

Kent Corridors to M25 Route Strategy Evidence Report April 2014



Document History

Kent Corridors to M25 route-based strategy evidence report

Highways Agency

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1 Introduction

1.1 Background

- 1.1.1 The Highways Agency is responsible for planning the long term future and development of the strategic road network.
- 1.1.2 Route-based strategies (RBSs) represent a fresh approach to identifying investment needs on the strategic road network. Through adopting the RBS approach, we aim to identify network needs relating to operations, maintenance and where appropriate, improvements to proactively facilitate economic growth.
- 1.1.3 The development of RBSs is based on one of the recommendations included in Alan Cook's report [A Fresh Start for the Strategic Road Network](#), published in November 2011. He recommended that the Highways Agency, working with local authorities (LA) and local enterprise partnerships (LEPs), should initiate and develop route-based strategies for the strategic road network.
- 1.1.4 The then Secretary of States accepted the recommendation in the Government's [response](#) (May 2012), stating that it would enable a smarter approach to investment planning and support greater participation in planning for the strategic road network from local and regional stakeholders.
- 1.1.5 The Highways Agency completed the following three pilot strategies which have been published on the [Agency website](#):
- A1 West of Newcastle
 - A12 from the M25 to Harwich (including the A120 to Harwich)
 - M62 between Leeds and Manchester.
- 1.1.6 Building on the learning from those pilot strategies, we have divided the strategic road network into 18 routes. A map illustrating the Routes is provided in Appendix A. The Kent Corridors to M25 Route is one of that number.
- 1.1.7 RBSs are being delivered in two stages. Stage 1 establishes the necessary evidence base to help identify performance issues on Routes and anticipated future challenges, takes account of asset condition and operational requirements, whilst gaining a better understanding of the local growth priorities.
- 1.1.8 In the second stage we will use the evidence to take forward a programme of work to identify possible solutions for a prioritised set of challenges and opportunities. It is only then that potential interventions are likely to come forward, covering operation, maintenance and if appropriate, road improvement schemes.
- 1.1.9 The RBS process will be used to bring together national and local priorities to inform what is needed for a Route, while delivering the outcomes in the performance specification.

- 1.1.10 Using the evidence base and solutions identification studies, we will establish outline operational and investment priorities for all Routes in the strategic road network for the period April 2015 – March 2021. This will in turn feed into the Roads Investment Strategy, announced by the Department for Transport in [Action for Roads](#).

1.2 The scope of the stage 1 RBS evidence report

- 1.2.1 During the first stage of RBS, information from both within the Agency and from our partners and stakeholders outside the Agency has been collected to gain an understanding of the key operational, maintenance and capacity challenges for the Route. These challenges take account of the possible changes that likely local growth aspirations, or wider transport network alterations will have on the Routes.

- 1.2.2 The evidence reports:

- Describe the capability, condition and constraints along the Route;
- Identify local growth aspirations
- Identify planned network improvements and operational changes
- Describe the key challenges and opportunities facing the Route over the five year period
- Give a forward view to challenges and opportunities that might arise beyond the five year period.

- 1.2.3 The 18 evidence reports across the strategic road network will be used to:

- Inform the selection of priority challenges and opportunities for further investigation during stage 2 of route-based strategies
- Inform the development of future performance specifications for the Highways Agency.

- 1.2.4 A selection of the issues and opportunities identified across the Route are contained within this report, with a more comprehensive list provided within the technical annex. This is for presentational reasons and is not intended to suggest a weighting or view on the priority of the issues.

- 1.2.5 The evidence reports do not suggest or promote solutions, or guarantee further investigation or future investment.

1.3 Route description

- 1.3.1 This RBS covers approximately 134 miles of the strategic road network and contains a mixture of motorway and trunk road sections made up of the following roads (also see Figure 1, p5):

- A2 (East) from Dover to Faversham and A2 (West) from Rochester to the M25
- M2 from Faversham to Strood
- A249 from M2 Junction 5 to Sheerness
- A20 between Dover and Folkestone
- M20 from Folkestone to the M25
- M26 from M20 Junction 3 to the M25

1.3.2 This RBS, illustrated in Figure 1, is situated wholly within the County of Kent and, with the exception of the A249, is a part of the Trans European Network¹ linking Dover and Folkestone to the M25 and the rest of the United Kingdom.

1.3.3 For administration purposes the Agency splits the Strategic Road Network (SRN) into a number of Areas. This RBS covers part of Area 4 (which is akin to the area covered by Kent and Sussex) and Area 5 (the M25/M26/M20 junction 1-3).

1.3.4 As well as the strategic function of distributing traffic to and from the ports at Dover and Sheerness and the Channel Tunnel, the Route joins the following major conurbations (listed alphabetically) in the County together and to the rest of the country:

- Ashford
- Canterbury
- Chatham
- Dartford
- Faversham
- Gillingham
- Gravesend
- Maidstone
- Rochester
- Sevenoaks
- Sittingbourne

1.3.5 Traffic flows along this Route range from 10,300 to 137,800 vehicles per day². Traffic flows are lower on the A249 near Sheerness and increase heading towards the M25. The highest flows are recorded in this RBS are on the A2 south of Swanscombe, about 3 miles from M25 Junction 2.

1.3.6 The percentage of goods vehicles within this Route range from 9% to 41%, the average percentage of goods vehicles is 21%, which is 3% higher than the average value of 18% across the whole SRN. More detail on the traffic composition and performance of the Kent

¹ The Trans-European Transport Network (TEN-T) is a planned set of road, rail, air and water transport networks in Europe. The TEN-T networks are a part of a wider system of Trans European Networks (TENs) including a telecommunications network (eTEN) and a proposed energy network (TEN-E or Ten-Energy).

² Throughout this report traffic flows are reported in terms of two-way Annual Average Daily Traffic (AADT) flows unless otherwise stated. It should be noted that one-way traffic flows may be greater or less than half the two-way AADT value

Corridors to M25 RBS against the other RBSs is given in section 2.1.

1.3.7

This Route connects with a number of other Routes for which RBS are also being developed. These are (also see Annex A Route-based strategies map p65):

- London Orbital and M23 to Gatwick
- South Coast Central

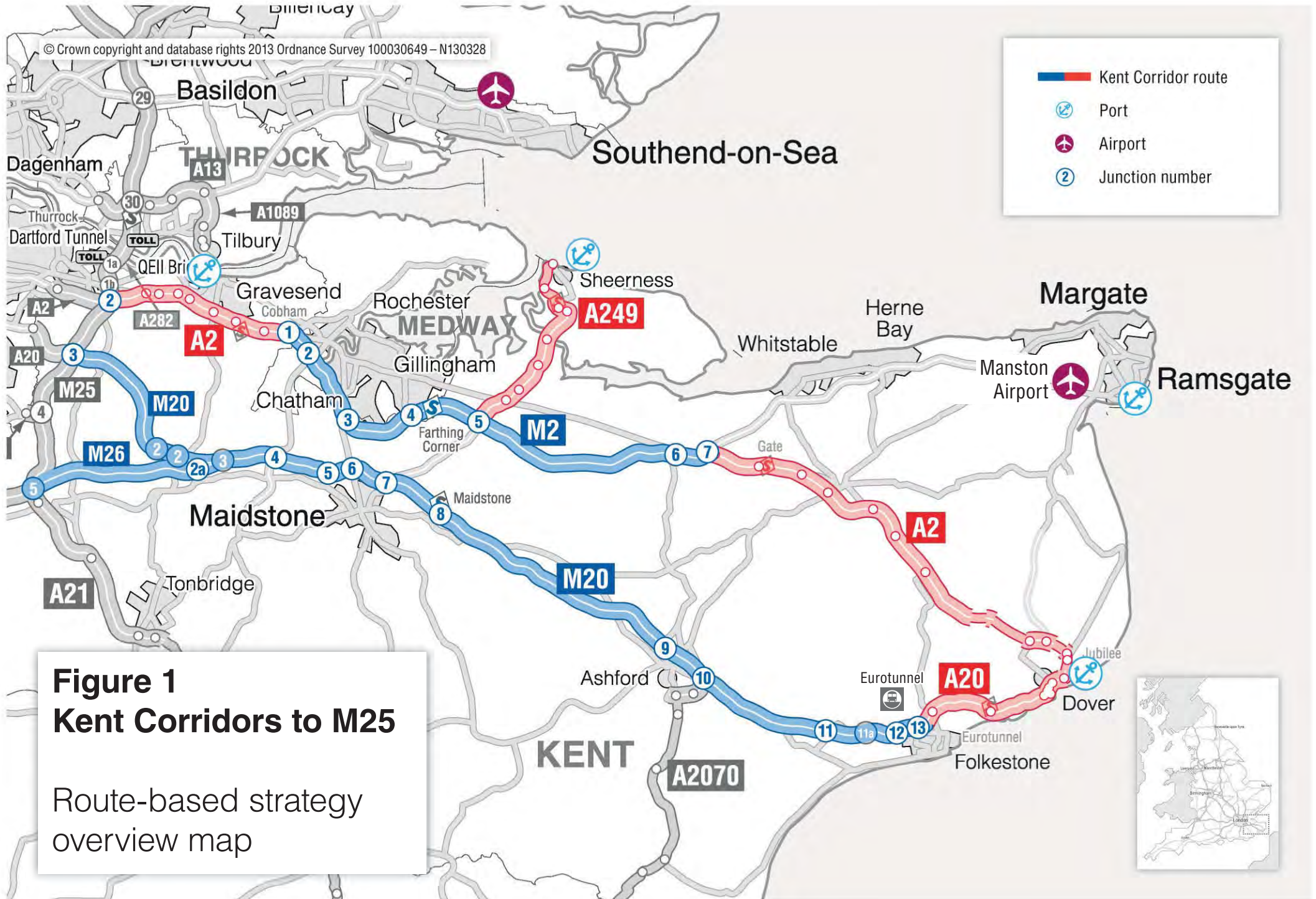


Figure 1
Kent Corridors to M25
Route-based strategy
overview map

2 Route capability, condition and constraints

2.1 Route performance

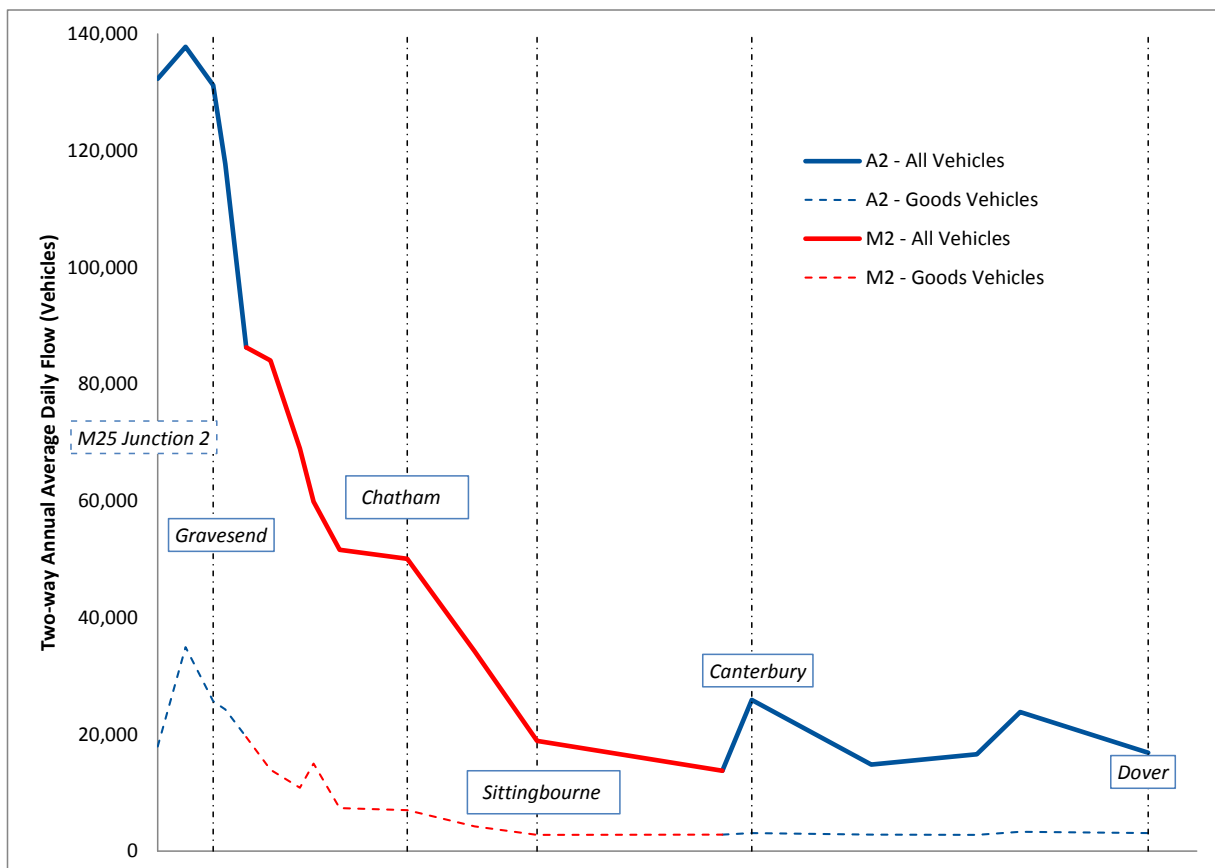
2.1.1 The strategic road network comprises only three per cent of England’s road network, but it carries one-third of all traffic. Around 80 per cent of all goods travel by road, with two-thirds of large goods vehicle traffic transported on our network.

2.1.2 The roads in this RBS carry between 10,300 and 137,800 vehicles per day depending on location. The lowest flows are on the sections of the A2 between Canterbury and Dover and the A249 to/from Sheerness. The highest flows are on the A2/M2 as the route approaches the M25 and on the M20 around Maidstone.

2.1.3 Goods vehicles feature prominently on this Route, with some sections south of Ashford consisting of more than 40% goods vehicles.

2.1.4 Chart 2.1 and Chart 2.2 illustrate how the traffic builds up as it heads towards the M25.

Chart 2.1 Traffic flows for A2/M2 from M25 Junction 2 to Dover

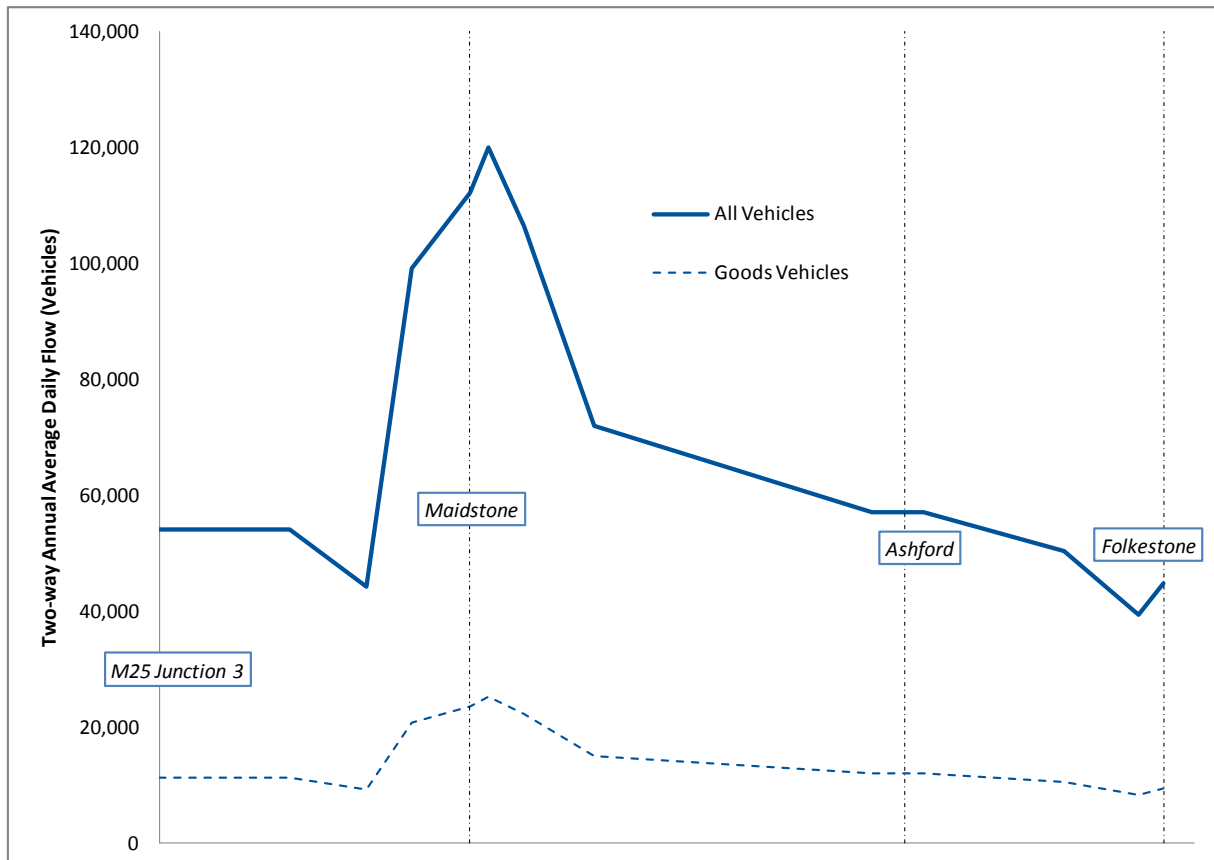


2.1.5 All figures quotes are two-way AADT flows. Traffic flows on the A2/M2 corridor range from 137,800 vehicles per day on the A2 at Dartford to 17,000 once the A2 reaches the Port of Dover. There is

a sharp decline in traffic flows after Gravesend where the traffic flows peak to approximately 50,000 vehicles per day at Chatham and then starting to level out at around 20,000 vehicles per day from Sittingbourne to Dover.

