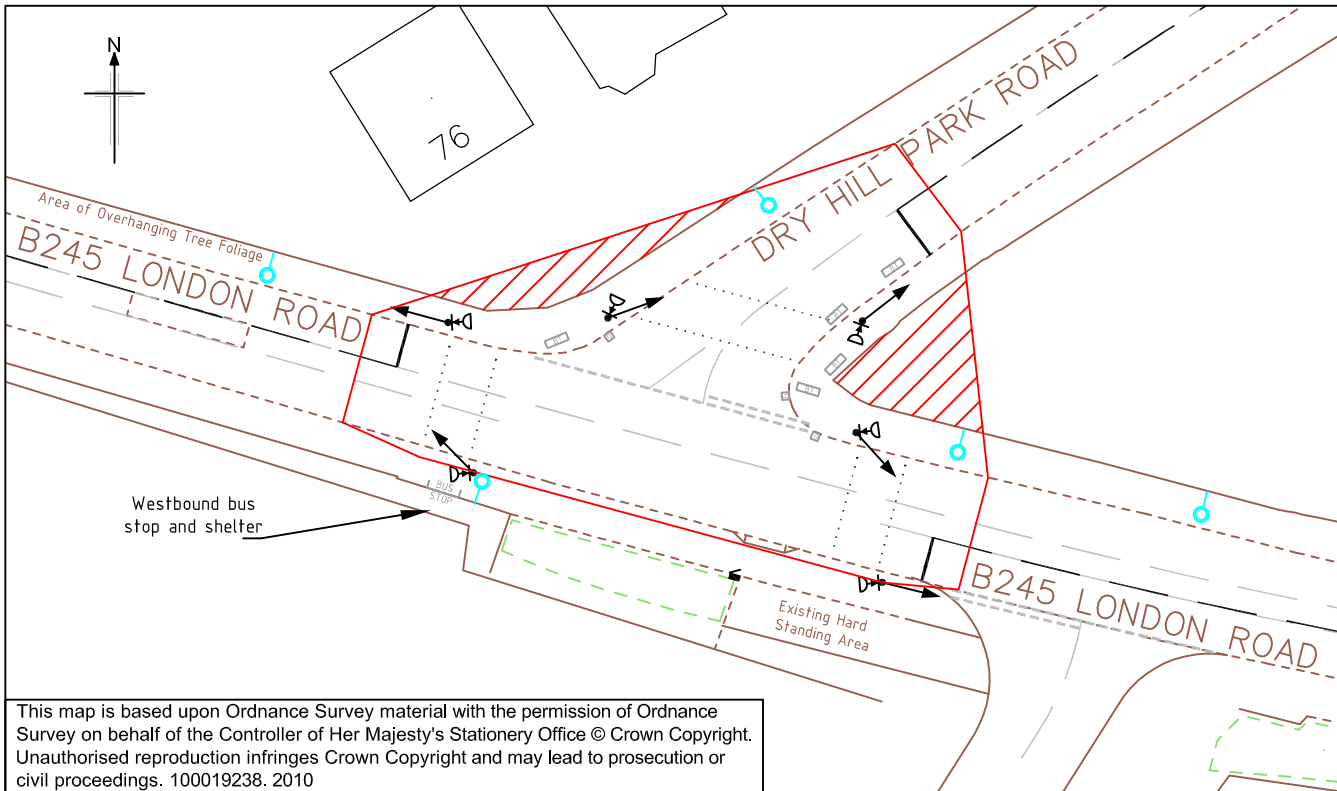
Date:

Scheme Promoter's Representative:

Signed:






Date:

Appendix E Previous Proposals – Full Signalisation



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KEY

-  Traffic Signal Head with Primary Hoods on 4m pole.
-  Pedestrian 'nearside' signal on a pole.
-  Traffic Signal Controller - Preferred Location.
-  Existing Streetlighting
-  Stopline intervisibility compromised zone.

NOTES

Drawing is based upon Ordnance Survey drawings with additional details measured on site. Existing hard standing area and sports centre access are not included on the Ordnance Survey base drawing.

High Friction Surface will be required for a minimum 50m in advance of stoplines.



Tactile paving required at crossing points.

