

A14 Study: Output 2

ATKINS

Option Generation and Initial Sifting Report
Department for Transport

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1. Introduction

Context and background

The A14 in the local and national context

- 1.1. The A14 is a critical element of the national infrastructure and its effective operation is key to the UK economy and local growth potential. It is a Strategic National Corridor¹ linking the Haven Ports to the Midlands, catering for strategic east-west movements and serving as a major freight artery.
- 1.2. It is a vital route of international, national, regional and local importance. The designation of the route as a **TEN-T route** is recognition of its international importance. In this respect the A14 corridor is the main transport artery for the **Port of Felixstowe** which caters for 40% of UK container trade and which is essential for the economic health and growth of the country. It also provides a strategic north-south link connecting the A1 with the M11.
- 1.3. In addition to its role in the strategic highway network the A14 between Cambridge and Huntingdon also functions as a key link in the local road network, carrying many shorter distance trips. As the main artery serving Cambridge and Huntingdon the A14 is deemed critical to the delivery of additional housing growth aspirations. This additional housing is vital for the development of the Cambridge Sub-region which has a world class economy with further significant development potential if the A14 issues could be overcome. This would create major opportunities for the economy at all levels.

Previous proposals for the A14 corridor in the study area

- 1.4. The 2001 Cambridge to Huntingdon Multi-Modal Study (CHUMMS)² recommended an improvement strategy for the A14 corridor comprising measures including the A14 incident detection and management technologies and the Cambridgeshire Guided Busway (both of which have now been implemented); the Felixstowe to Nuneaton rail freight upgrade (for which work is now underway); and a major road scheme for the section between Ellington and Fen Ditton.
- 1.5. The 2010 Comprehensive Spending Review cancelled the planned implementation of the £1.1 billion A14 Ellington – Fen Ditton scheme (EFD scheme) as it was deemed unaffordable. As part of the Spending Review the Government set out the following position on the A14:

"We recognise that this corridor faces severe congestion, and that mobility along the route is critical for economic success and growth. However, the current scheme is simply unaffordable under any reasonable future funding scenario. The Department has therefore stopped the current scheme....We will undertake a study to identify cost effective and practical proposals which bring benefits and relieve congestion – looking across modes to ensure we develop sustainable proposals. This approach will also provide an opportunity for the private sector to play its part in developing schemes to tackle existing problems in the corridor..."

Study background and objectives

- 1.6. This study has been commissioned in response to this commitment. The study has been commissioned in three parts. The objectives for each part being as follows:

- Output 1: seek to reconfirm our understanding of the nature, scale and importance of the problems affecting the A14 in the Huntingdon and Cambridge areas, developing a list of prioritised challenges (transport problems, and their consequences);
- Output 2: generate and sift potential interventions; and
- Output 3: develop a package of interventions to tackle the prioritised challenges which is affordable, deliverable and value for money.

¹ The A14, between the Haven Ports and the Midlands, is designated as Strategic National Corridor 11.

² Mouchel *et al* for DTLR and GO-East (2001) [Cambridge to Huntingdon Multi-Modal Study Final Report](#)

- 1.7. The study is concerned with a core study area and a wider study area. These are illustrated in Appendix A. The core study area is bounded by Ellington/Alconbury in the west and Fen Ditton in the east on the A14. The wider study area has been identified to consider freight modal shift opportunities benefitting the core study area. This is the Haven Ports, London and the South East to the Midlands and North via the A14 corridor.

A14 Challenge

- 1.8. Alongside the A14 Study, the Department for Transport (DfT) has initiated the 'A14 Challenge'³. The A14 Challenge has two components, the first of which is a web-based survey inviting people who "use the A14, live in the area, or can help with delivery" identify what they think would work best in terms of solutions for the corridor. Views are invited on the scope for improvements to both the national and local road networks, public transport and to road and rail freight facilities.
- 1.9. The second component, to be considered alongside the web-based survey, involves Cambridgeshire, Suffolk and Northamptonshire County Councils in gathering views on the same issues from key stakeholders through a series of discussions. Following the closing date for the A14 Challenge (31st January 2011) the Department will collate potential options, emerging from both components and feed those which are deemed to have merit into the technical workstream to be assessed alongside other emerging options to inform Output 2C.

Study methodology

- 1.10. The study is being carried out in 3 stages. The stages reflect the study objectives described in the previous section. Figure 1 shows the study stages, a brief summary of the tasks in each stage and the anticipated outputs.
- 1.11. The first stage of the study (Output 1) has already reported⁴. It identified priority transport problems and wider challenges in the study area (and beyond) which are summarised in the next section. The wider challenges established the core objectives for the option development work to be undertaken in this, the second stage of the study (Output 2).
- 1.12. The work carried out to support the option identification, generation and initial sifting (presented in this report) has not revisited the Output 1 work - the priority transport problems and wider challenges are taken as a direct input to the process. The links and relationships between the transport problems and wider challenges will be explored further as the study progresses and moves in to subsequent analytical stages.

Terminology

- 1.13. In order to differentiate between different steps in the option generation and sifting process it is helpful to understand the terminology used and the intended meaning.

Option

- 1.14. This is used to refer to:
- a single intervention;
 - a group of similar interventions e.g. lay-by closures at multiple locations; or
 - a collection of interventions at a single location e.g. merge and diverge improvements and capacity enhancements at a single interchange.

- 1.15. Options are discussed further in Section 2.

Component

- 1.16. Components are defined as potential elements of a package. Two types of components have been identified. Core components refer to large-scale infrastructure elements which represent a discrete choice of intervention in a given location. Complementary components refer, generally, to smaller measures which would typically be implemented alongside core components and are intended to reinforce or enhance their impacts.

³ <http://www.dft.gov.uk/consultations/dft-20111212>

⁴ Steer Davies Gleave for DfT (December 2011) A14 Study Output 1 Report

1.17. Components are discussed further in Section 3.

Package

1.18. Packages are defined as potential groups of core and complementary components which could sensibly be delivered together to form a cohesive solution capable of addressing the transport problems and wider challenges.

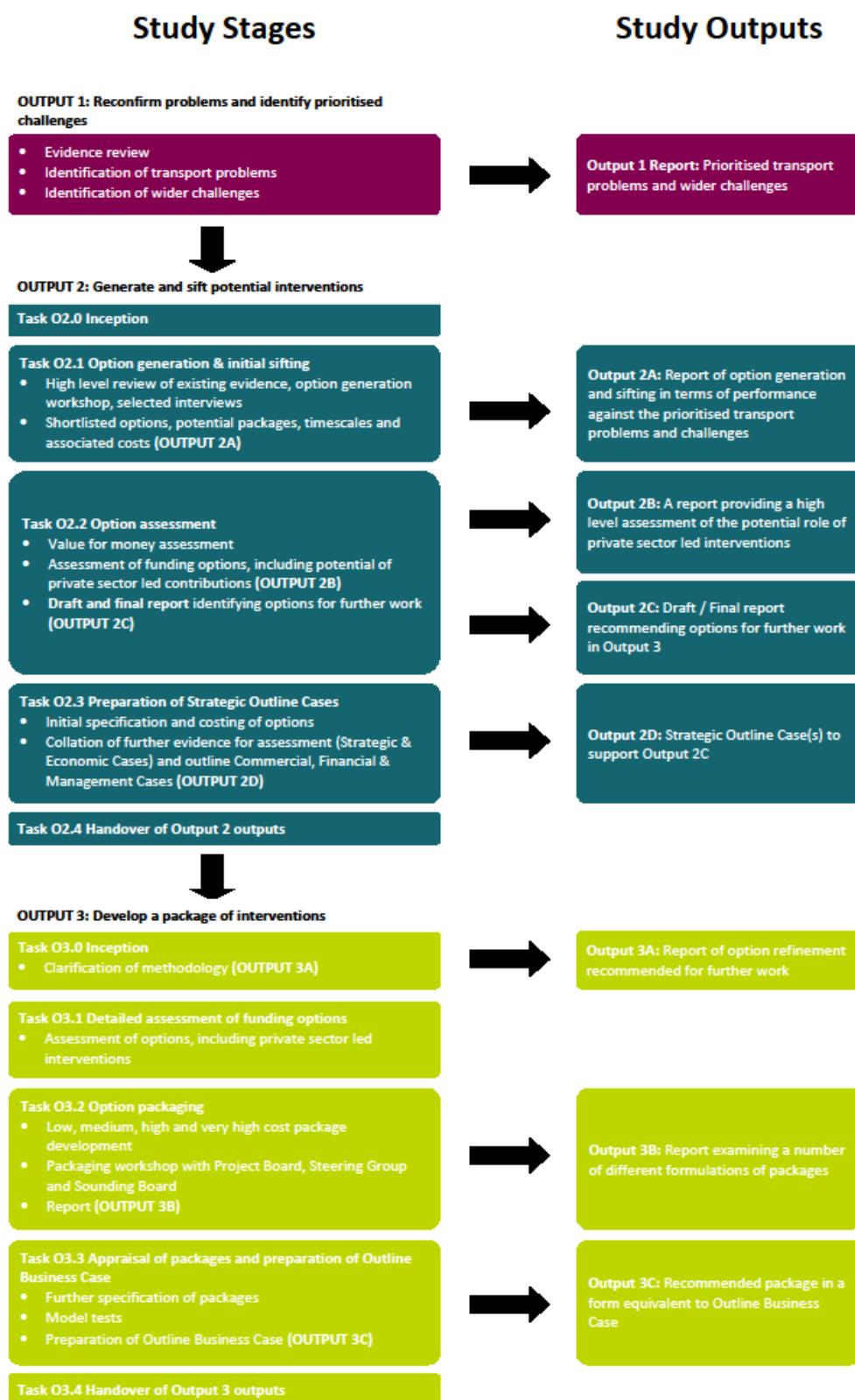
1.19. Packages are discussed further in Section 4.

Output 2 process

1.20. Within Task O2.1 (shown in Figure 1), the process for the option generation and initial sifting can be summarised as follows:

- Step 1 – generate a long-long list of options through a review of earlier studies; and an internal study team workshop;
- Step 2 – review the long-list of options to identify similarities between options, then rationalise options in to a short list of core and complementary components;
- Step 3 – combine components in to packages designed to address the transport problems and wider challenges; and
- Step 4 – ‘score’ the potential performance of the packages against the transport problems and wider challenges.

Figure 1. A14 study process: stages and outputs



The priority challenges identified in Output 1

- 1.21. The purpose of the work undertaken in Output 1 was to reconfirm the understanding of the nature, scale and importance of the problems affecting the A14 in the Huntingdon and Cambridge areas. In particular Output 1 identified a list of prioritised challenges. These are defined as ‘transport problems’ and the ‘wider challenges’ (non-transport consequences) associated with these problems. The prioritised challenges are summarised in the Challenge Matrix shown in Table 1⁵.

Table 1. Challenge matrix

Transport Problems	Wider Challenges						
	Supporting Economic Growth				Impact on quality of life (Social % Environmental impacts)		
	Lost productive time	Supporting growth in the wider UK economy	Supporting growth of Greater Cambridge	Access to labour markets	Quality of life/welfare	Accidents	Air Quality (Health) & Noise
Peak congestion and delay on A14							
Peak congestion and delay on key local roads							
Lack of resilience							
Safety							

Based on Steer Davies Gleave (December 2011) Figure 6.1

Transport problems

- 1.22. Transport problems were identified for both the short-term and the medium to long-term. The short term transport problems are summarised as⁶:
- congestion and delay on the A14 which impacts on strategic long term movements and local traffic;
 - lack of resilience in the A14 corridor, often impacting on local road traffic; and
 - safety on the A14.
- 1.23. All of the problems are anticipated to worsen in the future as traffic growth exacerbates current transport problems.
- 1.24. Medium to long-term transport problems were considered in the context of future drivers of demand. Three primary drivers of demand were identified which it is determined, under a ‘business as usual’ scenario would exacerbate the problems and therefore the wider challenges. These drivers are:
- the background growth in private car demand that will arise as the national economy grows;
 - future localised growth of employment in Cambridge and Cambridgeshire which in turn will support population growth; and

⁵ Based on A14 Study Output 1 Report, page 69, Figure 6.1, Steer Davies Gleave for the Department for Transport

⁶ A14 Study Output 1 Report, page 68, Steer Davies Gleave for the Department for Transport, plus additional text provided by the Project Board.

- forecast growth in freight and strategic traffic.

1.25. Given its dual role of strategic route and local road, the key challenges for the A14 corridor will be to accommodate the increasing use for freight movement that will come from the expansion of the ports and continued growth of long-distance travel north-south and east-west, whilst providing capacity for local access thus facilitating local employment and population growth. If growth in housing and employment could be accommodated without causing unacceptable impacts and costs on the transport network, it will promote economic development in an area that has high growth potential and the opportunity to contribute significantly to the national economy.

Wider challenges

1.26. The identification of the wider challenges in Output 1 was based on an understanding of the impacts of the transport problems on policy imperatives and broader economic, social and environmental priorities, defined as⁷:

- economy – the impact of transport on encouraging economic growth; and
- social and environmental impacts – covering measures of ‘well-being’, including accidents, air quality and health impacts, and access to services and economic ‘welfare’ benefits.

1.27. The following text, taken from the Output 1 report, describes each of the wider challenges⁸.

Lost productive time

- This relates to congestion and associated delay caused to business and freight traffic, where under normal conditions the economic costs of delay have a direct impact on business productivity. This ‘routine’ delay occurs in both peak and inter-peak periods, but is worse and more significant in the peaks.
- The impact of delays associated with lack of resilience is two-fold. First, there is the direct productivity cost of unreliable journey times – delay due to incidents (additional time). Second, there can be additional costs of disruption and day to day variability in journey times when this affects the planned timing of deliveries, meetings etc. which in turn can place significant additional costs on businesses.
- The lost productive time and lost productivity will, in the absence of interventions, increase over time as traffic growth exacerbates current transport problems.

Supporting growth in the wider UK economy

- Enabling the efficient movement of people and freight, from the Channel ports (as a strategic link for North-South movements) and particularly from the Haven ports (as a strategic link for East-West movements) throughout the country. With throughput in the Haven ports forecast to increase from three million TEUs⁹ to eight million TEUs by 2030¹⁰, the A14 has a major role to play in fostering growth and generating wealth through trade.

Supporting growth of the Greater Cambridge area

- The economy in the Cambridge area has high growth potential and is of national and international significance in certain industrial sectors but this will be frustrated by a lack of housing and the ability to move people and goods around freely.
- Enabling additional housing and employment would, other things being equal, contribute positively to the local, regional and national economy due to the high-value work and growth potential that underpin the economy of Greater Cambridge.
- However, transport constraints mean there is a trade-off between the economic growth from additional housing and jobs, and the economic costs that the greater congestion which would come from associated traffic growth would impose upon all businesses.

⁷ A14 Study Output 1 Report, page 68, Steer Davies Gleave for Department for Transport

⁸ This summary is reproduced from the A14 Study Output 1 Report, page 69, Steer Davies Gleave for the Department for Transport

⁹ TEU: twenty-foot equivalent unit

¹⁰ <http://www.portoffelixstowe.co.uk/PUBLICATIONS/JOURNAL/frmfuturedevelopment.aspx>

- The nature of this trade-off and challenge, and the potential options that could be considered, will be different in the short-and long-term. In the short-term the key issue is the potential for identified housing development in the vicinity of the A14 to come forward given current transport constraints.
- In the longer-term the issue revolves around the further development of the existing transport and land use strategy with the aim of efficiently delivering the level of housing that would support the growth of the Greater Cambridge economy. The challenge is the extent to which affordable and cost effective interventions can be developed that mitigate the associated economic costs on the transport network while supporting growth. This implies consideration of land use *and* transport issues and options along the A14 corridor, and also across a wider area.

Access to labour markets

- The success of the Greater Cambridge economy relies on having access to a sufficiently large labour market catchment. In choosing where to work, employees trade-off factors such as job income, house prices, commuting time and quality of life factors. High house prices within Cambridge means that a number of workers have to live some distance away and commute.
- Less attractive commuting (delay and unreliability, increasing cost, plus the adverse impact on quality of life) would, other things being equal, serve to limit Cambridge and Huntingdon's effective labour market catchment and make it a less attractive place for people to work.
- There is a link between labour market access and future housing growth, as the accommodation of additional housing closer to jobs can help increase the labour market catchment while mitigating impacts on the transport network. The significant additional housing planned within Cambridge creates the potential to support a more sustainable pattern of commuting, and also cater for the high demand, particularly among the young, for housing in Cambridge. However, many workers will want and choose to live in more rural locations and disparate commuting patterns (including within households) means that the merely locating new housing near jobs will not necessarily have a marked effect in encouraging more sustainable commuting.

Welfare impacts

- Welfare impacts reflect the measure of dis-benefit associated with travel time congestion and delay, and the leisure time foregone because of this.
- In addition to the direct time costs, there is strong evidence of the additional welfare disbenefit (frustration and annoyance) that people feel when driving in congested conditions.
- Welfare impacts can, in the medium term, have economic consequences if the impact of the quality of life from congested commuting conditions discourages people from working in the area (and is related to the labour market issue above).

Accidents

- Accidents have an economic cost (lost productivity, direct costs to NHS¹¹, Police) and a social cost (pain and suffering of individuals and families etc.).
- Although the accident rate per vehicle mile on much of the route is not significantly above the average for roads built to a similar design standard, this needs to be seen in the context that the road is below the standard to which a modern road would be designed. There are sections where accident rates are much higher than would be expected for roads of a similar standard. However, because traffic flows on the route are high there are a large number of accidents and disruptive incidents that cause delay on the A14 and have knock-on effects on the surrounding network. There is therefore considerable scope to reduce accident rates and the impact of incidents through improving the standard of the road.

¹¹ National Health Service

- As the social costs of accidents are significant, we suggest options should consider whether there is the potential to reduce accident risk and accidents in order to minimise accidents to levels below 'average' rates.

Air quality / health (and noise)

- There are four AQMAs¹² along the A14 corridor within the core study area, where the level of emissions represent a health risk for the surrounding community. The level of emissions (and noise) is related to the volume of traffic, but is also exacerbated when congestion and delay is more acute.
- An additional issue is the localised air quality and noise impacts that can occur when there is significant disruption on the A14, and traffic (including HGV) re-routes to the local network.

Purpose of this report

- 1.28. This report is the first report from Output 2 of the study and presents the results of the initial option generation and sifting exercise (see Task 2.1 in Figure 1). It describes:
- the source inputs for the option generation process and the development of a long-list of options;
 - the initial sifting process for rationalising the long-list of options into a series of potential package components; and
 - the outputs in terms of a set of draft packages for consideration by this study.
- 1.29. The output from Task 2.1, as reported here, is a long-list of potential options and a draft list of core and complementary package components presented as a set of draft packages. A short list of packages, and their constituent components, will be available for further consideration during the assessment process. The next phase of work will be a preliminary assessment of the affordability / fundability and value for money of different components/packages and will make recommendations on packages to be taken forward for more detailed assessment in Output 3. The outputs from this work will be presented in Output 2C. Output 2D will present Strategic Outline Cases to support the packages being recommended in 2C.

¹² Air Quality Management Areas

2. Option identification

Option identification process

- 2.1. The starting point for the initial option identification was a review of work to consider issues in the corridor, namely:
- the Cambridge to Huntingdon Multi-Modal Study (Mouchel, 2001);
 - the Freight Route Utilisation Study (Network Rail, 2007);
 - Strategic Rail Freight Network: The Longer Term Vision (Department for Transport, Sept 2009);
 - London & South East Rail Utilisation Study Draft for Consultation (Network Rail, July 2011);
 - Freight Mode Choice study (Department for Transport, 2010);
 - evidence produced during the development of, and Public Inquiry of, the A14 Ellington to Fen Ditton scheme;
 - the Cambridge Transport Innovation Fund Bid (Cambridgeshire CC, 2007);
 - the 'Access to and around Greater Cambridgeshire' regional DaSTS13 study (Steer Davies Gleave for Cambridgeshire County Council on behalf of East of England Partners, 2010);
 - the Transport and the Economy East of England Study (Steer Davies Gleave for the East of England Development Agency, 2008);
 - the East of England Transport and Carbon Study (Atkins, 2009);
 - the Sustainable transport options to support and deliver housing and economic growth in Key Centres for Development and Change regional DaSTS study (Halcrow Group Limited for Government Office for the East of England, 2010);
 - the Network resilience and adaptation regional DaSTS study (Hyder Consulting (UK) Ltd for the Highways Agency, 2010); and
 - Regional Infrastructure Fund for the East of England (Colin Buchanan and Partners Limited for the East of England Development Agency, 2009).
- 2.2. This review, supplemented with information provided by the Highways Agency (HA) on potential lower-cost solutions for problems experienced on the A14 in the core study area, and information provided by the DfT of the recent assessment of options for immediate investment, generated a long-list of more than 100 options for the core study area. An internal workshop was held to review the options, and to identify and consider additional options which may be able to address the transport problems and wider challenges identified in Output 1. The workshop was attended by representatives of the Highways Agency and Cambridgeshire County Council.
- 2.3. Freight options were also identified through the review of previous studies. The list of freight options was supplemented with information on potential options gained through discussions with Network Rail, and the Haven Gateway Ports¹⁴.

¹³ DaSTS – Delivering a Sustainable Transport System

¹⁴ At the time of preparing the DRAFT Option Generation and Initial Sifting Report the study team had been able to engage with Network Rail. Discussions with Haven Gateway Ports are to be fed in to the option generation process following a meeting in early February.

Long-list of options

2.4. The long-list of options is presented in Appendix B. It includes a range of different types of options with alternatives for:

- on-line highway widening of existing A14;
- off-line highway improvements (i.e. new alignments):
 - North/south of Huntingdon area, in particular a Huntingdon Southern Bypass;
 - northern routes extending towards Newmarket;
 - southern routes centred around the A428/A1198 corridor;
 - local improvements (access roads, auxiliary lanes, junction enhancements); and
 - bypassing Cambridge to the south.
- major A14 junction modifications;
- other highway capacity, resilience and safety measures;
- highway operation and charging;
- public transport improvements;
- rail freight improvements; and
- Travel Demand Management initiatives.

2.5. The long-list of options was then rationalised into ‘core’ and ‘complementary’ package components, as described in the next section.

2.6. Tolling of A14 traffic, has not been included as a discreet option and has not been ruled in or ruled out at this stage. Tolling will be given further consideration as a potential funding mechanism in the context of private sector led investment as part of the option assessment activity undertaken in Task O2.2.

3. Rationalisation of long list of options in to core and complementary components

Introduction

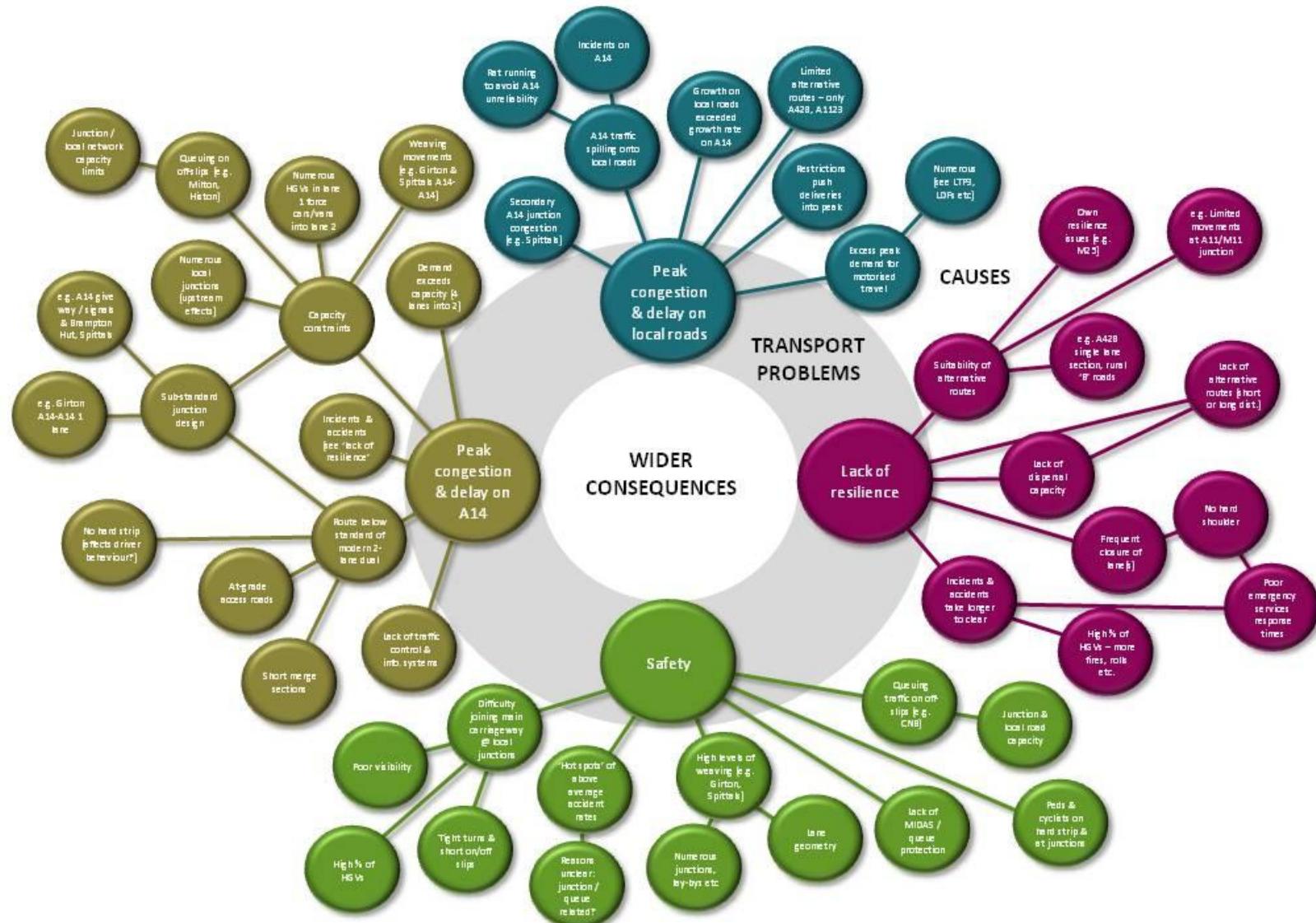
- 3.1. The purpose of the option generation and sifting process is to identify a set of options and/or packages which can address the established transport problems and wider challenges (see section 1) and which are affordable or can be made affordable through alternative funding mechanisms.
- 3.2. A pragmatic approach was taken to the identification of options, to make most use of earlier work and information arising from previous and extensive examination of problems and potential solutions. With that in mind, the options in the long-list were grouped under the different categories identified in paragraph 2.4 to allow for similar options to be viewed side by side and to be presented in a comparable way, where the level of available information on costs, benefits and impacts differs widely.

Rationalisation process

- 3.3. Considering the options in this way, and looking at similarities in what the long-list options do as well as inter-dependencies between them, allowed the long-list to be rationalised into a shorter list of potential package ‘components’. Components were then viewed as building blocks to be combined together in different packages designed to address the transport problems and wider challenges. Specifically, the rationalisation process reflected:
 - the causes of the transport problems in the corridor;
 - the wider challenges which the solution must address;
 - the key functions which an option or package will need to deliver; and
 - information on cost.
- 3.4. It is worth noting that, in identifying options, consideration was given to the underlying *causes* of the ‘transport problems’ identified in Output 1, and to thinking of the transport problems as the symptoms of those causes. By so doing, potential options to resolve the underlying causes of the transport problems could be identified. Figure 2 summarises our interpretation of the underlying causes of the transport problems¹⁵.

¹⁵ Figure 2 is intended to illustrate the relationships between the transport problems and their causes. It is not intended to focus on the links between transport problems and wider challenges.