2.1.6 The volume of goods vehicles on the route stays constant from Dover through to Sittingbourne at around 3,000 vehicles per day. The volume then steadily increases west of Sittingbourne towards the M25.

Chart 2.2 Traffic flows on the M20 between M25 Junction 3 and Folkestone



2.1.7 Traffic flows on the M20 start at approximately 55,000 vehicles per day from the M25, peaking as the route reaches Maidstone at 120,000 vehicles per day. The flows then decrease sharply to 50,000 – 60,000 vehicles per day east of Maidstone, towards Ashford and Folkestone. This indicates that the M20 around Maidstone also serves a key local access function.

2.1.8 As the A20/M20 links the Port of Dover and the Channel Tunnel to the rest of the country, there is a large amount of goods traffic within this route. There are consistently 10,000 – 15,000 goods vehicles per day from Folkestone to Maidstone, temporarily increasing around Maidstone to 20,000 – 25,000 goods vehicles per day, decreasing to 10,000 – 12,000 goods vehicles per day from Maidstone to the M25.

- 2.1.9 Along the short section of the M26, the traffic flows are between 45,000 and 54,000 vehicles per day. The volume of goods vehicles on the M26 is constant at 10,000 to 11,000 per day.
- 2.1.10 Traffic flows along the length of the A20 between Dover and Folkestone are consistently between 10,000 and 20,000 vehicles per day, the number of goods vehicles on the route remains constant at 3,500 per day.
- 2.1.11 Information on traffic flows on the A249 towards Sheerness is limited, but the information available shows the traffic flows peak as it arrives at M2 Junction 5 and disperse the further northwards along the A249. The number of goods vehicles also peaks at this point; however, as a proportion of the total traffic flow, goods vehicles remain constant.
- 2.1.12 The ten most trafficked sections of this Route are presented in Table 2.1. This is for the reporting period 1st April 2012 to 31st March 2013.

Table 2.1 Ten busiest sections on the Route (1 April 2012 to 31 March 2013)

Rank	SRN section	AADT ¹	National Rank
1	A2 between A2260 and A296	69,334 (London-bound)	73
2	A2 between A296 and A2260	68,443 (Coast-bound)	79
3	A2 between M25 J2 and A296	67,272 (Coast-bound)	83
4	A2 between A227 and A2260	66,190 (London-bound)	95
5	A2 between A296 and M25 J2	65,028 (London-bound)	107
6	A2 between A2260 and A227	65,009 (Coast-bound)	108
7	M20 between M20 J5 and M20 J6	60,482 (Coast-bound)	167
8	A2 between M2 J1 and A227	59,759 (Coast-bound)	177
9	M20 between M20 J6 and M20 J5	59,464 (London-bound)	179
10	A2 between A227 and M2 J1	57,934 (London-bound)	207

¹ Traffic flows in this table are reported in terms of one-way AADT

- 2.1.13 The National Rank is out of a total of 2,475 road links, the busiest section is the M25 between Junction 15 and 14 (107,000 vehicles per day (one-way)).
- 2.1.14 However, busy roads in themselves don't necessarily represent an issue – our customers' experience of driving on the network is important to us. The [Strategic road network performance specification 2013-15](#), sets us high level performance outcomes and outputs under the banner of an efficiently and effectively operated strategic road network. We currently measure how reliable the network is based on whether the 'journey' time taken to travel

between adjacent junctions is within a set reference time for that period, ie 'on time'.

- 2.1.15 The on-time reliability measure (OTRM)³ is measured over 2,497 links nationally. The most unreliable link is on the M50 between M5 Junction 8 and M50 Junction 1 (8.2%) and the most reliable link is on the M4 between M4 Junctions 20 and 21 (99.4%).
- 2.1.16 Figure 2.1 illustrates the average speeds during weekday peak periods between 1st April 2012 and 31st March 2013. The peak periods are generally the busiest periods on the network and help us to understand the impact of the worst congestion on customers' journey times. Figure 2.1 also shows any known performance or capacity issues where the local road network interfaces with the Route.

Table 2.2 Ten least reliable journey-time locations on the Route (1 April 2012 to 31 March 2013)

Rank	Location	On-time reliability measure	National Rank
1	M20 between M20 J2 and M20 J3	65.9%	313
2	A2 between M25 J2 and A296	66.8%	384
3	A249 between A2 and M2 J5 (DBFO)	67.1%	410
4	M20 between M20 J6 and M20 J5	67.3%	426
5	A2 between A258 and A20	67.3%	427
6	A2 between A20 and A258	67.6%	452
7	A20 between A256 and A20	67.9%	484
8	M26 between M20 J3 and M26 J2A	68.7%	552
9	M20 between M20 J13 and M20 J12	68.7%	564
10	M26 between M26 J2A and M20 J3	68.9%	580

- 2.1.17 The majority of this Route network is subjected to the National Speed Limit and is identified as having average peak hour speeds above 51mph indicating there is not a long term trend in capacity that will affect the speed of travel along those routes. Where sections of this Route are subject to a lower speed limit the recorded average speeds are in line with the speed limits, again demonstrating limited congestion.
- 2.1.18 The exception to this is on the A249 southbound between Sittingbourne and M2 Junction 5 Stockbury Junction, where the average peak hour speed for the A249 approaching the M2 Junction 5 Stockbury Junction was 31 to 40mph on a section of the network

³ The OTRM measures the reliability of journeys on the Highways Agency's motorway and A road network by the percentage of 'journeys' that are 'on time'. For this measure a 'journey' represents travel between adjacent major junctions on the network. An 'on time journey' is defined as one which is completed within a set reference time, drawn from historic data on that particular section of road.

subject to national speed limits. This is caused by congestion on the link and delays at M2 Junction 5 which is also reflected in the relatively high ranking in terms of OTRM of the Route in Table 2.2.

2.1.19 The strategic road network is key in promoting growth of the UK economy, and alleviating congestion can realise economic benefits.

2.1.20 Figure 2.2 shows the delay on our network compared with a theoretical free-flowing network⁴.

2.1.21 Based on the information available, the following sections of this Route are recognised as having the highest levels of vehicle hours delay:

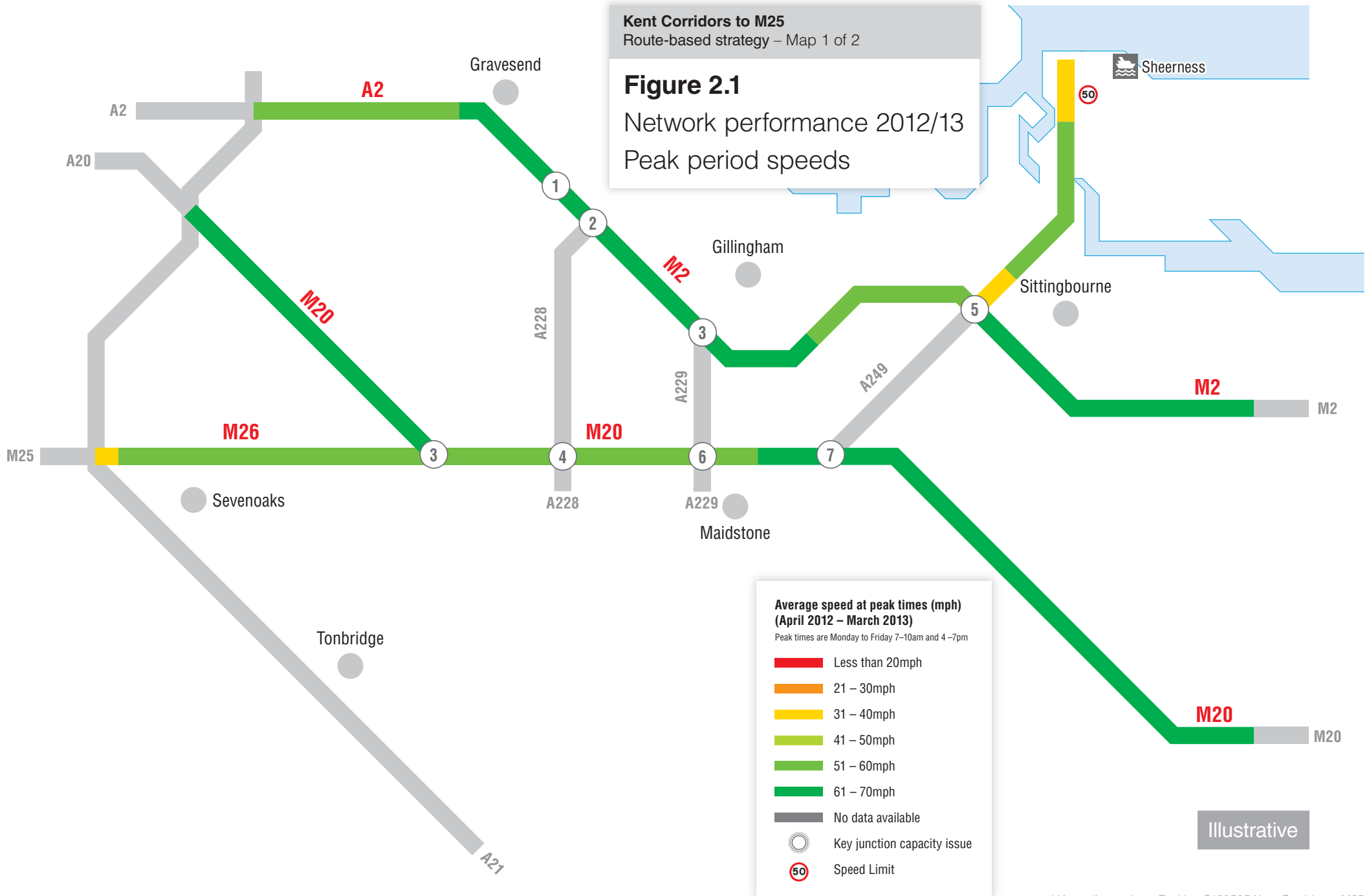
- M26 London-bound from Junction 2a to the M25
- M2 in both directions between Junctions 6 and 5
- A249 in both directions from M2 Junction 5 to Sheerness
- A20 between Dover and Folkestone

2.1.22 The following sections of this RBS are recognised as having the lowest levels of vehicle hour delay:

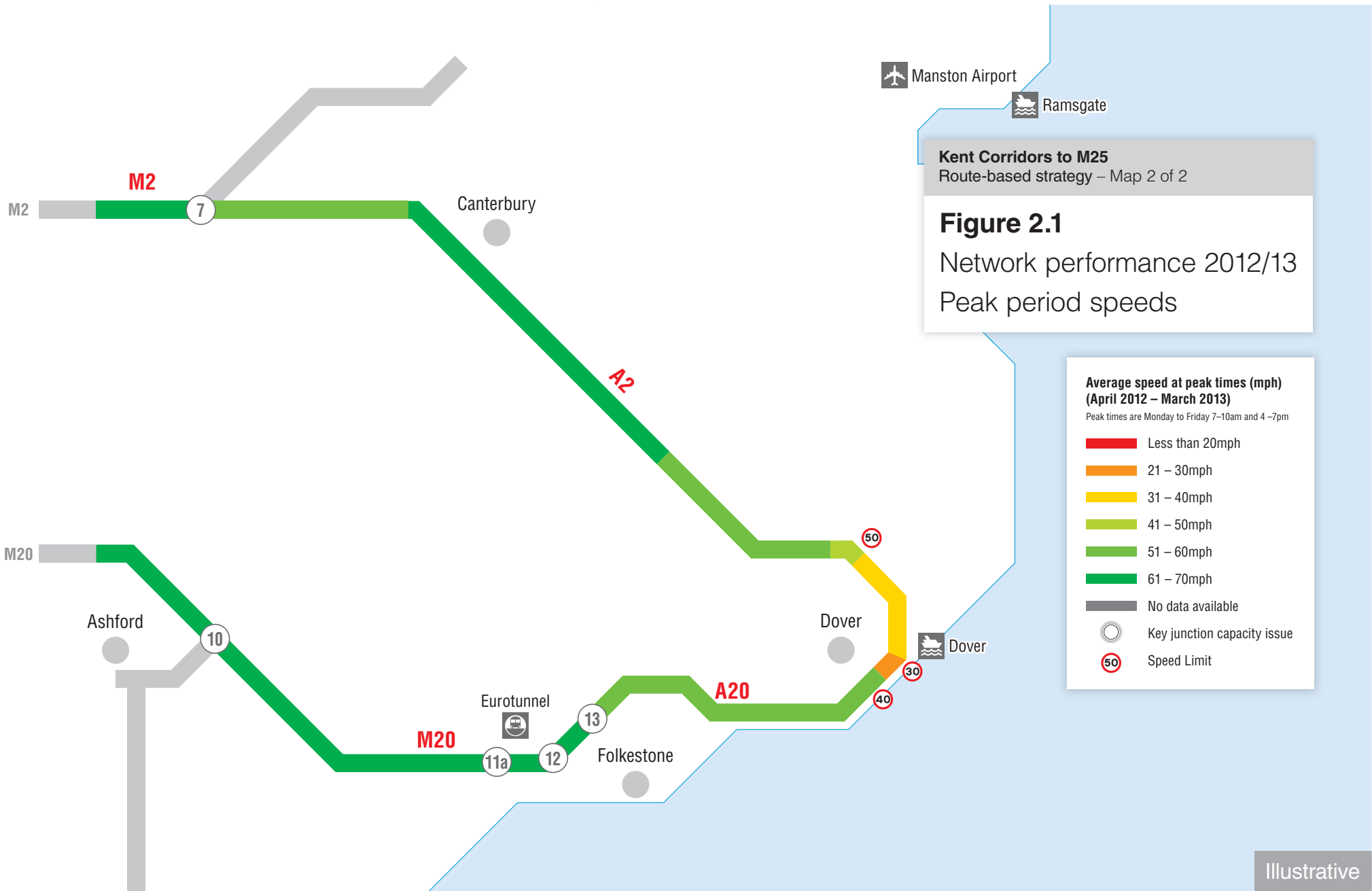
- M2 coast-bound from Junction 1 to 2
- M2 London-bound Junction 7 to 6
- M20 London-bound Junction 3 to 2
- M20 coast-bound from Junction 12 to 13
- A2 between the A28 Wincheap and the A2050 Roman Road (both directions)
- A2 London-bound between the A2/A256 Roundabout and A2 Whitfield roundabout
- A20 east of York Street, Dover

⁴ The figures quoted are averages and do not reflect specific durations of severe congestion that might experienced.