Detection and ducting details are not shown, but carriageway detector loops are expected to be required approximately 80m from each stopline on London Road. All detection within the controlled area and along Dry Hill Park Road will be pole mounted units.

All works are expected to be contained within the existing highway boundary. No haunch widening is proposed.

Departures from Standard is limited to the stopline intervisibility which is compromised by existing boundary features. Overhanging tree foliage will need to be trimmed to achieve visibility to the west primary signal.

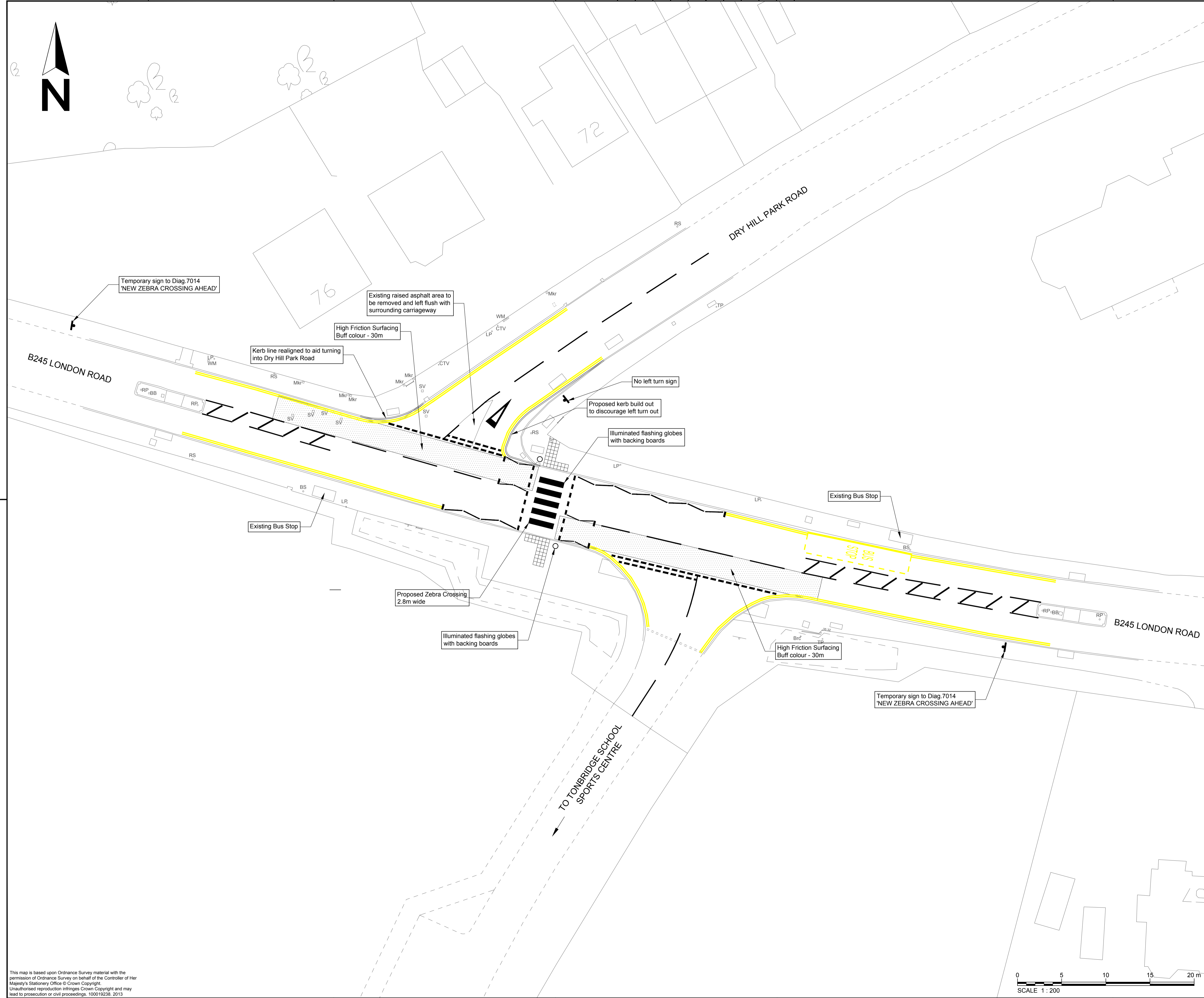
Bus Shelter (westbound) will need to be relocated to a position outside the controlled area.