Figure 2. Causes of transport problems in the A14 corridor



- 3.5. From an understanding of the transport problems, their causes and consequences, it has been possible to identify objectives that potential solutions should seek to support. These are:
- catering for the different needs of local and strategic movements in the corridor;
 - removing/reducing the flow of strategic traffic through Huntingdon;
 - reducing demand for highway movements in the corridor or providing additional capacity such that demand and supply are better balanced;
 - relieving the ‘pinch-points’ at Spittals, Brampton Hut and Girton Interchanges;
 - easing the movement of local trips in to the Greater Cambridge employment area;
 - strengthening the resilience of the corridor and wider strategic road network to incidents;
 - improving safety in the corridor to reduce the number of accidents; and
 - removing freight trips to reduce their impact in the core study area.
- 3.6. Although this a simplified list, it suggests that a successful package will need to support a complex array of objectives. The cancelled A14 Ellington – Fen-Ditton scheme included components which addressed almost all of these issues but, as a result, was extensive in scale and cost.
- 3.7. In compiling the long-list of options, information was gathered about their likely cost, as well as about deliverability, risks, and dependencies where it existed. In reality the level of information available about the majority of options is limited at this stage. This is to be expected as earlier studies only developed information to the level needed to address the issues being examined therein.
- 3.8. Where cost information exists it is mostly out of date and will need to be revisited as the study progresses. In light of this indicative costs have been generated using basic assumptions about unit rates. These figures are intended to provide a relative measure of costs between components only, and should not be treated as absolute values. Cost information will be refined as options/packages move through the assessment process.

‘Core’ and ‘complementary’ components

- 3.9. The options have been rationalised into a more generic set of ‘core’ and ‘complementary’ components. Core components tend to be larger and spatially discreet (i.e. they cannot be combined with another core component in the same location) but which can be combined with other core components in other parts of the corridor. They tend to determine the broad ‘shape’ of each package and the scale of their outcomes.
- 3.10. Complementary components are those which can be delivered in addition to one or more core components and tend to be of smaller scale (although this is not always the case).
- 3.11. The rationalised list of core components are presented in Table 2, and the rationalised list of complementary components is presented in Table 3. Each component, core and complementary, has been categorised into one of three ‘baskets’ as follows:
- highway infrastructure & management;
 - public transport / travel demand management; or
 - rail freight / freight demand management.
- 3.12. For auditing purposes, the tables show the ‘heritage’ of each component by providing the reference numbers of the options on the long list from which each component was derived (see Appendix B). Conversely, for each option in the long list in Appendix B, the core or complementary component which they influenced is shown (or, where a long-list option has been discarded, an explanation is given).
- 3.13. To aid understanding, schematic illustrations of the core highway components are provided in Appendix C.

Huntingdon Railway Viaduct

- 3.14. The withdrawal of the A14 Ellington to Fen Ditton scheme from the Highways Agency's programme has required a rethink in the maintenance strategy for the viaduct. The strategy now involves doing what is necessary to keep the structure in service, for the foreseeable future. This is necessary because at this time it is not known what the recommendations of this study will be and if they will affect the usage of the viaduct. Even if they do affect the viaduct, the timescale for their implementation is not known at this time.
- 3.15. As a result, the option identification process has assumed that the repair will extend the life for the foreseeable future. Notwithstanding this, a number of the core components identified would allow the existing A14 alignment through Huntingdon to be de-trunked or downgraded. However, in developing these core components no assumptions have been made about what would happen to the de-trunked or downgraded route and how this would be dealt with for example removing the viaduct structure and providing local road links. As a result, the cost estimates presented in Section 5 similarly assume no work on the viaduct. Please note however that the cost estimate for core component A does include an allowance for widening/rebuilding the viaduct.
- 3.16. These issues will be explored further, in subsequent stages of the study, if the relevant options are progressed.

Table 2. Core components

Ref	Summary name	Description	Related long-list option nos.
HIGHWAY INFRASTRUCTURE & MANAGEMENT			
A	Online widening Spittals to Bar Hill to D3AP	Online widening of A14 to D3AP Spittals to Bar Hill. Widen/rebuild Huntingdon viaduct. Assumes improved standard (e.g. provision of metre strip, closure of small junctions etc.) and probably additional local access routes similar to the HA proposal for the Bar Hill-Girton section.	6, 55, 75
B/B*	Online widening to D3AP HSB-Bar Hill/HSB-Girton	Online widening of A14 to D3AP between Trinity Foot (option B) or Huntingdon Southern Bypass junction (option B*) and Girton. Assumes improved standard (e.g. provision of metre strip, closure of small junctions etc.). For Option B, could offer lane gain/drop east of Trinity Foot junction.	6, 65, 76
C	Online widening to D4AP Bar Hill-Girton	Widening of main carriageway to D4AP between Bar Hill and Girton plus improved movements at Girton to/from A14 (E). Assumes improved standard (e.g. provision of metre strip, closure of small junctions etc.) and eastbound lane control for A14/A428/Cambridge/M11 traffic	6, 55
D	New local access roads (D2) HSB/Trinity Foot-Girton	New local access roads (D2) between junction with HSB (or Trinity Foot) and Girton with connections between the two for resilience. Alternative to start LARs further west (e.g. Galley Hill) although this requires navigating Fenstanton). Also requires improvements at Girton unless new A428 local link provided (in which case local access roads divert onto A428).	6, 71, 80, 104b
E/E*	New local access roads (D2) Godmanchester-Bar Hill	New local access roads (D2) between Godmanchester and Bar Hill (option E) or Girton (option E*). Limited access for local traffic to main A14 (at Galley Hill).	78, 79, 106b
F	Northern parallel route for strategic traffic with de-trunked A14.	New D2 or D3 route from west of Brampton Hut, north of Huntingdon, St. Ives and Milton, rejoining the A14 west of the A1303. Extension of M11 from Jn 14 to new road. Junctions with A1(M), A141, A10. Existing A14 de-trunked.	16, 21
G	Huntingdon Southern Bypass (HSB)	New D2 (if N-S traffic remains on A14 through Huntingdon) or D3 (if A14 de-trunked) route from west of Brampton Hut to A14 but with less junctions than EFD scheme Section 1 (possibly A1 only, or A1198 too - note if D2 for E-W traffic only, no need for junction with A1). Could follow similar alignment as EFD scheme (joining A14 near Trinity Foot) or follow a shorter alignment rejoining A14 near Hemingford. Either option would require enhancements on A14 between HSB and Girton (the shorter route therefore requires enhancements around Fenstanton).	8, 15, 54, 61, 63, 64, 65, 104a
H	Brampton Hut & Spittals Bypass	D2AP Northern bypass of Brampton Hut from Ellington to A14 Spur NW of Spittals	60, 77
J	A428 / A1198 strategic route.	New D3 (all strategic traffic) or D2 (E-W strategic traffic only, N-S remains on A14) route for strategic traffic: Western section of HSB as far as A1198 then upgraded A1198 (or new parallel alignment) south to A428 and completion of upgrade of A428 east of A1198. Requires downgrading of A14 and/or measures to deter its use for strategic traffic and local access from A428 retained. Also includes new / upgraded M11 Jn 13 to A428 link (if serving N-S traffic as well as E-W). Alternative new alignment from Brampton Hut direct to A428.	12, 17, 22, 67, 68, 69, 70, 81
K	A428 / A1 St Neots strategic route.	New D3 (all strategic traffic) or D2 (E-W strategic traffic only, N-S remains on A14) route for strategic traffic: Full upgrade of A428 between A1 and M11, including new alignment to NE of St Neots. Requires downgrading of A14 and/or measures to deter its use for strategic traffic and local access from A428 retained. Also includes new / upgraded M11 Jn 13 to A428 link (if serving N-S traffic as well as E-W).	12, 17, 22, 67, 68, 69, 70, 81

Ref	Summary name	Description	Related long-list option nos.
L	Short northern route.	New D3 alignment from A14/HSB junction (longer HSB option only), turning east to the north of Oakington and Histon to rejoin A14 east of A1303 (for strategic traffic). Would require grade-separated junction at Trinity Foot. Extension of M11 from Jn 14 to new road. Junctions with A1(M), A141, A10. Existing A14 de-trunked. Alternative: re-join A14 further west?	Not in long list
P	S2 local access roads Spittals / Godmanchester – Girton	Low standard (50mph S2?) local access roads Godmanchester/Spittals-Girton; enhanced Girton. Long-term: new off-line Huntingdon southern bypass.	Not in long list
R	Scaled-back Girton enhancement	Improvements to Girton interchange to allow for free-flow movements to/from widened A14 north of Girton to A14 and M11. A scaled-back version of the full ECI enhancement proposal.	Not in long list
S	Full Girton enhancement	Full enhancement to Girton interchange as per EFD scheme (i.e. catering for local access roads to north).	55
T	Free-flow A14-A14 at Brampton Hut & Spittals	Provision of free-flow movement for A14 traffic at Brampton Hut (new third level flyover) and Spittals (junction moved north-west to accommodate free-flow A14 routing).	Not in long list
PUBLIC TRANSPORT / TRAVEL DEMAND MANAGEMENT			
M(A)	Additional /expanded Park and Ride provision	New Park and Ride sites, e.g. Swavesey and/or Godmanchester, and/or expansion to existing facilities. Potential to include new guideway links.	113
M(B)	Additional / extended bus/Guided Busway Services	New or extended bus services accessing the guideway or making use of an improved A14 (depending on distribution of demand). Service specification to be determined as part of option assessment process.	114
M(C)	Cambridge area licence charge	Charge for travelling within a defined area of Cambridge at certain times. Would apply to private vehicles and freight vehicles.	38
RAIL FREIGHT / FREIGHT DEMAND MANAGEMENT			
O(A)	Ipswich North Curve	Enable trains to run from Felixstowe to Ely without reversing in Ipswich Yard. Provide for increase in freight capacity and capability.	F2
O(B)	Double-track Felixstowe branch line	Provide additional capacity on Felixstowe branch line.	F5
O(C)	March bi-directional freight loop.	Bi-directional freight loop of 775m capability, in order to increase freight capacity on Felixstowe to Nuneaton route and permit longer freight trains.	F18
O(D)	Strategic Rail Freight Interchanges	Support for Strategic Rail Freight Interchange developments (including expansion of existing terminals) along A14 corridor and beyond.	F8-F12

Table 3. Complementary components

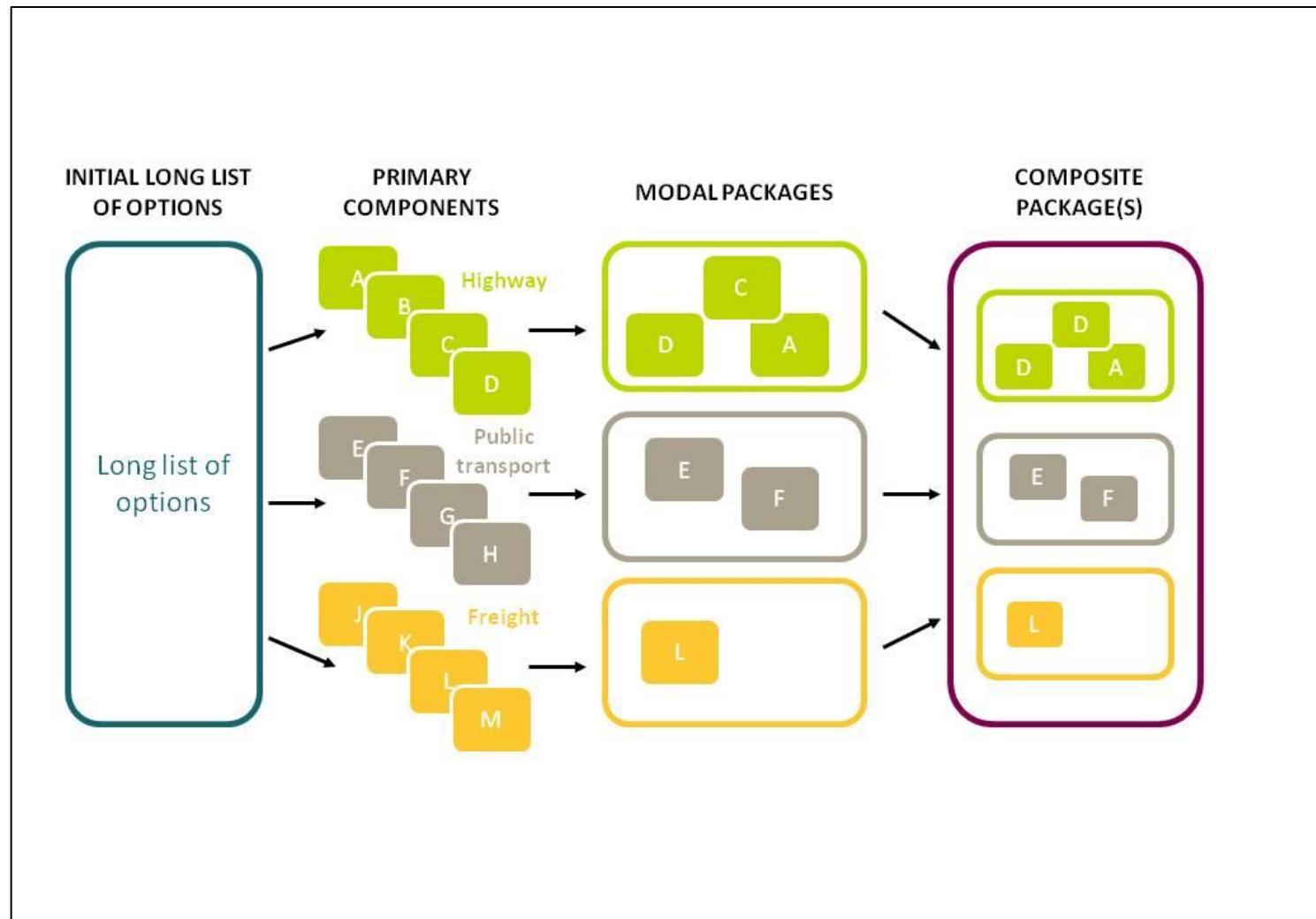
Type	Description (note complementary components may be applicable to more than one location)	Related long-list option no.s
HIGHWAY INFRASTRUCTURE & MANAGEMENT		
Small scale junction improvements	Rationalise / improve local junctions (focus on Hemingford to Trinity Foot section).	78, 79
	Parallel local traffic route Bar Hill – Girton.	80, 81
	Replace M11 north-bound to A14 east-bound loop (Jn14) further.	88, 107
Cambridge Northern Bypass Improvements	Auxiliary lanes (all/part).	18, 71, 119
	Widen to D3 (all/part).	18, 56
	Histon & Milton merge/diverge improvements.	82-86, 118
Resilience / safety	Emergency refuges along trunk route.	116
	Provision of metre strip Fenstanton-Girton on trunk route.	
	Removal of lay-bys on trunk route.	117
Operational & tolling	Reduce speed limit on trunk route.	112
	High occupancy vehicle lanes on trunk route.	93
	Active Traffic Management on trunk route (and possibly parallel local roads).	92
Other	More dispersal capacity on local roads (radials in to Cambridge to avoid spill-over on to A14).	81
PUBLIC TRANSPORT / TRAVEL DEMAND MANAGEMENT		
Public transport / Travel demand management	Better cycling provision from A14-locked villages	120
	Extension of Cambridge Controlled Parking Zone to city boundary.	31
	Behavioural change measures.	123
	Review location of proposed future developments.	98
RAIL FREIGHT / FREIGHT DEMAND MANAGEMENT		
Freight demand management	Freight traffic regulatory measures	F13-F15,F17
	Longer freight trains (30 wagons, 640m trailing length).	F3
	Syston to Wigston – longer term capacity interventions	F19
	Dedicated freight unloading infrastructure in Cambridge and Huntingdon	F16

4. Identification of modal packages

Introduction

- 4.1. Typically, the core components in each ‘basket’ will work better if they are combined together. For example it is unlikely that core component C (online widening to D4AP Bar Hill-Girton) would be proposed if not in combination with core component R or S (improvements at Girton). The same principles apply to the public transport and freight baskets.
- 4.2. Therefore, in this section we have sought to identify realistic and credible combinations of core components *within each basket* that could work together to overcome the transport problems and thus address the wider challenges. Not every possible permutation of core components is represented in the packages. Rather components have been combined into packages with a view to addressing, to a greater or lesser extent, the transport problems, their underlying causes, and objectives of intervention.
- 4.3. Please note that, at this stage our intention is :
 - to establish combinations of core components, and to identify supporting complementary components. Some ‘mandatory’ complementary components have been identified i.e. within a given package they are considered essential to ensure the core components deliver the desired results. As the study progresses, short-listed packages will be refined to maximise positive interaction between core and complementary components; and
 - to establish combinations of core components *within each basket* (referred to here as ‘modal packages’), not to identify holistic combinations of components across the three baskets (this will be undertaken at a later stage in the study process where modal packages are combined into ‘composite packages’ – see Figure 3).
- 4.4. The aim of the study is to identify an optimal solution, i.e. one which addresses all of the transport problems and wider challenges, and which is also affordable. The purpose of the option generation process is to identify a number of sensible packages, with a range of costs, which can be compared and assessed to understand their likely performance. As a consequence, not all packages will fully address all the transport problems and wider consequences and, as such, would be considered to be sub-optimal but, nevertheless may offer the best compromise between outcomes and affordability.
- 4.5. The study process is designed to help decision makers understand the likely scale of benefits associated with a given package and the extent to which it could address the problems and challenges, in return for a given level of investment.

Figure 3. Packaging process



Modal packages

- 4.6. The modal packages identified (showing the core components only) are listed in Table 4 (highway packages), Table 5 (public transport packages) and Table 6 (freight packages). Schematic illustrations of the potential highway packages (core components only) are shown in Appendix D. Appendix E lists all of the components of each modal package (i.e. core and complementary components).

Inclusion of complementary components

- 4.7. A summary of the principles for inclusion of complementary components within modal packages is set out below. At this stage in the option generation process the complementary components are defined in relatively generic terms. Brief descriptions are provided in Table 3.

Small scale junction improvements

Rationalise/Improve local junctions

- 4.8. Where a package has a local access road component there can be a major reduction in junctions to simplify access to/from the trunk route. Where there is no separate local access road all main junctions will need to be retained but these should be improved (particularly lengthening of slips) and minor accesses should be removed as far as possible.

Parallel local traffic route Bar Hill to Girton

- 4.9. This is viewed as an essential component where a package includes on-line widening between Spittals and Bar Hill.

Replace M11 northbound to A14 eastbound loop (Jn 14) further west

- 4.10. This is viewed as an essential component where a package does not contain significant enhancements at Girton Interchange.

Emergency refuges

- 4.11. This component is deemed essential in packages where neither on-line improvements are made to the trunk road or an alternative trunk road alignment are provided. Consideration could be given to as to whether this component should accompany the trunk road section of all options. This would provide a compromise between a motorway (with hard shoulder) and an all-purpose road. This may be worth considering simply due to the high proportion of HGVs and the need to have space to park these vehicles in breakdown situations.

Provision of metre strip

- 4.12. This should be included in all packages that use the existing carriageway, in unaltered or widened form. Any new trunk road carriageway (on-line or off-line) would include a metre strip as standard.

Removal of lay-bys

- 4.13. This should apply to all packages where the existing A14 carriageway is retained as the trunk road.

Reduce speed limit

- 4.14. This can apply to any package where there is a local access road or where the existing A14 is de-trunked (to become a local access road) with the lower speed limit applying to the local access road or to the de-trunked A14. This enables a lower standard (and thus cheaper) local route and creates a differential between the trunk and local routes that could aid tolling. The potential exists for lower speed limits to be imposed on a variable basis via Active Traffic Management (ATM), although legislation does not presently cover this for non-motorway roads.

High Occupancy Vehicle Lanes

- 4.15. This would only be likely to be operationally feasible where at least 3 lane carriageways are provided.

Active Traffic Management

- 4.16. This component should be included in all packages. Consideration could be given to extending the systems to the local road network.

Travel Demand Management/Alternative modes

- 4.17. The potential components identified under the Travel Demand Management/Alternative modes category are varied. Arguably all of these complementary components could be included with any combination of core components although, it is likely that the lower the level of additional capacity provided in the corridor, the greater the need for travel demand management measures will be.
- 4.18. The relationships between the complementary components and the core components will be explored in greater detail as the assessment progresses.

Table 4. Highway packages (core components only shown)

Package Ref	Core components (shown in order from east to west through core study area)				Notes
WIDENING OPTIONS					
ACR	A: Online widening Spittals to Bar Hill to D3AP	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement		
TACR	T: Free-flow A14-A14 at Brampton Hut & Spittals	A: Online widening Spittals to Bar Hill to D3AP	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement	
HACR	H: Brampton Hut / Spittals Bypass	A: Online widening Spittals to Bar Hill to D3AP	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement	
CR	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement			
TCR	T: Free-flow A14-A14 at Brampton Hut & Spittals	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement		
LOCAL ACCESS ROADS (LARs) OPTIONS					
DS	D: LARs (D2) Trinity Foot-Girton	S: Full Girton enhancement			
TDS	T: Free-flow A14-A14 at Brampton Hut & Spittals	D: LARs (D2) Trinity Foot-Girton	S: Full Girton enhancement		
HDS	H: Brampton Hut & Spittals Bypass	D: LARs (D2) Fenstanton-Girton	S: Full Girton enhancement		
E*S	E*: LARs (D2) Godm'r-Girton	S: Full Girton enhancement			
ECR	E: LARs (D2) Godm'r-Bar Hill	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement		
HUNTINGDON SOUTHERN BYPASS (HSB) PLUS WIDENING/LOCAL ACCESS ROADS** OPTIONS					
GB*CR(d)	G: D3AP HSB	B*: Online widening D3AP HSB-Bar Hill	C: Online widening D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement	All strategic traffic via HSB. A14 de-trunked.
GB*CR(r)	G: D2AP HSB	B*: Online widening D3AP HSB-Bar Hill	C: Online widening D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement	Strategic N-S traffic remains on 'old' A14.
GDS (d)	G: D3AP HSB	D: LARs(D2) Fenstanton-Girton	S: Full Girton enhancement		All strategic traffic via HSB. A14 de-trunked.

Package Ref	Core components (shown in order from east to west through core study area)				Notes
GDS(r)	G: D2AP HSB	D: LARs (D2) Fenstanton-Girton	S: Full Girton enhancement		Strategic N-S traffic remains on 'old' A14.
GPR(d)	G: D3AP HSB - part (west of A1198)	P: LARs (S2) Spittals / Godm'r - Girton	R: Scaled-back Girton enhancement		All strategic traffic via HSB. A14 de-trunked.
GPR(r)	G: D2AP HSB	P: LARs (S2) Spittals / Godm'r – Girton	R: Scaled-back Girton enhancement		Strategic N-S traffic remains on 'old' A14.
NEW ROUTE OPTIONS					
F	F: Northern parallel route.				All strategic traffic via new route. A14 de-trunked.
GL	G: D3AP HSB	L: Short northern route (D3).			All strategic traffic via new route. A14 de-trunked.
G(part)J(d)	G: D3AP HSB - part (west of A1198)	J: A428 / A1198 strategic route.			All strategic traffic via new route. A14 de-trunked.
G(part)J(r)	G: D2AP HSB - part (west of A1198)	J: A428 / A1198 strategic route.			Strategic N-S traffic remains on 'old' A14.
K	K: D3AP A428 / A1 St Neots strategic route.				All strategic traffic via new route. A14 de-trunked.

Notes to Table 4

A number of the packages including the Huntingdon Southern Bypass have two derivatives where:

- The '(d)' derivatives assume that the **A14 is de-trunked/downgraded** between Brampton Hut, the A1(M) and the point at which the Huntingdon Southern Bypass rejoins the existing A14 alignment (in the Hemingford-Trinity Foot area). In this derivative, the Huntingdon Southern Bypass would be D3AP standard to accommodate both north-south and east-west strategic traffic.
- The '(r)' derivatives assume that the A14 is not de-trunked/downgraded but that north-south strategic traffic (and some local traffic) continues to use the existing alignment past Huntingdon whilst strategic east-west (and some local traffic) uses the Huntingdon Southern Bypass. In this derivative, the Huntingdon Southern Bypass would be D2AP standard as it would not need to accommodate as much traffic.

Both derivatives would allow for full free-flow movement for strategic traffic and so perform similarly in economic terms. The key advantage of the '(d)' derivatives is that they remove strategic north-south traffic from the vicinity of Huntingdon. However, in so doing, they do so at the expense of a longer route for strategic north-south traffic; potential overload on the A1 between Brampton Hut and Alconbury; and underuse of existing assets such as the A1 spur north of Spittals and the (to be repaired) Huntingdon viaduct.

Table 5. Public transport / travel demand management packages (core components only shown)

Package Ref	Core components				Notes
M(A)	Additional /expanded Park and Ride provision				<i>Would need to be supported by enhanced service provision.</i>
M(B)	Additional / extended bus/Guided Busway Services				
M(AB)	Additional /expanded Park and Ride provision	Additional / extended bus/Guided Busway Services			
M(ABC)	Additional /expanded Park and Ride provision	Additional / extended bus/Guided Busway Services	Cambridge area licence charge		<i>Fiscal demand management only introduced alongside maximum public transport interventions.</i>

Table 6. Freight packages (core components only shown)

Package Ref	Core components				Notes
O(ABCD)	Ipswich North Curve	Double-track Felixstowe branch line	March bi-directional freight loop.	Strategic Rail Freight Interchanges	<i>Assumes that timetabling would be reviewed to maximise benefits.</i>
O(D)	Strategic Rail Freight Interchanges				

5. Modal packages for further assessment

Initial assessment of modal packages

- 5.1. An initial assessment has been made of the performance of each modal package in terms of the degree to which it addresses the transport problems and wider challenges shown in Table 1. This has been done using a simple scoring system where each package is scored between -3 and +3 depending on the scale and direction of impact with +3 being a very positive impact, -3 being a very negative impact and 0 being a negligible impact. This scoring is shown in Table 5 below (a full version of this table, showing package descriptions and complementary components can be found in Appendix E). Some packages have not been scored as the components are not yet sufficiently defined to make this a meaningful exercise.
- 5.2. It should be noted that, at this stage, this is a very broad assessment based on professional judgement rather than any form of travel demand, traffic or economic forecasting. As such, scores should be treated with caution and are presented in draft for discussion by the Project Board.

Table 7. Initial assessment of modal packages against transport problems and wider challenges

Package ref	TRANSPORT PROBLEMS ADDRESSED					WIDER CHALLENGES ADDRESSED						
	Peak congestion & delay on A14	Peak congestion & delay on key local roads	Lack of resilience	Safety	TOTAL	Lost productive time	Supporting economic growth of Gtr Cambridge	Access to labour markets	Quality of life / welfare	Accidents	Air quality (health) & noise	TOTAL
HIGHWAY INFRASTRUCTURE & MANAGEMENT PACKAGES												
<i>WIDENING</i>												
CR	0	0	0	2	2	0	0	0	1	2	0	3
ACR	1	2	2	2	7	1	1	1	1	1	-3	2
TACR	2	2	2	2	8	1	1	1	1	1	-3	2
HACR	2	2	2	2	8	1	1	1	1	2	-3	3
TCR	0	0	0	2	2	0	0	0	0	2	0	2
<i>LOCAL ACCESS ROADS</i>												
DS	1	1	1	2	5	2	3	3	2	2	0	12
TDS	1	1	1	2	5	1	1	1	1	1	0	5
HDS	1	1	1	2	5	1	1	1	1	2	0	6
E*S	2	2	2	2	8	2	2	2	2	2	0	10
ECR	2	2	1	1	6	1	1	1	1	1	0	5
<i>HUNTINGDON SOUTHERN BYPASS PLUS WIDENING/LOCAL ACCESS ROADS</i>												
GB*CR(d)	2	1	2	2	7	2	1	1	2	2	3	11
GB*CR(r)	2	2	1	2	7	2	2	1	1	2	2	10
GDS (d)	2	2	2	3	9	2	1	2	2	3	3	13
GDS(r)	2	2	2	3	9	2	2	2	2	3	2	13
GPR(d)	2	2	2	3	9	2	2	3	3	3	3	16
GPR(r)	2	2	2	3	9	2	3	3	3	3	2	16
<i>NEW ROUTES</i>												
F	3	3	3	3	12	3	2	2	2	3	3	15
GL	3	3	2	2	10	2	2	2	2	2	2	12
G(part)J(d)	2	2	3	3	10	2	2	3	3	3	2	15
G(part)J(r)	2	2	3	3	10	2	3	3	3	3	2	16
K	3	2	3	3	11	2	3	3	3	3	-1	13
PUBLIC TRANSPORT / PASSENGER DEMAND MANAGEMENT PACKAGES												
M(A)	1	1	0	0	2	1	1	1	0	0	0	3
M(B)	1	1	0	0	2	1	1	1	0	0	0	3
M(AB)	1	1	0	0	2	1	1	1	0	0	0	3
M(ABC)	2	2	0	0	4	1	1	-1	0	0	0	1
RAIL FREIGHT / FREIGHT DEMAND MANAGEMENT PACKAGES												
O(ABCD)	1	0	1	0	2	1	1	0	1	1	0	4
O(D)	0	0	0	0	0	0	1	0	0	0	0	1

Review of modal packages

- 5.3. As described in the previous chapter, 23 packages have been developed during Task 2.1. This chapter provides a commentary on each package describing:
- The extent to which it might address the transport problems;
 - a broad indication of cost; and
 - an initial indication of its ability to generate revenue to support private sector investment.
- 5.4. Please note the descriptions below relate to the core components. Additional complementary components which are considered as necessary for certain packages may not be referred to in the description.

Cost estimates

- 5.5. Cost estimates have been derived for each package based on their constituent core components and those complementary components identified as 'mandatory' in Appendix E. At this stage in the study costs are indicative only. They are presented in broad ranges to illustrate the likely order of magnitude for a particular package. The following ranges have been used:
- <£250 million;
 - £251 million - £500 million;
 - £501 million - £750 million;
 - £751 million - £1,000 million; and
 - >£1,000 million.
- 5.6. Basic construction costs have been derived using unit rates. In addition to basic construction costs, allowance has been included for costs associated with:
- preliminaries;
 - utilities;
 - land;
 - environmental mitigation; and
 - risk.
- 5.7. Costs shown are outturn estimates:
- based on 2006 prices;
 - assuming a five year construction programme commencing in 2013/2014;,
 - assuming an opening year of 2017/18; and
 - reflecting broad assumptions regarding inflation in-line with those applied to the cancelled A14 EFD scheme.
- 5.8. An allowance for optimism bias has been made at 44% in line with DfT appraisal guidance¹⁶.
- 5.9. Cost estimates will change as packages are refined and components are specified in more detail. As a scheme progresses it is expected that greater certainty about base construction costs will be reflected in the application of lower levels of optimism bias.
- 5.10. All of these factors mean that the package costs presented in this section are not directly comparable with the A14 EFD scheme costs. The A14 EFD scheme was assumed to have an earlier opening year of 2015/16 (affecting the level of inflation) and would have included a much lower level of optimism bias reflecting the advanced stage of development when the scheme was cancelled.

¹⁶ WebTAG Unit 3.5.9 - The Estimation and Treatment of Scheme Costs

Highway infrastructure & management packages

Package 'CR'

Description

Online widening to D4AP in each direction between Bar Hill and Girton with associated measures to improve the standard throughout (e.g. metre strip); plus a scaled-back (compared to the EFD scheme) enhancement of Girton interchange, primarily to improve movements between the A14 north and east of the junction. Would probably require enhancements to the western end of the Cambridge Northern Bypass.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> • 33% increase in capacity of mainline Bar Hill-Girton (the busiest section). • Improves A14-A14 movement at Girton, reducing queuing north and east of Girton. 	<ul style="list-style-type: none"> • Does not resolve congestion at Brampton Hut or Spittals (and is likely to worsen the problem westbound). • Does not remove strategic traffic from close proximity to Huntingdon. • Does not resolve congestion issues west of Bar Hill. • Lack of full Girton enhancement may negate benefits of additional capacity to west.
Indicative cost estimate	Ability to generate revenue stream
<£250 million	Low – only modest improvement. Toll would encourage diversion.

Package 'ACR'

Description

Online widening to add one lane in each direction between Spittals and Girton with associated measures to improve the standard throughout (e.g. metre strip) and eastbound lane control for A14/A428/Cambridge/M11 traffic. Plus a scaled-back (compared to the EFD scheme) enhancement of Girton interchange, primarily to improve movements between the A14 north and east of the junction. Would probably require enhancements to the western end of the Cambridge Northern Bypass.

An important package to consider as it tests the effect of releasing capacity on the dual 2 lane section whilst retaining the overall metering effect of Spittals.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> • 50% increase in capacity of mainline Spittals – Bar Hill, 33% Bar Hill-Girton. • Improves A14-A14 movement at Girton, reducing queuing north and east of Girton. • Improved resilience. 	<ul style="list-style-type: none"> • Does not resolve congestion at Brampton Hut or Spittals. • Would require widening of Huntingdon Viaduct. • Does not remove strategic traffic from close proximity to Huntingdon. • Could exacerbate congestion on CNB east of Girton without mitigation.
Indicative cost estimate	Ability to generate revenue stream
£501-750 million	Low/moderate – but lack of alternatives for traffic wishing to avoid toll.

Package 'TACR'

Description

Junction improvements to provide free-flow A14-A14 movements at Brampton Hut and Spittals. Online widening to add one lane in each direction between Spittals and Girton with associated measures to improve the standard throughout (e.g. metre strip); plus a scaled-back (compared to the EFD scheme) enhancement of Girton interchange, primarily to improve movements between the A14 north and east of the junction. Would probably require enhancements to the western end of the Cambridge Northern Bypass.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> • 50% increase in capacity of mainline Spittals – Bar Hill, 33% Bar Hill-Girton. • Provides free-flow A14-A14 movements at Brampton Hut and Spittals. • Improves A14-A14 movement at Girton, reducing queuing north and east of Girton. • Improved resilience. 	<ul style="list-style-type: none"> • Does not remove strategic traffic from close proximity to Huntingdon. • Would require widening of Huntingdon Viaduct. • Viability of free-flow junction improvements at Brampton Hut and Spittals still to be confirmed. • Could exacerbate congestion on CNB east of Girton without mitigation.
Indicative cost estimate	Ability to generate revenue stream
£750 million - £1,000 million	Low/moderate – but lack of alternatives for traffic wishing to avoid toll.

Package 'HACR'

Description

New northern alignment bypassing Brampton Hut and Spittals to provide A14-A14 free-flow. Online widening to add one lane in each direction between Spittals and Girton with associated measures to improve the standard throughout (e.g. metre strip); plus a scaled-back (compared to the EFD scheme) enhancement of Girton interchange, primarily to improve movements between the A14 north and east of the junction. Would probably require enhancements to the western end of the Cambridge Northern Bypass.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> • 50% increase in capacity of mainline Spittals – Bar Hill, 33% Bar Hill-Girton. • Provides free-flow A14-A14 movements at Brampton Hut and Spittals. • Improves A14-A14 movement at Girton, reducing queuing north and east of Girton. • Improved resilience. 	<ul style="list-style-type: none"> • Does not remove strategic traffic from close proximity to Huntingdon. • Would require widening of Huntingdon Viaduct. • Could exacerbate congestion on CNB immediately east of Girton without mitigation.
Indicative cost estimate	Ability to generate revenue stream
£501-750 million	Low/moderate – but lack of alternatives for traffic wishing to avoid toll.

Package 'TCR'

Description

Junction improvements to provide free-flow A14-A14 movements at Brampton Hut and Spittals. Online widening to D4AP in each direction between Bar Hill and Girton with associated measures to improve the standard throughout (e.g. metre strip); plus a scaled-back (compared to the EFD scheme) enhancement of Girton interchange, primarily to improve movements between the A14 north and east of the junction. Would probably require enhancements to the western end of the Cambridge Northern Bypass.

Key strengths

- 33% increase in capacity of mainline Bar Hill-Girton (the busiest section).
- Provides free-flow A14-A14 movements bypassing Brampton Hut and Spittals.
- Improves A14-A14 movement at Girton, reducing queuing north and east of Girton.

Key weaknesses

- Viability of free-flow junction improvements at Brampton Hut and Spittals still to be confirmed.
- Does not remove strategic traffic from close proximity to Huntingdon.
- Does not resolve congestion issues west of Bar Hill (and is likely to exacerbate them).
- Lack of full Girton enhancement may negate benefits of additional capacity to west.

Indicative cost estimate

£251-500 million

Ability to generate revenue stream

Low – only modest improvement. Toll would encourage diversion.

Package 'DS'

Description

Parallel local access roads between Trinity Foot (lane gain/drop to east of junction) and Girton. Alternatively local access roads could extend west to Galley Hill junction. Full enhancement of Girton interchange as envisaged in EFD scheme.

Key strengths

- Overcomes 'backing up' effect of Swavesey junction.
- Resolves Girton capacity issues.

Key weaknesses

- Does not resolve congestion at Brampton Hut or Spittals.
- Does not remove strategic traffic from Huntingdon.
- Does not resolve eastbound congestion issues between Spittals and Trinity Foot (although metered by Spittals).
- Likely to worsen westbound congestion especially on approach to D2 section towards Spittals.
- Could exacerbate congestion on CNB immediately east of Girton without mitigation.

Indicative cost estimate

£501-750 million

Ability to generate revenue stream

Low – could toll main carriageway but would encourage diversion to LARs.

Package 'TDS'

Description

Junction improvements to provide free-flow A14-A14 movements at Brampton Hut and Spittals. Parallel local access roads between Trinity Foot (lane gain/drop to east of junction) and Girton. Alternatively local access roads could extend west to Galley Hill junction. Full enhancement of Girton interchange as envisaged in EFD scheme.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> • Provides free-flow A14-A14 movements at Brampton Hut and Spittals. • Overcomes 'backing up' effect of Swavesey junction. • Segregates strategic and local traffic approaching Girton. • Resolves Girton capacity issues. 	<ul style="list-style-type: none"> • Viability of free-flow junction improvements at Brampton Hut and Spittals still to be confirmed. • Does not remove strategic traffic from close proximity to Huntingdon. • Likely to exacerbate eastbound congestion issues between Spittals and Trinity Foot. • Likely to worsen westbound congestion approaching D2 section west of Trinity Foot and approaching Spittals. • Could exacerbate congestion on CNB immediately east of Girton without mitigation.
Indicative cost estimate	Ability to generate revenue stream
£751 million - £1,000 million	Low – could toll main carriageway but would encourage diversion to LARs.

Package 'HDS'

Description

New northern alignment bypassing Brampton Hut and Spittals to provide A14-A14 free-flow. Parallel local access roads between Trinity Foot (lane gain/drop to east of junction) and Girton. Alternatively local access roads could extend west to Galley Hill junction. Full enhancement of Girton interchange as envisaged in EFD scheme.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> • Provides free-flow A14-A14 movements bypassing Brampton Hut and Spittals. • Segregates strategic and local traffic approaching Girton. • Resolves Girton capacity issues. • Overcomes 'backing up' effect of Swavesey junction. 	<ul style="list-style-type: none"> • Does not remove strategic traffic from close proximity to Huntingdon. • Likely to worsen eastbound congestion issues between Spittals and Trinity Foot • Likely to worsen westbound congestion approaching D2 section west of Trinity Foot / Galley Hill and approaching Spittals. • Could exacerbate congestion on CNB east of Girton without mitigation.
Indicative cost estimate	Ability to generate revenue stream
£751 million - £1,000 million	Low – could toll main carriageway but would encourage diversion to LARs.

Package 'E*S'

Description

Parallel local access roads between Godmanchester and Girton. Full enhancement of Girton interchange as envisaged in EFD scheme.

Key strengths

- Doubling (or more) of capacity on most of core route, but critically not at Huntingdon Viaduct.
- Resolves Girton capacity issues.
- Improved resilience.

Key weaknesses

- Does not resolve congestion at Brampton Hut or Spittals.
- Likely to worsen eastbound congestion between Spittals and Godmanchester.
- Does not remove strategic traffic from close proximity to Huntingdon.
- Likely to increase traffic in Godmanchester.
- Likely to worsen westbound congestion approaching D2 section west of Godmanchester and approaching Spittals.
- Would require problematic 'bypassing' of Fenstanton.
- Could exacerbate congestion on CNB east of Girton without mitigation.

Indicative cost estimate

£751 million - £1,000 million

Ability to generate revenue stream

Low/moderate – could toll main carriageway but would encourage diversion to LARs.

Package 'ECR'

Description

Parallel local access roads between Godmanchester and Bar Hill, then online widening to D4AP in each direction between Bar Hill and Girton with associated measures to improve the standard throughout (e.g. metre strip); plus a scaled-back (compared to the EFD scheme) enhancement of Girton interchange, primarily to improve movements between the A14 north and east of the junction. Would probably require enhancements to the western end of the Cambridge Northern Bypass.

Key strengths

- Doubling (or more) of capacity on most of core route, but critically not at Huntingdon Viaduct.
- Improves A14-A14 movement at Girton, reducing queuing north and east of Girton.
- Improved resilience.

Key weaknesses

- Does not resolve congestion at Brampton Hut or Spittals.
- Likely to worsen eastbound congestion between Spittals and Godmanchester
- Does not remove strategic traffic from proximity to Huntingdon.
- Likely to increase traffic in Godmanchester
- Likely to worsen westbound congestion approaching D2 section west of Godmanchester and approaching Spittals.
- Would require problematic 'bypassing' of Fenstanton.
- Lack of full Girton enhancement may negate benefits of additional capacity to west.

Indicative cost estimate

£501-750 million

Ability to generate revenue stream

Low/moderate – could toll main carriageway

	<p>but would encourage diversion to LARs. Tolling D4AP section leaves local traffic without alternative route.</p>
Packages 'GB*CR(d)' and 'GB*CR(r)'	
Description	Huntingdon Southern Bypass rejoining A14 between Hemingford and Trinity Foot. A14 then widened to D3AP to Bar Hill then D4AP to Girton (and to improved standards). Scaled-back (compared to the EFD scheme) enhancement of Girton interchange to improve A14-A14 movement. Would probably require enhancements to the western end of the Cambridge Northern Bypass. In the (r) derivative, north-south traffic remains on the existing alignment through Huntingdon and the HSB is built as D2AP. In the (d) derivative, all strategic traffic uses a D3AP HSB, and the existing A14 is de-trunked/downgraded between the A1(M), Brampton Hut and Hemingford-Trinity Foot. In the (r) derivative, the HSB is for east-west trips only, meaning that a junction with the A1 would not be required.
Key strengths	<ul style="list-style-type: none"> • Removes (d) or reduces (r) strategic traffic from close proximity to Huntingdon. • Removes A14-A14 traffic from Brampton Hut and Spittals. • 100% increase in capacity of mainline HSB – Bar Hill, 33% Bar Hill-Girton. • Improves A14-A14 movement at Girton, reducing queuing north and east of Girton. • Improved resilience.
Key weaknesses	<ul style="list-style-type: none"> • Derivative (r) only partially removes strategic traffic from Huntingdon. • In the (d) derivative, north-south traffic could continue to use on the de-trunked A14 through Huntingdon due to length of HSB route. • In the (d) derivative, the dual 2 lane section of the A1 north of Brampton Hut may become overloaded. • Could require problematic 'bypassing' of Fenstanton.
Indicative cost estimate	<p>£751 million - £1 billion (d) £751 million - £1 billion (r)</p>
Ability to generate revenue stream	Moderate/high – tolling of strategic traffic on HSB - especially in (d) derivative; or 'HOT' lanes on main carriageway between HSB and Girton.

Packages 'GDS (d)' and 'GDS(r)'

Description

Huntingdon Southern Bypass rejoining A14 between Hemingford and Trinity Foot and continuing widening to start of local access roads. Parallel local access roads between Trinity Foot (lane gain/drop to east of junction) and Girton. Alternatively local access roads could extend west to Galley Hill junction. Full enhancement of Girton interchange as envisaged in EFD scheme. In the (r) derivative, north-south traffic remains on the existing alignment through Huntingdon and the HSB is built as D2AP. In the (d) derivative, all strategic traffic uses a D3AP HSB, and the existing A14 is de-trunked/downgraded between the A1(M), Brampton Hut and Hemingford-Trinity Foot. In the (r) derivative, the HSB is for east-west trips only, meaning that a junction with the A1 would not be required.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> • Doubling (or more) of capacity on most of core route. • Removes some (r) or all (d) strategic traffic from Brampton Hut and Spittals. • Removes (d) or reduces (r) strategic traffic from close proximity to Huntingdon. • Segregates strategic and local traffic approaching Girton. • Resolves Girton capacity issues. • Improved resilience. 	<ul style="list-style-type: none"> • Derivative (r) only partially removes strategic traffic from proximity to Huntingdon. • In the (d) derivative, north-south traffic could continue to use on the de-trunked A14 through Huntingdon due to length of HSB route. • In the (d) derivative, the dual 2 lane section of the A1 north of Brampton Hut may become overloaded. • Could require problematic 'bypassing' of Fenstanton. • Environmental issues of HSB. • Very expensive.
Indicative cost estimate >£1,000 million (d) >£1,000 million (r)	Ability to generate revenue stream Moderate/high – tolling of strategic traffic on HSB – especially in (d) derivative; or on main carriageway between HSB and Girton (alternative route via LARs).

Packages 'GPR(d)' 'GPR(r)'

Description

Initially, parallel local access roads (of lower S2 standard) between Spittals (or Godmanchester if not feasible) and Girton. Scaled-back (compared to the EFD scheme) enhancement of Girton interchange, primarily to improve A14-A14 movement and access from the LARs to Huntingdon Road. In the longer-term, inclusion of Huntingdon Southern Bypass rejoining A14 between Hemingford and Trinity Foot. In the (r) derivative, north-south traffic remains on the existing alignment through Huntingdon and the HSB is built as D2AP. In the (d) derivative, all strategic traffic uses a D3AP HSB, and the existing A14 is de-trunked/downgraded between the A1(M), Brampton Hut and Hemingford-Trinity Foot.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> • Removes some (r) or all (d) strategic traffic from Brampton Hut and Spittals. • Removes (d) or reduces (r) strategic traffic from close proximity to Huntingdon. • Provides dedicated local route between Huntingdon and Cambridge. • Improves A14-A14 movement at Girton, reducing queuing north and east of Girton. • Overcomes 'backing up' effect of Swavesey junction. 	<ul style="list-style-type: none"> • Derivative (r) only partially removes strategic traffic from close proximity to Huntingdon. • In the (d) derivative, north-south traffic could continue to use on the de-trunked A14 through Huntingdon due to length of HSB route. • Could worsen westbound congestion especially approaching Spittals until HSB delivered. • May not resolve congestion issues west of Bar Hill until HSB delivered. • Could require problematic 'bypassing' of Fenstanton. • Lack of full Girton enhancement may negate benefits of additional capacity to west. Full scheme would cost considerably more.
Indicative cost estimate >£1,000 million (d) >£1,000 million (r)	Ability to generate revenue stream Moderate/high – tolling of strategic traffic on HSB - especially in (d) derivative; or on main carriageway between HSB and Girton (alternative route via LARs).

Package 'F'

Description

New D2AP (east of M11 spur) / D3AP (west of M11 spur) route from west of Brampton Hut, north of Huntingdon, St. Ives and Milton, rejoining the A14 west of the A1303. Extension of M11 from Jn 14 to new road. Junctions with A1(M), A141, A10. All strategic traffic would run via new route and the existing A14 would be de-trunked/downgraded between the A1(M) / Brampton Hut and Fen Drayton – check.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> Doubling or more of capacity for most of route. Removes strategic traffic from close proximity to Huntingdon. Provides dedicated local route between Huntingdon and Cambridge. Overcomes capacity issues on existing A14 mainline and junctions. 	<ul style="list-style-type: none"> Very significant environmental and cost issues. Potentially capacity issues on A1 / A14 north of new route. Longer route for north-south strategic traffic. Very expensive.
Indicative cost estimate	Ability to generate revenue stream
>£1,000 million	Moderate/high - tolling of Huntingdon-M11 spur section of new route. However, potential diversionary issues as longer route.

Package 'GL'

Description

Huntingdon Southern Bypass rejoining A14 close to Trinity Foot. Then new northern D2AP (east of M11 spur) / D3AP (west of M11 spur) route from HSB/A14 junction north of Oakington and Histon rejoining the A14 west of the A1303. Extension of M11 from Jn 14 to new road. All strategic traffic would run via the new route and the existing A14 would be de-trunked/downgraded between the A1(M) / Brampton Hut and Fen Drayton.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> Doubling (or more) of capacity on most of core route. Removes strategic traffic from close proximity to Huntingdon. Provides dedicated local route between Huntingdon and Cambridge. Overcomes capacity issues on existing A14 mainline and junctions. 	<ul style="list-style-type: none"> Significant environmental and cost issues. Longer route for north-south strategic traffic. Very expensive.
Indicative cost estimate	Ability to generate revenue stream
>£1,000 million	Moderate/high - tolling of Huntingdon-M11 spur section of new route. However, potential diversionary issues as longer route.

Packages 'G(part)J(d)' and 'G(part)J(r)'

Description

Shortened Huntingdon Southern Bypass from west of Brampton Hut to the A1198 alignment. Upgraded alignment via the A1198 corridor to Caxton Gibbet, then A428 corridor to Girton. New spur road linking M11 (S) and upgraded A428 (W) at Girton. In the (r) derivative, north-south traffic remains on the existing alignment through Huntingdon and the HSB/A428 is built as D2AP. In the (d) derivative, all strategic traffic uses a D3AP HSB/A428, and the existing A14 is de-trunked/downgraded between the A1(M), Brampton Hut and Girton. In the (r) derivative, the HSB is for east-west trips only, meaning that a junction with the A1 would not be required.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> • Removes some (r) or all (d) strategic traffic from Brampton Hut and Spittals. • Removes (d) or reduces (r) strategic traffic from close proximity to Huntingdon. • Provides dedicated local route between Huntingdon and Cambridge. • Overcomes capacity issues on existing A14 mainline and junctions. 	<ul style="list-style-type: none"> • Derivative (r) only partially removes strategic traffic from close proximity to Huntingdon. • In the (d) derivative, north-south traffic could continue to use on the de-trunked A14 through Huntingdon due to length of HSB route. • In the (r) derivative, the dual 2 lane section of the A1 north for Brampton Hut may become overloaded. • Could exacerbate congestion on CNB east of Girton without mitigation. • Traffic on A428 route not able to access Cambridge via Huntingdon Road. • Negative effects on adjacent communities. • Much longer journey for north-south traffic.
Indicative cost estimate £751 million - £1,000 million (d) >£1,000 million (r)	Ability to generate revenue stream Moderate - tolling of HSB (especially in (r) derivative) with local alternative via Godmanchester. Hard to toll A428 due to local traffic.

Package 'K'

Description

- Upgrade of A428 between A1 and M11, including new A428-A1 link to the north-east of St Neots. Also includes new / upgraded M11 Jn 13 to A428 link (if serving N-S traffic as well as E-W). All strategic traffic runs via a D3AP A428 and the existing A14 is de-trunked/downgraded between the A1(M), Brampton Hut and Spittals. May require new A14/A1 junction at Brampton Hut.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> Removes some (r) or all (d) strategic traffic from Brampton Hut and Spittals. Removes (d) or reduces (r) strategic traffic from close proximity to Huntingdon. Provides dedicated local route between Huntingdon and Cambridge. Overcomes capacity issues on existing A14 mainline and junctions. 	<ul style="list-style-type: none"> Derivative (r) only partially removes strategic traffic from close proximity to Huntingdon. In the (d) derivative, north-south traffic could continue to use the de-trunked A14 through Huntingdon due to length of the A428 route. Likely to place excessive demand on A1 between St Neots and Brampton Hut. Could exacerbate congestion on CNB east of Girton without mitigation. Traffic on A428 route not able to access Cambridge via Huntingdon Road. Negative effects on adjacent communities Much longer journey for north-south and east-west strategic traffic.
Indicative cost estimate £501-750 million	Ability to generate revenue stream Low - difficult to toll A428 due to local traffic. Tolling new section would lead to diversion south of St Neots.

Public transport / travel demand management packages

Packages 'M(A)'

Description

Provision of new Park and Ride site(s) or expansion of existing Park and Ride sites in the corridor, intended to encourage modal shift of people away from car travel for those journeys in scope, particularly in the peak period.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> Low-cost intervention. Supports DfT's climate change objectives Low/positive local environmental impacts. 	<ul style="list-style-type: none"> Unlikely to reduce demand for car travel sufficiently to resolve congestion problems. Difficult to 'capture' benefits of reduced demand for travel.
Outline cost <£250m	Ability to generate revenue stream Low. Whilst likely to generate revenue, operating costs mean that P&R expected to be broadly cost neutral.

Packages 'M(B)'

Description

Provision of new or enhanced conventional bus or guided busway services intended to encourage modal shift of people away from car travel, particularly in the peak period.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> • Potentially lower-cost than road alternatives. • Supports DfT's climate change objectives • Low/positive local environmental impacts. 	<ul style="list-style-type: none"> • Unlikely to reduce demand for car travel sufficiently to resolve congestion problems. • Difficult to 'capture' benefits of reduced demand for travel.
Outline cost	Ability to generate revenue stream
Mainly revenue costs.	May have on-going revenue support implications.

Packages 'M(AB)'

Description

Implementation of all reasonable public transport measures intended to encourage modal shift of people away from car travel, particularly in the peak period. Provision of new Park and Ride site(s) or expansion of existing Park and Ride sites in the corridor, and provision of new or enhanced conventional bus or guided busway services.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> • Potentially lower-cost than road alternatives. • Supports DfT's climate change objectives • Low/positive local environmental impacts. • Potential to generate revenue. 	<ul style="list-style-type: none"> • Unlikely to reduce demand for car travel sufficiently to resolve congestion problems. • Difficult to 'capture' benefits of reduced demand for travel. • Concerns over effects of 'sticks' on local economy.
Outline cost	Ability to generate revenue stream
Mainly revenue costs with low capital investment costs (<£250m)	May have on-going revenue support implications.

Packages 'M(ABC)'

Description

Implementation of all reasonable public transport measures intended to encourage modal shift of people away from car travel, particularly in the peak period. Package includes fiscal demand management measure in the form of an area charge in Cambridge.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> Potentially lower-cost than road alternatives. Supports DfT's climate change objectives Low/positive local environmental impacts. Potential to generate revenue. 	<ul style="list-style-type: none"> Unlikely to reduce demand for car travel sufficiently to resolve congestion problems. Main impact of area charge would be on local trips. Strategic trips would be unaffected. Difficult to 'capture' benefits of reduced demand for travel. Concerns over effects of on local economy if not supported by sufficient investment in alternative public transport across Cambridge. Political acceptability.
Outline cost Mainly revenue costs with low capital investment costs (<£250m)	Ability to generate revenue stream PT components may require on-going revenue support. Moderate/high – potential for revenue generation from area charge.

Rail freight / freight demand management packages

Package 'O(ABC)'

Description

Implementation of all infrastructure enhancements to provide additional operational capacity for rail freight movements in order to encourage freight to travel by rail rather than by road through the study area plus complementary measures to shift haulage of road freight away from the peak periods.

Key strengths	Key weaknesses
<ul style="list-style-type: none"> Generally deliver benefits over a wide area, not just the A14 corridor. Potential to remove HGVs – seen as major cause of congestion, safety and negative environmental impacts, despite relatively low number. 	<ul style="list-style-type: none"> Relatively small number of vehicles means that potential to reduce traffic on A14 is limited (see Output 1 report). Rail enhancement schemes tend to be expensive.
Outline cost Costs not available for all components. Estimated in the range of £251-500 million.	Ability to generate revenue stream Low - track access charges fall to Network Rail, other fees mainly to private sector.

Package 'O(D)'	
Description	
Implementation of new/expanded Strategic Rail Freight Infrastructure to encourage freight to travel by rail rather than by road through the study area plus measures to shift haulage of road freight away from the peak periods.	
Key strengths	Key weaknesses
<ul style="list-style-type: none"> Generally deliver benefits over a wide area, not just the A14 corridor. Potential to remove HGVs – seen as major cause of congestion, safety and negative environmental impacts, despite relatively low number. 	<ul style="list-style-type: none"> Relatively small number of vehicles means that potential to reduce traffic on A14 is limited (see Output 1 report). Rail enhancement schemes tend to be expensive.
Outline cost	Ability to generate revenue stream
Costs not available for all components. Estimated in the range of £251-500 million	Low - track access charges fall to Network Rail, other fees mainly to private sector.

Recommendations

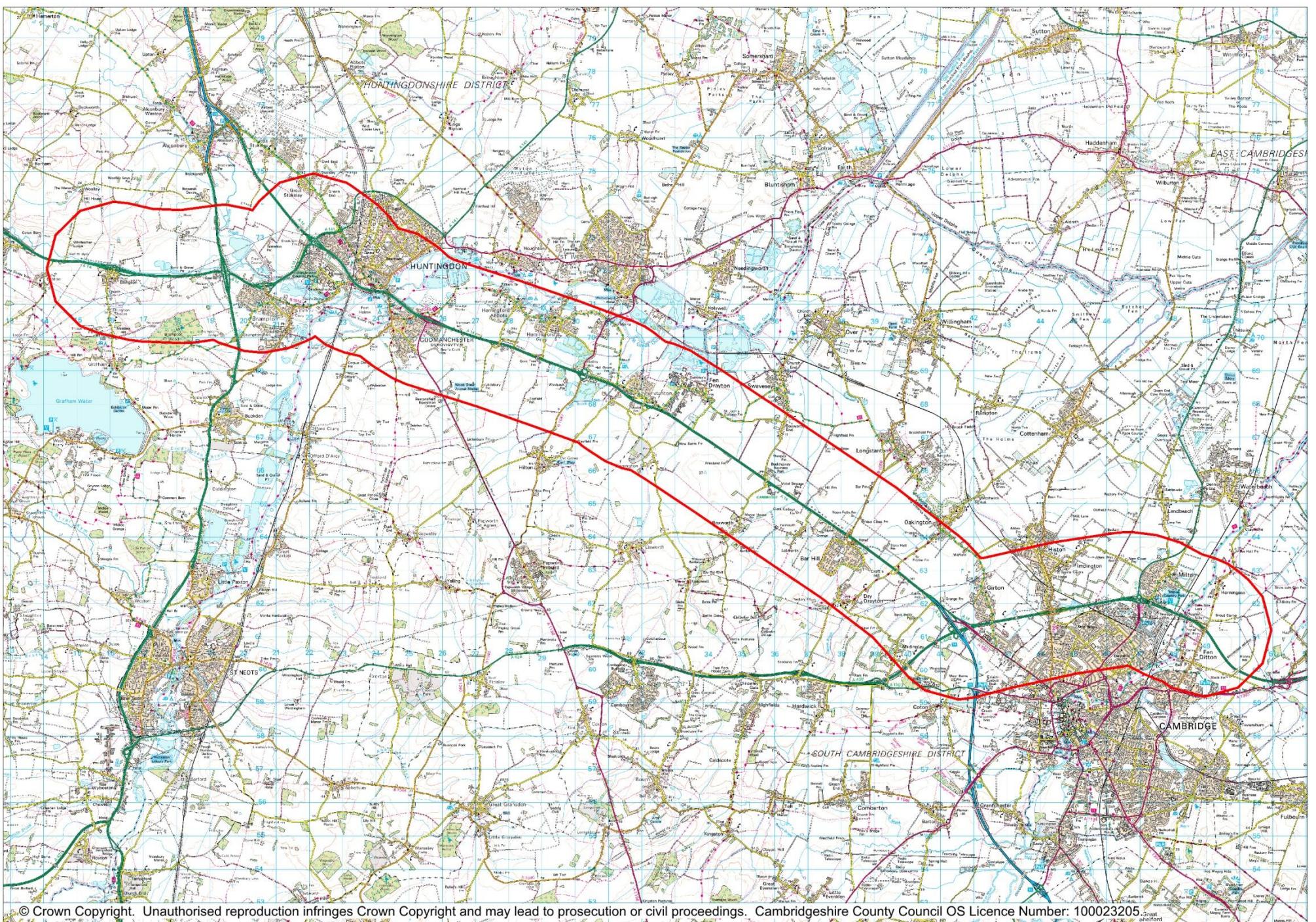
- 5.11. Having completed the initial assessment and review of modal packages, it is clear that each has clear advantages and disadvantages in terms of the degree to which they:
- address the transport problems identified in Output 1.
 - positively affect the wider challenges identified in Output 1; and
 - have other local impacts, positive or negative.
- 5.12. There is also considerable variation in the estimated cost of the modal packages, with those requiring extensive new alignment being particularly expensive.
- 5.13. It is recommended that, given the strategic nature of the assessment to date, all modal packages are retained at this stage to allow for further refinement later in the study.

Appendices

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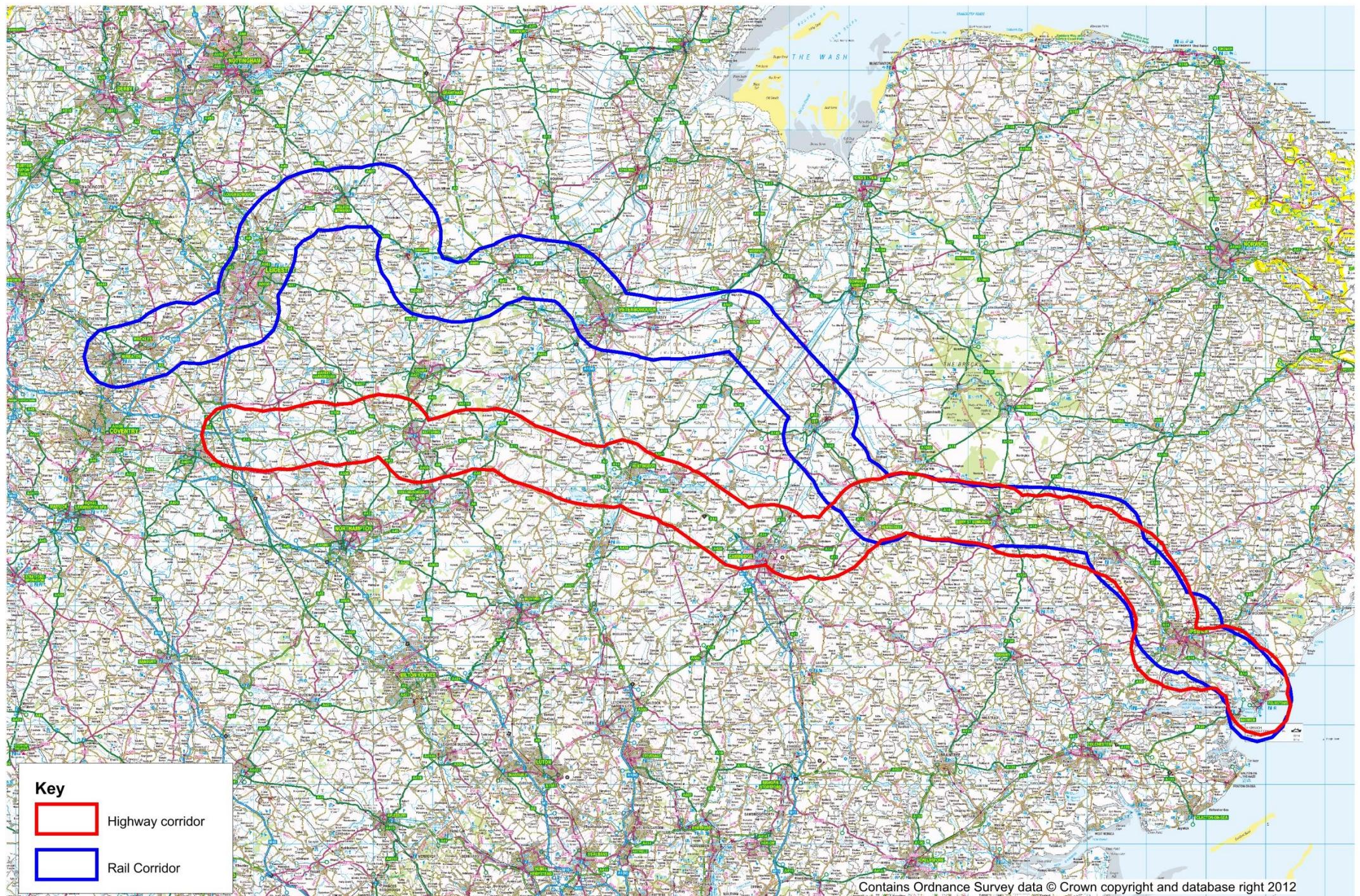
Appendix A – Core/wider study areas

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A14 Study Output 2: Option Generation & Initial Sifting Report
Core Study Area



A14 Study Output 2: Option Generation & Initial Sifting Report
Wider Study Area

Appendix B – Long-list of options

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ID	Option Description	Type	Incorporated into shortlist	Approx ECI section(s)	Location	Specialists' comments	Cost	Cost Assumptions	Why discarded - info drawn from previous study reports (pre A14 Study Outputs 2&3)	Comments	Source	Date	Page	Document link	Option Name
ONLINE IMPROVEMENTS															
55	ECI Section 2 only (widening of existing A14 between Fen Drayton and Histon)	Online improvements	Core components: A, C, S	2	Fen Drayton to Histon	Would exacerbate problems between Brampton Hut and Fen Drayton. Does not address critical Spittals to Fen Drayton section. Does not make sense in isolation.	£369m	2002 prices		BCR 1.84 (full scheme = 2.57)	A14 E-FD TN42 Scheme Options	Nov 2009	1	TN42	SO2: Section 2 only
56	ECI Section 3 only (widening of existing A14 between Histon and Fen Ditton)	Online improvements	Complementary components: CNB enhancement options	3	Histon to Fen Ditton	Would exacerbate problems between Brampton Hut and Histon, does not address critical Spittals to Girton section. Girton interchange would be a major constraint. Option would mainly address local traffic issues on Cambridge northern BP - not trunk issues between Spittals and Girton.	£83m	2002 prices		Has a better BCR than the full scheme (see p 15): 4.30 (full scheme = 2.57)	A14 E-FD TN42 Scheme Options	Nov 2009	1	TN42	SO3: Section 3 only
15	On-line Widening of A14 with options incl. a Cambridge Southern Bypass; Cambridge local road improvements; Huntingdon southern bypass (to Godmanchester or Fen Drayton); St. Ives Relief Road (alternative routes for a Huntingdon Eastern Bypass); M11 (J13-J14) modified; but issues around accommodating proposed slips at J13.	Online improvements	G (HSB), otherwise dropped due to cost, lack of support	1-3	Cambridge to Huntingdon and wider area	Complex and expensive. How do you deal with Spittals interchange, Brampton Hut or Girton? What happens with Huntingdon Viaduct?					CHUMMS	Aug 2001	4-6	CHUMMS_Chapter_4	H1
6	Online widening, segregated local distributor road, junction rationalisation (similar to the nearby and successful A1(M) at Alconbury).	Online improvements	Core components: A, B, C, D	1-3	Cambridge to Huntingdon	Noted that on-line widening could be difficult to deliver between Spittals and Fen-Drayton. On-line widening considered more feasible east of Fen Drayton.			Refined into H1, H2 and H3	Derived from previous A14 Improvement study .	CHUMMS	Aug 2001	4-3	CHUMMS_Chapter_4	R1
110	Bypass Fenstanton - keep EB carriageway where it is, move WB carriageway to a southern alignment. To tie in with an on-line widening between Girton and Godmanchester.	Online improvements	Could form part of online widening options	2	Godmanchester to Girton	Difficult to widen this section - could split carriageways or have separate trunk and local routes - could form part of a solution.				Greg not sure what this means!	workshop	9/1/12	n/a	n/a	Workshop_7
119	Auxiliary lanes to Cambridge Northern Bypass	Online improvements	Complementary components: CNB enhancement options	3	Girton to Milton	Focused on peak hour local traffic congestion, but could form part of overall solution. Particular benefits eastbound.					workshop	9/1/12	n/a	n/a	Workshop_16
51	Retain the A14 through Huntingdon as a trunk road for N-S traffic and new off-line route for E-W traffic (see report).	Online improvements	Retained as sub-option for HSB as D2 rather than D3 and keeping N-S traffic from existing A14 through Huntingdon.	1-3	Ellington to Fen Ditton	Performs better economically than ECI scheme as avoids lengthening N-S journeys.	£474m	Q1 2005 (p36)	The Alternative Proposal was not recommended for further consideration as it does not provide improved access to Huntingdon Town Centre and Railway Station, opposition from public, CCC and Huntingdonshire DC and CHUMMS strategy performs better.		A14 E-FD SAR	Oct 2007	28	Scheme Assessment Report	Alternative Proposal
72	Re-construct Huntingdon viaduct – may be added in combination with other options above	New viaduct	Dropped - HA announced intention to make permanent repair.		Huntingdon Viaduct	Could form part of overall solution.	£160m	2002 prices, incl inflation			A14 E-FD Value Management Workshop	Jul 2010	3	VM_Appendix_A	VM_9B
73	Widen CNB Histon-Fen Ditton to D3AP – may be added in combination with other options above	Online widening	Complementary components: CNB enhancement options	3	Histon to Fen Ditton	More expensive than auxiliary lanes Girton to Milton. Widening east of Milton may not be necessary - inconsistent with status of connecting local roads at Fen Ditton.	£230m	2002 prices, incl inflation			A14 E-FD Value Management Workshop	Jul 2010	3	VM_Appendix_A	VM_10
74	Widen CNB Girton to Fen Ditton to D3AP with Lane drop/land gain at Girton– may be added in combination with other options above	Online widening	Complementary components: CNB improvement options, small-scale junction improvements	3	Girton to Fen Ditton	See above - CNB auxiliary lanes Girton to Milton only probably more efficient.	£250m	2002 prices, incl inflation			A14 E-FD Value Management Workshop	Jul 2010	4	VM_Appendix_A	VM_11
75	Online widening of A14 to D3AP Spittals to Girton; widen/rebuild Huntingdon viaduct	Online widening	Core component A (Viaduct to be permanently repaired anyway)	2	Spittals to Girton	Possible - issues about costs vs. Huntingdon Southern BP. Significant environmental issues in Huntingdon. Would require significant property and land take.	£730m	2002 prices, incl inflation			A14 E-FD Value Management Workshop	Jul 2010	4	VM_Appendix_A	VM_12B
76	Online widening of A14 to D3AP Hemingford to Girton – shorter version of option 12B could be added in combination with Option 2A/2B	Online widening	Core component B	2	Hemingford to Girton	Possible, would need to be linked to some form of improvement in/around Huntingdon. Would take properties at Fenstanton.		not priced			A14 E-FD Value Management Workshop	Jul 2010	4	VM_Appendix_A	VM_13
93	Selective road widening/building (incorporating high occupancy lanes where relevant)	Online widening	Dropped - too generic. Except HOVs	1-3	county-wide						TraCS	Nov 2009	175	TraCS_Final_Report	TraCS_78
NEW ALIGNMENTS - HUNTINGDON AREA															
7a	Huntingdon Eastern Bypass to relieve A141, A1095, Spittals, closure of the A14 for structure repairs or replacement; provide an additional river crossing for Huntingdon.	New road alignment	Dropped - justification unclear in context of this study	1	Huntingdon	Would be very long and expensive. Would create additional mileage for both N-S and E-W movements with associated economic disbenefits. Link would have major environmental considerations e.g. Gt Ouse flood plain. Does this retain the existing section of the A14 between BH and Spittals? Does it replace the junctions with free-flowing slips?			Refined into H1, H2 and H3		CHUMMS	Aug 2001	4-3	CHUMMS_Chapter_4	R2
20	New link from A1123 to A14/A1198 at Godmanchester (Eastern bypass) could include Guided Busway	New road alignment	Dropped - justification unclear in context of this study	1	St Ives to Godmanchester	Would only really make sense with online or LDR improvements east of Godmanchester. Would need to be clear about source of CGB patronage. Better links to guideway should be investigated to provide P&R adjacent to A14 in this area.					CHUMMS	Aug 2001	4-7	CHUMMS_Chapter_4	Huntingdon Eastern Bypass
8	Huntingdon Southern Bypass. Options for E-W/N-S traffic split on existing and new road; alternative A1(M) extended south to new bypass; alternative on-line Hemingford to Fen Ditton or a southern bypass of Fenstanton.	New road alignment	Core component G	1	Huntingdon	Critical choice between Huntingdon Southern BP or on-line widening east of Spittals. Within HSB sub-options as to where route rejoins current A14 mainline to the east. ECI line bypasses Fenstanton, a shorter route would require property take for on-line widening at Fenstanton or some form of Fenstanton bypass. Difficult to separate local and strategic traffic with on-line-widening between Hemingford and Fenstanton.			Refined into H1, H2 and H3		CHUMMS	Aug 2001	4-3	CHUMMS_Chapter_4	R3
18	Fenstanton Southern Bypass, Huntingdon Southern Bypass (from A14 east of Ellington to A14 east of Godmanchester, with junctions on A1(M) and A1198), LDR from Fen Drayton eastwards, A14 north of Cambridge widened to D4 (D3+LDR) Girton to Histon, D3 Histon to Fen Ditton	New road alignment	Fenstanton southern bypass could form part of widening options. HSB - see option G. LDR - see D, E, D4+LDR dropped. D3 Histon to Fen Ditton - see CNB option	1-3	Cambridge to Huntingdon	Key issue of road standard and capacity provision - ECI scheme excessive in this regard (in current climate). Does CNB really need full widening? Auxiliary lanes Girton to Milton would probably suffice and would require a lower level of improvement at Girton than full widening. Widening may come in to play if Waterbeach progresses as strategic development site.					CHUMMS	Aug 2001	4-7	CHUMMS_Chapter_4	A14 Widening with local distributor roads (LDRs)
60	D2AP Northern bypass of Brampton Hut from Ellington to A14 Spur NW of Spittals	New road alignment to relieve bottleneck	Core component H	1	Ellington to A14 Spur	Would reduce A14 delays at Brampton and Spittals, but still likely to need A14 capacity enhancement east of Spittals.	£300m	2002 prices, incl inflation			A14 E-FD Value Management Workshop	Jul 2010	1	VM_Appendix_A	VM_1
61	D3AP short southern bypass of Huntingdon from Ellington to Hemingford Abbots; demolish Huntingdon viaduct	New road alignment	Core component G (Huntingdon viaduct repaired)	1	Ellington to Hemingford Abbots	Connection at Hemingford would require capacity enhancement eastwards to Girton with consequent issues at Fenstanton. Could mean crossing Gt. Ouse and railway is simpler.	£680m	2002 prices, incl inflation			A14 E-FD Value Management Workshop	Jul 2010	1	VM_Appendix_A	VM_2A
62	D2AP short southern bypass of Huntingdon from Ellington to Hemingford Abbots; rebuild Huntingdon viaduct for N/S traffic (see Option 9b).	New road alignment	Retained as sub-option for HSB as D2 rather than D3 and keeping N-S traffic on existing A14 through Huntingdon.	1	Ellington to Hemingford Abbots	HSBP in some form key alternative to on-line widening east of Spittals. Choice then to rejoin A14 line west or east of Fenstanton - depends on cost of longer HSB vs. cost of widening (or) partial bypassing at Fenstanton. Would have less resilience than 3-lane carriageway. Would not alleviate environmental issues in Huntingdon and Godmanchester.	£640m	2002 prices, incl inflation			A14 E-FD Value Management Workshop	Jul 2010	1	VM_Appendix_A	VM_2B
77	A14 J21 Brampton Hut to J23 Spittals: major realignment to north	New road alignment	Core component H	1	Brampton Hut to Spittals	As per 60 would only work with A14 capacity enhancement east of Spittals? MP - Would have benefits if this alleviates issues at Spittals for A14 traffic.	MP - large	No cost work done.			HA ideas	Apr 2011	1	HA_Ideas	HA_1
NEW ALIGNMENTS - LONG LINKS TOWARDS NEWMARKET															
10	New E-W link: Newmarket/Cambridge to A1. New E-W "concentrated" transport corridor (road/rail). Options north or south of Huntingdon and to tie into CNB with the flexibility in the longer term to be extended east towards Newmarket.	New road alignment	Dropped on cost / environmental grounds	1-3	A1 to Cambridge / Newmarket	Long lengths of entirely new road very expensive. Rejected through CHUMMS for similar reasons?			Refined into H1, H2 and H3		CHUMMS	Aug 2001	4-3	CHUMMS_Chapter_4	R5
13	New E-W great northern link : A1 to Newmarket new road along the A1123 corridor.	New road alignment	Dropped on cost / environmental grounds	1-3	Huntingdon to Newmarket (A1123 corridor)	Long lengths of entirely new road very expensive. Rejected through CHUMMS for similar reasons?			Refined into H1, H2 and H3		CHUMMS	Aug 2001	4-3	CHUMMS_Chapter_4	R8

28	New route leaving the A14 at Ellington, east of the A1, turning north passing between Alconbury and Huntingdon towards the Wyton. Thereafter, generally south of the A1123, to eventually rejoin the A14 to the east of Newmarket at the A142 junction at Exning.	New road alignment	Dropped on cost / environmental grounds	1-3	Ellington to Exning	Long lengths of entirely new road very expensive. Rejected through CHUMMS for similar reasons?	£350m	1998 price base (see p 4-17)	Major problems with environmental impacts, engineering complexity and costs (floodplain, fen wetland sites) Forecasts show that much thru traffic remains on existing A14.	CHUMMS	Aug 2001	4-15	CHUMMS Chapter 4	Strategy 6: Great Northern Route
21	New D3 route from A14 east of Ellington, north of Huntingdon and St. Ives, running parallel to the A14 to north of Milton, rejoining the A14 just west of the A1303 junction. Also includes north-south link to M11 at J14 (i.e. M11 extension); junctions at A1(M), A14 west of Huntingdon, A141, A1123, A10 (initially west-facing slips only). Existing A14 would revert to non-trunk local road, which could incorporate G8 or LRT	New road alignment	Core component F	1-3	Ellington to Quy	Long route, very expensive scheme. Risk of increasing journey lengths.				CHUMMS	Aug 2001	4-7	CHUMMS Chapter 4	Northern Route
16	Northern Route. Off-line East-West route, North of Cambridge with alternatives north and south of Huntingdon. Also includes Cambridge Southern Bypass, Huntingdon Eastern Bypass and Fen Ditton link within Cambridge. Modified M11 (J13-J14) but design issues to accommodate proposed slips at J13.	New road alignment	Core component F	Full corridor	Huntingdon to Newmarket	Very long route, very expensive.				CHUMMS	Aug 2001	4-6	CHUMMS Chapter 4	H2
NEW ALIGNMENTS - ECI-TYPE SCHEMES (I.E. PARTIAL SOUTHERN ALIGNMENTS / LONG HUNTINGDON SOUTHERN BYPASSES)														
59	ECI Published Scheme: D3AP southern bypass of Huntingdon from Ellington to Fen Drayton; demolish Huntingdon viaduct; D3AP on-line widening Fen Drayton to Fen Ditton; D2AP LARS Fen Drayton-Girton. But with VE applied and an alternative view on inflation	New road alignment	Dropped - not lower-cost alternative in this form (but perhaps HSB, widening/LARS and aux lanes on CNB).	1-3	Ellington to Fen Ditton	VE alone will not produce adequate cost savings. Much scaled down version of ECI scheme may form an option however.	£910m	2002 prices, incl inflation		A14 E-FD Value Management Workshop	Jul 2010	1	VM Appendix A	Full Scheme with VE
54	ECI Section 1 only (new offline section between Ellington and Trinity Foot, including the removal of the existing A14 viaduct at Huntingdon and the associated changes to the local road network)	New road alignment	Core component G (existing viaduct repaired) plus sub-option of retaining A14 thru Huntingdon for N-S traffic	1	Ellington to Trinity Foot	Problems would remain between Trinity Foot and Bar Hill and at Girton. Retention of viaduct would avoid journey length disbenefits to N-S traffic and reduce carriageway and junction requirements for HSBP.	£439m	2002 prices	BCR 2.47 (full scheme = 2.57)	A14 E-FD TN42 Scheme Options	Nov 2009	1	TN42	SO1: Section 1 only
104a	ECI off-line alignment, no junctions between Ellington - Girton, toll route.	New road alignment	Core component G	1	Ellington to Fen Drayton	Possibly deliverable as a tolled option, but only likely to carry significant traffic at weekday peak periods so unlikely to be fully fundable via tolling. Better option may be dynamic (peak period) tolling with significant toll contribution to scheme costs.				workshop	9/1/12	n/a	n/a	Workshop_1a
57	ECI Section 2 followed by Section 1	New road alignment	Potentially combinations of HSB and widening / LARS options	1,2	Ellington to Histon	Scaled down version may be more appropriate. Godmanchester/Fen Drayton to Girton LDR (S2) with improvements to existing A14 for trunk use (remove local accesses, improve main junctions, add metre strip and emergency refuge areas (ERAs). Section 1 could be D2 with Huntingdon viaduct retained.	£724m	2002 prices	BCR 2.42 (full scheme = 2.57)	A14 E-FD TN42 Scheme Options	Nov 2009	1	TN42	SO4: Sections 2+1
58	ECI Section 1 followed by Section 2	New road alignment	Potentially combinations of HSB and widening / LARS options	1,2	Ellington to Histon	As above, but probably makes more sense to deliver S2 first - otherwise exacerbates problems Fen Drayton eastwards.	£727m	2002 prices	BCR 2.41 (full scheme = 2.57)	A14 E-FD TN42 Scheme Options	Nov 2009	1	TN42	SO5: Sections 1+2
45	A14 diverges from existing route between Ellington and the A1, turning south and running parallel to the A1. Crosses A1 between Brampton and Buckden. Passes to the south of Buckden Landfill Site then crossed R Great Ouse and ECML. Continues eastn north of Hilton and Conington to join the existing A14 to the south of Fen Drayton, then as CHUMMS Strategy 2 from Fen Drayton to Fen Ditton.	New road alignment	Dropped - ECI route for HSB seen as preferable	1-3	Ellington to Fen Ditton	Minor alignment changes to ECI scheme - still likely to be too expensive.	£639m	Q1 2005 (p36)	This option was taken forward (for detailed reasons, see p 101). Reasons for the rejection of the other options are given below.	A14 E-FD SAR	Oct 2007	22	Scheme Assessment Report	A14 E-FD Orange Route
48	Follows Orange Route (45) as far as the ECML, then turns NE to join the line of the Blue Route (47) at the A1198 then to Fen Drayton as per Blue Route. As CHUMMS Strategy 2 from Fen Drayton to Fen Ditton.	New road alignment	Dropped - ECI route for HSB seen as preferable	Full corridor	Ellington to Fen Ditton	Minor alignment changes to ECI scheme - still likely to be too expensive.	£649m	Q1 2005 (p36)	The Blue Variation 1 Route Option is not recommended for further consideration because: • Despite performing comparably to the Orange Route Option it has low public support (5%).	A14 E-FD SAR	Oct 2007	22	Scheme Assessment Report	A14 E-FD Blue Route Variation 1
46	A14 diverges from existing A14 corridor to the west of Brampton Hut and runs SE between the A1 and Brampton Wood, then turns east and cross the A1 between Brampton and Buckden. Route then runs east across Buckden Landfill Sites and cross the R Great Ouse and ECML and continue east to the north of Hilton and Conington. Passes to the south of Fenstanton before rejoining the existing A14 to the south of Fen Drayton. Then as CHUMMS Strategy 2 from Fen Drayton to Fen Ditton.	New road alignment	Dropped - ECI route for HSB seen as preferable	1-3	Ellington to Fen Ditton	Minor alignment changes to ECI scheme - still likely to be too expensive.	£714m	Q1 2005 (p36)	The Brown Route Option is not recommended for further consideration because: • The cost of the Brown Route Option is higher than the other route options, which also adversely affects the economic performance in terms of the Benefit-Cost Ratio; • The Environment Agency has indicated that it would actively object to the Brown Route Option on the basis of the adverse environmental impacts associated with the route passing through the Buckden Landfill Site; • It would sterilise a large volume of valuable void space within Buckden Landfill Site and directly impact on the waste transfer facility; • There is relatively low public support for this route option from the 2006 Further Public Consultation (19%); • It would have a high impact on Godmanchester due to its proximity to this community; The Blue Route Option is not recommended for further consideration because: • It would have a high impact on Brampton and Godmanchester due to its proximity to these communities; • There is relatively low public support for the Blue Route Option from the 2006 Further Public Consultation responses (11%); • Between Ellington and the A1 the route is more visually intrusive within the open landscape and has a greater impact on Brampton Wood SSSI; • It would require the acquisition of the site Huntingdon Recycling Limited site at Ellington; • It would require the acquisition of part of the Brampton Park Golf Club; • It would require the relocation of high voltage electricity pylons at Ellington junction.	A14 E-FD SAR	Oct 2007	22	Scheme Assessment Report	A14 E-FD Brown Route
47	As Blue Route (47) between Ellington and the A1198. From the A1198 it would turn north to join the line of the existing A14 west of Gore Tree Farm, approximately 1 mile west of the Galley Hill Junction. It would then follow the alignment of the existing A14 past Fenstanton to Fen Drayton. Then as CHUMMS Strategy 2 from Fen Drayton to Fen Ditton.	New road alignment	Dropped - ECI route for HSB seen as preferable	1-3	Ellington to Fen Ditton	Minor alignment changes to ECI scheme - still likely to be too expensive.	£640m	Q1 2005 (p36)	The Blue Variation 2 Route Option is not recommended for further consideration because: • It passes through Fenstanton and so would have a significant impact on this community, including the need to demolish a number of private properties; • A lower than desirable minimum standard geometric alignment in the vicinity of Fenstanton where the new route would follow the alignment of the existing A14; • The economic performance is lower than for the other route options; • There is very low public support for this route option (2%);	A14 E-FD SAR	Oct 2007	22	Scheme Assessment Report	A14 E-FD Blue Route
49	As Blue Route (47) between Ellington and the A1198. It would then follow the alignment of the Blue Variation 2 Route Option, joining the line of the existing A14 at Gore Tree Farm. Then as CHUMMS Strategy 2 from Fen Drayton to Fen Ditton.	New road alignment	Dropped - ECI route for HSB seen as preferable	1-3	Ellington to Fen Ditton	Minor alignment changes to ECI scheme - still likely to be too expensive.	£617m	Q1 2005 (p36)	The Blue Variation 1+2 Route Option is not recommended for further consideration because: • It passes through Fenstanton and so would have a significant impact on this community, including the need to demolish a number of private properties; • A lower than desirable minimum standard geometric alignment in the vicinity of Fenstanton where the new route would follow the alignment of the existing A14; • The economic performance is lower than for the other route options; • There is very low public support for this route option (2%);	A14 E-FD SAR	Oct 2007	22	Scheme Assessment Report	A14 E-FD Blue Route Variation 2
50	As Blue Route (47) between Ellington and the A1198. It would then follow the alignment of the Blue Variation 2 Route Option, joining the line of the existing A14 at Gore Tree Farm. Then as CHUMMS Strategy 2 from Fen Drayton to Fen Ditton.	New road alignment	Dropped - ECI route for HSB seen as preferable	1-3	Ellington to Fen Ditton	Minor alignment changes to ECI scheme - still likely to be too expensive.	£620m	Q1 2005 (p36)	The Blue Variation 1+2 Route Option is not recommended for further consideration because: • The disadvantages of this route option are similar to those for the Blue Variation 2 Route Option east of the A1198; • There is very low public support for this route option (1%).	A14 E-FD SAR	Oct 2007	22	Scheme Assessment Report	A14 E-FD Blue Route Variation 1+2
63	D3AP southern bypass of Huntingdon from Ellington to Fen Drayton; demolish Huntingdon viaduct	New road alignment	Core component G (but Huntingdon viaduct repaired)	1	Ellington to Trinity Foot	Too expensive as section of ECI scheme.	£780m	2002 prices, incl inflation		A14 E-FD Value Management Workshop	Jul 2010	1	VM Appendix A	VM_3A
65	D3AP southern bypass of Huntingdon from Ellington to Fen Drayton; demolish Huntingdon viaduct; D3AP on-line widening Fen Drayton to Bar Hill	New road alignment	Core component G (but Huntingdon viaduct repaired). Online widening - see B	1,2	Ellington to Bar Hill	Does not separate local and long distance traffic - junction proliferation as per existing A14 would be retained. However, increased capacity can be used for local or long distance traffic so significant resilience benefits.	£810m	2002 prices, incl inflation		A14 E-FD Value Management Workshop	Jul 2010	2	VM Appendix A	VM_4A
64	D2AP southern bypass of Huntingdon from Ellington to Fen Drayton; rebuild Huntingdon viaduct for N/S traffic. (Option 98)	New road alignment	D2AP HSB - see 7. Retention of N-S strategic traffic thru Huntingdon dropped due to disbenefits of impact of strategic traffic on Huntingdon and relatively low cost of additional lane (if required) on HSB	1	Ellington to Trinity Foot	Could be cheaper than online improvements Brampton Hut to Fen Drayton (although such improvements would have major environmental issues).	£610m	2002 prices, incl inflation		A14 E-FD Value Management Workshop	Jul 2010	1	VM Appendix A	VM_3B
66	D3AP southern bypass of Huntingdon from Ellington to Fen Drayton; demolish Huntingdon viaduct; D3AP offline Fen Drayton-Girton; Retain old A14 and its junctions for local traffic; Reconstruct Girton interchange in combination with widening CNB from Girton to Histon.	New road alignment, local traffic on old A14, junction improvements	Dropped - likely to be too costly, and provides excessive capacity.	1-3	Ellington to Histon	ECI plus! Expensive and unnecessary increase in capacity (2 to 5 lanes) Fen Drayton to Girton?	£1130m	2002 prices, incl inflation		A14 E-FD Value Management Workshop	Jul 2010	2	VM Appendix A	VM_5A
NEW ALIGNMENTS - FULL SOUTHERN ALIGNMENTS / A428														
12	New southern alignment on A428/A1198 corridor. Ties in with committed improvements on A428 east of A1198 and the Papworth Bypass. A1(M) extended south. M11(J14) reverts to its original design function catering for the predominant E-W A428 traffic. M11 to A428 link provides relief to north end of M11. A14 reverts to a local (de-trunked) road.	New road alignment	Core component J (D2 or D3)	1-3	Cambridge to Papworth to Godmanchester (A428, A1198)	Cost? What standard of route? A428 is D2 and A1198 S2 only (including Papworth bypass). Doesn't address Spittals/Huntingdon viaduct issues - so would need to be combined with HSBP? Better for this to serve A14 (east) traffic only with M11 served by existing route? New route could be tolled with existing A14 as untolled alternative.			Refined into H1, H2 and H3	CHUMMS	Aug 2001	4-3	CHUMMS Chapter 4	R7
17	Southern Route. On-line widening of the existing A14 north of Cambridge with an alternative to the A14 west of Cambridge using an up-graded A428 and A1198 connecting to a Huntingdon Southern Bypass joining the existing A14 west of the A1. The A1(M) extended south to new bypass. Huntingdon Eastern Bypass connects A141/A1123 to new route. Also includes Cambridge Southern Bypass.	New road alignment	Core component J	1-3	Cambridge to Huntingdon and wider area	Probably far too expensive as stands - why include Cambridge SBP? General idea of use of A428/A1198 corridor with HSBP worth exploring as avoids major reconstruction at Girton. Scaled down version could use new A428/A1198/HSBP route for A14-A14 traffic only or A14W and A1N to A14E traffic. Option to toll new route with existing A14 as untolled alternative?				CHUMMS	Aug 2001	4-6	CHUMMS Chapter 4	H3

22	New D3 route from A14 east of Ellington, passing south of Huntingdon and Godmanchester, then west and parallel to the A1198; then turn east to follow the A428 past Hardwick, then turn south to make a connection to the M11 (J12). Junctions would be at the A1(M), link to A1198 immediately south of Godmanchester, A428 at Caxton Gibbet, Cambourne, and with the A428 between Harwick and Madingley. Would also include improvements to the A14 north of Cambridge (A14 Cambridge Northern Bypass widening)	New road alignment	Core component J	1-3	Ellington to Barton (M11 J12)	Probably too expensive as described. Potential option for scaled down version as above - D2 route Ellington-HSPB-A1198-A428 with A14 east connection only at Girton. As above NW connection could be to A14 only or A14 and A11. Would it be more cost effective to take M11 traffic from J14 by providing a slip and a flyover? New route could be tolled with existing A14 as untolled alternative.	CHUMMS	Aug 2001	4-7	CHUMMS_Chapter_4	Southern Route
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67	D3AP off line route from Ellington to A428 at Caxton Gibbet; widen A428 to D3AP Caxton-Girton (some bridges to be re-built); retain/detrunk old A14 for local traffic; divert M11 to A428 from J13; demolish Huntingdon viaduct	New road alignment, retain old route for local traffic	Core component J	1,2	Ellington to M11 J13	Too expensive as defined. Suggest as above - D2 route A428 to Ellington (for A14W) with possible connection to A1N. New route could be tolled with existing A14 as untolled alternative.	£1030m	2002 prices, incl inflation	A14 E-FD Value Management Workshop	Jul 2010	2	VM Appendix A	VM_6A
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68	D2AP off line route from Ellington to A428 at Caxton Gibbet; retain/detrunk old A14 for local traffic; rebuild Huntingdon viaduct for N/S traffic (Option 98)	New road alignment, retain old route for local traffic	Core component J	1,2	Ellington to A428 Caxton Gibbet	Would need retention of existing A14 for N-S traffic. Could provide connection to A1N near Brampton Hut. New route could be tolled with existing A14 as untolled alternative.	£740m	2002 prices, incl inflation	A14 E-FD Value Management Workshop	Jul 2010	2	VM Appendix A	VM_6B
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69	D3AP off line route from Ellington to A428 at Caxton Gibbet passing south of Buckden / Offord D'Arcy; widen A428 to D3AP Caxton-Girton (some bridges to be re-built); retain/detrunk old A14 for local traffic; divert M11 to A428 from J13; demolish Huntingdon viaduct	New road alignment and widening, retain old route for local traffic	Core component J	1,2	Ellington to M11 J13	Too expensive. Scaled down version as per 68 would make more sense.	£1250m	2002 prices, incl inflation	A14 E-FD Value Management Workshop	Jul 2010	2	VM Appendix A	VM_7A
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70	D2AP off line route from Ellington to A428 at Caxton Gibbet passing south of Buckden / Offord D'Arcy; retain/detrunk old A14 for local traffic; rebuild Huntingdon viaduct for N/S traffic (Option 98)	New road alignment, retain old route for local traffic	Core component J	1,2	Ellington to A428 Caxton Gibbet	Same as 68? Would need retention of existing A14 for N-S traffic. Could provide connection to A1N near Brampton Hut. New route could be tolled with existing A14 as untolled alternative.	£970m	2002 prices, incl inflation	A14 E-FD Value Management Workshop	Jul 2010	3	VM Appendix A	VM_7B
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NEW ALIGNMENTS - LOCAL ROUTES (SEE ALSO ECI)

104b	New local road between Fen Drayton to Girton	New road alignment	Core component D	2	Fen Drayton to Girton	Probably needs to be from Godmanchester - see below. Good as it addresses (a) the capacity issue (b) segregation of local traffic (c) future Northstowe development at specific location. How would it tie in at Girton?			workshop	9/1/12	n/a	n/a	Workshop_1b
106b	Provide a new local road from Godmanchester to Girton/Cambridge.	New road alignment	Core component E	2	Godmanchester to Girton	Could form part of a package that deals with issues at Girton, Spittals and the 2-lane section between Spittals and Bar Hill. Would enable existing A14 to focus on trunk road role with reduced junctions etc. As above re: benefits							

NEW ALIGNMENTS - CAMBRIDGE BYPASSES

7b	Cambridge Southern Bypass to complete an inner ring to connect and relieve radial routes; provide relief to CNB and M11 (J14); cater for A10 to M11 N-S movements and provide direct access to Addenbrooke's and Fulbourn hospitals.	New road alignment	Dropped - questionable validity in context of this study	3	Cambridge	Not really relevant to A14 issues. Could worsen traffic on A14 west of Cambridge.	Refined into H1, H2 and H3		CHUMMS	Aug 2001	4-3	CHUMMS_Chapter_4	R2
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JUNCTION MODIFICATIONS

107	Remove the weaving conflict at Girton by replacing the M11 NB to A14 EB loop further west.	Junction modification	Complementary components: Small-scale junction improvements	2	Girton	Depends on rest of package - would work best with improved capacity for A14 west of Girton.	£50m?		workshop	9/1/12	n/a	n/a	Workshop_4
108	Reduce A428 to a single lane (both directions) through Girton, so that M11/A14 movements become lane gain/drop.	Junction modification	Complementary components: Small-scale junction improvements	2	Girton	Already included in £20m Immediate Investment Programme scheme. Are additional improvements needed to address the A14 westbound/M11 northbound merge issue.	Cheap? Short-term option		workshop	9/1/12	n/a	n/a	Workshop_5
118	Longer / wider EB off-slips at Histon & Milton to prevent traffic backing onto main A14 carriageway.	Junction modification	Complementary components: CNB improvement option Free-flow links incl. Core component T.	3	Histon, Milton	Could form part of a larger package. Is this really a problem?			workshop	9/1/12	n/a	n/a	Workshop_15
71	Free-flow links A14 W-E and E-W at Girton in combination with widening Girton - Histon and LAR Girton-Dry Drayton (constructs proposed links from the Published Scheme excluding LAR links)	Junction modification	Complementary components: CNB options; LAR Girton - Dry Drayton (see Core component D)	2, 3	Dry Drayton to Histon	Likely to be very expensive. Simpler improvements available eastbound (as 108 above) but potential solution westbound.	£170m	2002 prices, including inflation	A14 E-FD Value Management Workshop	Jul 2010	3	VM Appendix A	VM_8
81	A14 J31 / M11 J14 / A428 remodelling, with a roundabout on the A428. Depends on scheme 7.	Junction modification	Complementary components: small-scale junction improvements	Bottleneck	Girton Interchange	Could form part of a larger package.	MP	No cost work done.					Would require land acquisition / orders
82	A14 J31 Girton eastbound, merge improvements	Junction modification	Complementary components: CNB improvement options	Bottleneck	Girton Interchange	Should be fairly straightforward and could be an early win and support longer term improvements to the A14.	LNMS	No cost work done.					HA ideas
83	A14 J31 Girton westbound, diverge improvements	Junction modification	Complementary components: CNB improvement options	Bottleneck	Girton Interchange	Should be fairly straightforward and could be an early win and support longer term improvements to the A14. However, the issue of the eastbound traffic merging with the M11 northbound will also need resolution.	LNMS	No cost work done.	Previous study undertaken				HA_11
84	A14 J32 Histon, ramp metering / ITM / merge/diverge improvements	Junction modification	Complementary components: CNB improvement options	3	Histon Interchange	Could form part of a larger package.	LNMS	No cost work done.					HA ideas
85	A14 J31 Girton to J32 Histon: auxiliary lanes	Junction modification	Complementary components: CNB improvement options	3	Girton to Histon	This may well be the most pragmatic option for the CNB - but between Girton and Milton. Could be supported by other measures such as ramp metering.	LNMS / MP	No cost work done.					HA ideas
86	A14 J33 Milton: ramp metering / ITM	Junction modification	Complementary components: CNB improvement options	3	Milton Interchange	Could form part of a larger package.	LNMS	No cost work done.					HA ideas
87	A428 eastbound approach to A14 J31: lane drop	Junction modification	Small-scale junction improvement option	Bottleneck	A428 to Girton Interchange	Would be useful to support a 2 lane movement for A14 eastbound, with one lane gain and one merge.	LNMS	No cost work done.					HA ideas
88	M11 J14: remove northbound loop to A14E, add new eastbound slip to A428 at Madingley	Junction modification	Complementary components: Small-scale junction improvements	Bottleneck	Girton Interchange	Could support improvements to A14 westbound movement at Girton - removes current M11 weave conflict.	No cost work done.		Potential temporary solution only. Would increase traffic on A1303				HA_16

OTHER CAPACITY, RESILIENCE & SAFETY MEASURES

116	Provision of emergency refuges to improve resilience	Resilience improvement	Complementary components: Resilience/safety options	1-3	Huntingdon to Cambridge	Will be important if existing A14 to continue as the trunk road - could also be supported by provision of metre strips. Good as this addresses a specific issue. Need to consider method/costs of enforcement (i.e. prevent people using it as a normal layby, which could make things worse).			workshop	9/1/12	n/a	n/a	Workshop_13
117	Removal of lay-bys to reduce incidences of slow-moving lorries pulling onto carriageway	Capacity & safety improvement	Complementary components: Resilience/safety options	1-3	Huntingdon to Cambridge	Will be important if existing A14 to continue as the trunk road - could also be supported by improved HGV parking area provision - is this an A14 specific issue? Need evidence that this is a real problem. Are the laybys on the Cambridge Huntingdon section of the same standard as those to the east of Cambridge (which were improved in the 1990's)			workshop	9/1/12	n/a	n/a	Workshop_14
78	A14 J25 Hemingford Abbots to J26 Galley Hill: access / junction rationalisation / parallel local routes	Capacity improvement, local route	Complementary components: Resilience/safety options	2	Hemingford Abbots to Galley Hill	Addresses specific issues surrounding mix of local traffic and substandard slip road. Could be shorter term improvement, depends on longer term role for existing A14 carriageway. Need would be linked to any HSBP option.	LNMS	No cost work done.					HA ideas
79	A14 J26 Galley Hill to J28 Trinity Foot: access / junction rationalisation / parallel local routes	Capacity improvement, local route	Complementary components: Resilience/safety options	2	Galley Hill to Trinity Foot	As above re: benefits. Could be shorter term improvement, depends on longer term role for existing A14 carriageway.	LNMS	No cost work done.					Could be locally contentious. May require land acquisition / orders

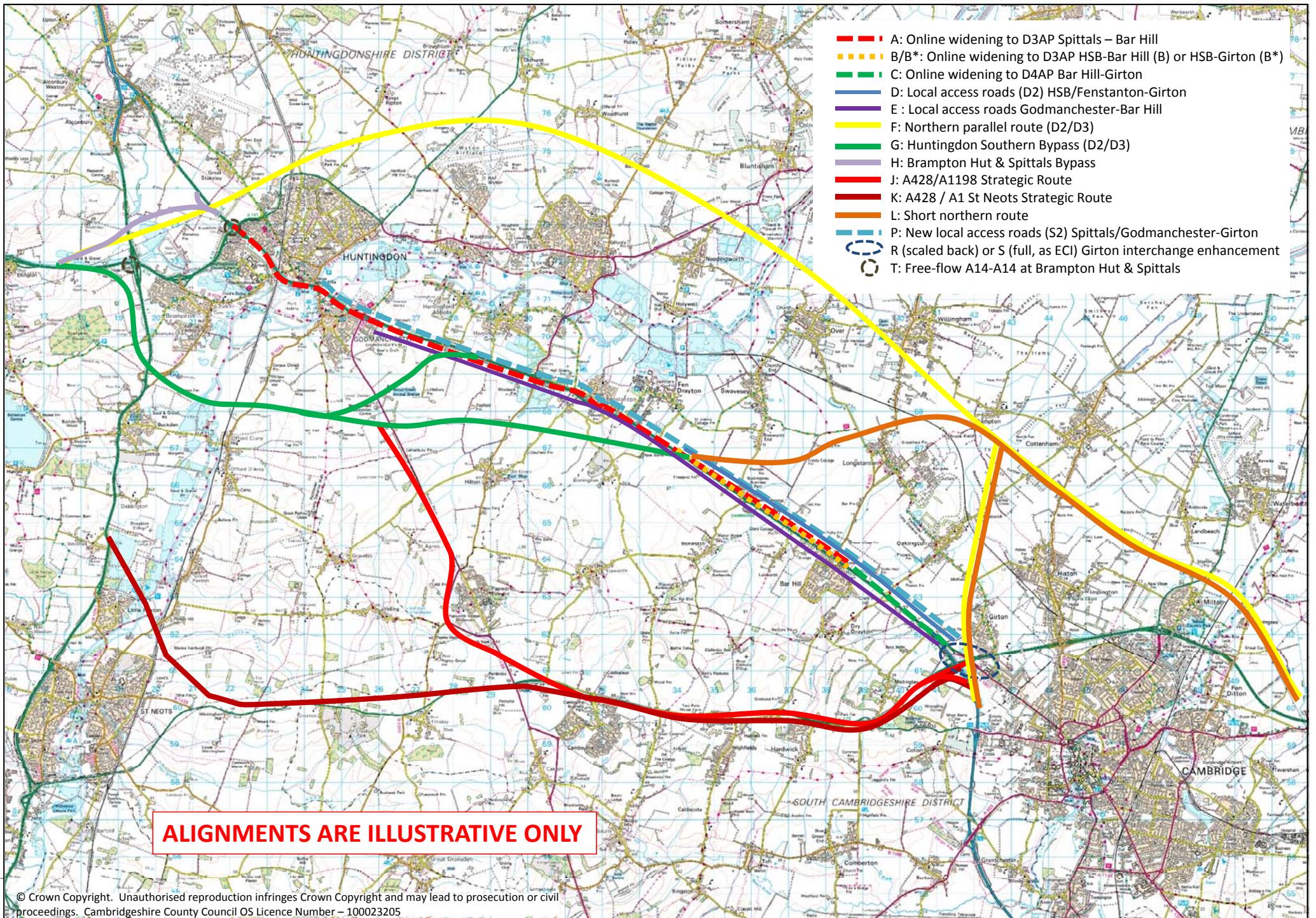
106a	Toll the A14 (in combination with 106b)	Charging	Complementary components: Operational / tolling options	2	Brampton Hut - Cambridge	Would probably need to retain a toll free route, but tolling (probably dynamic/peak period) could be applied to any new infrastructure.		workshop	9/1/12	n/a	n/a	Workshop_3			
109	Peak hour tolling on strategic A14 carriageway (and lower speed limit on local (non-tolled) road).	Charging/operation	Complementary components: Operational / tolling options	2	Godmanchester to Girton	Could be an important part of an overall package to reduce public sector funding requirement.		workshop	9/1/12	n/a	n/a	Workshop_6			
96	National road user charging (England/UK), including lorry road user charging	Tolling	Dropped - Government opposed to national RUC, except for HGVs	county-wide		Not sure how this would affect A14 - unless overall reduction in traffic?		TraCS	Nov 2009	178	TraCS Final Report	TraCS_59			
97	Motorway pricing/tolling	Tolling	Complementary components: Operational / tolling options	county-wide		As above.		TraCS	Nov 2009	178	TraCS Final Report	TraCS_60			
112	Reduce A14 speed limit to improve capacity (max flow at 40mph). Could apply peaks only (no legislation yet for variable speed limit on non-motorways).	Operational	Complementary components: Operational / tolling options	3	Huntingdon to Cambridge	Could form part of overall solution. Permanent lower speed limits (e.g. on any LDR) could enable lower standard/cost road but would tend to hit economics.		workshop	9/1/12	n/a	n/a	Workshop_9			
111	Dynamic lane usage (3 lanes, middle tidal) with moveable physical barrier, on local road, or similar with 5 lanes on strategic road.	Operational	Dropped - difficult to see where it would be applied. Peak flows very similar.	2	Godmanchester to Girton	Would depend on new infrastructure as existing unsuitable. Could be applied to 3 lane LDR for example?		workshop	9/1/12	n/a	n/a	Workshop_8			
11	A14 and A428 demand sharing and VMS. Enhanced role for E-W traffic on A428 and an M1/A421/A428 route. Reinstates A428 improvements west of A1198. VMS cordon to divert traffic between A14 and A428.	Operational	Dropped - unlikely to be viable except during incidents	1-3	A428 Cambridge to St Neots	Would require major and expensive upgrade to A428 at St. Neots. Would not serve N-S traffic. Could be large increase in journey length for A14 traffic to/from Midlands.	Refined into H1, H2 and H3	CHUMMS	Aug 2001	4-3	CHUMMS Chapter 4	R6			
89b	Toll sections of the A14 for freight traffic, which could help reduce congestion, generate revenues and encourage modal shift. Differential tolling by time period could also be used to encourage the re-timing of freight movements to avoid conflicts with other traffic.	Charging	Dropped - unattractive to local economy	A14		Why toll just freight movements? - Would make more sense to toll peak hour (car?) trips. Peak peiod tolling for all traffic more equitable.	Low p 111	Greater Cambridge DaSTS	Jun 2010	92	DaSTS Phase 1 Report (part 2)	Freight Strategy (highway)			
92	Active traffic management (further implementation - managed motorways, green waves, ramp metering, etc)	ITS and other technology-based solutions	Complementary components: Operational / tolling options	county-wide		Unlikely to be a solution in itself but potentially an important component of an overall solution to ensure 'making best use'.		TraCS	Nov 2009	175	TraCS Final Report	TraCS_1			
100	Ban HGV overtaking on dual carriageways at peak times	ITS and other technology-based solutions	Dropped - effectiveness questionable and problematic for vehicles joining main carriageway	county-wide		Not really addressing the main issues. This solution most effective where gradients encountered that significantly slow HGVs... What are lessons from trial scheme on A14 Leicestershire?		TraCS	Nov 2009	179	TraCS Final Report	TraCS_6			
101	HGV lanes on strategic highway network	ITS and other technology-based solutions	Dropped - inefficient use of capacity, and for reasons for 100.	county-wide		Insufficient capacity to provide this.		TraCS	Nov 2009	179	TraCS Final Report	TraCS_113			
103	Expand HA Traffic Officer Service (TOS) patrol Routes to A12, A13, A14 and selected local authority roads	ITS and other technology-based solutions	Dropped - already happening as short-term measure	Full corridor	A14	HATO's already patrol Huntingdon Girton section. < £10m not shown(p 164)					Network Resilience and Adaptation	RC1			
ALTERNATIVES TO PEAK CAR/VAN/LORRY TRAVEL, TRAVEL DEMAND MANAGEMENT															
113	P&R at Swavesey (for example), with dedicated access to/from A14 and link into guided busway	Alternatives to car	Core component M(A)	Swavesey		Better CGB based P&R for A14 traffic likely to form part of overall solution.						Workshop_10			
114	Feeder services to busway - depends on origins and destinations of trips	Alternatives to car	Core component M(B)	Huntingdon to Cambridge		An easy win but probably relatively small impacts on A14 traffic.						Workshop_11			
115	Express buses along (tolled?) A14	Alternatives to car	Dropped - unlikely to offer better alternative than CGB	Huntingdon to Cambridge		Issues will be encountered once Cambridge is entered - probably better to use CGB.						Workshop_12			
5	Extensive passenger transport network. Dedicated corridors/routes, CAMTRAM or guided bus extended to Huntingdon. Future expanded system to link to Waterbeach, Cambourne, Trumpington and serving hospitals at Addenbrooke's, Fulbourn, Hinchingbrooke, Papworth.	Alternatives to car	Dropped - elements which would relieve A14 already delivered.	Cambridge to Huntingdon & wider area		Guided bus services do extend to Huntingdon! Not sure that many of these movements would have much impact on A14. We need evidence of the impact of CGB on the A14 - this would provide the basis of assessing/justifying these options.		CHUMMS	Aug 2001	4-3	CHUMMS Chapter 4	P4			
90	Access to public transport at both Huntingdon and St Ives would be improved through provision of better interchange facilities and additional cycle parking. Cycle routes to both towns will be improved and better links to the national and regional cycle network will also be considered as part of this scheme.	Alternatives to car	Dropped - marginal impact on corridor	Huntingdon and St Ives		Sounds likely an easy win but impacts on A14 probably relatively small.	Med p 111	Greater Cambridge DaSTS	Jun 2010	100	DaSTS Phase 1 Report (part 2)	PT Access			
91	An expanded P&R site at Madingley Road will also intercept journeys on the Huntingdon corridor through a proposed link between the P&R site and Huntingdon Road.	Alternatives to car	Dropped - marginal impact on corridor	Cambridge NW		But this could encourage car use on A14 - better to relocate P&R activity to the Huntingdon/ St. Ives area.	Med / High p 111	Greater Cambridge DaSTS	Jun 2010	100	DaSTS Phase 1 Report (part 2)	Madingley Rd P&R			
14	Water taxis. Limited localised potential in Central Cambridge to connect city centre and northern fringe with possible future extension to Waterbeach using the River Cam. A Huntingdon-Godmanchester link on the River Great Ouse to reduce car use and relieve B1044.	Alternatives to car	Dropped - marginal impact on corridor	Cambridge centre, and Huntingdon to Godmanchester		No real impact on A14.		CHUMMS	Aug 2001	4-3	CHUMMS Chapter 4	W1			
44	A new railway station on the main line between Cambridge and Waterbeach	Alternatives to car	Dropped - marginal impact on corridor	Cambridge		Would benefit A10 but little impact on A14?					Transport Improvements Report	Chesterton Station			
29	Electrification of rail freight routes to enable shorter journey times	Alternatives to car	See freight options?	Ipswich to Nuneaton		Much freight is diesel hauled on electrified routes anyway and speed gain for electric freight likely to be limited. Changes to enable longer trains could be beneficial but probably very expensive.	£50m See p22				Strategic Rail Freight Network	Electrification of Freight Routes			
102	Support to rail freight operators (to develop capacity e.g. Rail Environmental Benefit Procurement Scheme and improve performance)	Alternatives to car	See freight options?	county-wide		Mode transfer to rail shown to have very small effects on A14 traffic.					TraCS Final Report	TraCS_84			
30	Extension of Cambridge traffic volume/access hours restrictions in Core Scheme area to the area between the inner and outer ring road. Requires additional vehicular restrictions (whilst permitting sustainable mode movements) by severing links between key radials: Mill Road and Hills Road/Cherry Hinton Road; Hills Road and Trumpington Road; Mill Road and Coldhams Lane.	Demand management	Dropped - impractical and lacks effectiveness	Cambridge city		Could increase orbital traffic movements around Cambridge on A14 and M11. Not clear if this would help traffic conditions on A14					TIF Options Assessment Report	Extension of the Cambridge Core Scheme			
31	Extension of Controlled Parking Zone to city boundary, limiting the majority of on-street parking to short-stay. Estimate of one third of trips with a destination inside the City Boundary area would be affected. The majority of the affected destination zones lie between the Inner Ring Road and the City Boundary area.	Demand management	Complementary components: Demand management	3	Cambridge city	Could be a very useful supporting measure to encourage mode transfer and reduce peak hour trips on A14. All charging options need to be considered alongside the likely PT measures required to offset the impact. If these involve greater +R it may be the case that the traffic impact on the A14 would change little.					TIF Options Assessment Report	Extension of the Controlled Parking Zone (CP2)			
32	A workplace parking levy in Cambridge (as had previously been considered in detail in 1999)	Demand management / charging	Dropped - national government not supportive	Cambridge city	Cambridge city	Could be a useful supporting measure to encourage mode transfer and reduce peak hour trips on A14 - but doubts about real effect on users. May just operate as a local tax (as in Nottingham to fund the NET extensions).					TIF Options Assessment Report	Workplace Parking Levy			
33	Cordon based charge for crossing the Inner Ring Road cordon (inbound only).	Demand management	Dropped - Ineffective compared to area license	Cambridge		Could increase orbital traffic movements around Cambridge on A14 and M11.			V0.1: All TIF road pricing variants rationalised into options 33,38,40,41		TIF Options Assessment Report	Road Pricing - Cordon based			
38	Area licence charge for travelling within the City boundary (in / out / around).	Demand management	Core component M(C)	Cambridge		Previous work showed would provide modest reduction in A14 traffic.			V0.1: All TIF road pricing variants rationalised into options 33,38,40,41		TIF Options Assessment Report	Road Pricing - Area Licence			
40	charge for travelling within the City boundary.	Demand management	Dropped - Ineffective compared to area license	Cambridge		As above.			V0.1: All TIF road pricing variants rationalised into options 33,38,40,41		TIF Options Assessment Report	Road Pricing - Distance based within City Boundary			
41	charge for for travelling within the Cambridge Hinterland.	Demand management	Dropped - Ineffective compared to area license	Cambridge		Could reduce peak hour traffic depending on charging regime - but would be very difficult to implement. Would trunk roads be included?			V0.1: All TIF road pricing variants rationalised into options 33,38,40,41		TIF Options Assessment Report	Road Pricing - Distance based within Cambridge Hinterland			
OTHER															
89a	Specialist provision at service stations near Cambridge to encourage freight drivers to take a break, especially if travelling during peak periods and also provision of better information to drivers and Freight Transport Companies.	Peak spreading	Dropped - general issue across SRN - not specific to A14	A14		Probably limited impact, but there are suggestions that current freight parking facilities in the area are inadequate, but not a specific corridor issue.	Low p 111				Greater Cambridge DaSTS	DaSTS Phase 1 Report (part 2)	Freight Strategy (highway)		
94	Job/house swap schemes (to reduce commuting distances)	Measures designed to reduce the need to travel	Dropped - to generic / long-term	county-wide		Unknown effects - key is to achieve better home/workplace balance within Cambridge to (car dominated) reduce in-commuting. Not focused on A14 corridor.					TraCS	Nov 2009	177	TraCS Final Report	TraCS_115
95	Fuel duty increases	Behavioural change / smarter choice options	Dropped - outside scope	county-wide		National policy implications? No specific impact on A14? Not focused on A14 corridor.					TraCS	Nov 2009	177	TraCS Final Report	TraCS_44
98	Review location of proposed new developments to reduce need to travel	Measures designed to reduce the need to travel	Complementary components: Demand management	county-wide		As 94 above, properly located new developments could reduce A14 traffic. Not focused on A14 corridor.					TraCS	Nov 2009	178	TraCS Final Report	TraCS_76

99	Reduction in packaging materials to reduce volume of freight	Measures designed to reduce the need to travel	Dropped - outside scope	county-wide	Action for logistics industry. Not focused on A14 corridor.		TraCS	Nov 2009	179	TraCS Final Report	TraCS_120		
120	Improved cycling provision from A14-locked villages e.g. Bar Hill and Lolkwth to Cambridge		Complementary components: Demand management							Mike Salter	Jan 2012		
121	Reconsideration of productivity TIF scheme that looked at active management of long distance traffic M1 A1 A14/M11		For further consideration							Mike Salter	Jan 2012		
122	Provision of lorry (and car?) parking at either end of scheme with real time info on congestion giving option to pull off and park during congested periods - provision of rest area facilities, wifi etc to allow to time to be used productively; could be used as a hub for ride sharing / passengers parking and transferring to high occupancy vehicles		Complementary components: freight							Mike Salter	Jan 2012		
123	Targeted efforts with key employers / locations to spread peak travel demand - build on work of Travel for Work partnership		Complementary component: demand management							Mike Salter	Jan 2012		
Freight													
F1	Support for proposals to upgrade the Felixstowe to Nuneaton railway line, which could reduce HGV demand by 4%.	Alternative modes (public transport, coastal shipping, rail freight, etc.)	Core components: Freight OA-OC	Felixstowe-Soham-Ely-March-Peterborough-Leicester-Nuneaton	See 'comments' column				Lacking in detail, but assumed to be a full route upgrade to increase freight path capacity, loading gauge and train trailing lengths. Strategy has effectively been replaced by more recent capacity and loading gauge Options (see all below).	CHUMMS	Aug 2001	5-3	Freight
F2	Ipswich North Curve. Enables trains to run from Felixstowe towards Ely without need to reverse in Ipswich Yard. Provides for increase in freight capacity and capability	Alternative modes (public transport, coastal shipping, rail freight, etc.)	Core components: Freight OA	Ipswich	See 'comments' column	£42 million	Strategic Freight Network CP4		Option is currently being considered by the IPC. Assuming consent granted, Option is expected to be completed by mid 2014.	Network Rail London and SE RUS	Jul 2011	160 and 175	Freight
F3	Increase in train length to 30 wagons (640m trailing length). Permit longer freight trains (efficiency gains)	Alternative modes (public transport, coastal shipping, rail freight, etc.)	Complementary component: freight enhancements	Felixstowe-Soham-Ely-March-Peterborough-Leicester-Nuneaton	See 'comments' column				On-going project with view to funding and completion in CP5.	Network Rail London and SE RUS	Jul 2011	160 and 175	Freight
F4	Ely to Soham double track. Installation of second track to provide double-track railway between Ely and Soham, in order to provide additional freight capacity	Alternative modes (public transport, coastal shipping, rail freight, etc.)	Option being funded through additional capital released as part of Chancellor's Autumn statement (National Infrastructure Plan).	Ely to Soham	See 'comments' column	£39.5 million	CP4 into CP5		Option being funded through additional capital released as part of Chancellor's Autumn statement (National Infrastructure Plan).	Network Rail	Jan 2012		Freight
F5	Double tracking sections of Felixstowe branch line. Provides for increased freight capacity on Felixstowe branch line	Alternative modes (public transport, coastal shipping, rail freight, etc.)	Core components: Freight OB	Felixstowe to Westerfield Junction	See 'comments' column					HPUK			Freight
F6	Development of third intermodal terminal within the port, capable of handling 640m trailing length trains (efficiency gains).	Alternative modes (public transport, coastal shipping, rail freight, etc.)	Core components: Freight OD	Port of Felixstowe	See 'comments' column					HPUK			Freight
F7	Syston to Stoke loading gauge enhancement to W12, providing an additional gauge cleared route from Haven Ports to the North West	Alternative modes (public transport, coastal shipping, rail freight, etc.)	Complementary component: freight enhancements	Syston to Stoke	See 'comments' column	c£16 million	CP4 into CP6		Option being funded through additional capital released as part of Chancellor's Autumn statement (National Infrastructure Plan).	Network Rail	Jan 2012		Freight
Strategic Rail Freight Interchanges													
F8	Strategic Rail Freight Interchange developments (including expansion of existing terminals) at Corby, Birch Coppice, East Midlands Distribution Centre (Castle Donnington) and Alconbury	Rail freight terminal developments (including expansion of existing terminals) at Corby, Birch Coppice, East Midlands Distribution Centre (Castle Donnington) and Alconbury	Core components: Freight OD	Corby, Birch Coppice, East Midlands Distribution Centre (Castle Donnington) and Alconbury	See 'comments' column				Developer financed Options	Network Rail Freight RUS	Mar 2007	123	Freight
F9	Strategic Rail Freight Interchange (SRFI) at Alconbury - Additional rail-served floor space - increased competitiveness for rail freight	Alternative modes (public transport, coastal shipping, rail freight, etc.)	Core components: Freight OD	Alconbury	See 'comments' column				Being promoted by Urban and Civic	Network Rail London and SE RUS, Urban and Civic ProLogis	Jul 2011	179	Freight
F10	DIRFT Phase 3. Additional rail-served floor space - increased competitiveness for rail freight	Alternative modes (public transport, coastal shipping, rail freight, etc.)	Core components: Freight OD	DIRFT	See 'comments' column								Freight
F11	SRFI at Rossington (Doncaster). Additional rail-served floor space - increased competitiveness for rail freight		Core components: Freight OD		See 'comments' column					Helioslough			Freight
F12	SRFI at Corby. Additional rail-served floor space - increased competitiveness for rail freight		Core components: Freight OD		See 'comments' column					ProLogis			Freight
F13	A review of all freight delivery time restrictions, including out-of-town retail parks, to remove unnecessary restrictions and permit deliveries outside the AM/PM peaks (middle of day or evening/night time) where it would not cause severe impacts	Affordable road schemes/Behaviour change	Complementary component: freight enhancements	Cambridge and Huntingdon	See 'comments' column				Operators generally avoid deliveries in the AM/PM peaks where possible. However, deliveries into Cambridge have to be completed before 10.00, thereby 'forcing' HGV traffic onto A14 during AM peak. Would probably need to be combined with other measures (below)	MDST			Freight
F14	Package of traffic regulatory measures to direct freight deliveries into Cambridge and Huntingdon outside the AM/PM peaks (middle of day or evening/night time).	Affordable road schemes/Behaviour change	Complementary component: freight enhancements	Cambridge and Huntingdon	See 'comments' column				Operators generally avoid deliveries in the AM/PM peaks where possible. However, deliveries into Cambridge have to be completed before 10.00, thereby 'forcing' HGV traffic onto A14 during AM peak. Would probably need to be combined with other measures (below)	MDST			Freight
F15	Package of traffic regulatory measures to direct freight deliveries into Cambridge and Huntingdon outside the AM/PM peaks (middle of day or evening/night time), but only when using modern equipment which minimises impact of urban deliveries e.g. Euro 4/5 HGVs and silent roll cages equipment.	Affordable road schemes/Behaviour change	Complementary component: freight enhancements	Cambridge and Huntingdon	See 'comments' column				Operators generally avoid deliveries in the AM/PM peaks where possible. This option would allow those operators with modern clean and quiet equipment an exemption from the 10.00 delivery restrictions, thereby encouraging deliveries outside the peaks and with equipment which offers minimal impacts.	MDST			Freight
F16	Dedicated freight unloading infrastructure in centre of Cambridge and Huntingdon e.g. unloading bays, to mitigate impact of freight deliveries outside AM/PM peaks (middle of day or evening/night time)	Affordable road schemes/Behaviour change	Complementary component: freight enhancements	Cambridge and Huntingdon	See 'comments' column				Ban on HGV traffic after 10.00 could remain, but dedicated unloading bays in appropriate locations on edge of centre would be provided, thereby allowing freight vehicles to park and complete deliveries on foot. This would encourage deliveries outside the AM peaks	MDST			Freight
F17	A freight 'charging' scheme for Huntingdon and Cambridge. Charges would be made for all deliveries during AM/PM peaks, but with discounts/free entry outside peaks (middle of day or evening/night time) and with modern equipment which minimised impact of urban deliveries	Behaviour change/Tolling	Complementary component: freight enhancements	Cambridge and Huntingdon	See 'comments' column				Similar to schemes employed/planed in Genoa and Krakow. Revenue raised could be 'ring fenced' for investment in dedicated HGV infrastructure for centre deliveries.	MDST			Freight
F18	March bi-directional freight loop.	Alternative modes (public transport, coastal shipping, rail freight, etc.)	Core components: Freight OA		See 'comments' column				Bi-directional freight loop of 775m capability, in order to increase freight capacity on Felixstowe to Nuneaton route and permit longer freight trains.				
F19	Syston to Wigston		Alternative modes (public transport, coastal shipping, rail freight, etc.)		See 'comments' column				Capacity enhancements in the longer term. The extent and nature of capacity interventions between Syston and Wigston are being examined in light of other planned or proposed schemes in				

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Appendix C – Schematic illustration of core highway components

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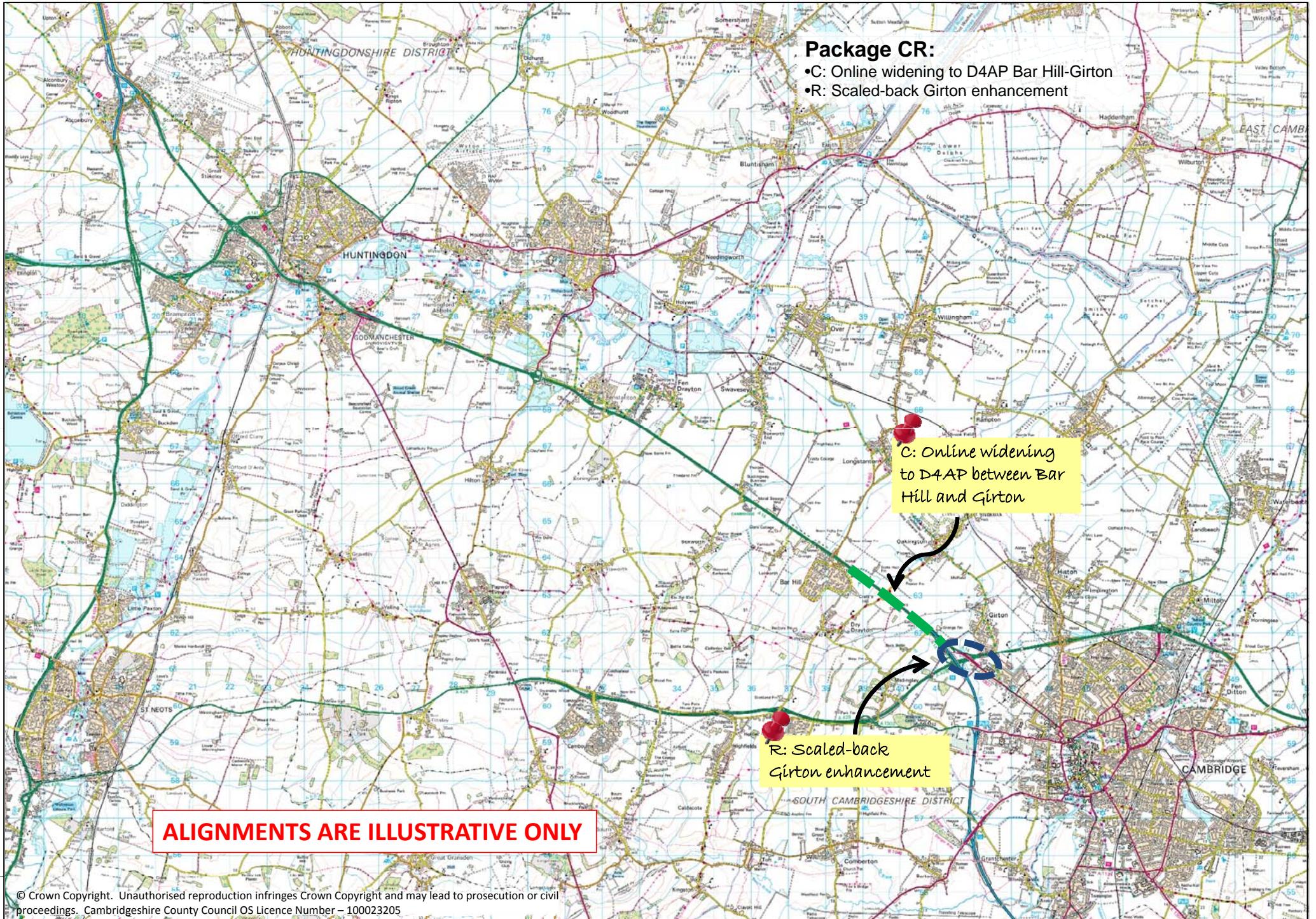


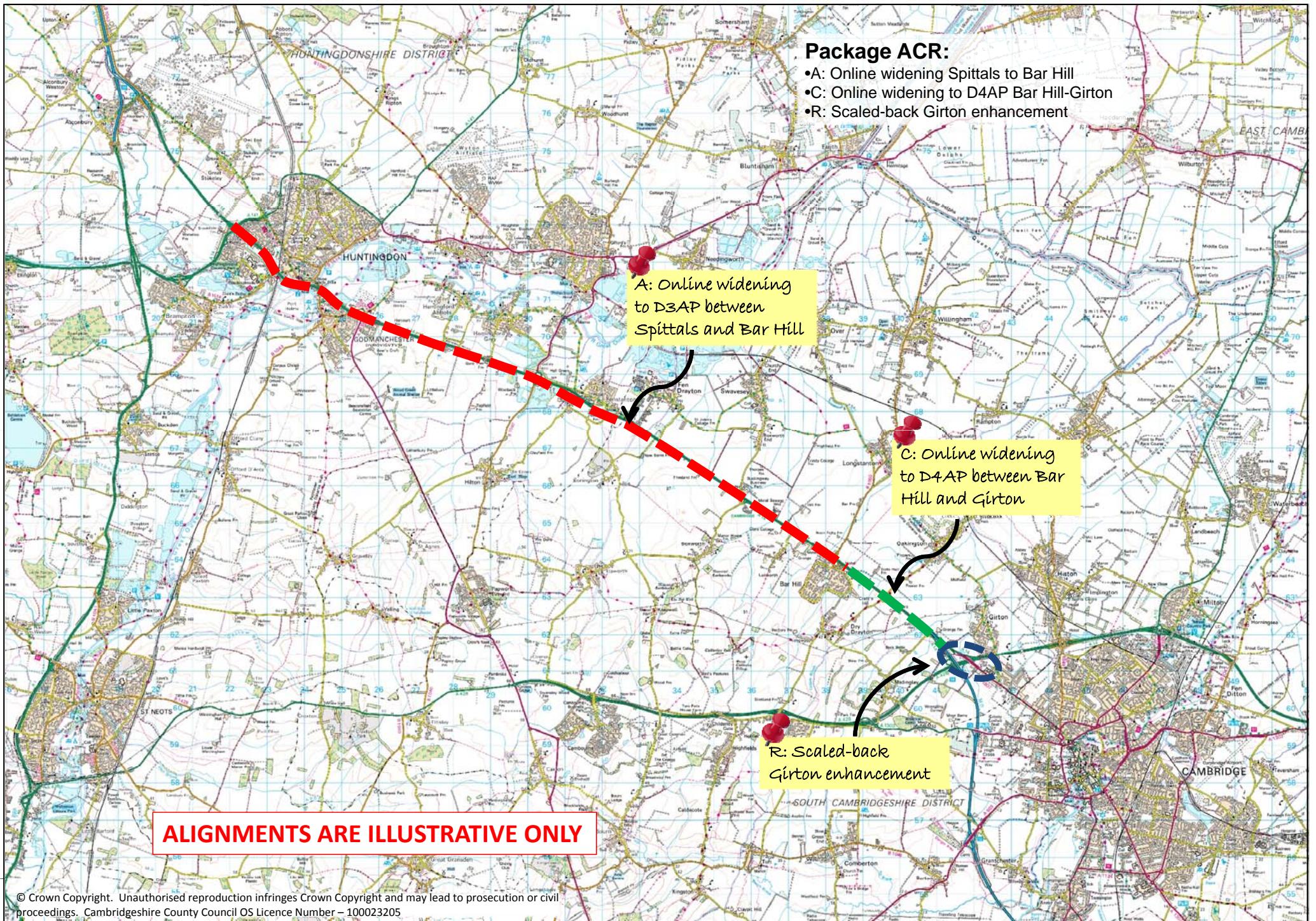
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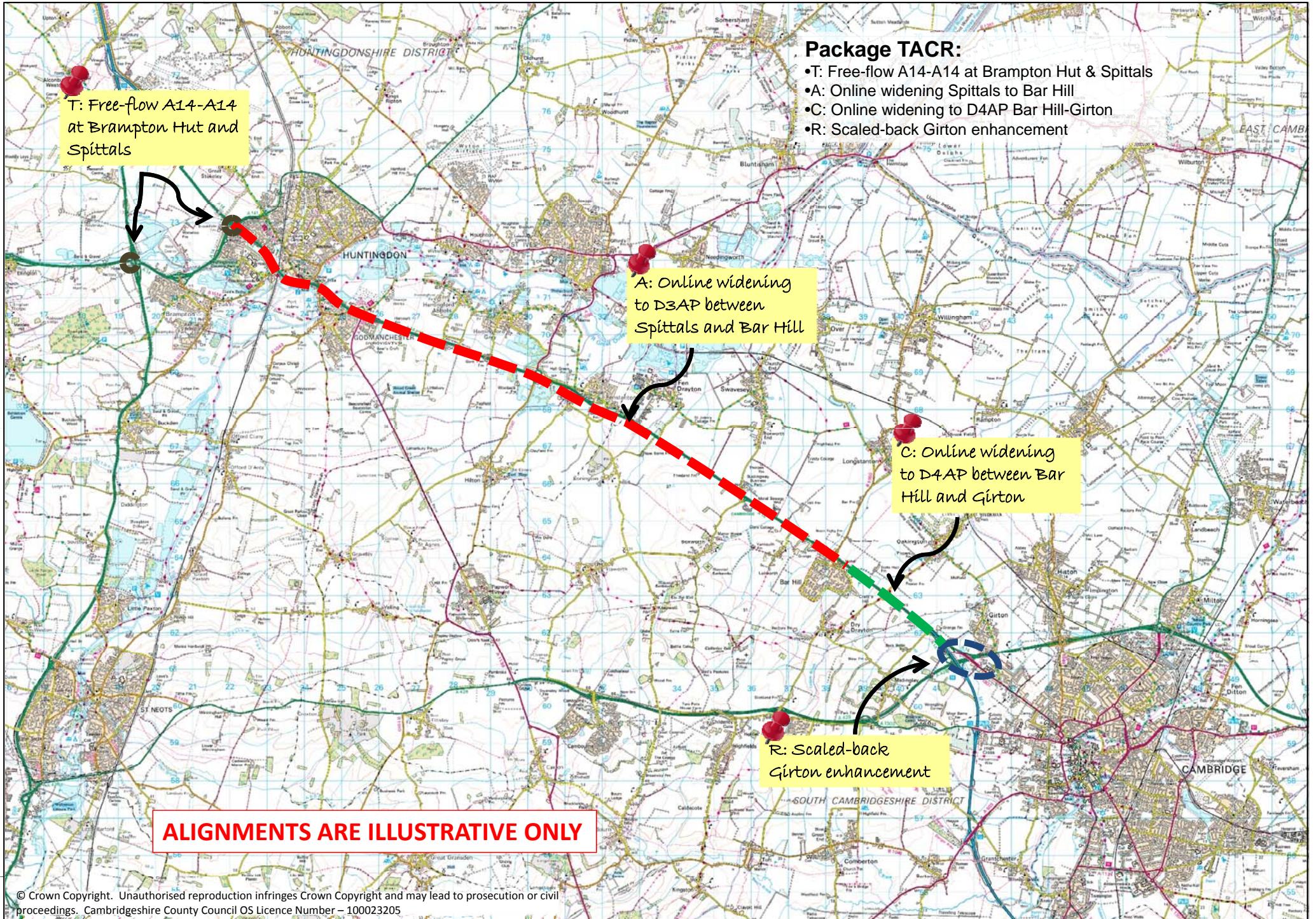
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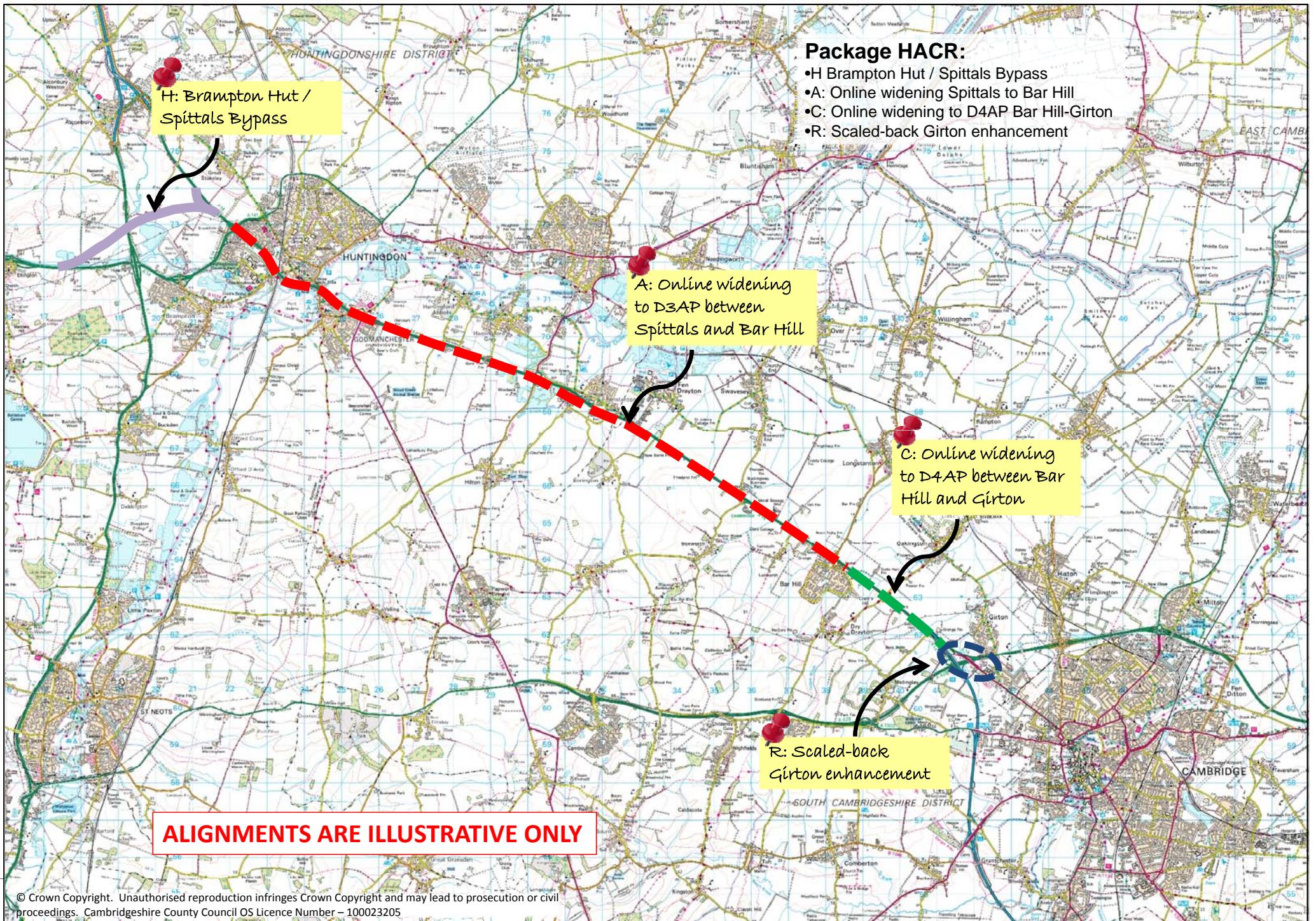
Appendix D – Schematic illustrations of modal packages (core highway components only)

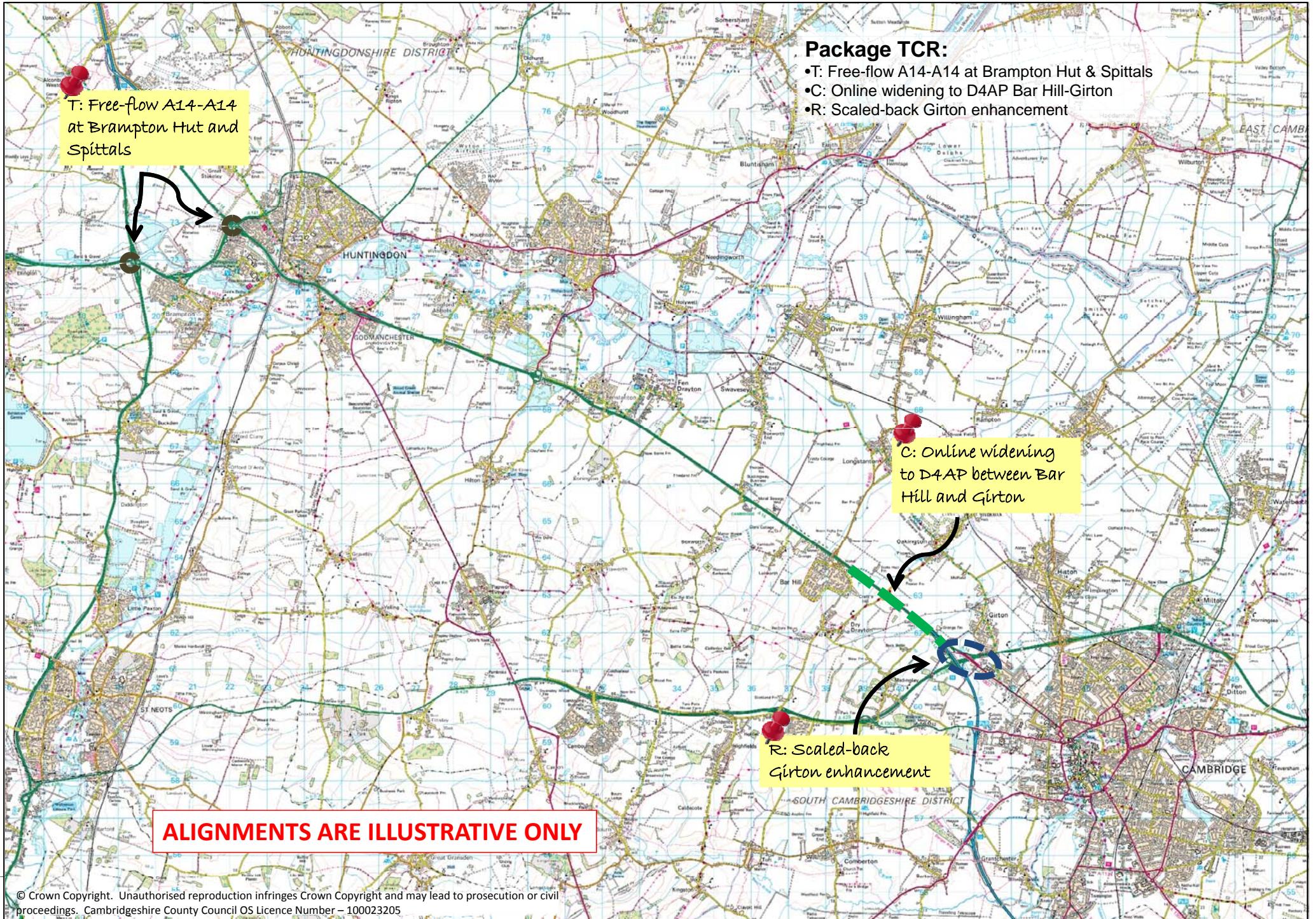
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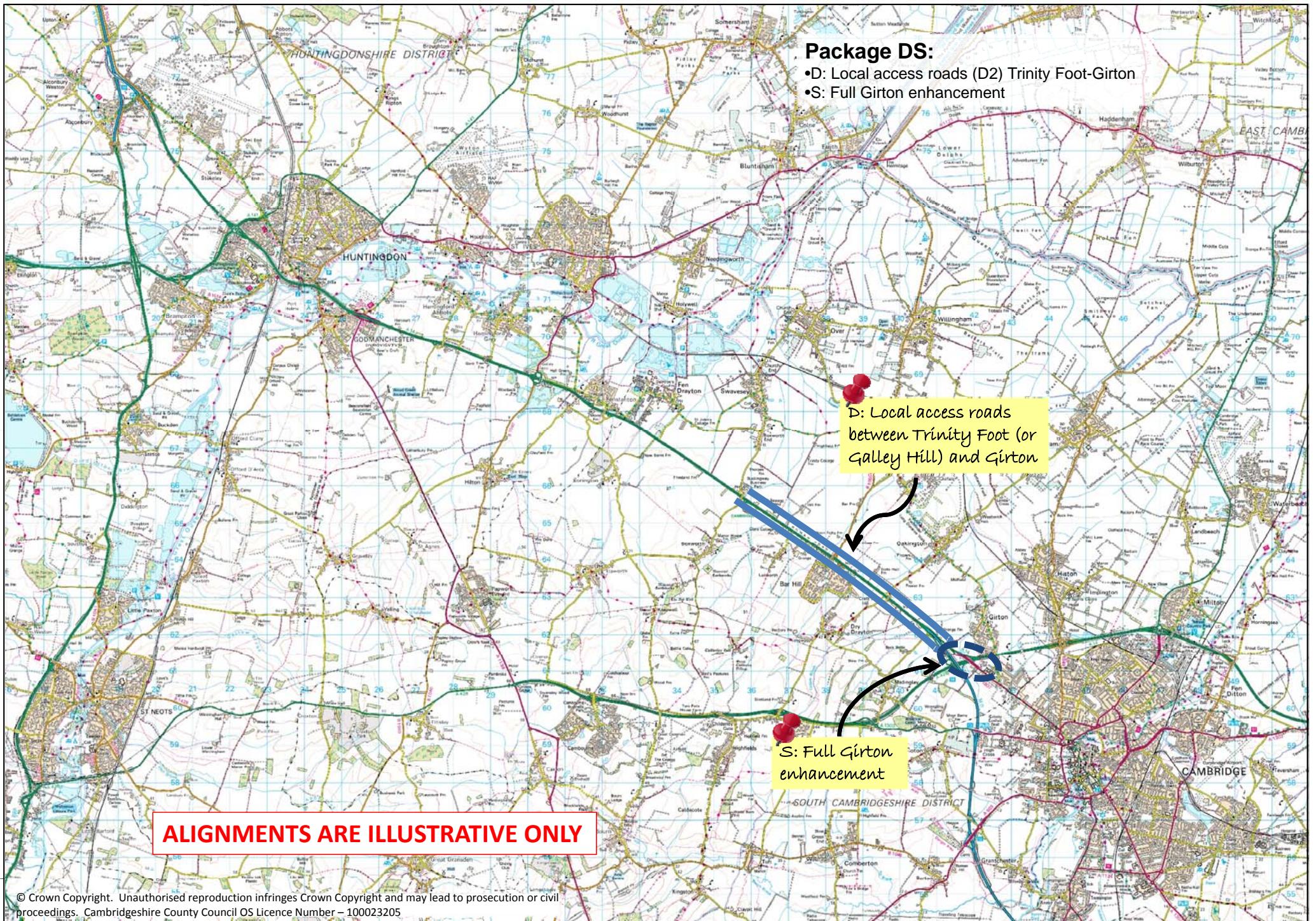




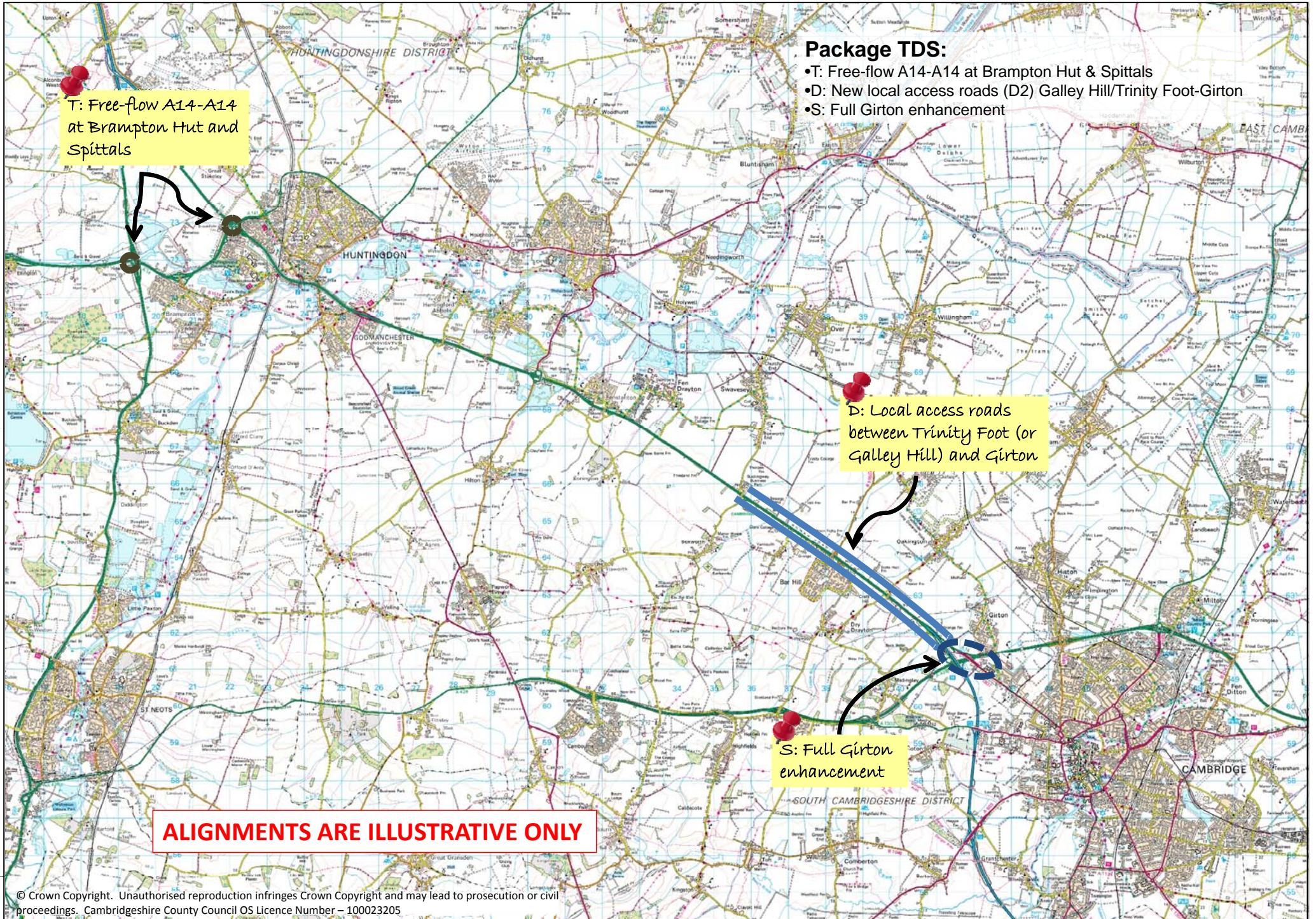


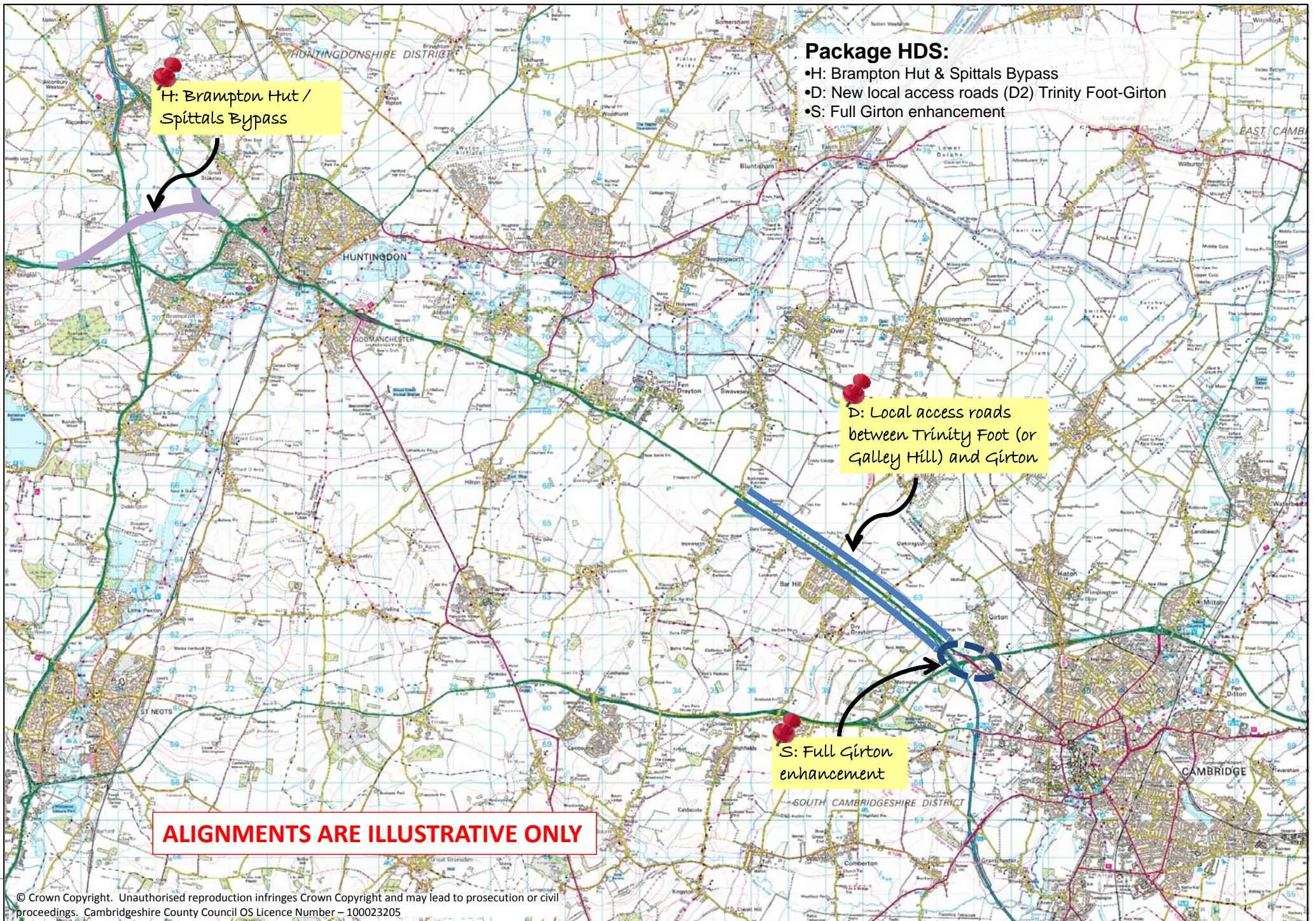




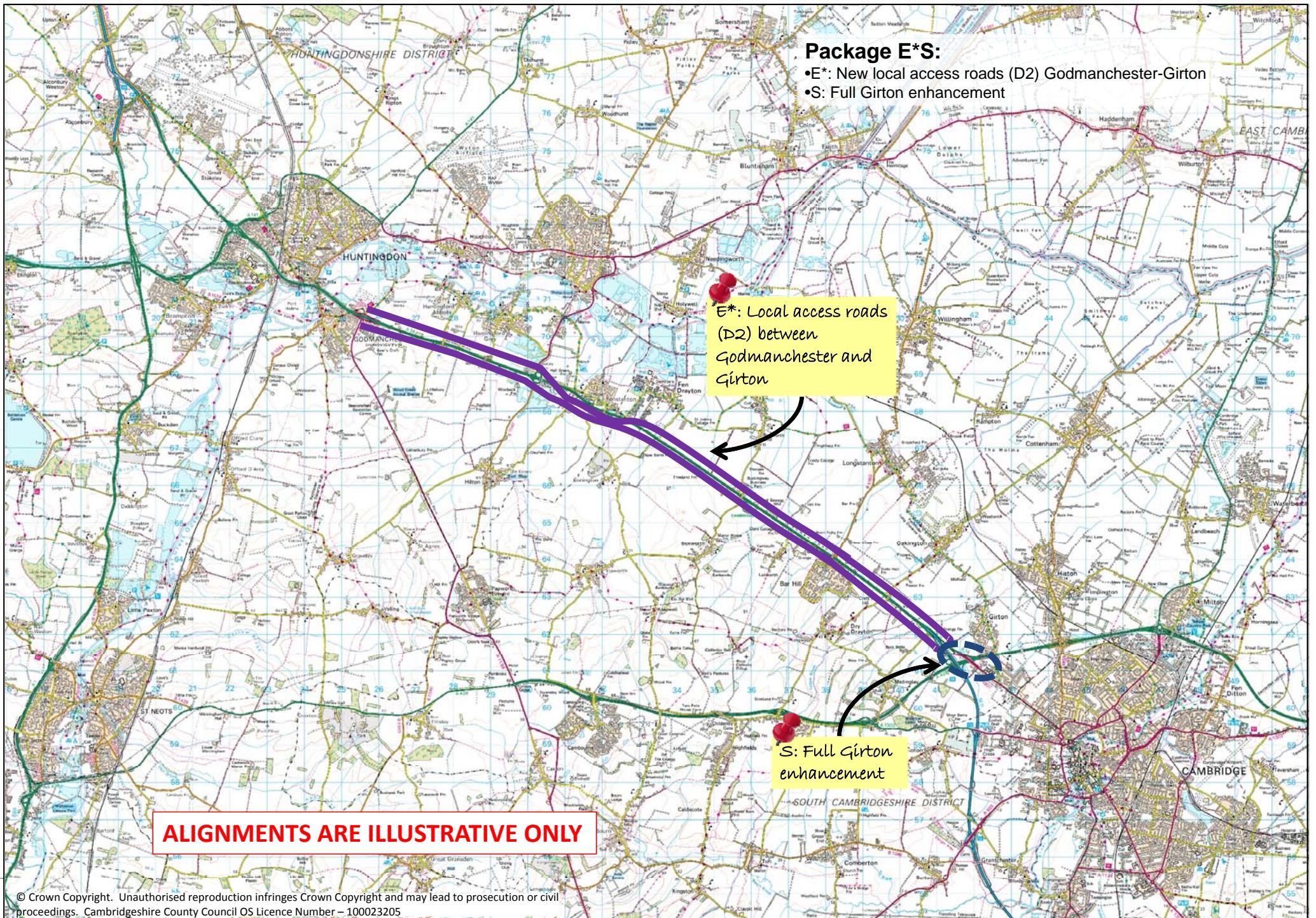


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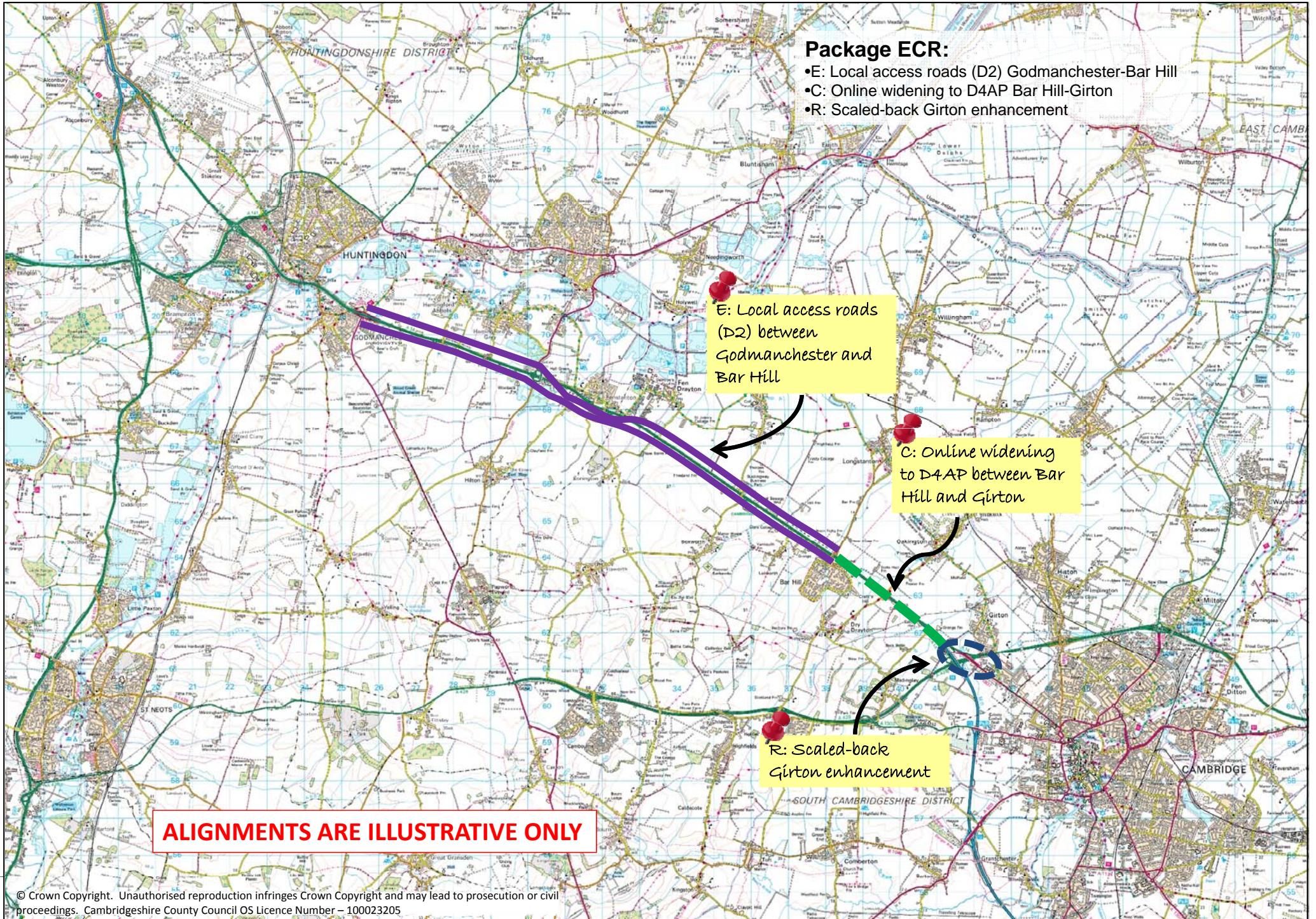




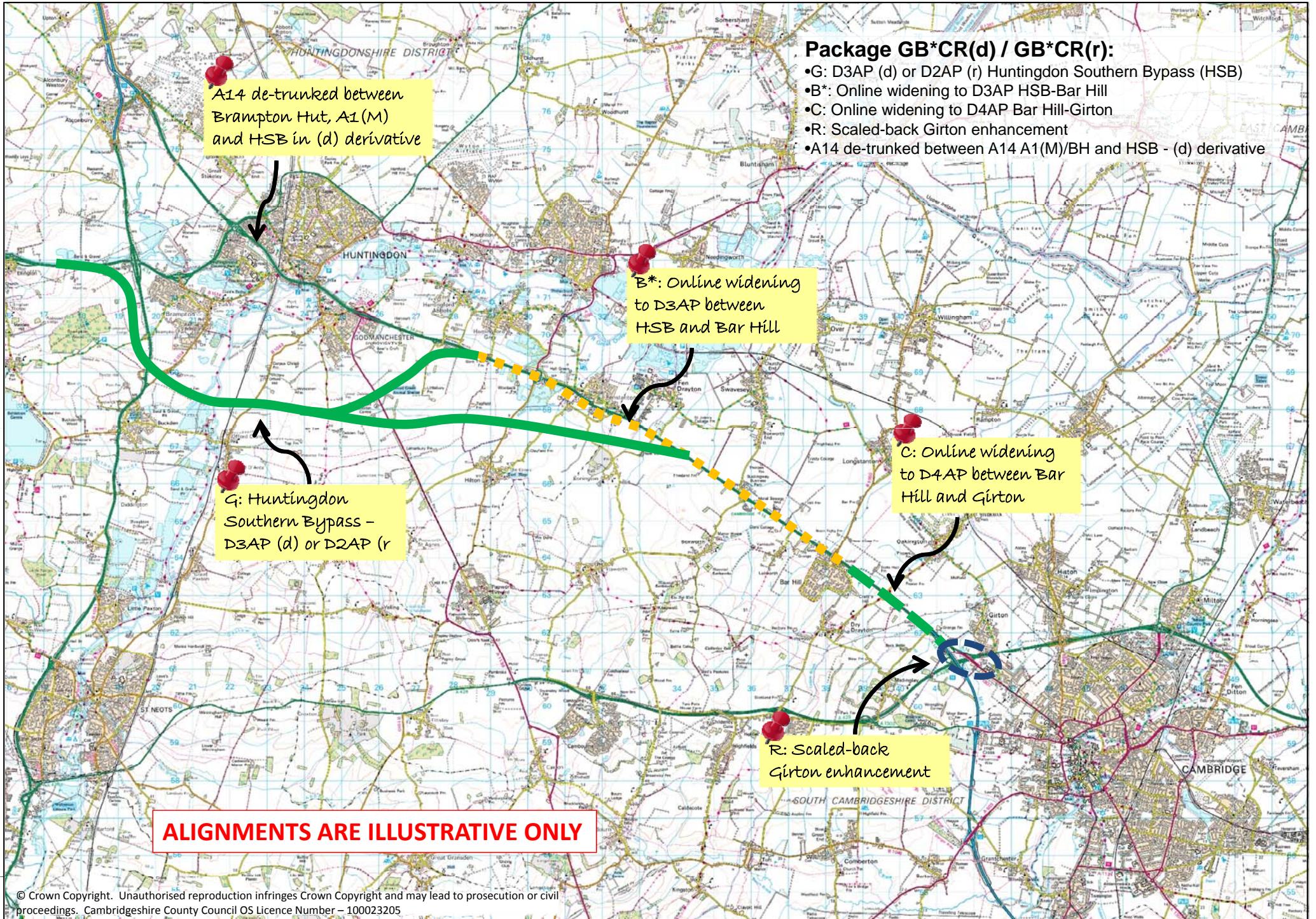
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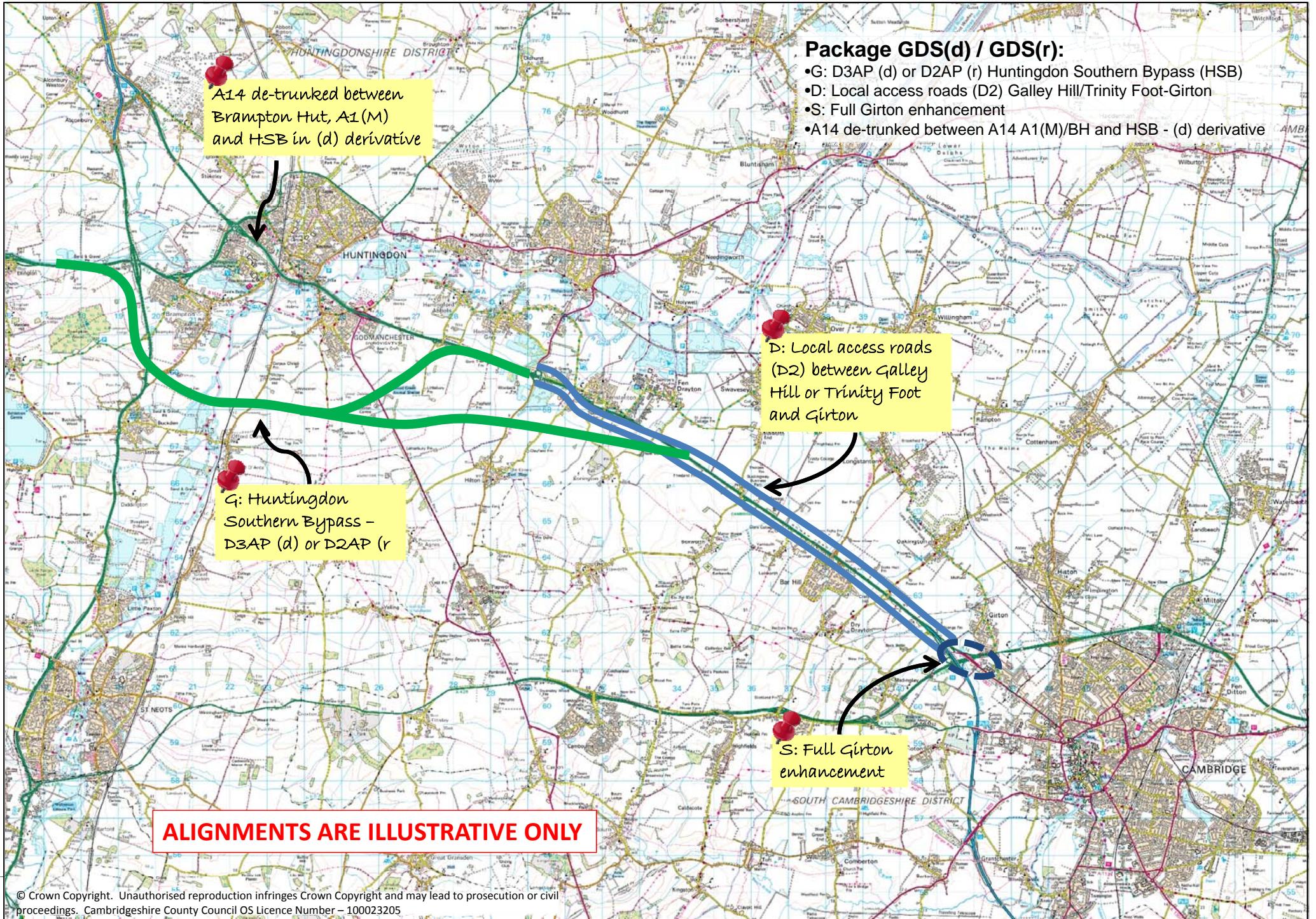


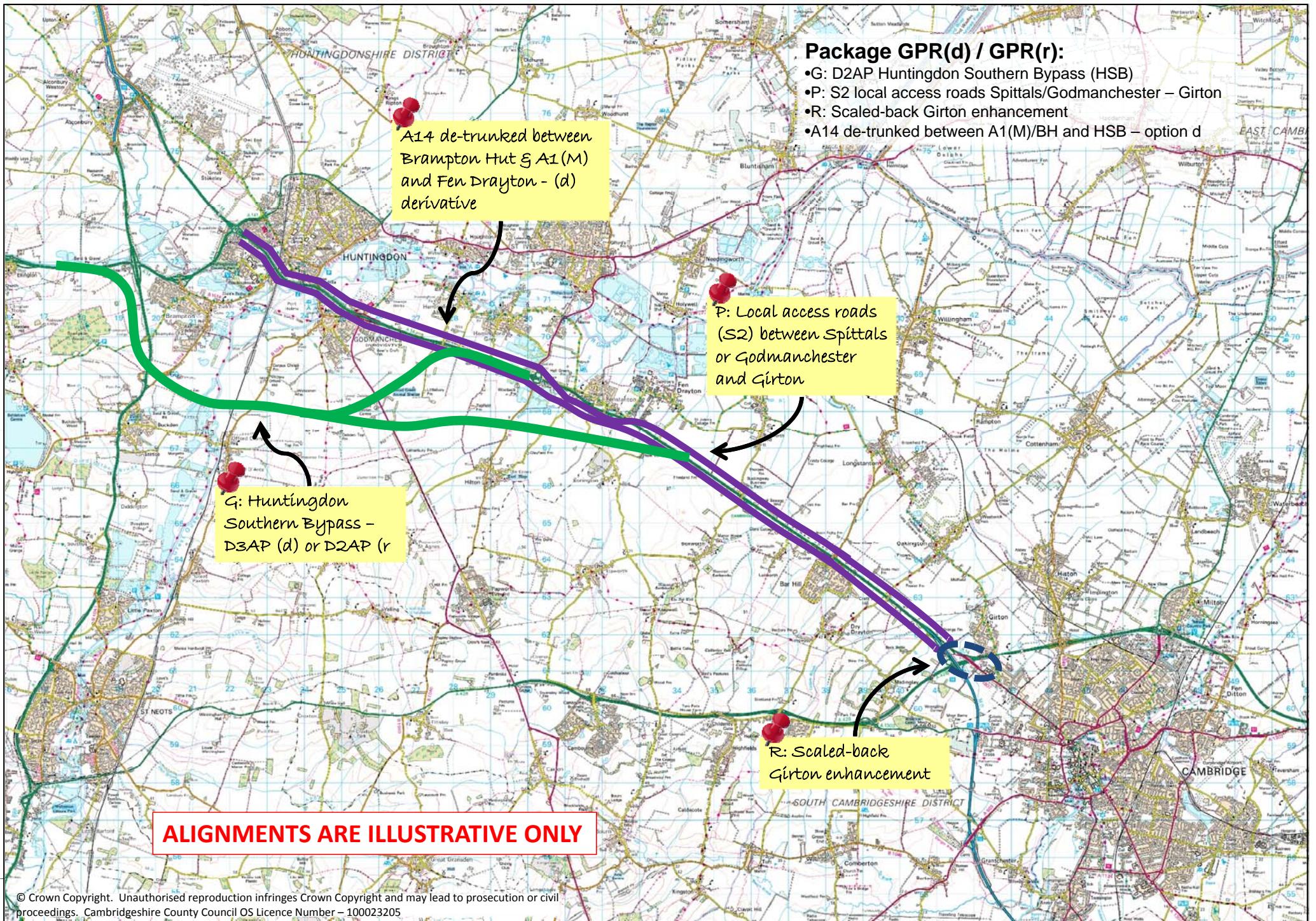
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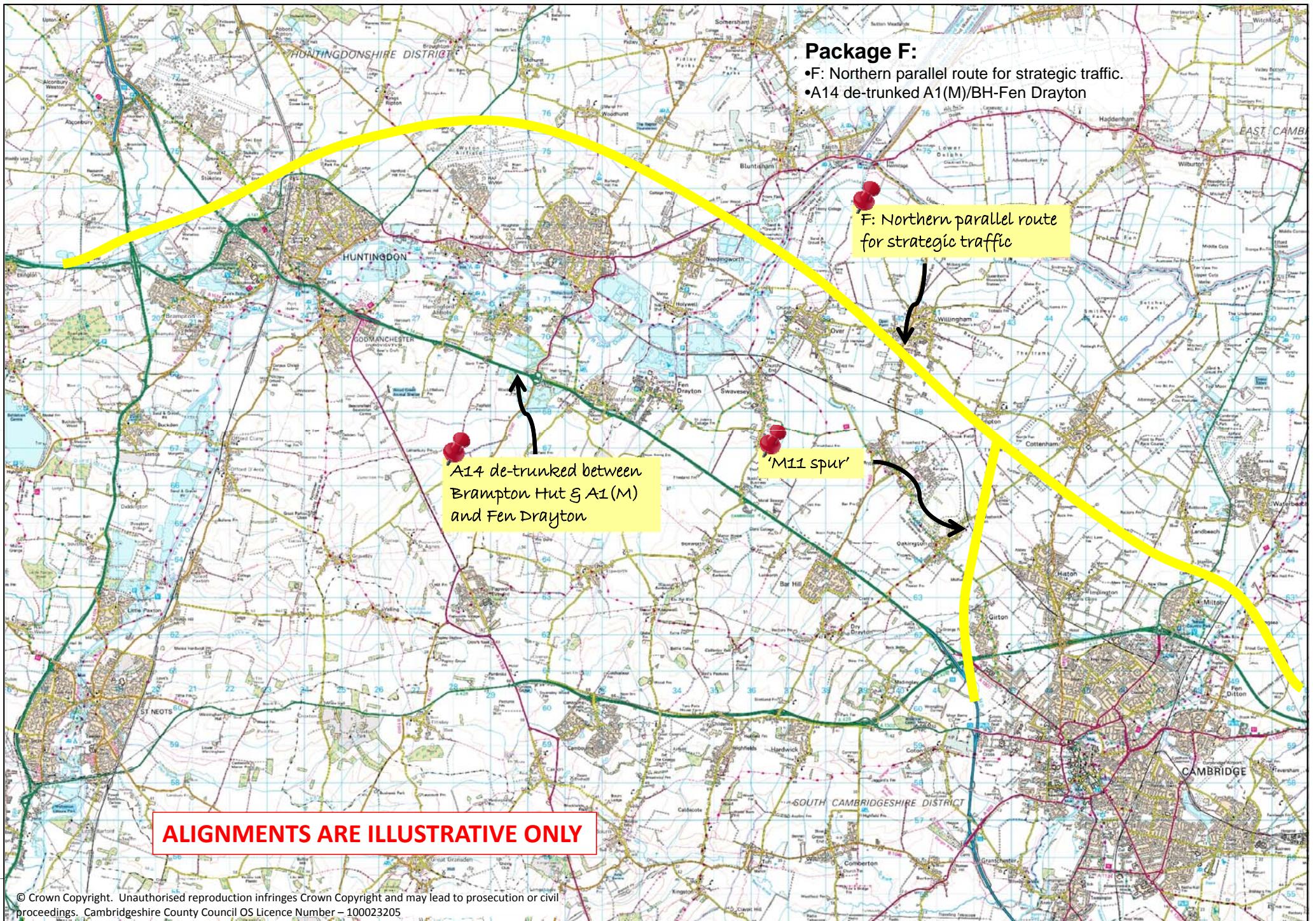


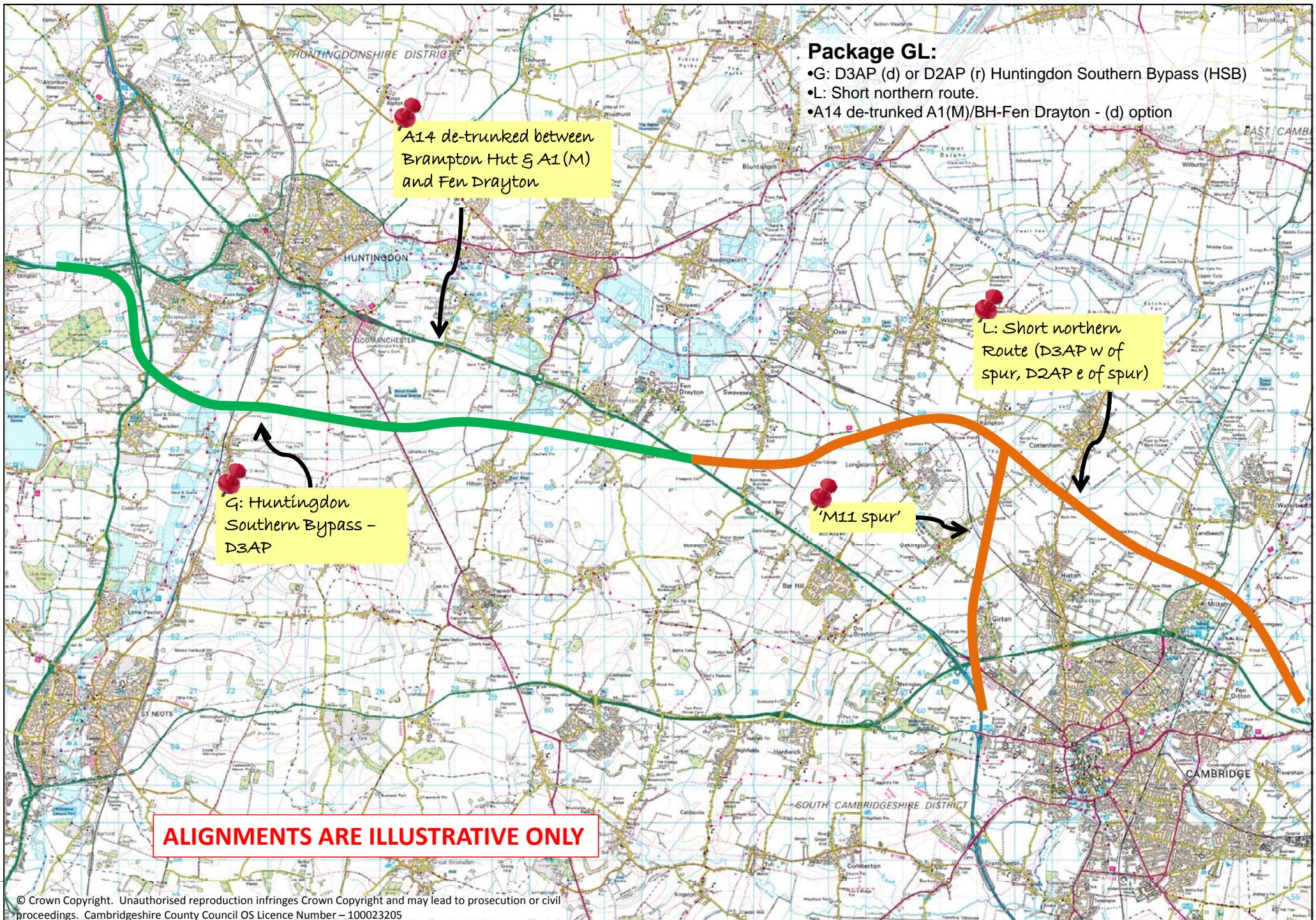
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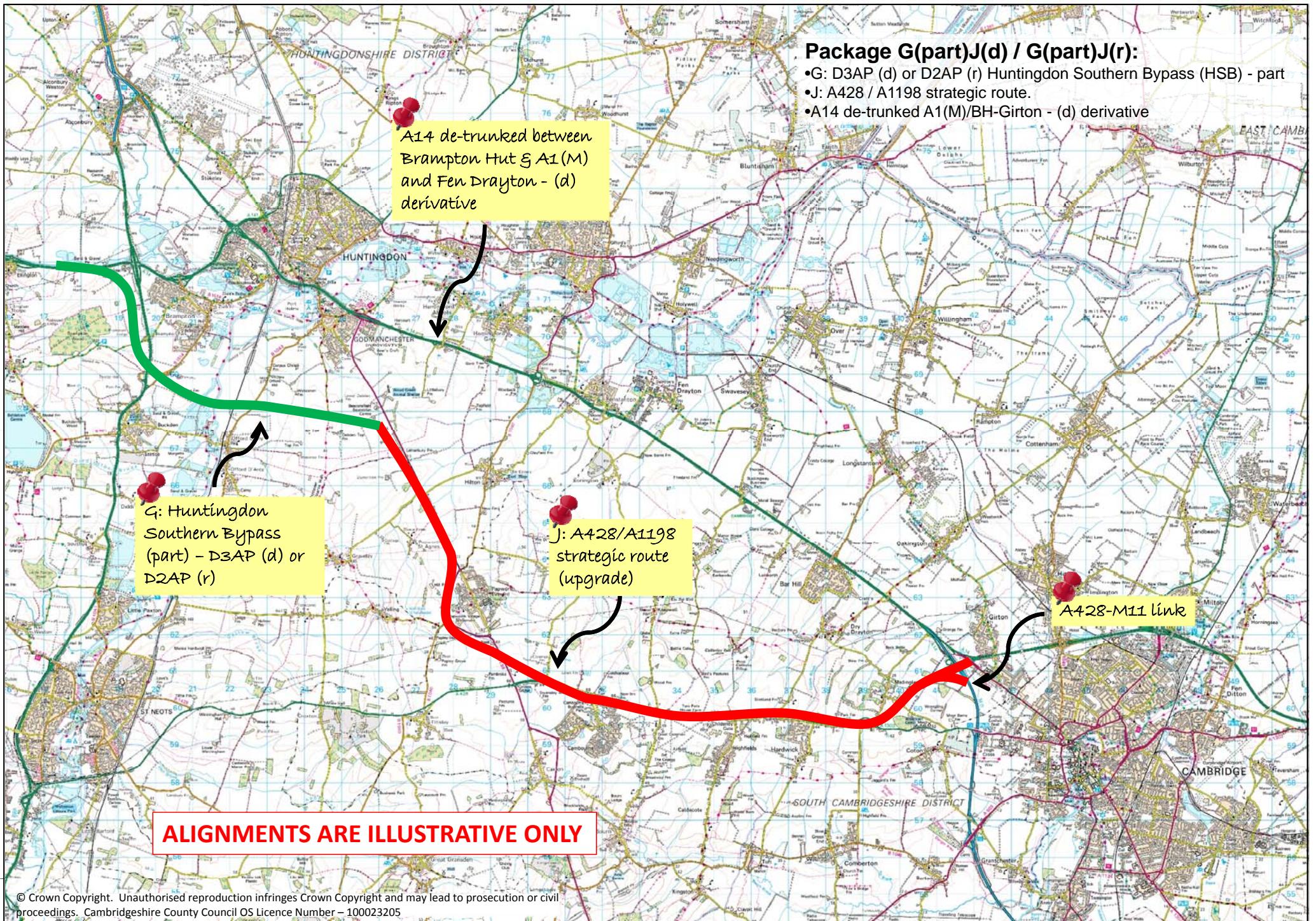


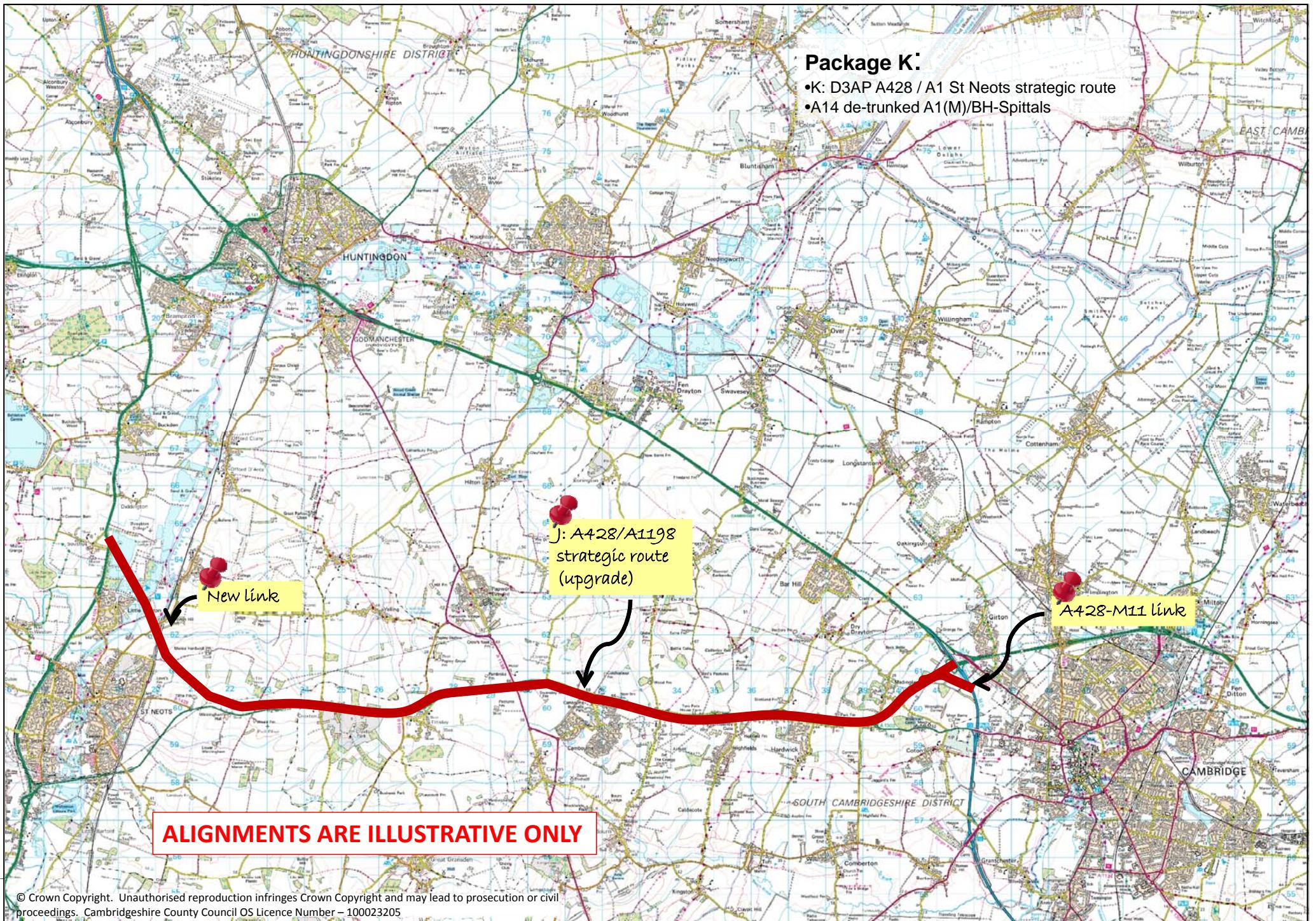






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Appendix E – Modal packages (including core and complementary components and scoring)

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PACKAGES OF OPTIONS (CORE AND COMPLEMENTARY COMPONENTS)

CORE COMPONENTS					Notes	COMPLEMENTARY COMPONENTS																		TRANSPORT PROBLEMS ADDRESSED				WIDER CHALLENGES ADDRESSED					
Package ref	Type	Core component #1	Core component #2	Core component #3	Core Component #4	78, 79	80, 81	88,	18,	18,	82-86,	116	117	112	93	92	97,	F7	F19	F3	F13-	120	31	123	98	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER	OTHER	
CR	Widen	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement		Probably requires CNB western end enhancements too (as do other 'R' options).	✓	✓		● ?	✓			●	✓	✓	●																	
ACR	Widen	A: Online widening Spittals to Bar Hill to D3AP	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement	Doesn't resolve BH or Spittals but worth keeping	✓	● -	● ?	✓		● ●	✓		✓	●																		
TACR	Widen	T: Free-flow A14-A14 at Brampton Hut & Spittals	A: Online widening Spittals to Bar Hill to D3AP	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement		✓	● -	● ?	✓		● ●	✓		✓	●																	
HACR	Widen	H: Brampton Hut / Spittals Bypass	A: Online widening Spittals to Bar Hill to D3AP	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement		✓	● -	● ?	✓		● ●	✓		✓	●																	
TCR	Widen	T: Free-flow A14-A14 at Brampton Hut & Spittals	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement		Probably requires CNB western end enhancements too (as do other 'R' options).	✓	✓	● ?	✓		● ●	✓		✓	●																	
DS	LARs	D: New local access roads (D2) Trinity Foot-Girton	S: Full Girton enhancement			● -	?	?	✓	●	✓	●			● ✓																		
TDS	LARs	T: Free-flow A14-A14 at Brampton Hut & Spittals	D: New local access roads (D2) Trinity Foot-Girton	S: Full Girton enhancement		Probably requires CNB western end enhancements too (as do other 'R' options).	● -	?	?	✓	●	✓	●			● ✓																	
HDS	LARs	H: Brampton Hut & Spittals Bypass	D: New local access roads (D2) Trinity Foot-Girton	S: Full Girton enhancement			● -	?	?	✓	●	✓	●			● ✓																	
E*	LARs	E*: New local access roads (D2) Godmanchester-Girton	S: Full Girton enhancement				● -	?	?	✓	●	✓	●			● ✓																	
ECR	LARs	E: New local access roads (D2) Godmanchester-Bar Hill	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement			● ✓	● ?	✓	●	✓	●				● ✓																	
GB*CR(d)	HSB & widen	G: D3AP Huntingdon Southern Bypass (HSB)	B*: Online widening to D3AP HSB-Bar Hill	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement	All strategic traffic via new alignment. A14 de-trunked A1(M)/BH to Fenstanton/HSB	✓	✓	● ?	✓		● ●	✓		✓	●																	
GB*CR(r)	HSB & widen	G: D2AP Huntingdon Southern Bypass (HSB)	B*: Online widening to D3AP HSB-Bar Hill	C: Online widening to D4AP Bar Hill-Girton	R: Scaled-back Girton enhancement	Strategic N-S traffic remains on old A14.	✓	✓	● ?	✓		● ●	✓		✓	●																	
GDS(d)	HSB & LARs	G: D3AP Huntingdon Southern Bypass (HSB)	D: New local access roads (D2) HSB-Girton	S: Full Girton enhancement		All strategic traffic via new alignment. A14 de-trunked A1(M)/BH to Fenstanton/HSB	● -	?	?	✓	●	✓	●			● ✓																	
GDS(r)	HSB & LARs	G: D2AP Huntingdon Southern Bypass (HSB)	D: New local access roads (D2) HSB-Girton	S: Full Girton enhancement		Strategic N-S traffic remains on old A14.	● -	?	?	✓	●	✓	●			● ✓																	
GPR(d)	HSB & LARs	G: D3AP Huntingdon Southern Bypass (HSB)	P: S2 local access roads Spittals / Godmanchester-Girton	R: Scaled-back Girton enhancement		All strategic traffic via new alignment. A14 de-trunked A1(M)/BH-HSB	● -	●	● ?	✓		● ●				● ✓																	
GPR(r)	HSB & LARs	G: D2AP Huntingdon Southern Bypass (HSB)	P: S2 local access roads Spittals / Godmanchester-Girton	R: Scaled-back Girton enhancement		Strategic N-S traffic remains on old A14.	● -	●	● ?	✓		● ●				● ✓																	
F	New route	F: Northern parallel route for strategic traffic with de-trunked A14.				All strategic traffic via new alignment. A14 de-trunked A1(M)/BH-Fen Drayton	-	?	?	✓						● ✓																	
GL	HSB & new route	G: D3AP Huntingdon Southern Bypass (HSB)	L: Short northern route (D3AP/D2AP).			All strategic traffic via new alignment. A14 de-trunked A1(M)/BH-Fen Drayton	-	?	?	✓						● ✓																	
G(part)J(r)	New route	G: D3AP Huntingdon Southern Bypass (HSB) - part (west of A1198)	J: A428 / A1198 strategic route.			All strategic traffic via new alignment. A14 de-trunked A1(M)/BH-Girton	-	?	?	✓						● ✓																	
G(part)J(r)	New route	G: D2AP Huntingdon Southern Bypass (HSB) - part (west of A1198)	J: A428 / A1198 strategic route.			Strategic N-S traffic remains on old A14.	-	?	?	✓	✓	✓	✓			● ✓																	
K	New route	K: D3AP A428 / A1 St Neots strategic route.				All strategic traffic via new alignment. A14 de-trunked A1(M)/BH-Spittals	-	?	?	✓						●																	
M(A)	PT/ Travel demand	M(A): Additional /expanded Park and Ride provision																								✓	✓	✓	✓	✓			
M(B)	PT/ Travel demand	M(B): Additional /expanded bus/Guided Busway services																								1	1	0	0	0	0		
M(AB)	PT/ Travel demand	M(A): Additional /expanded Park and Ride provision	M(B): Additional /expanded bus/Guided Busway services																							✓	✓	✓	✓	✓			
M(ABC)	PT/ Travel demand	M(A): Additional /expanded Park and Ride provision	M(B): Additional /expanded bus/Guided Busway services	M(C): Cambridge Area Licence Charge																						1	1	0	0	0	0		
O(ABCD)	Freight	O(A): Ipswich North Curve	O(B): Double-track Felixstowe branch line	O(C): March bi-directional freight loop.	O(D): Strategic Rail Freight Interchanges												●	●	●	●						1	1	1	0	2	1	1	0
O(D)	Freight	(OD): Strategic Rail Freight Interchanges																								0	0	0	0	0	0	0	0

(d) means de-trunked variant (no traffic through Huntingdon), with D3AP Huntingdon Southern Bypass

(r) means traffic strategic N-S traffic remains on existing A14 through Huntingdon, with D2AP Huntingdon Southern Bypass

- Complementary component incompatible with primary component(s)

? Further clarification required

● Complementary component considered mandatory

✓ Complementary component could be included in package (further refinement required)

All elements could be applied to all packages.

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