Figure 2.1
Network performance 2012/13
Peak period speeds

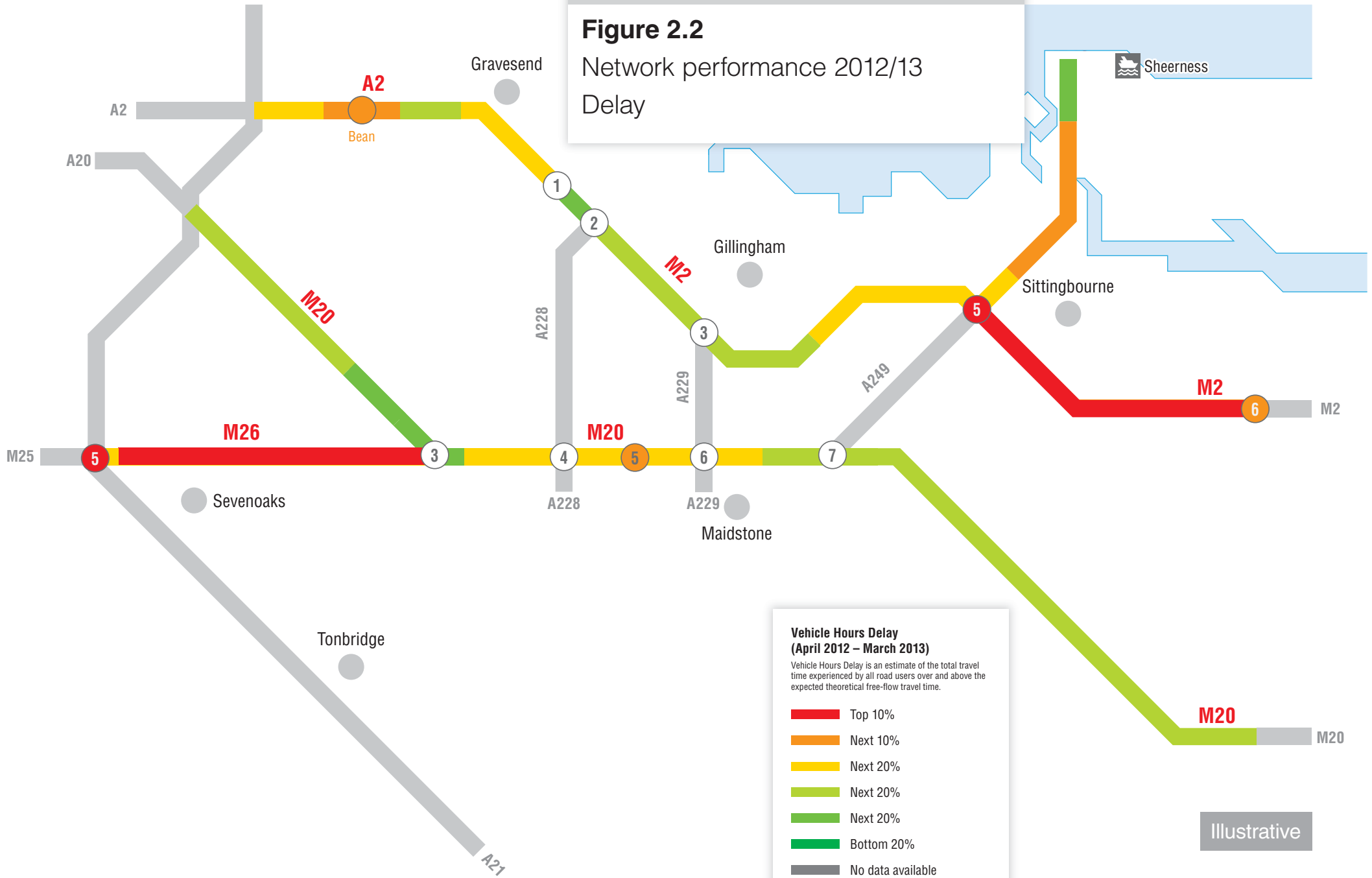


Illustrative

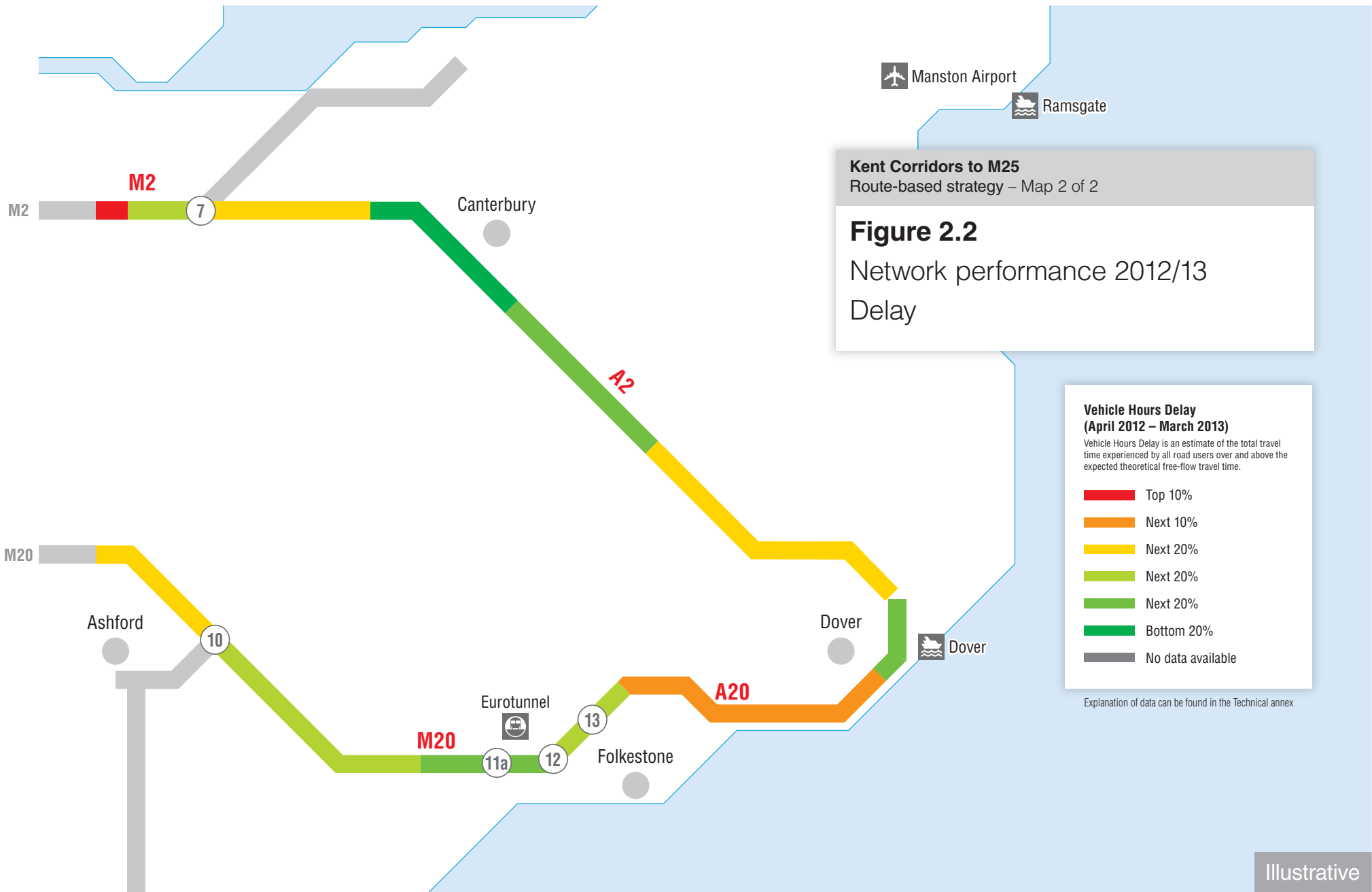


Illustrative

Figure 2.2
Network performance 2012/13
Delay



Illustrative



2.2 Road safety

- 2.2.1 As a responsible network operator and through the [Strategic road network performance specification 2013-15](#), the Highways Agency works to ensure the safe operation of the network.
- 2.2.2 While the SRN already comprises some of the Nation's safest roads in terms of accidents per million miles travelled, by 2020, [The strategic framework for road safety 2011](#) forecasts the potential for a 40% reduction of the numbers killed or seriously injured on the roads compared with 2005-2009. We are working toward this aspirational goal.
- 2.2.3 Figure 2.3 illustrates the rates of injury collisions and the top 250 casualty locations on the strategic road network between 2009 and 2011. Injury collisions are collisions where people were injured and their injuries were slight, serious or fatal. Damage only incidents have not been included. The top 250 casualty locations have been calculated nationally, and are based on the number of casualties which occurred within a distance of 100m. Locations with the same number of casualties have been given a 'joint' ranking and therefore, there may be some locations with the same rank number.
- 2.2.4 Eleven of the top 250 national casualty locations are within this Route, three of which fall within the top 50 casualty locations; M2 Junction 5, A2 Bean Interchange and the A2 Brenley Corner.
- 2.2.5 From Figure 2.3, the following sections of this Route are identified as having the highest casualty rates:
- M20/A20 coast-bound from the M20 Junction 12 to the Port at Dover
 - M20 London-bound from Junction 13 to 12
 - A2 coast-bound from The A258 to the Port at Dover
 - A2 coast-bound from Whitfield roundabout to the A256 Dumbbell Roundabout
 - A2 between the A2050 at Upper Harbledown and the A28 Wincheap junction (both directions)
 - M2 coast-bound from Junction 6 to 7
 - A249 London-bound approaching the M2 Junction 5
 - A249 Brielle Way, Sheerness (both directions)
 - A20 Townwall Street, Dover (both directions)
- 2.2.6 Annual Road Safety Statements⁵ covering this Route show that between 2009 and 2011 there were 1,236 collisions on sections

⁵ The Annual Road Safety Statement analyses all collision data from which the Highways Agency can assess whether there is any relationship between the road design or condition and the type of collisions that have occurred. Where these, rather than driver behaviour or other circumstances are contributory factors the Agency can then form a prioritised list of actions.

within this Route⁶. This is a reduction of 4% on the 2008 – 2010 levels and 14% between 2005 and 2007.

2.2.7 Of the 1,236 collisions recorded 13 (1%) included fatalities, 90 (7%) included serious injuries and 1,133 (92%) included solely slight injuries.

2.2.8 In terms of vehicles/road users involved in the collisions:

- 75% involved more than one vehicle
- Cars were involved in 94% of all collisions, 30% involved goods vehicles and 6% involved Motorcycles (or other power two wheeled vehicles)
- 10% of collisions involved foreign registered vehicles
- 11% of collisions involved road users aged 16-19
- 3% of collisions involved road users aged 70 or over
- Less than 1% of all collisions involved pedestrians; these consist of two fatal collisions, two collisions which were categorised as serious in severity and six which were categorised as slight in severity
- Less than 1% of collisions involved cyclists; these consist of two collisions which were categorised as serious in severity and two which were categorised as slight in severity
- There were no collisions involving equestrians in the period 2009-2011

2.2.9 The circumstances of these collisions is varied, the following identifies the key characteristics identify across sections within this Route:

- 32% occurred when the road surface was wet
- 30% occurred in dark conditions
- 7% of collisions cited severe weather conditions, such as heavy rain, snow and icy roads
- 3% involved objects or animals on the carriageway

2.2.10 Using the Police reports recorded at the scene of the collision, the Police Officers regularly recorded the following causation factors (or combination of causation factors):

- 28% cited 'driver failing to look properly'
- 23% cited 'failure to judge the speed of other drivers'
- 19% cited 'loss of control'

⁶ Does not include collisions on the M26 or A249 sections of this RBS. A limited dataset is available for the M26 which is not comparable to the Annual Road Safety Statement, key statistics available identified that there were 39 collisions between 2009 and 2011 with a Severity Ratio of 0.18. 85% of collisions occurred between Junctions 1 and 2. On the A249 there were 78 collisions between 2009 and 2011, 83% on the dual carriageway.

- 9% cited 'slippery road'
- 8% cited 'sudden breaking'
- 4% cited 'vehicle swerving'
- 4% cited 'poor turn or manoeuvre'
- 1% cited 'a blind spot'
- 1% cited 'inexperience of driving on the left'

2.2.11 While we aim to reduce the numbers killed or seriously injured using and working on the SRN, we will always identify more safety interventions than our budget allows us to implement. We use a prioritisation process to help us and we review this regularly to ensure we are targeting the locations with the greatest opportunity to save lives and reduce the severity of injury.

2.2.12 Table 2.3 summarises the top ten Priority Investigation Collision Cluster Sites and Table 2.4 summarises the Priority Link Sites for roads within this Route. These have been identified from the Annual Road Safety Statements covering this Route.

Table 2.3 Collision Investigation Priority Cluster Sites

Rank	Location	Number of Collisions (2009 – 2011)	Severity Rating*	Pipeline Scheme Identified
1	M2 Junction 5 including Stockbury Roundabout	33	45	No
2	M20 Medway Underbridge	15	28	No
3	A2(E) Brenley Corner Roundabout	23	27	No
4	M2 Junction 4	18	26	No
5	M20 Hook Street Overbridge	9	26	No
6	M2 Harp Farm Eastbound Underbridge	5	22	No
7	A2(W) A227 to Ebbsfleet junction	13	21	Yes
8	A2(W) Bean Interchange	20	20	Yes
9	M2 St. Catherine's Farm Overbridge	11	19	No
10	M20 Junction 8	15	19	No

* The Severity Rating is how clusters are scored and ranked. A fatal collision equals 10, serious collision equals 5 and a slight collision equals 1. The Severity Rating is the sum of score given to all collisions over a period and the sites are ranked from highest to lowest. The sites with the higher Severity Rating are ranked the highest.

Table 2.4 Collision Investigation Priority Link Sites

Location	Number of Collisions (2009 – 2011)	Collision Rate*	Pipeline Scheme Identified
M2/A2 Brenley Corner Roundabout to West of Canterbury Road over bridge	37	35.8	No
M2 southeast of Junction 3, A229 to East of Junction 4, A278	49	17.6	No
M2 southeast of Junction 5, A249 to East of Junction 6, A251	87	14.2	No
A2 Bean Interchange to A2260 Southfleet Interchange (Pepperhill)	84	25.4	Yes
A2/A2260 Southfleet Interchange to A227 Wrotham Road Interchange (Tollgate)	40	20.8	No

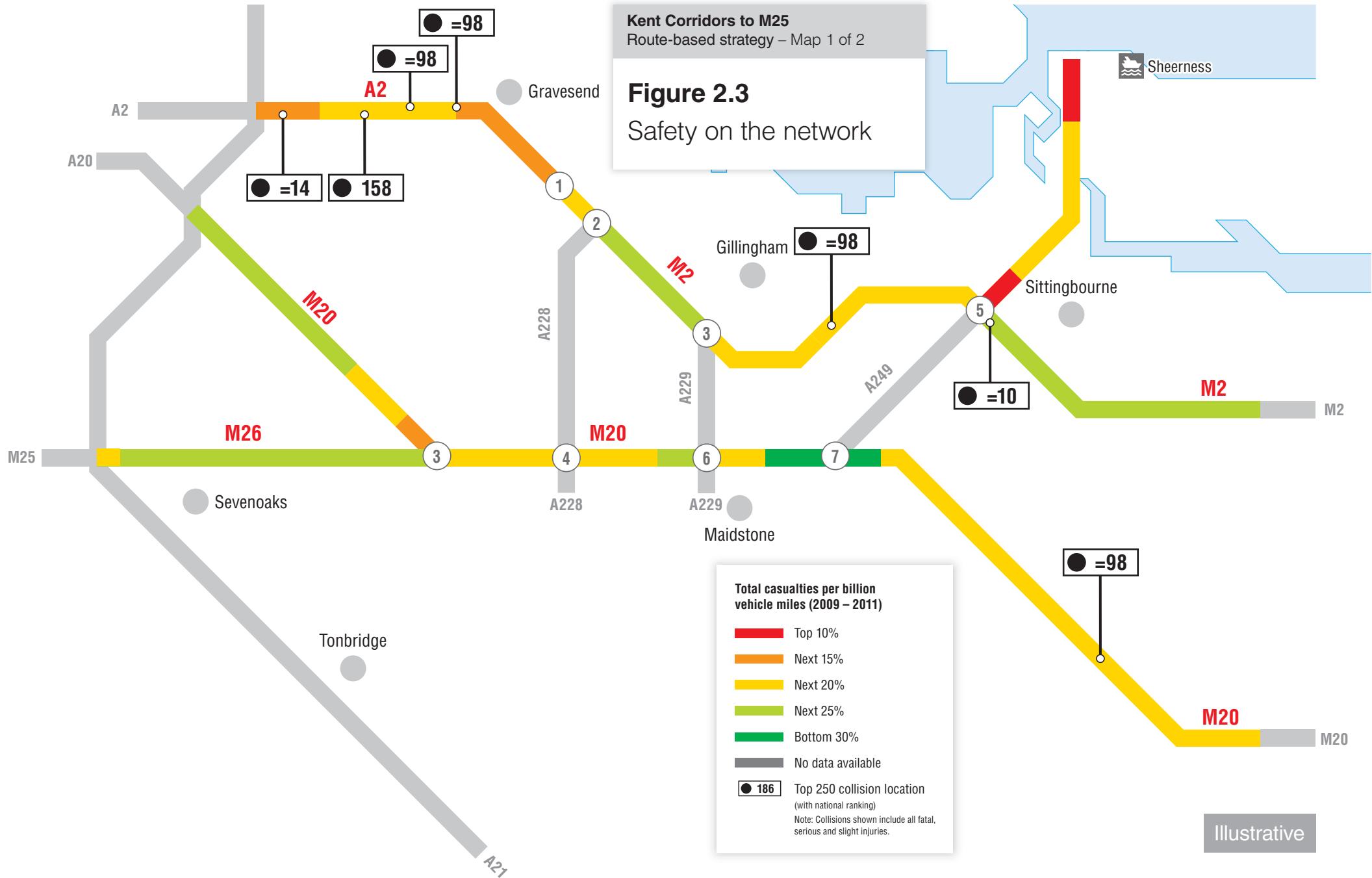
* Collisions per 10 million vehicle miles travelled

2.2.13 In addition to those identified in Annual Road Safety Statements within this RBS, the following locations/general safety concerns were identified by stakeholders at the engagement events:

- Provision of cycle routes offline
- M2 Junction 6
- M20 Junction 10 -11A
- Sheppey Bridge
- Temporary absence of lay-bys on single carriageway sections of the A2⁷
- A2/Sheppard's Well Junction near Dover

⁷ Six lay bys between Lydden and Whitfield are temporarily closed for up to 18 months from May 2013. This is because they are not up to standard and have been subject to dangerous parking and anti-social activity by HGVs. We are working with others to seek a solution to traveller facilities along this route.

Figure 2.3
Safety on the network



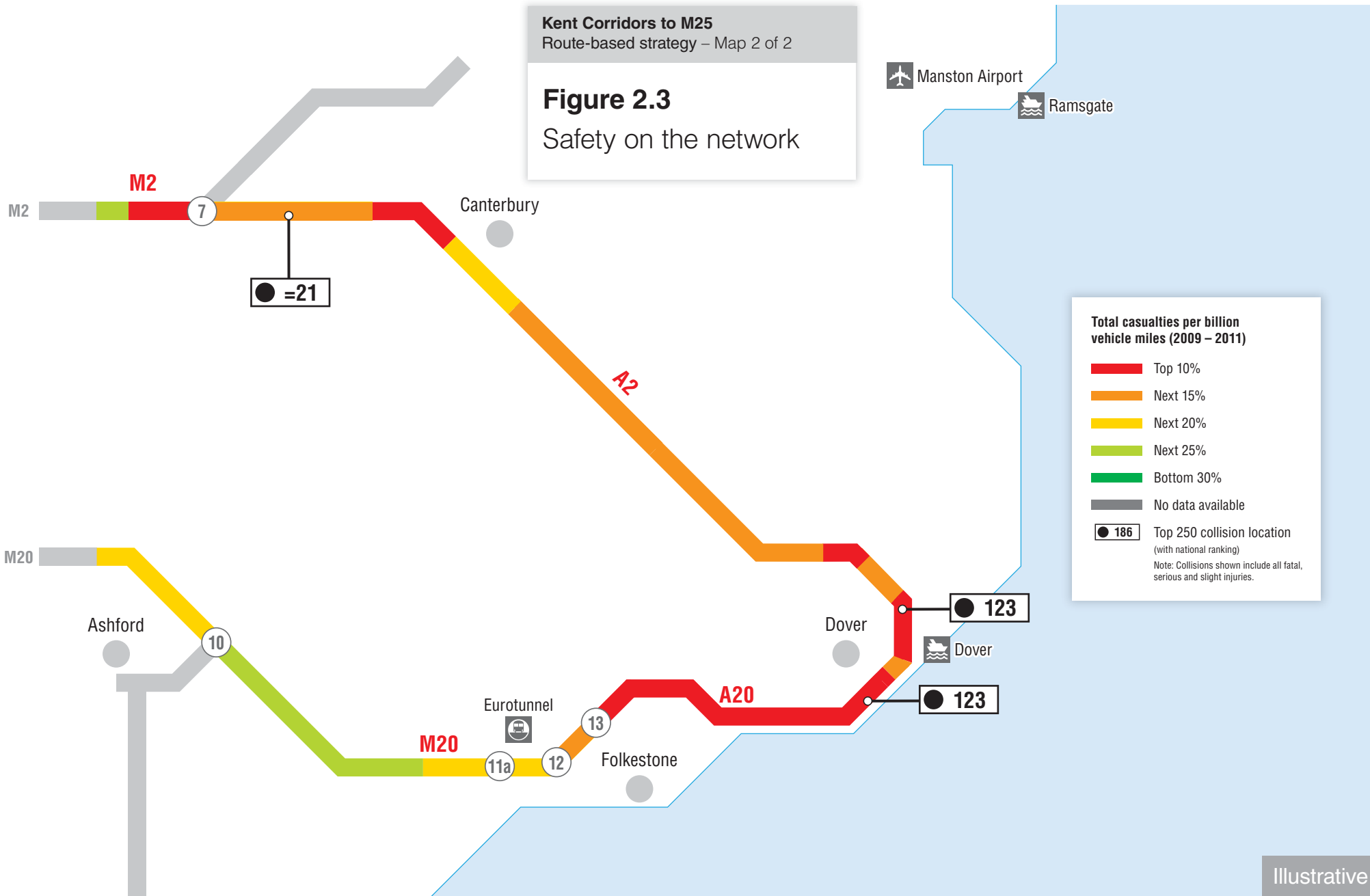
Total casualties per billion vehicle miles (2009 – 2011)

- Red: Top 10%
- Orange: Next 15%
- Yellow: Next 20%
- Light Green: Next 25%
- Dark Green: Bottom 30%
- Grey: No data available

● 186 Top 250 collision location (with national ranking)
Note: Collisions shown include all fatal, serious and slight injuries.

Illustrative

Figure 2.3
Safety on the network



Illustrative

2.3 Asset condition

- 2.3.1 We carry out routine maintenance and renewal of roads, structures and technology to keep the network safe, serviceable and reliable. We also ensure that our contractors deliver a high level of service on the strategic road network to support operational performance and the long-term integrity of the asset.
- 2.3.2 From new, assets have an operational 'life' within which, under normal conditions and maintenance, the risk of failure is expected to be low. Beyond this period, the risk of asset failure is expected to increase, although for many types of asset the risk of failure remains low and we do not routinely replace assets solely on the basis that they are older than their expected operational life. We use a combination of more regular maintenance and inspection along with a risk-based approach to ensure that assets remain safe while achieving value for money from our maintenance and renewal activities.
- 2.3.3 We maintain a National Asset Management Plan as an annual summary of the Agency's network asset inventory and condition. It is aimed at ensuring there is sight of future issues affecting the asset and enabling strategic decision making.

Carriageway Surface

- 2.3.4 The road surface on the strategic road network is primarily surfaced with two types of flexible bituminous materials, namely Hot Rolled Asphalt (HRA) which has an approximate design life of 25 years and Thin Surface Course System (TSCS) with a lower construction cost and shorter design life of 10-15 years. Large tranches of HRA were laid in the 1990s and TSCS tranches laid in the 2000s resulting in a significant proportion of the network reaching the end of its design life by 2020.
- 2.3.5 The concept of design life involves a technical assessment of how many years the road should last without the need for a major maintenance scheme. This depends on the type of road construction, traffic levels, the underlying geology, weather, topography and a number of other factors.
- 2.3.6 It should be noted that, although carriageway surfacing may be identified as reaching or exceeding its design life, the surfacing will not necessarily require treatment at this point. Carriageway surfacing that is beyond its design life is at a higher risk of failure, with such risk increasing the further that the surfacing exceeds its design life. The increasing age of the surfacing could manifest in an increased frequency of maintenance interventions which, if a renewals scheme is not funded, may result in a higher cost both financially and in terms of disruption to road users to maintain the asset in a safe and serviceable condition.
- 2.3.7 The majority of the Route, where there is flexible pavement, will come towards the end of its design life by 2020 and therefore there

is a need for a significant programme of major maintenance to extend the life of carriageways, structures and associated route assets. This is highlighted by stakeholders as a particular cause of concern as the works involved may include closures on roads with high volumes of goods vehicle traffic which are reliant on this route (over 75% of all heavy goods vehicles entering the UK travelling over the Agency's network in this area).

2.3.8 Over the last 10 years, the programmes covering HRA and Thin Surfacing have provided treatments that had helped maintain the serviceability and safety of the network. However, there is now a huge quantum of resurfacing to reinstate the carriageway and to restore longer design lives.

2.3.9 Paragraphs 2.3.10 to 2.3.17 summarise the condition of the carriageway surface for each section of this Route.

A2/M2 Corridor

2.3.10 For this corridor, moving from west to east, from the M25 Junction 2, the route has significant sections with a short residual design life with the A2 (from Junction 2) for the majority of the route (>75%) identified as reaching the end of its design life by 2020. In summary there are only a few notable sections (two way to the south of Gravesend, and some of the westbound carriageway between Junction 3 and 4), seen as having a longer-term design life.

2.3.11 Further east along the corridor the surface of the M2 is severely degraded in both directions along its length between Junction 5 and Canterbury. The A2 between Dover and the start of the M2 west of Canterbury (both directions) also suffers from a particularly deteriorated surface with at least 50% of the carriageway reaching the end of its design life by 2020.

M20/A20 Corridor

2.3.12 Close to its junction with the M25, the majority of the surfacing of M20 has a design life beyond 2020. Between junction 2 and junction 8 east of Maidstone, the majority of the surfacing has a shorter design life with much likely to require treatment by 2020.

2.3.13 The surfacing around, and to the east of, Ashford varies considerably with much likely to need treatment by 2020.

2.3.14 The M20/A20 between Folkestone and Dover comprises a mix of recently resurfaced and older stretches of road that are likely to need treatment by 2020. Within Dover, the A20 is also likely to require treatment; albeit that various sections may be treated separately as part of Port of Dover Terminal 2 works.

M26

2.3.15 The M26, connecting the M20 near Maidstone and M25 near Sevenoaks is likely to require treatment to several sections, particularly on the eastbound carriageway near the M20 before 2020.

A249

- 2.3.16 For A249 to the north of the M2 to Sheerness, the majority of the route (in both directions) has been identified as reaching the end of its design life by 2020.
- 2.3.17 With the exception of the A249, all these sections would be strategically key as they form a part of the TEN-T network, linking the Port of Dover and the Channel Tunnel to the M25.

Concrete Road Surfaces

- 2.3.18 We also have some concrete road surface material but this is only a very small proportion when compared to the length of flexible road surfaces. The amount of concrete road surface is also reducing as it is replaced by flexible material at the end of its serviceable life. Concrete is not a material we now use in new carriageway construction on any of the motorway and trunk road network.
- 2.3.19 The only section of this RBS which is concrete road surface is a 12 mile section of the M20 between Maidstone and Ashford.

Maintenance of Pavement

- 2.3.20 The Agency's overall budget for road maintenance (the roads portfolio) is split into various sub divisions. Maintenance of pavements covers 68% of the expenditure on the roads portfolio and there are specific issues of safety that are identified as need in to be addressed in the allocations for 2013/13. This includes treatment to sites that may not offer enough skid resistance for safe braking or are subject to increasing numbers of insurance claims due to road surfacing defects (potholes, etc).

Structures

- 2.3.21 Structures include bridges, large culverts, sign gantries, masts and retaining walls. Exceptions are bridges carrying railway lines and certain privately-owned structures.
- 2.3.22 The average age of bridges on roads within this Route are summarised in Table 2.5. The M2 has a number of older bridges, with an average age of construction of 49 years.

Table 2.5 Average age for bridges within this Route

Road	Average age of structure (years)	All structures constructed between (years)
M2	49	1960-2008
M20	25	1960-2011
A2	19	1964-2010
A20	24	1923-2010

- 2.3.23 Existing evidence indicates various issues arising with structures within the RBS area, for example:
- A2 Littledale Viaduct – extensive defects and potential half-joint failures
 - M2 Bottom Pond Viaduct – Bearings age related issues (40 years+ structure)
- 2.3.24 Reviewing the inspections and structural testing/investigations on some of the Agency's older structures has also shown that many assets in the area generally are becoming in need of essential works rather than simple low cost minor repairs.

Other key asset issues for routes

- 2.3.25 Existing evidence suggest that with regards to geotechnical assets, the A2 between Boughton and Dunkirk is known to be at risk due to issues regarding poorly performing London clay embankments.
- 2.3.26 In recent times, various roads in Kent have been affected by sinkholes and other similar geotechnical related phenomena. They may be severe weather related or becoming apparent for other reasons.

2.4 Route operation

Incident Management

- 2.4.1 We work hard to deliver a reliable service to customers and to reduce the number and impacts of incidents on road users.
- 2.4.2 Across the whole network, the Highways Agency Traffic Officer Service responds to around 20,000 incidents each month. We measure how effective we are at managing incidents by looking at the time incidents affect the running lanes.
- 2.4.3 The majority of the roads within this Route are motorway standard and so the highest level of coverage is provided by the Traffic Officer Service. This coverage includes information services and strategic overview, Regional Control Centre tactical overview and dedicated on-road Traffic Officer response teams.
- 2.4.4 Given the relatively low traffic flows, a lower level of service is provided along the A20, the A249 and the A2 from Canterbury to Dover sections of this Route. These sections have significantly reduced on-road services and have no dedicated Traffic Officer services.
- 2.4.5 We have a good understanding of the types of incidents which are quick to clear up and those which take longer. In general, there are far more incidents which don't affect the running lanes for very long, and mostly these are caused by breakdowns in the live lanes, debris or damage only collisions. The longest duration incidents are mostly caused by infrastructure issues, such as road surface repairs, bridge strikes, barrier collisions and spillages.

- 2.4.6 We continue to work with our partners in the emergency services to reduce the impacts on our network from serious collisions and long-duration incidents.
- 2.4.7 Table 2.6 summarises the average duration of incidents on the Route. The areas most affected by incidents receive the greatest coverage from the Traffic Officer Services.

Table 2.6 Average Incident Duration on Route

Less than 30 mins per incident	Between 30 and 60 minutes per incident	No data
A2 to the start of the M2	M2 between Junctions 1 and 2	A2 between M25 Junction 1 and the A2/A227 junction
M2 between Junctions 2 and 4	M2 between Junctions 4 and 6	A2 from west of Canterbury to Dover
M20 between Junctions 6 and 7	A2 from M2 to west of Canterbury	A20 from Spitfire Way to A2 Jubilee Way
M20 between Junctions 9 and 10	M26 (whole route)	A249 (whole route)
M20/A20 between Junction 13 and A20 Spitfire Way	M20 from M25 Junction 3 to M20 Junction 6	
	M20 between Junctions 8 and 9	
	M20 between Junctions 10 and 13	

Flooding

- 2.4.8 We have a responsibility to reduce flooding. Flooding of the HA network impacts upon network performance and the safety of road users. Flooding off the network has an impact on third parties living adjacent to the network.
- 2.4.9 Based on recorded flooding incidents, we have identified those parts of the network that are at risk of repeated flooding.
- 2.4.10 Table 2.7 identifies sections within the Route which are identified as being at risk of surface, groundwater and/or surge tide flooding. Level 3 flood risk areas are areas without flood defences that are identified as having a 1 in 100 chance of experiencing alluvial flooding and a 1 in 200 chance of experiencing surge tide flooding each year. Level 2 flood risk areas are identified as having a 1 in 1000 change of experiencing alluvial or surge tide flooding each year.

Table 2.7 Sections of the RBS Identified as being at Risk of Flooding

Level 3 Flood Risk Areas	Level 2 Flood Risk Areas
M20 junctions 9-10 Ashford	M20 between Maidstone and Ashford
M2 southwest of Sittingbourne	Sections of the M20 north of Maidstone
M2 junctions 6-7	M2 west of Strood
A2 west of Canterbury	A20 in Dover
A2 at Alyesham	
A20 north of Folkestone	
M20 at junction 4	
Sections of the M20 north of Maidstone	
A249, Isle of Sheppey	

Severe Weather

- 2.4.11 The Agency aims to minimise where possible the impacts of severe weather, for example, strong winds and snow, on network performance and the safety of road users.
- 2.4.12 Table 2.8 summarises the areas within the Route which have been identified as being susceptible to bad weather events.

Table 2.8 Areas susceptible to bad weather events

Location	Problem
M2 Medway Viaduct	Susceptible to ice forming and cross winds
M2 Junction 5 Stockbury Viaduct	Susceptible to ice forming
M2 Junction 5 to 6 Bottom Pond Viaduct	Susceptible to ice forming
M2 Junction 2 to 4 including A229 Bluebell Hill Interchange	Susceptible to ice forming and snow
A2 Jubilee Way	Susceptible to high winds
A2 Whitfield to Lydden	Susceptible to cross winds causing snow drifting
A2 Boughton hill	Susceptible to fog, icing and snow
A2 Swanscombe Hill	Susceptible to icing and snow
A20 Folkestone to Dover	Susceptible to fog, high winds, icing and snow
A249 Sheppey bridge	Susceptible to fog, ice forming and cross winds

2.5 Technology

- 2.5.1 The Highways Agency works hard to deliver a reliable service to customers through effective traffic management and the provision of accurate and timely information. We provide information to our customers before and during their journeys.
- 2.5.2 We monitor key parts of our network using CCTV and use sensors in the road to monitor traffic conditions. These are used by our National Traffic Operations Centre and seven Regional Control Centres to provide information to customers before their journeys, eg on the [Traffic England website](#) or through the [hands-free traffic app](#) for smartphones. Whilst on the network, we also inform our customers using variable message signs (VMS).
- 2.5.3 Technologies such as overhead gantries, lane specific signals and driver information signs also forms part of how we can operate our network efficiently. In some locations we have controlled motorways, which is where we can use variable mandatory speed limits to help keep traffic moving. Smart motorways use both variable mandatory speed limits and the hard shoulder as an additional live traffic lane during periods of congestion. Ramp metering manages traffic accessing the network via slip roads during busy periods to help avoid merging and mainline traffic from bunching together and disrupting mainline traffic flow.
- 2.5.4 MIDAS⁸ technology is used at all junctions along the M26, M20 and M2 and at the majority of the junctions along the A2. MIDAS detectors are also located along the mainline carriageway of the M20 from Junction 4 to Junction 8 and on the A2/M2 corridor between the Bean Interchange and M2 at Junction 4. The main gaps in the MIDAS network include:
- M26 mainline
 - M20 west of Junction 4 and east of Junction 8
 - M2 east of Junction 4
 - A2 and A20 at Dover
- 2.5.5 The Route has varying levels of CCTV coverage, as summarised below, with the highest density of cameras provided along the M20 at Maidstone and Folkestone and on the M2 around Junction 1 and Junction 3.
- 2.5.6 The main gaps within the CCTV coverage have been identified as:
- M26
 - M2 from Junction 5 to 7

⁸ Motorway Incident Detection and Automatic Signalling, usually abbreviated to MIDAS, is a distributed network of traffic sensors, mainly inductive loops which are designed to alert the local RCC (Regional Control Centre) to traffic flow and average speeds and in ATM (Active Traffic Management) zones, set variable messages signs, advisory speed limits along with mandatory speed limits in ATM sections with little human intervention.

- A2 from Bean Junction to the M2
- A2 between Canterbury and Dover
- A20
- A249

2.5.7 Permanent variable message signs (VMS) are provided along the A2 from Dartford to Rochester, the M2 between Rochester and Sittingbourne and the M20 around Maidstone and around Folkestone. The Agency can also deploy a number of mobile VMS; for example to assist sign major events or where there are long term works. Main gaps in the VMS network include:

- M26
- M20 between Junction 1 and 4
- M20 between Junction 8 and 9
- M20 between Junction 10 and 11
- M2 from Junction 5 to 7
- A2 between Canterbury and Dover
- A20
- A249

2.5.8 Sections 2.5.4 to 2.5.7 identified that key gaps in the level of technology provision along the Route occur on the M26 and the M2 east of Junction 4. Section 2.1 of this report and Figure 2.2 identify that these sections of the Route as experiencing the highest levels of delay.

2.5.9 Local stakeholders identified the lack of VMS (east of M20 Junction 8) and the need to improve communication with travellers as a priority challenge for this Route.

2.6 Vulnerable road users

2.6.1 Given the nature and type of carriageway along the Route, there are limited opportunities for the strategic road network traffic to interact with vulnerable road users (pedestrians, cyclists and equestrians).

2.6.2 The main locations identified which interact with vulnerable road users are the A20 through Dover, the A2 from Dover to Canterbury and the A249 north of M2 junction 5 to Sheerness (except for the Sheppey Crossing).

2.6.3 The A20 runs through the town of Dover and there are footpaths adjacent to either side of the SRN. Sections of the National Cycle Network (Route 2) are on the A20 along Archcliff Road, from the Western Heights Roundabout to Union Road, where off-road, segregated cycleways and footpaths are provided.

- 2.6.4 Between 2008 and 2011, there were eight reported personal injury collisions involving pedestrians and three involving cyclists on the A20 in Dover.
- 2.6.5 Provision of cycle routes off of the main carriageway instead of on-line and mixing with SRN traffic and providing segregated pedestrian and cyclist facilities was one of the priority issues raised by local stakeholders. The need to resolve issues of severance where communities need to cross the SRN rather than travel along it was also identified.

2.7 Environment

- 2.7.1 As a responsible network operator and through the [Strategic road network performance specification 2013-15](#), the Agency works to enhance the road user experience whilst minimising the impacts of the strategic road network on local communities and both the natural and built environment.

Air quality

- 2.7.2 We recognise that vehicles using our road network are a source of air pollution which can have an effect on human health and the environment. We also appreciate that construction activities on our road network can lead to short-term air quality effects which we also need to manage.
- 2.7.3 The Highways Agency is committed to delivering the most effective solutions to minimise the air quality impacts resulting from traffic using our network. We will operate and develop our network in a way that works toward compliance with statutory air quality limits as part of our broader [Environmental Strategy](#).

Table 2.9 AQMAs affected by the Route

AQMA	Pollutant ⁴			Part of Route affected
	PM10 ¹	NO ₂ ²	SO ₂ ³	
Maidstone Town Centre AQMA	✓	✓		M20 from east of M20 Junction 5 to M20 Junction 8
Tonbridge & Malling – M20 AQMA	✓	✓		M20 from where New Hythe Lane crosses the M20 to where Hall Road crosses the M20
Gravesham A2 AQMA	✓	✓		Gravesham A2 AQMA runs from just east of Pepper Hill interchange (Borough boundary) not A227 Tollgate
Dover A20 AQMA		✓		A20 from southern side of A20 Limekiln Roundabout to A20/A256 Maison Dieu Road
Dartford AQMA No. 4		✓		An area encompassing the Bean Interchange between the A2 and the A296
Sevenoaks – AQMA No. 1 M20		✓		An area following the M20 throughout the borough
Sevenoaks – AQMA No.3 M26		✓		An area following the M26 throughout the borough
Dover Docks AQMA			✓	A20 from A20/A256 Maison Dieu Road to A2 Jubilee Way south of the Upper Road over bridge

¹ PM10 – Particulate Matter 10

² NO₂ – Nitrogen dioxide

³ SO₂ – Sulfur dioxide

⁴ Benzene omitted from table as there are no exceedances within this Route

2.7.4 Table 2.9 summarises where the Route passes through an Air Quality Management Area (AQMA)⁹. The AQMA are designated for exceedance of the following pollutants: benzene, particulate matter (PM10), nitrogen dioxide (NO₂) and Sulfur dioxide (SO₂).

2.7.5 The Route passes through eight AQMAs, seven of which exceed the European air quality limits for annual average levels of NO₂. The A20 and A2 near Dover Docks passes through one AQMA which was designated for reasons of high levels of SO₂, and noted here for completeness.

⁹ Since December 1997 each local authority in the UK has been carrying out a review and assessment of air quality in their area. This involves measuring air pollution and trying to predict how it will change in the next few years. The aim of the review is to make sure that the national air quality objectives will be achieved throughout the UK by the relevant deadlines. These objectives have been put in place to protect people's health and the environment. If a local authority finds any places where the objectives are likely to be achieved, it must declare an Air Quality Management Area there. The Local Authority will then prepare an Air Quality Action Plan to improve air quality.

Cultural heritage

- 2.7.6 Wherever possible, balanced against other factors, Agency schemes are designed to avoid impacts on cultural heritage assets.
- 2.7.7 Sites which are considered to be of cultural heritage sensitivity consist of sites which have been allocated Designated Heritage Assets¹⁰. Such sites include World Heritage Sites¹¹, Scheduled Monuments¹², listed buildings¹³, registered parks and gardens¹⁴, registered battlefields¹⁵, conservation areas¹⁶ and historic landscapes¹⁷.
- 2.7.8 There is one World Heritage Site in the area, Canterbury Cathedral, which is located to the north of the A2, in Canterbury town centre.
- 2.7.9 There are no registered battlefields in the area.
- 2.7.10 Table 2.10 summarises the heritage assets that have been identified adjacent to this Route.

Table 2.10 Summary of cultural heritage assets near the Route

Scheduled Monuments	Listed Buildings	Registered Parks and Gardens
Dover Castle, Dover	K6 Telephone kiosk, adjacent to the A20 at Dover	Doddington Place
Archcliffe Fort, Dover	Little Chef situated on the A2 Canterbury Road	Mount Ephraim
Castle Hill, Folkestone	Swanscombe cutting footbridge at Bean, Dartford	Dane John Gardens
Fort Borstal, Rochester	143-144 Snargate Street, Dover	Broome Park
The Chestnuts Long Barrow, Tonbridge and Malling	Chestnut Street Farmhouse, West of Sittingbourne	Kearsney Court
Cistercian Abbey, Maidstone	Olstede, West of Sittingbourne	Leeds Castle

¹⁰ A Designated Heritage Asset is a World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area designated under the relevant legislation (Source: p51 National Planning Policy Framework, March 2012)

¹¹ A World Heritage Site is a place (such as a forest, mountain, lake, island, desert, monument, building, complex or city) that is listed by the UNESCO as of special cultural or physical significance.

¹² A Scheduled Monument is a 'nationally important' archaeological site or historic building given protection against unauthorised change.

¹³ A listed building is a building that has been placed on the Statutory List of Buildings of Special Architectural or Historic Interest.

¹⁴ A registered park and garden is a site included on the Register of Historic Parks and Gardens in England.

¹⁵ A registered battlefield is a site included on the non-statutory Register of Battlefields in England, maintained by English Heritage.

¹⁶ A conservation area is a designation by Local Planning Authorities of areas with special architectural and historic interest.

¹⁷ An historic landscape is an area designated by English Heritage representing some of the country's finest landscapes.

Scheduled Monuments	Listed Buildings	Registered Parks and Gardens
Thurnham Motte and Bailey Castle, Maidstone	Dumbles Tudor Rose Cottage, West of Sittingbourne	Chilston Park
Binbury Motte and Bailey Castle, Maidstone	Olde Houses, West of Sittingbourne	Godington Park
Ringwork and Baileys at Church Farm, Maidstone	Hook's Hole, West of Sittingbourne	Hatch Park
Romano British building west of Corbier Hall Wood situated to the north of the M20, Maidstone	Railings to South Side of Green to East of Naval Terrace, Sheerness	Sandling Park
Building crop mark, possible 'Corbier Hall', situated to the north of the M20, Maidstone	Wellington Dock and associated structures, Dover	Cobham Park
Queenborough Lines, Queenseborough	Medieval Undercroft at Number 10 Bench Street, Dover	
Sheerness Naval Defences, Sheerness	New Bridge House, Dover	
WW2 Heavy Anti-aircraft gun site, Iwade	1-4 Camden Crescent, Dover	
Romano-British villa and 19th century reservoir in Cobham Park, Gravesham	1-2 & 7-31 East Cliff Terrace, Dover	
An Anglo Saxon barrow field and prehistoric linear earthwork located east of the A2 at Barham Downs, Canterbury	Dane House, Dover	
Bowl barrow located to the east of the A2 (approximately 350m south west of Upper Digges Farm), Canterbury	Life-Boat Lodge, Dover	
Springfield Roman Site, Dartford	Former Dover Harbour Station, Dover	
Roman enclosure SE of Vagniacaee at Southfleet, Dartford	Coombe Farm Cottage, North of Folkestone	
	Cobham Hall	

Ecology

- 2.7.11 The Agency's activities, including road construction projects and maintenance schemes, have the potential to impact on protected sites, habitats and species. We aim to minimise the impact of our activities on the surrounding ecology and wherever possible contribute to the creation of coherent and resilient ecological networks by maximising opportunities for protecting, promoting, conserving and enhancing our diverse natural environment.

2.7.12 The following statutory designated ecological sites have been identified within this Route: National Nature Reserves (NNRs)¹⁸, Local Nature Reserves (LNRs)¹⁹, Ramsar Sites²⁰, Sites of Special Scientific Interest (SSSIs)²¹ and Special Areas of Conservation (SACs)²² and Special Protection Areas (SPAs)^{23,24}.

2.7.13 A summary of the statutory designated ecological sites situated within this Route is provided in Table 2.11.

Table 2.11 Location of statutory designated ecological sites

Site	Location	Designation					
		NNR	LNR	SSSI	SAC	SPA	Ramsar
Lydden and Temple Ewell Downs	A2, Dover	✓		✓	✓		
Blean Complex	A2, Canterbury	✓		✓	✓		
Elmey National Nature Reserve	A249, Isle of Sheppey	✓					
Medway Estuary and Marshes	A249, Queenborough			✓			✓
Queendown Warren	M2, Sittingbourne		✓	✓	✓		
Farningham Wood	M20, Sevenoaks		✓	✓			
Western Heights	A20, Dover		✓				
Ashford Green Corridors	M20, Ashford		✓				
Folkestone to Etchinghill Escarpment	M20, Folkestone			✓	✓		
North Downs Woodland	A249, Maidstone				✓		

¹⁸ National Nature Reserves are designated by Natural England under the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981. They are key places for wildlife and natural features in England

¹⁹ Local Nature Reserves is a designation for nature reserves in the United Kingdom

²⁰ Ramsar sites are a list of wetlands of international importance as defined by the Ramsar Convention for the conservation and sustainable utilisation of wetlands, recognising the fundamental ecological functions of wetlands and their economic, cultural, scientific and recreational value.

²¹ A Site of Special Scientific Interest is a conservation designation denoting a protected area in the United Kingdom, the current legal framework is provided in England by the Wildlife and Countryside Act 1981, as amended in 1985, and amended by the Countryside and Rights of Way Act 2000.

²² Special Areas of Conservation are protected sites designated under the EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora.

²³ A Special Protection Area is a designation under the European Union Directive on the Conservation of Wild Birds. Under the Directive, Member States of the European Union have a duty to safeguard the habitats of migratory birds and certain rare and vulnerable birds.

²⁴ Includes land-based and marine-based designations.

Site	Location	Designation					
		NNR	LNR	SSSI	SAC	SPA	Ramsar
Medway Estuary and Marshes	A249,					✓	
The Swale	A249					✓	
Wouldham to Detling Escarpment	A249, Maidstone			✓			
The Swale	A249, Isle of Sheppey			✓			
Hatch Park	M20, Ashford			✓			
Folkestone Warren	A20, Dover			✓			
Darneth Wood	A2, Dartford			✓			
Cobham Woods	M2, Rochester			✓			
Shorne and Ashenbank Woods	A2, Rochester			✓			

Landscape

- 2.7.14 Roads and other transport routes have been an integral part of the English landscape for centuries. However, due to large increases in traffic, combined with modern highway requirements, they can be in conflict with their surroundings. We are committed, wherever possible, to minimise the effect of our road network on the landscape.
- 2.7.15 Locations of landscape sensitivity include National Parks and areas designated as Areas of Outstanding Natural Beauty (AONBs)²⁵. The Route includes the Kent Downs AONB which covers an area of 878 sq km and stretches from the Surrey border to Dover.
- 2.7.16 The Dover to Folkestone Heritage Coast is located near the southern end of the M20 and A2 and covers the White Cliffs of Dover.

Noise

- 2.7.17 Traffic noise arising from the Highways Agency's network has been recognised as a major source of noise pollution.
- 2.7.18 We take practical steps to minimise noise and disturbance arising from the road network. This includes providing appropriate highway designs and making more use of noise reducing technologies.

²⁵ An AONB is an area of countryside considered to have significant landscape value in England, Wales or Northern Ireland, that has been specially designated by Natural England on behalf of the United Kingdom Government

- 2.7.19 In 2012, Defra completed the first round of noise mapping and action planning which identified the top one per cent of noisiest locations adjacent to major roads. These were based on the conditions in 2006. The locations in this top one per cent are known as Important Areas.
- 2.7.20 There are several Important Areas on the Route, the largest in terms of route length included are summarised below:
- A2 south of Gravesham from A2 Watling Street/B262 Hall Road to A2 Watling Street/Brewers Road
 - M20 Junction 4 to 5 north of Larkfield

Water pollution risk

- 2.7.21 We have a duty not to pollute water courses and ground water. We have identified those highway discharge locations across our network where there is an existing potential water pollution risk.
- 2.7.22 There are several areas within this Route where there is a risk from water pollution. This can be due to the accidental spillage of hydrocarbon compounds from vehicles, or the contamination of stormwater runoff by heavy metals and particulates from tyre and brake lining wear, moving engine parts, oil and grease. It may also be because the surrounding area is sensitive, for example, due to ecological designations or its use for the extraction of potable water. The water pollution risk areas are summarised in Table 2.12. None of these locations are where there are ecological designations.

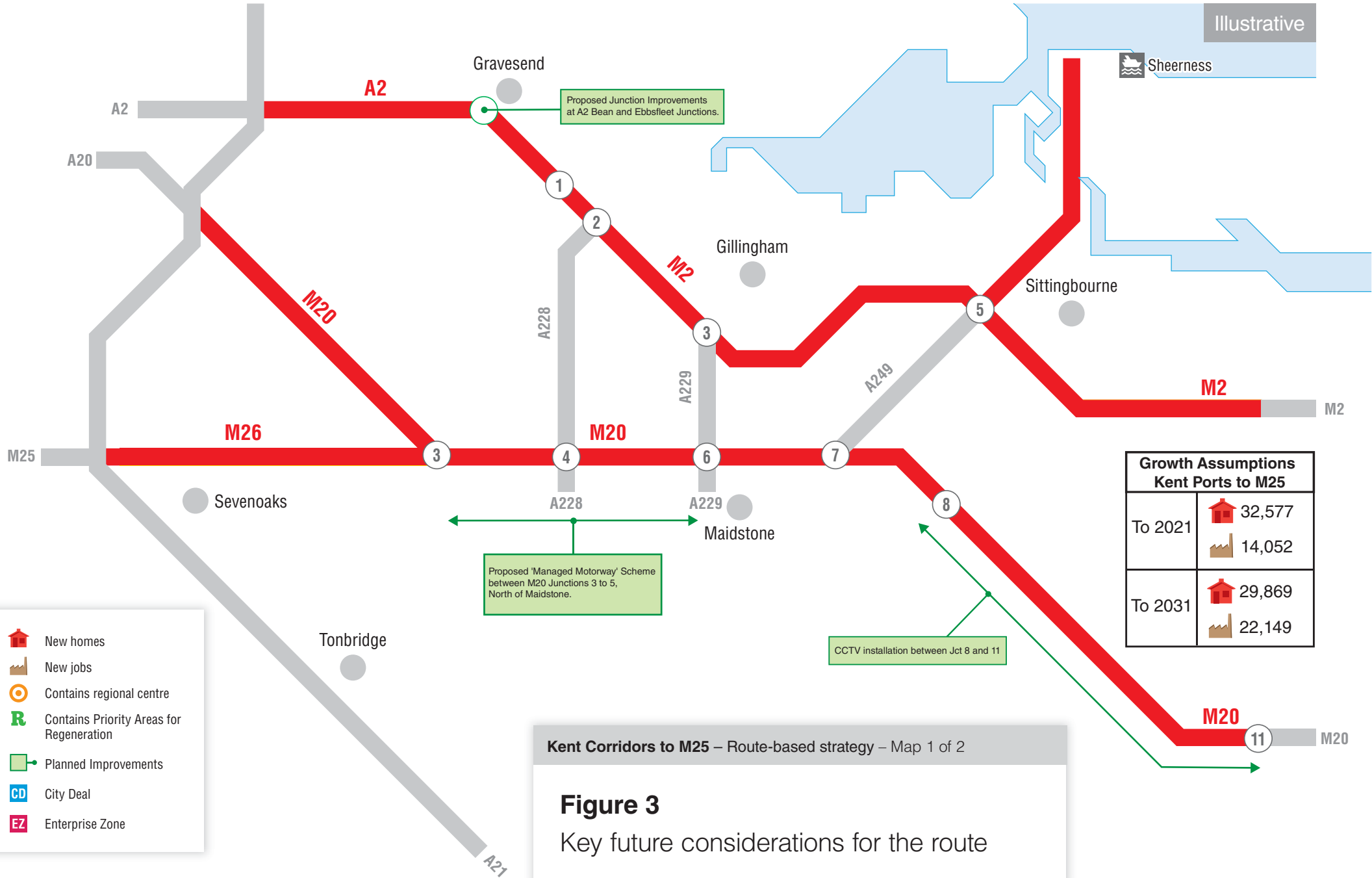
Table 2.12 Water pollution risk areas





	M2	M20	M26	A2	A20	A249	Total
Water Pollution Risk Areas	2	16	3	3	0	15*	39

3 Future considerations

3.1 Overview

- 3.1.1 There is already a lot known about the planned changes to and around the Route. Local authorities and the development community are already pushing forward the delivery of their housing and economic growth aspirations, as set out in their local plans. The Agency has a large programme of schemes it has to deliver, plus an even larger programme of pipeline measures that could come forward after the general election. Local authorities, together with port and airport operators, are progressing measures to improve the operation and performance of their transport networks and facilities.
- 3.1.2 All of these issues have the potential to directly influence the ongoing performance and operation of the Route. Figure 3 summarises the anticipated key future issues and the following sections summarise those issues in more detail.



Growth Assumptions Kent Ports to M25	
To 2021	 32,577  14,052
To 2031	 29,869  22,149

Kent Corridors to M25 – Route-based strategy – Map 1 of 2

Figure 3
Key future considerations for the route

Figure 3

Key future considerations for the route



3.2 Economic development and surrounding environment

3.2.1 A key aspect of managing the Route effectively will be ensuring that it is capable of supporting future local housing and economic growth aspirations. This will involve preparing the Route through effective management and public investment to be in the best possible position to cater for the planned demands placed upon it, whilst ensuring that the developments themselves effectively mitigate their local impacts.

3.2.2 Figure 3 summarises the known key housing and economic growth aspirations that would impact on the Route, with Table 3.1 below providing more context about some of those key developments the nature, scale and timing of the proposals.

Table 3.1 Key housing and economic growth proposals

Location of Development	Development Type	Anticipated growth		Anticipated Location of Impact on Route
		To 2021	To 2031	
Ashford Borough Council	Residential	11,898 dwellings	-	M20 Junctions 9 & 10
	Employment	196,500sqm	-	
Canterbury City Council	Residential	2,600 dwellings	5,550 dwellings	A2
	Employment	197,000sqm	100,000sqm	
Dartford Borough Council	Residential	7,062 dwellings	2,358 dwellings	A2
	Employment	10,175 jobs	3,300 jobs	
Dover District Council	Residential	980 dwellings	-	A2/A20
	Employment	63,500sqm	-	
Gravesham Borough Council	Residential	3,326 dwellings	2,844 dwellings	A2
	Employment	-	186,490 sqm	
Maidstone Borough Council	Residential	645 dwellings	10,130 dwellings	M20 Junctions 7 & 8
	Employment	-	9,400 jobs	
Medway Council	Residential	5,144 dwellings	4,126 dwellings	M2 Junctions 2 & 3
	Employment	2,047 jobs	914 jobs	
Sevenoaks District Council	Residential	995 dwellings	1,135 dwellings	M26
	Employment	780 jobs	1,770 jobs	

Location of Development	Development Type	Anticipated growth		Anticipated Location of Impact on Route
		To 2021	To 2031	
Shepway District Council	Residential	-	1,200 dwellings	M20 Junctions 11 to 13
	Employment	228,000sqm	-	
Swale Borough Council	Residential	7,773 dwellings	11,025 dwellings	A249 & M2 Junction 5
	Employment	3,530 jobs	6,783 jobs	
Tonbridge & Malling Borough Council	Residential	2,098 dwellings	-	M20 Junction 4
	Employment	-	-	
Thanet Borough Council	Residential	-	11,800 dwellings	M2 Junction 7
	Employment	-	5,000 jobs	
Total for Southern area of South East LEP	Residential	42,521 dwellings	50,168 dwellings	
	Employment	685,000sqm 12,222 jobs	286,490sqm 27,167 jobs	

- 3.2.3 The development levels identified in Table 3.1 represents the latest available information from published planning documents for each local authority. It contains a combination of consented and allocated growth areas in each authority. It is noted that not all the Plans have been adopted. For this reason, and via the normal development management process, the level of development may change from that in current published plans. The HA is aware that national policy relating to housing requires local authorities to seek to meet objectively assessed need. The HA will carefully monitor the impact planned numbers and locations for housing may have on the SRN and will respond accordingly.
- 3.2.4 Table 3.1 only outlines the development aspirations as identified in current local planning policy documents such as adopted core strategies and Local Plans. It does not identify the very long term aspirations of the local authorities which, as yet, have no planning status and therefore certainty over delivery.
- 3.2.5 The table also does not identify any planned changes in the operation of the major ports and airports surrounding the Route. Planned changes in the operation of these trip generators have been considered in section 3.4.
- 3.2.6 There are no areas in Kent where City Deals have been awarded and the only Enterprise Zone is Discovery Park, Sandwich, Kent. The development is the reuse of an old pharmaceutical campus for a science and technology park approximately 12 miles east of

Canterbury and 12 miles from the closest point of access to the trunk road at Dover.

3.3 Network improvements and operational changes

3.3.1 The Agency is already delivering a large capital programme of enhancement schemes nationally. This includes Major Schemes greater than £10m in value, plus smaller enhancement schemes including the current Pinch Point Programme. Table 3.2 below summarises the current committed enhancement schemes proposed along the Route, which have also been represented on Figure 3.

Table 3.2 Committed SRN enhancement schemes

Location	Scheme Type	Completion Year	Anticipated Benefits
M20 Junction 8 to 11	CCTV Installation	2014	Better visibility of SRN for the Agency, helps safely manage the network
M20 Junction 11a to 13	Resurfacing work	2013	Safer and smoother travel for road users
A2 Eastcliff Viaduct	Refurbishment works	2013	Prolonged life of structure
A2 Guston to Lydden	Resurfacing work	2013	Safer and smoother travel for road users
M20 Junction 7	Pinch Points scheme	2014	Safer merge/diverge at junction. Further improvements to Junction 7 likely through development related schemes

3.3.2 [The 2013 Spending Review](#) and subsequent report from HM Treasury [Investing in Britain's Future](#) referenced a series of potential new pipeline schemes for the strategic road network. Table 3.3 below provides a summary of the pipeline improvement schemes that would impact this Route, subject to value for money and deliverability.

Table 3.3 Declared pipeline schemes

Location	Scheme Description
Maidstone Junctions (M20 Junction 3 to 5)	Managed Motorways. Junctions to the north of Maidstone
M20 Junction 10a and new link road	A new junction and link road to the A2070 at Ashford in Kent with a new dual carriageway link road to the existing A2070 Southern Orbital Road and also connect to the A20 Hythe Road

Location	Scheme Description
A2 Ebbsfleet Junction	Improvements to the A2 junction at Ebbsfleet in North Kent between Dartford and Gravesend
A2 Bean Junction	Improvements to the A2 Bean junction

3.3.3 These schemes coincide with some of the problem areas identified in section 2 and the gaps in existing technology infrastructure on the M20. However, there will still be residual issues and gaps following delivery of these schemes along the Route.

3.4 Wider transport networks

3.4.1 The June 2013 report from HM Treasury Investing in Britain's Future also listed the local transport schemes either completed, under construction or due to start before May 2015. There are no local transport network enhancement schemes committed that have been identified as having a significant effect on the motorway and trunk road network that form this RBS.

3.4.2 At Dover Port there is a long term proposal to construct a second ferry terminal to cope with the forecast growth in traffic (estimated over 1.5 million more passengers a year by 2024). The Secretary of State for Transport approved the Dover Harbour Revision Order in 2011.

3.4.3 Eurotunnel is planning renovation of its terminals and adoption of the most efficient technologies e.g. new improved signalling and enlarged access plaza, will help them manage millions of extra passengers through the current tunnel system.

3.4.4 Manston Airport's previous owners forecast that they would serve around 4.7 million passengers and cater for around 400,000 tonnes of freight per annum by 2033. The intentions of the new owners are awaited. In 2011 they served between 50,000 and 100,000 passengers, and processed around 32,000 tonnes of freight.

3.4.5 Local planning policy acknowledges that 1 million passengers per annum and 250,000 tonnes of freight could be accommodated at the airport by 2011²⁶.

3.4.6 The port at Sheerness currently Imports 400,000 cars a year, 887,000 tonnes of fresh fruit, 434,000 tonnes of general cargo and 450,000 of forest product imports. With a planned £35 million investment in a new deepwater berth and fresh fruit terminal and new storage areas; these figures are likely to increase.

3.4.7 Lydd Airport's plans for a 250m runway extension and new passenger terminal were approved in April 2013. The new

²⁶ This figure is subject to review under the emerging Thanet Local Plan

passenger terminal will be capable of processing a further 500,000 passengers per annum.

- 3.4.8 The [Davies Commission](#)²⁷ identified the need to increase airport capacity in London and the South East by 2030. One of the long-term options for meeting future demand which is currently being considered is the provision of a new airport located on the Isle of Grain. In addition to passenger demand, it is expected that a new airport in this area may generate up to 100,000 new jobs and additional housing requirements for up to 150,000 people.

²⁷ Airports Commission: Interim Report (December 2013)

4 Key challenges and opportunities

4.1 Introduction

4.1.1 It is not possible to show all the challenges and opportunities identified in this evidence report. This chapter shows a selection based on those where our internal and external stakeholders viewed these as a priority and these are supported by evidence; albeit the evidence may not yet be sufficiently robust to enable the Agency to make final decisions regarding schemes or priorities. A full list of all the identified challenges and opportunities are provided in the Technical Annex.

4.1.2 Figure 4 (pages 59-60) summarises some of the key issues and challenges that the Route will experience during the 5 years from 2015, with the following sections and Table 4.1 (pages 56-58) explaining these issues and challenges in more detail.

Timescales

4.1.3 To understand the timescales of when the key challenges identified become critical and when opportunities on the Route could be realised, the following definitions have been made in Table 4.1:

- Short Term: current
- Medium Term: before March 2021
- Long Term: not before 2021

4.1.4 These timescale categories provide a guide for informing when a future intervention may be required to meet the anticipated future operational performance needs, or when interventions may be needed to help facilitate local housing and economic growth aspirations.

Local Stakeholder Priorities

4.1.5 Input from stakeholder and road user groups linked to the Route have been used to inform the development of this evidence report. This included getting their views on what they deemed to be the priorities within their area and identifying their 'top priorities' locally. This has been collated according to the route to which those views related.

4.1.6 In addition to the issues, challenges and opportunities raised at the engagement events, we have also taken into consideration issues which we are made aware of through the normal course of work and other means, such as the adjournment debate of the 12th November regarding infrastructure in Sittingbourne and Sheppey²⁸.

²⁸ Adjournment Debate – Roads infrastructure in Sittingbourne and Sheppey, 12 November 2013, http://www.publications.parliament.uk/pa/cm201314/cmhansrd/cm131112/halltext/131112h0002.htm#13111h0002.htm_spnew12, link last accessed 17/03/2014 14:26.

- 4.1.7 Table 4.1 presents a summary of whether the challenges and opportunities identified were a priority for our stakeholders in their particular area. This exercise does not seek to prioritise the challenges and opportunities along the length of the route by trying to compare one issue against another, but reports the feedback from local discussions.
- 4.1.8 This picture of stakeholder priorities is subjective and has been informed by discussions regarding the top priorities locally at the stakeholder events, and in conversations with stakeholders who couldn't attend the events.
- 4.1.9 We recognise that the picture we build through this categorisation will be influenced by the representatives and organisations we have engaged with, and that consequently we may not have achieved a statistically balanced view and certain priorities may not have been identified as a 'top priority'. We will be conscious of the limitations of the reporting of stakeholder priorities as we move into the second stage of RBS.

The role of the Local Enterprise Partnerships

- 4.1.10 This Route sits within the South East Local Enterprise Partnership (SELEP) area. As well as representing business interests this LEP group includes representatives from Essex, Kent, and East Sussex County Councils and Thurrock, Southend, Medway Councils.
- 4.1.11 SELEP is focussed on:
- Exploring and creating opportunities for enterprise; while
 - Addressing the barriers to growth
- 4.1.12 As such it has a clear set of priorities around developing and fostering business engagement and ensuring that the transport challenges of the area are met in order to encourage progress in its investment priorities.
- 4.1.13 From the stakeholder engagement exercise we know one of its priorities is encouraging progress on investment in a new Lower Thames crossing. This scheme to provide a new access point between North Kent and Essex and beyond has recently been the subject of Government consultation with three options tabled for consideration. While primarily providing a new strategic crossing these options also offer a range of varying localised regeneration opportunities for north Kent and the wider Thames Gateway.

Information from HAIL and the Highways Agency Managing Agent

- 4.1.14 As a part of the ongoing management of the network the Highways Agency Information Line (HAIL) and the Area 4 managing agent Balfour Beatty Mott MacDonald (BBMMJV) receive a considerable volume of communication from customers/users of the network.

- 4.1.15 Bearing in mind the area in question encompasses roads as diverse as the busy A27 along the south coast corridor, and the M2/M20, it is not surprising that this is one of the most active areas of the country for such communication. In the 12 months period until the end of November 2013, in excess of 5,300 representations were recorded.
- 4.1.16 Of the submissions relevant to this Route over 500 have been to do with M20 related issues, with a particular focus of correspondence concerned with the road to the north of Maidstone, and the section to the west of Ashford. In addition 124 representations were made with respect to A20 issues between Folkestone and Dover, and a similar cluster of concerns raised about the A20 in Dover.
- 4.1.17 More than 370 items of correspondence were also received in relation to M2 with clusters of communication activity in and around Junction 7 to the east of Faversham, and further clusters to the south of Sittingbourne and along the M2 to the south of Rochester. Additionally there were more than 490 A2 related representations concerned with issues in and around Canterbury and on the A2 to the east of Canterbury.
- 4.1.18 The information contained in Table 4.1 and included in the sections below was derived from the Stakeholder Event Reports, and from the Agency Road Users' Satisfaction Survey (ARUSS) report (July 2013).

4.2 Operational challenges and opportunities

- 4.2.1 There are a number of challenges and opportunities which from the preceding analysis and outputs from the stakeholder liaison have been identified as relevant to this Route and for general SRN activity. These are listed below for both generic and Route-specific considerations.

Overview

- 4.2.2 MIDAS technology is used at all junctions along the M26, M20 and M2 and at the majority of the junctions along the A2. MIDAS detectors are also located along the mainline carriageway of the M20 from Junction 4 to Junction 8 and on the A2/M2 corridor between the Bean Interchange and M2 at Junction 4. The main gaps in the MIDAS network include:
- M26 mainline
 - M20 west of Junction 4 and east of Junction 8
 - M2 east of Junction 4
 - A2 and A20 at Dover
- 4.2.3 The Route has varying levels of CCTV coverage, as summarised below, with the highest density of cameras provided along the M20 at Maidstone and Folkestone and on the M2 around Junction 1 and Junction 3.

4.2.4 The main gaps within the CCTV coverage have been identified as:

- M26
- M2 from Junction 5 to 7
- A2 from Bean Junction to the M2
- A2 between Canterbury and Dover
- A20
- A249

4.2.5 VMS are provided along the A2 from Dartford to Rochester, the M2 between Rochester and Sittingbourne and the M20 around Maidstone and around Folkestone. Main gaps in the VMS network include:

- M26
- M20 between Junction 1 and 4
- M20 between Junction 8 and 9
- M20 between Junction 10 and 11
- M2 from Junction 5 to 7
- A2 between Canterbury and Dover
- A20
- A249

4.2.6 There are key gaps in the level of technology provision along the Route occur on the M26 and the M2 east of Junction 4.

Generic Challenges/Opportunities identified by Stakeholders

4.2.7 From stakeholder input during the engagement workshops, the following generic challenges were identified:

- The management of incidents is good but the recovery times are not good enough. There is poor Traffic Officer coverage on the A2 East and A20.
- There is a need for better monitoring and communications with regards to diversions, with better information to drivers and management of incidents
- Lorry parking is a problems throughout the Route area (records of parking issues recorded by local authorities)
- The Agency's decision making appears to be stifled by processes, with too many systems which seem to hold things up.

4.2.8 The following generic opportunities were identified:

- Incident management: smart satnavs, VMS, CCTV, queue detection, automatic number plate recognition technology (ANPR), etc should be used to convey dynamic information.
- Incident management: There could be better coordination between the Agency and satnav companies and local network management centres.

Location-specific Challenges/Opportunities identified by Stakeholders

4.2.9 From stakeholder input during the engagement workshops, the following location-specific challenges were identified:

- M20 Operation Stack²⁹ - causing congestion and issues for economic growth with repercussions on the M20 and A2. Businesses not coming to Kent as a result.
- M2 Junction 7 – the junction is substandard leading to operational and safety issues.
- M25 Junction 5 – the missing east facing slips from A21 towards M26 leads to congestion on local roads.
- M20/A21 – the connectivity between the A21 and M20 is very poor, connecting routes A228 and A252 traverse through settlements with some below grade roads.
- Dartford Crossing – the provision of a Lower Thames Crossing to alleviate congestion.
- A2 at Lydden – dualling of current single carriageway section
- M2 Junction 5 and A249 Stockbury Roundabout – improvement to reduce congestion and facilitate growth north of the M2.
- M2 Junction 5A – a new junction to serve potential local growth.
- M20 Junction 4 – improvements to eastern overbridge to facilitate current and future growth.
- M2/A2 corridor – Kent County Council and others are seeking “bifurcation”, i.e. that this corridor is also officially signed as a route through Kent to the coastal ports.

Regional comments by Highways Agency Customers

4.2.10 The Agency Customer Feedback Report (1st Quarter 2013-14) notes that customers are telling the Agency that they like:

- The fact that the Agency works closely with stakeholders and residents to minimise disruption during works;

²⁹ Operation Stack is a traffic management strategy implemented by Kent Police at times when the Port of Dover is closed, whereby goods vehicles park on parts of the coast bound carriageway of the M20 and other traffic is diverted away from the motorway.

- Motorways are being cleared of litter and debris

4.2.11 Customers are telling the Agency that that they dislike:

- Missing connections for holidays due to unexpected delays on the network
- Litter on the network and debris left on verges.

4.2.12 From stakeholder liaison the Agency also recognise the need to provide support and greater engagement in relation to operational issues around the co-ordination of road works, event management and incident information.

The Impact on Local Economic Growth Aspirations

4.2.13 The London and South East Region produces the highest Gross Domestic product (GDP) of any region within the UK, and is the focus for the national motorway network.

4.2.14 The economic activity in this region, combined with its ports and airport activity creates a significant traffic demand which often exceeds the capacity of the road networks generally, thereby creating a number of locations where congestion and poor reliability and performance exist for parts of the working day.

4.2.15 In contrast to areas closer to London, the periphery of the region performs poorly against economic indicators. As a result local authorities are looking, especially in coastal areas, to regenerate local economies where they have suffered loss of employment opportunities. Pressure for new development, particularly to meet housing needs exacerbates this and often occurs close to congested junctions and road links.

4.3 Asset condition challenges and opportunities

Key maintenance challenges before 2021

4.3.1 The majority of the Route, where there is flexible pavement, will come towards the end of its design life by 2020. Specific sections include:

- 100% of the A249 (both directions)
- 50% of the A2 between Dover and the start of the M2 west of Canterbury (both directions)
- 100% of the M2 (both directions)
- 50% of the A2 from the M2 to the M25 (both directions between M25 Junction 2 and A2/A2260 junction)
- 75% of the M20 between Folkestone and M25 Junction 3 (both directions, long sections on M20 south of Ashford and from M20 Junction 8 and the bridge across the A20 London Road, north of Maidstone)

- 50% of the M26 (mainly in the eastbound direction near the interchange with the M20)
- 4.3.2 With the exception of the A249, all these sections would be strategically key as they form a part of the TEN-T network, linking the Port of Dover and the Channel Tunnel to the M25.

Local Stakeholder Comments

- 4.3.3 Local stakeholders identified the lack of VMS (east of M20 Junction 8) and the need to improve communication with travellers as a priority challenge for this RBS. From additional stakeholder/Asset Manager inputs the following additional safety issues were identified:
- Poor power supply on M2/A2/A20/A23 limits the capacity for Intelligent Transport Systems (ITS) & gantry information
 - Significant rutting on some parts of the corridor
- 4.3.4 Resurfacing of the network is an accepted priority, but there is a need to consider the local highway network during these works and the impact of diversions on these local routes.

Route-specific Challenges/Opportunities identified from Highways Agency Data

- 4.3.5 From the most recent of the Area Road User Satisfaction Surveys (ARUSS report)³⁰ stakeholder reaction in relation to the following was considered:
- poor/bad patches of road surfacing
 - where the road surface was noisy;
 - where they felt unsafe to some extent or more
 - where they had seen some patches/large amounts of long grass
 - where they had seen overgrown vegetation besides the carriageway
 - where they had seen some debris on the Agency roads
 - where they had seen litter on trunk roads
- 4.3.6 The responses relevant to this RBS area indicated that:
- Almost on fifth of users of the M20 complained of feeling unsafe – this is the same proportion as for the A27, and is the highest within the SRN in Kent and Sussex.
 - 10% of M20 users reported having been delayed by congestion at various locations including Junctions 5 – 6 in the peak hour and at Junctions 5 – 7.

³⁰ The Area Road Users Satisfaction Survey measures the awareness of and satisfaction with the Agency's services and other aspects of road users' experiences and perceptions.

- 20% of M20 users and 16% of M2 users noted the road surface to be poor – which is on par with user comments on the A23 and A259.
- 12% of M20 users noted the road to be moderately or very noisy, which is the highest within the SRN in Kent and Sussex.
- A quarter of M20 users and more than a quarter of M2 users reported seeing litter on the roads, whilst 30% reported seeing litter on the A2. These roads received the highest proportional feedback of all roads within the SRN in Kent and Sussex.

Regional comments by Highways Agency Customers

- 4.3.7 From the Highways Agency Customer Feedback Report (Quarter 1 2013-14), customers are telling the Highways Agency that they feel strongly about the sensitive environmental management of roadside verges but dislike overgrown verges, potholes and poor road surfaces.
- 4.3.8 From stakeholder liaison the agency also recognise the need to provide support and greater engagement in relation to operational issues around the co-ordination of road works, event management and incident information.

4.4 Capacity challenges and opportunities

- 4.4.1 There are no local transport network enhancement schemes committed that have been identified as having a significant effect on the motorway and trunk road network that form this Route.
- 4.4.2 At Dover Port there is a long term proposal to construct a second ferry terminal to cope with the forecast growth in traffic (estimated over 1.5 million more passengers a year by 2024). Eurotunnel is planning renovation of its terminals and adoption of the most efficient technologies e.g. new improved signalling, will help them manage millions of extra passengers with their current capacity.
- 4.4.3 This Route area provides the key links to Dover and Folkestone ports and also supports growth in many adjacent conurbations. In linking the Port of Dover and the Channel Tunnel to the rest of the country, it also carries a large amount of freight traffic with the percentage of goods vehicles within the Route area ranging from 9% to 41%, and an average percentage of goods vehicles of 21%, which is 3% higher than the average value of 18% across the whole SRN.
- 4.4.4 This Route will be the subject of increasing pressures to support growth at Dover Port and a probable second ferry terminal, and in support of anticipated growth at the Channel Tunnel and at Manston / Lydd Airports and at Sheerness Port.
- 4.4.5 The high proportions of goods vehicles impacts on capacity.

Location-specific Challenges/Opportunities identified by Stakeholders

- 4.4.6 From stakeholder input during the engagement workshops, the following location-specific challenges were identified:
- M2 – Junctions 4 and 7 comprise two-lane sections and Junction 5 (for A249). Development pressures on the A249 and its local north-south commuting role exacerbate this lack of capacity.
 - M2 Junction 3 – gyratory system is a capacity restraint on growth
 - M2 Junction 4 – limited capacity from local road network onto SRN
 - M2 Junction 7 Brenley Corner – Local Authorities have been advised to consider the impact of development on this. Capacity and alignment issues.
 - M20 Junction 4 – limited capacity
 - M25 Junction 5 - Missing east facing slips from A21 leads to congestion on local roads
 - M20 Junction 10 and M2 Junction 5 - capacity issues constraining the delivery of development
 - M26 – congestion/M25 Access
 - A2/M2 Junction 7 & A299 – Discovery Park, Sandwich access
 - A2/A2050 at Canterbury - queuing onto the SRN, local congestion causing rat-running through villages
 - A2 Ebbsfleet and Bean Junctions - improvements required to maximise growth in the Thames Gateway and/or access Bluewater Shopping Centre
 - Dover and Folkestone - tailbacks through the town
 - Dartford Crossing - there is not enough capacity at the junctions upstream and downstream of the crossing, which leads to local congestion. Journey times are very unreliable.

The Impact on Local Economic Growth Aspirations

- 4.4.7 It is recognised that all the communities of Kent have ambitions and targets around housing, employment and other forms of growth and regeneration. For example, assuming SELEPs draft SEP priority scheme for Ashford goes ahead; a new M20 Junction 10A proposed to be located to the South East of Ashford will relieve congestion at Junction 10 and help unlock housing and jobs growth. As such the scheme has the potential to unlock a major area of development potential in Kent.

4.4.8 In addition various housing proposals exist in the vicinity of Maidstone and Dover which will help support the long term development and regeneration of these towns.

4.4.9 The proposed new Lower Thames Crossing will alleviate the problems of the Dartford crossing and, depending upon the final alignment and design, may also be an opportunity to improve access to new development and reduce some of the existing problems of the Route.

4.5 Safety challenges and opportunities

Route-specific Challenges/Opportunities identified from Highways Agency Data

4.5.1 Three locations fall within the top 50 casualty locations; M2 Junction 5, A2 Bean Interchange and the A2 Brenley Corner.

Generic Challenges/Opportunities identified by Stakeholders

4.5.2 From stakeholder/Asset Manager inputs the following additional safety issues were identified:

- Goods vehicles parking – Network wide - Limited safe havens for vehicles,
- Foreign drivers and safety considerations – especially goods vehicles
- Driver tiredness – Kent stop-off hub for goods vehicle drivers.
- Diversion issues when carriageways are closed for maintenance
- Provision of cycle routes off-line rather than online and mixing with the SRN traffic - issue is that taking cyclist off-line becomes a County responsibility

Location-specific Challenges/Opportunities identified by Stakeholders

4.5.3 From stakeholder input during the engagement workshops, the following location-specific challenges were identified:

- M2 – this motorway between Junctions 4 and 7 are two-lane sections and Junction 5 (for A249). Development pressures on the A249 exacerbate this lack of capacity.
- M2 Junction 3 – safety and capacity issues
- A2 Bridge junction – safety issues regarding weaving vehicles
- A2 general safety issues in wet and dark conditions
- East-West facing network - safety issues due to sun glare
- A20 Dover to Folkestone and the A2 East – weather extremes and fog and east Kent snow fog, snow and extreme weather exacerbate safety issues

- M20 Junction 8 to 9 – concern over vehicles “aquaplaning” due to surface water

4.6 Social and environmental challenges and opportunities

Stakeholder Views

4.6.1 From stakeholder/Asset Manager inputs the following additional social and environmental issues were identified:

- Wider impacts of habitat expansion due to poor maintenance.
- Asset Management – night time work and diversionary effects creating negative feedback.
- M20 Junctions 8 to 9 and Junctions 4 to 7 – noise from concrete surfaces.
- A20 Dover – AQMA.
- Cycling – not suitable on A2 East.
- Horse riding – Sittingbourne crossings need improvements
- Dartford Crossing - will have an impact on air quality within Dartford.
- Congestion leading to air quality issues in Maidstone.
- Congestion from M25 spills onto local road network through a residential area into Dartford town centre.

Regional comments by Highways Agency Customers

4.6.2 From the Agency Customer Feedback Report, customers are telling the Highways Agency that they like:

- The fact the Agency work closely with stakeholders and residents to minimise disruption during works
- Local exhibitions to explain proposals
- Comprehensive and appropriate responses to complaints and questions
- Sensitive environmental management of roadside verges

4.6.3 Customers are telling the Agency that that they dislike:

- Trees being removed in association with improvement works

4.7 Co-operation between the Agency and Stakeholders

4.7.1 At the conclusion of the stakeholder engagement events, a plenary session was held to draw together suggestions around the theme of co-operation between the Agency and stakeholders. The following points were raised in this regard:

- Communication improvements

- Matching the Agency programme and those of local authorities.
- 4.7.2 Communication improvements were seen as the highest priority to fix in the short term; both communication between stakeholders and with the travelling public.
- 4.7.3 Kent County Council, Medway Unitary and the Agency coordinate information about developments and programmed schemes. This is very useful and Agency should continue to supply information into this. However, at the moment there is confusion about what funding will be available through the Local Enterprise Partnership and the Local Transport Board. Infrastructure Delivery Plans from local planning authorities are currently under development.
- 4.7.4 The Agency and local highway authorities should coordinate information on planned road works and events and provide joined up information for travellers. The joined up message and more accurate and timely information should also apply to disruption due to incidents.
- 4.7.5 There was concern from outside of the Agency/local authority organisations that there were too many “silos” in planning transport. The private sector wants certainty and reliability of the network.
- 4.7.6 There needs to be communication both sides of the English Channel. France appears to be working to a different set of growth assumptions from the UK.
- 4.7.7 There would be benefits to the Agency having a longer term programmes which have time-frames which are more in-line with those of Local Authorities as this would allow local authorities the opportunity to add value to schemes by providing funding through Community Infrastructure Levy (CIL)³¹. However, the converse is that CIL will not be used for transport schemes which are seen as unlikely to happen.
- 4.7.8 Stakeholders felt that a comparison with rail investment plans was useful – a 20 year plan with 5 year control totals.

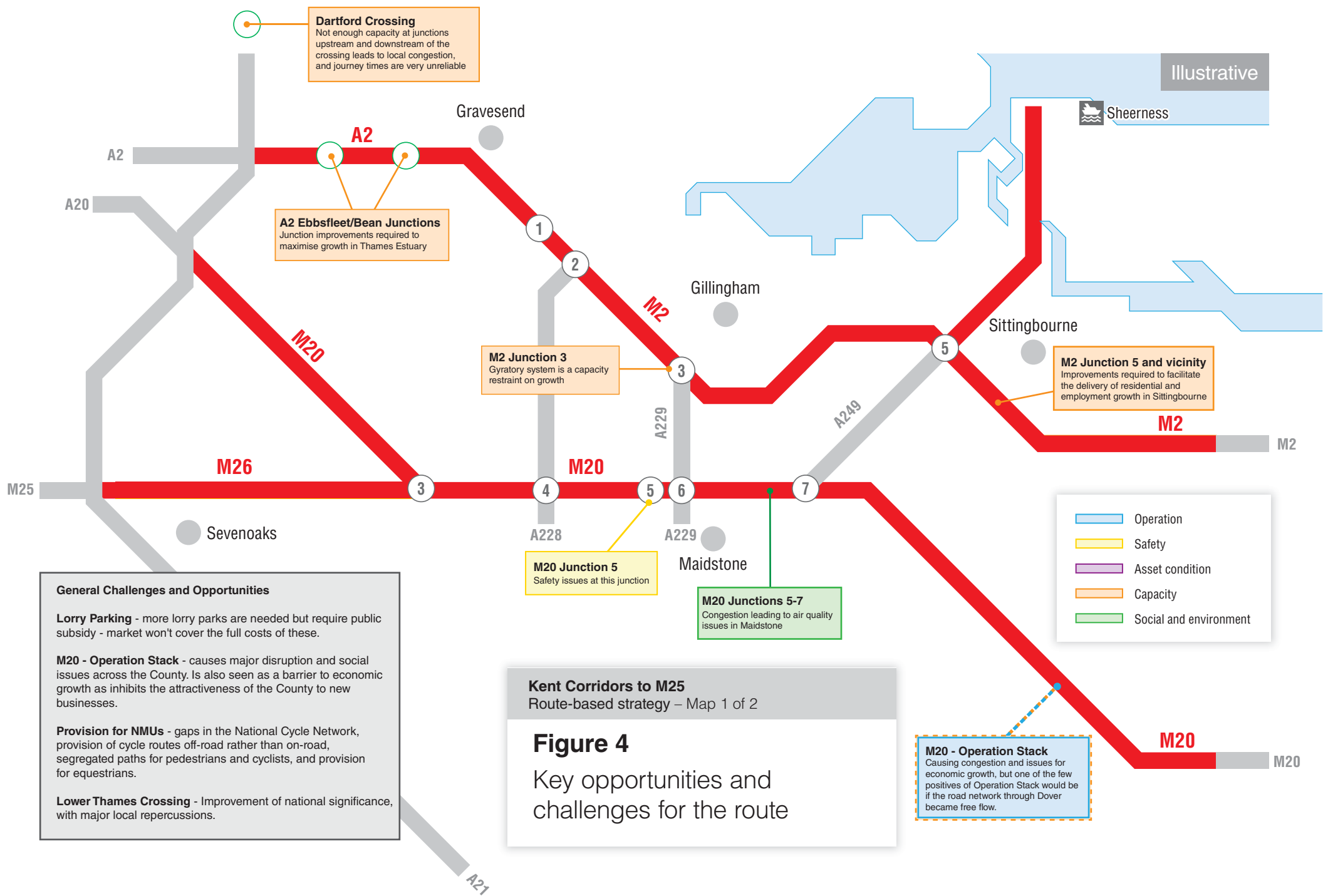
³¹ The Community Infrastructure Levy (CIL) is a method of securing generalised contributions from developers under the 2008 Planning Act.

Table 4.1 Schedule of challenges and opportunities

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
Network Operation	General	Information and Communication – provision of information early to motorists to enable choices to be made in good time (could include in-car technology, reducing the need for signage). VMS signing to be improved (flexibility of wording, etc).	No	✓			Y		✓	
	General	Journey Time Reliability – resilience to deal with incidents on the network.	No	✓			Y	✓		
	Diversion Routes	Of greater importance due to national strategic nature of ports. More strategic options are required. The A2 should be improved as an alternative.	Yes		✓		Y		✓	
	Lorry Parking	Lorry parking – More lorry parks are needed but require public subsidy - market won't pay full costs.	Yes	✓			Y		✓	
	M20 – Operation Stack	Causes major disruption and social issues across the County. Is also seen as a barrier to economic growth as inhibits the attractiveness of the County to new businesses.	Partial	✓			Y		✓	
Asset Condition	General	The resurfacing of the SRN is considered to be the obvious top priority.	Yes		✓		Y			✓
	General	The maintenance of the asset needs to be balanced with the needs of HGVs accessing the ports – i.e. the road can't be closed overnight.	Yes		✓		Y		✓	
Capacity	General	Cross Channel Traffic – projected growth in cross-channel trips will put increased pressure on ports and feeder network – SRN to be fit for purpose.	Partial	✓			Y	✓		

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	General	Capacity to accommodate growth and deliver economic priorities for LEP.	Partial		✓		Y	✓		
	Dartford Crossing	Not enough capacity at the junctions upstream and downstream of the crossing leads to local congestion. Journey times very unreliable.	Yes	✓					✓	
	M20 – Operation Stack	Operation Stack, causing congestion and issues for economic growth, BUT one of the few positives of Operation Stack would be if the road network through Dover become free flow.	Partial	✓			Y			✓
	M20 Junction 10	Required to facilitate the delivery of residential and employment growth in Ashford.	Yes		✓		Y		✓	
	M2 Junction 3	Gyratory system is a capacity restraint on growth.	Partial		✓		Y	✓		
	M2 Junction 5 and 5a	Required to facilitate the delivery of residential and employment growth in Sittingbourne.	Partial		✓		Y			✓
	M2 Junction 7	M2 J7 Brenley Corner - local authorities have been advised to consider the impact of their respective plans on this junction. All authorities currently working together under duty to co-operate; although no final overall picture of needs and impacts currently available.	Partial		✓		Y	✓		
	A2 Whitfield	Major housing growth around A2 at Whitfield.	Yes		✓		Y	✓		
	A2 Ebbsfleet/Bean Junctions	Junction improvements required at Ebbsfleet and Bean to maximise growth in the Thames Gateway.	Yes		✓		Y	✓		
Safety	General	Presence of foreign trucks (and drivers) on network represents increased risk of accidents – driver education/technology needed.	Yes	✓			Y	✓		

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	Provision for NMUs	Gaps in the National Cycle Network, provision of cycle-routes off-road rather than on-road, segregated paths for pedestrians and cyclists and provisions for equestrians.	Yes	✓			Y	✓		
	M20 Junction 5	Safety issues.	No	✓			Y		✓	
Social and environment	M20 Junction 5-7	Congestion leading to air quality issues in Maidstone.	No	✓			Y	✓		
	Dover and Folkestone	Tailbacks through the town	No	✓			Y	✓		
Other	Lower Thames Crossing	Improvement of national significance, with major local repercussions.	Yes	✓			Y		✓	
	M20 Maidstone	Point of highest pressure on the M20 due to confluence of routes and local trips using the M20. For example M20 J4 eastern overbridge needs widening to accommodate known current and future development.	Yes	✓			Y		✓	
	Programming	Mismatch of timing/programmes between local authorities and Highways Agency.	Yes	✓			Y		✓	





Illustrative

4.8 Conclusion

- 4.8.1 The Highways Agency is responsible for planning for the long term future and development of the Strategic Road Network (SRN). Dividing the SRN into 18 Routes, Route Based Strategies (RBS) represent a fresh approach to identifying investment needs on the SRN. Through adopting the RBS approach, we aim to identify network needs relating to operations, maintenance and, where appropriate, improvements to proactively facilitate economic growth.
- 4.8.2 RBS are to be delivered in two stages. Stage 1 seeks to establish the necessary evidence base to help identify issues, challenges and opportunities on Routes, taking account of asset condition, operational requirements and the plans and aspirations of local stakeholders. This document presents a summary of Stage 1 to-date.
- 4.8.3 Once stakeholders have had an opportunity to comment on the Stage 1 documents, they will be used to develop and take forward a programme of work to identify possible solutions for a prioritised set of challenges and opportunities. In turn these will feed into the Roads Investment Strategy that will set out operational and investment priorities for the SRN.
- 4.8.4 The Agency has, through on-going and specific event based engagement, obtained a wide range of views and evidence relating the Kent Corridors to M25 routes and the roles they play in the local and wider economy and society. While the numbers attending the engagement events were not high, it does appear that the views expressed are largely representative of the wider communities of Kent and those using the routes.
- 4.8.5 It is clear that stakeholders are generally in agreement as to what the major challenges and opportunities are facing the routes, which are set out below. However, views varied on the relative location and form of priorities, while some wished to promote particular localised solutions to perceived issues.
- 4.8.6 Most of the challenges and opportunities coincide with national and Agency policy and are supported by or likely to be supported by, robust evidence, it is likely that some may not. Therefore the inclusion of matters in this Stage 1 document does not mean that they can, or will, feed into the final Roads Investment Strategy.
- 4.8.7 In terms of the current principal purposes of the routes, they provide the key links via Dover and Folkestone ports and Eurotunnel to and from mainland Europe, as well as helping facilitate national, regional and local travel, regeneration and growth. The M20 also provides critical access via the M26/M25 to London, the airports of Heathrow and Gatwick and to the wider South-East, South-West and Midlands.
- 4.8.8 In terms of the current operation of the routes, the evidence shows that most of the time it does perform well; albeit that the Agency and

stakeholders are fully aware that a number of congestion hotspots exist. In several locations, major improvements are already being planned to address congestion and growth related issues. For example, in the case of M20 Junction 10 in Ashford there is already a declared pipeline scheme in place. Likewise the Government is committed to improving the A2 Bean and Ebbsfleet junctions, with the timing and form of any schemes subject to influence from decisions relating to the Lower Thames Crossing and the London Paramount proposals.

- 4.8.9 Equally evidence demonstrates that the network is generally very safe, although the Agency continually seeks to identify ways and means to make it safer. Thus various safety based improvements are being implemented across the Route.
- 4.8.10 The majority of the Route is subject to the highest levels of on-road service by Agency and service provider patrols. Where lower levels of service are provided this is simply a reflection of the lower levels of traffic. While regular Agency customer satisfaction monitoring picks up some comments on levels of service, stakeholders appear to be generally content that the level of service is appropriate.
- 4.8.11 The evidence shows that the majority of the Route is likely to come towards the end of their design life by 2020. Therefore a major Agency and stakeholder agreed issue for the future will be the need to resurface much of the network. Stakeholders considered this to be a top priority for the Agency.
- 4.8.12 Looking to the short and longer term future, the Agency and stakeholders concur that there are two main issues facing the Kent Corridors routes.
- 4.8.13 Firstly, the critical role this Route plays for the UK providing essential access via the ports of Dover and Folkestone to Continental Europe, and key roll-on/roll-off ferry ports and Channel tunnel to France and the European mainland.
- 4.8.14 Designated as a part of the TEN-T network, the Route links the Port of Dover and the Channel Tunnel, via the two main corridors to north Kent and Ebbsfleet, and then further to the M25 and via the Dartford crossing to the Midlands and north of England.
- 4.8.15 As such the Route helps underpin the success of the UK economy and industry nationally with the vast majority of our trade and exports being sea based and our most significant ferry port being Dover. It also offers local growth and regeneration opportunities within the Thames Gateway and for aspiring growth areas such as Ashford.
- 4.8.16 The projected growth in shipping and roll-on roll-off traffic means that while these corridors are busy now they are set to experience a year on year increase in activity into the foreseeable future.
- 4.8.17 The growth, however, continues to put pressure on road networks including, in particular, the local road network through Dover along

Townwall Street, and for the M20 corridor as a whole and the M26. It also exacerbates capacity and local access issues considerations along the A2 and for traffic accessing the M2 corridor, and ultimately impacts on access to north Kent and for the congested Dartford crossing

4.8.18 The second main role the Routes need to play is supporting the growth and regeneration aspirations of the Kent communities and the SELEP. In doing so it is recognised that as well as having national and regional roles, the SRN also plays an important local role. It facilitates local travel and consequently the interaction between it and the local networks need to be appropriately efficient and effective. The evidence compiled about the Route has shown that this Route needs to help support a large amount of economic growth up to 2021 (at least 32,577 dwellings and 14,052 jobs). These are located mainly within the boundaries of:

- Ashford Borough Council
- Dartford Borough Council
- Medway Council

4.8.19 Beyond 2021 (up to 2031), economic growth is likely to lead to at least a further 29,869 dwellings and 22,149 jobs located mainly in:

- Canterbury City Council
- Maidstone Borough Council
- Medway Council
- Swale Borough Council

4.8.20 There was widespread support from stakeholders for a new Lower Thames Crossing to alleviate the problems of the Dartford Crossing; albeit views on which option was preferred varied. It was also seen as an opportunity to improve access to new development and reduce some of the existing problems of the route; for example access to Dover via M2/A2.

4.8.21 Agency staff and service providers, as well as stakeholders, also raised a wide range of other challenges and opportunities that will face the Kent Corridors routes over the coming years. A cross-section of spatially specific challenges and opportunities are shown on Figure 4 (p59-60). Others are likely to become apparent as the RBS progresses and local plans and aspirations come to the fore. Stakeholders also raised a range of other issues. In no particular order they include:

- At a more general level there was an identified need for greater clarity around overall funding, as well a desire for a more joined up approach between the Agency and Local Authorities in the planning and provision of accurate technology solutions and messaging.



















- The impact of goods vehicles both in terms of their traffic and parking impacts on and adjacent to the network.
- Presence of foreign trucks (and drivers) on network represents a perceived increased risk of collisions, the evidence for which needs to be tested.
- Technology – a need for a comprehensive investment plan to maximise infrastructure capacity.
- Information and Communication – provision of information early to motorists to enable choices to be made in good time.
- A requirement for concerted investment in Asset Management; particularly improving pavement condition alongside a more focussed approach to soft estate management.
- Lack of soft estate management (and various resulting consequences, for example, access to assets, road safety implications for visibility).
- Development pressures – north of the M2 – and the provision of access to junctions along the M2.
- Safety - the need to reducing collisions.
- Event Management.
- Journey Time Reliability – resilience to deal with incidents on the network.
- Diversion routes – of greater importance due to national strategic nature of ports.
- Operation Stack.
- Non-motorised User (NMU) provision (including equestrian).
- Congestion leading to air quality issues in Maidstone.
- Tailbacks through Dover.

4.8.22 Overall, the Kent Corridors routes present a wide range of challenges and opportunities in the short and longer term. There is a general consensus among stakeholders regarding their key priorities and a willingness to work with the Agency to produce and deliver practical, sustainable, affordable solutions.

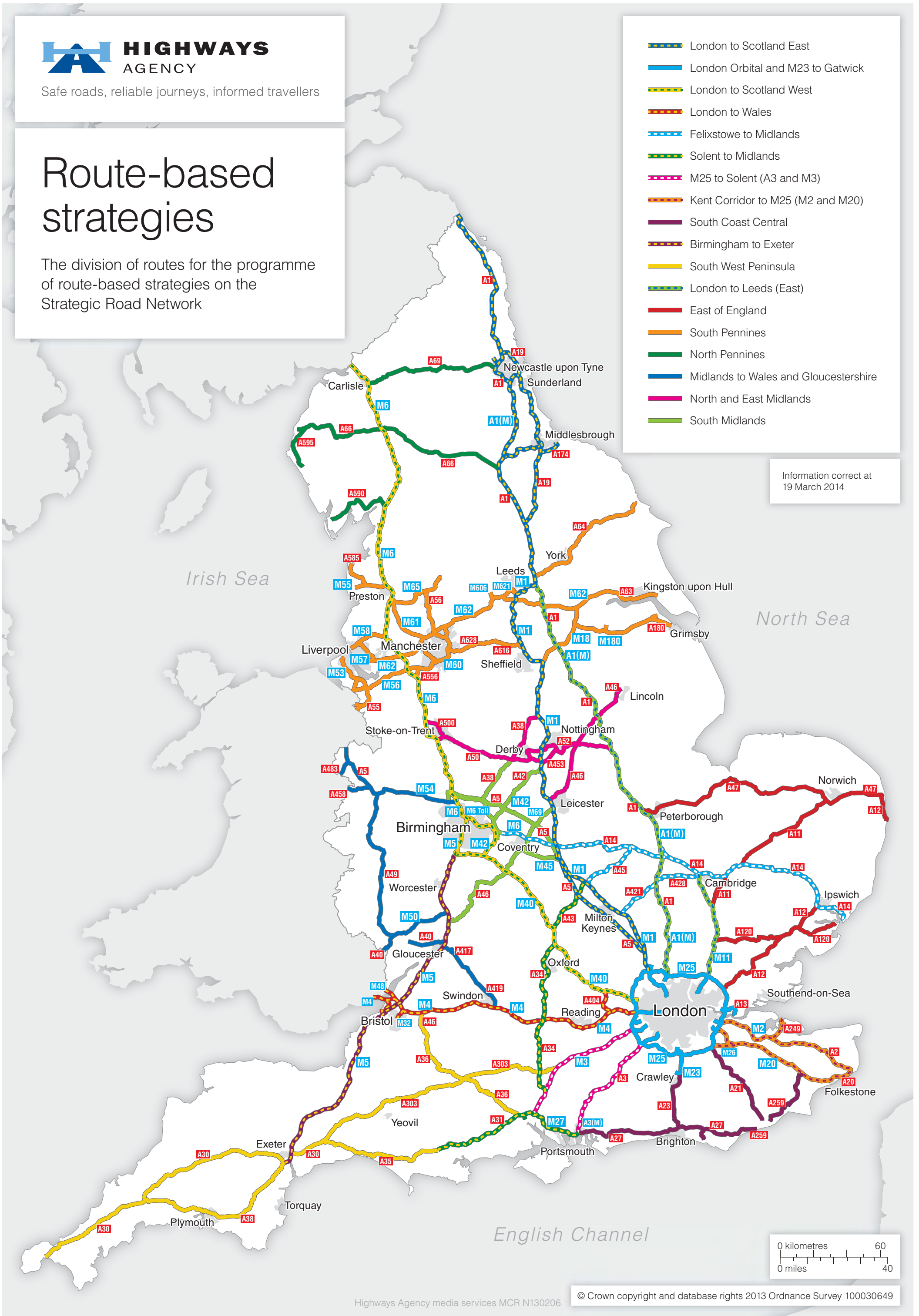
4.8.23 There is recognition by stakeholders that many of the issues will not be resolved overnight or easily, and some may not be able to be addressed at all. The Agency recognises the role it needs to play through the Kent Corridors to M25 RBS in managing the capacity pressures, addressing long term traffic growth issues and, via the Roads Investment Strategy for this RBS, supporting, where appropriate, economic growth.

Route-based strategies

The division of routes for the programme of route-based strategies on the Strategic Road Network

-  London to Scotland East
-  London Orbital and M23 to Gatwick
-  London to Scotland West
-  London to Wales
-  Felixstowe to Midlands
-  Solent to Midlands
-  M25 to Solent (A3 and M3)
-  Kent Corridor to M25 (M2 and M20)
-  South Coast Central
-  Birmingham to Exeter
-  South West Peninsula
-  London to Leeds (East)
-  East of England
-  South Pennines
-  North Pennines
-  Midlands to Wales and Gloucestershire
-  North and East Midlands
-  South Midlands

Information correct at
19 March 2014



Appendix B Glossary

Abbreviation	Description
AMP	Asset Management Plan
ANPR	Automatic Number Plate Recognition
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
ARUSS	Area Road Users' Satisfaction Survey
BBMMJV	Balfour Beatty/Mott McDonald Joint Venture
CCTV	Closed Circuit Television
CIL	Community Infrastructure Levy
DEFRA	Department of Environment, Food and Rural Affairs
DfT	Department for Transport
EEC	European Economic Community
ERT	Emergency Response Teams
eTEN	Trans-European Telecommunications Network
GDP	Gross Domestic Product
HAIL	Highways Agency Information Line
HGV	Heavy Goods Vehicles
HRA	Hot-rolled Asphalt
ITS	Intelligent Transport Systems
KCC	Kent County Council
LA	Local Authorities
LB	Listed Building
LEP	Local Enterprise Partnership
LNR	Local Nature Reserve
LOS	Level of Service
LTB	Local Transport Board
MAC	Maintenance Area Contractor
MIDAS	Motorway Incident Detection and Automatic Signing
MM	Managed Motorway
NMU	Non-motorised Users
NNR	National Nature Reserve
NO ₂	Nitrogen dioxide
NTOC	National Traffic Officer Centre
OTRM	On-time Reliability Measure
PM10	Particulate Matter 10
RBS	Route-based Strategy
RCC	Regional Control Centre
SAC	Special Area of Conservation

Abbreviation	Description
SELEP	South East Local Enterprise Partnership
SM	Scheduled Monument
SO ₂	Sulfur dioxide
SPA	Special Protection Area
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest
TEN	Trans-European Network
TEN-E	(or TEN Energy) Trans-European Energy Network
TEN-T	Trans-European Transport Network
TMD	Traffic Management Directorate
TOS	Traffic Officer Service
TSCS	Thin Surface Course System
UNESCO	United Nations Educational, Scientific and Cultural Organization
VMS	Variable Message Sign
WHS	World Heritage Site

Appendix C Stakeholder involvement

Organisation	Contact Name	Provided Input
Ashford Borough Council	James Renwick	Yes
Bluewater		No
British Horse Society	Elizabeth Akenhead	Yes
Canterbury City Council	Richard Moore	Yes
Dartford Borough Council	Lewis Boudville	Yes
Dover District Council	Gordon Measey	Yes
	Nigel Collor	
East Sussex County Council	Jon Wheeler	Yes
	Brian banks	
Eastbourne Borough Council		No
Environment Agency		No
Eurostar		No
Eurotunnel	Stuart Griffiths	Yes
Folkestone		No
Gatwick Airport		No
Gravesend Borough Council	Tony Chadwick	Yes
Hastings Borough Council	Kerry Culbert	Yes
	Tim Cookson	
Highways Agency	Nigel Edwards	Yes
Kent AONB		No
Kent County Council	Ann Carruthers	Yes
	Ruth Goudie	
	Lorna Day	
	Paul Lulham	
	James Hammond	
	Mary Gillett	
Kent Fire & Rescue Services		No
Kent Local Nature Partnerships		No
Kent Police Tactical Operations	Inspector Geoff Wood	Yes
Lewes District Council		No
Maidstone Borough Council	Tony Hapgood	Yes
Medway Council		No
Medway Services (Moto Hospitality)	Derrick Tate	Yes
Natural England		No
Network Rail		No
Port of Dover	Nigel Bodell	Yes
Ramblers Association		No

Organisation	Contact Name	Provided Input
Rother District Council		No
Royal Harbour Marina & Port Authority, Ramsgate		No
Sevenoaks District Council		No
Shepway District Council		No
South Down National Park Authority	Andy Beattie	Yes
South East Coast Ambulance Service (Kent)		No
Department for Transport	Lee Sambrook	Yes
South East Local Transport Board		No
Southeastern Railway		No
Sussex Police	Mark Dunn	Yes
Sustrans	David Young	Yes
Swale Borough Council	Gill Harris	Yes
Thames Gateway Kent Partnership	Dr Richard Longman	Yes
Thanet District Council	Steve Moore	Yes
Tonbridge & Malling Borough Council	Mike O'Brien	Yes
Tunbridge Wells Borough Council	Bartholomew Wren	Yes
Wealdon District Council		No
Welcome Break	Said Faghiri	Yes

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