## Document Control Sheet

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<td>Report Title:</td>
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### Issue Status/Amendment

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<td>Name: Michael Mortley</td>
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1 Introduction.

Following an initial request in August 2014, Kent County Council (KCC) instructed Amey to undertake a feasibility study looking into the possibility of providing safer provisions for cyclists along the A206 Bob Dunn Way in Dartford, Kent.

The study is required to look particularly at the stretch of highway between the roundabout at the A2026 Thames Road / Burnham Road junction to the west and the Marsh Street roundabout to the east as shown in Figure 1. This stretch of highway has been identified as being on a commuting desire line for cyclists and with recent and planned development in the area, cycle demand is likely to increase in the near future. With this anticipated increase in demand it is important to ensure that appropriate provisions for cyclists are made where possible to improve safety. Whilst there have been no pedal cycle accidents along this route since 2011, this is likely to be due to very low usage due to safety concerns.

The study is required to include the following:

- A review of existing cycling provisions on Bob Dunn Way.
- Identify and develop options for making cycling safer along this route including on carriageway or segregated facilities.
- Prepare provisional estimates of cost and likely construction timescales.
- Report on land usage and ownership for option schemes.
- Consider Environmental and Ecological impact for proposed options.
- Undertake a Utilities study for option schemes.

This study is intended for use in on-going cycling strategy discussions and in particular to support funding applications for future area improvements.
Figure 1 – Bob Dunn Way Dartford – General Study Area.
2 Study Background.

2.1 Location.

The A206 is essentially a 15 mile long Class A Principal highway in an Urban Area (DfT web-site definition) between Greenwich and Greenhithe, serving the major towns of Belvedere, Crayford and Dartford, along with linking into the M25 London orbital road at Dartford.

Bob Dunn Way, formerly known as University Way, was opened in 1994 to serve as a Dartford Northern Bypass and is a two-lane dual carriageway with 1m hard strips. The route crosses the River Darent on a large bridge structure and is generally elevated above the surrounding marsh land.

The town of Dartford just south of the Bob Dunn Way is a major conurbation within Kent having good road links with the M25, M20, M2 and Essex via the Dartford Crossing. Crayford to the west provides additional residential areas, with some large industrial/business developments particularly along the A206 Thames Road that links directly in to the Bob Dunn Way (See Figure 1). To the east lies Greenhithe, Ebbsfleet and Northfleet with their own newly developed areas such as Crossways Business Park, Bluewater Shopping Centre, Ingress Park Housing Development and the High Speed 1 rail links to London, other major Kent towns and Europe.

Immediately north of the study route is mainly marsh land leading to the River Thames, although a new development called ‘The Bridge’ is currently being constructed just north of the Marsh Street roundabout. ‘The Bridge’ development is a major Science and Business park combined with housing, a hotel, a large warehouse development and education areas. New housing areas have also been added south of the immediate Bob Dunn Way study area and there are plans in place to start construction on other developments nearby such as the Phoenix Quarter Housing Development at Temple Hill in Dartford.

A new development access road has also recently been constructed heading south from the Joyce Green Lane roundabout. There are also good local public transport links using the award winning Fastrack bus routes from Gravesend, Ebbsfleet, Bluewater and ’The Bridge’ development over Bob Dunn Way and onto Dartford town centre.

The whole Bob Dunn Way study area lies within the Thames Gateway regeneration area and is therefore likely to attract further large scale developments in the future.
2.2 Existing Cycling Provision and Cyclist Categories.

There are currently no provisions for cyclists along the Bob Dunn Way in Dartford, other than if they choose to use a narrow hard strip along the kerb line (Photo 1) or badly maintained footways or rough tracks in the verge (Photo2). Cycle guidance (design ref 1 see Appendix B) recognises a number of different types of cyclists whose needs can vary considerably when reviewing current or future cycling provisions. In terms of this study, it is considered that the main users of the Bob Dunn Way study route will be mainly fast cycling commuters with possible occasional leisure cyclists. The guidance describes a fast commuter as confident in most on carriageway situations and someone who will use a route with significant traffic volumes if it is more direct than a quieter route. Bob Dunn Way offers a direct ‘desire line’ journey east-west, or vice versa, between local residential and employment areas.

The DfT traffic count data website measures an average of around 48 cyclists (measured over the last 5 years – combined directions) using the road each day. Viewing websites such as Strava (a cycling route data archive) shows that leisure cyclists are also using the route and timing their journeys.

Away from the Bob Dunn Way study route there is reasonable existing or planned cycling provision in the local area, particularly in ‘The Bridge’ development which has a well-designed (Photo 3) off-carriageway network for cyclists. Figure 2 shows details of the main cycle routes in the immediate area. Two national cycle routes (pink highlighting) are shown north - south across the area, with cycle route 125 crossing Bob Dunn Way using a bridge and cycle route 1 following the west bank of the River Darent. A proposed national cycle route is also shown north – south on the east bank of the Darent and passing under Bob Dunn Way. There is also a cycle route (Photo 4) on the south west side of Thames Road (Regional route 18 – blue shading) and Burnham Road (National Route 18 – pink shading). Within ‘The Bridge’ development the local cycle network (highlighted as blue dotted lines in figure 2) provides an idea of the extensive cycle track layout. Cycle tracks also exist in the housing estate (Photo 5) built along the south of Bob Dunn Way to the south of ‘The Bridge’ development. The nearby Dartford Crossing also offers cyclists assisted crossing to and from Essex and Kent.

2.3 Existing Road Usage and Traffic Data.

Traffic volumes (combined directions) on Bob Dunn Way are around 24,000 vehicles per day (DfT traffic counts web-site 2013 data) of which 3,048 vehicles (13 %) are Heavy Goods Vehicles (HGVs). HGV usage is reasonably high as the A206 provides good links to the M25 and also local industries / businesses along the road.

A national speed limit applies to the Bob Dunn Way study route (70mph). The most recent speed survey data available for this road (KCC archive data - June 2005) showed average speeds collected of around 57 mph, although significant numbers of vehicles were recorded at over the legal speed limit.
Figure 2 - Bob Dunn Way Dartford – Study Area Existing & Proposed Cycle Routes.
3 Evaluation of Existing Cycling Provision.

As per the relevant guidance issued by the DfT, Sustrans, KCC and others, there are a number of core design elements to consider when evaluating cycle routes. The following section assesses the existing Bob Dunn Way study route and cyclist provisions in line with the core principles of Convenience, Accessibility, Safety, Comfort and Attractiveness. General existing route design and environmental details are also added near the end of this section, to provide additional points to consider when evaluating the overall route.

3.1 Convenience.

Bob Dunn Way in Dartford provides an excellent link West-East and vice versa, between the urban areas of Crayford, Dartford and Northfleet / Ebbsfleet. The link was originally built as a Dartford northern relief road and as such removes the need for travellers approaching from the north west or north east from entering Dartford town centre to find alternate routes such as using Burnham Road. ‘The Bridge’ development also has easy access to Bob Dunn Way and residents or workers in this area might be likely to use the route for fast commuting to other local areas, possibly by bike.

As such, the study route is deemed to be convenient for cyclists in terms of it serving multiple main destinations with the route being very direct and with good links into other local existing cycle routes. The lack of existing cycling provisions mean that cyclists generally have to cycle on the carriageway, and they are therefore unimpeded by other obstructions such as street furniture and parked vehicles etc.

3.2 Accessibility.

As noted above, the route offers an excellent level of accessibility in that it provides a link between trip origins and key destinations, including links to public transport access points such as Fastrack. Being a dual carriageway official access points to the road are limited to main junctions, although cyclists are able to access the route at other points after using local footways, paths or tracks. Future developments are likely in the area and possible plans by Sustrans to open up the Thames riverside to cycling should only lead to additional cycle users wanting to travel along a more direct route.
3.3 Safety.

There are two key aspects to this core principle. The first is the safety record of the route. Over the last three years there have been no recorded accidents involving cyclists on the route. There have however been around 14 motorised vehicle incidents over the same period, some of which involve motor cyclists who sometimes suffer from similar road sharing problems to cyclists. At first the zero cyclist accident rate seems to indicate that the existing route is safe for cyclists; however the safety aspect discussed next may mean that the rate may just be down to cyclists choosing not to use the route.

The second key aspect of this principle is the overall perception of safety. In short, the whole route would not be perceived to be safe due to the high speed nature of the road, the dual carriageway status and the inclusion of multiple roundabouts (Photo 6) for cyclists to navigate. Whilst no route usage related testimonies are available for this report, searches on the internet refer to many alternate dual carriageway related cycling ‘horror stories’ or near misses. Generally comments regarding cycling on dual carriageways are similar to the following quote –

"There are dual carriageways and dual carriageways... for example, what is the speed limit? You should really check this out! If it is 40, then you're okay, but 60/70 is a definite no-no. If it is one that's got many roundabouts, then that's dodgy too, because in my experience roundabouts and pedal bikes don't go together. Slip roads are even worse!"

(https://uk.answers.yahoo.com/question/index?qid=20080112075013AATYlInF)

Cyclists are obviously happy to use the Bob Dunn route as evidenced by the DfT traffic count figures; although numbers are not particularly high and the journey may be one of necessity rather than choice. It is likely that many casual riders would tend to stay away from the existing route provision. Any accident that might occur involving cyclists and motorised transport along Bob Dunn Way is likely to be serious or fatal. The fact that nothing has happened over the last three years may just be down to good fortune rather than route safety. Overall the existing provision for cyclists along Bob Dunn Way would be deemed to be un-safe.