Client				Drawing title		Proposed Traffic Signal Junction Outline Arrangement	
		Miller House, 43 - 51 Lower Stone Street, Maidstone, Kent, ME15 6GB, England Tel: 01622 666000 Fax: 01622 695085 www.jacobs.com		Drawing status			
Project		B245 London Rd / Dry Hill Park Rd Tonbridge		Scale		1/500 @ A4 Do not scale	
				Drawing number		B1567100/S/1	
				Rev		0	

0	Oct 10	Initial Issue	PRL	AMcM	AJS	AJS
Rev	Revision Date	Purpose of revision	Drawn	Checked	Reviewed	Approved

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.

Appendix F Crossing Option 2



Rev	Revision details	Chkd	Appd	Date
Drawn:	TMW			Preliminary
Design:	VMS			For comment
Chkd:	MIM			For tender
Appd:	MIM			For construction
Date:	18/09/13			As constructed
				For information



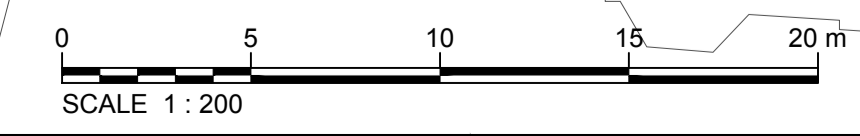
Client
Project Name
B245 London Road/Dry Hill Park Road, Tonbridge

Drawing Title
**Pedestrian Crossing - Option 2
Zebra Crossing**

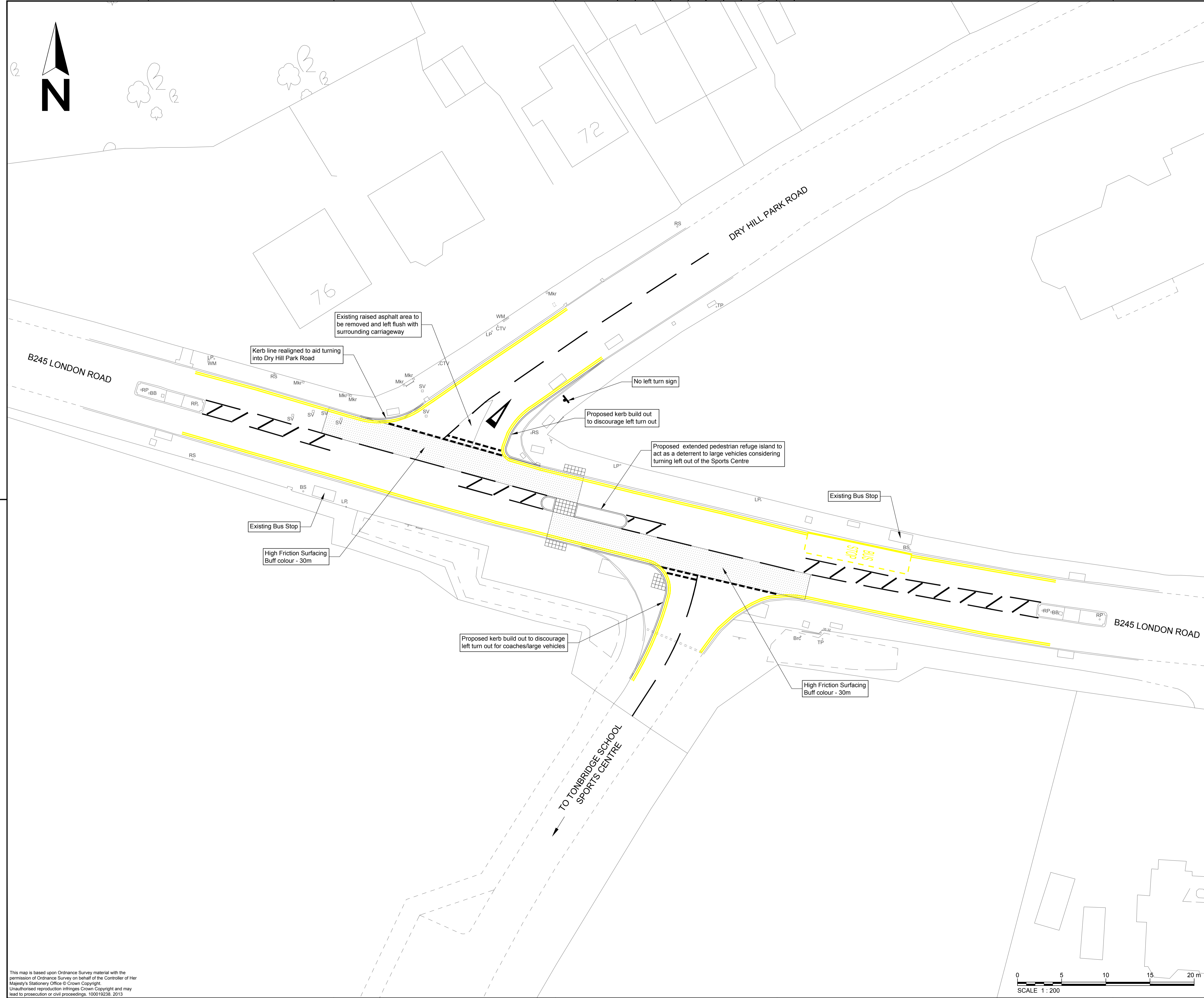
Original Drawing Size : A1
Scale : 1:200
Dimensions : -
Copyright © Amey

