

Dover District Council

Dover Bus Rapid Transit – Potential route options and development study White Cliffs Business Park to Connaught Barracks

1st March 2013

Notice

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Document History

JOB NUMBER: 5110054.001			DOCUMENT REF: Dover_BRT S106 Contributions Framework v0.1.docx			
3	Final Issue	CC	CPG	CC	GO	11/3/13
2	Final	CC	CPG	CC	GO	04/3/13
1	Final Draft for Issue	CC	CPG	CC	GO	17/12/12
0	Draft for Issue	PE	CC	CC		31/8/12
Revision	Purpose Description	Originated	Checked	Reviewed	Authorised	Date

Contents

Section	Page
1 Executive Summary	3
2. Introduction	7
3. Background & Context	8
4. Design Options & Solutions	9
5. Estimated Implementation Costs	13
6. Funding Mechanisms	16
7. Summary & Conclusions	19

Appendices

Appendix A – Drawings

Appendix B –DDC’s appraisal of potential access routes from White Cliffs Business Park to Dover Road

Appendix C –Survey Data - Dover Road

Appendix D - Improvement/ widening measures for Dover Road

1. Executive Summary

- 1.1 Atkins Highways & Transportation (Atkins) was commissioned by Dover District Council (DDC) to undertake further design development work on the proposed Dover Bus Rapid Transit (BRT) scheme in the vicinity of the White Cliffs Business Park (WCBP) situated to the north of Dover and immediately south of the A2. The objectives of the work were as follows:
- Evaluate and further develop the route options for BRT through the WCBP between the B&Q roundabout to the north / west and Dover Road in the south / east taking account of land ownerships, boundaries, designations and geographical and environmental factors;
 - Identify a BRT route between the B&Q roundabout in the WCBP in the north and the Connaught Barracks site in the south to minimise journey times for BRT vehicles;
 - Review the implementation costs estimated previously for the BRT (principally by WSP) and revise them in the light of the further design work undertaken for both the route through the WCBP and along Dover Road; and
 - Review the potential mechanisms for securing funding from the emerging Community Infrastructure Levy (CIL) for Dover District, as well as Section 106 development contributions.
- 1.2 The study was undertaken in the context of, the WSP's Dover Transport Strategy developed in 2008 which included proposals for new express bus services, further work undertaken by Atkins in evaluating the potential BRT route through WCBP and finally a feasibility study again by WSP which evaluated the financial viability of the BRT taking account of capital costs, operational costs and the potential passenger demand for a service. The geographical context of the study is shown in Figures 1.1 and 1.2.
- 1.3 Following site investigations, a meeting and site visit with local stakeholders and further consultation with both the DDC client and the highway authority, KCC, the three potential alignment options identified as part of the previous studies were considered in greater detail for the inclusion of the route through the WCBP namely:
- Route 1 which would form an adjusted eastern arm to the B&Q roundabout with the access to B&Q itself modified to accommodate the new route. From the roundabout the route would run in an easterly direction, immediately to the south of the B&Q site and then enter the Phase 3 development area through which it would travel until joining Dover Road approximately half way between the A2 in the north and the existing houses on the west side of that road. At this point it would be necessary to remove part of an existing line of trees and other vegetation located on the western side of Dover Road;
 - Route 2 which would form a new southern arm to the B&Q roundabout with minimal changes needed to the roundabout itself. From here the route would run south for a short length before turning south eastwards leaving the Phase 2 development area and then skirting the southern boundary of the Phase 3 development before turning south again, entering open land before turning eastwards and joining Dover Road to the south of the existing houses on the west wide of that road;
 - Route 3 which would also form a new southern arm to the B&Q roundabout with minimal changes needed to the roundabout itself. It would follow the same alignment of Route 2 for a short length but would then route further south turning south eastwards before entering open land joining Dover Road at the same point as Route 2.

1.4 Of these routes, Route 2 and 3 are preferred as

- Routes 2 and 3 would avoid removing part of the line of trees and vegetation on the west side of Dover Road which currently help to screen view of the WCBP from the east. Removal of the trees and vegetation would also significantly alter the rural character of Dover Road;
- Route 2 and 3 avoid the need to acquire and possibly purchase third party land that is associated with the access road to the B&Q store.
- Routes 2 and 3 are shorter than Route 1 when a section of Dover Road is included in the length and would therefore have lower estimated implementation costs but possibly a higher proportion of the cost must be borne by the Community Infrastructure Levy (as described in Section 5);
- As Routes 2 and 3 are shorter than Route 1 they would also result in lower operational costs than Route 1 (by implication of BRT journeys travelling a shorter distance, taking less time and using less fuel);
- Routes 2 and 3 would avoid the need for improvement works (and implementation costs associated with them) to the section of Dover Road to the north.

1.5 In order to allow two-way operation of BRT services on Dover Road it is proposed to widen short sections of Dover Road, principally where forward visibility is currently limited. This would enable BRT vehicles to travel along the majority of Dover Road within the existing cross section of the carriageway, allowing the road to retain its predominantly rural character, interspersed with short sections of widening to allow wide vehicles (such as BRT vehicles and HGVs) to pass each other.

1.6 It is anticipated that a form of BRT Dover Operational Management and Training Plan will need to be developed in tandem with the introduction of the physical improvement works. The Operational Management Training Plan would provide each of the drivers with a series of protocols that are to be adopted in situations where BRT vehicles pass each other on Dover Road. The intention being to enhance the passenger experience and remove the vision of a “too narrow road with BRT vehicles having to squeeze past each other”. This document should be based on southbound buses travelling down the gradient giving way to northbound buses travelling up the gradient on the approach to the narrowed sections.

1.7 The Dover BRT Study issued by WSP in March 2011, identified that the potential implementation cost of a BRT route through the WCBP was estimated at approximately £1m per kilometre length. This was based on the assumption that the entire road alignment through the WCBP would be dedicated to the BRT. However, given the requirement to provide vehicular access to each of the Phase 2 and Phase 3 developments within the WCBP (and potentially individual land parcels within each Phase) it would be appropriate for part of the road alignment to be shared by the BRT and development access traffic. This would maximise developable area within the WCBP by avoiding having two separate carriageways for the BRT and development access as well as minimising potential implementation costs and maximise funding opportunities.

1.8 For each of the proposed alignment options, it has been assumed that these will be shared by development traffic and BRT vehicles with right turn holding lanes included to cater for vehicles righting turning into development phases or individual land parcels and thus avoid ‘blocking’ through-vehicles, including the BRT services.

1.9 The estimated implementation costs for the route dedicated to the BRT through the WCBP, including widening works to Dover Road are as follows:

- Route 1 - £190,000
- Route 2 - £612,750
- Route 3 - £794,750

- 1.10 Possible mechanisms for funding the implementation of the BRT route across the WCBP and along Dover Road with particular reference to the Community Infrastructure Levy (CIL) and Section 106 development contributions have been considered.
- 1.11 Based on development planned in DDC during 2006-2026, funding required for the works at White Cliffs Business Park – Dover Road link including Dover Road widening are estimated as £3.2m.
- 1.12 The collective Section 106 funding requirements for the access road and associated provision for the BRT route along its length (which would be broken down into a series of individual projects) is estimated at £2.4m. This has been calculated from the estimated cost of £3.2m for the all of the development access and BRT infrastructure requirements for WCBP minus the £0.8m cost of the dedicated BRT section and Dover Road improvements (based on Route 3).

Figure 1.1 –Dover BRT – Dover Context

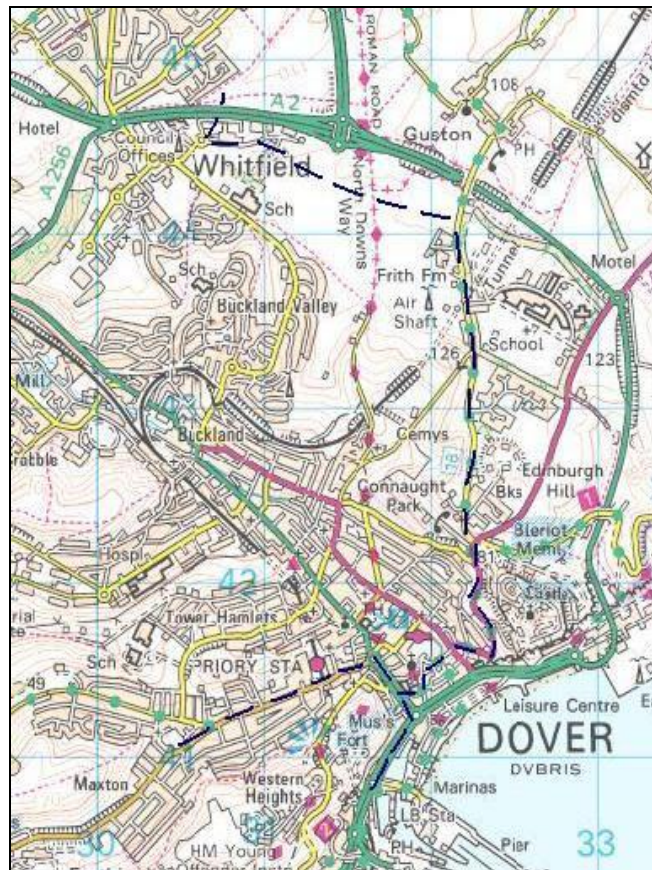
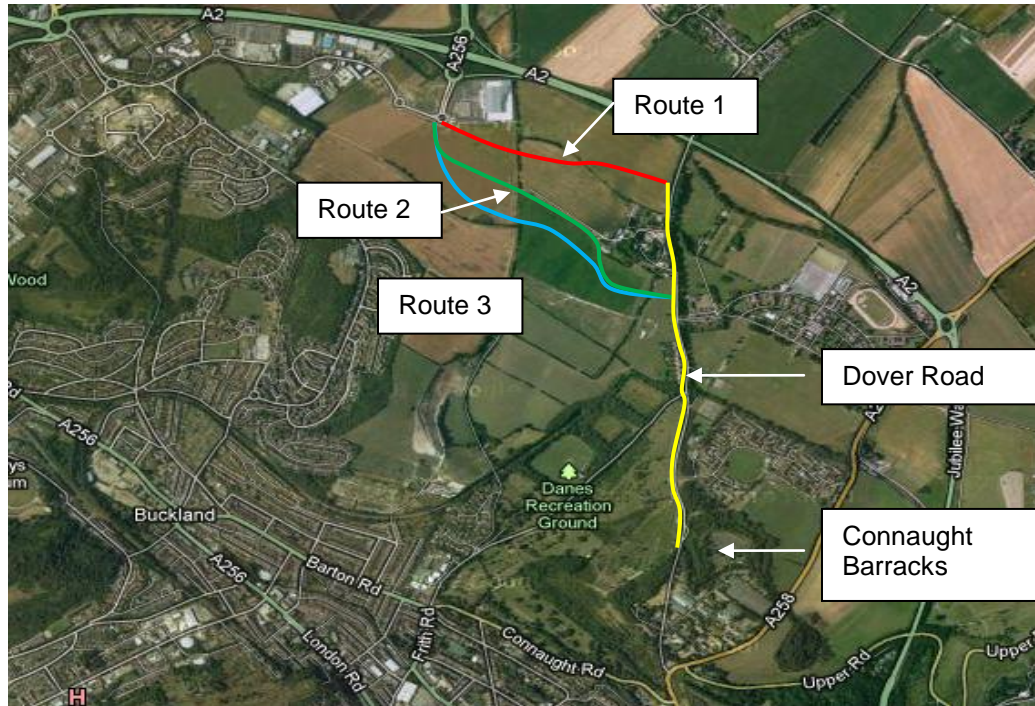


Figure 1.2 –Dover BRT Route – WCBP & Dover Road



2. Introduction

2.1 Atkins Highways & Transportation (Atkins) was commissioned by Dover District Council (DDC) to undertake further design development work on the proposed Dover Bus Rapid Transit (BRT) scheme in the vicinity of the White Cliffs Business Park (WCBP) situated to the north of Dover and immediately south of the A2. The objectives of the work were as follows:

- Evaluate and further develop the route options for the proposed BRT through the WCBP between the B&Q roundabout to the north / west and Dover Road in the south / east taking account of land ownerships, boundaries, designations and geographical and environmental factors;
- Identify a BRT route between the B&Q roundabout in the WCBP in the north and the Connaught Barracks site in the south to minimise journey times for BRT vehicles;
- Review the implementation costs estimated previously for the BRT (principally by WSP) and revise them in the light of the further design work undertaken for both the route through the WCBP and along Dover Road; and
- Review the potential mechanisms for securing funding including that from the emerging Community Infrastructure Levy (CIL) for Dover District Council as well as Section 106 development contributions.

2.2 The report is structured as follows:

- Section 3 describes the background to the study and the existing context;
- Section 4 describes three options for the route through the WCBP as well as the potential improvements to the Dover Road alignment;
- Section 5 presents the estimated implementation costs; and
- Section 6 identifies the mechanisms by which the BRT scheme through the WCBP and along Dover Road could be funded including consideration of CIL and S106 contributions.

3. Background & Context

- 3.1 The WSP Dover Transport Strategy (March 2008) identified a package of transport measures to manage the need to travel in Dover and the surrounding area and encourage use of more sustainable modes of travel in particular. Key elements of the strategy included:
- A new Park & Ride site in the vicinity of the WCBP;
 - An introduction of express bus services; and
 - Improved access to Dover Priory Station by existing buses and the new express bus service.

A copy of the Transport Strategy is available on DDC's website.

- 3.2 Following the preparation of the Dover Transport Strategy, DDC was successful in receiving funding and technical assistance from the Department for Transport in developing the strategy further to support the Core Strategy which proposes significant growth for Dover during the period up to 2026. A number of Core Strategy Options have been created by DDC with the largest of these proposing up to 14,000 additional homes for the District with associated retail, employment and other land uses. The District Council views this growth as critical to facilitate the regeneration of the town. As part of this Atkins was commissioned to provide transport planning technical assistance culminating in a report that considered the delivery and integration of a BRT service for Dover. This evaluated potential Park & Ride sites to the west of Dover, the highway improvements necessary to facilitate connection to these sites by BRT as well as the potential extension of the BRT through WCBP.
- 3.3 WSP then undertook an initial feasibility study of the BRT route options in March 2011 evaluating the financial viability of the BRT taking account of the capital cost of the proposed infrastructure, the operational costs of running the services and the potential demand for a BRT system. The study also identified a number of funding opportunities linked to the planned growth of Dover. The study is available at the following link:

<http://www.dover.gov.uk/pdf/Dover%20BRT%20Study%20Report%20030311%20Final%20Reformat.pdf>

4. Design Options & Solutions

- 4.1 This section of the report presents and describes the design options for the route through the WCBP between the B&Q roundabout and Dover Road as well as the package of selective improvements to lengths of Dover Road up to the Connaught Barracks development site to the south.
- 4.2 As part of the design development work undertaken previously a range of factors were identified as influencing potential design options and solutions both within the WCBP and along Dover Road. These included:
- Land ownership boundaries, including the extent of the Connaught Barracks site on the east side of Dover Road, and ownerships within the WCBP particularly in the vicinity of the B&Q roundabout and Dover Road;
 - The designations of WCBP into Phase 2 and Phase 3 development sites with particular reference to any impacts on the ability to develop individual parcels of land within these as a result of any given BRT alignment;
 - Topography including the undulating nature of the land within the WCBP and the proximity of the west side of Dover Road and to the south the valley sides;
 - Other natural features including the line of mature vegetation and trees on the west side of Dover Road in the vicinity of the WCBP; and
 - The narrow carriageway of Dover Road for the majority of its length north of Connaught Barracks where full two-way working for large vehicles such as buses is not currently feasible and there is also an absence of footways on both sides for the majority of its length.
- 4.3 The locations of each of these factors and constraints are shown in the plan in Appendix A.
- 4.4 The highway authority, Kent County Council (KCC) was consulted during the process of developing and evaluating design options and solutions. KCC indicated that the principals of the Kent Design Guide should be adopted which defines various standard types of road including 'Local Distributor Road', 'Major Access Road' and 'Lane'. Further information on the application of the Design Guide as it relates to Dover Road is given below.
- 4.5 A meeting and site visit was held with DDC and a selection of interested stakeholders, principally the local landowners and agents (including the HCA, owners of the Connaught Barracks site) in February 2012 to discuss potential design solutions, any issues associated with land ownerships and DDC's potential requirements for developer funding. Further information on the role of the meeting with respect to developing route options through WCBP is given below.

White Cliffs Business Park

- 4.6 A series of BRT route options were developed prior to the meeting with DDC and stakeholders in February 2012. These demonstrated the potential alignments from the B&Q roundabout to Dover Road and were then overlain on top of the established land ownerships, the Phase 2 & 3 development boundaries and current planning applications within the WCBP as shown on drawing No. 5085627/TP/PR&D/0020 in Appendix A. The three potential alignment options through the WCPB, identified as part of the previous studies, were considered in greater detail as part of the meeting, site visit and subsequent discussion with DDC. These are shown on drawing Nos. 5085627/TP/PR&D/0023, 024 and 0025 in Appendix A:
- Route 1 which would form an adjusted eastern arm to the B&Q roundabout with the access to B&Q itself modified to accommodate the new route. From the roundabout the route would run immediately to the south of the B&Q site and then enter the Phase 3 development area through which it would travel in an easterly direction until joining Dover Road. approximately half way between the A2 in the north and the existing houses on the west side of that road. At this point it would be necessary to remove part of an existing line of trees and other vegetation located on the western side of Dover Road;
 - Route 2 which would form a new southern arm to the B&Q roundabout with minimal changes needed to the roundabout itself. From here the route would run south for a short length before turning south eastwards leaving the Phase 2 development area and then skirting the southern boundary of the Phase 3 development before turning south again, entering open land before turning westwards and joining Dover Road to the south of the existing houses on the west wide of that road;
 - Route 3 which would also form a new southern arm to the B&Q roundabout with minimal changes needed to the roundabout itself. It would follow the same alignment of Route 2 for a short length but would then route further south turning south eastwards before entering open land joining Dover Road at the same point as Route 2.
- 4.7 DDC's assessment and report commentary of these routes is contained in Appendix B.

Dover Road

- 4.8 A key consideration in the development of solutions for Dover Road was to maintain its rural 'lane' characteristics. With this in mind the forward visibility of drivers and implications in terms of hedge row and tree removal to achieve the required visibilities was a significant factor. Whilst Dover Road could potentially be widened along its entire length, which would optimise its operational performance in terms of accommodating two-way operation for the BRT, it would also have a severe detrimental impact in terms of its rural character and the environment.
- 4.9 Accordingly in consultation with KCC the following design requirements were identified for Dover Road in order for it to be brought up to a standard suitable for the passage of BRT vehicles in both northbound and southbound directions:
- Carriageway width of 6.0 metres where this can be reasonably achieved taking account of topography, features of the natural environment such as trees and land ownerships;
 - Carriageway width of 5.5 metres would be acceptable where 6m cannot be achieved for lengths of the alignment benefitting from 'good' forward visibility; and
 - Where neither 5.5m nor 6.0 metres can be achieved local narrowing of the carriageway would be acceptable over a maximum length of 40.0 metres provided that there would be at least 40.0 metres length of at least 5.5 metres carriageway width between 'narrowed' sections. Where carriageway narrowing is required the width should be no more than 4.5 metres to allow two cars or light vehicles to pass in comfort but at the same time to make it clear that two buses of Heavy Goods Vehicles cannot pass and one would have to give way to the other.
- 4.10 Consideration of the above requirements and the resulting design would need to be considered further by KCC to determine the influence of the anticipated traffic levels (and by implication therefore the frequency of BRT service), estimated cost and environmental and safety factors.
- 4.11 There will be a need for further consideration and detailed assessment of the sub strata to determine the bearing capacity and required construction detail for the BRT. A determination of any archaeological features will also be necessary. Each of these assessments could identify a number of constraints requiring design alterations to accommodate each. The key objective is to facilitate two-way operation of the BRT service whilst maintaining the general 'rural' character of Dover Road.
- 4.12 To inform the design development for Dover Road, a walk-through survey was commissioned by DDC between Connaught Barracks and the proposed connection to route Option 1 (the northernmost proposed alignment) through the WCBP. This recorded existing carriageway widths and provided a photographic record which identified street furniture, boundary treatments and fence lines, as well as vegetation and location of trees. The walk-through survey results are presented in Appendix C.
- 4.13 A combination of the walk-through survey data, further site investigations undertaken by Atkins and consultation with DDC, KCC and other stakeholders has enabled a package of improvement measures to be developed and designed for Dover Road as shown on Drawing No 5085627/TP/PR&D/0022 in Appendix D.

4.14 It is proposed to widen the carriageway of Dover Road along a series of sections where forward visibility is limited. This would enable BRT vehicles to travel along the majority of Dover Road within the existing cross section of the carriageway, interspersed with short sections of widening to allow large vehicles (such as the BRT vehicles and HGVs) to pass each other. The improvement measures on Dover Road are as follows described from Connaught Barracks northwards:

- Two new sections of carriageway widening into the verge on the western side of the road in the vicinity of and to the north of Connaught Barracks (to create a 6.0 metre wide carriageway in each case);
- A new section of carriageway widening into the verge on the eastern side of the road in the vicinity of the Guston Church of England Primary School (to create a 6.0 metre wide carriageway);
- A new section of carriageway widening into the verge on the western side of the road north of the Guston Church of England Primary School in the vicinity of the existing reservoirs (to create a 6.0 metre wide carriageway);
- Two new sections of carriageway widening into the verge on the western side of the road in the vicinity of the houses on the western side of the road north of Down's Gate (to create a 6.0 metre wide carriageway in each case);
- A new section of carriageway widening into the verge on the western side of the road just south of Frith Lodge (to create a 6.0 metre wide carriageway) – this widening only applies to the WCBP Route 1 as the other two route options join Dover Road south of this point; and
- Two new sections of carriageway widening into the verge on the western side of the road north of Frith Lodge (to create a 6.0 metre wide carriageway in each case) – again this widening only applies to WCBP Route 1 as the other two route options join Dover Road south of this point. The Detailed design and construction of the works to Dover Road will need to take into consideration the environment of the surrounding area and the extent of any Nature Reserve.

4.15 It is anticipated that a form of BRT Diver Operational Management and Training Plan will need to be developed. The Operational Management Training Plan would provide each of the drivers with a series of protocols that are to be adopted in situations where BRT vehicles pass each other on Dover Road. The intention being to enhance the passenger experience and remove the vision of a “too narrow road and BRT vehicles having to squeeze past each other” This document should be based on southbound buses travelling down the gradient giving way to northbound buses travelling up the gradient on the approach to the narrowed sections.

5. Estimated Implementation Costs

- 5.1 The Dover BRT Study issued by WSP in March 2011, identified that the potential implementation cost of a BRT route through the WCBP was estimated at approximately £1m per kilometre length. This was based on the assumption that the entire road alignment through the WCBP would be dedicated to the BRT. However, given the requirement to provide vehicular access to the each of the Phase 2 and Phase 3 developments within the WCBP (and potentially individual land parcels within each Phase) it would be appropriate for part of the road alignment to be shared by the BRT and development access traffic. This would maximise developable area within the WCBP by avoiding having two separate carriageways for the BRT and development access as well as minimising potential implementation costs and maximise funding opportunities.
- 5.2 It is recognised that in order to provide 'priority' for BRT services and to prevent opening up a new route for other traffic from the B&Q roundabout to Dover Road, that any alignment would need to include a section dedicated to BRT services only. The dedicated section would run from Dover Road in the east to a point within the WCBP in the west which would be determined on the basis of future development opportunities coming forward and also on the basis of the dedicated section not being so short that it would become unenforceable.
- 5.3 At the point at which the BRT connects to Dover Road, there would need to be some form of highway measures that prevents vehicles, other than the BRT vehicles, travelling to or from Dover Road. For the purposes of estimating the implementation costs, this has been based on rising bollards activated by transponders on the BRT vehicles. The design of any physical highway measures that would be needed to restrict this movement from the WCBP to Dover Road to BRT vehicles only would be the subject to detailed design and discussion with KCC Highways, DDC and the bus operator.
- 5.4 For each of the proposed alignment options, it has been assumed that these will be shared by development traffic and BRT vehicles with right turn holding lanes included to cater for vehicles righting turning into development phases or individual land parcels and thus avoid 'blocking' through-vehicles, including the BRT services. At this time it is not possible to determine the exact number or location of the access points within the development or where these would intersect with the BRT. However given standards requiring sufficient distances between adjacent junctions a maximum of four such junctions has been assumed for each option.
- 5.5 On the approach to the B&Q roundabout it has also been assumed that a dedicated BRT vehicle lane of approximately 70 metres length will be provided for northbound / westbound BRT services in order to provide priority over development traffic on egress from the WCBP.
- 5.6 Based on the previous assumptions and the designs presented and described in the previous section, the estimated implementation costs for the route dedicated to the BRT through the WCBP are presented in Table 5.1 and are as follows:
- Route 1 - £80,000
 - Route 2 - £528,000
 - Route 3 - £720,000
- 5.7 These costs are for the dedicated BRT section only and exclude the sections of the alignment to be shared with development traffic. In developing these costs we have adopted the cost of £1m per kilometre length identified by WSP in their report.

Table 5.1 – Estimated Implementation Costs for Route through WCBP

	Route 1	Route 2	Route 3
BRT only link	- (See footnote 1)	£448,000 (See footnote 2)	£660,000 (See footnote 2)
Gate System	£20,000	£20,000	£20,000
Right turn lanes	£40,000 (4 no)	£40,000 (4 no)	£20,000 (2no)
Dedicated BRT approach to Rdbt	£20,000	£20,000	£20,000
Totals	£80,000 (See footnote 3)	£528,000	£720,000

Footnote 1: This cost is yet to be determined as it will be dependent on the configuration of buildings in the Phase III of the WCBP.

Footnote 2: This represents the cost of the BRT section of the route that is not within the WCBP.

Footnote 3: The Route 1 cost do not include any allowance for the cost for removal and replacement of any existing mature trees at the Dover Road junction to enable the required visibilities, neither has any allowance been included for any 3rd party land costs or environmental compensation that may be deemed payable to the owners of the private properties fronting Dover Road between the two potential junction points at Route 1 and Route 2/3.

5.8 The cost for the package of improvements along Dover Road has been estimated by Atkins based on the following assumptions:

- Full bituminous construction including 50mm surface course, 60mm binder, 60mm based and 150mm sub-base;
- Excavation of existing road construction;
- New filter drain on half the length of each proposed section of proposed carriageway widening;
- New post and rail fencing is proposed where hedgerows are to be removed as part of any carriageway widening;
- Preliminaries allowance of 20 percent; and
- Contingencies of 20 percent.

5.9 On the basis of the above, the total estimated implementation costs for the Dover Road improvements is estimated at £75,000 for Routes 2 or 3 and £110,000 for Route 1. The estimated cost for Option 1 is highest as a longer section of Dover Road needs to be improved compared to the other two options. A breakdown of the estimated costs for Dover Road is provided in Table 5.2 with the total combined cost for WCBP and Dover Road improvements provided in Table 5.3.

Table 5.2 – Estimated Implementation Costs for Dover Road Improvements

	Route 1 (Widening at all points)	Route 2 (Selected widening)	Route 3 (Selected widening)
Series 100 Preliminaries	£5,400	£3,500	£3,500
Series 300 Fencing	£12,500	£8,150	£8,150
Series 500 Drainage	£9,500	£6,300	£6,300
Series 600 Earthworks	£9,500	£6,300	£6,300
Series 700 Pavements	£39,600	£27,600	£27,600
Prelims (20%)	£15,300	£10,400	£10,400
Contingencies (20%)	£18,200	£12,500	£12,500
Total	£110,000	£74,750	£74,750

Table 5.3 – Total Estimated Implementation Costs for BRT (WCBP+ Dover Road)

	Route 1	Route 2	Route 3
WCBP Improvements	£80,000 (See footnote 4)	£528,000	£720,000
Dover Road Improvements	£110,000	£74,750	£74,750
Total Estimate	£190,000 (see footnote 5)	£612,750	£794,750

Footnote 4: Please refer to Table 5.1 footnotes

Footnote 5: The Route 1 cost do not include any allowance for the cost for removal and replacement of any existing mature trees at the Dover Road junction to enable the required visibilities, neither has any allowance been included for any 3rd party land costs or environmental compensation that may be deemed payable to the owners of the private properties fronting Dover Road between the two potential junction points at Route 1 and Route 2/3.

5.10 As noted previously the eventual route of the BRT through the WCBP will need to respond to the timing and extent of development proposals coming forward for the area in future, however there are clear benefits of alignments close to those presented as part of Routes 2 and 3 when compared to Route 1 because:

- Routes 2 and 3 would avoid removing part of the line of trees and vegetation on the west wide of Dover Road which currently help to screen view of the WCBP from the east. Removal of the trees and vegetation would also significantly alter the rural character of Dover Road. No allowance has been made for the environmental costs that will be result and at this time remain uncertain;
- Route 1 also includes an additional short length of Dover Road which passes the frontages of number of residential properties, potentially incurring compensation payments. There is also an unknown cost for the acquisition of 3rd party land;
- Routes 2 and 3 would avoid the need for improvement works (and implementation costs associated with them) to the section of Dover Road to the north and have a higher proportion of route that would need to be funded by the Community Infrastructure Levy

6. Funding Mechanisms

- 6.1 This section of the report discusses possible mechanisms for funding the implementation of the BRT route across the WCBP and along Dover Road with particular reference to the Community Infrastructure Levy (CIL) and Section 106 development contributions.
- 6.2 The Community Infrastructure Levy (CIL) was introduced by the Planning Act of 2008 and gained parliamentary approval on 17th March 2010. It has been designed to address some of the shortcomings of Section 106 agreements, namely that payments towards local infrastructure improvements were ad-hoc, slow, unpredictable and unfairly biased towards payments from larger developments. The intent was to better resource local authorities to deliver the necessary infrastructure through a simplified collection of payments that do not require protracted and often difficult negotiations through the Section 106 process. The levy was introduced to allow a cumulative contribution to necessary infrastructure from a wide range of developments and in a more transparent way. Tariffs are in terms of £/sqm for different types of use class (potentially varied across different geographical zones of the authority concerned) and are payable on granting of planning permission, provided overall development is in excess of £100 sqm (for a single dwelling in residential terms).
- 6.3 On 6th April 2011, DDC agreed to prepare a Charging Schedule to facilitate the collection of the CIL in accordance with Community Infrastructure Levy Regulations 2010. This dictates that prior to introducing CIL planning authorities must first prepare a preliminary draft charging schedule for consultation. DDC has now prepared their proposed Preliminary Draft Charging Schedule and provided details of development viability profiling, along with a schedule of costed transport infrastructure requirements to support planned development for the period from 2006 to 2026 (where planned development has largely derived from the Core Strategy). Permission to consult on the Preliminary Draft Charging Schedule was sought and given at a Cabinet Meeting held on 3rd December 2012. Consultation began on 13th December and will take place over 12 weeks (and will include a workshop with developers) and the preliminary schedule will be reviewed taking account of any representations received. Following this DDC will develop a Draft charging schedule, invite further representations and prepare for an Examination in Public, all within the overall programme of having CIL in place by April 2014.
- 6.4 It should be noted that the CIL regulations introduced restrictions on the use of Section 106 agreements including a limit of five agreements per 'project or type of infrastructure' which have started to apply since April 2011 and will be in full force by April 2014. Therefore by then the CIL charging schedule must be in place to maintain sufficient income from new development for infrastructure improvements. It should however be noted that CIL is not expected to entirely replace Section 106 agreements which will still be appropriate for site specific infrastructure and access requirements .
- 6.5 Based on the development planned in DDC during 2006-2026 a parallel schedule of infrastructure requirements with a value of £123m has been identified of which £44m has already been delivered and £22m is committed leaving a funding gap of £57m. It should be noted that not all planned infrastructure has a funding gap as some projects have already been constructed / implemented or have been funded from other sources. The transport projects with a funding requirement listed in the schedule includes the A2/A258 – Duke of York's roundabout improvement (£1.2m), a package of sustainable transport measures (£11.2m) and the BRT services (£10.1m) as well as Dover Park & Ride extension to the BRT (£2m). In terms of the BRT the breakdown is as follows:
- First 10 years' operating subsidy (£1.1m);
 - A2 Bridge (£5.2m); and
 - White Cliffs Business Park – Dover Road link including Dover Road widening £3.2m.

- 6.6 The viability profiling of development in the district was used to allow DDC to strike a balance between raising funds and adversely affecting the viability of development and has resulted in the proposed charging schedule having different charges for different areas of the district. Essentially town centre 'brownfield' developments are seen as less viable than 'greenfield' rural sites with the latter subject to a greater CIL charge than the former. However, whilst higher value parts of Dover town like Whitfield could potentially sustain a greater CIL charge than the rest of the town, defining Whitfield as a separate zone is seen as difficult given the limited empirical evidence on the level of contributions that have been accrued. A single zone is therefore proposed for the Dover Urban Area with any uplift in viability from the higher value areas such as Whitfield reflected in an additional contribution being sought from Section 106 contributions.
- 6.7 Within this context the proposed CIL charges for the Dover urban area including Whitfield are as follows:
- Residential land use - £50 per square metre;
 - Retail land use with units over 500 square metres - £50 per square metre;
 - Retail land use with units under 500 square metres - £25 per square metre;
 - All other land uses – nil.
- 6.8 Accordingly as currently drafted, the CIL charging schedule would result in no CIL receipts being generated by the potential development of Phase 2 and Phase 3 of the WCBP as these are allocated to B1, B2 and B8 land uses which attract a nil charge. Therefore development of the WCBP is not likely at this stage to contribute towards the cost of BRT via CIL.
- 6.9 In the light of the above and the further design work and estimated costs presented earlier in this report we conclude the following regarding the potential delivery and funding of the BRT in the vicinity of the WCBP:
- However, it would be appropriate for development agreements to be used either to provide directly or via off site contributions to be used to fund that section of the new carriageway within the WCBP whose primary purpose, although shared with BRT, is to provide vehicular access to the individual land parcels within Phase 2 and Phase 3. This approach would ensure that individual developments are directly funding their own infrastructure access requirements and although BRT would ultimately route along the access roads funded in this way, the design (and more importantly) cost would not be significantly different from an access road designed for development traffic alone without BRT. This would mean that BRT would benefit for the development of each parcel of land; and
 - Therefore sections of carriageway dedicated to BRT within WCBP and the improvements to Dover Road could be funded in part from CIL. This is appropriate since these improvements are directly and solely related to introducing the BRT service in the wider Dover urban area and so should be funded by the full range of development in the District rather than individual sites (such as those in Phase 2 and Phase 3 of WCBP).
- 6.10 If the approach described above is to be adopted then the schedule of infrastructure and parallel funding requirements used as the basis for CIL should be adjusted with respect to the BRT scheme in the vicinity of WCBP. The current funding requirement of £3.2m which is based on a full length of carriageway between the B&Q roundabout and Dover Road should be reduced to approximately £0.8m. This funding requirement is based on the higher of the estimated implementation costs of the dedicated BRT section and improvements to Dover Road for Routes 2 and 3 which are considered equally likely in future (noting that Route 1 which has a higher implementation cost is not preferred). The higher cost of Route 3 has been adopted for robustness in the absence of clarity over forthcoming development proposals within the WCBP which might otherwise determine which of Route 2 and Route 3 is likely to be more attractive.

- 6.11 The funding strategy above will be used by the planning authority in responding to any future development proposals for Phase 2 and Phase 3 of the WCBP. The collective Section 106 funding requirements for the access road and associated provision for the BRT route along its length (which would be broken down into a series of individual projects) is estimated at £2.4m. This has been calculated from the estimated cost of £3.2m for the all of the development access and BRT infrastructure requirements for WCBP minus the £0.8m cost of the dedicated BRT section and Dover Road improvements (based on Route 3 presented earlier in this report).

Table 6.1 –Collective Section 106/CIL funding requirements

	Based on Route 3
WCBP - Dover Road link	£3,200,000
WCBP Improvements	£720,000
Dover Road Improvements	£74,750
Total Estimate	£2,405,250

- 6.12 The estimated cost of £2.4m, based on route option 3 as indicated in Table 6.1, will need to be recovered from future development proposals as they come forward. It is considered most likely that development proposals for land parcels closest to the existing highway network of the B&Q roundabout will come forward first as the infrastructure requirements for them will be easiest to deliver since the length of access road will be reduced (when compared to sites on the eastern side of WCBP) and the land required to deliver the access roads is more likely to be in the direct control of the applicant. It is recommended that the planning authority works with the developers of these sites to encourage them to adopt alignments of their access roads that closely match the alignments for Routes 2 and 3 presented earlier in this report. It will be important that they fund and construct access roads that cross their land ownerships and reach the boundaries with other sites thereby providing ‘passive provision’ for extending the overall spine route for future development in Phase 2 and 3 and connecting to a BRT only section at a later date. The WSP estimated cost of £1m per km can be used as the basis for an initial response from the planning authority to requests for clarification from the developer on Section 106 funding requirements as these relate to access roads and BRT. Whether these costs are part of the on-site development costs or Section 106 agreement will depend on land ownerships and cannot be determined at this stage. This is not necessarily important at this stage as the total funding requirement will not change.
- 6.13 Each development site will need to be dealt with in a similar way as they come forward with them funding and constructing their access roads to provide alignments closely matching Routes 2 or 3. Further technical work and insight as to the nature of forthcoming development proposals will be required in future in order to determine which of Routes 2 or 3 (or variations on either of these two routes) will ultimately be delivered.
- 6.14 In the unlikely event that the above mechanism cannot be used for apportioning Section 106 funding requirements between individual sites within Phases 2 and 3 of the WCBP, the fallback position will be to apportion the overall £2.4m funding requirement on the basis of the overall proportion of the land being developed as part of the total area of Phases 2 and 3. It is not possible to apportion costs in any other way, for example, with reference to the overall forecast level of trip demand by mode or Gross Floor Area of development for each site as it is highly unlikely that this information will be available for each and every land parcel within Phase 2 and 3 of the WCBP.
- 6.15 Kent County Council and Dover District Council should also investigate other funding opportunities that could assist with the delivery of the BRT.

7. Summary & Conclusions

- 7.1 Atkins Highways & Transportation (Atkins) have undertaken further design development work on the proposed Dover Bus Rapid Transit (BRT) scheme in the vicinity of the White Cliffs Business Park (WCBP).
- 7.2 Atkins have further evaluated and developed the route options for BRT through the WCBP between the B&Q roundabout and Dover Road taking account of land ownerships, boundaries, designations and geographical and environmental factors.
- 7.3 A preference for Routes 2 and 3 over Route 1 has been identified. The full cost of Route 1 is uncertain as consideration will need to be given to the ecological cost for removal of a length of existing mature tree line on Dover Road as well as any 3rd party land costs and/or environmental compensation that may be deemed payable to the owners of the private properties fronting Dover Road between the two potential junction points at Route 1 and Route 2/3. These costs are unknown at this time.
- 7.4 Finally mechanisms for securing funding from the emerging Community Infrastructure Levy (CIL) for Dover District, as well as the current Section 106 development contributions, have been considered and reported upon.
- 7.5 The content of this study will be used by the Planning Authority in responding to any future development proposals for Phase 2 and Phase 3 of the WCBP.

Appendix A – Drawings

Notes

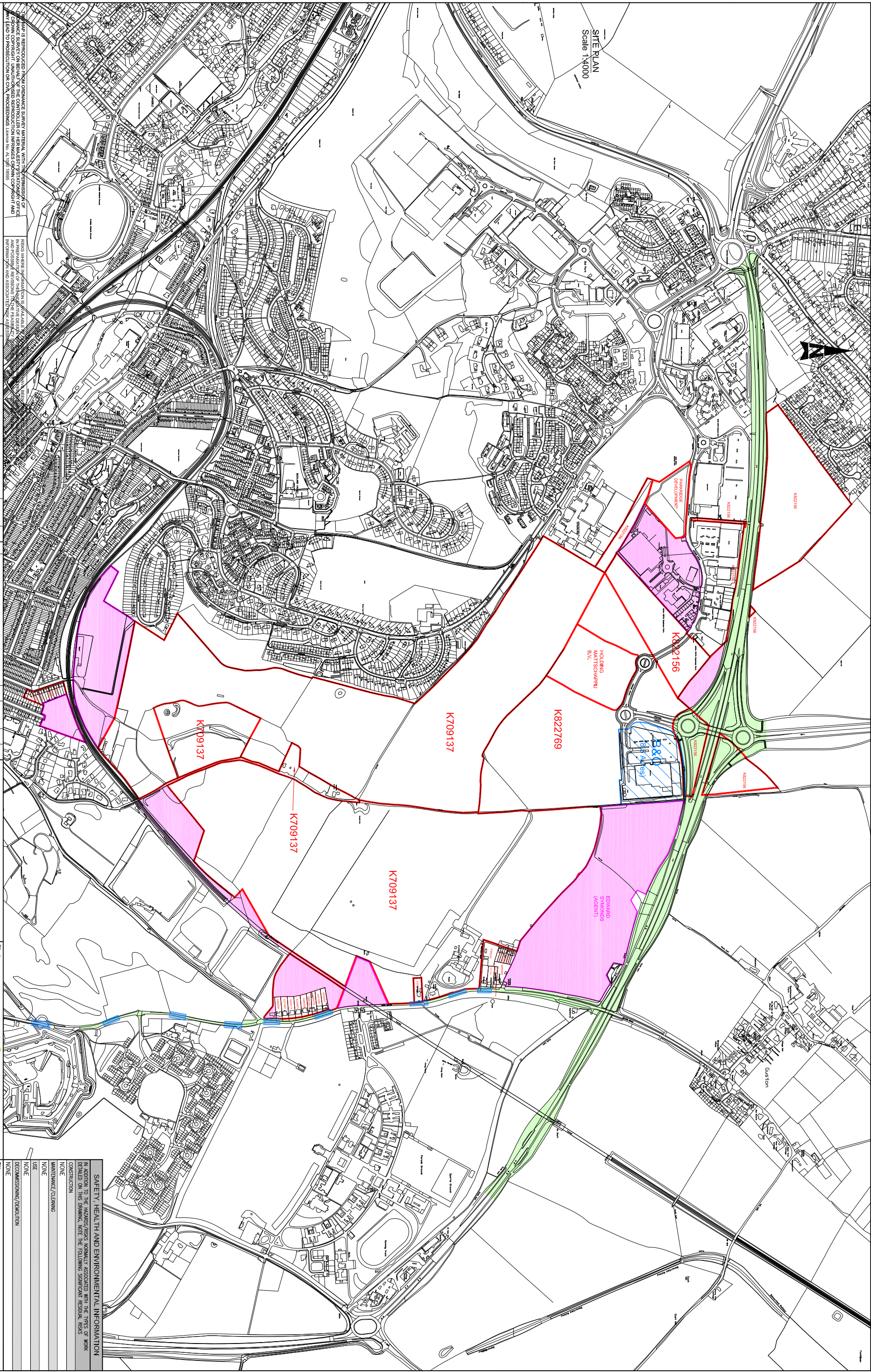
- Proposed layout based on OS data only. Design subject to change once topographical survey is available.
- The need for amendments to kerb line and roadway narrowing to be determined at detailed design stage and avoided if possible.

Key

- HIGHWAY LAND
- DEVELOPMENT LAND
- PRIVATE LAND
- LAND OWNERSHIP UNKNOWN

POSSIBLE SECTIONS OF CARRIAGEWAY

50M SECTIONS BORDERED BY VERGE WITHOUT KERBING, ALSO INCLUDES TAPERING UP TO 5m IN LENGTH WITH ALL WIDENING INCLUDED WITHIN EXISTING HIGHWAY BOUNDARY



Start	Purpose of Issue	Date	Auth	Rev	Description
	A FOR INFORMATION	02/12	CR	A	INITIAL ISSUE
	B FOR INFORMATION	02/12	CR		
	C FOR INFORMATION	06/12	AE		PROPOSED WIDENING ON DOVER ROAD ADDED

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DOVER RAPID TRANSIT

DOVER DISTRICT COUNCIL

Sheet Size	Original Scale	Design/Drawn	Checked	Approved
A1	NTS	DR	FE	CR

Project: **DOVER RAPID TRANSIT**

Drawn: 28/02/12
Checked: 28/02/12
Approved: 28/02/12

Revision: 5085627/TP/PR&D/020

SAFETY/ HEALTH AND ENVIRONMENTAL INFORMATION

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NONE

MAINTENANCE/ CLEANING

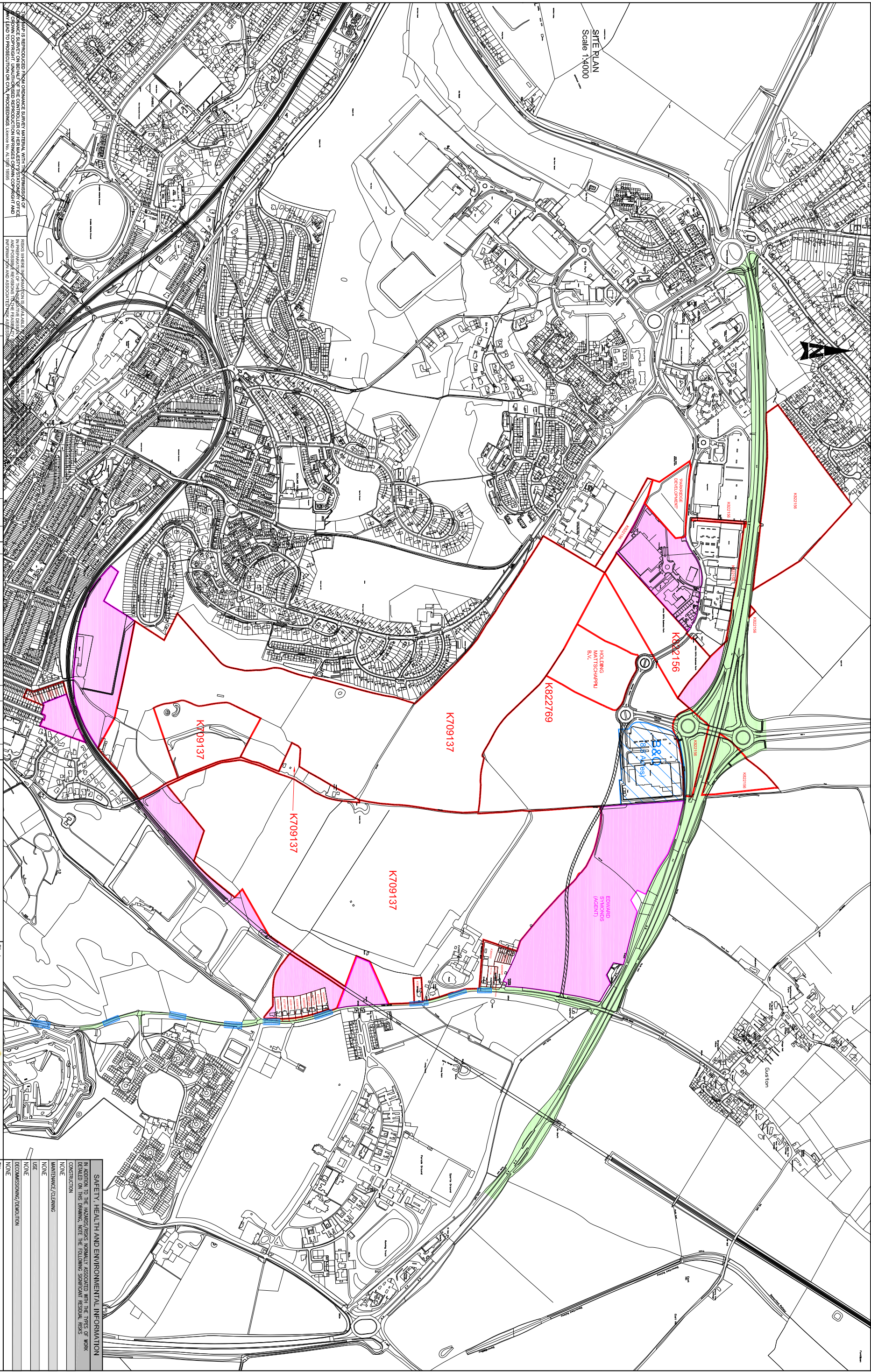
NONE

USE

NONE

DECOMMISSIONING/DEMOLITION

NONE



Notes:
 1. Proposed layout based on OS data only. Design subject to change once topographical survey is available.
 2. The need for amendments to kerb line and roadway narrowing to be determined at detailed design stage and avoided if possible.

- Key:
- █ HIGHWAY LAND
 - █ DEVELOPMENT LAND
 - █ PRIVATE LAND
 - █ LAND OWNERSHIP UNKNOWN
 - █ POSSIBLE ROUTE 1
- POSSIBLE SECTIONS OF CARRIAGEWAY
 WIDENING TO 6m FOR LENGTHS UP TO 50m.
 SECTIONS BORDERED BY VERGE WITHOUT
 KERBING, ALSO INCLUDES TAPERED UP TO 6m
 IN LENGTH WITH ALL WIDENING INCLUDED
 WITHIN EXISTING HIGHWAY BOUNDARY

Sheet	Purpose of Issue	Date	CRG	Author	Description
A	FOR INFORMATION	06/12	AE	06/12	FC
					CRG

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Sheet Size	Original Scale	Design/Drawn	Checked	Approved
A1	NTS	DR	FE	CRG
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28/02/12	28/02/12	28/02/12	28/02/12	A

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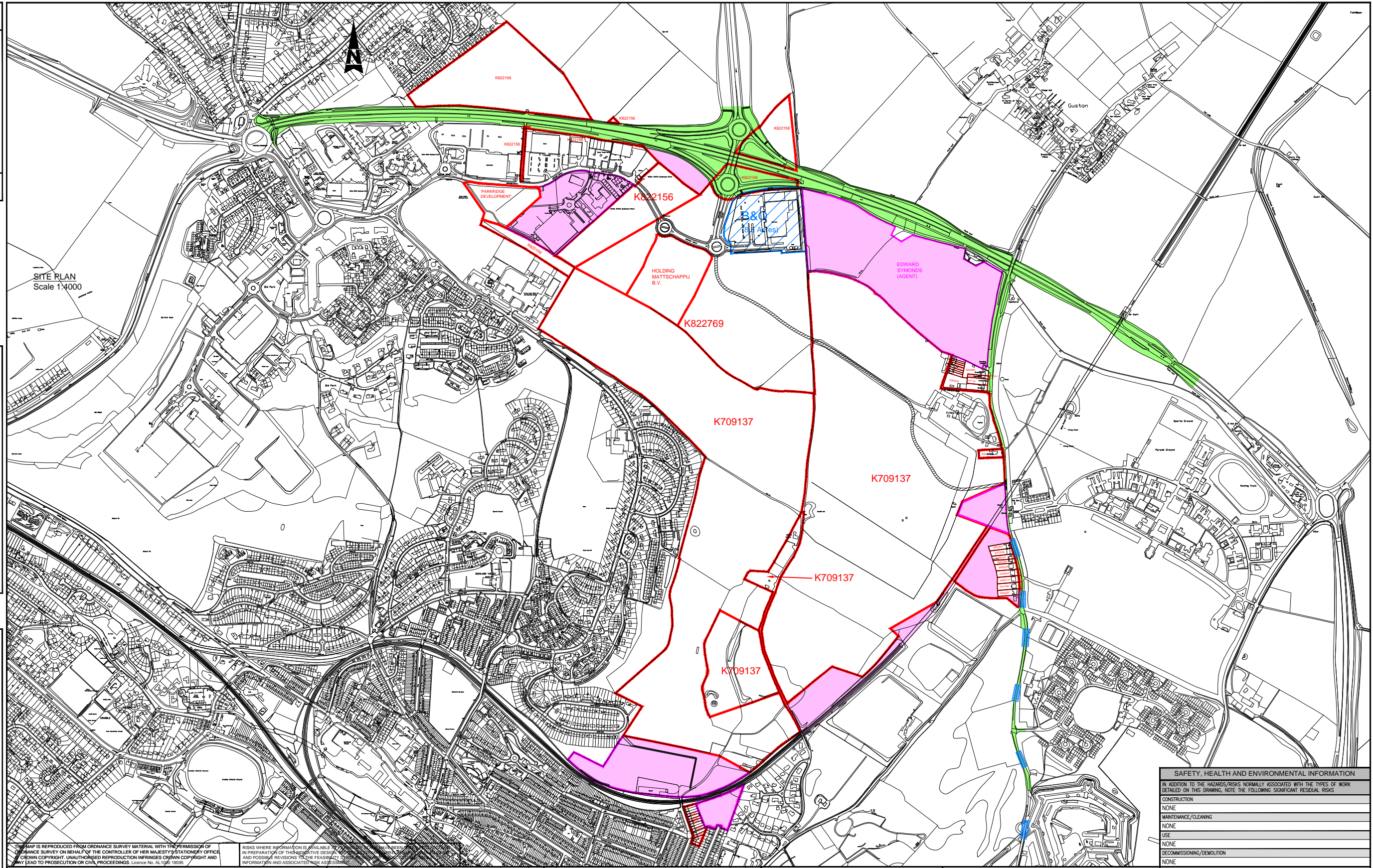
HONEYWOOD PARKWAY TO DOVER ROAD ROUTE 1

Rev A
 Drawing Number 5085627/TP/PR&D/024
 Status P

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File: 5085627/TP/PR&D/0024.dwg
 Date: Jun 19, 2012 - 11:04am
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Key
 HIGHWAY LAND
 DEVELOPMENT LAND
 PRIVATE LAND
 LAND OWNERSHIP UNKNOWN

POSSIBLE SECTIONS OF CARRIAGEWAY WIDENING TO 6m FOR LENGTHS UP TO 50m. SECTIONS BORDERED BY VERGE WITHOUT KERBING. ALSO INCLUDES TAPERS UP TO 8m IN LENGTH WITH ALL WIDENING INCLUDED WITHIN EXISTING HIGHWAY BOUNDARY

POSSIBLE ROUTE 2

Stat	Purpose of Issue	Date	Auth	Rev	Description	By	Date	Chk'd	Auth
A	FOR INFORMATION	06/12	CRC	A	INITIAL ISSUE	AE	06/12	PE	CRC

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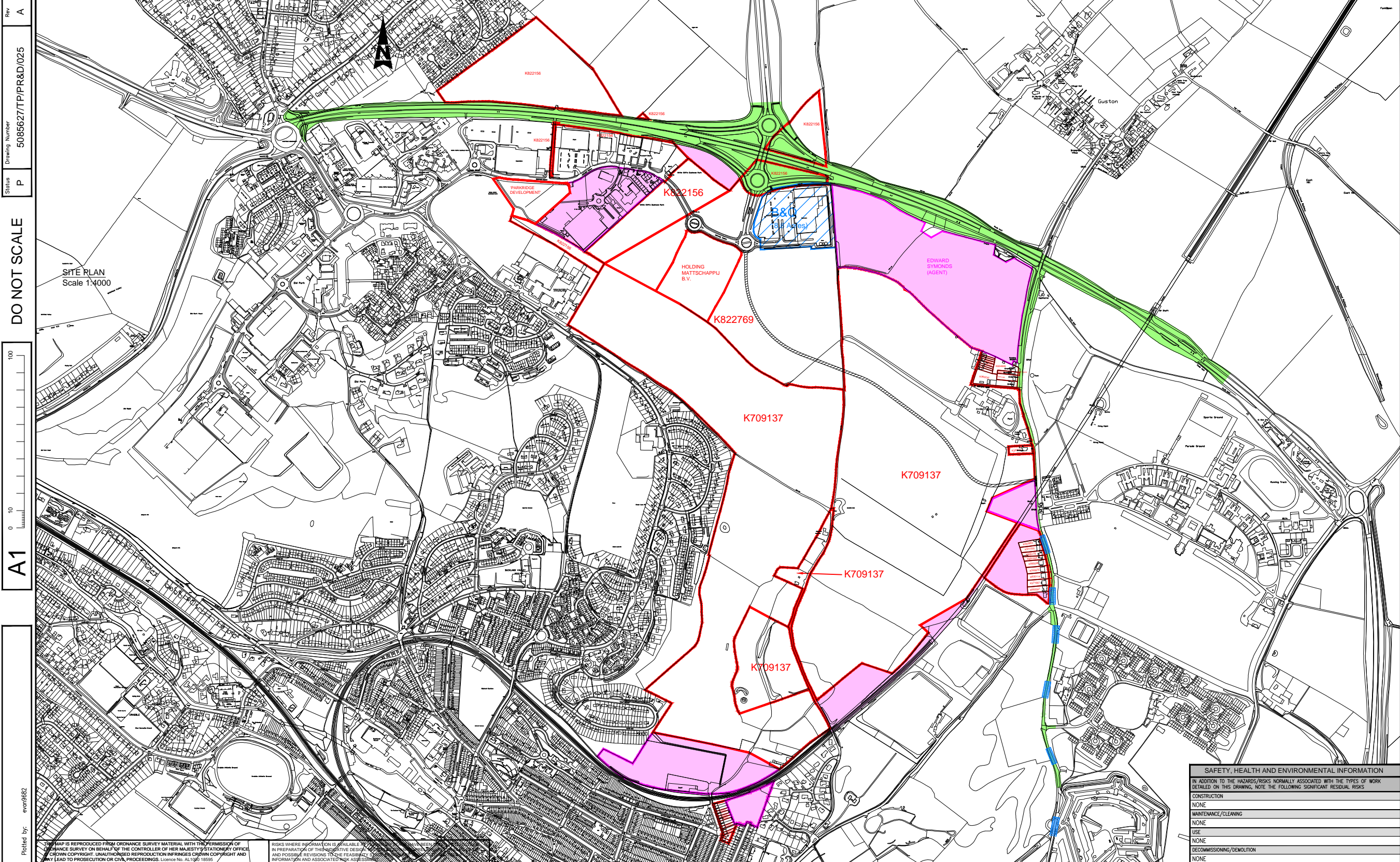
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HONEYWOOD PARKWAY TO DOVER ROAD
 ROUTE 2

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A1	NTS	DR	PE	CRC
Status	Date	Date	Date	Date
P	28/02/12	28/02/12	28/02/12	28/02/12
Drawing Number	Rev			
5085627/TP/PR&D/024	A			



Rev A
 Drawing Number 5085627/TP/PR&D/025
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 A1
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POSSIBLE ROUTE 3

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USE	NONE
DECOMMISSIONING/DEMOLITION	NONE

Sheet Size Original Scale
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Designs/Drawn Checked PE
 Date 28/02/12 Date 28/02/12

Authorised CRC
 Date 28/02/12

Status Drawing Number
 P 5085627/TP/PR&D/025

Rev
 A

Appendix B –DDC’s appraisal of potential access routes from White Cliffs Business Park to Dover Road

Introduction

This appendix has been prepared by Dover District Council who have undertaken an independent assessment of three indicative route options that the Bus Rapid Transit (BRT) could take between B&Q in the White Cliffs Business Park (WCBP) and the entrance to Connaught Barracks. The three routes involve either taking a northerly or southerly course across the land to the east of B&Q (Figure xxx). Each route has its advantages and disadvantages and has been assessed against a range of criterion (see attached table).

The starting point for this work was the Atkins Dover Park & Ride and Bus Rapid Transit Routing Study dated July 2010 and the information contained in the WSP Dover BRT Study dated March 2011.

Route option 1

Route option 1 was originally identified in the Atkins Report and is the shortest of the three route options (0.78km). The route is within Phase II and Phase III of the WCBP. It would, however, involve the substantial and potentially costly earthworks at the entrance to B&Q. More importantly, it is questionable about the deliverability of this route in terms of complications of landownership as it would involve the using the existing B&Q access road.

Route option 1 would allow all of the people employed in the Phase II and Phase to be within 400m of the BRT service (Figure xxx).

The proposed alignment of this BRT route would involve the removal of a number of mature trees in order to obtain the necessary visibility splays for a BRT only entrance onto Dover Road. This would effectively open up and remove the screening to the WCBP. It would also involve possible widening of 0.47km section of Dover Road from the point that it connects to Dover Road to route options 2 and 3. This additional cost would only be restricted to this option. Any widening of Dover Road immediately outside the residential properties (17 properties in total) may receive opposition as it would substantially alter the character of this section of Dover Road. From a landscape perspective, the alignment of this route in absence of any development on the WCBP would be particular prominent in the landscape.

Route option 2

For indicative purposes this route option involves a new spur road off the B&Q roundabout and then follows the boundary of Phase III WCBP before joining Dover Road. The main advantage of this route alignment is that the planned BRT service would have a reduced residential impact on people living in properties to the north of Dover Road and it would not require the widening of 0.47km of Dover Road. Unlike route option 1, as it is further south, it would also not involve the removal of trees fronting Dover Road which provide an effective screen to WCBP.

Route option 2 would allow all of the people employed in Phase II to be within 400m of a BRT service with only a relatively small area of land in the north/eastern corner of Phase III of the WCBP (which is more than likely only going to be developed for car parking) would be outside of the 400m radius of the BRT service (Figure xxx).

Route option 3

Route option 3 follows a similar alignment to route option 2. It does, however, deviate from the original route alignment that was included in the Atkins Report dated July 2010 as it would involve the construction of new spur road off the B&Q roundabout (rather than using the B&Q access road) and instead of following the boundary of the WCBP, it would continue further south (beyond Phase III of the WCBP employment allocation) before connecting with Dover Road.

Route option 3 would allow all of the people that would be ultimately employed in Phase II to be within 400m of a BRT service but would exclude a significant part of Phase III from being 400m of a BRT service.

Overall conclusions

The results of this assessment indicate that there are clear benefits with the alignment of route options 2 and 3 when compared to route option 1 for the following reasons:

- Both routes would not involve the removal of trees along the frontage of Dover Road which help to screen the WCBP employment allocation
- The removal of the trees along the frontage of Dover Road would significantly alter the character and appearance of Dover Road
- It would not involve widening the section of Dover Road at the point at which route option1 joins Dover Road

WCBP
Phase II

WCBP
Phase III

0.78km (0.48 miles)

2

1.141km (0.71 miles)

3

1.135km (0.70 miles)

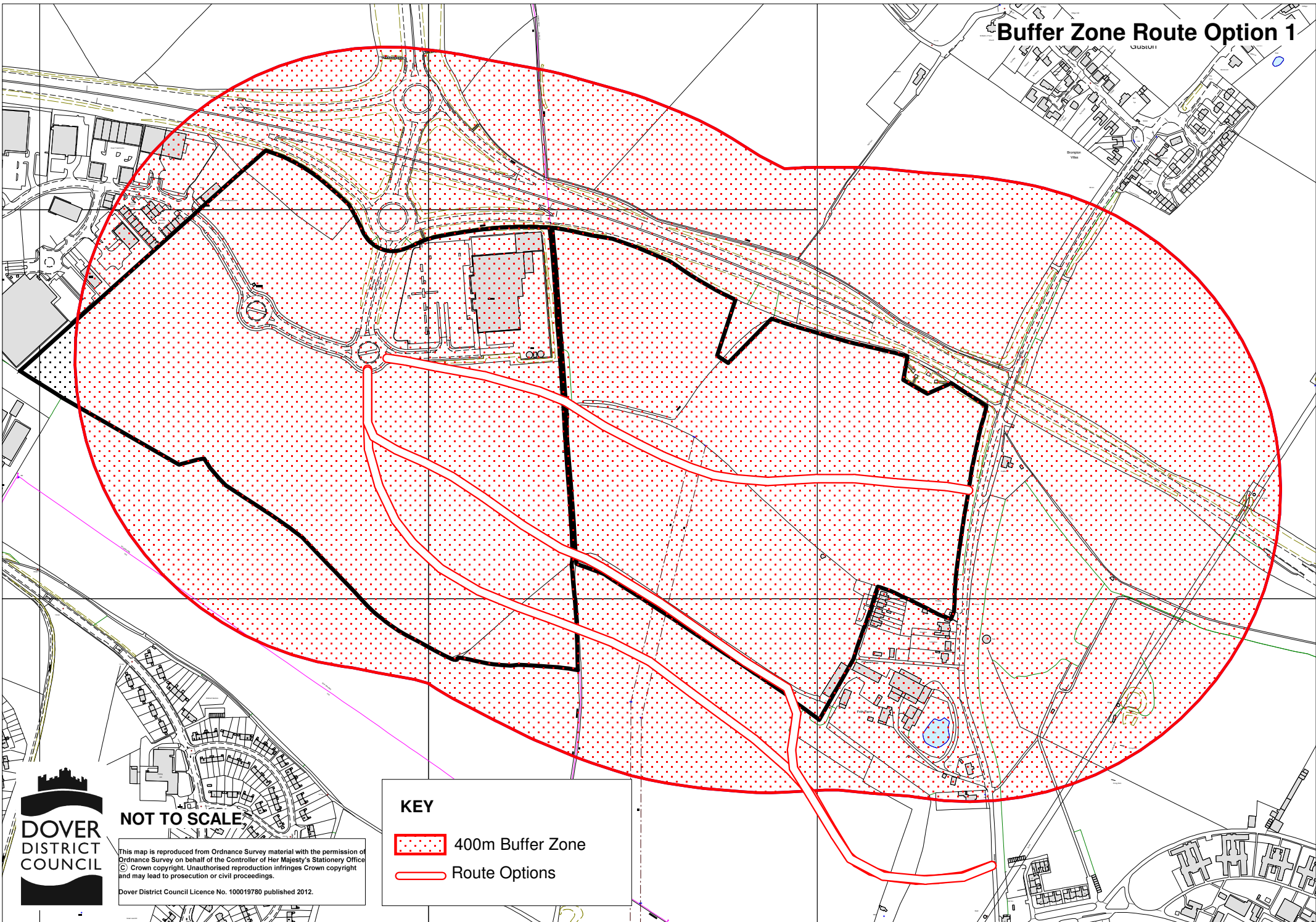
0.47km
(0.29 miles)



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Buffer Zone Route Option 1





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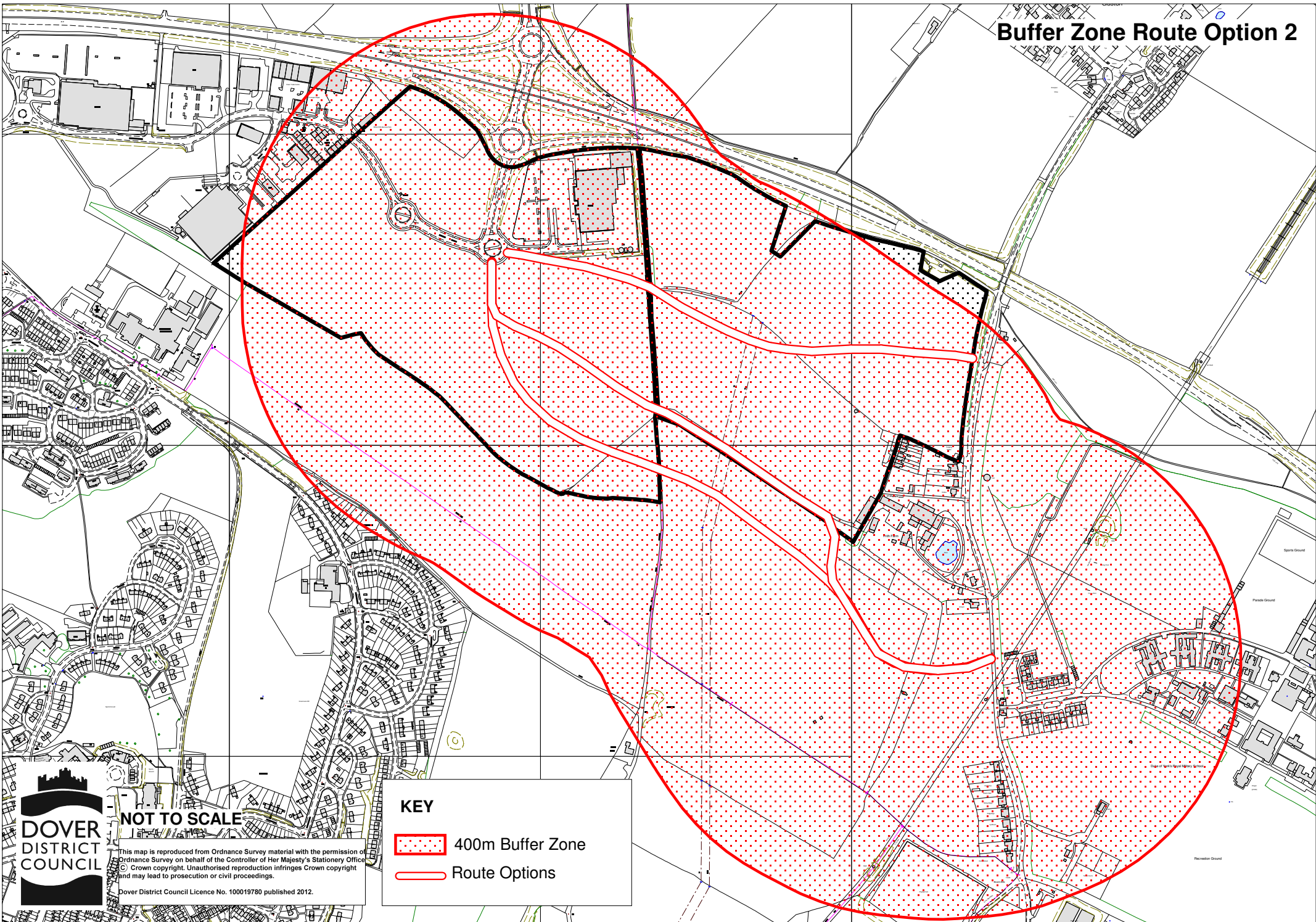
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KEY

-  400m Buffer Zone
-  Route Options

Buffer Zone Route Option 2





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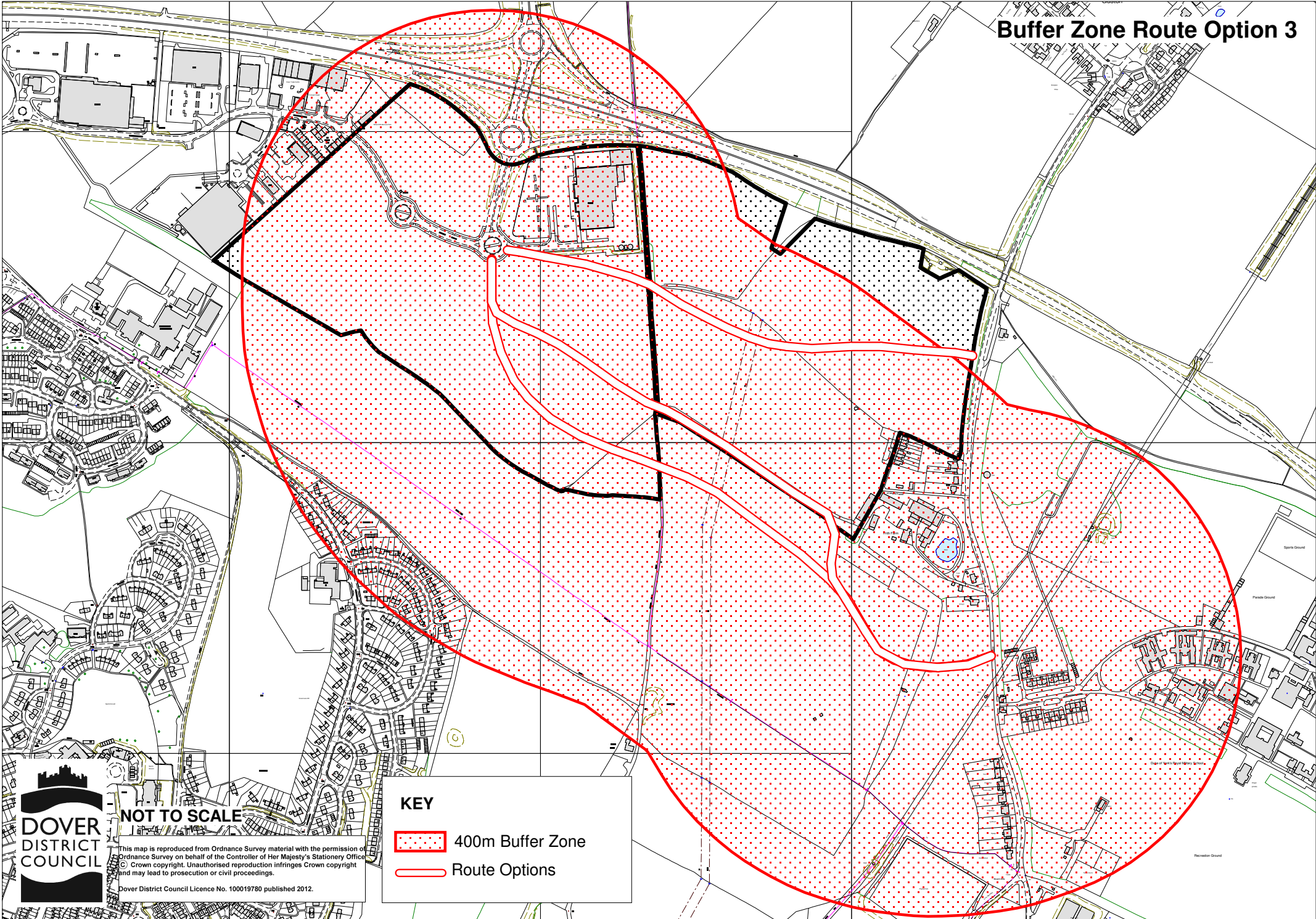
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KEY

-  400m Buffer Zone
-  Route Options

Buffer Zone Route Option 3



KEY

-  400m Buffer Zone
-  Route Options



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Dover Bus Rapid Transit – Potential route options and development study
White Cliffs Business Park to Connaught Barracks

Route Option	Landownership	Length of the route	Cost of construction of a BRT only link ¹	BRT permeability/ and potential bus patronage of the route	Landscape	Ecology	Trees	Residential amenity
1	<p>Multiple land ownership issues:</p> <p>WCBP Phase II - K822769</p> <p>This route option would also necessitate discussions with B&Q as the entrance to this the route would be on third party land and there are questions about the deliverability of this route option given the uncertainty over land ownership.</p> <p>WCBP Phase III – K709137</p>	0.48 miles (0.78km)	£780,000	The whole of WCBP Phase II and Phase III is within 400m of this route	<p>Whilst the northerly alignment would be the shortest distance when compared to the other route options depending on the exact alignment of the route, earthworks would be required at the entrance to B&Q access road in order to take in account the change in levels. As it is unlikely that a BRT could use the B&Q access road another section of road would need to be constructed alongside the B&Q access road and lighting columns. This would increase the visual impact of this route option when compared to routes 2 and 3.</p> <p>Common with all of the other route options the North Downs PROW divides Phase II and Phase III of the WCBP. Measures would need to be put in place to address the severance of this important historical route.</p>	As this site is improved grassland and arable fields, the ecology on this site would be restricted to wildlife associated with the North Downs PROW.	<p>The tree belt along the North Downs PROW is predominantly Sycamore and the removal of these trees is not considered to be a significant issue.</p> <p>In order to achieve the necessary visibility splays, the point of which the new access joins Dover Road would involve the removal of a number of mature trees. This would significantly alter the character and appearance of this section of Dover Road.</p>	This route option may potentially result in a detrimental impact on residential amenity on the properties locating Dover Road at Frith Close, properties and the farm located off St.Martin's Road and Frith Farm lodge. It would involve widening 0.47 km section of Dover Road in order to accommodate a BRT service along this section of Dover Road.

Dover Bus Rapid Transit – Potential route options and development study
 White Cliffs Business Park to Connaught Barracks

Route Option	Landownership	Length of the route	Cost of construction of a BRT only link ¹	BRT permeability/ and potential bus patronage of the route	Landscape	Ecology	Trees	Residential amenity
					<p>If the BRT route alignment was built in isolation of Phase II and Phase III of the WCBP route option 1 would be extremely visible in the wider landscape.</p> <p>Unlike route options 2 and 3 this option would involve the removal of a number of mature trees along Dover Road which would effectively open up views of the planned business park that currently help to screen Phase II and III from Dover Road.</p>			

Dover Bus Rapid Transit – Potential route options and development study
White Cliffs Business Park to Connaught Barracks

2	<p>WCBP Phase II - K822768</p> <p>WCBP Phase III - K709137</p>	0.71 miles (1.141km)	£1,141,000	<p>The whole of WCBP Phase II is within 400m of the BRT route. The majority of Phase III of the WCBP is within 400m of the BRT route. The north east part of the Phase III (0.64 hectares) would not be within 400m. This part of the WCBP would, however, probably be set aside for car parking/landscaping.</p>	<p>The land is generally fairly flat but gently rises to the south. The exact alignment of this route is only indicative but could utilize the existing farm track which is located along the boundary of Phase III of the WCBP.</p> <p>The visual impact of the short section of the route that would be outside of Phase III of the WCBP could be reduced by only building this section as a single carriageway and by restricting this part as route to a BRT/cycleway only. This would have the added advantage that lighting could be installed at a lower level.</p> <p>Where the route joins Dover Road it would need to be positioned between the railway tunnel ventilation shaft and the residential property called 'Arleigh'. The point at which it joins Dover Road would involve the removal of short section of hedgerow although as this is a relatively straight section of road this would be minimal.</p>	<p>If this route option follows the farm track there would be little ecological impact. The part of the route which is located outside of Phase III of the WCBP could include additional hedgerow planting and could involve strengthening the southern section of the hedge along Dover Road which would have a positive ecological advantage.</p>	<p>Tree removal would be restricted to the trees along the North Downs PROW.</p>	<p>The route alignment would need to take into account and safeguard the residential amenity of the residential property called 'Arleigh'.</p>
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Dover Bus Rapid Transit – Potential route options and development study
White Cliffs Business Park to Connaught Barracks

3	<p>WCBP Phase II – K822769</p> <p>WCBP Phase III – K709137</p>	0.70 miles (1.135 km)	£1,135,000	<p>The whole of Phase II of the WCBP would be within 400m of the BRT route. Bringing the BRT route further south means that 3.5 hectares of the north east section of Phase III of the WCBP would not be within 400m of the BRT route which would affect potential bus patronage.</p>	<p>Similar comments apply to route option 2. However, unlike route option 2 more than half of route would not be located within an area of land that is currently allocated/planned for future development. This means that the visual impact of the route option would be greater than route option 1 and 2 as it would not be related to any built development and, being further south, the potential for light pollution on the ridge line above the town would be greater.</p>	<p>Similar comments apply to route option 2 – the section of the route which is not within Phase III of the WCBP could include additional hedgerow planting and could involve strengthening the southern section of the hedge along Dover Road which would have a positive ecological advantage.</p>	<p>The same comments apply to this route as route option 2.</p>	
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Footnote 1: The construction costs have been based on indicative figures that are contained in the WSP Dover BRT Study that assumed a construction cost of £1m per km.

Appendix C –Survey Data - Dover Road

15m Intervals, c'way only
(not accounting for verges).

8.0m
6.6m
5.9m
5.3m
5.1m
5.3m
5.6m
6.3m
8.0m
6.0m
5.9m
5.6m
5.6m
5.5m
5.4m
5.1m
5.1m
4.9m
4.75m
4.8m
4.5m
5.0m

BURGOYNHEIGHTS

ANDIO CRESCENT

CASBINS SQUARE

FORT BURGOYNE
(Casernated Barracks)

FORT BURGOYNE ROAD

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Title

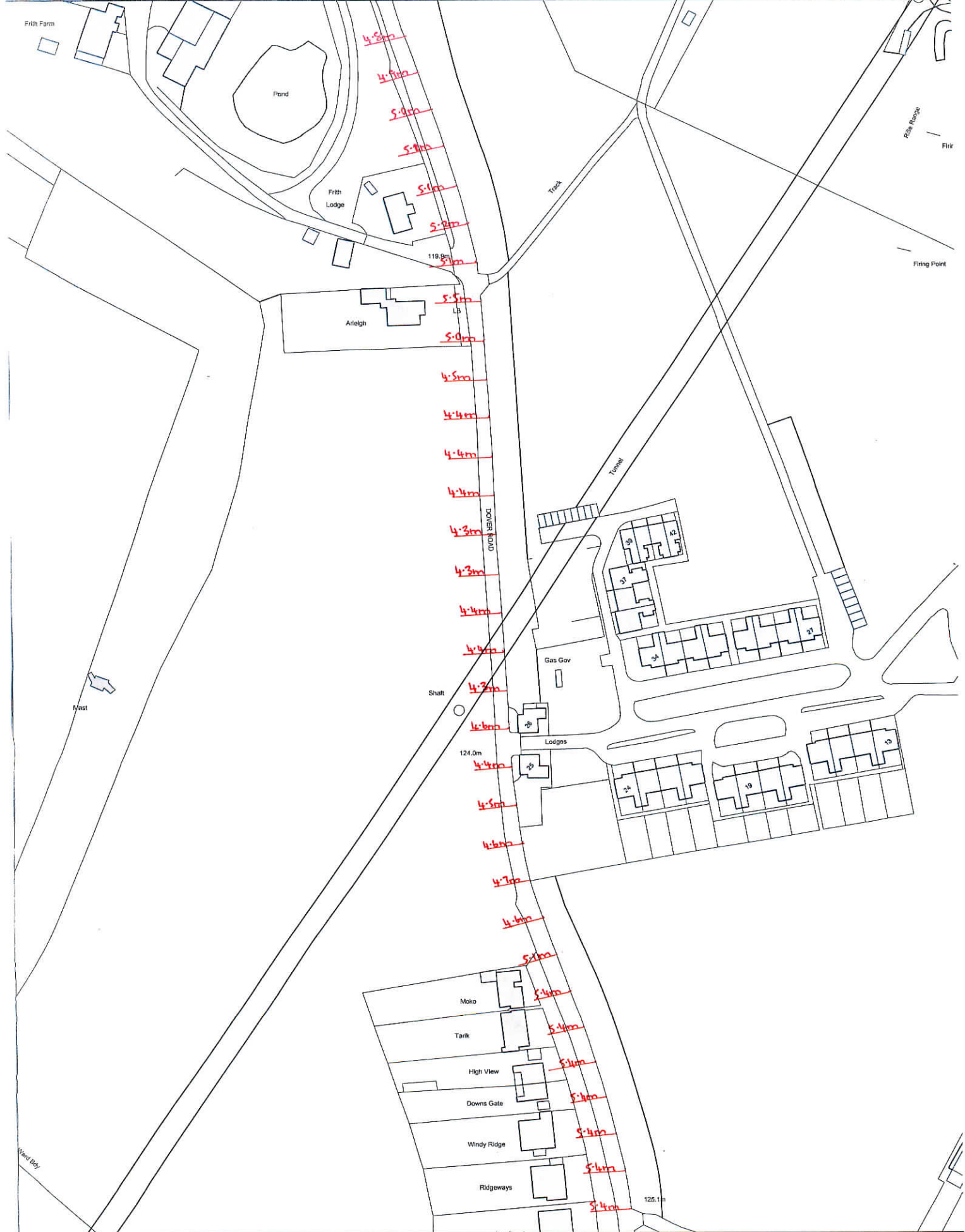
Scale: 1:1,250



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Title

Track

POWELL RD

Cophorne

Path (cm)

119.1m

Tank

Shaft

Pumping Station

Cranbrook

Rosedene

Frith Close

Erebus

ST MARTIN'S ROAD

Frith Farm

5.8m

5.7m

5.8m

6.0m

6.3m

5.5m

5.1m

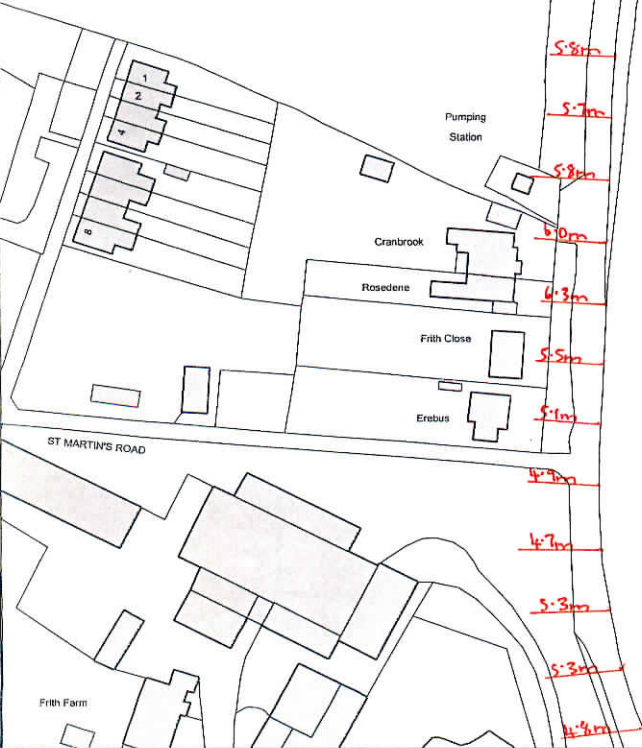
4.7m

4.7m

5.3m

5.3m

4.8m



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Title

Appendix D

Improvement/widening measures for Dover Road

Notes
 1. Proposed layout based on OS base only. Design subject to change once topographical survey is available.
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Date	Auth	Rev	Description
02/12	CRC	A	INITIAL ISSUE

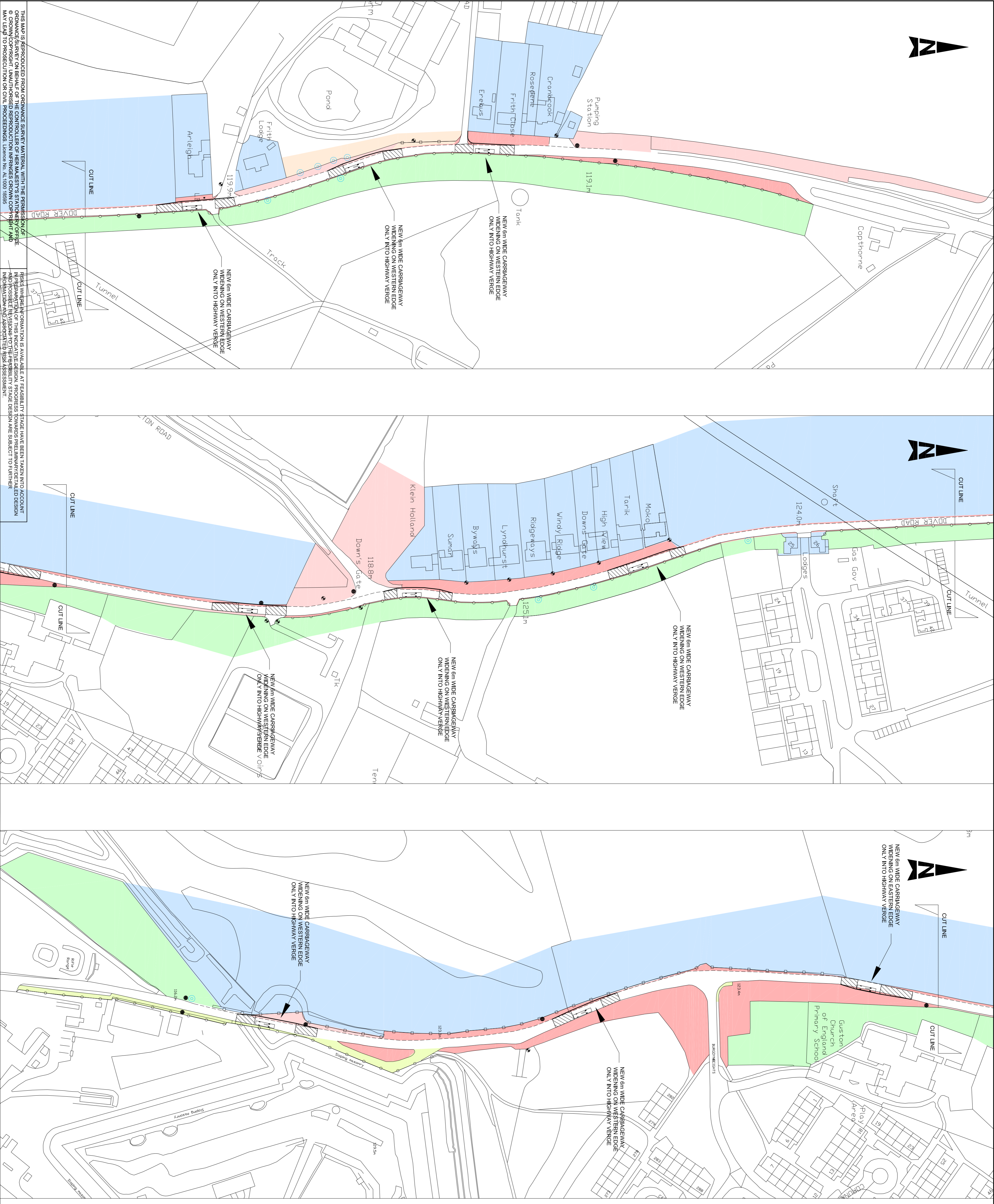
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Client: **DOVER DISTRICT COUNCIL**

Project: **DOVER RAPID TRANSIT**

Sheet Size	A1	Original Scale	1:1250
Status	P	Design/Drawn/Checked/FE	DK
		Date	28/02/12



KEY:

	HIGHWAY VERGE
	HIGHWAY VERGE WITH MATURE TREES
	THIRD PARTY OWNERSHIP
	THIRD PARTY OWNERSHIP MATURE TREES AND SHRUBS
	THIRD PARTY OWNERSHIP GRASS WITH HEDGEROWS
	FOOTWAY
	EXISTING UTILITY POLE
	EXISTING ROAD SIGN POST
	EXISTING MATURE TREE
	EXISTING METAL PALISADE FENCING
	EXISTING POST AND RAIL WIRE FENCING

PROPOSED CARRIAGEWAY WIDENING TO 6m WITH ENTRY AND EXIT TAPERS