3.4 Comfort.

There are currently no cycling provisions along the study route, which means that cyclists are forced to mix with traffic on the carriageway. Most sections of the route are reasonably straight, or on large radii curves, with little or no change in gradient and wide running lanes (Photo 7), which aids cyclist comfort. There is also a typically 1,000 mm wide hard strip following the kerb line on each side, although any cyclists trying to make use of this might be hindered by drainage gullies placed at regular intervals. Generally gullies along the road do not have wide inlets though, so should not create wheel trap problems with a risk of throwing cyclists off. During a site visit, in general the asphalt carriageway surface was observed to be in satisfactory condition, which is an important factor when considering ride comfort.
The speed differential between cyclists and vehicles would be high at most points along the route, other than when approaching junctions or roundabouts. HGVs utilising the route would add to a feeling of cyclist discomfort, and a need to negotiate other lanes when turning at roundabouts may lead to cycling conflicts with other motorised road users. During a site visit it was possible to feel the suction of large HGVs passing, even whilst standing on the ‘relative safety’ of the verge line.

Overall whilst the actual ‘physical’ comfort for cyclists on this road would be deemed to be satisfactory, other factors would lead to their overall perceived comfort being low.

### 3.5 Attractiveness.

Bob Dunn Way runs through varied landscapes over its short length. To the west the route starts in an industrial type area (Photo 4), soon changing to an elevated roadway with views over marshland towards the River Thames, although the river is not actually visible (Photo 8). At the Joyce Green Lane roundabout (Photo 9), the roadway changes to a more typical urban dual carriageway in cutting, with more built up areas along the route towards the east (Photo 10).

Large pylons also follow the route giving a sense that you are never really far from the areas largely industrial past. As discussed in section 2.2 the physical aspects of the route, namely its straight and roundabout sections, might well prove attractive to club cyclists in terms of providing an ideal time trial route. Conversely, the fact that there is currently no cyclist provision along the whole length is potentially proving unattractive to cyclists, who perhaps would like to use the route, but are prevented through personal safety concerns. Overall the route would not be described as scenic, but has some interesting vistas and is ever changing, making cycling interesting.

### 3.6 General Route Notes.

Additional key points to consider when evaluating Bob Dunn Way as a possible cycle route are as follows:-

- The River Darent bridge is around 130 metres in length overall with around a 30 metre span and has a purpose built footway that follows the crossing, with the addition of a metal parapet/barrier fence (Photo 13).
- There are a number of existing uncontrolled crossing points built at the roundabouts along Bob Dunn Way to provide easier access to the other side of the dual carriageway (Photo 17).
- In general, vegetation is set back from the carriageway. However, there are one or two areas where vegetation is close or partly encroaching on the carriageway, which may cause an issue for passing cyclists and other non-motorised users.
- Street lights are present on the central verge along the whole route length. It should be noted that the entire route falls within the KCC ‘Safe and Sensible Street Lighting’ scheme.
As part of this scheme, it is believed that the lighting along the route between the roundabout junctions will be switched off on a trial basis for one year, until around May/June 15.

- The carriageway hard strip is discontinued through all of the roundabouts and short sections of the carriageways adjoining the roundabouts.
- The Burnham Road junction has hatching on the roundabout to control lane usage (photo II) and the westbound carriageway joining the junction has been widened to three lanes.
- Alignment characteristics;

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<tr>
<td>Maximum gradient</td>
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### 3.7 Environmental Conditions.

Amey carried out a desktop Environmental Scoping Assessment in September 2014 on the general area that might be affected by any future proposed cycling improvements. The outcomes of the assessment are detailed in Appendix C however some general notes regarding the area were as follows:-

- The Environment Agency would need to be consulted regarding future proposals, due to the proximity to Bob Dunn Way of floodplains and two main rivers (Darent and Cray).
- The route lies within an area classified as Flood Zone 3 (1 in 100 or greater chance of flooding each year). This has been seen over the past few years with Bob Dunn Way being closed to local traffic following heavy rains and flooding.
- A number of air quality sensitive locations were located within the study area such as education establishments within ‘The Bridge’ development and the London Borough of Bexley Air Quality Monitoring Area along Thames Road.
- There were no sites of particular archaeological or cultural heritage in close proximity to Bob Dunn Way.
- The scheme area is not within an Area of Outstanding Natural Beauty or other conservation area.
- Part of the area around the River Cray falls into the Greater Thames Marshes Nature Improvement Area, which invokes ecological objectives to be managed.
- There were no major geological notes raised apart from if proposed works were to take place on Marshland.
- Thought should be given to using sustainably/locally sourced materials particularly if construction is proposed on the marshland area.
- Consultations would have to take place with local farmers and land owners if works were planned to disrupt access rights to fields, property and footpaths.
3.8 Existing Provision Summary.

In summary the analysis of the existing cycling provision on Bob Dunn Way suggests that this road provides a convenient route for experienced commuter cyclists, with good accessibility and links to various destinations and other cycle routes. Whilst the route has not had any cycle related accidents recently it cannot however be said that the existing provision is safe for cyclists. The route also provides a reasonably pleasant easily cycled commuter choice but this would be affected by a perception of danger to cyclists caused by carriageway traffic volume, classification and speed.
4 Options Considered For Future Cycling Provision.

4.1 Deciding on the type of cycle facility

The aim of any future cycling provision for Bob Dunn Way would be to create a route that meets the five key criteria listed in section 3. Cycle route design guidance recommends (design ref 1 see Appendix B) that when high traffic volume and or speed is a factor on the route in question, an off-carriageway cycling facility is generally preferred. As previously shown within the historical traffic data from 2013, the average daily traffic flow (combined directions) is around 24,000 vehicles per day with 2005 data providing an average speed of 57mph and giving suggestions that high numbers of vehicles are exceeding the speed limit. Taking this archive data into account again guidance recommends (design ref 1 see Appendix B) providing a physically segregated facility in the form of a cycle track. However, the same guidance also duly notes, that certain proposed solutions may not always be viable.

The A206 Bob Dunn Way is elevated in parts and in cutting for the remainder, meaning earthworks could be involved with any off carriageway proposals. The existing bridge structure and over bridges also create similar restrictions for off carriageway cycling. Improving the existing on-carriageway experience for cyclists might be a less costly option, though may not promote additional route usage. The possibility of locating an alternate newly constructed cycle track route along the desire line is a solution that appeals to improve safety, though has the potential to be costly both in terms of scheme costs and environmental impact, particularly with new river crossings being required. With cycling accident rates currently being low there may even be a case to do nothing at this stage, however this is not seen as a satisfactory long term solution.

There are also a number of known possible planning applications being lodged for areas around Bob Dunn Way. Three main areas that may prove useful in providing connectivity for cycling provision between the proposals provided in this report and existing newly developed cycling routes are identified on drawing DCWFS/option2/0002. The three areas are around Joyce Green Lane and its associated roundabout and it would be prudent for planners to ensure that considerations are made in these applications to include cycling links within them. If these do progress they should provide better options for cyclists in this area to get to/from Bob Dunn Way, ‘The Bridge’ development, the Fastrack overbridge and the housing developments south of Bob Dunn Way. This would essentially open up cycling routes in this area and likely remove the need to construct new routes along Bob Dunn Way between Joyce Green Lane and Marsh Street.

Taking all of the above into account, four options are proposed in this report and are discussed in more detail below.
4.2 Option 1. Provision of improved on-carriageway cycling facilities.

In order for this option to be undertaken it is considered that a traffic speed limit reduction on Bob Dunn Way from 70 mph down to 40 mph would have to be accepted. Archive speed data shows an average speed of around 57mph so the reduction to 40mph limit might not be seen as a significant step change.

Cycle route design guidance on the hierarchy of cycle provision recommends that traffic volume reduction should be the first consideration when designing improvements to existing on-carriageway cycle infrastructure. As mentioned previously, the A206 Bob Dunn Way offers a strategic function in terms of the links it provides to the wider road network. As a result, there is likely to be little or no scope, or desire to encourage reassignment of traffic to alternative routes. Flows on Bob Dunn Way are also likely to increase during periods when the M25 and the Dartford crossing are affected by congestion, given their proximity to the A206.

DfT Guidance (design ref 6 see Appendix B) suggests that for the level of traffic flow experienced on this road a Dual Two lane all-purpose rural road is the appropriate carriageway standard. Removal of traffic lanes in order to accommodate cycling is unlikely therefore to be a practical proposition, particularly in the short term given the existing level of cycling usage.

A possible solution and one that is becoming increasingly common, is to reconfigure the carriageway space to provide a better balance between motorised and non-motorised users. This generally takes the form of marking cycle lanes on the carriageway with a corresponding reduction in traffic lane(s) width.

The existing carriageways consist of two 1m hard strips and two 3.65m running lanes. These could be reconfigured to provide a 2m cycle lane, a 3.33m nearside traffic lane and a 3m off side lane with a 1m off side hard strip, as illustrated in figure 3. It is however reemphasised, that a 40mph reduced speed limit is considered desirable should this option be taken forward to better encourage and promote its use for cyclists on safety grounds. That said the narrower lanes and clear visual prominence of the cycle lane should have a psychological effect on the driver likely to result in a natural reduction in speed. This would add support to a reduced 40mph speed limit.

Implementation of this option would also require that the current part night lighting trial on Bob Dunn Way was completed, and that lighting would always be on to increase cyclist visibility to other road users.
Existing Dual carriageway
Configuration

Proposed Dual carriageway
reconfiguration to provide balanced road user needs
4.3 **Option 2. Provision of a verge line cycle track following Bob Dunn Way.**

During a site visit, around 10 cyclists were noticed over a period of a few hours travelling along the existing route. Around half were choosing to cycle on carriageway using the hard strip whilst the others tended to use whatever footways or tracks they could find along the northern verge side of the road in both directions. No cyclists were observed using the southern verge side, although there was some evidence of tracks along the verge on that side suggesting possible usage at times.

The northern and southern verge lines of Bob Dunn Way are currently a mixture of maintained and unkempt asphalt footways and rough tracks (*Photo 12, 14*). Asphalt footways are currently present around roundabouts and also over the Darent crossing bridge. Unkempt footways and rough tracks dominate the majority of the remaining verge areas. The rough tracks are possibly just overgrown existing footway areas as there is some evidence of asphalt material along them. They are however likely to be badly damaged and unusable due to the lack of maintenance in the area. Stretches of the verge routes are also lined by safety barriers generally to protect road users from embankment areas and other large structures such as over-bridges and large road signs (*Photo 18*).

Throughout the whole study length along the northern verge line it would appear possible to tidy up, enlarge, repair or reconstruct the footways to form a new cycle track (See Drawing Nos. DCWFS/Option2/001 and 002). The proposed width of this route would vary along its length, with the maximum suitable width possible being chosen along the route dependant on site restrictions. In places 3m widths may be possible although generally 2m widths should be feasible.
Upgrade existing crossing facilities

New Access road. Approximate route only (mapping not available)

Upgrade existing footway

Upgrade existing crossing facilities exact method to be outlined in design stage

Exact route of connectivity to be approved during planning

Upgrade, repair, reconstruct existing routes along verge line if route is required

Exact route of connectivity to be approved during planning

Upgrade existing crossings & footways if route is required exact method to be outlined in design stage

Placing Application Area 1

Placing Application Area 2

Placing Application Area 3

The Bridge Development

DCWFS/Option2/002

KEY

- Proposed route
- Existing route
- Additional route if required
- Planning application areas

Bob Dunn Way Dartford Cycle Way Feasibility Study

Future Cycling Provision
Verge Line Route
Option 2
The nature of the unkempt and overgrown verge lines suggests that they would likely be good habitats for wildlife. Any proposed cycle route work along the verges would raise environmental and ecological concerns, some of which are addressed in the Environmental Scoping Assessment in Appendix C. A preliminary ecological appraisal would need to be undertaken on site prior to any construction work proceeding and the presence of any non-statutory local wildlife sites established. Given the nature of this area it is possible that reptiles, newts, voles, breeding birds or bats may be present along any new route. Seasonal surveys would therefore be required to check for the presence of wildlife and these would now not be able to be undertaken until spring 2015. Early survey dates would therefore be recommended in order to minimise delays to a desired improvement completion caused through ecological studies. In some places where existing structures, barriers and embankments exist as pinch points, the maximum width for the route may drop to around 1.5m (Photo 19), dependant on whether alterations could be made in these areas. Over the Darent bridge the existing footway drops to around 1.1m at its narrowest point, tapering out to around 1.8m at each end. It may be possible to widen the bridge along its length in order to provide increased width for the cycle track crossing; however to complete this over the approximately 130m length of the bridge would also be costly and might involve extensive traffic management implications during construction. Initial structural investigations would need to be undertaken to ascertain in the first place whether it would be possible to carry this out and also how best to undertake this.

An alternate solution, but one that would provide increased cycle track width for cyclists over the length of the bridge, would be to locally terminate the 1.0m hard strip either side of the bridge and replace the 1m hard strip over the bridge with a widened footway. This would increase the minimum cycle track width over the bridge to around 2.1m at its narrowest point. The loss of the hard strip over the bridge would however mean that two lanes of traffic could not be maintained on carriageway in the event of a vehicle breakdown until it was removed. This option would effectively remove any buffer zone between the cycle route and the carriageway and consideration will need to be given to this during design. A typical cost to implement this reallocation would be around £12,000 on top of the costs listed for option 2 in section 5. This additional cost would also apply to options 3 and 4 if this alternate solution was included.

Off carriageway two-way cycle tracks should preferably be 3m in width with a 1.5m buffer zone provided to the edge of carriageway. Additional width should also be added where vertical obstructions occur such as signs or walls/barriers. Clearly, these standards are not possible all along the existing northern verge without major alterations to the highway cross section and associated structures. However the resulting sub-standard widths will nevertheless offer an improved off-road facility to that currently used. Its suitability in the long term would be dependent on future cycle demand which if significantly increased may begin to make the sub-standard widths prohibitive. In the short term however it will offer a quick and cost effective solution to providing safer cycle provision.
Option 2 would need to be implemented in full between Thames Road and Joyce Green Lane to improve cycling provision along Bob Dunn Way; however if the future planning submissions mentioned earlier in section 4.1 are approved, then from Joyce Green lane roundabout new cycling links could be formed through planning area 1 and onwards into ‘The Bridge’ development cycle routes, or through planning areas 2 and 3 and linking in to the Fastrack overbridge and its National Cycle Route. This would remove a specific need to continue option 2 along Bob Dunn Way between Joyce Green Lane and Marsh Street, although it may be beneficial to provide this as an alternate option should cyclists not wish to divert from their more direct route following the carriageway.

4.4 **Option 3. Provision of a verge line cycle track joining in to newly constructed off carriageway cycle tracks.**

This option follows the same route as option 2 for the section between Burnham Road and the Joyce Green Lane roundabout utilising a verge line cycle track to provide off carriageway cycling provisions (See Drawing Nos. DCWFS/Option3/001 and 002). However, at the Joyce Green Lane roundabout there are options to join in to existing newly constructed cycle tracks through the southern housing development, or dependant on planning outcomes use a route through planning application area 1, rather than continue down the dual carriageway verge. Choosing these routes would provide a less direct route than continuing eastward along the verge; however it should provide a more pleasant route generally following the overall desire line between east and west. This route if linked in to the housing estate and other local cycle routes might also generate increased cycle usage on an improved Bob Dunn Way cycling provision. The verge line route could also be continued along Bob Dunn Way towards Marsh Street to provide for those requiring a more direct route.
New Access road. Approximate route only (mapping not available)

Choice No 1
Create new cycle ramp up to existing paths or other route approved during planning

Choice No 2
Use existing cycle track

Create new path under bridge structure

At this point national cycle route 125 can be joined by following Fastrack Overbridge

Upgrade, repair, reconstruct existing routes along verge line if route is required

Adjust existing footway to accommodate cyclists

Connection to bridleway at this point

Upgrade existing crossings & footways if route is required exact method to be outlined in design stage

Possible alternate off road route may need upgrading

Existing cycle path ramp down to Bob Dunn Way
After utilising the northern verge route up to Joyce Green Lane, if the route is to enter the southern housing development rather than proceed through the planning application area 1 then the existing roundabout crossing points (Photo 20) would need to be considered as how best to deal with the need for additional cyclists/pedestrians to cross Bob Dunn Way. The issue of crossing points is further discussed within section 4.7 of this report.

Once on to the southern side of the dual carriageway there is the potential for two alternative routes. One would be to construct a new cycle ramp up the bank at that point (Photo 21) and join up to the cycle track in the housing estate. This track closely follows Bob Dunn Way and may become part of a planning requirement inclusion for planning application area 2. The second would be to join the new cycle track heading south, along the eastern side of the new (as yet unopened) access road off the roundabout (Photo 16, 22). The environmental and ecological issues discussed in option 2 above would also apply to this option wherever new construction works are taking place.

The first route would continue as follows:-

- Follow the existing housing estate 3m wide cycle track to head towards the Fastrack Bridge crossing Bob Dunn Way. (Photo 23) At the Fastrack bridge a new cycle track would need to be created under the structure (on the presumption that this is considered to be highway land) and this would join on to the existing cycle track on the opposite side of the bridge. (Photo 24).

- Headroom beneath the Fastrack bridge girders is constrained at this point and this route could only be achieved if it were possible to reduce the levels of the paved area under the bridge. Consideration would need to be given to existing bridge foundations, services in the area, drainage for the new route and also a fence to protect cyclists from falling down the embankment. If this route could not be achieved it would be necessary to join in to existing estate roads in order to re-join the cycle track on the opposite side of the bridge.

- Following the newly linked 3 metre wide cycle track, it would be possible to travel to the Fastrack turning circle, located at the bridle way bridge over Bob Dunn Way. (Photo 25)

- The route around the turning head would then follow the existing northern footway; however this would require widening in order to accommodate a 3m wide cycle track. This would involve either works to the adjacent Bob Dunn Way embankment or some realignment of the turning head kerb line and possibly also the roundabout. (Photo 26) This would require prior consultations with Fastrack management and may require alterations to bus waiting locations.
• The next existing section of cycle track is only 1.8m wide yet it would appear this could easily be widened to 3m subject to land enquiries/agreements. The track is however unbounded and as such offers a reasonable width for passing cyclists, albeit slightly below minimum preferred standards.

• This track continues along to the end of McCudden Road. *(Photo 27)* At this point cyclists could then utilise the existing relatively quiet estate roadways (5.5 metres wide) to travel along towards the turning head at the end of Cornwall Road. *(Photo 28)*

• From here another existing cycle track leads down to Bob Dunn Way at the Marsh Street roundabout using a ramp *(Photo 29)*. It would then be possible to cross to the northern side of Bob Dunn Way again, using a crossing point the layout of which would need to be considered during the design stage *(Photo 30)*. This would provide access to ‘The Bridge’ development cycle tracks at this point.

This proposed route links up with National cycle route 125 at the Fastrack Bridge *(Photo 31)* and offers access to ‘The Bridge’ development, or Dartford town centre. The bridleway *(Photo 32)* also offers access to ‘The Bridge’ development, and at the Marsh Street ramp leading down to Bob Dunn Way, it is possible to cycle through to Henderson Drive in Temple Way, using an asphalt path through a small wooded area *(Photo 33)*. This path is not lit, but there is evidence of usage by cyclists in the area.

The second route would continue as follows:-

• Follow the newly constructed cycle track along the new access road south from the Joyce Green Lane roundabout until reaching a new cycle ramp *(Photo 34)* that leads to the Dunlop Close access road *(Photo 35)*. The ramp may need to be altered to make cycle access easier as currently the ramp is fairly steep over a short distance. It may be that the ramp can be altered as part of a planning inclusion within the application for planning area 3.

• Once up the ramp the access road can then be followed eastward *(Photo 36)* until reaching Dunlop Close itself, near to the junction of the Fastrack over bridge. An alternate option may be to include a new cycling provision within the planning application approval requirements for planning area 3 following the same route. From here it is possible using existing crossing points to join the existing National cycle route 125 leading toward ‘The Bridge’ development. It would also be possible to continue eastward along Joyce Green Lane using the existing quiet estate roadways, before turning north and linking up with Cornwall Road. At this point it may also be possible to continue eastward along an existing track way. This alternate track was only noticed during desktop studies as it was essentially outside of our site visit area. The track appears to be of a cobbled block construction and would likely need improvements to make cycling more comfortable.

• Once linking up to Cornwall Road, following this route eastward will link you back up to the turning head at Cornwall Road in the east and ultimately lead back to Bob Dunn Way.
Minimal new construction works and alterations to existing infrastructure would be required for both of these routes as a large proportion follows existing cycle tracks and residential roads.

Whilst many commuter cyclists will inevitably continue to follow Bob Dunn Way to Marsh Street, these alternative routes will offer a choice away from traffic which may be more appealing to some cyclists.


A new off highway route to the north of Bob Dunn Way appears feasible although would be relatively costly compared to the other options due to the need to construct a new bridge at the River Darent. (See Drawing No. DCWFS/Option4/001). Land ownership issues would also need to be addressed through consultation, and a new route through parts of the marsh land would raise environmental and ecological concerns, some of which are addressed in the Environmental Scoping Assessment in Appendix C. The ecological and environmental notes discussed in options 2 and 3 also apply to this option. It should be noted that a non-statutory, county-level designation Local Wildlife Site (LWS) exists on the eastern bank of the River Darent. The designation of LWS is made by the Kent Wildlife Trust in collaboration with the Kent Nature Partnership led by KCC. An LWS is a material planning consideration and any significant impacts should be assessed by an ecologist and then discussed with Kent Wildlife Trust during the design process. A potential off highway route is described below, although this would be subject to land ownership enquiries. The route would provide a pleasant cycling choice away from traffic however may be seen as a little remote which may discourage some cyclists from using it, especially during evening or dark winter periods:-

- After following the footway from the crossing at the north western corner of the roundabout, an existing access road (Photo 37) leads off to the North West before turning east and following Bob Dunn Way. The existing access is gated and the road is believed to be privately owned (although this will need to be verified in land use consultations) and clearly a public right of way would need to be established. The access road is a concrete structure (Photo 38) in good condition and is around 4.8m wide. Controlled vehicular access would be necessary to prevent mis-use.

- The access road follows Bob Dunn Way past another access point before ending at a trackway leading northward. At this point a new stretch of cycle track would need to be added over a short stretch of marsh land leading eastward, along to another access road (Photo 39) close to the dual carriageway bridge. A short length of existing concrete roadway then leads off towards the River Darent (Photo 40).

- If this off highway route were followed it would be possible to divert back on to a Bob Dunn Way route at this point in order to utilise the existing crossing, possibly with widening added to the northern length of the bridge, rather than construct a new one.
Upgrade existing crossing facilities exact method to be outlined in design stage.

Create new bridge crossing.

Alternate river crossing route with possible bridge widening on northern length of bridge or re-allocation of hard strip to cycle route.

Join to existing verge line route and upgrade as required.

Continue along verge line if required.

Exact route of connectivity to be approved during planning.

Possible route of cycle track.

Less favorable alternate off road route.

New Access road. Approximate route only (mapping not available).

Regional cycle route 18.

Provide new crossing facilities exact type to be outlined in design stage.

Create new off road cycle track.

Use existing concrete access road.

Create new concrete access road.

Use existing concrete access road.

Upgrade existing footway.

Less favorable alternate off road route.

Alternate river crossing route with possible bridge widening on northern length of bridge or re-allocation of hard strip to cycle route.

Join to existing verge line route and upgrade as required.

Continue along verge line if required.
• If a new bridge crossing was required to cross the river (*Photo 41*) onto its eastern bank, the bridge would likely be a single span full through truss bridge (*photo 43*). This would be of a steel construction with a steel decking and would need to be at least 40m in length or longer dependant on Environment Agency consultations.

• Once over the river there is no existing infrastructure in place and a new track would need to be constructed adjacent to the embankment slope through the existing marshland (*Photo 42*) and on towards Joyce Green Lane. It may be possible to keep close to, or even be built inside, the existing highway boundary line at the base of the dual carriageway embankment. Alternatively, following existing track ways remote from Bob Dunn Way through the marsh land may be a better option.

• Construction methods for a cycle track across the marsh land would be dependent on ecological/environmental and structural findings. The Environmental Scoping Assessment contained in Appendix C mentions the use of boardwalk construction using sustainably sourced materials. There are also a number of large banks that would need to be addressed along this route particularly close to joining in to Joyce Green lane.

• At Joyce Green Lane the new track would either link in close to the roundabout, or further north in the area of existing farm buildings, if existing tracks are utilised.

• From Joyce Green Lane onwards to Marsh Street roundabout there currently appears to be no practical alternative other than to use the verge route options described in sections 4.3 and 4.4. This could change however with the submission for planning application area 1 which should provide adequate cycling routes connecting the Joyce Green Lane area in to ‘The Bridge’ development.

Another alternate off highway route that is possibly less favourable (see Drawing No. DCWFS/Option4/001) would be to follow cycle route 18 south down Burnham Road and then cross over to Sandpit Road. Cyclists might then be able to follow Sandpit Road eastward, until it reaches the Thames Water works close to the River Darent. From here it may be possible to follow the line of the West Kent Main Sewer, again crossing the river, before proceeding on across marshland towards the area of land adjacent to Joyce Green Lane. From Joyce Green Lane onwards similar conditions would exist as outlined above for the route towards Marsh Street roundabout. This route has not been investigated fully as an option as it would have similar issues to the route discussed above, in that there would be land use, environmental, ecological and river crossing issues, along with the route along Sandpit Road which is industrialised having cycling safety issues, due to numerous junctions and HGV parking along the road.
4.6 General option choice notes – Statutory Undertakers

All statutory undertakers have been contacted as part of this report to complete a search of their apparatus present within the general study area. All have responded with information with the exception of UK Power Network (UKPN). Details of UKPN apparatus in the area will subsequently be reviewed when received. Of the replies only Gas, BT, Thames Water, Virgin, Vodafone and GTC responded saying they had services in the area, although it is likely that UK Power will also have services in the area due to the proximity of the power station and pylons along Bob Dunn Way. A summary of services present along Bob Dunn Way and surrounding areas is supplied below; however exact details of the likely work and cost involved in altering existing services or chambers etc. is currently not available. We do not anticipate there being significant utility costs in implementing the route options provided and once details of a preferred route are chosen a C3 enquiry would be made to provide utility work budget estimates for that route.

B.T. - Services along both sides of Bob Dunn Way from Joyce Green Lane Roundabout eastward, along with services along access roads and in housing estates.

Thames Water – Supply - No services along Bob Dunn Way but some present at Thames Road, Joyce Green Lane roundabout and in housing estates. Surface/Waste – No services along Bob Dunn Way but main sewer crosses the fields from the sewage works at Sandpit Road to Joyce Green Lane roundabout passing under Bob Dunn Way. At the roundabout local sewers also cross Bob Dunn Way to the main sewer.

Virgin – Services present along the south of Thames Way and also in the northern verge line of Bob Dunn Way for the full extent of the study area.

Vodafone – Services present in the northern verge line of Bob Dunn Way for the full extent of the study area.

Gas – Service along the south of Thames Way and at Joyce Green Lane Roundabout. Also present in housing estates and also crosses Bob Dunn Way near the Bridleway.

GTC – Multiple areas around ‘The Bridge’ development and south of the Marsh Street roundabout.

4.7 Crossing Points – Considerations.

Within the proposals listed in sections 4.1 to 4.5 there may be requirements for cyclists and pedestrians to cross busy roads in order to use the planned routes. Currently along the sections of Bob Dunn Way being studied there are a number of crossing points mainly close to roundabouts and their associated side roads, although these are all uncontrolled as highlighted in (photo’s 15,17,20,30). Historic accident records do not show any recorded incidents at these crossings although this may be due to their very low use.
If the proposals listed are taken forward then consideration will need to be made as to how best the crossing issues can be dealt with at each proposed crossing location. Ideally due to the high speed nature of most of the carriageway, removing the need to cross at all by utilising other alternate routes would be the best option.

There are 3 main areas that need to be considered. These are the Thames Road roundabout, the Joyce Green Lane roundabout and the Marsh Street roundabout.

4.7.1 **Thames Road roundabout.**

Options 2, 3 and 4 identify a need for cyclists and pedestrians to cross from National cycle route 18 on Thames Road to the proposed northern verge line route. The speed limit at this location is 30mph and lane widths are wide. Currently there is no formal crossing point here other than provision of the roundabout central splitter island in the carriageway which acts as some refuge for users crossing the road. At this location a Toucan crossing facility may be possible however care would be required with its positioning to ensure that the associated signals would not confuse drivers on approach to the roundabout. Typically implementation of a Toucan Crossing at this site might cost in the region of £20,000.

4.7.2 **Joyce Green Lane roundabout.**

Options 2, 3 and 4 all again identify a possible crossing need at this roundabout. Currently an uncontrolled formal crossing point (dropped kerbs) exists on the roundabout and options 2 and 4 only need a crossing of Bob Dunn Way if there is a requirement to get cyclists/pedestrians from the northern verge to the southern housing estate and its cycle routes. If planning area 1 is correctly planned and developed however; then a cycle route through that area would remove a need to cross Bob Dunn Way directly as links to the Fastrack overbridge will provide excellent facilities for gaining access to the southern side of the road. Implementing signage promoting this route would also be beneficial in this instance. Removal of the current formal crossing facility may also be considered in order that users are discouraged from taking the shorter but more dangerous direct route across the roundabout approach.

Another option may be to include the provision of a suitably positioned Toucan crossing on Bob Dunn Way immediately east of the roundabout as part of any planning requirements for area 1, 2 or 3 developments. Option 3 definitely requires users to cross Bob Dunn Way in order to use the planned route, but again providing a crossing point really depends on other planning matters and how/when the land in planning area 1 is developed. Typically implementation of a Toucan Crossing at this site might cost in the region of just under £100,000 once factors such as non-skid surfacing and other safety measures are included.
4.7.3 **Marsh Street roundabout.**

Within the report and associated drawings, options 2, 3 and ultimately 4 all promote a need to cross this roundabout junction. There is an existing formal crossing at the location (dropped kerbs) but, depending on demand and safety considerations, a Toucan crossing may be preferable. The speed limit on Bob Dunn Way at this location is 70mph however speeds will be significantly lower at the roundabout crossing location. Again if planning proposals for area 1 provide adequate connections between existing routes and proposed routes, it may be better to actively promote through the use of signage crossings made at the Fastrack overbridge or the bridleway bridge, instead of using a possibly more dangerous roundabout crossing. Removal of the existing formal crossing may also be considered if re-routing is adopted. Again typically implementation of a Toucan crossing at this site might cost in the region of just under £100,000 once factors such as non-skid surfacing and other safety measures are included.
5 Provisional option cost estimates.

The budget estimates provided below are indicative and have been produced for the purposes of comparing the relative costs between the options. The costings are subject to full design and land usage outcomes and exclude any specific provision for utility works, which should be minimal.

Allowance has been made for restricted or overnight working within the estimates (additional 25%) which might be necessary given the nature of the works involved and possible lane rental aspects. A contingency allowance has also been applied and varies across each option depending on likely risks involved.

<table>
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<tr>
<th>Charge Description</th>
<th>Option Choices</th>
<th>Preliminaries</th>
<th>Traffic Signs &amp; Road Markings</th>
<th>Pavements</th>
<th>Kerbs, Footways &amp; Paved Areas</th>
<th>Bridgeworks</th>
<th>Restricted or Overnight Working</th>
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Table 1 – Provisional Option Costings and Main Construction Involvement.
Option 1 has been split into 3 sub options based on the method of removal for the existing white lines. Scabbling is the cheapest option but will leave the surface scarred and will look unsightly. Hydroblasting should look better but still has the possibility of leaving marks or surface defects. Resurfacing of the whole carriageway will give a much better finish, however is obviously costlier but may be able to be carried out as part of another budget.

The option 2 cost estimate covers provision of a verge line cycle route between Thames Road and Marsh Street. Removal of the section between Joyce Green Lane and Marsh Street in favour of joining in to as yet undeveloped or planned areas around Joyce Green Lane would obviously likely reduce this estimate cost.

The Option 3 cost estimate does not allow for any new cycle tracks along Bob Dunn Way from Joyce Green Lane to Marsh Street roundabouts. The assumption is that all cyclists will use the new tracks through the housing estate or as yet unplanned tracks through the planning application area 1. Whilst this will benefit local cyclists in accessing Bob Dunn Way it may be that commuter cyclists still want to carry on along the dual carriageway between the roundabouts. It may therefore be necessary to add costs on for verge line or on carriageway routes from there on to provide a better overall solution.

The option 4 cost estimate does include for a verge line cycle track between Joyce Green Lane and Marsh Street in lieu of there being other off road options through ‘The Bridge’ development. This would likely reduce if other routes through as yet unplanned areas were incorporated, removing the need for the additional verge line route. The bridge structure cost does not include for piled abutments if required, or overall design and related fees.

None of the option costings above include for crossing point construction if required.
6 **Summary.**

The choice between options, or parts of options, is dependent on many factors and also the priorities placed on them by the promoter (KCC). To assist in this process the key considerations are listed below:

**Usage & Safety:** Bob Dunn Way in Dartford currently has no planned cycling provision; however it has been shown that largely commuter cyclists are willing to use the existing highway layout as it provides a quick route along a desire line from the west to the east of Dartford. Cyclists choose to use the route in low numbers despite the speed class and volume of other road users providing a perception of danger. The adoption of proposals in option 1 within this report may attract additional commuter usage through a feeling of reduced danger with a shift towards cyclist safety on the road. Adoption of options 2, 3 or 4 however would likely add increased leisure users on the route, through better links with surrounding cycling provision and routes being generally off highway.

**Design:** When looking again at the core design principles used for existing route analysis it can be said that option 1 should only really improve upon the safety aspect of the route, whereas options 2-4 are likely to improve on all the principles listed. This suggests that option 1 might be ruled out, but if the road speed can be reduced to 40mph in order to undertake option 1 then this might be viewed as the more favourable option. Options 2-4 would be seen as the better options to choose in order to promote and cope with likely future area developments and match the provisions currently designed in to recent developments which are generally very good.

**Cost:** The lowest cost option to implement would be option 1a; however option 3 is only slightly higher cost than this and provides the added benefits listed above in usage and design. Option 4 would be seen as the most costly option but also provides the benefits of being mainly off road. The option 4 costs could potentially be reduced by not building a new bridge but alternatively using or widening the existing crossing. Costs for this would need to be investigated however initial thoughts suggest that there may not be a significant saving when compared with the new build option. If existing bridge widening was favoured then option 4 along with options 2 and 3 could gain added cycling comfort benefit through the additional width, but this would obviously be costlier. As discussed earlier in section 4.3 an option to reallocate the carriageway hard strip to widen the existing footpath over the bridge would be another alternative and this could be carried out at a reduced cost to major bridge works. Crossing point requirements for all options may also add to overall charges but these cannot really be judged until a better understanding of the chosen route is known.
**Environment/Ecology:** Option 1 has no real environmental/ecological benefits other than reducing the need to carry out construction works on new areas of land. Options 2-4 all mainly affect the environment/ecology through new construction works required, particularly option 4 if a bridge was built. These might be offset however by options 2-4 possibly promoting additional cycling usage in the area and thereby reducing traffic numbers. This is outlined at points within the environmental scoping assessment.

**Land Ownership:** Options 1 and 2 have minimal land ownership issues as any planned works would likely be mostly within the KCC highway boundary (confirmation of this is currently being sought through the KCC highways definitions team). If option 2 made use of connections through as yet unplanned areas then land ownership discussions would need to take place. Option 3 would likely require approvals and acquisition of some land from the owners of the housing development and other interested parties, whilst option 4 would create the most land ownership issues unless use can be made of KCC owned land wherever possible.

**Implementation:** Option 1 could potentially be implemented during 2015 as it has no environmental/ecological issues. It would however be reliant on achieving a speed reduction on Bob Dunn Way to 40mph and consultations on this could delay matters. Implementation of Options 2 and 3 will be dependent on resolving land use, planning, environmental, ecological and other design related issues. Of particular note would be the need to consider ecology surveys that may be required as these are seasonable and, depending on the survey outcomes, can significantly delay implementation. Implementation late 2015 could however be achievable from an ecological point of view, but planning authorisations for the three planning areas would likely delay this. Option 4 has the potential to take the longest to implement as this has the most engineering input especially if a new bridge is chosen. It will also be dependent on resolving land and planning issues along with ecological aspects. Realistically, a summer 2016 start could be anticipated.

**Disability Accessibility:** A choice of proposals also has to be based on disability accessibility as defined in the equality act 2010. Individual requirements have not been discussed within the report as such, but overall the least inclusive scheme option choice would be option 1 due to the necessity for disabled users to have to use on-highway routes, a choice that could be very dangerous for the user. Whilst options 2, 3 and 4 all remove this issue there are still disability inclusion issues that may need to be addressed, possibly at additional cost within each option. Reduced widths of cycle track below normally suggested widths would possibly lead to disabled users struggling to use routes, especially when having to pass or be passed by other users. Sustrans does however comment in its cycle route guidance, that unsegregated shared use may go down to 2-2.5m on lesser routes and it may be that the proposals put forward in options 2, 3 and 4 are acceptable given the likely numbers of expected usage, which may be lower than on busy central town routes.
Dual Carriageway crossing points would also likely be dangerous to disabled users without additional assistance and the inclusion of ramps on routes would all add to their problems.
Appendix A  Site Photographs.
Photo 1 – Bob Dunn Way showing hard strip along kerb line.

Photo 2 – Typical rough tracks along Bob Dunn Way.
Photo 3 – Existing cycle infrastructure at ‘The Bridge’ development.

Photo 4 – Existing cycle route (RR18) along Thames Road.
Photo 5 – Existing cycle tracks in housing estate south of Bob Dunn Way.

Photo 6 – Cyclist navigating around large roundabout.
Photo 7 – Typical running lanes on dual carriageway.

Photo 8 – Typical views towards River Thames.
Photo 9 – Bob Dunn Way in Cutting after Joyce Green Lane roundabout.

Photo 10 – Built up area around eastern end of Bob Dunn Way.
Photo 11 – Hatching on Burnham Road roundabout.

Photo 12 – Un-maintained footways and typical safety barriers.
Photo 13 – Parapet along River Darent Bridge.

Photo 14 – Partial evidence of footways along verge line.
Photo 15 – Bob Dunn Way informal crossing point.

Photo 16 – New access road south of Joyce Green Lane roundabout.
Photo 17 – Typical roundabout crossing point.

Photo 18 Safety barrier protection for bridges and signs along Bob Dunn Way.
Photo 19 – Pinch point areas along verge line.

Photo 20 – Existing roundabout crossing to be upgraded.
Photo 21 – Bank leading to southern housing estate cycle track.

Photo 22 – Start of new southern cycle track at Joyce Green roundabout.
Photo 23 – Housing estate cycle track to Fastrack Bridge.

Photo 24 – Possible under bridge route?
Photo 25 – Housing estate cycle track joins Fastrack turning head.

Photo 26 – Turning head roundabout / kerb line may need realignment to accommodate cycles.
Photo 27 – Narrower housing estate cycle track.

Photo 28 – Existing cycle track at end of McCudden Road.
Photo 29 – Existing cycle ramp to McCudden Road (note short cut in grass).

Photo 30 – Crossing point at Marsh Street Roundabout.
Photo 31 – Fastrack National cycle route 125.

Photo 32 – Bridleway to ‘The Bridge’ development.
Photo 33 – Existing cycle track through wooded area.

Photo 34 – Newly constructed cycle track route.
Photo 35 – New ramp to join Dunlop Close Access Road.

Photo 36 – Dunlop Close Access Road.
Photo 37 – Existing Access road to concrete farm track.

Photo 38 – Typical condition of farm track access.
Photo 39 – End of first section of access track.

Photo 40 – Western bank of River Darent at end of farm track.
Photo 41 – The River Darent would require a bridge crossing.

Photo 42 – Marsh land towards Joyce Green Lane.
Photo 43 – Possible Bridge Crossing Design.
Appendix B  Design References & Useful Web-Sites.
Design reference documents inspected in this report.

1. Department for Transport – Local Transport Note 2/08 – Cycle Infrastructure Design – October 2008
3. Department for Transport - Local Transport Note 1/12 - Shared Use Routes for Pedestrians and Cyclists - September 2012
4. Manual for Streets
5. Kent Design Guide
7. DfT Circular 01/2013 Setting Local Speed Limits.

Web-sites referred to within the Report.

Appendix C  Environmental Scoping Assessment
Environmental Scoping Assessment

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prepared by</td>
<td>Jennifer Allen</td>
<td>24/09/2014</td>
</tr>
<tr>
<td>Checked by</td>
<td>Ian Fuller</td>
<td>07/10/2014</td>
</tr>
<tr>
<td>Received by</td>
<td>Ian Hutcheon</td>
<td>07/10/2014</td>
</tr>
</tbody>
</table>

Project No: Bob Dunn Way Dartford – Cycle Route Feasibility Study.  
Scheme Title: CO04300257

Project description

Scope of works:
Amey have been requested to look into the feasibility of creating improved cycling provisions, along a stretch of the A206 Bob Dunn Way in Dartford, between the A2026 Burnham Rd/Thames Rd roundabout and the Marsh Street roundabout on Bob Dunn Way. Currently there are no cycling provisions for this stretch of road and therefore possible improvements could involve simply altering existing road lane assignments, adding new cycle paths along the route or even creating a new cycle route off the general road alignment. A plan is attached covering the general area that could be affected by proposed alterations, if deemed feasible.

As this is a feasibility study, some things are yet to be decided on and thus the impact of the works cannot be stated fully.

NGR – 555100, 175697 to 552685, 175324

Options involve:
Option 1 - Upgrading or constructing a roughly 2m wide asphalt footway, along the northern verge line of the whole dual carriageway section being studied.

Option 2 - Is to follow option one between Burnham Rd and Joyce Green Lane, but then to join in to existing cycle path routes on the southern side of Bob Dunn Way, through the housing estate. This may involve some new construction and upgrading of existing paths.

Option 3 - Is to construct a new route through the northern marshland area, using existing tracks where possible. From Burnham road roundabout following a concrete farm track along the dual carriageway line, then linking in to another concrete track closer to the river. At the river a new steel/wooden bridge would be required close to the existing bridge but on a lower level. On the eastern side of the river a new track would be required, generally following the route of the dual carriageway along the base of the embankment line, or possibly cutting across the marsh to existing farm tracks.

All new tracks are likely to be asphalt construction, not just stoned tracks, apart from across the Marsh.
Figure 1: The general area that could be affected by proposed alterations, if deemed feasible.

Figure 2: Scheme Location: Dartford, Kent

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>This project requires Screening Opinion (EIA Regulations)</td>
<td>TBC</td>
</tr>
<tr>
<td>This project requires a Record of Determination (Applicable to HA work only)</td>
<td>NO</td>
</tr>
<tr>
<td>This project requires environmental permissions, licenses or</td>
<td>YES</td>
</tr>
<tr>
<td>consents? (ENVT-EnvtAssess-PL-02))</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>(List applicable permissions, consents or licenses)</strong></td>
<td></td>
</tr>
</tbody>
</table>

*Once detailed design has been confirmed, and owing to First Priority Locations existing within the extent of the scheme, further noise assessment is likely to be required. Liaise with the local EHO at Dartford City Council to ascertain whether a Section 61 Consent is required.*

*Consult with the local farmers and local authority regarding disruptions to farms and public rights of way. A statutory process needs to be followed if the works include changes to PROW including temporary diversions ([https://www.gov.uk/public-rights-of-way-landowner-responsibilities](https://www.gov.uk/public-rights-of-way-landowner-responsibilities)) – to be looked at once detailed design has been confirmed.*

*The Environment Agency will need to be consulted due to works within/over 2 main rivers (River Darent and River Cray), associated floodplains and flood defences. Consent for the works and a Flood Risk Assessment may be required.*

<table>
<thead>
<tr>
<th>What statutory procedures are involved?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>(List relevant procedures)</strong></td>
</tr>
</tbody>
</table>

*If the total works area exceeds 1ha, which is yet to be confirmed, a Screening Opinion will be required under the Town and Country Planning (Environmental Impact Assessment) Regulations 2011.*
### IDENTIFICATION OF POTENTIAL ENVIRONMENTAL EFFECTS

#### AIR QUALITY

**Assessment methodology:**
A desktop study using the Department for Environment, Food and Rural Affairs, Air Quality and Pollution Section database was carried out. DEFRA [http://uk-air.defra.gov.uk/aqma/](http://uk-air.defra.gov.uk/aqma/)

**Key baseline conditions:**
- The surrounding area is semi-rural in the western parts of the scheme by the Dartford and Crayford Marshes, and more urban near the A206/Marsh St junction.
- There are residential properties within 300m, adjacent to the A206 in some parts.
- There are chemical works, waste services and other businesses/industry within 300m.
- There are sensitive locations within close proximity:
  - The Bridge Learning and Community Campus is north of the A206 by Joyce Green Farm
  - Dartford Bridge Community Primary School is also north of the A206
- A small part of the scheme (by the industrial estate) is located within the London Borough of Bexley AQMA, the declared pollutants of which are Particulate Matter PM$_{10}$ – annual and 24-hour mean, and Nitrogen dioxide NO$_2$ – annual mean. This falls within the area which already has a cycle route.
- It is not known if the scheme will significantly increase local atmospheric particulate levels at nearby premises.

**Key construction activities:**
- Improvements to cycling provisions along Bob Dunn Way
- Where there are no cycling provisions along the A206, possible improvements could involve:
  - Simply altering existing road lane assignments,
  - adding new cycle paths along the route or
  - creating a new cycle route off the general road alignment.

**Temporary effects:**
- The level of excavations required and thus the emissions and dust produced from the works, depends on the option selected for the cycle route provisions.
- The works should not affect the AQMA as cycle routes already exist here.

**Permanent effects:**
- Provision of a cycle route may increase cycle usage locally and have a positive impact on local air quality.

**Mitigation / control measures:**
- **Best Practicable Means (BPM) should be employed during construction, for example,** vehicle idling time should be minimised, and dust should be damped down as necessary.
- **Site staff will be instructed to follow the relevant pollution prevention guidance documents (Environment Agency Pollution Prevention Guidelines (PPG) 1 and 6).**
- All plant and fuel-requiring equipment utilised during construction should be well maintained in order to minimise emissions.
- All vehicles likely to generate dust on and off site should have covered or sheeted bodies.
- **In the next stage of scheme design, once the preferred option has been selected,** requirements for Air Quality Assessment should be reviewed by the Amey Environment Team.

**Further action/assessment required?**
TBC

*If yes, specify details*
Re-assess impacts to air quality and if further assessment is needed in the next stage of scheme design, once design option has been confirmed
### ARCHAEOLOGY AND CULTURAL HERITAGE

|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Key baseline conditions: | • There are no scheduled monuments within 300m.  
• There are no listed buildings within 100m.  
• There are numerous multi-period local historic environmental records and findspots around the proposed cycle route including cropmark, circular ditches, Roman coins, beakers, Paelithic mammalian remains, postmedieval wharves, 20th century explosives works, the site of gunpowder works which closed in 1989 and several Roman Urn burials near Joyce Green Lane. |
| Key construction activities: | • Improvements to cycling provisions along Bob Dunn Way  
• Where there are no cycling provisions along the A206, possible improvements could involve:  
  - Simply altering existing road lane assignments,  
  - Adding new cycle paths along the route or  
  - Creating a new cycle route off the general road alignment. |
| Temporary effects: | • None predicted |
| Permanent effects: | • None predicted |
| Mitigation / control measures: | Should there be any possible archaeological site or findings (e.g. pottery, stone artefacts, coins, flint) please contact the Environment Team immediately for further advice. |
| Further action/assessment required? | YES |

*If yes, specify details
Where construction of new cycle routes is required, a Cultural Heritage specialist should review proposals and advise on any requirements for further assessment, liaison with the County Archaeologist and any specific mitigation and control measures.*
**LANDSCAPE**

**Assessment methodology:** A desktop study using the following data sources:
- Google Maps

**Key baseline conditions:**
- The overall character of the location is semi-rural to urban, with marshland areas dominating the areas south of the scheme by the River Darent and the River Cray.
- The National Character of the area is 'Greater Thames Estuary', with the local character a mixture of grassland and scrub and rivers, open water and wetland north of Bob Dunn Way, and more urban features (roads and development) predominantly south of the A206 apart from where the River and wetland habitats intersect the road.
- The scheme is not within an AONB or conservation area.
- The scheme requires both permanent land take from the flood plain and marsh/wetland.
- There are trees within falling distance.
- The scheme requires the permanent removal of shrub, scrub and grass and aquatic vegetation.
- New lighting and signs may be required where cycle routes don’t already exist.

**Key construction activities:**
- Improvements to cycling provisions along Bob Dunn Way
- Where there are no cycling provisions along the A206, possible improvements could involve:
  - Simply altering existing road lane assignments,
  - adding new cycle paths along the route or
  - Creating a new cycle route off the general road alignment.
- New lighting and signs may be required

**Temporary effects:**
- Temporary visual impact whilst the works take place.

**Permanent effects:**
- The scheme will permanently remove vegetation in this area, resulting in a permanent change to the landscape character, more so where the character is rivers, open water and wetland.
- New cycle path along the A206 which will add to the urban land use of the area.
- If new lighting columns are needed this will also have a visual impact.

**Mitigation / control measures:**
- A landscape and visual impact assessment should be undertaken to determine the visual impact and any aftercare works required.
- Once detailed design has been confirmed, any Tree Preservation Orders (TPOs) should be established by contacting the local authority conservation officer.
- Works must be undertaken in conjunction with BS5837:2005 – Trees in Relation to Construction.
- Limit damage to the surrounding environment, only clear vegetation where necessary and do not park vehicles or plant on the soft estate.
- It is advised that any excavated soil is reinstated into its original position to avoid any cross contamination or spread of weeds.

**Further action/assessment required?** YES

*If yes, specify details*

**Landscape and Visual Impact assessment**

Once detailed design has been confirmed, any Tree Preservation Orders (TPOs) should be established by contacting the local authority conservation officer.
### Assessment methodology:

A desktop study using the following data sources:
- Kent Local Wildlife Sites GIS data supplied by KCC

### Key baseline conditions:

- Wansunt Pit Special Site of Scientific Interest (SSSI) is located approx. 1.8km away from the scheme.
- Part of the scheme, by the River Cray, falls within the Greater Thames Marshes Nature Improvement Area (NIA), which has objectives for habitat creation, restoration and management.
- There are areas of BAP priority habitat within the vicinity of the scheme including: coastal and floodplain grazing marsh; mudflats and sandflats; intertidal substrate foreshore, reedbeds, willow carr and deciduous woodland.
- There may be non-statutory Local Wildlife Sites within close proximity which will need to be confirmed through further desk study.
- There are no European Sites within 2km of the scheme.
- There are several European protected sites within 30km, but none with bats as a qualifying feature.
- Protected or otherwise notable species may be present within or adjacent to the scheme and therefore an ecological scoping walkover survey is required to confirm potential for such species.

### Key construction activities:

- Improvements to cycling provisions along Bob Dunn Way
- Where there are no cycling provisions along the A206, possible improvements could involve:
  - Simply altering existing road lane assignments,
  - adding new cycle paths along the route or
  - Creating a new cycle route off the general road alignment.

### Temporary effects:

- Temporary disturbance to vegetation

### Permanent effects:

- Removal of important habitat and associated damage or disturbance to protected/notable species, with a consequent decrease in the biodiversity value of the area and.

### Mitigation / control measures:

- An ecologist should carry out a Preliminary Ecological Appraisal of the scheme to confirm the potential for habitat and species impacts. This study will recommend any further surveys required which in turn will inform the requirements for mitigation.
- Seek biodiversity enhancements that can be delivered with the scheme and which contribute to meeting NIA targets in close consultation with an ecologist.
- Limit impacts to Priority BAP habitats where possible.

### Further action/assessment required?

<table>
<thead>
<tr>
<th>Yes/No</th>
<th>Details</th>
</tr>
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<tbody>
<tr>
<td><strong>YES</strong></td>
<td>A Preliminary Ecological Appraisal to determine the impact to protected species and BAP</td>
</tr>
</tbody>
</table>
priority habitats, as well as any other constraints and opportunities of the scheme.

| This project requires Assessment of Implications on European Sites (AIES)? | NO |
### GEOLOGY, SOILS AND CONTAMINATED LAND

<table>
<thead>
<tr>
<th>Assessment methodology:</th>
<th>A desktop study was conducted utilising the British Geological Survey (BGS) Geology of Britain Interactive mapping tool: <a href="http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html">http://www.bgs.ac.uk/discoveringGeology/geologyOfBritain/viewer.html</a></th>
</tr>
</thead>
</table>
| Key baseline conditions: | - The underlying geology is Seaford Chalk Formation And Newhaven Chalk Formation (undifferentiated) – Chalk, with superficial deposits of Alluvium - Clay, Silty, Peaty, Sandy and Taplow Gravel Formation - Sand And Gravel.  
- The scheme will involve excavations, the extent to which is not certain yet.  
- Marshland will be impacted by the works. |
| Key construction activities: | - Improvements to cycling provisions along Bob Dunn Way  
- Where there are no cycling provisions along the A206, possible improvements could involve:  
  - Simply altering existing road lane assignments,  
  - adding new cycle paths along the route or  
  - Creating a new cycle route off the general road alignment. |
| Temporary effects: | - Soil disturbance as a result of excavations. |
| Permanent effects: | - Disturbance to the marshland areas will have a permanent impact on the soils in this location. |
| Mitigation / control measures: | - Advice should be sought from an Amey ecologist re dealing with excavated material from marshland habitat – it may be possible to reinstate it in the adjacent land.  
- Excavated material should be reinstated to its original position if possible.  
- Stockpiles should be located away from the drainage system and any environmentally sensitive areas. |

| Further action/assessment required? | YES |

*If yes, specify details*

Advice should be sought from an Amey ecologist or wetland specialist re dealing with excavated material from marshland habitat – it may be possible to reinstate it in the adjacent land.
<table>
<thead>
<tr>
<th><strong>MATERIALS USE</strong></th>
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</thead>
<tbody>
<tr>
<td><strong>Assessment methodology:</strong></td>
</tr>
</tbody>
</table>
| **Key baseline conditions:** | • Asphalt for new cycle paths (aggregate mix, filler and binder)  
• A bridge may need to be constructed – to be confirmed during detailed design.  
• Appropriate path over the marshland areas – timber paths – boardwalk.  
• Paint for any line marking  
• New signs (metal, plastic, concrete)  
• Lighting columns (Metal, plastic, glass)  
• It is not known if the scheme will exceed £500,000 |
| **Key construction activities:** | • Improvements to cycling provisions along Bob Dunn Way  
• Where there are no cycling provisions along the A206, possible improvements could involve:  
  - Simply altering existing road lane assignments,  
  - adding new cycle paths along the route or  
  - Creating a new cycle route off the general road alignment. |
| **Temporary effects:** | • None predicted |
| **Permanent effects:** | • Raw material consumption including fuel and water. Natural resource depletion. |
| **Mitigation / control measures:** | • We recommend contacting companies who specialise in wetland boardwalk construction.  
• Use sustainably sourced materials (e.g. locally sourced) where possible and appropriate.  
• It is Amey policy to reuse or recycle as much waste as practicable. |
| **Further action/assessment required?** | TBC |

*If yes, specify details*

**It is Amey best practice to carry out a materials and resources assessment when a scheme exceeds £500,000.**
### NOISE AND VIBRATION

|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Key baseline conditions:
- The surrounding area is semi-rural in the western parts of the scheme by the Dartford and Crayford Marshes, and more urban near the A206/Marsh St junction.
- There are residential properties within 300m, adjacent to the A206 in some parts.
- There are chemical works, waste services and other businesses/industry within 300m.
- There are sensitive locations within close proximity:
  - The Bridge Learning and Community Campus is north of the A206 by Joyce Green Farm
  - Dartford Bridge Community Primary School is also north of the A206
  - There are First Priority Locations along the A206 (dark blue on map below)
- It is not known if the scheme will significantly increase noise levels at nearby premises, both during works and in the long term.
- It is not known if the works will be taking place at night.

#### Key construction activities:
- Improvements to cycling provisions along Bob Dunn Way
- Where there are no cycling provisions along the A206, possible improvements could involve:
  - Simply altering existing road lane assignments,
  - Adding new cycle paths along the route or
  - Creating a new cycle route off the general road alignment.

#### Temporary effects:
- It is not known what the impact may be as yet. It is likely there will be some noise impact during the works, which may impact the residential areas south of the A206 where the FPL exists.
- If bridge construction is required, there will inevitably be an increase in noise levels. As the surrounding area here is predominantly wetland with no residential properties in close proximity, it is unlikely a noise assessment will be required.

#### Permanent effects:
- It is anticipated that there will no permanent impacts to noise levels in the area. Provision of cycle routes however may influence people to cycle over using their vehicle to travel with consequent traffic levels and thus noise levels decreasing in the surrounding area.

#### Mitigation / control measures:
- Once detailed design has been confirmed, and owing to First Priority Locations existing within the extent of the scheme, further noise assessment is likely to be required. Liaise with the local EHO at Dartford City Council to ascertain whether a Section 61 Consent is required.
- If the works are to take place at night we would also recommend contacting the local EHO and letter drops at nearby residential properties making them aware of the nature and duration of the works.
- A noise and vibration assessment may be required depending on the proximity of sensitive receptors once detailed design has been confirmed.
- Best practicable means of noise control, as described within BS 5228-1:2009 'Code of
Practice for Noise and Vibration Control on Construction and Open Sites', should be implemented in order to minimise the risk of disturbance. The British Standard provides specific detail on suitable measures for noise control in respect to construction operations.

- Operatives should receive training to effectively employ techniques to reduce noise.
- Unnecessary noise should be avoided when carrying out manual operations and when operating plant and equipment.

| Further action/assessment required? | TBC |

| If yes, specify details |

Once detailed design has been confirmed, and owing to First Priority Locations existing within the extent of the scheme, further noise assessment is likely to be required. Liaise with the local EHO at Dartford City Council to ascertain whether Section 61 Prior Consent is required under the Control of Pollution Act 1974.

If the works are to take place at night we would also recommend contacting the local EHO and letter drops at nearby residential properties making them aware of the nature and duration of the works.

A noise and vibration assessment may be required depending on the proximity of sensitive receptors once detailed design has been confirmed.
### EFFECTS ON ALL TRAVELLERS

<table>
<thead>
<tr>
<th>Assessment methodology:</th>
<th>Desktop study with reference to the information supplied within the Alert Form.</th>
</tr>
</thead>
</table>
| **Key baseline conditions:** | - The scheme will temporarily disrupt and/or restrict access to farms, public rights of way and local traffic.  
- It is envisaged that there will be lane closures on the A206 whilst works take place here.  
- A cycle route already exists in parts of the scheme (dark blue on map below)  
- It is not known if the works are taking place at night.  
- It is not known if the location of the scheme is an accident hot spot.  
- There are no bus routes along the A206 |
| **Key construction activities:** | - Improvements to cycling provisions along Bob Dunn Way  
- Where there are no cycling provisions along the A206, possible improvements could involve:  
  - Simply altering existing road lane assignments,  
  - adding new cycle paths along the route or  
  - Creating a new cycle route off the general road alignment. |
| **Temporary effects:** | - Disruption to farms, public rights of way and local traffic.  
- Improvements to the already existing cycle path will prevent cyclists temporarily using this route. |
| **Permanent effects:** | - Improvements to the already existing cycle paths and provision of new cycle routes will be a positive impact on travellers wishing to cycle as oppose to using their vehicle. |
| **Mitigation / control measures:** | - Consult with the local farmers and local authority regarding disruptions to farms, public rights of way.  
- Warnings of lane/road closures complete with signage should be given well in advance of works  
- If Traffic Management is required it should be planned to offer the best possible solution to avoid disruption.  
- Inform the emergency services of the works |
| **Further action/assessment required?** | YES |

*If yes, specify details*

Consult with the local farmers and local authority regarding disruptions to farms and public rights of way. A statutory process needs to be followed if the works include changes to PROW including temporary diversions ([https://www.gov.uk/public-rights-of-way-landowner-responsibilities](https://www.gov.uk/public-rights-of-way-landowner-responsibilities)) – to be looked at once detailed design has been confirmed.
**LAND USE**

<table>
<thead>
<tr>
<th>Assessment methodology:</th>
<th>Desktop study</th>
</tr>
</thead>
</table>
| **Key baseline conditions:** | • The surrounding land use is semi-rural to urban.  
• The works are improvement in relation to cycle routes in Dartford |
| **Key construction activities:** | • Improvements to cycling provisions along Bob Dunn Way  
• Where there are no cycling provisions along the A206, possible improvements could involve:  
  - Simply altering existing road lane assignments,  
  - adding new cycle paths along the route or  
  - Creating a new cycle route off the general road alignment. |
| **Temporary effects:** | • None predicted |
| **Permanent effects:** | • The works will decrease the amount of land classified as rural (marshland habitat). |
| **Mitigation / control measures:** | None required |
| **Further action/assessment required?** | NO |

*If yes, specify details*
### EFFECTS ON THE COMMUNITY AND PRIVATE ASSETS

<table>
<thead>
<tr>
<th>Assessment methodology:</th>
<th>Desktop study</th>
</tr>
</thead>
</table>
| **Key baseline conditions:** | - The scheme involves works to the existing cycle route as well as provision of a new section of cycle path along Bob Dunn Way.  
  - It is not known if there is a high level of community interest in this scheme.  
  - Joyce Green Cemetery is located approx. 50m south of the Marsh St/ Bob Dunn Way junction.  
  - It is not known if the works will be taking place at night  
  - The scheme is not likely to adversely affect views from local properties  
  - There are no bus routes along the A206. |
| **Key construction activities:** | - Improvements to cycling provisions along Bob Dunn Way  
  - Where there are no cycling provisions along the A206, possible improvements could involve:  
    - Simply altering existing road lane assignments,  
    - adding new cycle paths along the route or  
    - Creating a new cycle route off the general road alignment. |
| **Temporary effects:** | - Local traffic will be impacted by the works.  
  - Cycle paths to be improved may be temporarily unavailable during the works. |
| **Permanent effects:** | - Provision of additional cycle paths in the local area which will benefit the local community. |

**Mitigation / control measures:**
- Provide advanced warning before the start of the works
- Consult with the local authority if the scheme will temporarily disrupt access to the Cemetery.

**Further action/assessment required?**
- NO

*If yes, specify details*
## DRAINAGE AND THE WATER ENVIRONMENT

<table>
<thead>
<tr>
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<tbody>
<tr>
<td><strong>Key baseline conditions:</strong></td>
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</tbody>
</table>
| - The River Darent and the River Cray exist within the extent of the scheme, with the whole of the scheme within Flood zone 3 (has a 1 per cent (1 in 100) or greater chance of flooding each year).  
| - Flood defences exist along the main rivers, and parts of the A206 benefit from these, as shown on the map below. |
| - The River Cray has a moderate ecological quality.  
| - The scheme requires permanent physical changes to ponds, river, stream and ditches  
| - There will be liquid discharges from the works in relation to dewatering activities and excavations.  
| - At the river a new steel/wooden bridge would be required close to the existing bridge but on a lower level  
| - Marsh land habitat will be disrupted/removed as part of the works.  
| - Other impacts to the water environment are yet to be confirmed. |
| **Key construction activities:** |  
| - Improvements to cycling provisions along Bob Dunn Way  
| - Where there are no cycling provisions along the A206, possible improvements could involve:  
| - Simply altering existing road lane assignments,  
| - adding new cycle paths along the route or  
| - Creating a new cycle route off the general road alignment. |
| **Temporary effects:** | None predicted |
| **Permanent effects:** |  
| - Permanent physical changes to the water features within the location of the scheme.  
| - Loss of wetland habitat. |
| **Mitigation / control measures:** |  
| - The Environment Agency will need to be consulted due to works within/over 2 main rivers (River Darent and River Cray), associated floodplains and flood defences. Consent for the works and a Flood Risk Assessment may be required.  
| - All gullies to be covered to prevent any material entering the gully pot. All liquid discharge should be collected and taken away to be treated before disposal at a licensed facility. |
- Best practice will be applied by referring to method statements and risk assessments for substances and materials used during construction.
- Spill kits must be available on site at all times and all subcontractors and personnel should be trained/briefed on Amey’s Spillage Procedure.
- Comply with Pollution Prevention Guidelines for working on or near water.

**Further action/assessment required?**

| YES |

If yes, specify details

The Environment Agency will need to be consulted due to works within/over 2 main rivers (River Darent and River Cray), associated floodplains and flood defences. Consent for the works and a Flood Risk Assessment may be required.
## ENERGY AND LIGHTING

<table>
<thead>
<tr>
<th><strong>Assessment methodology:</strong></th>
<th>Desktop study</th>
</tr>
</thead>
</table>
| **Key baseline conditions:** | - It is not known if the works will be taking place at night.  
- The scheme may require permanent lighting installation where new cycle routes are provided |
| **Key construction activities:** | - Improvements to cycling provisions along Bob Dunn Way  
- Where there are no cycling provisions along the A206, possible improvements could involve:  
  - Simply altering existing road lane assignments,  
  - adding new cycle paths along the route or  
  - Creating a new cycle route off the general road alignment. |
| **Temporary effects:** | Task lighting at night will result in increased energy consumption |
| **Permanent effects:** | New lighting along new cycle paths will result in a permanent increase in energy consumption |

### Mitigation / control measures:

*If appropriate, sustainable energy sources should be considered, e.g. solar or LED.*

### Further action/assessment required?

<table>
<thead>
<tr>
<th>NO</th>
</tr>
</thead>
</table>

*If yes, specify details*
## WASTE

<table>
<thead>
<tr>
<th>Assessment methodology:</th>
<th>Desktop study with reference to the information supplied within the Alert Form.</th>
</tr>
</thead>
</table>
| Key baseline conditions: | - It is not currently known what waste will be produced.  
- It is not known if the scheme will exceed £300,000 and thus if a SWMP is required. |
| Key construction activities: | - Improvements to cycling provisions along Bob Dunn Way  
- Where there are no cycling provisions along the A206, possible improvements could involve:  
  - Simply altering existing road lane assignments,  
  - adding new cycle paths along the route or  
  - Creating a new cycle route off the general road alignment. |
| Temporary effects: | - If waste is generated and not contained and disposed of appropriately, it could lead to environmental harm. |
| Permanent effects: | - As long as mitigation measures are followed no permanent effects are anticipated. |
| Mitigation / control measures: | - All waste should be segregated appropriately and stored in a safe manner for duty of care compliance.  
- Waste to be considered for reuse/recycling, suitable on and off site options should be considered, but must remain appropriate to the scheme value.  
- Consult with the ecologist regarding any earth waste from the wetland which cannot be re-instated into the adjacent land.  
- All sub-contractors removing waste from site must possess a current Waste Carrier’s Licence.  
- Site’s used for disposal / recycling of waste must be suitably licensed or exempt from this requirement.  
- Waste transfer notes are required for all waste. Any hazardous waste should only be disposed of by a specialist waste contractor under a hazardous waste consignment note. |
| Further action / assessment required? | NO |
| Site Waste Management Plan recommended? | TBC |

*If yes, specify details*