Drawing No
4300072/000/01
Rev
0

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Appendix G Crossing Option 3



Rev	Revision details	Chkd	Appd	Date

Drawn: TMW	Preliminary
Design: VMS	For comment
Chkd: MIM	For tender
Appd: MIM	For construction
Date: 18/09/2013	As constructed
	For information



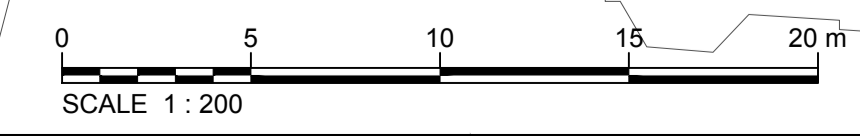
Client
 Project Name
B245 London Road/Dry Hill Park Road, Tonbridge

Drawing Title
**Pedestrian Crossing - Option 3
 Pedestrian Refuge Island**

Original Drawing Size : A1 Dimensions : -
 Scale : 1:200 Copyright © Amey

Drawing No
4300072/000/02 Rev
0

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Appendix H Stage 1 Safety Audit Options 2 and 3

London Road, Tonbridge

Proposed Zebra Crossing/uncontrolled crossing

Stage 1 Road Safety Audit



October 2013

1 INTRODUCTION

1.1 Auditor and Audit process

1.2 This report results from a Stage 1 Road Safety Audit carried out on two different proposals along London Road east of the junction with Dry Hill Park Road, Tonbridge.

Option 1 consists of a zebra crossing with a prohibition of a left turn out of Dry Hill Park Road

Option 2 consists of an uncontrolled crossing with a pedestrian island again with a prohibited turn.

The existing carriageway at this location consists of a two laned single carriageway road subject to a 30mph speed limit by virtue of a system of street lights.

The junction is extremely busy with traffic queuing along Dry Hill Park Road for a considerable distance. Vehicles were observed having a significant problem pulling out from the junction due to vehicle speed along London Road which are significantly over the 30mph speed limit.

1.3 The audit was carried out by:

Gareth Williams MCIHT, Independent Consultant
CMILT, MSoRSA

1.4 The audit took place on Saturday 26th October 2013, and comprised of an inspection of the drawings listed below and a site visit during daylight hours in fine weather conditions.

1.5 The audit has been carried out following the procedures set out in the Kent County Council Guidance note for the provision of Safety Audit 2004.

The team has examined the scheme with the sole purpose of identifying features of the design which could be altered or removed to improve its safety. The team has not examined or verified the compliance of the design features to any other criteria.

1.6 Departures from Standards

No Relaxations or Departures from Standards have been notified

1.7 Drawings and documents provided

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Safety audit supporting information including speed data

Stage 1 audit - previous

1.8 Classification of Safety Issues

Safety issues or concerns have been classified as follows:

- **PROBLEM:** feature requiring the most effort to resolve to reduce the potential of contributing to crashes or causing injury to road users.
- **COMMENT:** feature not considered as severe as a PROBLEM but still requiring some action by the design engineer.

1.9 Recommended solutions for problems identified during the audit are not absolute. There may be alternatives that will be applicable to produce the same or desired safety effect.

1.10 Where applicable, references to sign diagram numbers relate to sign reference numbers in the Traffic Sign Regulations and General Directions 2002.

2	ITEMS RAISED AT THIS STAGE 1 AUDIT
2.1	<p>COMMENT – BOTH OPTIONS</p> <p>Location: Junction of Dry Hill Park Road and London Road</p> <p>Summary: The proposed build out to deter vehicles turning left will play a significant part in preventing illegal turns but not assist turning positions.</p> <p>Opportunity should be taken when building the kerb build out to realign the junction straightening out the eastern corner of Dry Hill Park Road and curving the centre line marking to the west. This will allow vehicles to align better for the right turn. It was observed during the site visit that vehicles often positioned themselves incorrectly causing a delay in the turning movement.</p> <p>RECOMMENDATION</p> <p><i>It is recommended</i> that the junction be modified aligning traffic in the southbound lane at an increased angle by about 10-20 degrees.</p>
2.2	<p>COMMENT – OPTION PED REFUGE ISLAND</p> <p>Location: London Road east of junction</p> <p>Summary: The proposed pedestrian island is not shown as having high visibility beacon.</p> <p>The new pedestrian island will play an important part in preventing illegal turns. However no information is given as to its construction. Due to the location and speed of vehicles it is important that this facility is highly visible to all motorists.</p> <p>RECOMMENDATION</p> <p><i>It is recommended</i> that the pedestrian island is constructed to current KCC standard design with high visibility beacon and reflectorized keep left arrows on the far end of the island itself.</p>

AUDIT TEAM STATEMENT

I have examined the design drawings and documents provided. I have inspected the site. The audit has been carried out in accordance with Kent County Council Guidance note for the provision of Safety Audit 2004. I have not been involved in the scheme design. The identified issue(s) has/have been noted in this report with the accompanying recommendation(s) put forward for you to consider for implementation.

AUDIT TEAM LEADER

Gareth Williams MCIHT, CMILT,
MSoRSA
Independent Consultant

Signed:

Date: 26th October 2013

4 AUDIT RESPONSE SHEET

AUDIT STAGE: Stage 1

PROJECT TITLE: Options for improvement – London Road, Tonbridge



Item No.	Issues Identified and Their Recommendations	Design Project Manager Response	Scheme Promoters Decision And Proposed Action
2.1	<p>COMMENT – BOTH OPTIONS</p> <p>Location: Junction of Dry Hill Park Road and London Road</p> <p>Summary: The proposed build out to deter vehicles turning left will play a significant part in preventing illegal turns but not assist turning positions.</p> <p>Opportunity should be taken when building the kerb build out to realign the junction straightening out the eastern corner of Dry Hill Park Road and curving the centre line marking to the west. This will allow vehicles to align better for the right turn. It was observed during the site visit that vehicles often positioned themselves incorrectly causing a delay in the turning movement.</p> <p>RECOMMENDATION</p> <p><i>It is recommended</i> that the junction be modified aligning traffic in the southbound lane at an increased angle by about 10-20 degrees.</p>		
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	<p>vehicles it is important that this facility is highly visible to all motorists.</p> <p>RECOMMENDATION</p> <p><i>It is recommended</i> that the pedestrian island is constructed to current KCC standard design with high visibility beacon and reflectorized keep left arrows on the far end of the island itself.</p>			
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Audit Team Leader: Gareth Williams

Signed:

Date: 26th October 2013

Design Project Manager:

Signed:

Date:

Scheme Promoter's Representative:

Signed:

Date: