GRAHAM + SIBBALD

Proposed Electric Vehicle ('EV') Strategic Road Network ('SRN') Service Station with Amenity Building and Ancillary Traditional Fuels ('The Development') Need Assessment ('the Report')

Former Tollgate Hotel Site ('The Site')
Junction A2 Trunk Road and A227 Wrotham Road
Gravesend
Kent

Prepared for BP Pulse
Prepared on behalf of Graham + Sibbald LLP
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Competency

The Report has been prepared by Calum Campbell, Managing Partner of Graham + Sibbald LLP. Calum is a Member of the Royal Institution of Chartered Surveyors and a Member of the Energy Institute. He specialises in the acquisition, disposal, assessment, and valuation of service stations and roadside facilities throughout the UK. Calum has more than 25 years' property experience and has worked in the roadside sector since 2000.

Graham + Sibbald LLP have not had any involvement with the Site prior to this instruction from BP. However, the firm has been involved in three valuations, for entirely unrelated purposes, of the neighbouring Tollgate Service Station.

Executive Summary

The Climate Change Act of 2008 sets legally binding targets to reduce carbon dioxide emissions in the UK by least 80% by 2050, from 1990 levels. In 2019, the UK Government legislated for a net zero carbon dioxide emissions target for 2050 ('net zero'). Crucial to achievement of these targets is removing the reliance upon motoring powered by fossil fuels. Transport is the UK's largest emitting domestic sector and 91% of UK transport emissions come from road transport.

Accordingly, the UK Government set targets to ban the sale of petrol and diesel cars from 2030 ('the ICE [Internal Combustion Engine] ban'). In September 2023 this was modified by the 'zero emission vehicle mandate', requiring that 80% of new cars and 70% of new vans in the United Kingdom be zero emission by 2030, and 100% by 2035.

Motorists are now beginning to adopt the usage of EV at scale, in recognition of the effect of traditional motoring on climate change and in recognition of UK Government guidance and policy being supportive of the move to EV. Further adoption is however hamstrung by 'range anxiety', about the distance an EV can travel without a re-charge.

In March 2022 the UK Government released 'Taking Charge – the Electric Vehicle Infrastructure Strategy' ('the TC-Doc'). The TC-Doc is appended at **Appendix 1**. The TC-Doc sets out how EV chargepoint infrastructure will replace traditional petrol and diesel, enabling the step change adoption of EV cars and vans. The UK Government will set, where necessary, the legislative framework and will engage in strategic guidance and support mechanisms for stakeholders; the market will deliver the rollout and market principles will ensure best value for consumers, of which the Development is a fine example. If the market does not deliver such facilities, then the Automated and Electric Vehicles Act 2018 has the potential to require the same by law. The TC-Doc focuses on two crucial sectors: firstly, the rollout of high-powered chargers on the SRN, and secondly local on street charging. Given the location of the Site, the focus of this Report is on the former.

The Department for Transport ('DFT') claims that EV recharging on Britain's motorways and major A roads is already no more than 25 miles apart. An investigation of the detail behind this claim however reveals, in Policy Paper: Government Vision for the rapid chargepoint network in England, published on 14th May 2020, that the basis for this claim is that *'a device is being counted as being on the SRN if it is within 1 linear mile of a point of entry/exit to the SRN'.* This position is contrary to the tenor of the December 2022 Policy Paper: 'Strategic Road Network and the delivery of sustainable development' ('the Circular') which emphasises that roadside development should be either on-line or at a location that shares a common boundary with the highway at a junction with the SRN. The Circular is appended at **Appendix 2**. As is clear from the Circular, National Highways ('NH') does not want to encourage unnecessary traffic movements onto or off the SRN for safety reasons, including for the purposes of refuelling, and therefore the DfT claim should be seen in this context. It does not demonstrate that the need for facilities such as the Development as met or even close to being met by existing provision, either nationally or locally in Gravesham Borough ('Gravesham').

In May 2023 National Highways published a Route Strategy Initial Overview Report for the Kent Corridors to M25 section of the SRN. This document will ultimately feed into the Road Infrastructure Strategy ('RIS') for 2025-2030 and NH Strategic Business Plan. The Route Strategy Initial Overview Report sets the following 6 Initial Route Objectives ('the IROs') for Kent Corridors to M25. These are: -

(a) Support safe and efficient freight movement to and from air, rail, sea and freeports in the Kent Corridors,
(b) Support Sustainable Development within Kent & Thurrock,
(c) Promote the Kent Corridors as a region that sets the standard in supporting the use of technology,
(d) Improve the resilience of routes from Dover, Sheerness, Tilbury and Thames Gateway Ports to the M25,
(e) Promote sustainable connectivity in the region,
(f) Be a better neighbour by safeguarding the environment and reducing the impact of air quality and noise on local communities including Dover, Maidstone, Aylesford, Ashford and Canterbury.

Except for (a) (to which the Development may only contribute indirectly by taking away passenger vehicle usage from competitor facilities which combine passenger and freight services) the Development would directly contribute positively to the remaining IROs.

Fundamental additional stakeholders, among others, will be Local Authorities ('LAs'). They will be expected to set appropriate strategies in their area of control to deliver an equitable rollout over the country. At present, Gravesham is in the lower 20-40% category of Local Authorities for the provision of EV chargepoints.

There are four types of chargers, ultra-rapid, rapid, fast, and slow. Whilst slow chargers are appropriate for those with off-road parking and overnight recharging, the latest high kW rapid chargers are the ones needed on the SRN and major roads to facilitate a relatively seamless transition to EV motoring. Completion of the Development will contribute 24 ultra-rapid chargers to the SRN at a nodal interchange with the A227 and would be a significant contribution to the Government target of 6,000 high-powered chargepoints on the SRN by 2035. It will form part of the BP Pulse commitment referred to on page 27 of the TC-Doc to *'double the size of its network in the UK to 16,000 chargepoints by 2030 and install a number of rapid charging hubs'*. Further, completion of the Development will take the provision of Rapid Chargers in Gravesham from 6 to 30, a quintupling the same in one development.

The movement from petrol and diesel motoring to EV will not negate the need for service stations. Refuelling will just be by a different methodology. Further, the current emphasis is to separate passenger and Light Goods Vehicle ('LGV') and HGV services provision. This is firstly in recognition that the fuelling of the latter is already changing from diesel to a form of natural gas, biodiesel, hydrogen and such like, and that for some of these methodologies there are safety implications in terms of their proximity to EV. Secondly truck stops should be separate from facilities for passenger vehicles, in recognition of the distinct needs of their respective vehicle types, the security of the same, and for the needs of their drivers. It is therefore appropriate that the Development does not provide HGV facilities.

The Site is well positioned as a roadside services facility and with the additional benefit of serving cross traffic on the A227. Ingress to and egress from the Site is established and is conventional and convenient for the Development use. No significant detour from the A2 or A227 is required.

The traffic flows on the A2 proximate to the Site exceed many motorways. The cross-traffic flows on the A227 are at a level of some trunk routes. The Development will create a step change to EV provision on this part of the SRN and in Gravesham.

The Development is market-leading and cutting-edge. Quite simply, there are no other facilities currently operating in the United Kingdom that compare with it in terms of the combination of the Development with the volume of traffic passing proximate. Further, it will not conflict with other service station provision in the vicinity. The Development is a service station for EV recharging with ancillary traditional fuels provision for cars, vans and Light Goods Vehicles ('LGVs"), with amenity building. The emphasis is therefore reversed from any other service station facility in the vicinity, where traditional fuelling takes precedence over recharging. Further, all recharging will be by ultra-rapid 150 kW units, of which there will be 24 in total. This will enable customers to recharge their vehicles, even those with large batteries, to 80% in less than 30 minutes. The Development will be at the cutting edge of technology for this sector, setting a benchmark for others to follow.

It is axiomatic that to meet current legislation to achieve net zero, government strategies for decarbonising transport, government agency (in particular NH) strategies for decarbonising transport and LA strategies for the same, construction of facilities such as the Development will be required. The Site and the Development meets the requirements of the relevant authorities, agencies, and stakeholders, fulfils a pressing need on this part of the SRN and locally in Gravesham, and will be a precedent and beacon for further similar developments in the United Kingdom. Without the Development and that of its type, net zero in this sector will never be achieved.

1.00 Introduction

1.01 The Report has been prepared to consider and evaluate the issue of 'need' in relation to proposals by BP Pulse ('BP') to develop a new Electric Vehicle Charging service station with ancillary traditional fuels forecourt and amenity building using the former Tollgate Hotel site adjoining Junction 2 of the re-aligned A2 trunk road at its intersection with the A227 Wrotham Park Road at Gravesend in Kent.

1.02 The Report has been prepared in connection with a Planning Application to be made to Gravesham Borough Council for the Development.

1.03 The Report considers the UK Government policy concerning and targets for the rapid infrastructure development of EV chargepoints, both on a national and local level, and the qualities of the Site in respect of this purpose. An assessment of local policies in relation EV chargepoints has also been undertaken.

1.04 This Needs Assessment sets out details of the traffic flows passing the Site, and provides commentary on the scale of these flows, before considering the current service station provision for EV on this part of the SRN.

1.05 The EV market, when compared with the traditional refuelling market, is in its infancy. The step change adoption of EV by motorists will only take place when 'range anxiety', being concerns about the distance an EV can travel without a recharge, is answered by facilities such as the Development. Therefore, any assessment of need should properly consider both national and local government aspiration and the directional and legislative framework created for delivery of the same.

1.06 The Report provides summary conclusions on the degree of unsatisfied need in this locality, describes the Development for the Site and assesses its suitability and the potential of the Site to satisfy this need.

2.00 EV charging on the SRN

2.01 Trunk roads developed in the 20th Century and the period following the second world war saw the introduction of motorways. Both have become high-speed dual (or greater) carriageways with limited accesses.

2.02 In terms of EV chargepoints, NH were given a commitment of £15 m to ensure that there were chargepoints (rapid where possible) every 20 miles on 95% of the SRN by 2020. This led to, they claim, 97.4% of the SRN being covered by 66 new charge points. Subsequently they have claimed that none of the SRN is further than 25 miles from a chargepoint provision on the same. An analysis of the assumptions behind this statement reveals that *'a device is being counted as being on the SRN if it is within 1 linear mile of a point of entry/exit to the SRN'.* This position is contrary to the tenor of the Circular which emphasises that roadside development should be either on-line or at a location that shares a common boundary with the highway at a junction with the SRN. As is clear from the Circular, NH does not want to encourage unnecessary traffic movements onto or off the SRN for safety reasons. The claim that none of the SRN is more than 25 miles from a chargepoint on the same therefore does not in any way demonstrate that the need for facilities such as the Development has been met or is even close to being met by existing provision, either nationally or locally in Gravesham Borough.

2.03 The modern motorist visiting a traditional service station expects and requires a fast and efficient service. The most modern service station facilities comprise a single building with several tills which allows fuel, food and other goods to be purchased with the efficiency of a single transaction. Toilets are also located within the control building. The expectations and requirements of the EV motorist are the same and need to be delivered if EV adoption is to be achieved at scale. Accordingly, the same facilities will be delivered in the Development. The charging facilities will deliver a cutting-edge swift recharge of EV vehicles, even those with large batteries, leaving the motorist to take advantage of the other facilities provided. It is cutting-edge principally in the sense that it provides 24 ultra-rapid chargers on one site, facilitating recharge in a timescale that will not materially affect the time efficiency of the driver when compared with one driving a traditionally fuelled vehicle. By so doing the Development will meet the aspiration of the government (23rd March 2021 by the Parliamentary Under-Secretary for the DfT) *'want to make charging as easy as refuelling a petrol or diesel car'.*

3.00 The Adoption of Electric Vehicles by Motorists to Date

3.01 Transport is currently the largest emitting sector the UK economy, responsible for 27% of total UK greenhouse gas emissions. 91% of UK transport emissions come from road transport. Over half of these emissions come from cars. Consequently, as part of the Government strategy to de-carbonise the UK economy and be net zero by 2050 the sale of petrol and diesel cars will be phased out. By 2030 80% new cars and 70% of vans will be zero emission, and 100% of both by 2035. In the interim there will be targets on the motor manufacturers to produce clean vehicles.

3.02 Whilst there are various forms of Electric Vehicle currently on the market in the UK, not all of these are zero emission. Vehicles emitting less than 75 g/km of CO2 currently qualify for classification as Ultra Low Emission Vehicles (ULEVs) and include some Plug-in Hybrid Vehicles (PHEV). Battery Electric Vehicles (BEV) and Fuel Cell Electric Vehicles (FCEVs) produce no CO2 at the exhaust pipe and thereby qualify as Zero Emission Vehicles (ZEVs). ULEVs and BEVs require to be plugged into the grid to re-charge whilst FCEVs re-fuel in a similar way to traditional vehicles, but with different products such as hydrogen.

3.03 For the ongoing purposes of the Report, reference to both PHEV ULEVs and BEVs will generically be referred to as Electric Vehicles (EVs). The primary purpose of the Development is to re-charge this category of vehicle.

3.04 Since the emergence of EVs as a means of motoring, successive governments have used various forms of incentive to increase their adoption by the motorist. Whilst these have had an effect, they have not resulted in anything approaching wholesale change. The need to decarbonise the transport sector as a major contribution to gaining net zero by 2050, combined with a growing awareness of climate change and public support for action against it, has led to a growth in legislative action of which the 2030 restriction on the sale of new petrol and diesel vehicles is the clearest example.

3.05 The combined effects of governmental incentives and legislation has had a significant effect. In 2021, 190,000 EVs were sold in the UK, that being more than in the 5 previous years combined and which equated to nearly 1 in 8 of all new cars sold. In December 2021, over a quarter of all new cars sold in the UK were EVs. The equivalent figure for 2019 was less than 2%. In February 2024 there are over 1,000,000 EVs and a further 620,000 plug-in hybrids registered in the UK and in 2023 nearly 315,000 EVs were registered in the UK, a growth of 18% over 2022. In terms of vans, at the end of February 2024 there were over 57,000 EV vans ('EVV') registered in the UK. In 2023 over 20,000 EVV were registered in the UK. DfT sources estimate that 10 million vehicles, a quarter of the car and van population, will need to be zero emission at the exhaust pipe by 2030. The Commission on Climate Change estimate is even more positive at 27-37% of the car and van population will be EVs (BEVs) by 2030.

3.06 Whilst petrol and diesel cars are nearing the end of their product life cycle, a major hurdle to the wholesale adoption of EVs is the ability of the motorist to re-charge their vehicle. More specifically a major barrier to people choosing to purchase an EV is 'range anxiety', about the distance an EV can travel without a re-charge.

3.07 A step growth in the adoption of EV vehicles is therefore crucial to the decarbonisation of the UK economy. Progress has been made and adoption is growing. However, there is a 'chicken and egg' problem; without the plentiful and ready existence of rapid re-charging facilities on the SRN, motorists will be reluctant to make the switch from traditional fuels to EV.

4.00 Types of EV Charge Points

4.01 There are four main types of EV chargepoint, being ultra-rapid, rapid, fast, and slow. These represent the power outputs, and therefore charging speeds, available to charge an EV. Power is measured in kilowatts (kW).

4.02 Each chargepoint type has an associated set of connectors which are designed for low or high-power use, and for either AC or DC charging.

Ultra-Rapid and Rapid Chargers

- 50 kw DC charging on one of two connector types
- 43 kw AC charging on one connector type
- 100+ kw DC ultra-rapid charging on one of two connector types

4.03 These are the fastest way to charge an EV and are often found on MSAs or trunk route services.

4.04 Ultra-Rapid DC chargers provide power at 100 kW or more. They are typically either 100 kW, 150 kW or 350 kW. For those EVs capable of accepting 100 kW or more, charging times to 80% are kept down to 20-30 minutes even for models with a large battery capacity. Even if an EV is only able to accept a maximum of 50 kW DC, they can still use ultra-rapid charge points as the power will be restricted to the capacity of the vehicle. At this level, recharge to 80% will take approximately 1 hour.

4.05 Rapid AC chargers provide power at 43 kW. They are typically able to charge an EV to 80% in 20-40 minutes.

Fast Chargers

- 7 kW charging on one of three connector types
- 22 kW fast charging on one of three connector types
- 11 kW fast charging on Tesla Destination network

4.06 Most fast chargers provide AC charging, though some networks are installing 25 kW DC chargers. A 7 kW charger will recharge a compatible EV with a 40 kW battery in 4-6 hours, and a 22 kW charger in 1-2 hours.

Slow Chargers

- 3 kW – 6kW charging on one of four connector types

4.07 Most slow chargers are rated at up to 3 kW. In reality, most slow charging is carried out between 2.3 kW and 6 kW, though the most common slow chargers are rated at 3.6 kW. Charging times vary on the charging unit and the EV being charged, but a full charge on a 3 kW unit will typically take between 6-12 hours.

4.08 The most appropriate chargers for siting on service stations on the SRN are ultra-rapid chargers. The Development will comprise 24 of these.

5.00 EV Charging Infrastructure – Policy Rollout and Responsibilities

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5.01 EV ownership is impractical without sufficient charging facilities. Lack of them produces the range anxiety referred to in paragraph 3.06 above. The UK Government has recognised this. Michael Ellis, the then Transport Minister said on 20th June 2019 that *'Our vision is to have one of the best electric vehicle infrastructure networks in the world. This means current and prospective electric vehicle drivers are able to easily locate and access charging infrastructure that is affordable, reliable and secure'.* In March 2022 the Government's stated policy was that *'EV charging should be cheaper and more convenient than refuelling at a petrol station'.*

5.02 The Government does not intend to develop the necessary recharging infrastructure, but to set the strategy, aspiration, and where necessary legislative framework for its delivery by the private sector, working with NH, LAs and other stakeholders.

5.03 In October 2023 National Highways published the document 'Planning for the Future – A guide to working with National Highways on planning matters' ('the NH guide'). This is at **Appendix 3**. The NH Guide, it is expressly stated therein, should be read in conjunction with the Circular. These combined documents ('the Combined Documents') represent the headline implementation of Government Policy and objectives to development on or adjacent to the SRN, as National Highways was appointed by the Secretary of State for Transport as a Strategic Highway Company under the provisions of the Infrastructure Act 2015. The Circular emphasises the importance of the provision of EV charging facilities.

5.04 Paragraphs 109 - 111 of the Circular are under the general heading of 'Provision for zero emission and hybrid vehicles'. Paragraph 110 reads *'operators…must support the uptake of zero emission and hybrid vehicles through the installation of EV chargepoints at their sites. All chargepoints should be user-friendly and accessible. In this regard, operators are expected to adhere to user-centred design principles: providing easy-to-read prices in p/kWh that do not fluctuate once charging sessions have started; ensure that chargepoints are working all year round; and provide free 24/7 helplines for users. Due consideration should be given for some chargepoints being located where they can be safely accessed by a recovery vehicle and car towing a caravan.*

5.05 Paragraph 111 of the Circular reads '*The Office for Zero Emission Vehicles (OZEV) has worked with Motability and the British Standards Institution to develop a Publicly Available Specification for accessible charging (PAS 1899), the United Kingdom's first accessibility standard for the design and installation of public chargepoints. PAS 1899 was published in October 2022 and should be considered by any party involved in providing public chargepoints'*

5.06 Feeding into the Combined Documents are various strategic documents published by NH. These include the 5-year programmes of funding known as the Road Investment Strategies ('RIS'), in which the UK is currently in the second phase (1st April 2020 – 31st March 2025). The third phase RIS (1st April 2025 – 31st March 2030) is in its planning stage, NH having published the 'Strategic Road Network Initial Report 2025-2030'. There are other contemporary, or near contemporary documents which provide strategic guidance, such as 'Net zero highways: our 2030/2040/2050 plan' published in 2021 and 'Connecting the Country: our long-term strategic plan to 2050' published in May 2023. For the purposes of considering the Development in the context of national strategy these can be summarised thus:

- The DfT's 6 objectives for the SRN are: -
    - Improving Safety for all
    - Network Performance
    - Improved Environmental Outcomes
    - Growing the Economy
    - Managing and Planning the SRN for the future
    - A technology-enabled network

- The description and purpose of the SRN is: -
    - The SRN is the biggest piece of infrastructure in the UK and the most heavily used part of the road network carrying a third of all traffic and two-thirds of all freight,
    - The principal purpose of the SRN, quoted in paragraph 4 of the Circular, is to enable safe, reliable, predictable, efficient, often long journeys of both people and goods in England between: main centres of population, major ports, airports and rail terminals
    - geographically peripheral regions of England
    - chief cross-border routes to Scotland and Wales

- In paragraph 6 of the Circular it states that the SRN: -
    - Provides critical links between our cities and other urban centres
    - Serves as a gateway to global markets and travel destinations
    - Connects our communities with families and job opportunities
    - Binds and strengthens our Union
    - Drives productivity and prosperity by unlocking growth
    - Encourages trade and attracts investment
    - Plays a vital role in levelling up the country

- To deliver a net zero economy roads need also to be net zero. The 2030/2040/2050 plan focuses on three interlinked areas under NH jurisdiction, and three phases to achieving net zero: -
    - NH Corporate Emissions by 2030
    - Maintenance & Construction Emissions by 2040
    - Road User Emissions by 2050

- Additionally in paragraph 6 of the Circular it states that NH *'will prepare and plan for the delivery of future transport technology on the network, such as the installation of high-powered chargepoints for EV'.*

5.07 The DfT publishes, from ZapMap Data, a league table of public EV recharging provision by LA at https://maps.dft.gov.uk/ev-charging-map/index.html. According to this source, on 1st January 2024, there were 53,677 public EV charging devices available in the UK. Of these, 10,118 were rapid devices, defined as being 50 kW and above. Provision however varies greatly between Local Authorities.

5.08 On 25th March 2022 the Government released 'Taking Charge – the Electric Vehicle Infrastructure Strategy' ('TC-Doc'). This is appended at **Appendix 1**. As the title suggests, this document is focused on the delivery of more public charging points for EVs in the shortest possible time. In the foreword from the Secretary of State for the DfT it reads *'we expect about 300,000 public chargers as a minimum by 2030. Our goal is to ensure these chargepoints are installed ahead of demand, inspiring confidence in drivers who have not yet made the switch'*. The TC-Doc goes on to say that there could be potentially more than double that number. According to the TC-Doc (at March 2022) there are 29,600 public chargepoints in the UK of which over 5,400 are 'rapid'- meaning that they can charge an EV in less than 30 minutes. The disparity between these numbers and those quoted in paragraph 5.07 perhaps illustrates the dynamic changes occurring currently in the market.

5.09 The TC-Doc goes on to specify further goals of its strategy. These briefly comprise:

- That chargers should be rolled out where they are needed most. They should be distributed nationally on an equitable basis,
- There should be bankcard, phone and other modern systems to access chargers,
- Standards should be set on price transparency, reliability and open data,
- To step up the delivery of high-powered chargers on the SRN for people making longer journeys a £950 million rapid charging fund will support the rollout of at least 6,000 high-powered chargepoints across England's motorways and main A roads by 2035,
- Local Authorities will be granted over £500 million to assist in the rollout of more chargers in their boroughs.

5.10 The TC-Doc goes on to specify key challenges to its strategy. These briefly comprise:

- That the pace of rollout is too slow. The pace is not consistent with a wholly zero emission new car fleet by 2035,
- Too often public charging points let people down. Every EV driver wants access to a plentiful, reliable and fairly priced public charging system. This is not consistently the experience of customers,
- The business case can be challenging for commercial deployment, particularly in areas of potentially low utilisation and high connection costs. This creates a 'chicken and egg' situation for potential EV purchasers, reluctant to buy until there is more visible infrastructure,
- Connecting new chargepoints to the system can be slow and expensive,
- There is a need for more local engagement, leadership and planning. Some local authorities are more engaged and well-resourced to rise to the challenge than others.

5.11 To address the challenges highlighted in paragraph 5.10 above, the TC-Doc states that the UK Government will focus their intervention on two crucial sectors where accelerated rollout is necessary to make 'range anxiety' a thing of the past. These are:

(i) High powered chargers on the SRN,
(ii) Local on-street charging.

5.12 The focus of the Report and nature of the proposed Development, means it will concentrate upon (i) above. Completion of the Development will create a step change in the Kent Corridors to M25 area of the SRN in terms of provision of EV chargepoints. Specifically, they will be high-powered, reliable and well-maintained, which are accessible to all who need them 24 hours a day, trading on a price-transparent basis and using all modern means of payment.

5.13 The TC-Doc states that the UK Government will accelerate the rollout of high-powered chargers on the SRN through the £950m Rapid Charging Fund. It states on page 8 that *'this will unlock current barriers to deployment at some of these locations, enabling provision where the commercial case will not add up. Confidence in the ability to undertake longer journeys is fundamental to EV adoption. We will ensure that every motorway service area has at least six rapid chargers by the end of 2023, with some having more than twelve. There will be over 6,000 high powered chargers along our strategic roads by 2035. Electricity network capacity at motorway service areas will be ready to meet demand to 2035 and beyond. We will consult on mandating that service area operators and large fuel retailers must meet minimum chargepoint numbers at specific sites, and at increasing levels over a period of time, to address both actual and perceived demand'.*

5.14 In general terms, the UK Government does not expect to get involved where the private sector is developing apace, except in the removal of existing barriers, and therefore will not be intervening in the destination sector such as the Development.

5.15 Further, the Government is relying upon competition to deliver best value for motorists. The TC-Doc states that the UK Government is aware that many LAs face challenges in developing local charging infrastructure. To assist LAs with this there are various grants, schemes and initiatives primarily:

- The LEVI Fund. This provides includes £50m to improve delivery across the country. It will provide training, tools and knowledge sharing. This money will be focused on areas currently behind in delivering and planning chargepoints,
- A knowledge hub for LAs will be launched in spring 2022, with guidance on EVs and charging infrastructure. This will include a tool kit for LAs to help them reduce emissions from transport,
- AN EV infrastructure guide will be produced for LAs in partnership with the Institution of Engineering and Technology ('IET') to assist with the transmission to ZEVs,
- The Geospatial Commission is undertaking a discovery research project to explore how location data can better be utilised to support planning and delivery of chargepoints by LAs,
- Regional support for LAs to plan chargepoints will be provided. Sub-national bodies in England have been funded to assess charging demand at a regional level and develop tools to assist LAs in developing chargepoint plans,
- Local Net Zero Hubs are being created (Greater South-East, South West, Midlands, North West and North East) to enable regional EV infrastructure initiatives to be coordinated at a national level,
- The UK Government will work with industry to provide consolidated evidence on fleet charging demand to inform LAs. Appropriate research will be captured and disseminated,
- UK Government will look to take pre-emptive powers to ensure a clear statutory obligation for LAs to develop local charging infrastructure strategies and oversee their delivery. This was timetabled for delivery in 2023,
- The Local Government Support Programme (LGSP), launched in October 2018 and November 2021 helps LAs decarbonise transport, improve air quality and increase EV adoption. This scheme has so far helped 121 LAs, and will continue to exist, fully funded by the DfT and administered by the Energy Savings Trust.

Allocation of Responsibilities for EV Infrastructure Development

5.16 The TC-Doc summarises the role of the UK Government in delivering EV charging infrastructure as:

- Set the overall vision for the UK's electric vehicle charging infrastructure network.
- Define outcomes and measure and monitor progress.
- Provide the legislative, regulatory, funding and support frameworks to deliver a well-functioning, competitive market with targeted interventions when required.

5.17 The TC-Doc summarises the role of Local and Mayoral Authorities in delivering EV charging infrastructure as:

- Develop and deliver ambitious tailored local EV charging infrastructure strategies that provide scaled, commercially sustainable public charging provision. They should align with wider local transport and energy decarbonisation policies.
- Ensure clear ownership and resourcing of the planning and delivery of EV charging infrastructure rollout.
- Ensure local chargepoints are inclusively designed and accessible for residents, businesses, and visitors, and in line with local authorities' legal obligations.
- Ensure internal processes for the installation of chargepoints are efficient, fast and easy to navigate for those working with local authorities.

5.18 The TC-Doc summarises the role of County Councils in delivering EV charging infrastructure as:

- The UK Government expects the EV chargepoint strategy for an area to be produced by the highest tier authority responsible for transport planning.
- Local highway authorities in England should consult any district level authorities in their area when developing chargepoint strategies.
- Chargepoint strategies should be aligned with wider transport and energy plans. Chargepoint strategies should be aligned with the principles in existing Local Transport Plans ('LTPs'), which LAs have a statutory obligation to develop. Updated guidance to producing LTPs will be published in 2022, and subsequent updates to LTPs should include the area's EV strategy. The strategies should incorporate engagement with key stakeholders to address barriers and unlock opportunities.

5.19 The TC-Doc summarises the role of Sub-national Transport Bodies in delivering EV charging infrastructure as:

- Lead assessments of demand across their regions to assist local authorities and electricity network operators in the planning of chargepoint rollout.

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National Highways Policies

5.20 Included in the 'Strategic Road Network Initial Report 2025-2030' referred to in paragraph 5.04 above, are more specific 'Route Strategy Initial Overview Reports', dated May 2023. There are, in total, 20 such reports. As the SRN is a national infrastructure, reporting segmentation of the same is a notional choice, however it enables interested parties to deal more specifically with the large amount of information available to them.

5.21 The Route Strategy Initial Overview Report in which the proposed Development stands is known as 'Kent Corridors to M25'. This is appended at **Appendix 4**. Very briefly, the purpose of this report is to apply the DfT 6 objectives for the SRN laid out in paragraph 5.06 above to the Kent Corridors to M25 route, to inform decision making in the third RIS 2025-2030.

5.22 Based upon NH data analysis and engagement with stakeholders, NH have set 6 Initial Route Objectives for Kent Corridors to M25. These are: -

(a) Support safe and efficient freight movement to and from air, rail, sea and freeports in the Kent Corridors,
(b) Support Sustainable Development within Kent & Thurrock,
(c) Promote the Kent Corridors as a region that sets the standard in supporting the use of technology,
(d) Improve the resilience of routes from Dover, Sheerness, Tilbury and Thames Gateway Ports to the M25,
(e) Promote sustainable connectivity in the region,
(f) Be a better neighbour by safeguarding the environment and reducing the impact of air quality and noise on local communities including Dover, Maidstone, Aylesford, Ashford and Canterbury.

5.23 The Route Strategy Overview Reports will be finalised following feedback on the Initial Overview Reports. This is happening now.

5.24 The Route Strategy Overview Reports will be used as a forward planning tool by NH to help identify investment opportunities for enhancements, as well as to support decisions around operating and maintaining the NH controlled network. These will of course then feed into the RIS and NH Strategic Business Plan.

5.25 The Development would clearly directly assist in the delivery of the Initial Route Objectives laid out in paragraph 5.22, except for (a), which would benefit indirectly, as the Development does not include HGV provision.

Kent County Council Policies

5.26 Kent County Council (KCC) are leading a project with Connected Kerb and 7 district councils, of which Gravesham is one. This is known as the Kent & Medway Chargepoint Network. Connected Kerb will install 600 new charging points over two years. The member councils are providing over 150 car parking locations, from which they will receive a revenue share. It is planned that each car park will have four electric charging points, offering a mixture of fast 7Kwh and rapid 50 kW chargers.

5.27 Kent County Council Local Transport Plan (LTP) 4: Delivering Growth Without Gridlock (2016-2031) identifies the transport priorities for the County. Outcome 4 of the LTP is to enhance the environment. Page 9 of the LTP sets out that the policy priority for achieving this outcome is to *'deliver schemes to reduce the environmental footprint of transport and enhance the historic and natural environment'*. The LTP is silent on EV chargepoints and the need to provide the necessary infrastructure to support the transition to electric vehicles.

5.28 The Kent & Medway Emissions Analysis and Pathway to Net Zero (2020) was commissioned by Kent County Council on behalf of all local authorities in Kent and Medway who together have committed to reduce greenhouse gas emissions in the area to Net Zero by 2050 at the latest. Page 41 of this document details that

transport is responsible for 38% of Kent and Medway's emissions and that there is a need to focus on the way people travel and the phasing out of fossil fuel vehicles. Identified transport measures include the adoption of more electric vehicles. Page 4 details that *'switching to electric vehicles: considers the speed of the uptake of electric cars, trains and buses and phasing out of petrol and diesel vehicles. The impact of this measure is influenced by both the demand-side reduction and grid supply from renewable energy supply.'* Page 43 contains further detail on the switch to electric vehicles and states that *'one of the most important steps to reducing transport emissions in Kent and Medway is the transition to electric vehicles. As with other measures around electrification, the success of the switch to EV relies heavily on grid decarbonisation and renewable electricity supply. Kent already runs a fully electrified passenger rail network'.*

5.29 The above demonstrates that the transition to electric vehicles is a key priority for Kent County Council in their achievement of Net Zero by 2050.

Gravesham Borough Council Policies

5.30 In terms of the provision at Gravesham, the same source as specified in paragraph 5.07 reports that there are in total 61 public EV charging devices equating to 57.1 devices per 100,000 population (population 106,870). Of the chargers, 6 are rapid. In terms of where Gravesham ranks in terms of provision relative to other UK LAs, this puts them in the lower category of 20-40%.

5.31 Gravesham recently published a Climate Change Strategy (Gravesham Borough Council, Climate Change Strategy 2022-2030) for the Borough Council's activities, having declared a Climate Emergency in June 2019. Priority 3: The Community Leader of the Delivery Plan sets out areas for action. Action point 3.5 states that a key action will be to *'develop electric vehicle charging infrastructure across the borough, both for resident, business and general public use'.*

5.32 This demonstrates the Borough Council's commitment to support the transition to electric vehicles and delivering the necessary EV charging infrastructure.

5.33 The TC-Doc represents a high-level Central Government guidance document for implementation by all stakeholders to the rollout of EV infrastructure. Stakeholders include (but are not limited to) Local Authorities. Gravesham Borough Council are committed to developing an EV charging infrastructure, but currently are in the lower level 20-40% of Local Authorities in terms of delivery. Development of the former Tollgate Hotel site as an EV Service Station as proposed by BP would therefore represent a step change in their delivery level of the same.

6.00 The Development & Site

The Development

6.01 The Development is for the construction of an EV chargepoint Service Station with ancillary Light Goods Vehicle (LGV) and private motor vehicles refuelling by traditional means. There is an ancillary sales building. A plan of the Development is appended at **Appendix 5**.

6.02 The sales building is central to the site with the recharging facilities arranged around the north-western, north-eastern, and south-eastern elevations to the same. Further to the south-east is the LGV and motor vehicle refuelling forecourt. The sales building has a gross external area of 450 square metres, and which will house the retail and customer service areas.

6.03 There are in total 24 chargepoints serviced by 12 300 kW ultra-rapid chargers. The traditional forecourt is laid out in Domino 6 pattern with therefore 12 refuelling points.

6.04 There will be customer parking bays to the north-west. To the south are 4 staff parking bays adjacent to which are two air and water bays.

6.05 The conventional forecourt has been specifically designed for conversion away from petrol and diesel as demand for those products at first reduces and then dies with the passage of time. The two most likely conversions will be to include additional EV facilities or for the introduction of refuelling of FCEV ZEVs (see paragraph 3.02). Such vehicles are a rarity in the UK at present however are more prevalent in mainland Europe, notably Germany. If there is a growth in their adoption, there would be a synergy for the inclusion of refuelling facilities, such as hydrogen, for such vehicles in the Development. Further, should any other appropriate technologies emerge for zero emission refuelling, they could be incorporated into the Development at this point.

6.06 The other difference is that the Development does not include facilities for Heavy Goods Vehicles (HGVs). In that sense it differs from the traditional SRN service station in that the facilities are not comprehensive in that sense alone.

The reasons for the Non-inclusion of HGV Refuelling in the Development

6.07 HGV refuelling is undergoing a similar transition as motor cars and vans. HGV refuelling is moving away from traditional diesel to Biodiesels, forms of Natural Gas, hydrogen and even EV. The most prominent of these is perhaps Biomethane or Bio-CNG, produced from waste products. The use of these products instead of traditional diesel produces much less carbon dioxide emissions (between 70-90%). However, their storage is in some cases in above-ground pressurised containers.

6.08 As EV service areas develop, they are unlikely to include refuelling for HGVs. This is for the following reasons: -

(i) CNG Truck Refuelling sites fall under the remit of the Health and Safety Executive (HSE) and are heavily regulated. Compressed gas is highly flammable and explosive. The same could be said of petrol, however CNG cannot be stored safely underground. Above ground CNG tanks near a preponderance of high voltage electricity from EV charging is not something that Developers, or the Authorities are likely to promote.

(ii) There is always a conflict between HGV and car and van usage of service stations. The movement of HGVs near motorists who have stopped for a variety of reasons; refuelling, a natural break, refreshment, exercise or more probably all has always been contradictory to a degree, and especially on sites

where space is at a premium. The potential for accidents is clearly there, especially when the users are likely to be tired. The changing fuel scenario has, in my opinion, brought about the tipping point for the separation of HGV refuelling from other forms of transport.

(iii) In the Combined Documents NH outline that they do not wish to encourage HGVs to refuel in areas where there are insufficient facilities for rest, a natural break and refreshment. In the time of Satellite Navigation and immediate communication they are looking for drivers to plan and stop where there are adequate facilities for them, instead of refuelling at a site without the same and carrying out the other elements of a stop in an inappropriate location.

(iv) The Combined Documents recognise the different requirements for truck stops against facilities for passenger cars and other road users. In addition to (i)-(iii) above, there is an additional focus on security. Truck stop facilities should have gated entry systems and fencing at their perimeter.

6.9 The planned Lower Thames Crossing, connecting the A2 to the east of the Site with ultimately the M25 in Essex, will remove a significant proportion of HGV traffic from passing the Site.

6.10 It is therefore considered that the inclusion of HGV refuelling is not justified under an Assessment of Need, nor indeed would it be desirable in the application of policies outlined in the Combined Documents.

The Site – Location and Accessibility

6.11 **Appendix 6** shows the location of the site. It lies about 7 miles south of junction 2 of the M25, 46 miles from the Channel Tunnel; 53 miles from the Dover ports and 33 miles from Gatwick Airport. It will serve traffic using the strategic A2 trunk road in Kent which connects the M25 London Orbital motorway, just South of the Dartford River Crossing with Canterbury and the Channel Ports. It will also serve the A227 which connects Gravesend immediately to the north with Wrotham to the south.

6.12 More particularly, the Site immediately adjoins the north-eastern quadrant of the junction which has been constructed to carry the newly aligned A2 trunk road over the A227. The road scheme to upgrade the A2 trunk road, constructed between 2006 and 2009, moved this section of the road some 180 metres to the south of its historic alignment, away from the southern residential areas of Gravesend.

6.13 This adjoining grade separated junction is fully integrated and so accommodates all traffic turning movements. Consequently, the Site will be readily and conveniently accessible to all traffic approaching this junction.

6.14 Traffic leaving or joining the A2 trunk road at this junction will pass close to its entrance as will traffic travelling through the junction on the A227. Traffic will readily reach the Site by using the exit slip roads and junction or both roundabouts if travelling north.

6.15 An established single entrance and exit to the Site formed by a dedicated leg on the northern junction roundabout will provide a conventional and convenient arrangement for both entering and exiting the facilities. Similarly, the junction will readily allow all traffic to continue upon its journey with no significant detour.

6.16 In commercial terms these access arrangements will be effective and allow the Site to meet the needs EV and other passenger vehicle and LGV categories of passing traffic readily and conveniently once developed, at a location close to the A2 trunk road as well as serving traffic passing on the A227.

The Site – General Characteristics

6.17 The site extends to approximately 3.22 acres or thereabouts, whilst the proposed operational area is 2.4 acres or thereabouts. The Site is readily capable of accommodating a modern EV service station.

6.18 The shape of the Site provides a regular developable plot. BP has confirmed that the existing slopes in the main area of proposed construction will be adjusted, levelled, and lowered in places. These adjustments do not present any operational difficulties for the proposed use of the site.

6.19 The Site is not subject to any adverse rights or other matters that would prevent it from being used as a Service Station.

6.20 It is concluded that the site is readily capable of being developed for this purpose.

7.00 Strategic Road Network and Current Traffic Flows

7.01 The A2 trunk road is one of the most important strategic routes in the United Kingdom. It is a radial route running out of London in a south-easterly direction, crossing the M25 at its Junction 2 and continuing to serve the north Kent coastal towns of Northfleet, Gravesend, Strood, Chatham, Rochester and Gillingham before heading south towards Canterbury and Dover and the coastal ports.

7.02 The traffic flows on the route are commensurate with its strategic importance and are extremely high in absolute terms. DfT count point 81429 shows that the average annual daily flow ('AADF') travelling through the junction on the A2 trunk road in 2022 was 112,939. DfT count point 81433 shows that the corresponding traffic flow travelling through the junction on the A227 in 2020 (no later data was available) was 19,471. It is notable that this traffic flow was lower than previous years, presumably due to Covid-19 lockdowns.

7.03 These traffic flows are higher than those on many motorways in the United Kingdom. Many service stations are supported by traffic flows lower than those on the on the A227 cross flow alone, even using the 2020 figures.

7.04 As noted, in road safety terms it is more stressful to drive on busy congested roads than those where traffic flows are lower. The high volumes of traffic on the A2 trunk road in particular provided part of the justification for improving the specification and capacity of the A2 trunk road when it was upgraded. It is evident however that that the traffic use remains high, and the road is consequently busy. There is clearly

a requirement for EV and currently, conventional fuel facilities to meet the needs of EV and other passenger vehicle and LGV traffic using these routes.

8.00 Existing ultra-rapid EV Provision in the vicinity

Facilities on the SRN

8.01 We have examined sections of the SRN relevant to the Site. We have limited our investigations to the provision of ultra-rapid devices only, given the requirement for the same on the SRN. Further, we have limited our investigations to on-line facilities only. Paragraph 2.02 of the Report highlights that NH has counted chargepoints located within 1 linear mile of the SRN as being on the same, however for the reasons stated in paragraph 2.02 we do not believe this appropriate.

8.02 **Traffic travelling south via the northern section of the M25. Thurrock Services – Medway Services. Total distance 25 miles.**

(i) Thurrock Services

- located on the M25 at junction 31.
- distance to site 10 miles.
- EV charging facilities comprise 12 ultra-rapid devices.

(ii) Medway Services

- Located on-line on the M2 at Farthing Corner.
- Distance to Site 15 miles.
- EV charging facilities comprise 10 ultra-rapid devices and a Tesla Supercharger facility.

8.03 **Traffic travelling south via the southern section of the M25. Clacket Lane Services – Medway Services. Total distance 37 miles.**

(i) Clacket Lane Eastbound Services

- Located on-line on the M25 between junction 5 and junction 6.
- Distance to Site 22 miles.
- EV charging facilities comprise 3 ultra-rapid devices.

(ii) Medway Services

- Located on-line on the M2 at Farthing Corner.
- Distance to Site 15 miles.
- EV charging facilities comprise 10 ultra-rapid devices and a Tesla Supercharger facility.

8.04 **Traffic travelling south from Central London via the section of the A2 trunk road within the M25. None to Medway Services. Total distance 35 miles.**

(i) McDonalds Old Kent Road

- Located on a junction with the A2.
- Distance to Site 22 miles.

- EV charging facilities comprise 2 ultra-rapid devices.

(ii) Medway Services

- Located on-line on the M2 at Farthing Corner.
- Distance to Site 15 miles.
- EV charging facilities comprise 10 ultra-rapid devices and a Tesla Supercharger facility.

8.05 **Traffic travelling south from Central London via the section of the A20 trunk road within the M25. New Cross - Medway Services. Total distance 37 miles.**

(i) NONE

(ii) Medway Services

- Located on-line on the M2 at Farthing Corner.
- Distance to Site 15 miles.
- EV charging facilities comprise 10 ultra-rapid devices and a Tesla Supercharger facility.

8.07 **EV recharging facilities at Medway Services Westbound and Clacket Lane Westbound Services.**

(i) Medway Services

- Located on-line on the M2 at Farthing Corner.
- Distance to Site 15 miles.
- EV charging facilities comprise 10 ultra rapid devices and a Tesla Supercharger facility.

(ii) Clacket Lane Westbound Services

- Located on-line on the M25 between junction 5 and junction 6.
- Distance to Site 22 miles.
- EV charging facilities at Clacket Lane comprise 3 ultra-rapid devices.

EV charging facilities on the A227 north and south

8.08 None.

Summary

8.09 The facilities briefly described in paragraphs 8.01 – 8.08 above, demonstrate a clear need for further EV recharging provision on the routes examined. The Development therefore represents a step-change, relative to the existing provision, on these connecting parts of the SRN and on the cross-route of the A227.

9.0 Conclusions Relating to Need

National Need

9.01 The legislation laid out in this Report, creating a critical path to decarbonising the transport sector, a major contribution to the achievement of net zero, make it

axiomatic that facilities such as the Development need to be built, in that without the plentiful and ready existence of rapid re-charging facilities, motorists will be reluctant to make the switch from traditional fuels to EV.

9.02 Recognising the point made in paragraph 9.01 above, government clarified their framework for the proactive rollout of EV infrastructure in March 2022 when it released the TC-Doc. This was the framework set to achieve a greatly increased presence of EV recharging, and particularly rapid recharging facilities, bring 'range anxiety' to an end and thereby encourage the wholesale adoption of EV vehicles.

9.03 NH, appointed by the Secretary of State for Transport as a Strategic Highway Company under the provisions of the Infrastructure Act 2015, manage the SRN. The principal purpose of the same *'is to enable safe, reliable, predictable, efficient, often long journeys of both people and goods in England between: main centres of population, major ports, airports, and rail terminals'*. Their plans recognise and implement government policy, and particularly those outlined in paragraphs 9.01 and 9.02 above. Specifically, it is stated in the Circular that NH *'will prepare and plan for the delivery of future transport technology on the network, such as the installation of high-powered chargepoints for EV'*. The aim is to have at least 6,000 high powered chargepoints on the SRN by 2035, and NH are working towards net zero by Road User Emissions by 2050.

9.04 Paragraphs 9.01 – 9.03 above clearly demonstrate the need for the Development in national terms from a legal, government policy and strategic perspective.

Local Need

9.05 In May 2023 National Highways published a Route Strategy Initial Overview Report for the Kent Corridors to M25 section of the SRN. It set 6 IRO's for Kent Corridors to M25. These are principally concerned with sustainable development, the use of technology, route resilience to change, sustainable connectivity and concerns about the environment, air quality and noise levels. Completion of the Development will contribute to 5 of these positively, and directly. The remaining IRO relates to freight. The Development will contribute to this IRO positively, but indirectly, by taking passenger and LGV vehicles from facilities more suited to servicing HGVs.

9.06 Our examination of EV recharging provision in section 8 of this Report clearly shows a dearth of facilities on the SRN in the vicinity of the Site, the connecting parts of the same and the cross-route of the A227.

9.07 The provision of EV recharging in the Gravesham is insufficient. Gravesham currently stands in the lower-level 20-40% of LAs for the provision of EV recharging facilities. However, Gravesham's Climate Change Strategy requires it to *'develop electric vehicle charging infrastructure across the borough'*.

9.08 The need for the Development is therefore manifest in meeting NH strategies in the region. Further a local need for further recharging facilities in Gravesham is manifest and its completion will create a step change for provision of the same in the Borough.

Merits of the Site to service the needs outlined

9.09 The location of the Site is convenient for ingress to and egress from the A2 trunk route and is near to the A2 trunk route. Further, it is at an important nodal point able to serve cross-traffic on the A227 as well as the A2, and for those heading from Gravesend and Wrotham to access the SRN. It therefore serves both traffic SRN traffic and local traffic in Gravesham.

9.10 The traffic flows on the A2 and A227 in the vicinity of the Site are both substantial. The flow on the A2 is more than many motorways and the cross-traffic on the A227 alone exceeds a level that sustains many main-road service stations.

9.11 An established single entrance and exit to the Site formed by a dedicated leg on the northern junction roundabout provides a conventional and convenient arrangement for both entering and exiting the facilities. Similarly, the junction would readily allow all traffic to continue upon its journey with no significant detour.

9.12 The Site is a strong location in terms of the volume of passing traffic and is conveniently situated to service the same. It will service both the SRN and Gravesham. The Development will therefore have a far-reaching impact upon the provision of EV recharging facilities in south-east England, and more widely in the United Kingdom.

Merits of the Development to service the needs outlined

9.13 The Development is market-leading and cutting-edge. Quite simply, there are no other facilities currently operating in the United Kingdom that compare with it in terms of the combination of the Development with the volume of traffic passing proximate.

9.14 There are in total 24 chargepoints serviced by 12 300 kW ultra-rapid chargers. These will enable 24 EV vehicles to re-charge, even those with large batteries, in a timescale that will not materially affect the time efficiency of the driver when compared with one driving a traditionally fuelled vehicle. During charging, drivers will be able to use the facilities provided in the amenity building. It therefore meets the test set by the Parliamentary Under-Secretary for the DfT on 23rd March 2021 that the government *'want to make charging as easy as refuelling a petrol or diesel car'.*

9.15 BP prides itself on its focus upon the needs of the customer. The chargepoints will be user-friendly, accessible, and well maintained. These features combined with the latest mobile app technologies (including BP's own app) demonstrates that the Development will be an example of the application of the latest technology to service the emerging EV vehicle fleet.

In Summary

9.16 The Development is needed locally in Gravesham, by the users of the SRN on this section of the SRN, as part of the UK wide infrastructure on the SRN enabling *'safe, reliable, predictable, efficient, often long journeys'* around the country for EV vehicles and as a market-leading stimulus to further developments of its type. Without the Development and that of its type, net zero in this sector will never be achieved.

APPENDIX 1

HM Government

Taking charge: the electric vehicle infrastructure strategy

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Foreword from the Secretary of State for Transport

In November 2020, the Prime Minister put the UK on course to be the fastest nation in the G7 to decarbonise road transport, announcing that sales of all new petrol and diesel cars and vans would end in 2030. Alongside Government plans to introduce targets for sales of clean vehicles from 2024, the public discourse on zero emission motoring has now firmly shifted from if it will happen, to when.

The industry has also comprehensively embraced the transition to green road transport. By March 2022, Mini, Vauxhall, Ford, Bentley, Rolls Royce and others have committed to a zero emission future from 2030, and more than £3 billion of investment has flowed into the UK zero emission vehicle sector. In 2021, 190,000 battery-powered electric vehicles (EVs) were sold in the UK. This was more than the five previous years combined, and nearly 1 in 8 of all new cars sold. This year it will be even more.

Thanks to the huge investment now pouring into battery technology, EVs are getting cheaper to buy and more efficient to run, with many travelling over 200 miles on a single charge, which compares favourably with average daily car use. In 2019, the average car journey in England was 7-8 miles in urban areas, and about 10 miles in rural areas. Owning and running an EV has never been easier. We are now focused on developing a robust, fair and scalable charging network covering the entire country.

Our plans will get more chargepoints in the ground, quicker. They will strengthen the business case for chargepoint operators to invest now at this early stage of the transition, and the speed at which they are connected to the electricity system will accelerate.

Charging often starts at home, with most UK motorists having access to off-street parking. As an EV driver myself, I know that home-charging not only provides access to the cheaper electricity prices, but also means my car is charged each morning ready for the day ahead.

But not everyone has access to off-street parking, so we will focus efforts on installing more on-street chargepoints, providing convenient and affordable charging, ideally on the street where you live. You'll see chargers integrated into lamp posts and next to parking bays, for example. Innovative solutions are being piloted up and down the country as I write.

We expect around 300,000 public chargers as a minimum by 2030. Our goal is to ensure these chargepoints are installed ahead of demand, inspiring confidence in drivers who have not yet made the switch.

They must also be rolled out where they are needed the most nationwide. Government's role is to set the right foundations for an equitable nationwide charging roll-out, removing barriers along the way. That means tackling some of the key bugbears of current EV drivers, such as providing bankcard access or equivalent at chargers alongside phone payments, and setting standards on price transparency, reliability and open data.

We will step up the delivery of high powered chargers on the strategic road network for people making longer journeys. We already have one of the largest rapid charging networks in Europe – a 2020 study found we had more rapid chargers for every 100 miles of key strategic road than any country in Europe. Our £950 million rapid charging fund will support the rollout of at least 6,000 high powered chargepoints across England's motorways and major A-roads by 2035.

We'll also support local authorities with over £500 million of funding, helping them find innovative ways to increase local chargepoint coverage.

But Government is only part of the solution. The private sector has a critical role to play in providing convenient, affordable and reliable charging for all. We are already seeing a proliferation of public chargepoints at supermarkets, gyms and tourist attractions, installed without Government support.

Looking to the future, our goal is to completely integrate charging with our smart energy system, delivering benefits to the grid, and the potential for lower cost, or even negative, electricity tariffs for those willing to charge flexibly.

Ultimately, charging your EV should be easier, cheaper and more convenient than refuelling a petrol or diesel car, wherever you live. At the same time, we must make sure that this revolution happens alongside growth in all other zero emission and low emission forms of travel, such as walking – so we are setting out clear principles to minimise pavement clutter, prevent trip hazards for pedestrians and stop new EV charging bays precluding bus and cycle lanes.

Building a world-leading charging network will enable EV drivers to plug in and charge anywhere, be it on the street where they live, where they shop, or on route to their destination. This won't happen overnight, nor without challenges along the way. But the benefits of the zero emission motoring will be felt everywhere, with improved air quality in our towns and cities, economic growth through our automotive industry, and ultimately cheaper and cleaner driving for all.

Executive Summary

Introduction

In December 2021, over a quarter of all new cars sold in the UK were battery electric vehicles.[1] The equivalent figure for 2019 was less than 2%.[2] The decarbonisation of UK road transport is now accelerating at an astonishing pace and the UK is in the vanguard of this change. As the first G7 nation to announce phase out dates for new petrol and diesel cars, vans and trucks, we are determined to stay at the forefront of this transition. The UK recognises that a focus on vehicles is only half of the challenge. A world-class charging infrastructure is absolutely fundamental to delivering net zero road transport. This document sets out our strategic approach in delivering this charging infrastructure out to 2030.

The vast majority of drivers will do most of their charging at home, overnight. We need public chargepoints for two main purposes: to enable long distance journeys, and to support those without off-street parking.

Our vision for 2030

We will remove charging infrastructure as both a perceived, and a real, barrier to the adoption of electric vehicles (EVs). EV charging should be cheaper and more convenient than refuelling at a petrol station. Specific predictions of the future mix and number of chargepoints are inherently uncertain in 2022 due to rapid developments in battery and charging technology, and because consumer preferences about where and when they would like to charge are still being revealed. The commercial landscape for charging infrastructure is also developing quickly but the balance between fewer, higher-powered chargers and more numerous, lower-powered ones is not yet clear. By 2030, we expect there to be **around 300,000 public chargepoints** as a minimum in the UK, but there could potentially be more than double that number.

1 SMMT (2022). Available at: https://www.smmt.co.uk/vehicle-data/car-registrations/
2 DfT (2022). Cars registered for the first time by propulsion and fuel type: Great Britain and United Kingdom (VEH0253). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1046011/veh0253.ods

In any scenario, rollout must progress at pace to provide sufficient chargepoints ahead of demand and to ensure that the UK is a place where:

Everyone can find and access reliable public chargepoints wherever they live – be that city centre or rural village, urban flat or suburban house, in the north, south, east or west of the country. Charging opportunities will not be limited by income or location.

Effortless on and off-street charging for private and commercial drivers is the norm – easy overnight charging is, and will remain, the default for those with driveways. But charging should be just as convenient and stress-free for those who currently park on street. This must extend beyond privately owned cars; those who drive vans and commercial vehicles must also have access to chargepoints that meet their needs.

Fairly priced and inclusively designed public charging is open to all – there will be vibrant competition across the charging sector with choice in provider and type of charging, and open data on pricing and availability. Streets will not be cluttered by trailing charging cables.

Market-led rollout for the majority of chargepoints delivers a thriving charging sector – the sector is booming now with smart UK SMEs driving the pace of change and forcing big corporates to adapt. By 2030, this will represent a huge global opportunity for UK Plc. A thriving competitive market will help to drive down costs for consumers.

Infrastructure is seamlessly integrated into a smart energy system – to minimise the impact of the EV transition on the grid (both distribution and generation), but also to offer the lowest cost tariffs to consumers and to capitalise on the exciting opportunities of 'Vehicle-to-Grid'.

Continued innovation to meet drivers' needs lowers cost and increases convenience – because although the fundamentals of delivering electricity to charge batteries will not change, the charging landscape of 2030 will be very different. We are already seeing startling innovation in both technology (speed, smartness and delivery method) and business models (from peer to peer charging to portable tariffs).

The current state of play

The UK market: In 2022, the UK is a leader in the EV transition and in many aspects of charging infrastructure provision. There are around 29,600 public chargepoints in the UK of which over 5,400 are 'rapid' – able to charge an EV in around 30 minutes.[3] This infrastructure is serving around 750,000 plug-in vehicles (of which over half are pure battery electric).[4] These numbers compare well to the 8,000 or so UK petrol stations (with around 66,000 spaces at pumps) currently serving around 37 million petrol and diesel vehicles.[5,6]

The pace of deployment is also accelerating, with the certainty over phase-out dates driving private sector investments of hundreds of millions of pounds during 2021. There have been new commitments for thousands of chargers at workplaces, supermarkets, hotels, petrol stations, on local streets and in rapid charging hubs. On average, 100 new rapid chargers were added to the UK network every month during 2021.[7] Ten years of consistent Government support and private sector investment means that the UK charging market is unrecognisable from where it was a few years ago in breadth, depth and speed of deployment.

Key Challenges: Although recent progress has been strong, there are significant challenges, clearly identifiable in 2022, to delivering our vision for 2030:

- **The pace of rollout is too slow** – even the recent surge in chargepoint deployment is not at a pace consistent with what is needed for a wholly zero emission new car fleet in 2035. This is particularly true for local, low power, on-street charging which is so crucial for drivers without driveways. Many fleet drivers also rely on this type of charging. Planning arrangements can be complex to manage. Chargepoint installers can sometimes need multiple permissions, consents and licences, which adds time and cost to deployment.
- **Too often, public charging lets people down** – although many EV drivers with driveways discover that they can meet almost all of their charging needs at home, every EV driver wants access to a plentiful, reliable and fairly priced public charging network. But too often they experience poor customer service, opaque or excessive charging costs, poor reliability and complex access regimes involving numerous apps and smartcards.

3 DfT (2022). Charging Device Statistics. Available at: https://www.gov.uk/government/statistics/developing-faster-indicators-of-transport-activity

4 DfT (2022). Table VEH0133. Licensed ultra low emission vehicles by body type and propulsion or fuel type. Available at: https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01 and SMMT (2022). Available at: https://www.smmt.co.uk/vehicle-data/car-registrations/

5 Experian Catalist (2020). As of May 2020, there were 33,948 fuel pumps in the UK, offering approximately 66,000 fuelling spaces.

6 DfT (2022). The total number of battery electric cars and vans were subtracted from the total number of cars and vans to give the total number of cars and vans using petrol or diesel. Table VEH0133. Licensed ultra low emission vehicles by body type and propulsion or fuel type. Available at: https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01; Table VEH0101. Licenced vehicles at the end of the quarter by body type. Available at: https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01

7 DfT (2022). Charging Device Statistics. Available at: https://www.gov.uk/government/statistics/developing-faster-indicators-of-transport-activity and https://www.gov.uk/government/collections/electric-vehicle-charging-infrastructure-statistics

- **The business case for commercial deployment can be challenging** – this can be particularly true in areas of potentially low utilisation or high connection costs. In 2022, there are significant regional disparities in deployment. This creates a chicken and egg problem with potential EV purchasers, at both individual and company fleet level, being reluctant to buy until there is more visible infrastructure.
- **Connecting new chargepoints to the electricity system can be slow and expensive** – this is a particular issue in remote areas, where new high power connections might be required, or locations where there is insufficient capacity in the existing distribution network, such as for charging of vehicle fleets in depots. Numerous chargepoint operators have brand new chargepoints installed, but are waiting for a grid connection so that they can be turned on.
- **We need more local engagement, leadership and planning** – local authorities are fundamental to successful chargepoint rollout, particularly for the deployment of widespread on-street charging. They are ideally placed to identify the local charging needs of residents, fleets and visitors. But the current picture is mixed. Some are driving the agenda forward at pace, others are short of dedicated resource and expertise. Planning permission delays are often cited as a major brake on the speed of deployment, and the interaction between local parking and charging policies is not fully resolved.

Delivering the vision

Our approach to addressing these challenges, and to delivering our vision of a world-leading public charging offer where 'range anxiety' is a thing of the past, will be based on the following strategic framework:

We will focus our intervention on two crucial sectors where we most need an accelerated pace of rollout, and where the business cases can be particularly challenging: high powered chargers on the strategic road network and local on-street charging. We will target our intervention at these two areas, addressing the key challenges:

a. We will accelerate the rollout of **high powered chargers on the strategic road network** through the £950m Rapid Charging Fund. This will unlock current barriers to deployment at some of these locations, enabling provision where the commercial case will not add up. Confidence in the ability to undertake longer journeys is fundamental to EV adoption. We will ensure that every motorway service area has at least six rapid chargers by the end of 2023, with some having more than 12. There will be over 6,000 high powered chargers along our strategic roads by 2035. Electricity network capacity at motorway service areas will be ready to meet demand to 2035 and beyond. We will consult on mandating that service area operators and large fuel retailers must meet minimum chargepoint numbers at specific sites, and at increasing levels over a period of time, to address both actual and perceived demand.

b. We will transform **local on-street charging** by putting an obligation on local authorities (subject to consultation) to develop and implement local charging strategies to plan for the transition to a zero emission vehicle fleet. These strategies should identify how to provide affordable, convenient charging for residents, businesses including fleets, and visitors without causing pavement disruptions that could discourage walking and cycling. They will also need to consider charging opportunities for other vehicles, including e-bikes and motorbikes. We will use our £500m local infrastructure support programme to drive innovative new approaches to deploying local chargepoints at scale, including through a new £10m pilot. This will help develop new commercial models and provide greater clarity on the best balance, for the consumer and the energy system, between low power and high power charging. Different funding streams for EV infrastructure will be consolidated as much as possible to ensure clarity, simplicity and efficiency for local authorities. We will provide a dedicated local authority support programme to ensure they have the resource and expertise they need to work out their specific local challenges and plan accordingly. The £500m will be spent to ensure provision right across England, with full consideration given to the spatial disparities set out in the Levelling Up White Paper.[8]

We will allow thriving sectors to thrive and address barriers to private sector rollout. Certain areas of the charging infrastructure market are already growing at pace. Here, the role of Government is simply to remove any existing barriers and step out of the way, so:

a. Government will not be intervening in the destination charging sector, and will look to end direct subsidy support for home charging and workplace charging at the earliest appropriate time.

b. We will help to reduce the costs to businesses by tackling barriers to investment and delivery of public chargepoints. Where barriers are slowing down private sector deployment, we will address them: for example, we will consult on measures to make Traffic Regulation Orders (part of the process to install on-street chargepoints) more straightforward.

We will give people confidence in the public network. We will regulate to ensure chargepoints are reliable and easy to use. This will include specific requirements on open data, price transparency, payment methods and reliability. We will also develop chargepoint design standards to improve accessibility and improve signage to chargepoint locations.

8 DLUHC (2022). Levelling Up the United Kingdom. Available at: https://www.gov.uk/government/publications/levelling-up-the-united-kingdom

We will work with Ofgem to ensure chargepoints can seamlessly integrate with the energy system. The EV transition is both an opportunity and a risk to the UK energy system and is part of wider changes needed to deliver net zero across the whole economy. We will ensure that the opportunities are grasped and the challenges mitigated. This will include making sure that the bulk of charging is 'smart' and ideally off-peak, that connection costs do not avoidably deter chargepoint deployment (including through the use of Ofgem's £300m Green Recovery Scheme), and that EV charging infrastructure makes the most efficient use of the electricity system. This will help ensure that charging costs are fair for both consumers and businesses.

We will support innovation in business models and technology. As the automotive sector increasingly shifts its focus to electrified cars, the pace of technology development has become ever quicker. Battery packs are becoming more energy dense, enabling longer ranges. Previously unimagined rates of charging are now possible and wireless charging is nearing commercial deployment. At the same time, the economic potential from the integration of the energy and transport systems has barely begun to be tapped. There is huge scope for chargepoint operators to gain by selling services to the grid, for the grid to gain by increasing flexibility, and for consumers to ultimately benefit through cheaper, and potentially even negative, tariffs if they agree to cede some control over charging or even share some of their vehicle's battery capacity. We will continue to facilitate this innovation and encourage new business models to deliver the charging we need. This could be through local community charging companies, longer-term on-street concessions, remote charging, cable guttering, lamppost chargers or peer-to-peer charging services.

Conclusion

Transport is the UK's largest emitting domestic sector and 91% of UK transport emissions come from road transport. If the UK economy is to achieve net zero emissions by 2050, it has to decarbonise road transport. The recent rapid increase in both the supply of, and the demand for, EVs means that charging infrastructure now stands as the single biggest challenge to that decarbonisation.

We will continue to support the excellent cross-sector engagement happening through partnerships such as Electric Vehicle Energy Taskforce (EVET), the Automotive Council, and the EV Fleet Accelerator to ensure we meet this challenge together. We will use their insights and our metrics to monitor progress, taking into account the uncertainty around future need, so that we can pre-emptively respond to changes in consumer and market needs.

Delivering the world class charging infrastructure the UK needs will not be easy and cannot be delivered by Government alone. It will require commitment and investment across the energy, chargepoint, automotive and public sectors.

But it must, and will, be done.

Our commitments

Support the accelerated rollout of a comprehensive and competitive rapid charging network on major roads	
Work with the private sector to ensure there are at least six high powered chargepoints at each motorway service area by the end of 2023.	**End 2023**
Consult on the design of the £950m Rapid Charging Fund. This fund will support the rollout of at least 6,000 high powered chargepoints across England's motorways and major A-roads by 2035, by enabling electricity network infrastructure to be installed ahead of chargepoint demand.	**Winter 2022 / Spring 2023**
Launch pathfinder projects for the Rapid Charging Fund, ahead of the fund opening in 2023.	**Winter 2022**
Support local government to develop chargepoint strategies and scale up the rollout of public chargepoints on local streets	
Provide local authorities with grant funding through the On-Street Residential Chargepoint Scheme. The scheme has supported 2,038 chargepoints to date, with a further 4,539 planned for 2021-22.	**Ongoing**
Provide expert support, through the Local Government Support Programme, to local authorities seeking to develop chargepoint strategies, procure chargepoints and apply for funding.	**Ongoing**
Launch the £10m Local EV Infrastructure (LEVI) pilot project.	**Spring 2022**
Invest at least a further £500m to support local authorities to plan and deliver local public charging infrastructure. This will include the £450m Local EV Infrastructure (LEVI) Fund, and the On-street Residential Chargepoint Scheme. The LEVI Fund includes up to £50m to fund the staff needed to do this work, and the supporting knowledge and tools to help them to work out their specific local challenges and plan accordingly.	**2022-2025**

Allow thriving sectors to thrive and address barriers to private sector rollout	
Building regulations requiring new homes and non-residential buildings to include chargepoints come into force.	**Summer 2022**
Refocus the Electric Vehicle Home Charging Scheme (EVHS) and the Workplace Charging Scheme (WCS) to ensure they are targeted at those areas still needing support, such as flats and rented accommodation, or small accommodation businesses and charities.	**Ongoing**
Consider amendments to the Transport Planning Practice Guidance (PPG) relating to chargepoints, to make local approaches to chargepoint planning and delivery more consistent and streamlined.	**Summer 2022**
Consult on measures to make Traffic Regulation Orders (part of the process to install on-street chargepoints) more straightforward.	**Spring 2022**
Regulate to make sure public chargepoints are reliable and easy to use	
Introduce new legislation to improve people's experience when using public chargepoints. Legislation will be introduced in spring 2022 and come into effect in summer 2022. We will work with industry to open up data so that drivers can access real time information about chargepoints across the public network, rely on the public chargepoint network with improved reliability, compare prices, and pay for their charging easily, whoever the chargepoint provider. We will also be supporting fleet electrification by introducing payment roaming across the public chargepoint network.	**Summer 2022**
Improve accessibility at public chargepoints for disabled users. We will work in partnership with Motability and have commissioned the British Standards Institute (BSI) to develop accessible charging standards. These standards will provide guidance to industry and allow drivers to easily identify which chargepoints are suitable for their needs.	**Summer 2022**
Publish the Government response to the Future of Transport Regulatory Review proposals that were consulted on in 2021.	**Summer 2022**

Work with Ofgem to make sure that chargepoints are easy to connect and integrate with the electricity system	
Accelerate the widespread deployment of vehicle-to-everything (V2X) technologies, working in close collaboration with Ofgem and industry. We will publish a summary of our recent Call for Evidence and outline next steps.	**Summer 2022**
Mandate that, from June 2022, private chargepoints sold in GB must be smart and meet minimum device-level requirements.	**Summer 2022**
Identify the role of smart charging in the public infrastructure network and consider mechanisms to deliver this.	**Summer 2022**
Maximise the opportunities for flexibility from EVs while protecting the electricity grid and consumers, publishing a joint Government-Ofgem Electric Vehicle Smart Charging Action Plan.	**Summer 2022**

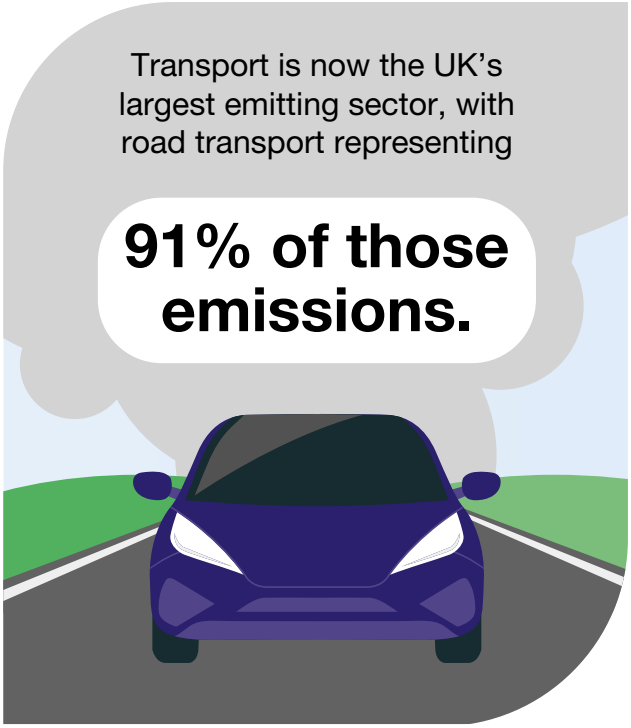
Source: DfT

1. Introduction

The switch to electric cars and vans has reached a tipping point

The UK Government has committed to net zero emissions by 2050.[9] Transport is now the UK's largest emitting sector, and 91% of those emissions come from road transport.[10,11] It is essential for the vehicles on the UK's roads to be emission-free at the tailpipe.

With the UK's clean electricity mix today, a typical battery electric car is estimated to produce only a third of the greenhouse gas emissions of an equivalent petrol car on a lifecycle basis. Emissions savings compared to petrol could rise even further, to ~76% by 2030 and ~81% by 2050, through improvements in grid decarbonisation, battery technology, manufacturing, and end-of-life processing.[12]



9 Climate Change Act 2008 (2050 Target Amendment) Order 2019 (online). Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111187654

10 BEIS (2021). 2020 UK Greenhouse Gas Emissions (online). Available at: https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2020

11 BEIS (2022). Final UK greenhouse gas emissions national statistics: 1990 to 2020. Available at: https://www.gov.uk/government/statistics/final-uk-greenhouse-gas-emissions-national-statistics-1990-to-2020

12 Ricardo-AEA for DfT (2021). Lifecycle Analysis of UK Road Vehicles.

In November 2020, the Prime Minister put the UK on course to be the fastest nation in the G7 to decarbonise cars and vans, announcing that all new petrol and diesel cars and vans will be phased out by 2030. Government is supporting this with a zero emission vehicle mandate which will provide certainty over the scale and pace of the transition to consumers, energy providers, the chargepoint industry and investors, vehicle manufactures and supply chains. EVs will improve air quality in our towns and cities, reduce harmful emissions, and offer cleaner and convenient driving for all.

This change has already begun. As of March 2022, there are around 450,000 battery electric vehicles in the UK and around 750,000 vehicles with a plug registered in the UK, up from 8,000 in 2010.[13] This compares with a total of 37.6 million cars and vans currently registered in the UK.[14]

In December 2021, industry statistics showed that over a quarter of all new cars sold were battery electric vehicles.[15] By 2030, we estimate that up to 10 million vehicles, up to a quarter of all cars and vans, will need to be zero emission at the tailpipe.[16] Some scenarios predict even higher levels of adoption to meet carbon targets. For example, the Committee on Climate Change (CCC) estimates that battery electric vehicles will comprise 27-37% of the car and van fleet by 2030.[17]

Cars and taxis alone represent 52% of domestic transport emissions, with an additional 16% from vans and other light goods vehicles.[18] The focus of this document is on cars and vans up to 3.5 tonnes (including some zero emissions vans up to 4.25t), both private and fleet vehicles. However, many of the principles in this document also apply to electric buses and trucks, particularly when charging at a depot or equivalent. They are also relevant to electric mopeds and motorbikes, which can use the same chargepoints as electric cars and vans.[19,20]

13 DfT (2022). Table VEH0133. Licensed ultra low emission vehicles by body type and propulsion or fuel type. Available at: https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01 and SMMT (2022). Available at: https://www.smmt.co.uk/vehicle-data/car-registrations/

14 DfT (2022). Statistical data set – All vehicles (VEH01). Available at: https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01

15 SMMT (2022). Available at: https://www.smmt.co.uk/vehicle-data/car-registrations/

16 Estimates from internal DfT modelling (2021). RoCaFF. Consistent with electric vehicle adoption rates published in the 2035 Delivery Plan.

17 Committee on Climate Change (2020). The Sixth Carbon Budget, Surface Transport. Available at: https://www.theccc.org.uk/wp-content/uploads/2020/12/Sector-summary-Surface-transport.pdf

18 DfT (2021). Table ENV0201. Greenhouse gas emissions by transport mode: United Kingdom. Available at: https://www.gov.uk/government/statistical-data-sets/energy-and-environment-data-tables-env#greenhouse-gas-emissions-env02

19 SMMT (September 2021). SMMT vehicle data: car registrations. Available at: https://www.smmt.co.uk/vehicle-data/car-registrations/

20 British Gas (2021). 3 policy essentials to accelerate the mass roll-out of electric vehicles. Available at: https://www.britishgas.co.uk/business/blog/3-policy-essentials-to-accelerate-the-mass-roll-out-of-electric-vehicles/

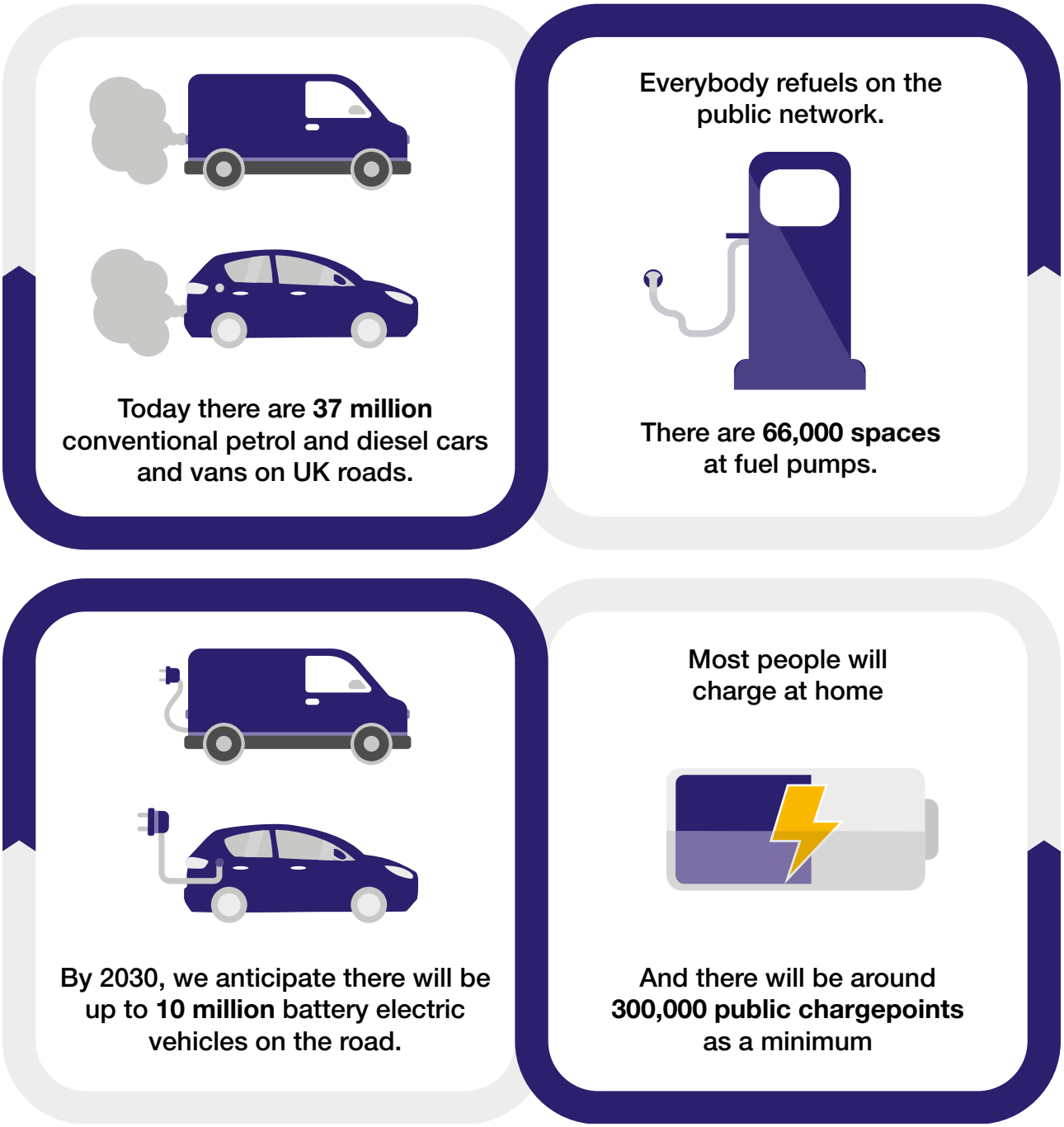
The fleet market makes up approximately half of all new car sales in the UK. In 2021, fleets had a market share of 56.5% of new car sales.[21] Fleet turnover is crucial to growing the second-hand market, which will help make electric vehicles affordable more quickly for everyone.We welcome the commitments made recently by some of the UK's biggest fleets to go electric and recognise the pressing need to improve public infrastructure provision to enable this transition. Many fleet drivers are likely to rely heavily on public charging.

Their needs can differ from those of private drivers due to several factors, including shift work, a need for flexibility and a high reliance on parking on residential streets. For example, around 70% of British Gas's electric vehicle fleet drivers rely on a combination of public charging and workplace charging.[22] We will continue to work closely with fleet operators to ensure the charging framework meets their needs.

Vauxhall Vivaro-e. Source: Vauxhall

21 SMMT (December 2021). SMMT vehicle data: car registrations. Available at: https://www.smmt.co.uk/vehicle-data/car-registrations/

22 British Gas (2021). 3 policy essentials to accelerate the mass roll-out of electric vehicles. Available at: https://www.britishgas.co.uk/business/blog/3-policy-essentials-to-accelerate-the-mass-roll-out-of-electric-vehicles/



Figures from: DfT vehicle statistics,[23] and Experian.[24]

23 DfT (2022). The total number of battery electric cars and vans were subtracted from the total number of cars and vans to give the total number of cars and vans using petrol or diesel. Table VEH0133. Licensed ultra low emission vehicles by body type and propulsion or fuel type. Available at: https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01; Table VEH0101. Licenced vehicles at the end of the quarter by body type. Available at: https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01

24 Experian Catalist (2020). As of May 2020, there were 33,948 fuel pumps in the UK, offering approximately 66,000 fuelling spaces.

Chargepoints are found in a variety of public and private settings around the country

Private charging options

Residential off-street – home charging

Private off-street charging on driveways and in garages.

Workplace

Charging provided in private workplace car parks.

Depot

Charging at private business locations for EVs used commercially (including buses, HGVs and public sector fleets).

Public and private charging occurs in a wide range of locations and settings, providing flexible solutions to meet people's differing needs.

Most EV drivers charge overnight at home.[25] This will remain the case as EV uptake increases. Around 70% of households with a vehicle in England currently have access to private, off-street parking.[26] However, for the sizeable minority without home charging, the public charging network is critical. 90% of all current EV drivers rely on it from time to time.[27]

25 Element Energy (2019): Electric Vehicle Charging Behaviour Study. Available at: http://www.element-energy.co.uk/wordpress/wp-content/uploads/2019/04/20190329-NG-EV-CHARGING-BEHAVIOUR-STUDY-FINAL-REPORT-V1-EXTERNAL.pdf

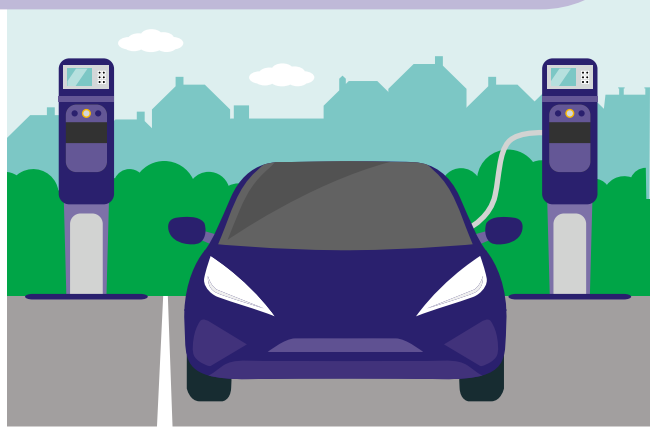
26 Department for Transport (2021). National Travel Survey Table NTS0908: Where vehicle parked overnight by Rural-Urban Classification of residence. Available at: https://www.gov.uk/government/statistics/national-travel-survey-2020

27 EVA England (2021). Improving Driver's Confidence in Public EV Charging. Available at: https://www.evaengland.org.uk/wp-content/uploads/2021/04/EVA-England-Consumer-Charging-Survey-Report.pdf

Public charging options

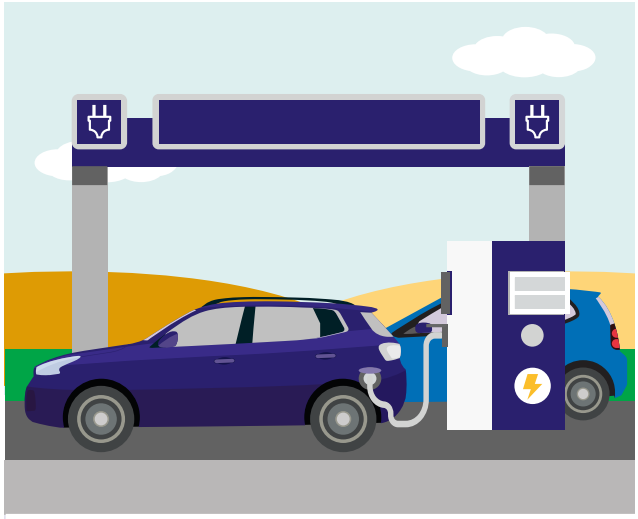
Residential on-street

Chargepoints installed to serve vehicles parked on-street. Can be standalone chargepoints or integrated into existing street furniture (e.g. lampposts).



Residential charging hubs

A communal parking area with chargepoints for residents.



On-route

Rapid and ultra-rapid charging to enable long-distance journeys. Depending on the vehicle, these can charge a car from 0-80% charge in just half an hour.

Destination

Charging installed at destinations with longer duration visits (e.g. gyms, supermarkets, shopping centres and transport hubs such as airports and train stations).

Public charging devices by location type, March 2022 (includes chargepoints only available for use by vehicles from certain manufacturers).[28]

16,864

at destinations such as retail car parks, hotels and workplaces.

9,382

at on-street locations.

2,011

rapid or high powered devices along the strategic road network.

Over 1,000

at other locations, including train stations and airports.

ZAP MAP

How and when people charge matters for both individual drivers and management of the wider electricity system. This will become increasingly the case as the number of EVs goes up. Increased numbers of EVs will increase the total charging demand on the electricity system. This in turn will have cost implications to ensure the electricity network is equipped to manage the demand. Emerging technologies such as smart charging and vehicle-to-grid and vehicle-to-everything (V2X) offer consumers flexibility and the ability to charge at time of lowest cost, or even sell back energy to the grid. We discuss this further in the 'Electric vehicle charging and the electricity system' annex, on page 119.

28 Analysis from Zap Map (2022).

Smart charging allows EVs to be charged when it is most efficient for the balance of supply and demand across the electricity system. This means shifting charging to periods of lower overall demand for electricity (for example, overnight) or high renewable generation (for example, particularly windy or sunny weather).

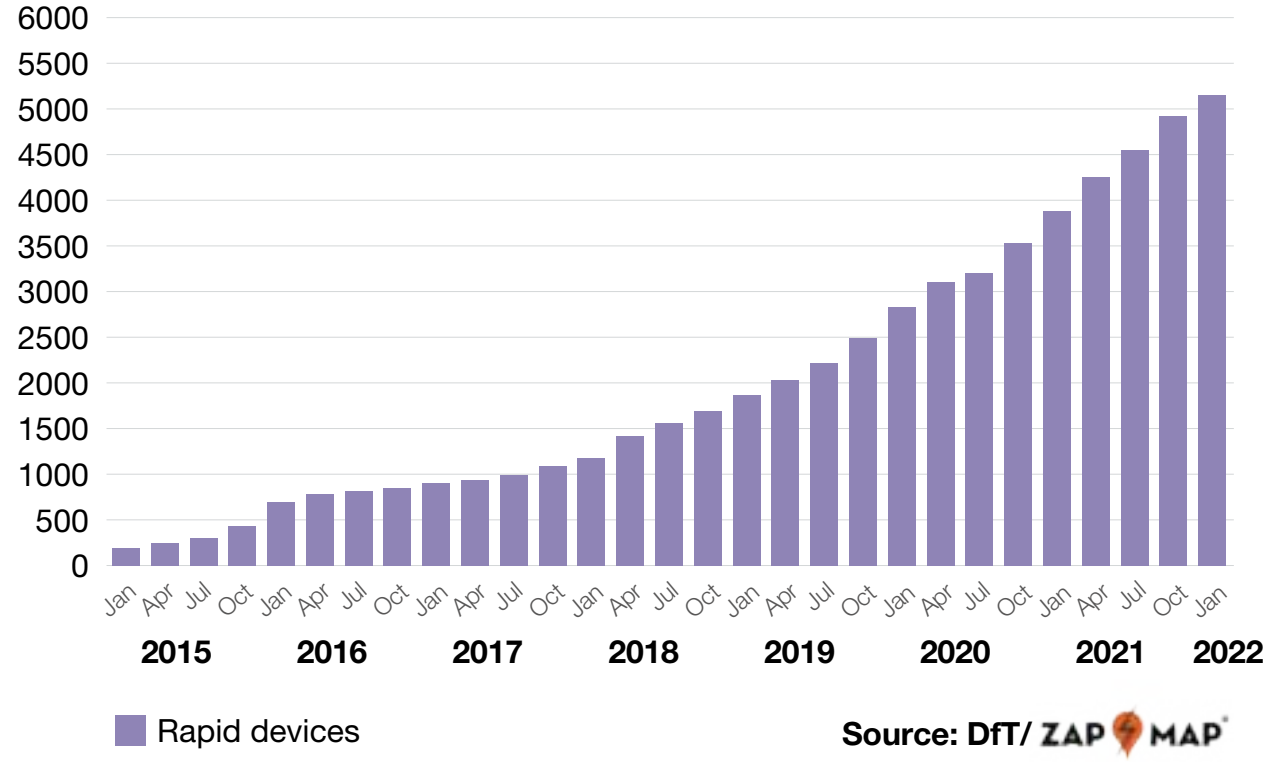
The number of public chargepoints is growing dramatically across most of the country, particularly on the rapid network

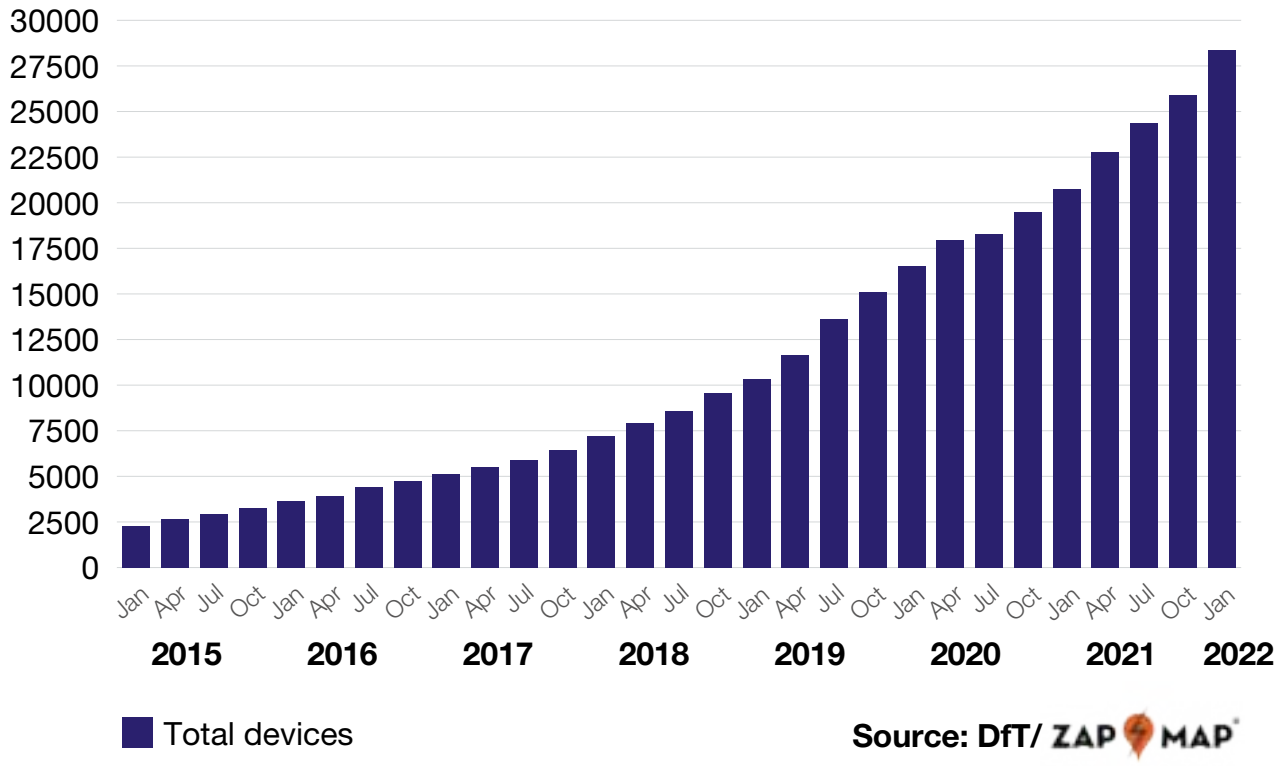
The number of public chargepoints has grown four-fold over the last five years. On average, over 600 new chargers are being added to the UK's roads each month, of which over 100 are rapid.[29] Between 1 October 2021 and 1 January 2022, 2,448 charging devices were added to the public network.[30] It is not a consistent picture across the country, however. In general, the early uptake of EVs has not been evenly spread, and, as a result, nor has public chargepoint deployment, particularly for local on-street charging.

29 DfT (2022). Charging Device Statistics. Available at: https://www.gov.uk/government/statistics/developing-faster-indicators-of-transport-activity

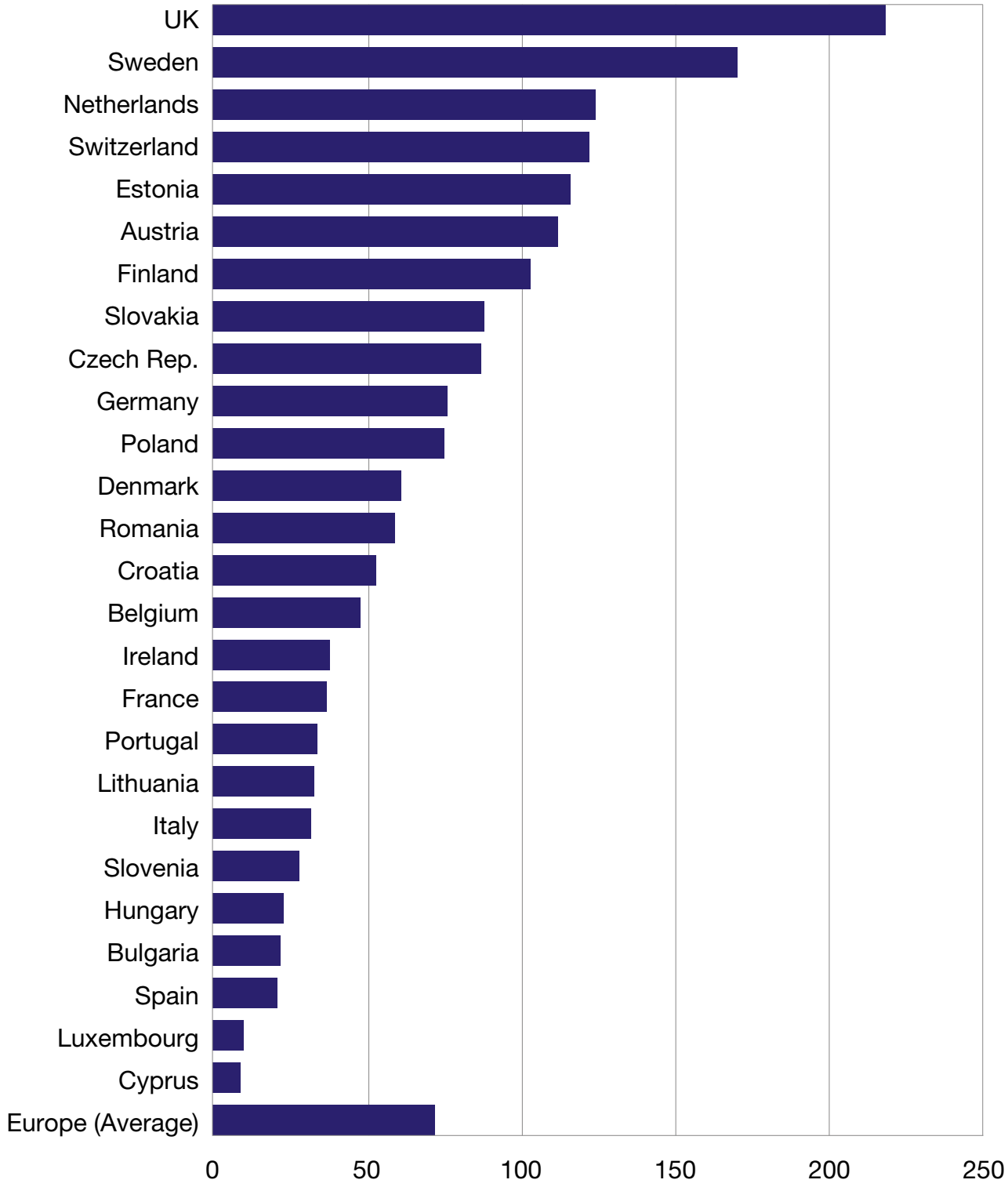
30 DfT (2022). Charging Device Statistics. Available at: https://www.gov.uk/government/statistics/developing-faster-indicators-of-transport-activity and https://www.gov.uk/government/collections/electric-vehicle-charging-infrastructure-statistics

Number of public devices



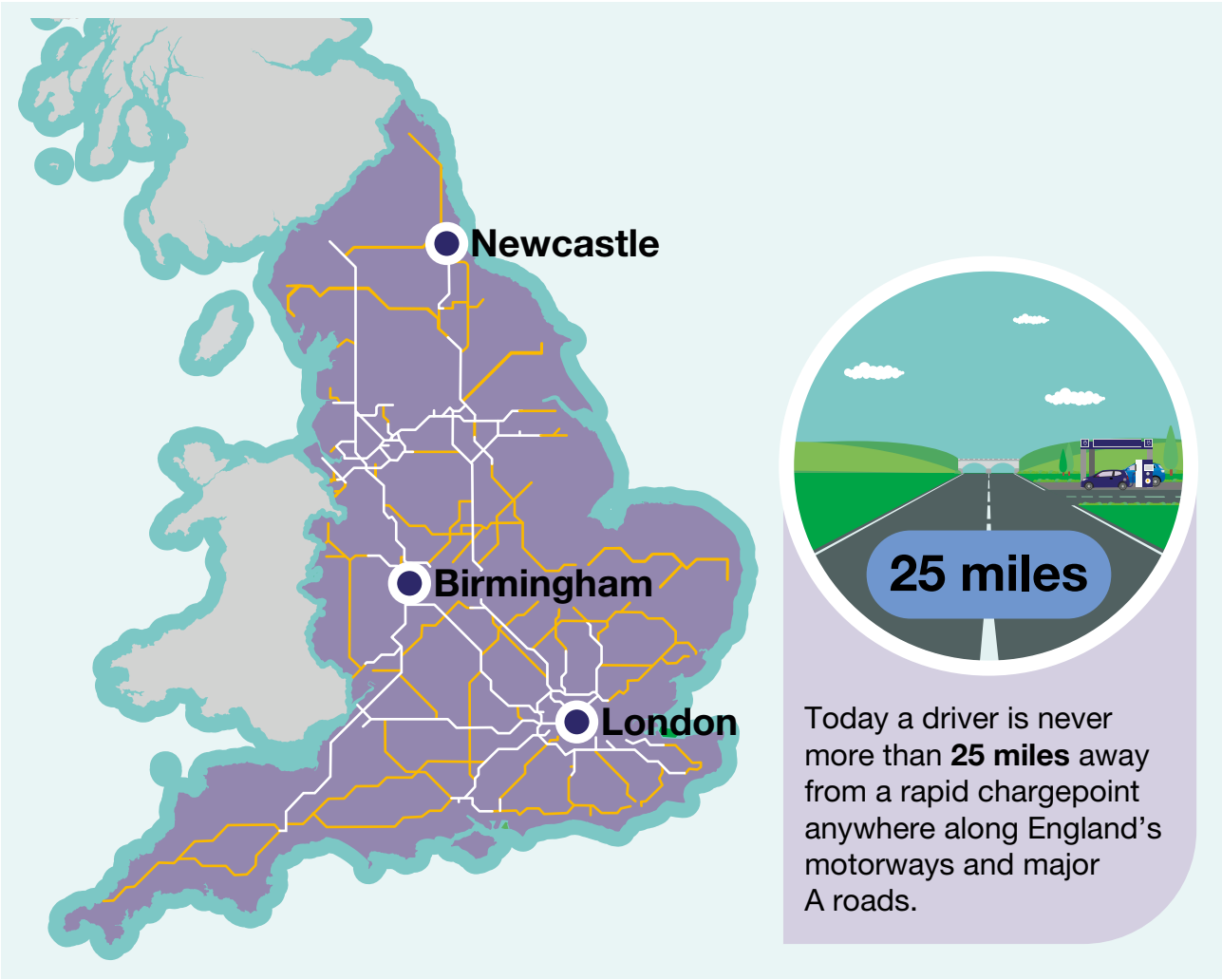


Number of fast chargers (>22kW) per 100km (62 miles) of motorway[31]



31 Transport & Environment (2020). Recharge EU: How many chargepoints will Europe and its Member States need in the 2020s. Updated based on data from EAFO and Eurostat (2021). Available at: http://www.indiaenvironmentportal.org.in/files/file/Recharge-EU-charge-points-Europe-2020s.pdf

Together, Government and industry have supported the installation of around 29,600 publicly available charging devices. This includes more than 5,400 rapid chargers at around 3,300 locations servicing over 0.4 million battery electric vehicles.[32,33,34] In comparison, the UK has around 8,000 petrol station locations[35] supplying 37 million petrol and diesel cars and vans.[36] A recent study found that the UK now has more fast chargers (>22kW) for every 100km (62 miles) of key strategic road than any country in Europe.[37]



32 DfT (2022). Charging Device Statistics. Available at: https://www.gov.uk/government/statistics/developing-faster-indicators-of-transport-activity
33 Rapid chargepoint locations based on analysis procured from Zap Map (2022).
34 DfT (2022). Table VEH0133. Licensed ultra low emission vehicles by body type and propulsion or fuel type. Available at: https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01 and SMMT (2022). Available at: https://www.smmt.co.uk/vehicle-data/car-registrations/
35 Experian Catalist (2020). As of May 2020, there were 8,385 fuel stations in the UK.
36 DfT (2022). The total number of battery electric cars and vans were subtracted from the total number of cars and vans to give the total number of cars and vans using petrol or diesel. Table VEH0133. Licensed ultra low emission vehicles by body type and propulsion or fuel type. Available at: https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01; Table VEH0101. Licenced vehicles at the end of the quarter by body type. Available at: https://www.gov.uk/government/statistical-data-sets/all-vehicles-veh01
37 Transport & Environment (2020). Recharge EU: How many chargepoints will Europe and its Member States need in the 2020s. Updated based on data from EAFO and Eurostat (2021). Available at: http://www.indiaenvironmentportal.org.in/files/file/Recharge-EU-charge-points-Europe-2020s.pdf

The chargepoint sector is unrecognisable from 10 years ago, with increasing private investment

Since Government first started investing in the UK chargepoint sector in 2010, there have been huge advances in the scale of infrastructure that is being rolled out. Most EVs can now be charged at all devices on the UK public network due to increased standardisation of connectors (plugs). The supply chain is growing rapidly, and new business models continue to emerge, such as peer to peer solutions and "roving charging services", which keep track of your charging needs and come to recharge your vehicle when you need it.

Our phase out dates for new petrol and diesel cars and vans sent a clear signal of the UK's intent. This certainty has unlocked new private sector funding. In seven months, over half a billion pounds of private investment has been publicly committed to chargepoint rollout. This will expand chargepoint provision and create jobs and investment across the country.

Many charging options are now becoming widely available across a range of locations. This diversity creates flexibility for businesses and individual drivers. We cannot confidently predict at this stage of the market transition what the optimum proportions of different charging speeds or locations will be.

Indeed, people will need a place-based approach to charging mixes. Parking constraints and travel needs vary between local areas, and different people will favour different approaches to charging. These options are not independent from each other: a high proportion of workplace or destination charging, for example, may reduce the level of on-street charging needed in an area. We expect people will continue to want and use a variety of charging solutions to suit their individual needs. The home charging market is thriving and there is a growing UK ecosystem around charging with small and medium-sized enterprises (SMEs) supplying cables, chargers, and adapters. Destination charging, where drivers can charge at supermarkets, gyms, and attractions, is also being rolled out at pace by the private sector without Government subsidy. Many leading supermarkets now offer chargepoints for customers, including Tesco,[38] Waitrose,[39] Morrisons[40] and Asda.[41] New acquisitions and partnerships are springing up, such as between Shell and Ubitricity,[42] or Engie and Premier Inn.[43]

38 Pod Point (2021). Tesco Volkswagen EV Charging – UK National Rollout. Available at: https://pod-point.com/rollout/tesco-ev-charging

39 Shell (2021). Shell to install hundreds of electrical vehicle charging points at Waitrose stores by 2025 as part of expanded partnership. Available at: https://www.shell.co.uk/media/2021-media-releases/shell-to-install-hundreds-of-electrical-vehicle-charging-points-at-waitrose-stores.html

40 Energise Energy Solutions (2021). Morrisons unveils 'nation's largest network' of EV charging points. Available at: https://www.energise.energy/news/morrisons-unveils-nation-s-largest-network/

41 Asda (2021). Asda and Engie rollout EV charging points at stores in West Yorkshire. Available at: https://corporate.asda.com/newsroom/2021/05/21/asda-and-engie-rollout-ev-charging-points-at-stores-in-west-yorkshire

42 Ubitricity (2021). Shell aims to install 50,000 ubitricity on-street EV charge posts across the UK by 2025. Available at: https://www.ubitricity.com/shell-aims-to-install-50000-ubitricity-on-street-ev-charge-posts-across-the-uk-by-2025/

43 Engie (2021). ENGIE partners with Premier Inn for nationwide rollout of high power EV charging points. Available at: https://www.engie.co.uk/about-engie/news/engie-partners-with-premier-inn-for-nationwide-rollout-of-high-power-ev-charging-points/

Charging at workplaces is also growing: Government has supported the installation of over 22,000 workplace charging sockets as of January 2022.[44] Rapid charging hubs and electric forecourts are emerging as a further option for EV drivers to recharge. Other parts of the market, such as on-street charging, are less advanced and are still largely dependent on grant funding.

Recent investment commitments in chargepoint deployment

Rapid Charging	
BP Pulse	Aiming to double the size of its network in the UK to 16,000 chargepoints by 2030 and install a number of rapid charging hubs.
Shell	Plans to install 5,000 rapid and ultra-rapid EV chargers on forecourts by 2025.
Motor Fuel Group	Investing £400m to install 2,800 high powered chargers (150 kW and 350 kW) at 500 UK locations by 2030.
InstaVolt	Aims to deliver 5,000 chargers by 2024/25 and 10,000 by 2030.
GRIDSERVE	Has acquired the Electric Highway from its original developer, Ecotricity. GRIDSERVE is planning to deliver over 5,000 high powered chargers by 2025. The total investment GRIDSERVE plans to deploy across its Electric Hub and Electric Forecourt® sites is in excess of £1bn.
Osprey	Will invest £75m to install over 150 high powered EV charging hubs across the UK by 2025, with up to 12 rapid chargers per site.
Pivot Power	Plans to build a national network of Energy Superhubs delivering up to 2GW of battery storage, to create the power infrastructure for mass-scale rapid EV charging. The first project, Energy Superhub Oxford, will provide up to 50 chargepoints.

44 DfT (2021). Electric vehicle charging device grant scheme statistics: October 2021. Available at: https://www.gov.uk/government/statistics/electric-vehicle-charging-device-grant-scheme-statistics-january-2022

Destination & On-street Charging	
EVBox	Announced that 500 chargepoints will be installed across UK car parks in a boost for destination charging.
Podpoint	Partnered with VW and Tesco to deliver chargepoints at Tesco locations throughout the UK.
GeniePoint	Partnered with Morrisons to deliver chargepoints at Morrisons locations throughout the UK.
Ubitricity	Has announced an ambition to install 50,000 on-street chargepoints by 2025.
Connected Kerb	Will install 190,000 publicly accessible AC chargers in the UK by 2030. The company specialises in standard chargers with 7 to 22 kW for on-street charging.
Allstar / Gronn Kontakt	Forming a partnership to launch the first EV charge payment card for fleets which can be used across 3,700 chargepoints in Britain.

Private investment is being supported by targeted Government funding

Funding Scheme	Description
Electric Vehicle Home-charging Scheme (EVHS)	Provides a 75% contribution to the cost of one chargepoint and its installation. A grant cap is set at £350 (including VAT) per installation. From this year, this will focus on support for home charging at flats and rented accommodation. The Government has delivered over 277,000 chargepoints through the EVHS and its predecessor, the Domestic Recharge Scheme (DRS), as of January 2022.
Workplace Charging Scheme (WCS)	A voucher-based scheme to provide eligible applicants with support towards the upfront costs of the purchase and installation of EV chargepoints. The contribution is limited to 75% of purchase and installation costs, up to a maximum of £350 for each socket, up to a maximum of 40 across all sites for each applicant. Since 2016, the scheme has supported over 22,000 chargepoint installations.
On-street Residential Chargepoint Scheme (ORCS)	Provides local authorities with grant funding that can be used to part-fund the procurement and installation of on-street EV chargepoint infrastructure to meet residents' needs. The funding available contributes to the capital costs of procuring and installing the chargepoint and an associated dedicated parking bay (where applicable). The scheme has supported 2,038 chargepoints to date, with a further 4,539 planned for 2021-22.
Local EV Infrastructure Fund (LEVI Fund)	A new £450m fund to facilitate the rollout of larger-scale chargepoint infrastructure projects, including local rapid hubs and larger on-street schemes not captured by ORCS. £10m pilot to be launched.
Rapid Charging Fund (RCF)	£950m fund to future-proof electrical capacity at motorway and major A-road service areas for the installation of EV infrastructure. Under development.

Funding Scheme	Description
Charging Infrastructure Investment Fund (CIIF)	A £422m investment (with £200m being a cornerstone investment by Government) which is managed and invested on a commercial basis by a private sector fund manager. The fund is dedicated to catalysing the rollout of a robust and diversified public EV charging infrastructure. Four investments have been made from the CIIF so far: InstaVolt, Liberty Charge, char.gy, and Zest.

Delivering a reliable, comprehensive public charging network requires a UK-wide approach

The UK Government has a clear commitment to achieving net zero emissions across the whole country. To achieve this, we need a reliable, comprehensive public charging network across the UK. The vision and principles of this strategy apply throughout the UK, including the importance of increased local leadership. The specific approaches taken may vary, however. Elements of transport policy are devolved, including roads and local transport, strategic planning, land use and public transport subsidies. Energy policy is also devolved in Northern Ireland.

The Devolved Administrations have a critical role in leading the strategic approach within their devolved responsibilities. We will continue to work closely with the Scottish and Welsh Governments as they take forward their strategies (Switched On Scotland Phase Two: An Action Plan For Growth; A Network Fit For The Future: Draft Vision for Scotland's Public Electric Vehicle Charging Network and Electric Vehicle Charging Strategy for Wales respectively) and with the Northern Ireland Executive as it considers its own approach in the development of their EV Charging Infrastructure Plan in 2022.[45]

The transition to EVs will require support from Government, regulators and the transport and energy sectors. In July 2021, the Competition and Markets Authority (CMA) published its Electric Vehicle Charging Market Study: final report, which set out recommendations for Government and other bodies.[46]

We welcome this report and the recommendations in it have informed our strategy. We are publishing the Government's response to the CMA study alongside this strategy.

Ofgem, the GB regulator for gas and electricity networks, recently set out its own priorities relating to EVs in "Enabling the transition to electric vehicles: The regulator's priorities for a green fair future". These cover electricity network capacity, efficient energy system integration through smart charging, and consumer participation and protection.[47] They are all fundamental to ensuring the energy system is ready and able to meet the demands of mass EV uptake.

Government is working with Ofgem to ensure electricity network arrangements enable faster deployment of charging infrastructure across the whole country. Ofgem's £300m Green Recovery Scheme is an important part of this transition. It will fund improvements to electricity infrastructure to support low-carbon projects including the rollout of EV infrastructure. Longer term, the upcoming price control for electricity distribution (RIIO-ED2) will enable distribution network companies to ready the low voltage network for significant increase in chargepoint deployment. In addition, changes to the network charging regime will help reduce upfront connection costs for new EV infrastructure.

45 Northern Ireland Executive (2021). The path to net zero energy. Secure. Affordable. Clean. Available at: https://www.economy-ni.gov.uk/sites/default/files/publications/economy/Energy-Strategy-for-Northern-Ireland-path-to-net-zero.pdf

46 CMA (2021). Electric vehicle charging market study. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1012617/EVC_MS_final_report_--.pdf

47 Ofgem (2021). Enabling the transition to electric vehicles: The regulator's priorities for a green fair future. Available at: https://www.ofgem.gov.uk/publications/electric-vehicles-ofgems-priorities-green-fair-future

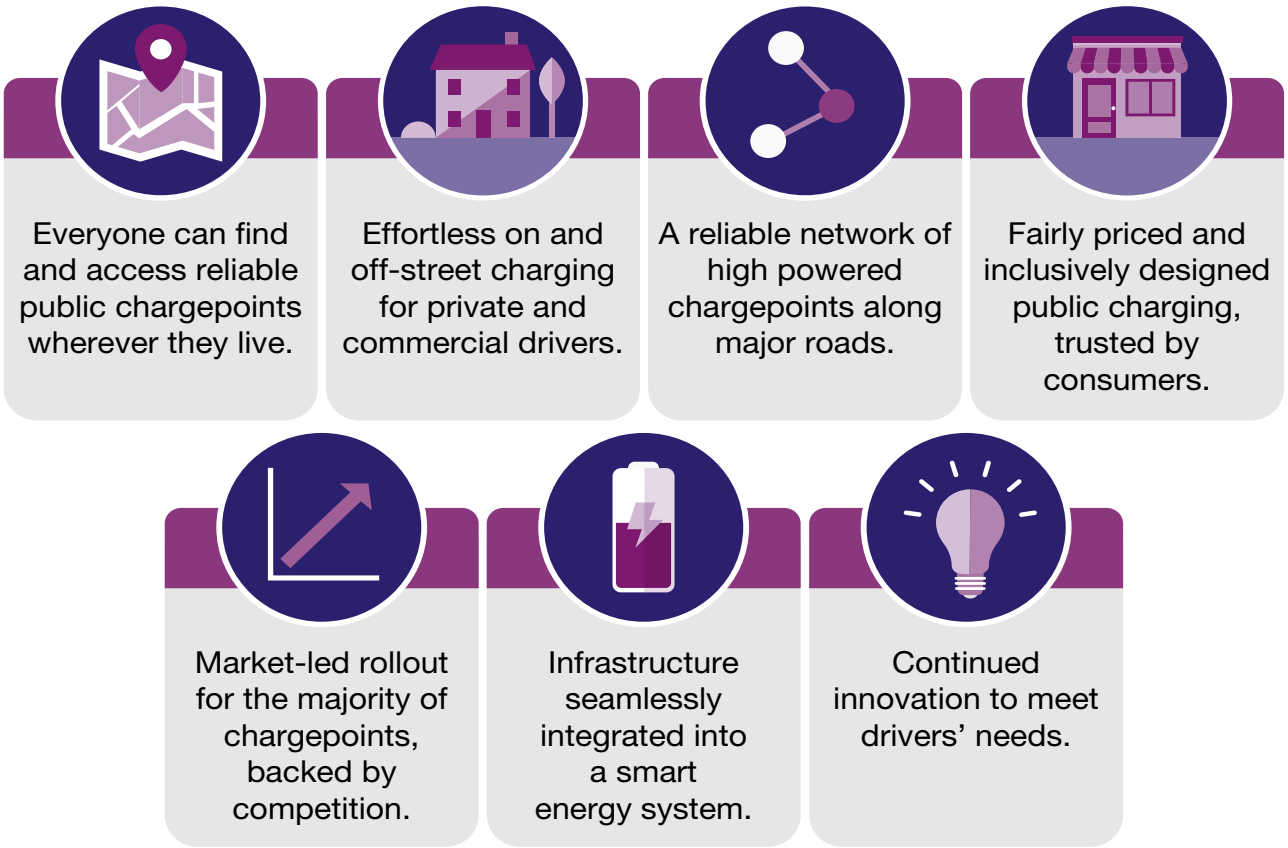
2. Vision

The switch to EVs will bring significant benefits to the country. It will be a major contributor to our net zero goal; improve the country's air quality and people's health; and support new jobs and growth opportunities. It will also be better for individual drivers, their families, and businesses. We know this change is possible. Less than 1% of people who have already switched to an EV want to go back to a petrol or diesel vehicle.[48]

As we transition into mass market adoption of EVs, the charging market will evolve to meet increasingly diverse charging needs. Rapid progress across this diverse market will be essential to stay ahead of demand and deliver our vision: charging infrastructure that works for everyone, wherever they live, work and travel.

48 Zap Map (2021). New survey reveals EV switchers don't look back. Available at: https://www.zap-map.com/new-survey-reveals-ev-switchers-dont-look-back/

We have a clear vision for the country's future charging infrastructure.



Everyone can find and access reliable public chargepoints wherever they live

People making the switch to an EV must have the confidence that the public charging network they need is available, whether they live in a densely populated city or in a remote village in the countryside. There are currently around 66,000 spaces at fuel pumps serving the entire UK diesel and petrol fleet.[49] By 2030, there will need to be at least four times that number of public EV chargepoints, based on our current estimates. Predictions of the future mix and number of chargepoints are inherently uncertain. The number of chargepoints needed will depend on consumer travel and charging behaviour; different approaches will be suitable for different local environments, particularly for those without off-street parking. But rollout will progress rapidly, ensuring sufficient chargepoints are provided ahead of demand. This is needed both nationally and within local areas, so that no region or demographic is left behind.

People will be able to find the location of nearby chargepoints easily through a choice of cross-network apps and open information. They will have confidence that the chargepoint will be operating reliably and that support is available if anything does go wrong.

49 Experian Catalist (2020). As of May 2020, there were 33,948 fuel pumps in the UK, offering approximately 66,000 fuelling spaces.

Effortless on and off-street charging for private drivers and businesses

Only an EV can charge quietly and effortlessly by your home while you are asleep, removing the need for specific journeys to a forecourt to refuel. The majority of drivers will take advantage of overnight charging at home, as most EV drivers do now.[50,51] For many people, charging will not be needed more than once a week: in 2019, the average car journey length in England was 7-8 miles for drivers in urban areas, and about 10 miles for drivers in rural areas.[52]

Where home charging is not possible, people will have easy access to public chargepoints near their home, in addition to chargepoints at destinations and workplaces. These chargepoints will be integrated seamlessly into local streets, without disrupting pavement access. Local authorities will engage with residents and businesses to ensure that chargepoint provision stays ahead of need, without exacerbating parking constraints. Local charging hubs and electric forecourts (equivalent to current petrol or diesel refuelling) will provide further options for recharging. This will give people who use their vehicle extensively (van drivers, for example) the confidence that they can charge at or near home at the end of their shift, and during the day if they need to.

Innovative solutions could also give many more people the ability to charge their vehicle using their home electricity supply while parked on-street. Pavement adaptations, for example, could enable people parked on-street to run a cable from their house to their car, without causing a trip hazard.

Peer-to-peer charging (also called community charging) will see many people making their private chargepoints available to rent. This is being pioneered by companies such as Co-Charger and JustPark.

Ensuring local chargepoints are integrated into their surrounding environment:

- Chargepoints should not obstruct pavements or highways, or present a safety risk to pedestrians.
- Cables will not be allowed to trail across the pavement unless adaptive infrastructure is provided to accommodate them safely (e.g. gullies). Anything that creates a trip hazard does not constitute adaptive infrastructure.
- Chargepoints must be incorporated into existing street furniture or parking bays wherever possible. In circumstances where it is not possible, priority must be given to ensuring that access to, and use of, pavements is not impeded and safety of pedestrians is not jeopardised.
- Parking spaces for EV charging will not be added in places where parking spaces are currently not allowed, nor where they could disrupt traffic flow, cyclists or pedestrians.
- Chargepoint design and placement should meet accessibility standards and guidance.

50 Several studies show that the vast majority of current EV owners charge their car at home. These findings are summarised in Hardman, S, et al (2018) 'A review of consumer preferences of and interactions with electric vehicle charging infrastructure', Transportation Research Part D: Transport and Environment (Volume 62).

51 Element Energy for National Grid (2019). Electric Vehicle Charging Behaviour Study. Available at http://www.element-energy.co.uk/wordpress/wp-content/uploads/2019/04/20190329-NG-EV-Charging-Behaviour-Study-Final-Report-V1-External.pdf

52 DfT (2021) National Travel Survey 2019, NTS9910. Available at: https://www.gov.uk/government/statistical-data-sets/nts99-travel-by-region-and-area-type-of-residence

A reliable network of high powered chargepoints along major roads

Drivers will be able to top up their vehicle quickly and easily while travelling. Travelling a long distance for work or leisure will be as straightforward in an EV as it is now in a petrol or diesel vehicle. All motorway service areas will have at least six high powered, open access chargepoints by the end of 2023, allowing people to top up in the time it takes them to have a cup of coffee.

By 2035, there will be at least 6,000 high powered chargers across the main roads and motorways in England. Competition between chargepoint operators at each motorway service station will give EV drivers at least as much choice as there is for on route refuelling of petrol and diesel vehicles today. Charging apps will display real time charging prices, making it easy to compare different options.

Fairly priced, inclusively designed public charging, trusted by consumers

People will have access to affordable and fairly priced public charging, so that those without off-street parking at home can switch to an EV without facing disproportionate charging costs. Competition between chargepoint operators will keep prices down and quality of service high. Drivers will be protected by rigorous reliability and transparency standards set out in law to ensure the public network is reliable and that they are able to access help using a chargepoint if they need it.

Chargepoints will work for everyone. They will be inclusively designed for all drivers, meeting standards developed with disability access as a priority. They will not inconvenience other users of roads and pavements. Instead, they will be incorporated sympathetically and safely into their environment. The transition to EVs must work with Government's wider commitments to decarbonise travel. Chargepoint locations will be aligned with local approaches to decarbonise transport such as greater active travel or use of public transport.

Market-led rollout for the majority of chargepoints, driven by competition

The private sector will lead on chargepoint rollout, stimulating UK investment and business, and creating jobs across the country. Institutional investors, among others, will take advantage of the market's huge growth potential and future demand certainty.

Infrastructure providers will have access to the data they need to identify potential business opportunities and areas of need. They will work with local authorities, transport, and energy bodies to install new chargepoints as efficiently as possible, minimising costs and disruption to the public. Competition on both the rapid and local networks will drive new delivery models for consumers.

Government will ensure that no part of the country is left behind. We will enable more local authorities to support private sector provision: they will identify specific local needs and run competitive tenders to meet the needs of their residents, businesses, and visitors. Public funds will target the least commercially viable segments of the market.

Infrastructure seamlessly integrated into a smart energy system

EV drivers will benefit from an increasingly smart energy system, helping to manage demand and in turn reducing costs for energy consumers more widely.

Individual households and companies will save money by using smart charging. People charging at home or work will have a wide choice of smart charging tariffs. They will be able to charge their vehicle when energy prices are lower without inconvenience. They will be able to take advantage of vehicle-to-grid technology, selling back energy from their vehicle battery when it is needed.

People reliant on lower power, on-street public charging could have the option to book slots to take advantage of smart charging. Companies with vehicle fleets that charge at a depot or local base will use intelligent, smart charging and vehicle-to-grid systems that are programmable and allow for scheduling. At rapid hubs, battery storage capabilities will help to manage energy demands and reduce costs at busy times. For chargepoint operators and installers, the process of connecting new chargepoints to the grid will be efficient and straightforward, with fair costs.

Continued innovation to meet drivers' needs

Innovative technologies will continue to emerge and be developed both in charging infrastructure and electric vehicles themselves. The regulatory framework will support the deployment of innovative solutions to benefit EV drivers, and wider society. New start-ups and technology innovations will create greater choice for consumers and investment opportunities. Vehicle manufacturers, energy and charging companies will work together to offer competitive packages to consumers.

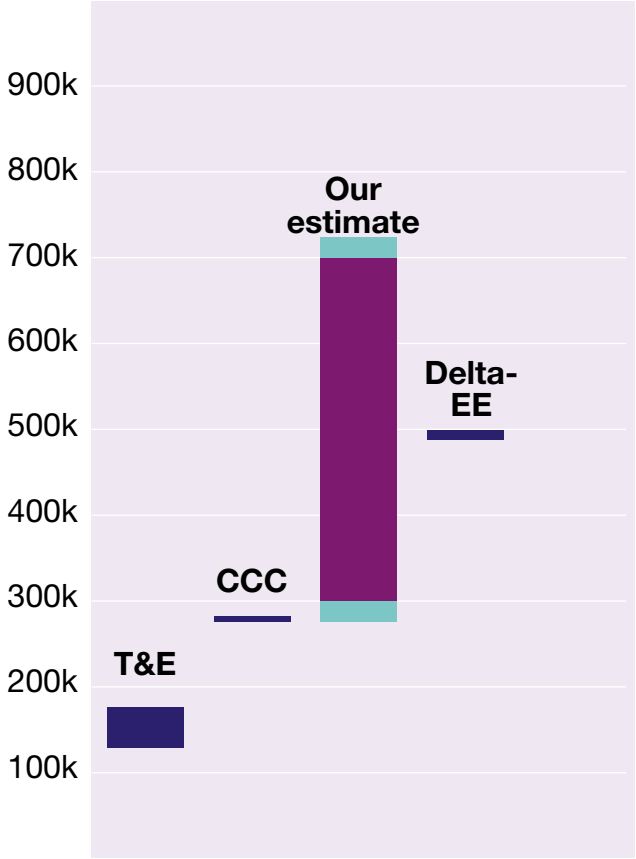
How many public chargepoints will the UK need in 2030?

We estimate that around 300,000 public chargepoints will be needed as a minimum to support our commitment to phase out sales of new diesel and petrol cars and vans by 2030. However, this figure is highly uncertain. Consumer charging behaviour and preferences, mileage and future chargepoint technologies will all influence the number of public chargepoints needed.

A fundamental aspect of this uncertainty is the question of which charging approaches will prove to be practical for people without off-street parking, and how these solutions will be used in practice. Parking constraints and travel needs vary between local areas, and different people will favour different approaches to charging. However, if we assume that on a national basis there is a high proportion of charging at workplaces and that consumers adopt efficient charging behaviour, as well as lower mileage, around 300,000 public chargepoints would be required. This number would increase up to around 700,000 if there is a higher proportion of on-street chargers across the country, and consumers drive more and adopt relatively inefficient charging behaviours, staying longer parked at chargepoints while not actually charging. Our estimates are in line with the latest industry findings.

This figure illustrates the level of uncertainty associated with forecasting future chargepoint need. Industry estimates vary significantly, with different analytical approaches taken and assumptions made around future driving behaviours, charging preferences and the development of vehicle and chargepoint technology. Our approach varies key assumptions, providing us with a range of results capturing the main uncertainties.

There is no standard categorisation of chargepoints across the industry estimates. Chargepoints at workplaces are generally not categorised as public chargepoints, and are not included in our estimates. A high proportion of workplace charging therefore assumes that more people are charging at locations not included in our estimate.



Chargepoint estimates for 2030 from Transport & Environment (T&E),[53] the Climate Change Committee (CCC),[54] the International Council on Clean Transportation (ICCT),[55] and Delta-EE.[56]

53 Transport & Environment (2021). Charging forward: creating a world-class UK charging network. Available at: https://www.transportenvironment.org/discover/charging-forward-creating-a-world-class-uk-charging-network/

54 Committee on Climate Change (2020). The Sixth Carbon Budget, Surface Transport. Available at: https://www.theccc.org.uk/wp-content/uploads/2020/12/Sector-summary-Surface-transport.pdf

55 ICCT (2020). Quantifying the electric vehicle charging infrastructure gap in the United Kingdom. Available at: https://theicct.org/sites/default/files/publications/UK-charging-gap-082020.pdf

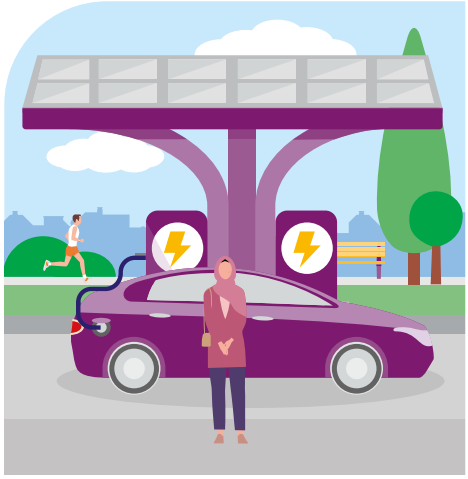
56 Delta-EE (2020). Whitepaper: European EV Chargepoint Forecasts. Available at: https://www.delta-ee.com/downloads/1-research-downloads/63-electric-vehicles-electricity/2591-forecasting-whitepaper.html#form-content

Electric vehicle charging will fit around people's individual needs.

As the network of charging infrastructure continues to expand over the coming years, drivers will have greater choice and flexibility in how they charge their vehicle. The following sets out just a few of the many possible ways that charging our vehicles will fit into our lives. Many drivers will use a combination of different charging approaches.

Amir is self-employed and uses a van for work. His work involves a lot of journeys locally, totalling around 250-300 miles per week. He usually plugs in to charge three or four evenings a week, with his vehicle fully charged by the morning.

He had a chargepoint installed on his driveway so he can charge on his domestic energy tariff. The chargepoint is smart, which means it shifts charging to off-peak times, which saves Amir money. He has also signed up to a vehicle-to-grid scheme with his electricity supplier. By keeping his van plugged in during the week when he doesn't need to use it, he's able to sell energy back to the grid when demand is high.



Jackie lives in an area where parking availability is limited at certain times, so she prefers to charge at her local community charging hub. The hub can accommodate six electric vehicles at once, with about 50 households using it regularly.

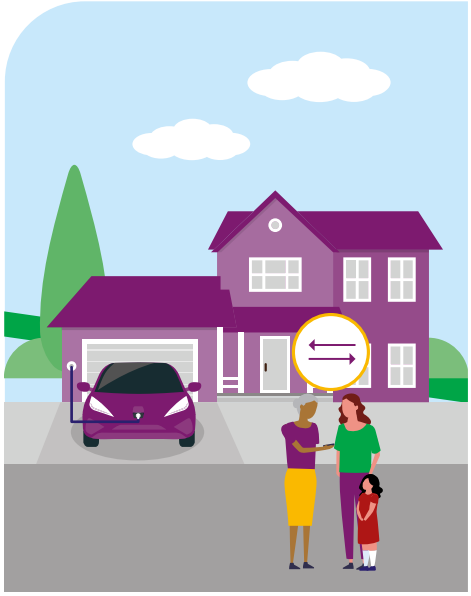
She travels around 100 miles each week for work, shopping and leisure trips. She charges at the hub overnight roughly once every week. It's about a ten-minute walk or two-minute cycle from home.

Alice is a delivery driver and travels long distances, roughly 200 miles a day. She refuels at rapid service stations when she takes her lunch break, which takes around 20 minutes. Rather than have to use different apps, she uses a fuel-card provided by her employer, much like she used for her old diesel vehicle. There are normally at least six chargepoints at the service area, with some having many more.

At the end of her shift she returns to the depot where there are chargepoints. This means she can start the next day on a full charge.

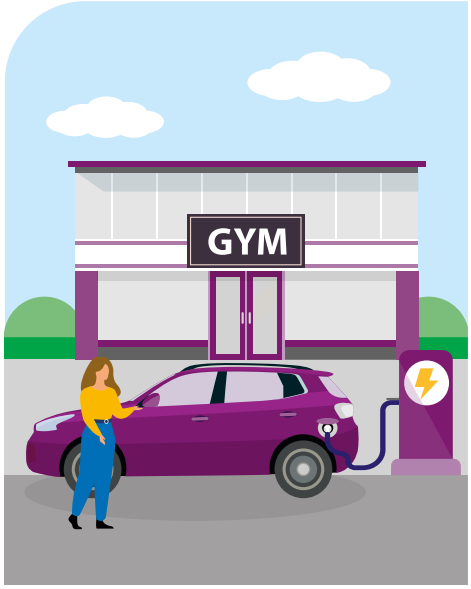
Harry usually charges his electric vehicle on his street, after his local authority had six lamp-post chargers installed by a chargepoint operator. He's able to book this on the chargepoint operator's app. One of the spaces is reserved for a car club, which his partner uses occasionally.

There are about 20 electric vehicles on his road using the chargepoints. These chargepoints are smart-enabled, so he pays less by opting to charge when there is lower demand for electricity. If he ever needs to top up unexpectedly, he can use a nearby rapid hub to quickly recharge.



Wendy has young children. She parks and charges her electric car on her driveway**.** As she doesn't travel every day, she finds she only has to charge every week or so. While she's not using her chargepoint, Wendy is able to rent it out to other people using a mobile app on her phone.

Sofia charges on Wendy's driveway. Using the mobile app she's able to arrange the charging and payment. Sofia likes this way of charging because its affordable, convenient and she always knows where she's going to charge. When she's travelling, she often uses the same app to book a place at another private chargepoint to charge ahead of time, as well as using public chargepoints at destinations and on major roads.



Elena finds it convenient to charge at work or on-the-go. She charges easily at destinations such as her workplace, the gym and the supermarket. Many supermarkets also make these chargepoints available overnight.

She travels around 50 miles a week, and it has become a habit to plug-in at her destination, so she doesn’t need to make extra trips to the forecourt. Her place of work has a chargepoint for almost every parking space. At destinations there are usually between two and four charging bays, but new chargepoints are popping up regularly.

Case study

Innovation: Trojan Energy – DoorSTEP Project:

This is an innovative project funded by the Office for Zero Emission Vehicles (OZEV) in partnership with Innovate UK (IUK). In a trial running from February to July 2022, Trojan Energy's Aon Charger, a 'flat and flush' charging technology, will be installed at 25 properties on selected streets in the London Borough of Brent and in three districts of Oxfordshire.

These chargers will be linked via an underground cable to the household's energy supply. This will allow households without off-street parking to access the same low-cost charging rates available to EV drivers with chargers installed on private driveways or in garages. Trojan's chargers sit below the pavement surface and users access them by inserting a Trojan 'lance' to connect the chargepoint to their vehicle. This will avoid the trailing of cables across the pavement and remove the need for additional permanent street clutter. The host can also choose to make this available to other EV drivers, helping to share the cost and increasing access to charging in the area.

Source: Dundee City Council

3. Key challenges

The UK's charging infrastructure is in a strong starting position. However, our ambition for EV uptake by 2030 is high. Meeting it will involve addressing some critical challenges.

The pace of rollout across the country is too slow for some chargepoint types, particularly public on-street charging.

The current pace of rollout is too slow to match our projected 2030 needs. In 2021, around 600 chargepoints were added to the public charging network every month.[57] If this rate continued, only 58,000 more public chargepoints would be available by 2030, to add to the 29,600 available today.

The pace of public chargepoint rollout will accelerate over time as EV adoption rates and demand for public charging increase. However, we want to speed up the transition across the country, by ensuring that enough chargepoints are available ahead of demand to encourage more people to make the switch. There is significant variation of chargepoint deployment across the country. This is to be expected given differing levels of early EV uptake but if left unaddressed, it risks leaving places behind.

57 DfT (2021). Charging Device Statistics. Available at: https://www.gov.uk/government/statistics/developing-faster-indicators-of-transport-activity and https://www.gov.uk/government/statistics/electric-vehicle-charging-device-statistics-october-2021

Tackling this situation is particularly important for the rollout of local on-street chargepoints, which the CMA found to be "significantly lagging behind" other parts of the market.[58] In England, an estimated 24% of households with a vehicle park on the street overnight.[59] Industry analysis suggests that this percentage can be much higher for fleet drivers, making on-street charging provision particularly important to enable businesses to transition to EVs.[60,61] And consumer research suggests that a perceived lack of on-street charging is a critical barrier to switching for people without off-street parking.[62] We will therefore increase our focus on levelling up and accelerating the deployment of local on-street charging.

The business case for commercial deployment can be challenging in some areas.

Stakeholder feedback and emerging analysis of chargepoint business cases indicate that, in some areas, the commercial model for on-street residential chargers is challenging. This can be exacerbated by low utilisation rates, as EV adoption is still in its early stages in some areas. Higher numbers of EV drivers in an area should create higher demand for public charging, making installation a more attractive investment proposition. Over time, the highest utilisation rates are likely to be found in areas where car ownership and vehicle mileage is highest. With multiple factors at play it is too early to generalise, but we expect that chargepoints will ultimately be commercially attractive in a mix of rural and urban areas.

Low utilisation can also hold back rollout of high powered chargepoints in remote areas and destination charging in seasonal tourist spots. In these instances, the gap may have wider consequences. People will have less confidence that they can travel long distances if they perceive there to be "off limit" areas for onroute top ups. Chargepoints in seasonal tourist areas will be critical to support local tourism during peak periods, despite low usage off season.[63,64]

Local on-street charging can be particularly commercially challenging for developers and investors. Charging volumes are generally lower due to the slower speed of charge and the lower margins on the sale of each kWh (though charging events are much longer). There is also limited space and electricity grid capacity along busy residential streets for chargepoints, which restricts the number of chargepoints a developer can install.

58 CMA (2021). Electric vehicle charging market study. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1012617/EVC_MS_final_report_--.pdf
59 Department for Transport (2021). National Travel Survey Table NTS0908: Where vehicle parked overnight by Rural-Urban Classification of residence. Available at: https://www.gov.uk/government/statistics/national-travel-survey-2020
60 Mitie (2021). Response to CMA electric vehicle charging market study. Available at: https://assets.publishing.service.gov.uk/media/6038f51bd3bf7f038f0f5d22/Mitie.pdf
61 British Gas (2021). 3 policy essentials to accelerate the mass roll-out of electric vehicles. Available at: https://www.britishgas.co.uk/business/blog/3-policy-essentials-to-accelerate-the-mass-roll-out-of-electric-vehicles/
62 Britain Thinks (2022). Public Electric Vehicle Charging Infrastructure: Deliberative and quantitative research with drivers without access to off-street parking
63 SSEN (2020). E-tourism: charging demand by electric vehicles in Scottish tourist hotspots. Available at: https://www.ssen.co.uk/WorkArea/DownloadAsset.aspx?id=19789
64 CMA (2021). Electric vehicle charging market study (pg.7 – risk of charging deserts). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1012617/EVC_MS_final_report_--.pdf

In addition, on-street projects have fewer opportunities for the developer to access ancillary revenues, unlike rapid charging stations connected to, for example, cafés or shops.

Generally, developers target a certain number of EV drivers in the surrounding area per chargepoint to provide certainty over demand. The viability of chargepoints therefore depends significantly on the EV uptake rates in the local area. At the same time, people are less likely to switch if they do not see chargepoints locally. Government support through the new Local EV Infrastructure (LEVI) Fund is crucial at this stage of the transition to ensure deployment remains ahead of need, giving people the confidence to switch. Rapid chargepoints (which can add around 100 miles of range in 35 minutes)[65] are already widely available along motorways and major A roads, and provision of ultra-rapid chargepoints is also growing. There are already 218 open access rapid and 76 open access ultra-rapid chargers at motorway service areas, and a further 234 ultra-rapid chargers which can be used by specific EV models.[66] But there is limited scope for the private sector to expand the number of chargepoints at many motorway service areas. Costly electricity network upgrades will be required to cater to the demand from a growing electric car and van fleet, and potentially heavy goods vehicles too.

Connecting new chargepoints to the electricity system can be slow and expensive.

Connecting new chargepoints to the electricity system can be an expensive and often slow process. Chargepoint operators have reported poor grid capacity in some areas being a barrier to projects, especially in more remote rural areas.[67] In a recent internal survey of local authorities by the Office of Zero Emission Vehicles, connection costs were the second most quoted barrier to the deployment of public chargepoints.

The costs and timescales involved can vary significantly between sites, depending on the location and available capacity at the specific site. Costly upgrades to the electricity grid may be needed to accommodate additional demand. Connecting several fast chargers could cost tens of thousands of pounds. For larger projects, such as charging at depots for fleets, or those at strategic, inflexible locations such as along motorways, the process could cost hundreds of thousands of pounds and take around two years.[68]

65 Pod Point (2021). How long does it take to charge an electric car? Available at: https://pod-point.com/guides/driver/how-long-to-charge-an-electric-car
66 Analysis procured from Zap Map (2022)
67 CMA (2021). Electric vehicle charging market study (pg.58). Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1012617/EVC_MS_final_report_--.pdf
68 CMA (2021). Electric vehicle charging market study. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1012617/EVC_MS_final_report_--.pdf

In some areas, there is not enough local engagement and leadership for chargepoint rollout.

Installing and operating chargepoints requires several parties across the energy sector, local government and the transport sector to work together effectively. The complexity of the delivery environment can create confusion over roles and responsibilities, and can increase costs and project delays.[69]

Local highway authorities are ideally placed to help the market achieve ambitious, scaled rollout in their area as they are responsible for local highways, understand their populations' needs and have a central role in local transport planning. They can work with electricity network operators to strategically plan for future infrastructure provision. This is particularly important in areas struggling to attract market interest. Local highway authorities in GB consist of unitary authorities and county councils. Combined authorities also share some highways duties with their local highway authorities. In Northern Ireland, we propose that local councils may be best suited to this role.

There is a wide variation in local authority capacity, expertise and engagement in EV charging.[70] Although differences in provision reflect variation in population density, levels of off-street parking, and specific local commitments to transport decarbonisation, the regional disparities for on-street provision are stark. Local authorities have reported a range of challenges they can face. These include a lack of clarity over their role, perceived insufficient funding, and constrained resource. Other concerns raised include the complexity of engaging with the energy connections process, data gaps, and specialist skills/knowledge gaps in local authorities. In addition, local authorities must balance the parking needs of petrol and diesel vehicle drivers with increasing demand for parking with charging from EV drivers.

Local leadership is essential to creating new investment opportunities and inspiring local confidence in EVs. An actual or a perceived lack of sufficient supply can reduce people's willingness to switch. Without consistent prioritisation of charging infrastructure deployment across the country, some areas are at risk of being left behind.

69 Transport & Environment (2021). Charging Forward Report (2021). Available at: https://www.transportenvironment.org/publications/charging-forward-creating-world-class-uk-charging-network

70 Transport & Environment (2021). Charging Forward Report). Available at: https://www.transportenvironment.org/publications/charging-forward-creating-world-class-uk-charging-network

Too often, the public charging network lets people down.

Some people are already having a positive experience using the public chargepoint network. However, chargepoints can be difficult to find, difficult to use and may turn out to be in use or broken when a driver reaches them. For disabled drivers, the situation can be particularly challenging. In many places, insufficient thought has been given to inclusive access.

Even paying for charging can be unnecessarily complicated. It can require multiple apps or smartcards across different chargepoint operators.[71] The Competition and Markets Authority found that only 9% of all public chargepoints offer contactless payment.[72] At rapid and high powered chargers (50kW+), only 41% of chargepoints have a contactless debit or credit card payment option.[73] Limited competition on some parts of the network leaves drivers reliant on potentially expensive, unreliable, and poor-quality facilities. We considered these issues further in "The consumer experience at public EV chargepoints" consultation in 2021.[74] We will be publishing the Government's response later this year.

Public charging is also generally more expensive than private home charging.[75] The National Audit Office reported that the cost of public charging could be between 59% and 78% higher than charging at home.[76]

These issues matter, not just because current EV drivers can experience unacceptably poor service, but because they deter others from switching to an EV.

71 Policy Exchange (2021). Charging Up – Policies to deliver a comprehensive network of public EV chargepoints. Available at: https://policyexchange.org.uk/wp-content/uploads/Charging-Up.pdf
72 CMA (2021). Electric vehicle charging market study. Available at: https://www.gov.uk/government/publications/electric-vehicle-charging-market-study-final-report/final-report
73 DfT (2021). The consumer experience at public chargepoints. Available at: https://www.gov.uk/government/consultations/the-consumer-experience-at-public-electric-vehicle-chargepoints/the-consumer-experience-at-public-chargepoints
74 HM Government (2021). The consumer experience at public electric vehicle chargepoints consultation. Available at: https://www.gov.uk/government/consultations/the-consumer-experience-at-public-electric-vehicle-chargepoints
75 National Audit Office (2021). Reducing carbon emissions from cars (pg.38). Available at: https://www.nao.org.uk/wp-content/uploads/2021/02/Reducing-Carbon-Emissions-from-cars.pdf
76 National Audit Office (2021). Reducing carbon emissions from cars. Available at: https://www.nao.org.uk/wp-content/uploads/2021/02/Reducing-Carbon-Emissions-from-cars.pdf

What is the long-term charging solution for those without off-street parking?

There could be around 10 million electric cars and vans that are regularly parked overnight on-street in the UK by 2050. They will all need to access charging solutions that are as convenient and affordable as possible, and that minimise the impact on the UK's electricity system. This will almost certainly be provided by a mix of charging solutions including some local on-street charging, some destination charging, some workplace charging and some rapid charging. Although there is insufficient evidence in 2022 to suggest a definitive optimum mix, even in 2050 there will be a clear need to (a) shift as much charging activity as possible into the off-peak to minimise the burden on the electricity system, and (b) to offer access to the lowest cost charging tariffs to consumers.

Both of these imperatives would suggest that ubiquitous, low cost, overnight on-street charging should be part of the solution. But it is not yet clear if there is a sustainable commercial model to deliver this, and there are potentially tricky interactions with local parking policies and street clutter. Other key factors such as grid reinforcements will also affect the commercial model for different charging solutions.

We will use the £450m Local Electric Vehicle Infrastructure (LEVI) Fund to explore deployment of local charging at scale, to better understand some of these challenges and how they can be overcome. We are committed to ensuring that there is no unnecessary penalty in terms of cost or convenience for electric vehicle drivers without driveways.

Source: Urban Foresight

4. Taking charge: our strategic pillars

Our actions to address the challenges are already underway.

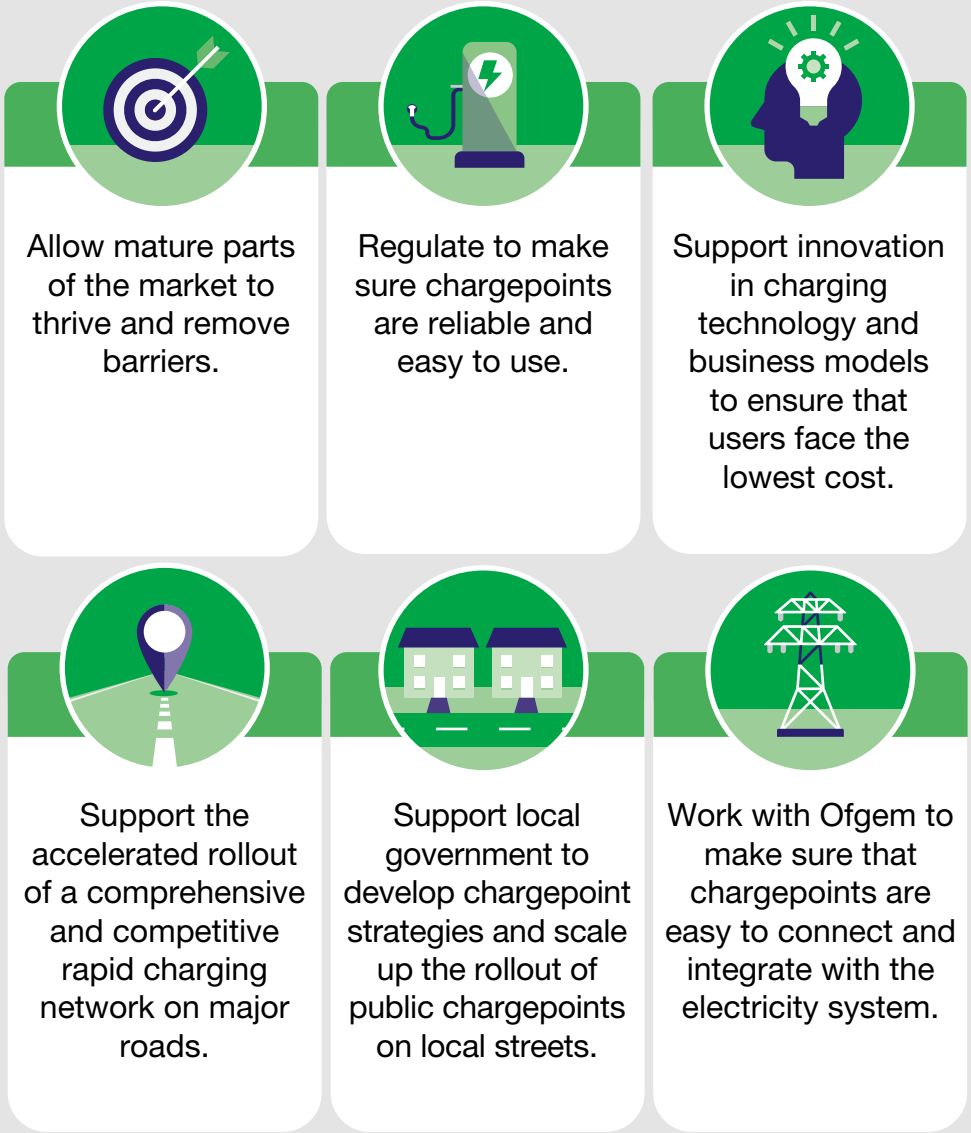
The UK Government has been investing in the country's EV charging infrastructure for over a decade, and work to support its development has ramped up steadily in recent years.

Since 2020, this government has committed over £2.5 billion to the EV transition, of which over £1.6 billion is to support charging infrastructure.

In July 2021, we set out the milestones towards achieving our phase out dates of sales of new petrol and diesel cars and vans in Transitioning to zero emission cars and vans: 2035 delivery plan.[77]

Our strategic pillars summarise what Government will do to accelerate chargepoint deployment across the whole country and deliver our vision. We set out where and how we will intervene to address the challenges currently slowing down the rollout in parts of the country. Government cannot do this alone, however. As part of our approach, we will work with organisations from across sectors to make our vision a reality. We set out in the Role and Responsibilities Annex (page 83) what we expect from the different organisations responsible for chargepoint rollout.

77 HM Government (2021). Transitioning to zero emission cars and vans: 2035 delivery plan. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005301/transitioning-to-zero-emission-cars-vans-2035-delivery-plan.pdf


Allow mature parts of the market to thrive and remove barriers.
Regulate to make sure chargepoints are reliable and easy to use.
Support innovation in charging technology and business models to ensure that users face the lowest cost.
Support the accelerated rollout of a comprehensive and competitive rapid charging network on major roads.
Support local government to develop chargepoint strategies and scale up the rollout of public chargepoints on local streets.
Work with Ofgem to make sure that chargepoints are easy to connect and integrate with the electricity system.

To maximise competition and innovation, we will allow mature parts of the market to thrive and remove barriers.

Our Vision

Market-led rollout for the majority of chargepoints, backed by competition.

Continued innovation to meet drivers' needs.

We want to maximise the opportunity for chargepoints to be delivered by the market. Market-led rollout will foster competition, encouraging chargepoint suppliers to provide innovative solutions that meet drivers' needs, at the lowest possible cost. The more mature parts of the market are already thriving, such as home charging and destination charging. We are taking regulatory action to make home charging a default option; from June 2022, all new homes, or those undergoing major renovation, with associated parking will have to have chargepoints installed.

We will remove remaining barriers to these markets as we transition our focus to less developed parts of chargepoint rollout. This year, we will reform the Electric Vehicle Homecharge Scheme (EVHS) away from the established market for people with their own driveways and garages. Instead, we will focus on supporting people living in flats and rented accommodation to access the benefits of home charging. We will also extend the use of workplace charging. We will support the charity sector and smaller accommodation businesses such as B&Bs to install workplace charging, through changes to the Workplace Chargepoint Scheme (WCS).

The delivery environment for chargepoint installation is complex, involving multiple organisations and cutting across transport, energy, and planning policies. In some cases, securing the relevant permissions, consents, and licenses to install a public chargepoint can take several months. We know that this can create additional costs and delays to projects. It can slow down deployment and may deter some investors from participating. We will make clear guidance available to make these processes as smooth as possible.

In 2020, the Government introduced a unified consent for 'pavement licences' outside cafes and restaurants. These have been successful in reducing bureaucracy, whilst ensuring local residents are consulted. We would like to explore options for introducing a unified consent process for installing EV chargepoints, including consideration of a streamlined process for obtaining both the planning permission consent and the highways consent for the traffic management works at the same time.

We will also review the regulatory framework relating to EV chargepoints. The regulatory environment needed to encourage early EV uptake, and accompanying public charging network is unlikely to be the same as that needed for a future mass market scenario. The consumer base will change from early adopters to a much wider base, creating different consumer expectations and needs from the public chargepoint network. The scale of potential investments will increase to allow for large-scale project deployment. As we move at pace from an early to a more mature market, we need to ensure the regulatory arrangements continue to support the transition, rather than hold it back.

We will regulate to make sure chargepoints are reliable and easy to use.

Our Vision

Effortless on and off-street charging for private and commercial drivers.

Fairly priced and inclusively designed public charging, trusted by consumers.

Too often, the charging network lets people down. To accelerate the transition to EVs, we must ensure that drivers across the country can have confidence and trust that public chargepoints will be easy to find, easy to use and fairly priced. One of our key priorities is to address issues with reliability, ease of payment and locating the right chargepoint for consumers' needs.

We expect to bring in new legislation this year which will improve drivers' experiences using the public charging network. People will be able to compare the price of charging across networks quickly; they will be able to pay for their charge easily, without relying on multiple apps. They will also be able to rely on chargepoints being operational because of rigorous new legal obligations on chargepoint operators. All publicly available rapid chargepoints of 50kW and over will have to meet 99% minimum reliability standards by the end of 2023. If people do have difficulties at a chargepoint, they will be able to get help and support. These changes will significantly improve current EV drivers' experience of using the public charging network. In doing so, they will increase wider public confidence in the network, encouraging more people to switch to an EV.

Mandating a single payment metric so consumers can compare the price across different charging networks.

Improving the **reliability of the charging network** so that consumers can feel confident that the chargepoint is working as expected.

Enabling consumers to **easily locate the right chargepoints** for their needs through opening public EV chargepoint data.

Standardising the payment methods to make it easier to pay for charging.

Accessibility will also be a cross-cutting focus for public chargepoints. We want everyone, including disabled drivers, to be able to use the public network with ease. We launched a project to develop a ground-breaking British chargepoint design, with sustainability and inclusive design at its core. The final design was unveiled at COP26 in Glasgow. We will publish the design considerations developed as part of the chargepoint design project, which will help guide local authorities and the chargepoint industry to fully consider good design, prioritising ease-of-use, inclusivity, and accessibility. We have already published guidance, through the Inclusive Mobility document,[78] on best practice for designing transport infrastructure for a barrier-free pedestrian environment.

78 HM Government (2022). Inclusive mobility: making transport accessible for passengers and pedestrians https://www.gov.uk/government/publications/inclusive-mobility-making-transport-accessible-for-passengers-and-pedestrians

In partnership with Motability, we have commissioned the British Standards Institute (BSI) to develop charging standards to improve disabled people's experience when using public EV chargepoints across the UK. They will provide guidance to industry and drivers and allow drivers to easily identify which chargepoints are suitable for their needs.

Source: ChargePlace Scotland

We will support the accelerated rollout of a comprehensive and competitive ultra rapid charging network on major roads.

Our Vision

A reliable network of high powered chargepoints along major roads.

We know that prospective drivers of EVs often cite the risk of running out of charge on a long-distance journey as a key barrier to making the switch away from a petrol or diesel vehicle.[79] A comprehensive charging network along motorways and major A roads is key to tackling this concern. This ability to stop and recharge in 15 minutes or less will also mean that drivers will not need to invest in the most expensive EVs, which tend to come with larger batteries and extended ranges.

We want commercial and private drivers across the country to find it just as convenient to make a long journey in an EV as in a petrol or diesel vehicle. To support this aim, in May 2020 the Government published its vision for the rapid chargepoint network in England.[80]

The vision sets out the following ambitions:

- By 2023, we aim to have at least 6 high powered, open access chargepoints (150-350 kilowatt capable) at motorway service areas in England, with some larger sites having as many as 10-12.
- By 2030, we expect the network to be extensive and ready for more people to benefit from the switch to electric cars. We are planning for there to be around 2,500 high powered chargepoints across England's motorways and major A roads.
- By 2035, we expect around 6,000 high powered chargepoints across England's motorways and major A roads.

Many operators of motorway service areas have embraced the ambition to install six high powered chargers by the end of 2023. Over 70% of England's motorway service areas now have a plan to deliver this, and we will continue to work with site operators to ensure that every site is reached.

79 Bright Blue (2021). Driving uptake: Maturing the market for battery electric vehicles. Available at: http://www.brightblue.org.uk/wp-content/uploads/2021/02/maturing-the-market-for-battery-electric-vehicles.pdf

80 HM Government (2020). Government vision for the rapid chargepoint network in England. Available at: https://www.gov.uk/government/publications/government-vision-for-the-rapid-chargepoint-network-in-england/government-vision-for-the-rapid-chargepoint-network-in-england

Currently, however, the commercial case can be difficult for high powered chargepoints, particularly where connecting to the electricity system is expensive and time-consuming. Working across government, we have taken significant steps to address this. Over 40 sites will benefit from short-term grid upgrades through Ofgem's Green Recovery Scheme, which is accelerating £300m in investment in upgrades to the electricity network to support economic recovery and low-carbon development. We are working with National Highways to fund on-site electricity storage solutions, to enable additional sites to meet the 2023 goal.

We will consult on mandating that service area operators and large fuel retailers must meet minimum chargepoint numbers at specific sites, and at increasing levels over a period of time, to address both actual and perceived demand. To ensure the private sector can continue to expand the charging network at pace in the 2020s, the Government will invest up to £950m through the Rapid Charging Fund. This will fund all or a portion of the cost of upgrading the electricity grid at strategic locations along major roads to meet future demand for high powered chargepoints, where it is currently prohibitive, expensive and uncommercial to do so.

The Rapid Charging Fund provides a pivotal opportunity to open up the market at motorway service areas as well as increase charging infrastructure available to drivers. The upgraded connections will only be open to chargepoint operators with open networks that are interoperable with all EVs. We are actively considering the principles on which we will issue this funding. These could include a requirement for applicants to ensure there is fair competition between chargepoint operators at each motorway service area site and that there is an open tender process for chargepoint service contracts to make use of the funding. We will continue to work with the Competition and Markets Authority to inform the development of the Rapid Charging Fund.

The Rapid Charging Fund will be rolled out as quickly as possible. Detailed design work on the fund is currently being finalised, ahead of a public consultation later in the year. We expect to launch some pathfinder projects at selected sites in 2022, followed by the full launch of the fund in 2023.

We will ask local government to develop chargepoint strategies and we will scale up the rollout of public chargepoints on local streets.

Our Vision

Everyone can find and access reliable public chargepoints wherever they live.

We are committed to a comprehensive rollout of charging infrastructure which leaves no area of the country behind. There is huge capacity for the market to meet this challenge and, in areas with higher EV ownership and well-developed local government strategies, local infrastructure delivery is expanding rapidly and the commercial case for private investment is strengthening. However, the pace of rollout across the country is too slow and there is insufficient local leadership and engagement in some places. We are providing local government with the support they need to meet the challenge.

Many areas do not currently have sufficient charging demand to support investment, and local authorities can lack the experience and capacity to develop strategies and apply for funding. The resulting lack of infrastructure can dissuade prospective EV owners, which in turn risks slowing the transition to EVs and leaving some people behind. To ensure all areas have access to high quality, competitively priced infrastructure delivered ahead of need we are therefore significantly increasing funding with a comprehensive £500m local infrastructure support programme. This includes launching the £450m Local EV Infrastructure (LEVI) Fund to help local authorities to dramatically scale up infrastructure provision to level up provision across the country, and to negotiate good commercial terms. This fund will be flexible in its approach, to match the level of public subsidy to the specific need in different local areas.

We recognise the current spatial disparities in the provision of EV infrastructure across the UK. When allocating funding, consideration will be given to places that have not previously received funding for EV infrastructure, and those where chargepoint provision is currently low.

We are launching a £10m pilot of the LEVI Fund to provide an early opportunity for local authorities to scale up their local charging provision and maximise the potential for private sector finance. The pilot will test how we can most effectively support local authorities procuring chargepoint deployment by trialling different delivery mechanisms, business models and technologies.

We will be monitoring the level of engagement and planning taking place at the local government level. We will publish information on which local highway authorities have produced strategies for chargepoint provision. We will look to take pre-emptive powers to ensure there is a clear statutory obligation to develop local charging infrastructure strategies and oversee their delivery, subject to consultation.

We know many local authorities face challenges in developing local charging infrastructure approaches. We are taking actions through a range of routes to ensure they have the tools and resources required to identify and address their specific local challenges (ranging from how to meet seasonal charging demand from tourism, to working with housing associations and car park operators). The LEVI Fund includes up to £50m to fund local delivery support across the country, and provide training, tools and knowledge sharing. We will focus on upskilling areas which are currently behind in planning and delivering chargepoints.

In spring 2022, we will launch a local government knowledge hub on gov.uk with consolidated guidance for local authorities on EVs and charging infrastructure, and we will publish a Local Authority Toolkit to help local areas to reduce emissions from transport. This Toolkit will provide local authorities with guidance and information on a range of topics including those relevant to chargepoint provision such as electric car clubs and fleet electrification. We will also publish an EV infrastructure guide for local authorities in partnership with the Institution of Engineering and Technology (IET) to assist with the transition to zero emission vehicles.

We are addressing barriers to data sharing which can impede decision making. The Geospatial Commission is undertaking a discovery research project in 2022 to explore how location data can be better utilised to support planning and delivery of chargepoints by local authorities.

We are providing regional support for local authorities to plan chargepoints. Sub-national Transport Bodies in England have been funded to assess charging demand at a regional level and develop tools to assist local authorities in developing their own chargepoint plans. A transport working group is also being developed through the Local Net Zero Hubs, to enable regional EV infrastructure initiatives to be coordinated at a national level. (The five Local Net Zero Hubs – Greater South East, South West, Midlands, North West and North East of England – promote best practice and support local authorities to develop net zero projects that can attract commercial investment.)

We will work with industry to provide consolidated evidence on fleet charging demand to inform local planning. New research will capture fleet attitudes and preferences towards charging, and we will work with industry to improve information on depot locations and other large fleet sites. We will disseminate future outputs from fleet EV groups, such as the forthcoming research on fleet charging use cases for different user groups being developed by the British Vehicle Rental and Leasing Association (BVRLA), and specifications to standardise fleet data for sharing with local authorities and other stakeholders.

We will work with Ofgem to make sure that chargepoints are easy to connect and integrate with the electricity system.

Our Vision

Infrastructure seamlessly integrated into a smart energy system.

EVs will have a significant impact on the electricity system but the process of connecting chargepoints to the system can be a significant, and costly, challenge for developers and fleet operators. We are focused on ensuring the connection process does not slow down the transition.

Ofgem, the energy regulator, is preparing for the transition to EVs and will support strategic investment in the electricity network to deliver the capacity needed for the net zero transition. Ofgem is placing a clear expectation on network companies to anticipate and accommodate increasing demand. Stakeholders across the electricity system are already starting to adapt and put in place solutions to connect and manage the additional electricity demand from vehicle charging. There are significant opportunities from the increased use of smart, flexible charging. We will work with Ofgem, energy companies and the charging industry to improve current processes and to maximise the benefits of emerging technologies for EV drivers and energy consumers. We will set out our overall approach to transforming the electricity network to achieve our net zero goal in our electricity networks strategic framework in spring 2022.

In July 2021, we published the Smart Systems and Flexibility Plan with Ofgem. This placed commitments on distribution network operators to make more effective use of local network solutions and smart technologies in ensuring the distribution network is ready for EV charging demand. These solutions can alleviate network constraints, providing cost-effective, net-zero compliant alternatives to expensive network upgrades or renewables curtailment. We will identify the role of smart charging in the public infrastructure network and consider mechanisms to deliver this. We will consider the potential sharing of private chargepoint location and energy data with specified parties to support network planning.[81] We will aim to consult in 2022 on additional measures to ensure we are taking a systems-wide approach for a safe and secure transition to smart charging.

81 HM Government (2021). Consultation outcome – Electric vehicle smart charging. Available at: https://www.gov.uk/government/consultations/electric-vehicle-smart-charging

The cost, timeframes and complexity of connecting chargepoints to the electricity system can be a barrier to deployment. We are committed to addressing these to ensure charging infrastructure can be rolled out at the pace required, working with Ofgem. The Government's electricity networks strategic framework will set out the numerous actions being taken to improve the affordability of connections, reduce connection timescales and improve customer experience. Ofgem is proposing to reduce the cost of new grid connections where upgrades to the existing network are required, from April 2023. Increasing competition in connections will also reduce both costs and timescales and Ofgem has challenged distribution network operators to include actions to facilitate competition in their business plans for the upcoming price control for electricity distribution (RIIO-ED2).

We published guidance in June 2021 on Connecting electric vehicle chargepoints to the electricity network.[82] We will continue to review evidence on connection costs and timings and work closely with Ofgem to ensure that these do not significantly delay EV uptake, particularly at inflexible locations with high demand such as depots. We are also working with Ofgem to deliver their £300m Green Recovery Scheme.

Accommodating fleet demand at depots

- Fleets are particularly likely to need network upgrades to install multiple chargepoints (e.g. at depots). Ofgem's Green Recovery Scheme has allowed the distribution network companies to fund several projects to provide new connections at fleet depots (such as Caledonian bus depot and Wardle depot).[83]
- **We expect local government to work closely with fleets and businesses** to ensure that their needs are considered as they plan and deliver local public charging infrastructure (with our support).
- We have made funding available for Sub-national Transport Bodies to assess regional EV infrastructure demand. Clusters of demand (including sites such as depots) should be identified as part of this. This will help electricity network operators to plan their networks to accommodate this demand.
- We will work with industry to provide **consolidated evidence on fleet charging demand** to inform local planning. This will include improved information on depots and other fleet sites.

82 HM Government (2021). Connecting electric vehicle chargepoints to the electricity network. Available at: https://www.gov.uk/government/publications/connecting-electric-vehicle-chargepoints-to-the-electricity-network

83 Ofgem (2021). Decision on the RIIO-ED1 Green Recovery Scheme. Available at: https://www.ofgem.gov.uk/publications/decision-riio-ed1-green-recovery-scheme

We will intervene further if progress is not fast enough.

Infrastructure rollout must ramp up significantly, and soon. There is already excellent cross-sector engagement and commitment across government, the chargepoint industry, energy and auto sectors to making this happen. Over the next two years, we will continue to work collaboratively with bodies such as Electric Vehicle Energy Taskforce (EVET), the Automotive Council, and the EV Fleet Accelerator to monitor progress closely. Where we identify outstanding issues, we will prepare to take further actions.

In 2030, there will still be some variation in EV uptake between different regions and demographics. Local factors will impact the types of charging that people find most convenient, and significant changes in charging technology – and travel behaviour – are likely over the rest of this decade.

However, we cannot wait until 2030 to see if our approach is right. To keep track of progress, we will use metrics that enable us to identify if and where the market fails to deliver, taking into account the uncertainty around future need. This will enable us to take action. We will continue to report publicly on chargepoint provision and regional rollout, providing updates on the chargepoints per capita across the country, and the number of different types of public chargepoints by region. We will develop improved metrics to monitor provision and disparities between local areas while accounting for local needs, such as:

- The percentage of households with vehicles parked on-street compared to the number of public chargepoints in an area;
- Typical average walking time to a public chargepoint for households in areas with many vehicles parked on the street;
- Utilisation of public chargepoints (this will be over a longer time frame and will build on work to open up chargepoint data).
- We will also monitor consumer behaviour and experiences at chargepoints, as these are both fundamental to maximising the benefits of EVs. We will assess progress on consumer confidence and specific consumer experience issues at public chargepoints, and evaluate the uptake of smart charging. We will continue to review emerging evidence on how and when consumers use public chargepoints, and the associated costs and benefits to consumers and the energy system.

We expect to review our approach by 2023 and decide at this point whether we need to change the regulatory framework further. In advance of this, Government consulted in the Future of Transport Regulatory Review in 2021 on potential measures that would enable us to intervene quickly. We will publish our response to this in summer 2022.

5. Our action plan

Allow mature parts of the market to thrive and remove barriers.

We will reform the Electric Vehicle Homecharge Scheme (EVHS) to focus on support for home charging at flats and rented accommodation, rather than the more established market for people with their own driveways and garages.	**Spring 2022**
We will amend the Workplace Chargepoint Scheme (WCS) to support small accommodation businesses (such as B&Bs) and the charity sector (such as heritage sites and other charitable destinations) to install workplace charging for guests and visitors. We will transition away from supporting businesses to provide chargepoints for their staff and fleets, which is a more developed market.	**Spring 2022 for expanded remit**
From June 2022, we are requiring all new homes with associated parking, including those undergoing major renovation, to have chargepoints installed at the point of construction. Charging infrastructure will also be required in new non-residential properties. We have published guidance on meeting the new regulations in Approved Document S.	**Summer 2022**
We will consider what further role Planning Practice Guidance (PPG) can have in ensuring the delivery of EV infrastructure is appropriately supported by the planning system.	**Summer 2022**

We will work with the EV Fleet Accelerator and other fleet stakeholders to accelerate fleet transition to electrification, setting out our shared findings.	**Ongoing**
We will make charging data available to all parties that need it to plan and deliver chargepoint infrastructure, building on our commitments in our consumer experience consultation and the Modernising Energy Data programme.	**2023 industry developed data solution**
We will explore options to streamline and reduce barriers in the planning system and take any necessary actions. As part of this, we will explore whether Permitted Development Rights could be used to accelerate the process of public chargepoint installation.	**Summer 2022**
We will develop best practice guidance on Section 50 licenses for the installation of chargepoints. This will be published on the local government knowledge hub on gov.uk.	**Autumn 2022**
We will consult on measures to make Traffic Regulation Orders (part of the process to install on-street chargepoints) more straightforward.	**Spring 2022**

Regulate and provide guidance to make sure chargepoints are reliable and easy to use.

We will bring in new legislation in summer 2022 to improve people's experience when using public chargepoints. The regulations will be overseen and monitored by a public body. We will work with industry to open data so that drivers can access real time information about chargepoints across the public network, rely on the public charging network, compare prices and can pay for their charging easily, whoever the chargepoint provider. We will mandate reliability standards to ensure consumers have confidence wherever they travel in the UK. We will also support fleets by introducing payment roaming across the public chargepoint network. Legislation will come into effect in summer 2022.	**Summer 2022**
We will publish the design considerations developed as part of the chargepoint design project, which will help guide local authorities and the chargepoint industry to fully consider good design, prioritising ease-of-use, inclusivity, accessibility and aesthetics.	**Summer 2022**

In partnership with Motability, we have commissioned the British Standards Institute (BSI) to develop charging standards to improve disabled people's experience when using public EV chargepoints across the UK. These standards will provide guidance to industry and drivers and allow drivers to easily identify which chargepoints are suitable for their needs.	**Summer 2022**
We will publish the Government response to the Future of Transport Regulatory Review proposals that were consulted on in 2021.	**Summer 2022**
We will improve signing for charging facilities on the trunk road network.	**Autumn 2022**

Support the accelerated rollout of a comprehensive and competitive ultra rapid charging network on major roads.

We will consult on the design of the £950m Rapid Charging Fund. This fund will support the rollout of at least 6,000 high powered chargepoints across England's motorways and major A-roads by 2035, by enabling electricity network infrastructure to be installed ahead of chargepoint demand.	**Winter 2022 / Spring 2023**
We will launch pathfinder projects for the Rapid Charging Fund, ahead of the fund opening in 2023.	**Winter 2022**
We will work with the private sector to ensure there are at least six high powered chargepoints at each motorway service area by the end of 2023.	**End 2023**

Ask local government to develop chargepoint strategies and scale up the rollout of public chargepoints on local streets.

Lack of coherent strategic direction at a national level, including no articulation of the vision for the future and lack of clarity over the role authorities were expected to play in delivering EV charging infrastructure.	
We are setting out our strategic direction through this strategy, including roles and responsibilities for the core participants in EV infrastructure deployment.	**Immediate**
We will look to take pre-emptive powers, subject to consultation, to ensure there is a clear statutory obligation to develop local charging infrastructure strategies and oversee their delivery.	**2023**
Funding and resource constraints: current funding structures are too short term to allow strategic planning and are based on competitive allocation. This hinders the identification and delivery of infrastructure where it is most needed.	
We are funding the rollout of public chargepoints for people without off-street parking through the expanded On-street Residential Chargepoint Scheme (ORCS).	**Ongoing**
We are increasing the Local EV Infrastructure (LEVI) Fund to £450m. We will help local authorities to negotiate good commercial terms which reflect local market conditions, ensuring that our funding schemes provide good value for money in levelling up chargepoint provision.	**2022-2025**
We are launching a £10m pilot of the LEVI Fund to provide an early opportunity for local authorities to scale up their local charging provision and maximise the potential for private sector finance. This pilot will test how we can most effectively support local authorities procuring chargepoint deployment by trialling different delivery mechanisms, business models and technologies.	**Spring 2022**
The LEVI Fund includes up to £50m to fund local delivery support across the country, and provide training, tools and knowledge sharing. We will focus on upskilling areas which are currently behind in planning and delivering chargepoints, to help them identify and address their specific local challenges.	**2022-2025**

We are providing expert support, through the Local Government Support Programme (LGSP), to local authorities seeking to develop chargepoint strategies, procure chargepoints, and apply for funding. The Local Government Support Programme helps local authorities decarbonise transport, improve air quality and increase EV adoption. The programme is currently administered by the Energy Savings Trust, fully funded by the Department for Transport and available to all local authorities across England. Since the launch of the scheme in October 2018 and November 2021, LGSP has delivered support to 121 councils, helping them progress their EV and sustainable travel projects.	**Ongoing**
Lack of data to support decision making, including not having modelling of future demand.	
Following the recent consultation to improve the consumer experience at public chargepoints, the Office for Zero Emission Vehicles (OZEV) has commenced a workstream to open public EV chargepoint data. The Geospatial Commission is undertaking a discovery research project in 2022 to explore how location data can be better utilised to support planning and delivery of chargepoints by local authorities.	**Spring 2022**
We are providing regional support for local authorities to plan chargepoints. Sub-national Transport Bodies in England have been funded to assess charging demand at a regional level and develop tools to assist local authorities in developing their own chargepoint plans. A transport working group is also being developed through the Local Net Zero Hubs, to enable regional EV infrastructure initiatives to be coordinated at a national level. The five Local Net Zero Hubs (Greater South East, South West, Midlands, North West and North East of England) promote best practice and support local authorities to develop net zero projects that can attract commercial investment.	**Ongoing**

We will work with industry to provide consolidated evidence on fleet charging demand to inform local planning. New research will capture fleet attitudes and preferences towards charging, and we will work with industry to improve information on depot locations and other large fleet sites. We will disseminate future outputs from fleet EV groups, such as the forthcoming research on fleet charging use cases for different user groups being developed by the British Vehicle Rental and Leasing Association (BVRLA), and specifications to standardise fleet data for sharing with local authorities and other stakeholders.	**Autumn 2022**
Practical challenges for local delivery such as procurement approaches and local authorities' access to the right commercial skills; responding to market constraints and technology uncertainty; insufficient sharing of best practice and documentation; and competing demand for charging infrastructure against footway and road space constraints and space for bike and bus lanes.	
We will launch a local government knowledge hub on gov.uk with consolidated guidance for local authorities on EVs and infrastructure. This will include examples of local strategies for different area types, best practice to address specific challenges, examples of regional collaboration, and procurement tools. The hub will also include a comprehensive guidance document to support local government authorities in planning and provision of chargepoints to meet their specific local needs.	**Spring 2022**
The Government has made available a Crown Commercial Services framework for local authorities to use to procure a commercial partner.	**Ongoing**
We will publish a Local Authority Toolkit to help local areas to reduce emissions from transport. It will provide local authorities with guidance and information on a range of topics including those relevant to chargepoint provision such as electric car clubs and fleet electrification. This will help them build business cases, develop innovative policies, secure funding, and deliver measures on the ground.	**Spring 2022**
We will publish an EV infrastructure guide for local authorities in partnership with the Institution of Engineering and Technology (IET) to assist with the transition to zero emission vehicles.	**Spring 2022**

We will work with Ofgem to make sure that chargepoints are easy to connect and integrate with the electricity system.

We laid regulations in October 2021 to mandate that private chargepoints sold in GB must be smart and meet minimum device-level requirements from June 2022. We have made advice on smart charging available via the Energy Savings Trust.	**In force from June 2022**
We will identify the role of smart charging in the public infrastructure network and consider mechanisms to deliver this. We will consider the potential sharing of private chargepoint location and energy data with specified parties to support network planning.[84] We will aim to consult on additional measures to ensure we are taking a systems-wide approach for a safe and secure transition to smart charging.	**Summer 2022**
We will set out our overall approach to transforming the electricity network to achieve our net zero goal and continuing energy security in our electricity networks strategic framework: Electricity Networks: Enabling the Transition to Net Zero. This will include our approach to enabling cost effective and timely connections.	**Spring 2022**
We will maximise the opportunities for flexibility from EVs while protecting the electricity grid and consumers, publishing a joint Government-Ofgem Electric Vehicle Smart Charging Action Plan.	**Summer 2022**
With Ofgem, we have placed commitments on distribution network operators to make more effective use of local network solutions and smart technologies in ensuring the distribution network is ready for EV charging demand. These solutions can alleviate network constraints, providing cost-effective, net zero compliant alternatives to expensive network upgrades or renewables curtailment. Commitments published in the Smart Systems and Flexibility Plan, published jointly with Ofgem in July 2021.	**Ongoing**
Accelerate the widespread deployment of vehicle-to-everything (V2X) technologies, working in close collaboration with Ofgem and industry. We will publish a summary of our recent Call for Evidence and outline next steps.	**2022-2023**
Ofgem is proposing changes to reduce the cost of new grid connections where upgrades to the existing network are required.	**Changes to take effect in April 2023**

84 HM Government (2021). Consultation outcome – Electric vehicle smart charging. Available at: https://www.gov.uk/government/consultations/electric-vehicle-smart-charging

6. Glossary

A smart and flexible system	A system that uses smart technologies to provide flexibility to the system, to balance supply and demand and manage constraints on the network.
A-roads	Major roads between regional towns and cities.
Bundling	Selling different items i.e., products and services, together as a package.
Chargepoint	The hardware used to charge electric vehicles.
Chargepoint Operators (CPOs)	Entities that manage, maintain, and operate chargepoints and the wider charging stations (both technical and administrative).
Charging Infrastructure	All physical and non-physical facilities that aid in the charging of electric vehicles. This includes the chargepoint, the car park, the electrical grid, and other components.

Charging Station Owner (CSO)	The owner of both the charging stations and the location that they are installed at. Often, though not exclusively, this is a business that has decided to provide electric vehicle charging at their private location.
Demand-Side Response (DSR)	Responses by consumers to change consumption patterns in real-time at times of stress on the main electricity system, or in response to changes in prices.
Depot	A building or site where fleet vehicles are stored.
Distribution Network Operator (DNO)	Companies licensed to distribute electricity in Great Britain by the Office of Gas and Electricity Markets (Ofgem). Distribution network operators own and operate the local 'distribution' network. They bring energy to homes and businesses at lower pressure and voltages from the transmission network. There are 14 licensed geographically defined areas.
Electricity Network Operator	Collective term for both Distribution and Transmission Network Operators.
Electricity Suppliers	The companies that supply electricity (and gas) to your home. They do not own any of the network of cables and pipes that delivery the electricity (and gas) to your home.
Fast charging	Chargepoints with power output of 7 to 22 kilowatts (kW).
Fleet	Groups of vehicles owned by a single organisation.
Fleet Operators	Organisations who own fleets – groups of vehicles owned by a single organisation.
Flexible	The ability to shift in time or location the consumption or generation of energy.
Greenhouse gas (GHG)	Any gas that absorbs heat energy emitted from Earth's surface and reradiating it back to Earth's surface. This causes global warming. Carbon dioxide which is emitted by diesel vehicles is a greenhouse gas.

Home-charger	Electric vehicle chargers installed in homes. A slow or fast chargepoint is installed and connected to the home electricity supply.
ICE Vehicles	Internal Combustion Engine Vehicles. These are vehicles that use internal combustion engines and therefore emit carbon dioxide as pollution when using fossil fuels such as petrol or diesel.
Inclusively Designed	Whereby the chargepoint and surrounding area are designed with inclusivity and accessibility in mind; that all consumers, including those with visible and non-visible disabilities, can easily charge their vehicle. This could consider aspects such as height of chargepoint, kerb height, appropriate signage cable weight and space between bollards. We recognise that there may not be a universal solution to or definition of 'accessible', given consumers' access needs can vary on their disability. This will be worked through as part of the BSI Standards development process.
Kilowatt hour (kWh)	Measure of electric vehicle battery charging capacity using kilowatts (kW) (measure of electric power – 1kW = 1000 Watts).
Local / Residential Charging Hubs	Public stations for charging electric vehicles. They possess multiple electric vehicle chargepoints for the public to use.
Local Area Energy Mapping and Planning (LAEMP)	A means, led by local governments, of exploring a range of different future local energy scenarios to achieve decarbonisation.
Local Authority	An organization that is officially responsible for all the public services and facilities in a particular area.
Market-wide Half-Hourly Settlement	The Market Half-Hourly Settlement (MHHS) will place the right incentives on retailers to develop and offer new tariffs and innovations that encourage and enable more flexible use of energy, for example, time of use tariffs, automation, vehicle-to-grid solutions and battery storage.

Market-led Approach	Allowing private investment and business in a competitive market framework to lead the building and facilitation of electric vehicle charging infrastructure. The Government will take an active role in guiding the market.
Mobility Service Provider (MSP)	Entities that the electric vehicle driver has a subscription with for all services related to the electric vehicle operations. MSPs provide electric vehicle drivers with access to charging stations.
Motorway Service Areas (MSAs)	Site near motorways where drivers can refuel their vehicles and can take part in other activities such as eating or shopping.
Net zero	A target of reaching a balance in emissions, with the amount of greenhouse gas produced and the amount removed from the atmosphere equally zero. This can apply across an economy or for a company. The UK Government has committed to net zero emissions across the UK by 2050.
Net zero emissions	Achieving a balance between greenhouse gas emissions produced and the amount removed from the atmosphere, through a combination of emission reduction and removal.
Off-Street Charging	Charging electric vehicles anywhere that is not on or next to the streets. This could involve charging hubs (stations).
On-Street Charging	Charging electric vehicles on the street, anywhere on or along the pavement of the streets.
On-Street Residential Chargepoint Scheme (ORCS)	A UK-wide Government funded grant scheme available to Local Authorities that can be used to fund the cost of installing electric vehicle chargepoints.
On-route Charging	Electric vehicle charging by consumers on longer journeys (e.g. along motorways at MSAs or major A-roads).
Open access	We have defined ‘open access’ as not-for-proprietary-use for specific makes of vehicles.

Original Equipment Manufacturers (OEMs)	Manufacturers who make components that are used in another company's end product.
Pay-as-you-go (PAYG)	An ad-hoc method for accessing and paying for a charge at a public chargepoint without entering into a pre-existing contract with the chargepoint operator. This may include contactless, apps, QR codes or paying online.
Peer-to-peer charging	Private owners making their chargers available for the public.
Public Charging	Electric vehicle chargepoints that are in publicly accessible locations and are not exclusive for specific members such as residents or workers. Broadly includes on-route, on-street and destination charging.
Return-to-base fleets	Whereby vehicles within a fleet return to a shared location (usually a depot) when no longer in use.
Smart charging	Smart charging is a convenient way of charging an electric vehicle at times when demand for electricity is lower, for example at night, or when there is lots of renewable energy on the grid. This can help reduce the need for electricity network reinforcement to meet increased demand from EVs, and offers benefits to consumers too, including savings on their energy bills.
Sub-national transport body	A transport governance organisation intended to provide strategic transport governance at a much larger scale than existing local transport authorities, by grouping councils together.
The Energy Networks Association	An association representing the interests of the electricity transmission and distribution licence holders in the UK.
Transmission Network Operators	Transmission network operators own and operate the high pressure and voltage network transporting energy across the country from where it is made.

Ultra-low emission vehicles	Any vehicle that emits less than 75g of CO2 per kilometre.
Ultra-rapid charging	Chargepoints with power output of over 50 kilowatts, usually 100 kilowatts or more.
Utilisation rates	The rate which the public are owning and using electric vehicles (can be measured in percentages).
Vehicle-to-Everything (V2X)	V2X, where “X” stands for everything, is the umbrella for all forms of technology whereby the electric vehicle battery can export electricity back to a system, be that a home (V2H), a building (V2B) such as a business or back to the electricity grid (V2G).
Vehicle-to-grid (V2G)	A leading example of V2X – it allows electric batteries to store energy and discharge it back to the electricity network when it is most needed.

Annex 1. Roles and responsibilities

Delivering the vision set out in this strategy requires a shift in how government at all levels plans, delivers, and works with the private sector, researchers, and civil society to deliver EV charging infrastructure. The Government's policy is for a market-led rollout. Government will provide an enabling national legislative and regulatory framework and targeted funding to address market failures to ensure no areas or demographics get left behind.

The key roles and responsibilities are summarised below:

Table 1: Key roles and responsibilities in delivering EV charging infrastructure

Organisation	Summary of role and responsibilities
Central government	• Set the overall vision for the UK's electric vehicle charging infrastructure network. • Define outcomes and measure and monitor progress. • Provide the legislative, regulatory, funding and support frameworks to deliver a well-functioning, competitive market with targeted interventions where required.
Devolved Administrations	• Set out the strategy and policy for the charging infrastructure network in their devolved area. • Define outcomes and monitor progress. • Engage with UK Government to promote collaboration and best practice sharing to create a cohesive UK network.

Organisation	Summary of role and responsibilities
Local and Mayoral authorities	• Develop and deliver ambitious tailored local EV charging infrastructure strategies that provide scaled, commercially sustainable public charging provision. They should align with wider local transport and energy decarbonisation policies. • Ensure clear ownership and resourcing of the planning and delivery of EV charging infrastructure rollout. • Ensure local chargepoints are inclusively designed and accessible for residents, businesses, and visitors, and in line with local authorities' legal obligations. • Ensure internal processes for the installation of chargepoints (for example grant permissions) are efficient, fast and easy to navigate for those working with local authorities.
Sub-national Transport Bodies	• Lead assessments of demand across their regions to assist local authorities and electricity network operators in the planning of chargepoint rollout.
Ofgem	• Ensure the electricity network is ready for the transition to EVs. • More widely, regulate the energy industry to support delivery of decarbonisation of the energy system.
Electricity network operators	• Facilitate fast and efficient connections of EV charging infrastructure to the grid. • Support local authorities in planning chargepoint delivery and chargepoint operators in delivering projects.
Chargepoint operators	• Provide convenient, reliable and affordable charging infrastructure that meets all legal and regulatory requirements. • Collaborate with local governments to help develop appropriate local charging strategies and solutions, and bid into tenders. • Develop and innovate, supporting long term growth of the sector and creating jobs across the UK.

Organisation	Summary of role and responsibilities
Operators of Motorway Service Areas	• Plan and deliver the ambitious rollout of charging infrastructure at motorway service areas. • Work closely with chargepoint operators to ensure that there are enough chargepoints at services across the UK.
Fleet operators and businesses	• Develop and deliver plans to transition fleets to electric vehicles, including putting in place the appropriate supporting infrastructure. • Share plans and data with local authorities to enable local authorities to understand wider charging provision within their areas.
Investors	• Work with the stakeholders set out in this chapter to increasingly understand and invest in this growing sector.

The table above is not exhaustive. As part of their work developing and delivering charging infrastructure strategies, local authorities will be engaging with residents and businesses to understand their needs. Moreover, charities, universities, and independent representation groups provide valuable evidence, data, and insight to help with the planning and delivery of charging infrastructure. We strongly encourage this collaboration.

Given the breadth of roles and responsibilities represented by the organisations above, it is critical that there are structured ways for those organisations to collaborate, develop and deliver solutions together. In the accompanying engagement summary, we have provided an overview of some of the relevant key strategic stakeholder partnerships funded and managed by central government. These are not exhaustive and are supplemented by ongoing dialogue between the organisations above.

Local government has a critical role in planning and delivering electric vehicle charging infrastructure.

As we set out in our Net Zero Strategy, a place-based approach will be essential to achieve our cross-cutting net zero ambitions, and the strategic role of local authorities will be fundamental.[85] As the Transport Decarbonisation Plan sets out, Local Transport Plans will set the vision for individual areas to hit net zero in transport. Charging strategies should align to this higher strategic document, reflecting the complementary but sometimes competing demands of walking, cycling and public transport.

We expect the market to lead the majority of public chargepoint deployment. However, local government has a crucial role in ensuring that deployment reaches all areas, using sustainable commercial approaches (for example, procuring for expected high and low utilisation areas at the same time). Further, local authorities are able to bring wider considerations into the planning and delivery of on-street chargepoints, including granting permissions for the works to take place, approving on-street parking bays associated with chargepoints and balancing demands against other uses of the roads and pavements. This will be increasingly important as we transition to mass market adoption of EVs, and the number of drivers relying on public chargepoints increases.

Below, we set out the roles and responsibilities of local and mayoral authorities in the two key aspects of delivering charging infrastructure.

Developing local electric vehicle infrastructure strategies

We want to work collaboratively with local and mayoral authorities in England as they take responsibility to develop local EV chargepoint strategies as an immediate priority. These bodies have both the knowledge of the local areas and the policy responsibilities across core components, such as street-works, to be expertly placed to facilitate the rollout. We would also encourage local highway authorities in Scotland and Wales to develop local strategies, which reflect the priorities set out in the devolved administrations' own charging infrastructure strategies. In Northern Ireland, we envisage local councils being best placed to take on this role.

The strategies should set out how local charging needs will be met at scale and over time (for example, five years) and, where possible, ahead of need. Working with each other and central government, they should consider where and to what extent provision is likely to be met by the market, without additional intervention. As an example, an area with high destination charging or local forecourt availability will require a different approach to a highly residential area with no equivalent options. We will provide further detail on what local strategies should consider, and examples of strategies for different types of areas, on our new local government hub.

85 HM Government (2021). Net Zero Strategy: Build Back Greener. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1026655/net-zero-strategy.pdf

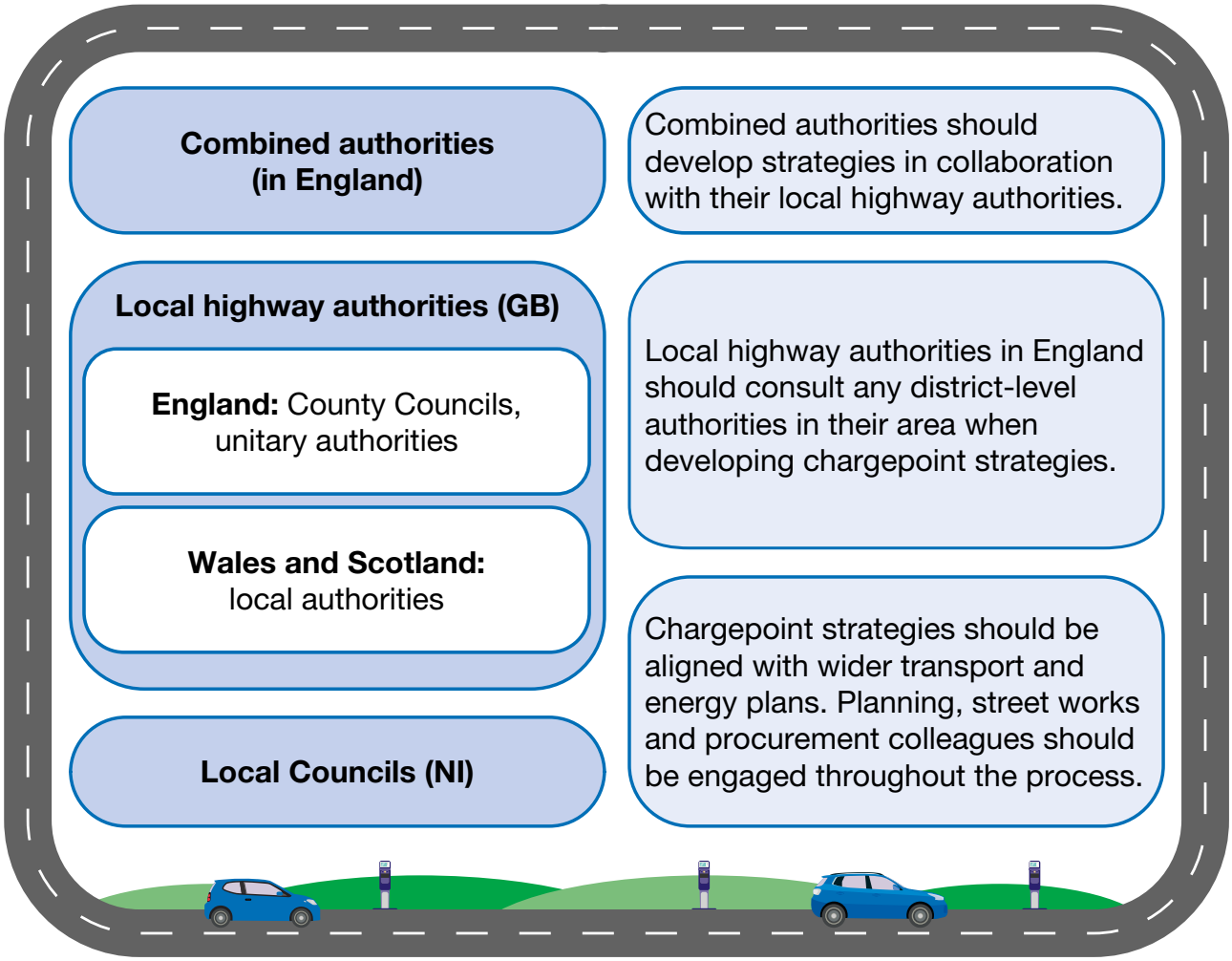
In England, there are multiple tiers of local government, and responsibilities for highways may be shared across tiers. Combined authorities share some highways duties with the county or unitary councils that work together under it. In these cases, we expect the EV chargepoint strategy for an area to be produced by the highest tier authority responsible with transport planning – i.e. the combined authority – in collaboration with their local highway authorities and other councils within the combined authority.

Combined authorities should also ensure that strategic travel needs within major cities are fully considered and that chargepoint plans are aligned with wider transport and energy plans for the area. Lower tier councils within a combined authority area should be actively involved in the development of these strategies, to ensure that the specific charging needs of their area are incorporated. Outside of combined authority areas, where there are two tiers of local government, we expect county councils to produce EV chargepoint strategies. They should do so in close collaboration with district level councils.

Each chargepoint strategy should conform to wider plans for transport and energy for the local area. In England, chargepoint strategies should be aligned with the principles in existing Local Transport Plans, which local authorities have a statutory obligation to develop. Updated guidance on producing Local Transport Plans will be published in 2022. Subsequent updates to Local Transport Plans should include the area's EV charging strategy. When assessing different chargepoint options, local authorities should avoid street clutter and prevent trailing cables, and maximise pavement space for those with disabilities. Chargepoint strategies must be aligned with plans to support walking and cycling and should consider charging opportunities for electric bikes and motorbikes, as well as cars and vans.

The strategies should also be aligned with any local area energy planning underway. This will require collaboration with energy stakeholders such as network operators. The Department for Business, Energy and Industrial Strategy (BEIS) and Ofgem are working together to assess the case for further action to address barriers and unlock opportunities presented by local energy system mapping and cross-sector planning across England. Local Area Energy Mapping and Planning (LAEMP) could help bring together key stakeholders to explore routes to decarbonisation in their local area, identify priority areas for action, and consider potential local barriers such as network constraints.

We expect these local government bodies to develop chargepoint strategies



Sub-national Transport Bodies can support in providing valuable data and insight into expected demand across regions. Early engagement with electricity network operators will help ensure plans consider grid capacity and any associated costs.

Local highway authorities should also work closely with businesses and residents. Businesses may have plans for installing charging infrastructure at their premises that could meet the needs of some residents and customers travelling in the area. Residents will provide valuable feedback on the types of charging solutions they would support in the area and how any plans interact with wider transport considerations.

To level up the benefits of EVs and to support local government in developing strategies and charging deployment, we are announcing combined capital and resource funding of £500m for local authorities to plan and deliver scaled, sustainable EV charging infrastructure over time.

What does good look like for local authorities?

- Agreed ownership and resourcing of the planning and delivery of EV charging infrastructure rollout.
- A published local strategy for the planning and delivery of charging infrastructure to ensure all areas and communities have access to it. We encourage local authorities to include commitments in their strategies on the scale and type of chargepoint deployment they will prioritise to meet local needs.
- A commercial approach which reflects local priorities, maximises opportunities to draw in private investment, and provides long term certainty on availability, reliability and ongoing maintenance costs and revenue generation.
- A clear approach to promoting competition and fair pricing for drivers in local areas, which considers the need for ongoing flexibility as technology and consumer needs evolve, and the principles for managing risk of a single provider operating in one area. For some local authorities, an option may be the use of franchising. In some areas, there may be benefits to separating ownership of the different components of the charging infrastructure, if carefully considered.
- Integration of the local strategy into broader local transport plans (including statutory Local Transport Plans in England), and in conjunction with Local Area Energy Mapping and Planning (LAEMP) as this evolves.
- A cross-sector approach, such as through a working group, which draws in expertise from transport, planning, parking, commercial, property and energy at a scale appropriate for the region. This should include the local electricity network operator to understand electricity network considerations. This may also involve working across local authority boundaries.
- An approach to street works licensing consistent with that of neighbouring local authorities.
- Early engagement with local businesses about the needs of their fleets, and consideration of how these can be addressed.

Delivery

As part of developing local EV infrastructure strategies, local highway authorities and relevant government bodies should agree who is responsible for the procurement and ongoing maintenance of any contracts to meet the identified charging infrastructure gaps. It is very likely that putting in place chargepoint provision in a local area will involve more than one team within that local authority and involve strong collaboration between the different layers of local government in that area. In addition, there will be occurrences where combining delivery approaches across different local government bodies would increase the commercial attractiveness of a proposition, drawing in a wider range of market participants and private investment, for example, bundling up multiple smaller patches with low charging utilisation across different local authorities.

To help, the Government will make £50m available to support the delivery of EV chargepoint infrastructure. Government also funds the Local Government Support Programme, which provides a free advice service to local authorities developing the strategies, plans and delivery approaches to EV charging infrastructure. Government will also work with local authorities and the Local Government Association to ensure value for money, and commercially and technological astute contracts are agreed.

Delivering chargepoint plans

Local EV charging infrastructure strategies should define the local authority (or authorities) responsible for procuring and managing contracts for delivering chargepoint infrastructure. In general:

- Local authorities should seek to deliver scaled, sustainable plans for their areas and communities with the chargepoint market and relevant stakeholders.
- When tendering out local provision, local authorities should ensure contract terms with chargepoint operators promote competition and fair pricing for drivers. Where possible, this includes ensuring there is more than one chargepoint operator within a local area.
- Local authorities should ensure any contract terms with chargepoint operators allow for flexibility in delivery approaches as technology and/or consumer needs evolve.

Sub-national Transport Bodies

We also have made funding available for Sub-national Transport Bodies in 2021-22 to produce regional assessments to support energy system stakeholders and local authorities in planning charging infrastructure provision. We expect these assessments to be in place by the end of 2022. They should:

- Produce scenarios for potential demand for EV infrastructure in the region. These may either build on demand assessments from individual local authorities or provide the basis for more tailored demand scenarios for specific local authorities, depending on the status of existing plans across the region.
- Identify clusters of demand in the region, including bringing together data on current demand and potential future demand from fleets operating in the region (where possible, this should include demand from buses and other heavy vehicles, as well as cars and vans). This should identify charging demand in areas without off-street parking, and at sites such as depots where many vehicles may be charging overnight. This will help electricity network operators to plan their networks to meet this expected demand.
- Identify different levels of engagement and progress within local authorities in the region and locations where additional support is needed to enable planning of local chargepoints.
- Highlight examples of best practices between local authorities and foster partnerships between authorities to ensure charging infrastructure is delivered in an efficient and cohesive manner. Successful charging infrastructure deployment will need committed engagement from across sectors.

Local authorities have a critical strategic role in planning and ensuring delivery of local chargepoint provision. However, rollout across the country is the responsibility of a range of other organisations as well. Chargepoint operators, fleet operators and energy network operators are all integral to a smooth transition.

We expect chargepoint operators to lead the majority of rollout across the country, working with businesses, residents, local and mayoral combined authorities, and others to deliver charging solutions which are inclusively designed. They are responsible for delivering, operating, and maintaining chargepoints, although under some business models they may wish to sub-contract some aspects.

Priorities for chargepoint operators should include:

- Accessing and attracting investment to deliver, operate and maintain chargepoints.
- Ensuring their chargepoint network meets all regulatory requirements and provides a high-quality service to drivers.
- Encouraging energy companies to offer and implement smart and flexible technologies and tariffs of benefit to consumers and the energy system.
- Working with local authorities on local chargepoint strategies and participating in local tenders.
- Identifying and developing chargepoint sites, sharing data with local authorities and electricity network companies to enable planning and quicker delivery.

Fleets are a significant part of our transition to EVs. These are groups of vehicles that are owned or leased by a business or organisation (including the public sector). They include (but are not limited to); delivery and freight vehicles, buses, emergency service vehicles, service sector vehicles, car-clubs, and business pool cars. Some businesses have a couple of vehicles, while others have many thousands. With this wide range in fleets comes a wide variety in the charging solutions that will be most appropriate for each fleet, based on their usage patterns, mileage and how long they are parked in a typical day. Fleet operators should work with local highway authorities. They will need to share information on their prospective fleet needs to inform local planning. Similarly, local electricity network operators will need to consider future fleet charging requirements as part of their network planning.

Priorities for larger fleet operators should include:

- Regularly assessing current and future charging needs, identifying potential clusters of needs (whether depot or home based).
- Sharing information on key charging locations and requirements when requested by local authorities and electricity network operators as part of strategy development.
- Liaising with electricity network operators and chargepoint operators on innovative, smart systems for scheduled charging that can reduce costs at depots (or other sites with multiple vehicles).
- Collaborating locally and nationally to improve chargepoint utilisation rates and efficiency, and create “win-wins”, for example, by providing access to other fleets with different usage patterns or to local residents.

Fleet leadership

Trade bodies and representative groups can provide a collective voice for fleets, ensuring that their needs are communicated clearly.

The EV Fleet Accelerator formed by the CEOs of bp, BT, Direct Line Group, Royal Mail, Scottish Power, Severn Trent, and Tesco, aims to use electric fleets as a catalyst to accelerate the widespread conversion to EVs across Britain.[86] This group constitutes the owners and operators of some of the biggest van fleets in the country, complemented by infrastructure, energy, retail and insurance and repair capability.

Similarly, members of the British Vehicle Rental and Leasing Association (BVRLA) have established the 'Plug-in Pledge' which will see the sector registering 400,000 battery electric vehicles per year by 2025, which could represent approximately 80% of new battery electric car and van sales.[87]

Lastly, the EV100 is a global initiative bringing together companies committed to switching their fleets to EVs and installing charging infrastructure for employees and customers by 2030.[88]

The energy sector is fundamental to fast, efficient and cost-effective installation of chargepoint installation across the country. Ofgem is the independent regulator for the gas and electricity markets in Great Britain. They are critical to ensuring that energy regulation supports EV uptake and the interests of energy consumers.

Ofgem set out their role in enabling the transition at least cost to consumers earlier this year: Enabling the transition to electric vehicles – the regulator's priorities for a green, fair future. This includes their high-level priorities across networks, system integration, and consumer participation & protection. We welcome and support the actions Ofgem have already taken in this area.

86 EV Fleet Accelerator (2021). Findings & Recommendations. Available at: https://www.openreach.com/content/dam/openreach/openreach-dam-files/images/about-us/sustainability/EVFA_Report_July_2021.pdf

87 BVRLA (2020). 2020 Plug-in Pledge. Available at: https://www.bvrla.co.uk/resource/2020-plug-in-pledge.html

88 Climate Group (2020). About EV100. Available at: https://www.theclimategroup.org/about-ev100

Areas of focus for Ofgem

- Ensuring that the process of connecting to the network is straightforward and connections can be delivered at a fair price.
- Through the 2023-2028 electricity distribution price control development, Ofgem are supporting strategic investment on local distribution networks to support the increase of electric vehicles.
- Considering reforms to promote flexibility and smart charging, and ensuring the regulatory framework supports the uptake of smart charging and V2X technology.
- Supporting innovation: A £450m fund (managed in partnership with Innovate UK) will be available over the next five years to support strategic and innovative networks projects across four key challenges, including transport.[89]
- Supporting infrastructure projects, including rapid charging rollout, across the country. In May 2021, Ofgem announced a £300m Green Recovery Scheme investment for network projects with distribution network operators (DNOs) and the Energy Networks Association (ENA) to enable the installation of charging infrastructure, such as rapid charging, and wider low carbon projects.[90]

Electricity network operators are responsible for planning and managing their networks, and delivering an efficient, easy process for new EV chargepoints to be connected to these networks. Ofgem use the price control framework to ensure that the network operators provide the required infrastructure to deliver the capacity to meet both current and future demand on the network. Electricity network operators forecast demand, including EV uptake, to shape investment plans for reinforcing the network or procuring flexible solutions.

Most new local connections will be at the lower voltage distribution level. However, some major EV hubs or depot connections may require a higher voltage transmission network connection.

89 Ofgem (2021). New £450m fund to unlock cutting-edge innovation across gas and electricity networks. https://www.ofgem.gov.uk/publications/new-ps450m-fund-unlock-cutting-edge-innovation-across-gas-and-electricity-networks

90 Ofgem (2021). Ofgem delivers £300m down payment to rewire Britain Available at: https://www.ofgem.gov.uk/publications/ofgem-delivers-ps300-million-down-payment-rewire-britain

Areas of focus for electricity network companies

- Providing a smooth, clear and timely process for new connections, including: being transparent on the process for assessing viability of connections at potential sites; making information on available capacity easily available; installing connections as quickly as is feasible; and proactively developing flexibility options to reduce costs and timescales.
- Purchasing flexibility services as an alternative to building more network, where it is economic and efficient to do so.
- Providing and disseminating information on smart and flexible new connections.
- Engaging proactively with local authorities on short and long-term local areas energy plans, including chargepoint strategies.
- Continuing to engage with Government on delivery of the Rapid Charging Fund.
- Keeping their own business plans and related publications easily available and updated regularly in response to developments in EV charging requirements.

Source: SMMT

Annex 2. Case studies

Chargepoint rollout is progressing fast. The following examples highlight how the roles set out in this strategy are already being put into practice, with many projects demonstrating innovative and collaborative approaches. To deliver our vision, these approaches – as well as lessons learnt – be shared and implemented across the UK.

Local authorities

Case study

Regional collaboration for chargepoint rollout: West Midlands Combined Authority

- West Midlands Combined Authority (WMCA) is taking a pivotal role in the regional planning and coordination of EV infrastructure. Their report: Electric Vehicle Charging and Enabling Energy Infrastructure: A West Midlands Approach, sets out the role for the Combined Authority in coordinating resources and promoting joint delivery between key stakeholders.[91]
- As a first step, they have initiated a Steering Group formed of key stakeholders to ensure that a coordinated approach to EV strategy and infrastructure provision is taken across the region to support the accelerated uptake of EVs. This has supported the development of a rapidly expanding on street public charging network.
- Their role also includes coordinating with the Distribution Network Operator (DNO) to create datasets of existing and planned energy infrastructure including known grid constraints.
- Following a successful bid as part of the City Region Sustainable Transport Settlements, over the next 5 years they plan to install 1,000 EV chargepoints, as well as the creation of a network of 10 EV Charging Area Transit Stations strategically located to provide ultra-fast charging facilities for a range of vehicles across the region.[92]
- More broadly, WMCA have also launched a new training centre in Wolverhampton to provide EV mechanic training. The first of its kind in the UK, the Electric Vehicle and Green Technologies Training Centre has been backed with £250,000 in funding and aims to train 720 local people over the next 18 months. This will enable people to start a new career or upskill, providing crucial skills for the transition to EVs.[93]

91 WMCA (2020). Electric Vehicle Charging and Enabling Energy Infrastructure: A West Midlands Approach. Available at: https://governance.wmca.org.uk/documents/s3953/Report.pdf

92 WMCA (2021). West Midlands secures over £1bn funding to drive a green transport revolution. Available at: https://www.wmca.org.uk/news/west-midlands-secures-over-1bn-funding-to-drive-a-green-transport-revolution/

93 WMCA (2021). New centre to train local people to work on electric vehicles opens in Wolverhampton Available at: https://www.wmca.org.uk/news/new-centre-to-train-local-people-to-work-on-electric-vehicles-opens-in-wolverhampton/

Case study

Partnership for on-street chargepoint planning and procurement: London

- London Councils, the Greater London Authority, Transport for London and the 33 London boroughs formed a partnership in 2016 to support the delivery of on-street chargepoints and secure funding from the Office for Zero Emission Vehicles.
- A bespoke procurement framework for chargepoints was created to support boroughs. It ensures pan-London standards, with flexibility for boroughs to deliver chargepoints that suit their requirements. Over 4,000 on-street public chargepoints have been procured through the framework since 2018.
- Officers from all boroughs receive project delivery support from London Councils. They regularly share knowledge and have access to a chargepoint data dashboard offering valuable insight into utilisation rates and trends across London. Residents can suggest locations for chargepoints to London Councils via their website.

Case study

Community engagement for rural chargepoint planning: Durham County Council

- Durham County Council's vision is to ensure all residents without off-street parking can access convenient, accessible, and safe EV charging, ideally within a 5-minute walk of their home. The Scaling On Street Charging Infrastructure (SOSCI) project creates a framework for communities to identify, finance and install chargepoints with a focus on rural areas. Durham County Council has 40% terraced housing within its community, leaving residents without a driveway or garage to charge.
- An EV working group (internally) and an EV resident group has been established to support the project. These groups meet on monthly basis to provide feedback on potential chargepoint sites. Diverse stakeholders have been involved, including village halls groups, housing associations, parish churches and libraries. All the chargepoints will be near residential areas and allow overnight charging.
- The SOSCI project is funded by Innovate UK and was awarded approximately £263,000 in 2019 for 100 chargepoints at locations. These were due to be installed by the end of 2021.

Case study

Ambitious scale deployment: Plymouth City Council

- Plymouth are taking a multi-faceted approach to decarbonising transport in a manner that is equitable, affordable, accessible, collaborative and efficient in order to best serve the local citizens. The council is developing several approaches to ensure a variety of options that will be most appropriate for different users of the infrastructure network.
- Through the Transforming Cities Fund, they are developing an innovative network of 50 mobility hubs including EV chargepoints, e-bikes and car club vehicles.
- They are delivering a network of 15 innovative vehicle-to-grid (V2G) chargepoints at their council depot. Their fleet vehicles are generally operational from 7am-4pm so lend themselves well to V2G as peak times often occur from 5-7pm.
- Through the Innovate UK Clean Streets project, they are delivering 52 on-street pop-up chargepoints to provide access to on-street infrastructure without contributing to street clutter.
- The council is working with Connected Kerb to deploy a further 50 on-street chargepoints using funding from the On-street Residential Chargepoint Fund.

Sub-national Transport Bodies

Case study

Midlands Connect

Midlands Connect have assessed the EV infrastructure needs of their region, including consideration of demand scenarios and a comparison of the extent of rollout, planning and engagement with EV infrastructure across the local authorities in their region. This identified a need for accelerated progress on chargepoint planning and rollout in the Midlands, particularly amongst rural Local Authorities and areas with high concentrations of housing with no off-street parking in the region. They are also developing an "Electric Vehicle Infrastructure Planning tool" to help local authorities to identify the best locations for new charging infrastructure.[94]

Transport East and England's Economic Heartland

Transport East and England's Economic Heartland have committed to undertake an 'electric vehicle sprint', working with local authorities and organisations from the private sector, National Grid and the broader energy sector, to better understand and coordinate the delivery of EV charging infrastructure across these regions. England's Economic Heartland are also planning to develop bespoke recommendations for each transport authority in the region to achieve their net zero pathway, based on the typology of each area.[95]

94 Midlands Connect (2021). Supercharging the Midlands. Available at: https://www.midlandsconnect.uk/publications/supercharging-the-midlands/

95 England's Economic Heartland (2021). Decarbonising Transport. Available at: https://www.englandseconomicheartland.com/our-work/decarbonising-transport/

Chargepoint operators

Case study

Agile Streets

This project will allow drivers using on-street charging infrastructure to access off-peak rates, including those offered for domestic energy tariffs. Connected Kerb will install 100 electric car chargepoints on streets and car parks in Glasgow, Hackney (London), Shropshire, and East Lothian. The trial began in autumn 2021.

The trial will collect data on participants' charging behaviour and identify how smart charging can reduce the cost of charging EVs. Once completed, the charging infrastructure will be handed over to the councils for continued operation.

Local drivers who have not yet gone electric but wish to participate in the scheme can take part by subscribing to an electric car from EV subscription service, ONTO, at a discounted rate of up to 50% for the first two months.

The BEIS funded project has been pioneered by a consortium comprised of Samsung Research, Connected Kerb, Octopus Energy for Business, SMETS Design Limited, Energy Saving Trust and the Power Networks Distribaution Centre. It has received £1.5m as part of the Beyond Off-Street Smart Meter Electric Vehicle Charging programme.

Case study

Oxford Gul-e Project

Government has funded (via Innovate UK) Oxfordshire County Council and ODS to deliver OxGul-e, a prototype design for a purpose-built cable gully. Approximately a third of households in Oxfordshire live in terraced properties in urban centres and historic market towns. The cable gully solution will allow residents without off-street parking to charge an EV outside their home by running a charging cable through this gully in the pavement. The project builds on the concept piloted in Oxford through the Go Ultra Low Oxford Project funded by the Office for Zero Emission Vehicles and aims to identify how this solution could be applied safely at scale. Where residents usually park outside their home, this could provide a safe and cost-effective alternative to stand-alone bollards and prevents trailing cables across pavements.

Government will continue to engage with this and other trials to understand how this approach can ensure the safety of all users of the pavement, including disabled users.

Fleet operators

Case study

Zenobe, Surrey[96]

Zenobe is a business leading in the deployment of grid-scale battery storage. In 2019, they partnered with Stagecoach and Surrey County Council to enable the uptake of 9 electric buses. During the scoping phase, it was found an upgrade to the on-site electricity supply would cost circa £2-3m, which threatened the viability of the project. Zenobe were able to avoid this upgrade by supplying a stationary battery as part of a package, alongside chargepoints and a bespoke software system.

This enabled the project to go ahead at ~20% the cost of the grid upgrade, paid over a seven-year contract and was operating within six weeks. The stationary battery also generates additional income through utilising the battery to provide services to the grid when not charging the electric buses.

96 Zenobe (2021). Stagecoach park & ride. Available at: https://www.zenobe.com/case-studies/stagecoach-park-and-ride

Case study

UPS and UKPN Services London[97]

UK Power Networks Services implemented new smart EV charging systems for UPS's central London delivery fleet, as part of the Smart Electric Urban Logistics project (funded by Government and Innovate UK). This solution allowed UPS to increase the number of 7.5-tonne electric trucks operating from its London site from the previous limit of 65 to 170, without the need for an upgrade to the local electricity network. It includes smart charging points, a smart grid application, and an energy storage system at the depot.

This innovative approach will be crucial in supporting UPS as they transition to electric vehicles, having recently committed to buying 10,000 electric delivery vans from Arrival.

97 UKPN (2021). UPS – Facilitating large fleet operators to go electric. Available at: https://www.ukpowernetworksservices.co.uk/case-studies/ups-facilitating-large-fleet-operators-to-go-electric/

Case study

Uber, London[98]

Last year, Uber announced its plans to invest £5m in public EV infrastructure in boroughs across London where drivers needed it the most. Their investment will focus on boroughs that have lower concentrations of chargers than others. The chargepoints will be accessible to both Uber drivers and the public.

A key component of Uber's plans is to ensure a fair transition. The funding will focus on delivering 7-22kW chargers that allow drivers to charge their vehicles overnight; but also, to identify charger locations near to drivers' homes, as most do not have access to off-street parking.

Uber have been working closely with London Councils to understand how the £5m can best be used to increase the scale and pace of the rollout of charging infrastructure. The collaboration has focussed on identifying locations using Uber driver requests as well as using a procurement framework that will enable them to work with boroughs, chargepoint operators and other third parties in a transparent and effective way. They hope that their investment will become a model which other public and private sector EVI partnerships can emulate.

98 The Guardian (2020). Uber pledges £5m toward electric vehicle charging points in London. Available at: https://www.theguardian.com/technology/2020/oct/19/uber-pledges-5m-toward-electric-vehicle-charging-points-in-london

Case study

SSE Energy Solutions

SSE Energy Solutions is investing in a scalable, strategic network of EV ultra-rapid charging 'Community Hubs' across the UK, providing a wide range of chargepoints, designed to support business fleet vehicles, including those who bring their vehicle home, and residents without off-street parking. Located predominantly in urban areas, the Community Hubs will be in clusters of between 10 and 20 bays, serving fleets who need reliable infrastructure close to their business routes. Hubs will be supplied with renewably sourced electricity, refreshment, and toilet facilities, along with WIFI connectivity, and 24/7 customer service to ensure maximum comfort while charging.

Electricity Network companies

Case study

Charge Collective Project, UKPN[99]

Running from 2020-2022, this is a collaborative project intended to demonstrate how UKPN can work together with local authorities to plan local, public charging networks in areas at risk of getting left behind in the transition to electric vehicles.

UKPN are engaging with and coordinating local authorities and EV stakeholders to plan the rollout of community EV chargepoints, with the intention of delivering community charging at the lowest possible network cost. They aim to optimise the location of the chargepoints, considering their benefits (such as facilitating EV uptake and improving air quality), and the associated network costs. The project will develop practical tools to help DNOs facilitate chargepoint deployment. These will include:

- A process for engaging and coordinating with local authorities, chargepoint investors and other EV stakeholders to plan the roll out of EV chargepoints;
- A framework to decide where chargepoints should be installed, and the level of support payments required (both of which will be locally determined);
- A method for taking the output of this framework and tendering support payments to chargepoint investors, aimed at reducing their upfront costs;
- An assessment of the net benefits of this approach; and
- An assessment of opportunities for flexibility services from public charging infrastructure, by commissioning a research study to explore this potential through e.g. analysis of charging patterns and engaging with customers.

99 UKPN (2021). Electric Vehicles – Charge Collective. Available at: https://innovation.ukpowernetworks.co.uk/projects/charge-collective/

Annex 3. Engagement summary

This strategy draws on the work of industry and Government stakeholders, many of whom have identified existing barriers and recommendations to speed up infrastructure rollout. These include:

a. Ofgem and their report – Enabling the transition to Electric Vehicles.[100] This includes how energy sector regulation supports the rapid transition to EVs and does so at least cost to consumers.

b. The Electric Vehicle Energy Taskforce (EVET) who bring together stakeholders across the automotive and energy sector to work on ensuring that the GB energy system is ready for and able to exploit the mass take up of electric vehicles. The taskforce's work is funded by Government and run by the Zemo partnership. It is chaired by Philip New, chief executive of Energy Systems Catapult. Over 350 organisations have contributed to EVET's work so far. EVET made 21 proposals to industry and Government in their 2020 report.[101]

c. EVET also coordinated and contributed to several further workstreams in 2020 and 2021, including many of the outputs mentioned below.

d. *The Competition and Markets Authority's Electric Vehicle Charging Market Study*, which sets out their recommendations for Government to enable the delivery of a comprehensive and competitive charging sector that works for everyone.

e. The Local Government Association's report on the role of local authorities in the provision of EV chargepoints, including a summary of the barriers faced by local authorities and recommendations on their role.

f. The Green Finance Institute's report on unlocking public and private capital to decarbonise road transport.

100 Ofgem (2021) Enabling the transition to electric vehicles: The regulator's priorities for a green fair future. Available at: https://www.ofgem.gov.uk/publications/electric-vehicles-ofgems-priorities-green-fair-future

101 Energy Systems Catapult (2020). EV Energy Taskforce: Moving from Proposals to Actions. Available at: https://es.catapult.org.uk/reports/ev-energy-taskforce-moving-from-proposals-to-actions/

g. The Energy Systems Catapult (ESC) and their research on consumer attitudes and system impacts of different charging approaches. ESC was set up and is part funded by Innovate UK to help the UK navigate the transformation of our whole energy system and capture the new commercial opportunities created. The Catapult's mission is to bring together industry, academia and Government to build consensus and accelerate the development of new technology-based products and services in the energy sector.

h. Energy Saving Trust and their resources providing guidance to local authorities on chargepoint planning and provision, and the processes involved. The Energy Saving Trust is an independent organisation whose role includes providing advice and outreach support to public and private sector fleets, SMEs, local authorities and the industry supply chain on road transport decarbonisation, particularly in support of EV uptake and charging infrastructure.

i. The Electric Vehicle Fleet Accelerator, (which includes the owners and operators of some of the biggest van fleets in the country, complemented by infrastructure, energy, retail and insurance and repair capability), the International Council on Clean Transportation (ICCT), Policy Exchange, Bright Blue, the Society of Motor Manufacturers and Traders (SMMT), the Automotive Council and other industry groups have also published recommendations on the approach needed to ensure that infrastructure provision enables the transition to EVs.

Throughout the first half of 2021, officials at the Office for Zero Emission Vehicles (OZEV) held a series of workshops, inviting attendees across the charging infrastructure industry, trade associations, local authorities, and distribution network operators (DNOs). We selected a broad range of stakeholders that would bring different perspectives to the discussion and ultimately inform the approach taken in the strategy. The workshops involved discussions of the key barriers, emerging best practice and support attendees wanted to see from central Government.

Officials also issued a survey to local authorities, which was shared by the Energy Savings Trust to provide a further opportunity for detailed information gathering. This survey has helped to inform our assessment of the main barriers and the scale of the impact that they have on infrastructure rollout.

Stakeholder	Subject
Devolved Administrations	Engaged with officials in Scotland, Wales, and Northern Ireland during the development of the strategy to test and discuss potential options.
Local Authorities & Associated Organisations	A series of workshops with local authorities and associated organisations (including Local Partnerships and the Local Government Association) with support from the Energy Saving Trust. Initial workshops focussed on the barriers to rollout of EV infrastructure, with later workshops used as an opportunity to test potential solutions and interventions from Government. Key topics included: • Resource and expertise • Planning system • Government funding and support We have also engaged with Sub-national Transport Bodies on their role in regional infrastructure planning and provision.
Chargepoint Operators	Hosted a discussion on barriers to chargepoint rollout with a range of chargepoint providers, operators and eMSPs.
Distribution Network Operators	Discussion of the connections process and how it can be improved to be easier, faster, and cheaper for parties installing charging infrastructure.
Fleet operators & Trade Bodies	Met with a range of fleet operators at different scales to understand the needs of fleets and the barriers they face in electrifying their vehicles. This included meetings with Zemo Partnership, BVRLA, Logistics UK, NHS Fleet, CoMoUK and individual fleet operators.
Automotive sector	Meetings with SMMT, Automotive Council and the Road Transport Transition Committee to discuss the content of the Infrastructure Strategy.

Internal / Cross-government	Subject
Ofgem	Regulatory environment and its influence on the roll-out of EV infrastructure.
BEIS	Net Zero Strategy, local area energy mapping and planning, vehicle manufacturing.
CMA	Provided considerable input to their market study and ongoing discussions over Government's response to their recommendations.
DCMS	Lessons learnt from the roll-out of broadband and how this can be applied to charging infrastructure, particularly focussing on rural provision.
DEFRA	Discussed charging infrastructure considerations for rural communities, including opportunities to maximise benefits of funding schemes.
DLUHC	Discussions with the Local Government Climate Change team to ensure join up of net zero Policy Planning reforms and how the planning system impacts the pace of infrastructure roll-out.
DfT	Discussion of the Transport Decarbonisation Plan, Bus Back Better Strategy and Local Transport Plans to ensure alignment on policy and broader decarbonisation objectives. Regions, Cities and Devolution directorate to discuss local authorities and other regional players on local leadership.
HMT	Engagement on key barriers and policy including support for local authorities.

In the development of the strategy, we have also drawn on existing evidence and reports. In particular but not exclusively:

Organisation	Report
Transport Scotland	Switched On Scotland Phase Two: An Action Plan For Growth (June 2017)
Field Dynamics	On-street Households: the next EV challenge and opportunity (October 2020)
BVRLA	Road to Zero (October 2020)
Policy Exchange	Charging Up (February 2021)
Bright Blue	Driving Uptake: maturing the market for battery electric vehicles (February 2021)
Welsh Government	Electric Vehicle Charging Strategy for Wales (March 2021)
Transport & Environment	Charging Forward (May 2021)
Local Partnerships	Scoping the role of local authorities in the provision of electric vehicle charging infrastructure (July 2021)
Scottish Futures Trust	Electric Vehicle Charging Infrastructure Report (July 2021)
Green Finance Institute	Road to Zero: Unlocking public and private capital to decarbonise road transport (November 2021)
EV Fleet Accelerator	EV Fleet Accelerator Findings & Recommendations (July 2021)

Annex 4. Electric vehicle charging and the electricity system

How and when people charge will be crucial for the impacts on the electricity system.

When people charge their EVs is relevant not just to individual drivers, but to wider management of the electricity system. This will become increasingly the case as the number of electric vehicles goes up, increasing total charging demand.

The graph on the following page shows the estimated total daily energy demand for Great Britain, illustrating current times in the day when demand is highest. If a significant proportion of increased EV charging coincides with those peaks, this will increase the costs of upgrading the electricity network to cope with the electricity demand.

Estimated total daily energy demand for Great Britain

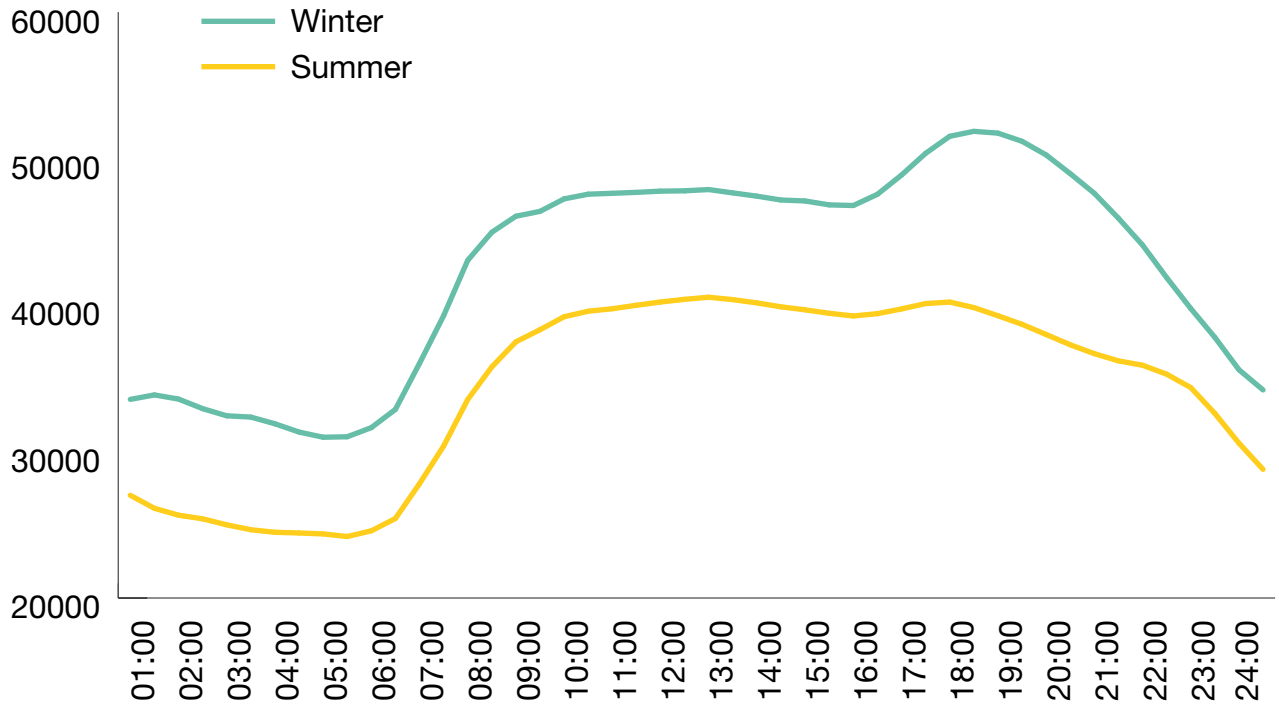


Chart shows total estimated demand on the electricity system across an average business day for summer and winter in 2019, from BEIS scenarios used in the Net Zero Strategy.[102]

However, when people choose to charge varies between different charging settings.[103] Charging at work accounts for about 15% of current EV charging demand. In this setting, drivers tend to plug in when they arrive in the morning (08:00-10:00). The use of public charging infrastructure (10% of current EV charging demand) is currently spread fairly evenly across the day.

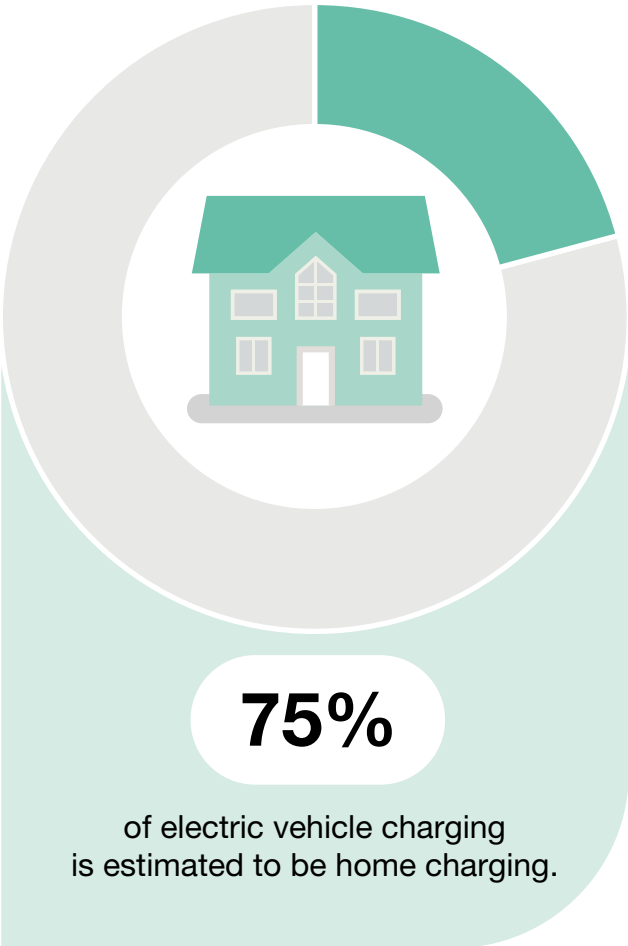
75% of EV charging is estimated to be residential charging.[104] An associated risk with this is that drivers complete their last trip of the day and plug in, which could exacerbate the existing sharp peak in electricity system demand in the early evening (17:00-20:00).[105]

102 BEIS (2021). Extracted from BEIS' Dynamic Dispatch Model scenarios used in the Net Zero Strategy (2021).

103 UK Power Networks (2018). Charger Use Study – Recharge the Future. Available at: https://innovation.ukpowernetworks.co.uk/projects/recharge-the-future/#:~:text=The%20Charger%20Use%20Study%20activity,compute%20the%20load%20from%20EVs.&text=It%20creates%20the%20industry%20leading,advancements%20in%20accuracy%20and%20granularity

104 Element Energy (2019): Electric Vehicle Charging Behaviour Study. Available at: http://www.element-energy.co.uk/wordpress/wp-content/uploads/2019/04/20190329-NG-EV-CHARGING-BEHAVIOUR-STUDY-FINAL-REPORT-V1-EXTERNAL.pdf

105 There is currently limited evidence on the patterns of use at residential on-street chargepoints. However, there is evidence from other European countries that suggest that the shape of the demand curve could be very similar to the home charging profile.



We estimate that road transport could represent approximately 15% of total electricity demand in 2050 compared to less than 1% of demand today.[106] The UK electricity market is already set up to bring forward the investment in generation that will be required to meet this. The Contracts for Difference scheme supports significant investment in low carbon generation, and is backed by the Capacity Market, our principal tool for ensuring the security of electricity supply.

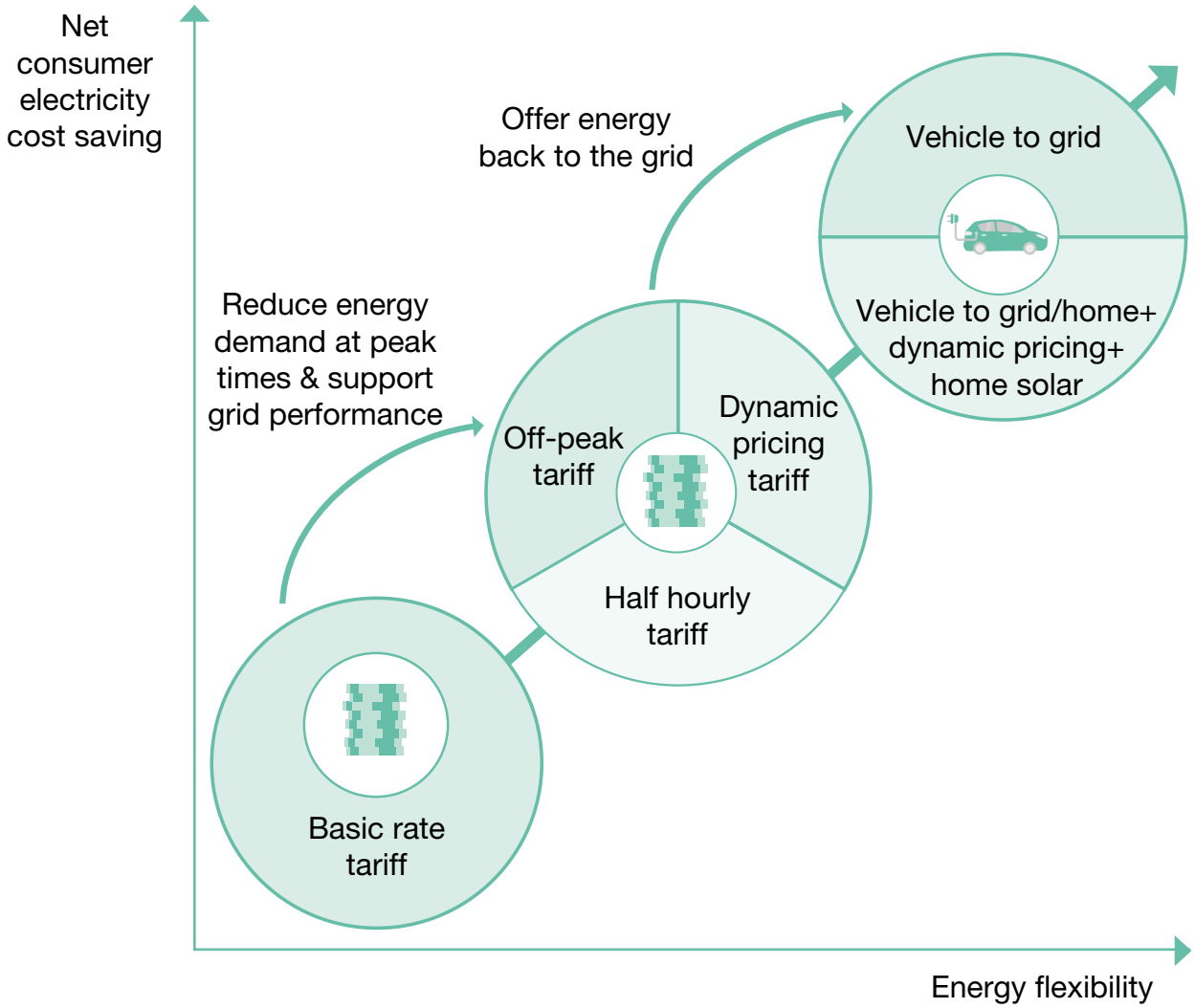
In the Net Zero Strategy, Government set out that, subject to security of supply, all our electricity will come from low carbon sources by 2035. This brought forward the Government's commitment to a fully decarbonised power system by 15 years.[107]

Smart charging will allow more efficient use of our flexible, renewable generation. It allows people to charge their vehicles when it is most efficient for the electricity system. This can save people money, allowing them to take advantage of lower energy prices without inconvenience. EV owners with off-street parking can access electricity prices below the average domestic rates via time of use tariffs and smart charging, meaning that the cost of charging can be significantly lower. In addition, consumers can be rewarded for allowing a third-party to control when their vehicle is charged (known as demand side response) – meaning they simply have to set how much charge they want their car to have by morning and then let a company optimise when their car charges in order to maximise the benefits to the energy system. In future we also expect more consumers to be able to power their homes or sell energy to the grid at times of high demand through Vehicle-to-grid and Vehicle-to-X technologies. Many people are already using smart charging at home and work, and we are requiring all new private chargepoints to be smart from June 2022. We expect to see increasing opportunities for people to have similar options on the public network as the network grows and technologies advance.

106 HM Government (2021). 5.1 Digest of UK Energy Statistics (DUKES): electricity. Available at: https://www.gov.uk/government/statistics/electricity-chapter-5-digest-of-united-kingdom-energy-statistics-dukes

107 HM Government (2021). Net Zero Strategy: Build Back Greener. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

Consumers can benefit from cheaper EV charging, with the incorporation of energy flexibility technologies and services



(V2G) Vehicle to grid technology (where electricity is exported from the vehicle battery to the grid) can also help smooth electricity demand and reduce the associated impacts on electricity system costs. These technologies are already in use at many charging locations. We are working with Ofgem to maximise the opportunity for flexibility from EVs, while protecting the electricity grid and consumers.

Where people charge also impacts the costs of installing chargepoints and of reinforcing the electricity network to manage the increased demand, at either a national or a local level. For example, several rapid charging points in a single "hub" location may require one large upgrade to the high voltage network. Servicing a similar number of on-street chargers might require a larger number of smaller connections to the low voltage network.

These types of costs will be an important factor in determining chargepoint location. Electricity network operators are already forecasting EV demand and planning how their networks will support chargepoints. However, more analysis is required to identify the most commercially viable approaches to chargepoint deployment in different areas.

Annex 5. Future chargepoint requirements and the chargepoint demand model

Overview

The public chargepoint estimates presented in the EV Infrastructure Strategy have been constructed using the Chargepoint Demand Model (CDM). This annex outlines the underpinning modelling approach.

The CDM estimates annual electric vehicle (EV) chargepoint requirements out to 2030 across three key public charging categories[108].

10. Residential on-street (e.g. lamppost)
11. Destination (e.g. supermarkets, leisure centres, hotels)
12. On route (rapid) (e.g. motorway service areas and refuelling stations)

108 Workplace and private home charging have also been considered within the modelling framework but aren't included in the definition of public chargepoints.

It is estimated that between 280,000 and 720,000 public chargepoints[109] could be required in 2030 to support the transition to EVs. This represents direct charging demand from estimated EV mileage and not the level of infrastructure needed to encourage EV uptake through improved driver perceptions of charging.

The estimates are based on a wide range of scenario analysis which captures key uncertainties of future charging behaviour, preferences and vehicle mileage.
The scenarios are based on the best current available evidence and will evolve over time as the market matures and more evidence around consumer behaviour, preferences and technology emerge.

Modelling approach

The modelling utilises a top-down approach, based on a calculation of the future energy requirements of electric car and van owners across the United Kingdom.

The projection of EV sales assumed in the model is in line with the Office for Zero Emission Vehicles (OZEV) 2035 delivery plan range and the Net Zero Strategy[110] transport scenario. This uptake projection represents one potential trajectory to achieving road transport decarbonisation ambitions.
This corresponds to BEVs comprising 24% of total cars on the road and 14% of total vans on the road.

109 In our analysis a chargepoint is defined as the equipment required to supply energy to an EV. It is assumed that each chargepoint has only one connector meaning that it is only capable of charging one electric vehicle at a time.

110 Transitioning to zero emission cars and vans: 2035 delivery plan – OZEV (2021): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005301/transitioning-to-zero-emission-cars-vans-2035-delivery-plan.pdf
Net Zero Strategy: Build Back Greener – BEIS (2021), Technical Annex, Table 10: https://www.gov.uk/government/publications/net-zero-strategy

A detailed model map is presented below, outlining key inputs and calculation steps that underpin the chargepoint projections:

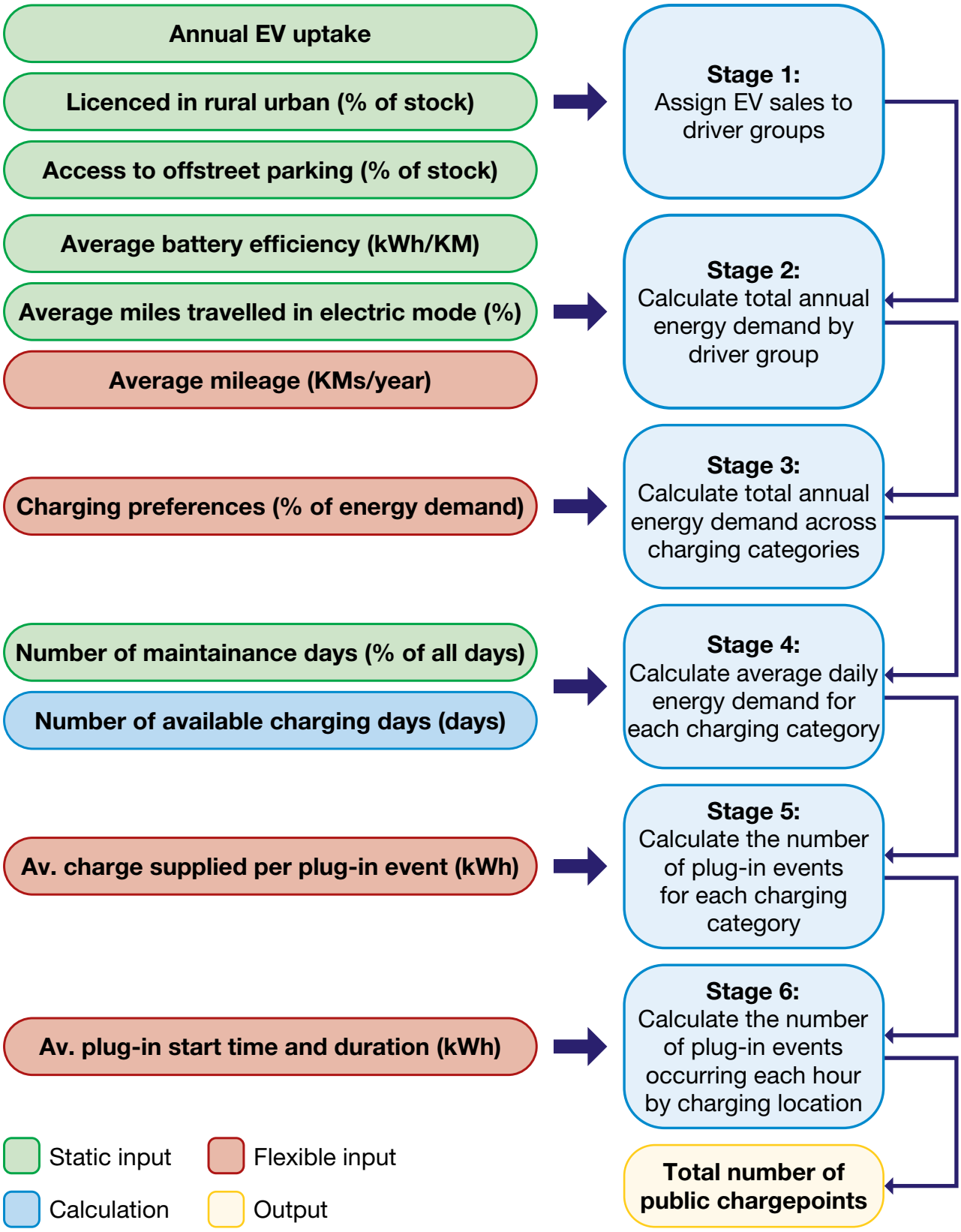


Figure 1 – Chargepoint Demand Model Map

Scenarios

A set of scenarios have been produced to underpin the estimates illustrating the scale of infrastructure rollout needed under credible 2030 outcomes. As illustrated above in Figure 1, four key assumptions have been adjusted to reflect the areas of major uncertainty:

1. Vehicle mileage
2. Where drivers prefer to charge
3. How frequently drivers charge
4. How long drivers occupy a chargepoint.

These assumptions have been selected due to significant uncertainty around how they may change over time as the market develops from its current early stage, as well as the potential scale of impact on modelling outputs. All other assumptions have been kept constant across the scenarios. More detail on these four areas can be found in the sections below and a full list of assumptions and sources can be found in Table 5 at the end of this annex.

1. Mileage

Annual mileage is a key factor in determining the energy requirements of EV owners. At Stage 2 of the model map above, three mileage levels have been tested and are displayed in Table 1 below. An additional assumption is then applied to plug-in hybrids (PHEVs) to account for the fact that only a proportion of their annual miles will be driven in electric mode.

	Cars	Vans
Low	7,700	11,500
Central	8,500	12,700
High	9,400	14,000

Table 1 – Annual mileage in 2030 (miles per year)

2. Charging preferences of drivers without off-street parking

As set out in the EV Infrastructure Strategy there will be a variety of suitable locations for an EV owner to charge in the future – at home, at work, on a residential street, at a destination or on-route to a destination. Anticipating where drivers without off-street parking will charge is very difficult as it will depend on several variables such as the price or convenience of charging at each location. These factors will become more certain once more EVs are adopted by drivers without off-street parking. To account for this uncertainty the impact of three illustrative sets of charging preferences have been tested[111] at Stage 3 of the modelling.

a. **Existing behaviour / High workplace** – EV owners without off-street parking charge at a broad mix of public chargepoints.[112] It is assumed these drivers' source approximately 60% of their energy from a combination of residential on-street, destination and rapid chargepoints with the remainder at workplaces.[113]

b. **High on-street** – Over time, on-street charging becomes more prevalent. By 2035 it is assumed EV owners without off-street parking source 80% of their charging demand from on-street chargepoints.

c. **High destination / on-route** – Over time, destination and on-route charging becomes more prevalent. By 2035 EV owners without off-street parking source 80% of their charging demand from a combination of these two locations.

3. Amount of electricity supplied per plug-in event

Stage 5 of the modelling factors in the number of plug-in events required over the course of an average day to satisfy energy demand. A 'plug-in event' is defined as the entire period a chargepoint is occupied and includes the time the EV is charging and any remaining time the driver spends occupying the chargepoint after the charging is complete.

111 Charging preferences of EV owners with access to off-street parking are assumed constant across all scenarios. Charging preferences of EV owners are the same across the three preference sets in 2021. Preferences gradually diverge over time to 2035.

112 The illustrative preference set aligns closely with assumptions used by the ICCT (2020): Quantifying the electric vehicle charging infrastructure gap in the United Kingdom. This is based upon a study of existing charging behaviour from Element Energy (2019): Electric Vehicle Charging Behaviour Study.

113 It is assumed that PHEVs without access to off-street parking source 60% of their charging demand from workplace chargepoints and 40% from a combination of residential on-street and destination chargepoints.

As it is unrealistic to assume that all drivers fully charge their battery from 0% to 100% every time they plug-in, an assumption is required to define the amount of electricity that is supplied to the battery on average every time an EV plugs-in. Assumptions have been expressed below as the amount of charge that is added to the battery (as % of total capacity) per plug-in event. As illustrated in Table 2 below, it is assumed that on average each EV adds 55% to their battery every time they charge at an on-street chargepoint.

Given the significant uncertainty around future charging behaviour, the impact of reducing the amount of charge supplied (reflecting more frequent charging) and increasing the amount of charge supplied (reflecting less frequent charging) has been tested.

	On-street	Destination	Rapids
Low	40%	20%	45%
Central	55%	30%	55%
High	70%	40%	65%

Table 2 – Average additional charge supplied per plug-in event (% of battery capacity)

4. Plug-in duration

Stage 6 of the modelling involves distributing plug-in events throughout the hours of the day. This stage of calculation is important as it accounts for public chargepoints being shared amongst EV drivers and potentially used more than once per day.

Plug-in events are distributed in line with the charging patterns observed by existing EV owners[114] and differ across charging categories. For example, it is assumed that the greatest proportion of plug-in events at destination chargepoints begin at 08:00 (13%), whilst the greatest proportion of plug-in events at on-street chargepoints begin at 17:00 (11%). Distributing plug-in events across the day enables us to calculate the number of plug-in events occurring each hour. By observing the hour with the greatest number of plug-in events taking place, it is possible to estimate how many chargepoints are occupied during the peak hour and therefore the number of chargepoints required.

A key assumption influencing the number of plug-in events taking place in any hour is how long drivers occupy a chargepoint, including time plugged-in and not actively drawing charge. Table 3 below shows the assumptions that have been used for each chargepoint location. The 'Low' captures a scenario where drivers plug-in for a shorter period relative to the 'Central' whilst the 'High' captures a scenario where drivers plug-in for longer.

It is important to note that this assumption alone does not alter the active charging time which is determined in Stage 5. Figure 2 on the following page illustrates this impact for the on-street category, where all scenarios see over four hours of active charging, with an additional 8 hours of additional plug-in time after the battery is fully charged in the high scenario.

	On-street	Destination	Rapids
Low	08:45	01:59	00:24
Central	10:45	02:59	00:29
High	12:45	03:59	00:34

Table 3 – Average plug-in duration (hh:mm)

114 HMG (2018): Electric Chargepoint Analysis – https://www.gov.uk/government/statistics/electric-chargepoint-analysis-2017-public-sector-fasts

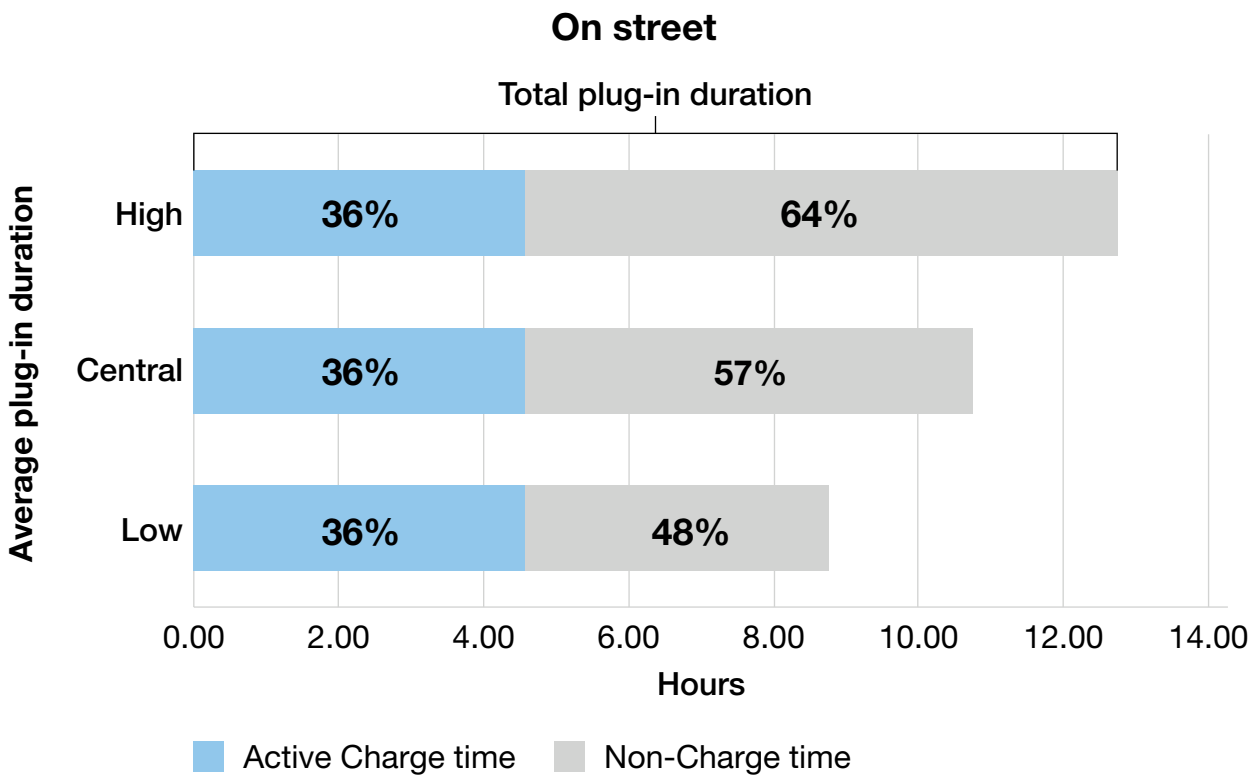


Figure 2 – Proportion of time plugged in vs actively charging

The four assumptions described above have been combined to create the set of results presented in Table 4. In the 'Low' scenario mileage, charge supplied, and plug-in duration values are lower than the Central, capturing a scenario reflecting low chargepoint need. Conversely, the 'High' scenario captures high chargepoint need. These scenarios have been repeated across different chargepoint preference sets, outlined in the sections above, to provide estimates of low and high chargepoint need.

The scenarios presented capture a broad range of behaviour to account for known future uncertainty surrounding how frequently drivers charge, how long they occupy a chargepoint, how far they drive and where they prefer to charge. The results from the modelling do not represent absolute minimum and maximum chargepoint requirements. We have used the best available evidence to provide a credible range of results and to illustrate the potential scale of roll-out needed in 2030.

Results

The results from our scenarios indicate that between 280,000 and 720,000 public chargepoints could be needed to support ambitious EV sales trajectories by 2030. Table 4 provides a breakdown by chargepoint category.

The tables illustrate the level of chargepoint demand that could be required for public chargepoints on residential streets, at destinations such as supermarkets and on-route at rapid charging stations. It also highlights the highest and lowest bounds of the estimated range across all scenarios in red.

Preference set A: Existing behaviour / High workplace

	Low	Central	High
Residential on street	125,000	155,000	225,000
Destination	140,000	175,000	220,000
Transit	14,000	15,000	16,000
Total public	**280,000**	350,000	460,000

Preference set B: High On-street

	Low	Central	High
Residential on street	270,000	340,000	490,000
Destination	140,000	170,000	215,000
Transit	9,000	10,000	11,000
Total public	420,000	520,000	**720,000**

Preference set C: High destination & on-route

	Low	Central	High
Residential on-street	70,000	90,000	130,000
Destination	300,000	370,000	475,000
Transit	15,000	16,000	18,000
Total public	390,000	480,000	620,000

Table 4 – Results[115]

115 On-street and destination chargepoints rounded to nearest 5,000. On-route chargepoints rounded to nearest 1,000.

The lower requirement of 280,000 public chargepoints represents the scale expected in a scenario where consumers without off-street parking continue to charge at the types of locations currently observed, including a significant amount of workplace charging (which are not classed as public chargepoints). This level of provision translates to approximately nine BEV drivers without access to off-street parking for every one public chargepoint.[116,117]

The high end of the range reflects a scenario where most of the charging by drivers without off-street parking is done at on-street residential chargepoints with 490,000 chargepoints needed to meet demand. This level of provision translates to approximately four BEV drivers without access to off-street parking for every one public chargepoint.

Modelling Constraints

The CDM is an economic model which by nature is unable to capture all behaviours across the chargepoint market. There is inherent uncertainty regarding the modelling results as the electric vehicle and chargepoint market is still at an early stage of development. There is uncertainty about future consumer preferences and behaviour, and how the market will respond to these.

Below is a list of technical modelling constraints that should be considered alongside these estimates:

- There is no spatial component to the model. As such, it assumes perfect geographical distribution of chargepoints, where drivers can always access chargepoints at the locations they want, when they need to. Accounting for this element would likely increase the number of chargepoints required.
- No investment or planning foresight has been assumed. Chargepoints are required to meet the direct charging needs of EV drivers rather than to incentivise uptake or minimise installation or energy system costs. Accounting for this element would likely increase our projections in the short term (e.g. 2021-2035) and reduce our projections in the long term (e.g. 2035+).
- Modelling has been based on current known and widely used chargepoint technologies, future technology solutions are likely to enter the chargepoint/ EV market that may transform current assessments of consumer chargepoint demand.
- Estimates have been provided at a national level. Further analysis utilising area-specific inputs would be required to forecast requirements at a more granular (i.e. local) level.

116 In addition to public chargepoints, some EV drivers without access to off-street parking will have access to workplace chargepoints, which represents a significant charging category.

117 However, it is assumed that a small portion of demand from drivers with access to off street parking is also met by public charging.

- Energy demand is averaged equally across all days of the year. As such, the projections reflect the number of chargepoints required to meet peak demand on an average day; they do not reflect the number of chargepoints to meet peak demand on the busiest day of the year. Accounting for this element would likely increase the number of chargepoints required.
- Vehicle licencing data has been used to create rural and urban-based EV driver groups. It is known that some vehicles are licenced to the business address rather than an individual driver's address which could lead to an under or over-estimation of chargepoint requirements. For example, an increase in the number of rural-based EVs would increase public chargepoint requirements as these drivers are assumed to have higher mileage. However, this would be offset to some extent by the assumption that rural drivers have greater access to off-street parking, relative to urban-based drivers.

Detailed Assumptions

Assumption	Description
Electric Vehicle Uptake	Number of EVs (by year, vehicle type, powertrain)
Vehicle licence information	Proportion of EVs owners licenced to rural and urban areas (by year, vehicle type)
Access to Off-street Parking	Proportion of EV owners with access to off-street parking (by year, classification)
Chargepoint availability	Time chargepoints are unavailable due to maintenance
EV mileage	Average annual mileage (by year, vehicle type, powertrain)
Battery efficiency	Average battery efficiency (by year, vehicle type, powertrain)
Electric mode	Proportion of total miles in electric mode (by year, vehicle type) – applicable to PHEVs only.
Plug-in start time	Proportion of total charging events starting (by hour, location)
Plug-in duration	Median plug-in duration per charging event (by year, vehicle type, powertrain, location)
Charge supplied	Median charge supplied per charging event (by year, vehicle type, powertrain, location)

Table 5 – Assumptions log

Low	Central	High
Source		
HMG (2021): Transitioning to zero emission cars and vans: 2035 delivery plan[118]		
HMG (2020) National Travel Survey & HMG (2020) Vehicle Licence Statistics[119]		
HMG (2020) National Travel Survey[120]		
RAC Foundation (2018) – Development of the UK Public Chargepoint Network[121]		
Data in Table 1	HMG (2020) Road Traffic Forecasts[122]	Data in Table 1
Analysis of type approval (electricity consumption) data with a 'real world' uplift applied.		
Technical Report on the development of a World-wide Worldwide harmonised Light duty driving Test Procedure (WLTP)		
HMG (2018): Electric Chargepoint Analysis – Domestics, Public Sector Fasts and Local Authority Rapids[123]		
Data in Table 3	HMG (2018): Electric Chargepoint Analysis – Domestics, Public Sector Fasts and Local Authority Rapids	Data in Table 3
Data in Table 3	Data in Table 3	Data in Table 3

(Table 5 – Assumptions log continued)

118 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1005301/transitioning-to-zero-emission-cars-vans-2035-delivery-plan.pdf
119 https://www.gov.uk/government/collections/vehicles-statistics
120 https://www.gov.uk/government/statistical-data-sets/nts09-vehicle-mileage-and-occupancy#history
121 https://www.racfoundation.org/wp-content/uploads/Development_of_the_UK_CPN_Harold_Dermott_December_2018.pdf
122 https://www.gov.uk/government/collections/road-traffic-statistics
123 https://www.gov.uk/government/statistics/electric-chargepoint-analysis-2017-local-authority-rapids

APPENDIX 2

Policy paper

Strategic road network and the delivery of sustainable development

Contents

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National Highways and the strategic road network

The Strategic Road Network (SRN) is a network of 2,300 miles of strategic roads in England, which comprises the motorways and the strategic A roads. The SRN is a vital part of the national infrastructure, supporting the movement of people and goods, and is managed by the Strategic Road Network Delivery Plan (SRNDP), which is a 30 year plan for the SRN. The SRNDP is a key part of the Government's Transport Decarbonisation Plan (TDP) and the Government's Net Zero Strategy (NZS), which set out the Government's ambitions for the transport system to achieve net zero.

The Government has set out its vision for a sustainable transport system in its Transport Decarbonisation Plan, Gear Change, Bus Back Better and Active Travel England's Vision for Walking, Cycling and Wheeling. The Government's ambitions are for a transport system that enables people to live healthier lives, with more active travel and better access to public transport services, and for a transport system that is cleaner, quieter and healthier for everyone. The company's ambitions support strategic policy making authorities and community groups responsible for preparing local and neighbourhood plans to bring forward sustainable transport interventions, including active travel schemes, and to seize opportunities to maximise walking, wheeling, cycling, public transport and shared travel have been identified in the TDP.

The SRN is a strategic network with limited capacity and will need to be managed to ensure it supports the delivery of sustainable development and economic growth. Strategic and guidance that aim to maximise the negative environmental impacts of development, including:

- the NPPF
- the National Infrastructure plan
- Clean Growth Strategy
- Clean Air Strategy
- the Net Zero Strategy
- national design guide
- Manual for Streets design guide
- local authority transport
- inclusive mobility
- Government's Vision for Cycling
- the Government's Walking Investment Strategy

Local transport plans guidance and an update to Planning for Streets will also be published in due course.

The Transport Decarbonisation Plan and the Future of Freight Plan also recognise that local planning and highways authorities need keep where practicable to sustainable transport and developing innovative policies to reduce car dependency. This includes ensuring that local authorities have the capacity and capability to deliver transport capacity (and/or provision of alternatives) and planning that will use sustainable transport and to achieve and provides the transport solutions to deliver those outcomes (proposed in the Transport Decarbonisation Plan and the Future of Freight Plan) are in place and managed. The company will support local authorities in achieving the net zero ambitions and engagement with their plan-making and decision-taking stages, while recognising the limited capacity of the SRN and supported by certain interventions to ensure it is fit for purpose and/or location.

The role of this document

This document is the policy of the Secretary of State in relation to the SRN which supports the delivery of sustainable development. It is for local authorities, planning and highways authorities, national planning policy, to be read alongside planning policy guidance, national design guide, National Planning Policy Framework (NPPF), Planning Practice Guidance (PPG), Planning for Sustainable Development and Transport Infrastructure (PSDTI) and setting out the strategic approach to planning and development proposals under the Town and Country Planning Act 1990 (TCPA) and Planning and Compulsory Purchase Act 2004 (PCPA) and the national significant infrastructure project (NSIPs) regime. It is the strategic policy in the relevant national policy statement. This document replaces the policies in the Government's Circular 02/13 (Circular 02/13).

It has been prepared by the Secretary of State and National Highways to support the development industry, public bodies and communities to assist the delivery of sustainable development. It is for local authorities, planning and highways authorities, and other bodies responsible for preparing local and neighbourhood plans, local authorities, sub-national transport bodies, local enterprise partnerships, combined authorities, and other bodies responsible for preparing local and neighbourhood plans, urban regional the SRN.

The circular is applicable to the whole of the SRN, comprising the trunk motorways ("motorways") and strategic trunk roads (MTR's) in England, including those trunk managed by the Design, Build, Finance and operate companies. For the avoidance of doubt, the Secretary of State's Strategic Road Network (SRN) is applicable in relation to its functions within the SRN.

Principles of sustainable development

The Company will aid in the development of sustainable development and sustainable development. In this context, the company's licence agreement defines sustainable development as "the ability to meet the needs of the present without compromising the ability of future generations to meet their own needs". The company's licence agreement requires the company has an important role to play in the drive towards zero emission transport and sustainable transport. The Government's Transport Decarbonisation Plan (TDP) and the Government's Net Zero Strategy (NZS) set out the ambitions for a sustainable transport system to achieve net zero.

The Government's ambitions are for a transport system that enables people to live healthier lives, with more active travel and better access to public transport services, and for a transport system that is cleaner, quieter and healthier for everyone. The company's ambitions support strategic policy making authorities and community groups responsible for preparing local and neighbourhood plans to bring forward sustainable transport interventions, including active travel schemes, and to seize opportunities to maximise walking, wheeling, cycling, public transport and shared travel have been identified in the TDP.

The SRN is a strategic network with limited capacity and will need to be managed to ensure it supports the delivery of sustainable development and economic growth. Strategic and guidance that aim to maximise the negative environmental impacts of development, including:

- the NPPF
- the National Infrastructure plan
- Clean Growth Strategy
- Clean Air Strategy
- the Net Zero Strategy
- national design guide
- Manual for Streets design guide
- local authority transport
- inclusive mobility
- Government's Vision for Cycling
- the Government's Walking Investment Strategy

Local transport plans guidance and an update to Planning for Streets will also be published in due course.

The Transport Decarbonisation Plan and the Future of Freight Plan also recognise that local planning and highways authorities need keep where practicable to sustainable transport and developing innovative policies to reduce car dependency. This includes ensuring that local authorities have the capacity and capability to deliver transport capacity (and/or provision of alternatives) and planning that will use sustainable transport and to achieve and provides the transport solutions to deliver those outcomes (proposed in the Transport Decarbonisation Plan and the Future of Freight Plan) are in place and managed. The company will support local authorities in achieving the net zero ambitions and engagement with their plan-making and decision-taking stages, while recognising the limited capacity of the SRN and supported by certain interventions to ensure it is fit for purpose and/or location.

New connections and capacity enhancements

New connections (for example, new junctions or direct accesses) on the SRN lead to more weaving and turning manoeuvres, which in turn create additional risk to safety and reduce the capacity of the network. Such proposals will be considered only if overall national economic benefit outweighs disadvantages.

Dc.Ds bases the principle of creating new connections on the SRN should be identified at the plan-making stage in consultation with the company and local authority potential impacts on the SRN can be considered alongside whether such new connections are consistent with the company's strategic aims. The company will need to be satisfied that all reasonable options to reduce vehicle movements, weaving, wheeling and parking, public transport and shared travel to assist in reducing the need for the connection. Where a new connection is proposed, the company will need to transport trends (or areas that can be made more sustainable) have been explored before considering options for new connections to the SRN. There may also be limited opportunities to provide new connections to the SRN to enable the delivery of programmes to support local economic growth, although requirements will be subject to the overarching principle of sustainable transport interventions.

DT.Ds Where this had not occurred, there will be no new connections or those sections of the strategic road network are required by NPPF/PSDTI other than those for strategic regional roadside facilities, emergency vehicle access, public transport interchanges and those for non-motorised users (NMU) and public transport. Where NMU and public transport are provided safely. The company will not permit new connections to serve isolated Roads and Bridges (SRNB), new connections to stop or connection roads will be considered only if they are in the public interest.

DT.Ds There may be a need to provide a new or improved junction to provide a longer-term solution, for example, where a local authority has a long-term plan for a new or improved junction, Additionally, further through access to other developments may be restricted by the decision-maker.

DT.Capacity enhancements such as modifications to existing junctions or road widening to facilitate development should be determined on a case-by-case basis. The company will consider proposals to improve the SRN where they will enable or improve community connectivity and public transport accessibility. Such proposals will be weighed against any negative safety, traffic flow, environmental and deliverability impacts. Where such proposals are required, the company will need to be satisfied that the proposed scheme will not have a significant adverse impact on the SRN.

DT.Where new connections and capacity improvements to the SRN are being accepted, the relevant authorities and development proponents should fully consider this scoping with respect to the stability of development[TPDSI.2].

DT.The SRNB and are the statutory of the Secretary of State's requirements for access, design and audit in the highway scheme design process to which development proposals are subject. The Design Manual for Roads and Bridges (DMRB) specifies identifies the framework and approach for safety and operational assessments undertaking any activity that may have an impact on safety on the SRN. Proposals in accordance with the DMRB will be required to demonstrate that the impacts on the company can review impacts that would lead to overall a significant adverse impact. Proposals modifications to the SRN, which enable opportunities for new or improved access, junctions, or other modifications to the SRN, which enable or improve community connectivity and public transport accessibility. Such proposals will be weighed against any negative safety, traffic flow, environmental and deliverability impacts. Where such proposals are required, the company will need to be satisfied that the proposed scheme will not have a significant adverse impact on the SRN.

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DT.Where new connections and capacity improvements to the SRN are being accepted, the relevant authorities and development proponents should fully consider this scoping with respect to the stability of development[TPDSI.2].

Engagement with plan-making

General principles

DN. The NPPF provides that transport issues should be considered from the earliest stages of plan-making and development proposals so that sustainable transport can be promoted. In relation to the preparation of local plans and spatial development strategies, the company will need to be consulted on the transport implications of the company from the outset of the process, to understand the strategic road network and see designations and the impacts on road safety and future performance of the SRN. Local authorities should ensure that the SRN is not adversely affected by proposals and will provide a robust assessment of the potential impacts on the SRN and how the plan will enhance transport strategy and the Strategic Environmental Assessment (SEA) or the Sustainability Appraisal (SA) should include an assessment of the impacts on the SRN.

DT. In exercising its duties as a statutory consultee in the development of local plans, infrastructure Act 2015 sets out that the company must co-operate as far as reasonably practicable with local authorities, in relation to matters which are expected to have a cross-boundary or strategic effect.

DN. The policies and allocations that would flow plan-making must not compromise the SRN's ability to provide the long-distance connections and capacity given. When the company exists local authorities[TPDSI.2.1] the development of their plans and strategies, the company will need to be consulted on the transport implications of the SRN and the implications of the allocations and policies. Where this is not the case, further in SRN development section (such as logistics and manufacturing). The company will need to be satisfied that all reasonable options to reduce vehicle movements, weaving, wheeling, parking, public transport and shared travel have been explored before considering options for new connections to the SRN.

DN. New connections and capacity improvements to the SRN which are necessary to operate strategic growth should be identified at the plan-making stage and provide the best opportunity to consider the cumulative impacts of development and to identify the most sustainable solutions. The company will need to be satisfied that all reasonable options to reduce vehicle movements, weaving, wheeling, parking, public transport and shared travel have been explored before considering options for new connections to the SRN. There may also be limited opportunities to provide new connections to the SRN to enable the delivery of programmes to support local economic growth, although requirements will be subject to the overarching principle of sustainable transport interventions.

DN. Where this had not occurred, there will be no new connections or those sections of the strategic road network are required by NPPF/PSDTI other than those for strategic regional roadside facilities, emergency vehicle access, public transport interchanges and those for non-motorised users (NMU) and public transport. Where NMU and public transport are provided safely. The company will not permit new connections to serve isolated Roads and Bridges (SRNB), new connections to stop or connection roads will be considered only if they are in the public interest.

DN. There may be a need to provide a new or improved junction to provide a longer-term solution, for example, where a local authority has a long-term plan for a new or improved junction, Additionally, further through access to other developments may be restricted by the decision-maker.

DT. Capacity enhancements such as modifications to existing junctions or road widening to facilitate development should be determined on a case-by-case basis. The company will consider proposals to improve the SRN where they will enable or improve community connectivity and public transport accessibility. Such proposals will be weighed against any negative safety, traffic flow, environmental and deliverability impacts. Where such proposals are required, the company will need to be satisfied that the proposed scheme will not have a significant adverse impact on the SRN.

DN. Where new connections and capacity improvements to the SRN are being accepted, the relevant authorities and development proponents should fully consider this scoping with respect to the stability of development[TPDSI.2].

DN. The company will not be satisfied and may restrict the approach to the forthcoming of new connections on the remainder of the SRN, determining such cases on a case-by-case basis. Where such proposals are required, the company will need to be satisfied that all reasonable options to reduce vehicle movements, weaving, wheeling and parking, public transport and shared travel to assist in reducing the need for the connection. Where a new connection is proposed, the company will need to transport trends (or areas that can be made more sustainable) have been explored before considering options for new connections to the SRN. There may also be limited opportunities to provide new connections to the SRN to enable the delivery of programmes to support local economic growth, although requirements will be subject to the overarching principle of sustainable transport interventions.

DN. Where this had not occurred, there will be no new connections or those sections of the strategic road network are required by NPPF/PSDTI other than those for strategic regional roadside facilities, emergency vehicle access, public transport interchanges and those for non-motorised users (NMU) and public transport. Where NMU and public transport are provided safely. The company will not permit new connections to serve isolated Roads and Bridges (SRNB), new connections to stop or connection roads will be considered only if they are in the public interest.

DN. There may be a need to provide a new or improved junction to provide a longer-term solution, for example, where a local authority has a long-term plan for a new or improved junction, Additionally, further through access to other developments may be restricted by the decision-maker.

DT. Capacity enhancements such as modifications to existing junctions or road widening to facilitate development should be determined on a case-by-case basis. The company will consider proposals to improve the SRN where they will enable or improve community connectivity and public transport accessibility. Such proposals will be weighed against any negative safety, traffic flow, environmental and deliverability impacts. Where such proposals are required, the company will need to be satisfied that the proposed scheme will not have a significant adverse impact on the SRN.

DN. Where new connections and capacity improvements to the SRN are being accepted, the relevant authorities and development proponents should fully consider this scoping with respect to the stability of development[TPDSI.2].

Evidence base

DN. The NPPF expects local plans and spatial development strategies to be underpinned by a clear and transparent evidence base which demonstrates the authority's preferred approach to land use and strategic transport options, and the formulation of the local plan and strategies. The company is a statutory consultee in the development process to explore options to address the impacts on the SRN and the company's plans (including a reduction in the need to travel and integrating land use planning and transport, including active travel, public transport, shared mobility, cycling, public transport and shared travel.

DN. The Transport Decarbonisation Plan indicates that carbon emissions from car and van travel will need to reduce significantly to meet the Government's ambitions for net zero. The company will need to be satisfied that all options to reduce car and van use and be fully zero emissions at the tailpipe from 2035, the proposed action of growth in vehicle miles, and the Government's ambitions for a transport system that enables people to live healthier lives, with more active travel and better access to public transport services, and zero emissions and therefore complied with the requirements of the Climate Change Act 2008.

DT. Alongside this, the local authority should identify the key issues within their study area and the potential impacts on the SRN. The company's Strategic Road Network Strategy and Delivery Plan focuses on consultation with local authorities to the responsibility of the local authority contributing to strategic policy making functions and the development of local plans and strategies. The company will need to be satisfied that the proposed scheme will not have a significant adverse impact on the SRN. Where such proposals are required, the company will need to be satisfied that all options to reduce car and van use and be fully zero emissions at the tailpipe from 2035, the proposed action of growth in vehicle miles, and the Government's ambitions for a transport system that enables people to live healthier lives, with more active travel and better access to public transport services, and zero emissions and therefore complied with the requirements of the Climate Change Act 2008.

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Infrastructure delivery

DN. The company's investment plan plan-making will help inform the preparation of local plans. The company's investment plan will be prepared in the Transport Scoping. This evidence should provide a means of demonstrating to the examining inspector, local authorities and other stakeholders that the company's plan is robust and that the funding, partners and resources are in place to enable the delivery of infrastructure, so that there is realistic prospect that longer term investment can be secured within the Strategic Road Network.

Integration strategies

DN. Local plans and spatial development strategies should seek to better integrate the SRN with the wider road network and other transport modes to enhance connectivity, maximise opportunities for facilitate economic growth and support transport decarbonisation across the country.

DN. In line with the aims of promoting sustainable development and the commitment in the Transport Decarbonisation Plan (TDP) to ensure that the transport system is cleaner, quieter and healthier for everyone, the Government's TDP sets out that the consideration of development of safer and integrated network for pedestrians, wheelers, cyclists and horse riders.

Other plan making and site allocations

DT. The company is statutory consultee to the 'permission in principle' process and the development management process. The company will provide advice on development orders, and will be consulted on the potential impacts of development on the SRN that are identified through the assessment process.

DN. The SRNPD also confirms the Secretary of State's requirement for access, design and audit in the highway scheme design process to which development proposals are subject. The Design Manual for Roads and Bridges (DMRB) specifies the framework and approach for safety and operational assessments undertaking any activity that may have an impact on safety on the SRN. Proposals in accordance with the DMRB will be required to demonstrate that the impacts on the company can review impacts that would lead to overall a significant adverse impact. Proposals modifications to the SRN, which enable opportunities for new or improved access, junctions, or other modifications to the SRN, which enable or improve community connectivity and public transport accessibility. Such proposals will be weighed against any negative safety, traffic flow, environmental and deliverability impacts. Where such proposals are required, the company will need to be satisfied that the proposed scheme will not have a significant adverse impact on the SRN.

DN. The company will be consulted on the SRN activities necessary to operate strategic growth should be identified at the plan-making stage and provide the best opportunity to consider the cumulative impacts of development and to identify the most sustainable solutions. The company will need to be satisfied that all reasonable options to reduce vehicle movements, weaving, wheeling, parking, public transport and shared travel have been explored before considering options for new connections to the SRN. There may also be limited opportunities to provide new connections to the SRN to enable the delivery of programmes to support local economic growth, although requirements will be subject to the overarching principle of sustainable transport interventions.

DN. Where this had not occurred, there will be no new connections or those sections of the strategic road network are required by NPPF/PSDTI other than those for strategic regional roadside facilities, emergency vehicle access, public transport interchanges and those for non-motorised users (NMU) and public transport. Where NMU and public transport are provided safely. The company will not permit new connections to serve isolated Roads and Bridges (SRNB), new connections to stop or connection roads will be considered only if they are in the public interest.

DN. There may be a need to provide a new or improved junction to provide a longer-term solution, for example, where a local authority has a long-term plan for a new or improved junction, Additionally, further through access to other developments may be restricted by the decision-maker.

DT. Capacity enhancements such as modifications to existing junctions or road widening to facilitate development should be determined on a case-by-case basis. The company will consider proposals to improve the SRN where they will enable or improve community connectivity and public transport accessibility. Such proposals will be weighed against any negative safety, traffic flow, environmental and deliverability impacts. Where such proposals are required, the company will need to be satisfied that the proposed scheme will not have a significant adverse impact on the SRN.

DN. Where new connections and capacity improvements to the SRN are being accepted, the relevant authorities and development proponents should fully consider this scoping with respect to the stability of development[TPDSI.2].

Engagement with decision-taking

Statutory requirements

DN. The Town and Country Planning (Development Management Procedure) (England) Order 2015 (DMPO) and the Planning Regulations for consultation with the company in respect of applications submitted under the Town and Country Planning Act 1990 (and the provisions for the company to respond to those applications.

DT. When consulted on an application for planning permission, the company will ensure a response is provided within the statutory timeframe, or agreed timeframe. Where appropriate, representations will be accompanied by recommendations or unacceptable impacts on the SRN that are identified through the assessment process.

DN. The DMPO also confirms the Secretary of State's requirement for access, design and audit in the highway scheme design process to which development proposals are subject. The Design Manual for Roads and Bridges (DMRB) specifies the framework and approach for safety and operational assessments undertaking any activity that may have an impact on safety on the SRN. Proposals in accordance with the DMRB will be required to demonstrate that the impacts on the company can review impacts that would lead to overall a significant adverse impact. Proposals modifications to the SRN, which enable opportunities for new or improved access, junctions, or other modifications to the SRN, which enable or improve community connectivity and public transport accessibility. Such proposals will be weighed against any negative safety, traffic flow, environmental and deliverability impacts. Where such proposals are required, the company will need to be satisfied that the proposed scheme will not have a significant adverse impact on the SRN.

DN. The company will be consulted on the SRN activities necessary to operate strategic growth should be identified at the plan-making stage and provide the best opportunity to consider the cumulative impacts of development and to identify the most sustainable solutions. The company will need to be satisfied that all reasonable options to reduce vehicle movements, weaving, wheeling, parking, public transport and shared travel have been explored before considering options for new connections to the SRN. There may also be limited opportunities to provide new connections to the SRN to enable the delivery of programmes to support local economic growth, although requirements will be subject to the overarching principle of sustainable transport interventions.

DN. Where this had not occurred, there will be no new connections or those sections of the strategic road network are required by NPPF/PSDTI other than those for strategic regional roadside facilities, emergency vehicle access, public transport interchanges and those for non-motorised users (NMU) and public transport. Where NMU and public transport are provided safely. The company will not permit new connections to serve isolated Roads and Bridges (SRNB), new connections to stop or connection roads will be considered only if they are in the public interest.

DN. There may be a need to provide a new or improved junction to provide a longer-term solution, for example, where a local authority has a long-term plan for a new or improved junction, Additionally, further through access to other developments may be restricted by the decision-maker.

DT. Capacity enhancements such as modifications to existing junctions or road widening to facilitate development should be determined on a case-by-case basis. The company will consider proposals to improve the SRN where they will enable or improve community connectivity and public transport accessibility. Such proposals will be weighed against any negative safety, traffic flow, environmental and deliverability impacts. Where such proposals are required, the company will need to be satisfied that the proposed scheme will not have a significant adverse impact on the SRN.

DN. Where new connections and capacity improvements to the SRN are being accepted, the relevant authorities and development proponents should fully consider this scoping with respect to the stability of development[TPDSI.2].

DN. Where the company is consulted on planning applications, the company will need to be satisfied that the proposed scheme will not have a significant adverse impact on the SRN. Where such proposals are required, the company will need to be satisfied that all options to reduce car and van use and be fully zero emissions at the tailpipe from 2035, the proposed action of growth in vehicle miles, and the Government's ambitions for a transport system that enables people to live healthier lives, with more active travel and better access to public transport services, and zero emissions and therefore complied with the requirements of the Climate Change Act 2008.

DT. Alongside this, the local authority should identify the key issues within their study area and the potential impacts on the SRN. The company's Strategic Road Network Strategy and Delivery Plan focuses on consultation with local authorities to the responsibility of the local authority contributing to strategic policy making functions and the development of local plans and strategies. The company will need to be satisfied that the proposed scheme will not have a significant adverse impact on the SRN. Where such proposals are required, the company will need to be satisfied that all options to reduce car and van use and be fully zero emissions at the tailpipe from 2035, the proposed action of growth in vehicle miles, and the Government's ambitions for a transport system that enables people to live healthier lives, with more active travel and better access to public transport services, and zero emissions and therefore complied with the requirements of the Climate Change Act 2008.

Annex A: Relevant policy and guidance

Annex B: Glossary

Special types of development

Advertisements

RS. Advertisements within the highway boundary of the SRN are not permitted and the Highway Authority will not authorise advertisements adjacent to the highway. Such an excavation will be made for any functional or other advertisement by the company that is considered by the company for commercial purposes, or for consultation purposes, or for public safety.

CS. The company will not object to proposals for advertising consent for displays outside of the highway boundary of the SRN where they specifically mention that a road safety hazard resulting from driver distraction would be a direct consequence of the proposed display. Such proposals should be submitted to the company for a formal response using the relevant case, substance and the assessment of advertisements. These factors could present a safety concern for advertisements that: Are in the vicinity of a traffic signal, roundabout, or other complex traffic control; Have advertisement incorporate elements of traffic sign design, such as directional arrows.

Gateway structures and public art

S2. A general terms, the siting of gateway structures and public art within the highway boundary of the SRN will not be permitted for safety and operational reasons, although consideration will be given to the provision of gateway structures and public art outside/close to its used part the highway, would features on large scale proposals. Similarly, the siting of such features not in the SRN will only be acceptable where its location does not affect the safety of the highway. Developers are encouraged to discuss the design and delivery of their proposals with the company at the earliest opportunity.

Electronic communications apparatus

S13. Infrastructure for the provision of electronic communications networks must not cause a safety or environmental hazard to any road users, workers or third parties, and must not interfere with the operation of the highway, its drainage and other ancillary maintenance. Surface should not be caused by the laying of the infrastructure, or highway including pavement, surfaces, structures, drainage works and ancillary equipment, including, but not limited to, signs, signals, lighting and cameras, obscured. In addition, the proposals must be carried out without an unacceptable interference to traffic flow on the SRN.

S14. To flow and safe and where planning permission or a street works licence would be required to install such apparatus within the highway boundary of the SRN, network management, environmental and road safety considerations will be taken into account such. Details of the submission requirements can be found in the DPMB.

On-shore wind turbines

S15. Wind turbines should not be located where restricts need to pay particular attention to the siting tower, such as the immediate vicinity of connections, sharp bends, or where there is a blind summit in the road.

S16. Wind turbines should not be located where they would cause significant visual or mechanical failure, wind turbines should be sited at a minimum of height [illegible] 1.5 metres or height 1.1 times the tower from the highway boundary of the SRN.

S17. The company recognises that, in certain circumstances, a variation to the above requirements may be acceptable. In such cases, the developer should be aware that it may apply where there is a significant difference in elevation between the highway and proposed turbine location. The promoter will be required to demonstrate that any proposed variation from the above requirements is acceptable and does not pose unacceptable risk.

S18. The promoter of a wind turbine development must identify any impacts on the highway network, including the cumulative impact of other proposed developments and identify measures to mitigate those impacts. Such a proposal would need to be provided for any abnormal load deliveries to the site via the SRN.

S19. Access to the site for construction, maintenance and de-commissioning should be obtained from the local road network. A direct connection to the SRN will only be permitted in exceptional circumstances.

Developments with solar reflection

S5. Some developments, notably solar farms, and turbines and those with expansive glass facades, have the potential to create glint and glare which can affect road users and drivers. Where these developments would be visible from the SRN, promoters must provide a glint and glare assessment to demonstrate that no glare will be produced, which satisfies the company that safety on the SRN is not compromised.

Roadside facilities

General principles

G1. The primary function of roadside facilities is to support the safety and welfare of road users travelling on the strategic road network and not to serve the needs of the surrounding area, and create a safe, inclusive and accessible environment. In most cases it is the private sector to promote roadside facilities, although there may be a role for the company and local highway authorities to provide these where a need arises.

G2. This section sets the government's policy on the provision of roadside facilities on or near to the SRN and their operation by signing, to enable implementation of the policies prescribed in The Traffic Signs Regulation and General Directions 2016 ("the TSRGD") on the strategic road network.

G3. Roadside facilities that are located close to the strategic road network but not adjacent to junction must be signed for safety reasons. As such, new or improved facilities must be located within a maximum of 15 minutes drive time of the SRN. Signing of existing or improved roadside facilities will be the subject of a legal agreement between the company and operator of these facilities.

Spacing of general purpose facilities

T6. Roadside facilities perform an important safety function by providing opportunities for drivers to take a break from driving. Research has shown that taking breaks in advance of fatigue setting in should and take a break of at least 15 minutes is best practice.

T7. The network of signed roadside facilities on the SRN is intended to provide opportunities to stop at intervals of approximately half an hour. However, the timing is subjective as travel between services may be longer or shorter than half an hour.

T8. On this basis, the maximum distance between signed motorway service areas should be 28 miles. This is based on an average speed of 56 miles per hour. In practice, the actual distance between special services will be shorter, typically in the region of 30 minutes driving time.

T9. The distance between services can be shorter, but to protect the safety and operation of the SRN, the arrangements arrangements of facilities must comply with the requirements of DMRB. Where there is a need for a motorway service area between separation. The implication of technical technology to enable a reduction in driver attentions should also be a consideration for reduced spacing between services.

T9. In determining applications for new or improved sites, local planning authorities should take into account the need for the site to be in the interest of safety. For safety reasons, as informed by the maximum recommended distances set out above.

Spacing of freight facilities

T5. Drivers of heavy goods and public service vehicles are subject to a regime of mandatory rest breaks and need to be able to access safe, secure and well-lit with critical problems of compliance with such requirements.

R5. It is recognised that on certain parts of the SRN and at certain times a shortage of parking spaces for these vehicles which can lead to fatal safety issues due to stop and others requirements for mandatory breaks and rests. To alleviate the shortage, the company will consider, in the short term, the use of its land and highway for temporary of new parking sites. As a result, enabling motorbikes (Motorcycles and Mopeds) or near to the SRN must be retained for their continued and future use unless it can be shown that alternative provision is available.

R6. In areas where there is an identified need [illegible] the company will seek the relevant local planning authorities to ensure that local plan allocations and planning decisions are consistent with the requirements of the DMRB and DfT Circular 02/13. These circumstances, and planning authorities should have regard to the following spacing requirements:

(i) the maximum distance between motorway facilities (providing HGV parking (being service area or lorry/truck stop) should be no more than 14 miles; and

(ii) the maximum distance between WPTN facilities providing HGV parking (being service area or lorry/truck stop) should be the equivalent of 28 minutes driving time for HGV drivers.

(iii) Where the general spacing distance above are not met, in areas of HGV parking pressure, the company will support the case to address unmet demand, subject to an assessment of the safety of the proposed access or egress arrangements.

Trip generation

R3. Roadside facilities should not designed to serve passing traffic and not be destinations in their own right. Consequently, the transport assessment to accompany a planning application for a new or improved facility must show that there would only be negligible impact on the surrounding strategic road network. Such an assessment will need to be made for any proposals for a new or improved facility, or the provision of facilities that would meet the needs of commercial drivers and their vehicles.

Location

R4. On-line (between junctions) service areas are more accessible to users of the SRN than those located off-line (at junctions) and are preferred by the company. They also help to avoid an increase in traffic demand at junctions with all-purpose roads.

R5. Therefore, in circumstances where competing sites are under consideration and on the assumption that all other factors are equal, New facilities should be located on-line.

R6. However, where an on-line service area cannot be delivered due to planning, safety, operational or environmental constraints, the development of off-line facilities will be common boundary with the highway at a junction with the SRN, and which provides the minimum required facilities to meet the needs of the travelling public, should be considered to be preferred by the company.

R7. The company will not support proposals for roadside facilities adjacent to a junction with a motorway that will exceed the minimum requirements for roadside facilities set out in Table 1, as these can prevent or reduce the provision of more appropriate facilities.

R8. Where the provision of roadside facilities exceeds the minimum requirements, the company will seek to limit access to the SRN, where there would exceed the minimum requirements for signing and would not direct traffic through an established residential area.

Eligibility for signing

R9. The minimum requirements for roadside facilities to be eligible for signing from the SRN are set out in Table 1. For the purpose of managing traffic and safety on the strategic road network, the company will not in table 1 may be temporarily waived by the company at any roadside facility.

R9. The signing of roadside facilities and signing arrangements will also must comply with the Traffic Signs Regulations and General Directions 2016 (as amended), funding, installation and maintenance of signs is available from the company. Only in exceptional circumstances will non-prescribed signs be appropriate, and these must be authorised by the Department for Transport.

Access to the strategic road network

R9. The suitability of connections to roadside facilities from the local road network will be considered on a case-by-case basis by the relevant local planning authority as part of the development control process. Such connections will be considered acceptable in principle if the proposal meets the local road network and the SRN. In addition, any facility to accessed must be limited to left-in/left-out junctions, perhaps supplemented by an access to/from the local road network. Left-turn lanes, ghost islands, and other such features may be required to ensure safe access and egress.

R10. Access to other developments from roadside facility or from its connection to the SRN is not permitted. Furthermore, where a new connection is agreed for a roadside facility, the existing access to the SRN should be closed and returned to the permitted land use to be in accordance with paragraph 32 of this circular.

Retail activities and picnic areas

R11. Retail activities and ancillary activities at roadside facilities is a matter for consideration by the relevant local planning authority in line with planning policy and guidance. Such activities should be proportionate to the roadside facility and should not impact on the primary function of roadside facilities which is to support the safety and welfare of the road user

R11. Picnic area will be permitted at all types of roadside facilities.

Hotels, conference centres and business centres

R12. Hotels and other ancillary facilities may be considered by the relevant local planning authority as part of the development control process.

R6. As a statutory consultee to such proposals, the company will not object to the provision of hotels, conference centres and other ancillary facilities at roadside facilities where the impacts on safety and network capacity would be acceptable. Consideration will be given to the impact on the strategic road network is used and reduction in the general parking provision available to other road users.

Coach interchanges, park & ride and park & share

R7. Such developments will be a matter for consideration by the relevant local planning authority in line with planning policy and any other material considerations.

R8. As a statutory consultee to such proposals, the company will not object to the local transport benefits, particularly any reduction in trip mileage, and will not object where the impacts on safety and network capacity would be acceptable.

Driver and tourist information

R9. Operators of roadside facilities are encouraged to provide tourist information and make local, regional and national tourist information available.

Parking charges

R10. Where a charge is to be exacted for parking beyond the mandatory 2 free hours for signed roadside facilities as set out in table 1, the charges should be clearly displayed within parking areas and the amenity building(s). Drivers must at all times be able to understand the charge, the length of time they are parking, and without the necessity to use a mobile phone. Cycle parports must be accessible.

Mandatory parking provision

R10. Where a site is subject to a pre-existing roadside agreement which specifies the levels of parking provision, this must continue to apply until such time as the scale and/or scope of one or the activities is extended or reduced.

R12. Where the scale and/or scope of on-site activities is altered, the methodology set out in Table 1 should be used to determine the minimum requirements for the number of parking spaces by vehicle type. This methodology will also be used for calculating the level of parking provision for a new site under consideration. For the avoidance of doubt, the 2 free hours for HGV drivers and coach drivers is not to be included in numbers on site.

R13. Notwithstanding the provisions of the previous 2 paragraphs, parking needs may be considered to be exceptional in circumstances where the parking is for a special event where the company is satisfied that the parking provision is sufficient to meet the needs in such circumstances. In this regard, due consideration will be given to any site constraints where provision may be made for an increased number of spaces for HV.

Parking requirements

R14. The parking requirements for a motorway service area (MSA) are set out in table 2 of Annex A. In calculating the, the most recent available data should be used to identify the peak monthly traffic flow, which should then be averaged to find the daily flow. The peak hour flow should then be calculated by multiplying the daily flow by 0.09 (10% of the daily flow) and then calculated the number of parking spaces.

R15. The parking requirements for a motorway rest area are half of those required for a MSA as set out in Table 2. Rounded up to a whole number of spaces.

R16. The parking requirements for an MTPR service area are set out in table 3 of Annex A.

R17. The parking requirements for motorway truckstops are the same as the MSA requirements set out in Table 2 of Annex A, but with 10% of the total number of parking spaces, 1 space for a car, 1 space for a coach and 1 dimensional space must also be provided.

R18. The parking requirements for non-motorway truckstops (MTPR truckstops and those to be signed from the SRN) will be determined on a case-by-case basis.

Provision for zero-emission and hybrid vehicles

R19. The Road Charging Board was announced in the Road Traffic Act 2020 as part of the government's commitment to roll-out UK charging infrastructure. By 2030, government wants to see the majority of journeys on the strategic road network (SRN) to be powered by ultra-low emission vehicles (ULEV). The purpose of this programme is to ensure that there is a high-powered and open access charging network ready to meet customer needs. The network will be open to all ULEV drivers, regardless of vehicle ownership, convenient and cost-effective to use. (DfT and HE's Ultra-Low Emission Vehicle Strategy, 2021).

R19. In line with this, operators of motorway and MTPR service areas must support the uptake of zero-emission and hybrid vehicles through the installation and DfT charging points of their sites. All chargepoints should be user-friendly and accessible. In this regard, operators should ensure that the chargepoints are installed in locations that provide sufficient space to prohibit that do not hazardous vehicle charging sessions have started, ensure that chargepoints are working all year round, and provide free 24/7 telephone for users to report faulty chargepoints. Operators should also ensure that chargepoints are fitted (or be easily accessed by a mobile vehicle) and are bearing a number.

R20. The Office for Zero Emission Vehicles (OZEV) has worked with Polishalty and the Institute for Sustainability to develop the Electric Vehicle Charging in Residential Dwellings (YRD). YRD, the Certificate's first accessibility standard for the design and installation of public chargepoints. PAS 1899 was published in October 2019 and is intended to be followed by any public motorway service area public chargepoints.

R21. In addition, plans submitted with applications for roadside facilities must show how they support the conversion of parking spaces allocated for petrol or diesel vehicles (including HGVs, cars and coaches) for spaces with an EV chargepoint in the future without detriment to the overall parking provision.

Annex A: Roadside facilities tables

Table 1: Minimum requirements for roadside facilities to be eligible for signing from the SRN

Minimum requirements to be eligible for signing from the SRN (Mandatory P= Permitted)	Motorway service area	Motorway rest area	Motorway truck stops	MTPR truck stop	Truck stop signed from the SRN	Truck stop signed from the SRN*
Available 24 hours a day, 365 days of the year	Y	Y	Y	Y	Y	Y
Available at all times for Christmas Eve and Boxing Day and on every day between Christmas Day, Boxing Day and New Year's Day	Y	Y	Y	Y	Y	Y
Free parking for a minimum of 2 hours for all vehicles (including those to use the facility	P	P	P	P	P	P
Segregated parking for cars/light vehicles with trailers, caravans, approved/pre-matrix electrical vehicles and motor statement	Y	Y	P	P	P	P
Provision of security arrangements including monitoring, lighting and emergency call points	Y	Y	Y	Y	Y	Y
Free to use toilets with hand washing facilities, baby changing places toilet facilities, toilets with disabilities, and rest to use	Y	Y	Y	Y	Y	Y
Free to use purchase during opening hours	Y	Y	Y	Y	Y	Y
Shower and toilet facilities available for purchase (provision for showers, warmer), including toilets/shower to the shower/washing area	Y	P	P	Y	Y	Y
Provision of fuel (petrol, diesel and/or and EV chargepoints	Y	Y	P	P	P	P
Hot drinks and cooked fuel food available for purchase during all opening times, consumption on the premises	Y	Y	P	P	P	P
Hot drinks and fuel food available for purchase at least between 8am to 8pm for consumption off the premises	Y	Y	P	P	P	P
Access to a free 24 hour a day telephone for emergency use, including facilities purchase for disabled charging	Y	Y	Y	Y	Y	Y
Can an overnight stay be carried out for the purposes of the Drivers' Hours (Licensing of Operators) Act 1995 and the Public Service Vehicles (Operators' Licence) Rules 1995	Prohibited	Prohibited	Prohibited	Prohibited	P	P

Table 2: Parking requirements at motorway service areas

	Calculation***	Variable	Notes
Traffic flow (Vehicles per day) Footnote (a)		A	
Cars and light goods vehicles		B	
HGVs and coaches		C	
No. of parking spaces required Footnote (b)		D	
Cars	0.5% of A	C	
HGV	0.5% of B, or 1% of B in areas where there is an identified need	D	
Abnormal load	Minimum of 1		
Coach	0.1% of B	E	
Coach interchange Footnote (c)	No. of spaces subject to agreement	F	
Caravans/motorhomes/etc.	0.05% of A	F	
Plot size/pitch	0.05% of A (where the number falls below 10, a minimum of 10 spaces shall be provided)	G	Dedicated motorcycle spaces for security/safety
Additional car parking spaces for lodges	0% of C (where the number falls below 10, a minimum of 10 spaces shall be provided)	H	Located in proximity to the lodges
Caravan/motorhome/etc. and coach parking for disabled users	3% of C (where the number falls below 10, a minimum of 10 spaces shall be provided)	I	Located in proximity to the entrance of the amenity building/shop

Table 3: Parking requirements at all-purpose trunk road service areas

	Calculation***	
No. of parking spaces required Footnote (b)		
Cars	0.1% of A (see Table 2)	Minimum of 10
HGV	Minimum of 2	
Abnormal load	Minimum of 1	

Coach	Minimum of 1	
Coach interchange [footnote 34]	No. of spaces subject to agreement	
Caravan/motorhome/vehicle and trailer	Minimum of 2	
Motorcycle	0.015% of A (where the number falls below 10, a minimum of 10 spaces shall be provided)	Dedicated motorcycle spaces for securing bikes
Additional car parking spaces for lodges	One space per 2 bedrooms	
Car parking for disabled users	Minimum of 3 spaces and an additional minimum of 2 spaces for lodges	Located adjacent to the front entrance of the amenity building/lodges
Caravan/motorhome/vehicle and trailer parking for disabled users	Minimum of 1	Located adjacent to the front entrance of the amenity building/lodges

*Limited to a single or exceptionally 2 interconnected premises, accessed directly from the trunk road or a junction on the trunk road.

**See paragraph on exception to these location requirements.

***The company can assist with these calculations.

1. The strategic road network comprises the trunk motorways and all-purpose trunk roads in England as shown: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/677493/s170085_Network_Manangement_Map.pdf
2. As set out in the Road Investment Strategy 2: 2020-2025 report.
3. Local planning authorities, and elected mayors or combined authorities where planning powers have been conferred.
4. The Major Road Network forms the middle tier of the busiest and most economically important local authority 'A' roads.
5. Net zero highways: our 2030 / 2040 / 2050 plan.
6. RTPI Research paper: The Location of Development (December 2021).
7. This will include (but is not limited to) fibre-optic broadband and co-working/home office spaces as well as sustainable transport infrastructure.
8. The NPPF sets out the national policy position in respect of sustainable development considerations for rural housing.
9. Active Travel England will also champion the delivery of sustainable transport options within the planning system.
10. High-speed traffic routes are motorways, and all-purpose dual carriageways with partially or comprehensively limited access.
11. This will include construction costs, relevant fees and a commuted lump sum regarding future maintenance.
12. Design agents appointed by development promoters will be expected to demonstrate conformity with the quality management systems that the DMRB requires for designers working for the company; failing which designs may be subject to additional checks and approvals.
13. Local authority refers to the public authority whose duty it is to carry out specific planning or highway functions for a particular area. All references to local authority include the district council, London borough council, county council, combined authorities, mayoral authorities, sub-national transport bodies, local enterprise partnerships, Broads Authority, National Park Authority, the Mayor of London and a development corporation, to the extent appropriate to their responsibilities.
14. This may include opportunities for a rail network connection in addition to having a close proximity to the SRN and customers.
15. Strategic policy-making authorities must also refer to the planning practice guidance when producing their transport evidence.
16. Or the principles of the National Design Guide and National Model Design Code where these have not been prepared.
17. Inclusive mobility establishes spacing requirements and other relevant considerations in providing for an inclusive environment.
18. Details of the company's pre-application advice service can be found at: https://nationalhighways.co.uk/our-roads/planning-and-the-strategic-road-network-in-england/
19. The NPPF establishes the weight to be given to policies in emerging plans.
20. Opportunities to maximise sustainable transport solutions will vary between urban and rural areas.
21. Where development proposals are consistent with an up-to-date plan or strategy (or where there is no up-to-date plan or strategy), this should include all relevant development that is consented or allocated where there is a reasonable degree of certainty will proceed within the next 3 years and include the full amount of development to be built. Where development proposals are not consistent with an up-to-date plan or strategy, this should include all relevant development that is consented or allocated over the entirety of the plan period. In some instances, due regard should be had to permissions and allocations in neighbouring authorities. The inclusion or exclusion of specific developments should be agreed with the local planning authority at pre-application stage.
22. This will normally be instances where the improvement is identified in the company's RIS, has funding secured by other means and/or where this is linked to a committed development scheme; and for works to the SRN, the scheme should be at PCF Stage 3 preliminary design or later in its development process.
23. The special considerations which apply to the siting of wind turbines are set out in this paragraph.
24. An informal connection refers to surface water run-off and a formal connection to an engineered connection.
25. The height measurement of a wind turbine shall be taken from ground level to the tip of the rotor blade.
26. This will be informed by regular updates to the Department for Transport's National Lorry Parking Survey and demand assessments undertaken by the company to ensure that appropriate evidence is available on the national picture.
27. Including facilities which provide services to general motorists as a secondary activity.
28. Rapid charging fund guidance (September 2021)
29. Publicly Available Specification for accessible charging: https://www.bsigroup.com/en-GB/standards/pas-1899/
30. Where supporting information is available, operators may wish to increase the number of parking spaces for particular types of vehicles in recognition of the make up of the road users served by the facility.
31. Parking for disabled travellers should be clearly signed at the entrance to the services.
32. Where such a facility has been permitted.
33. Parking for disabled travellers should be clearly signed at the entrance to the services.
34. Where such a facility has been permitted.

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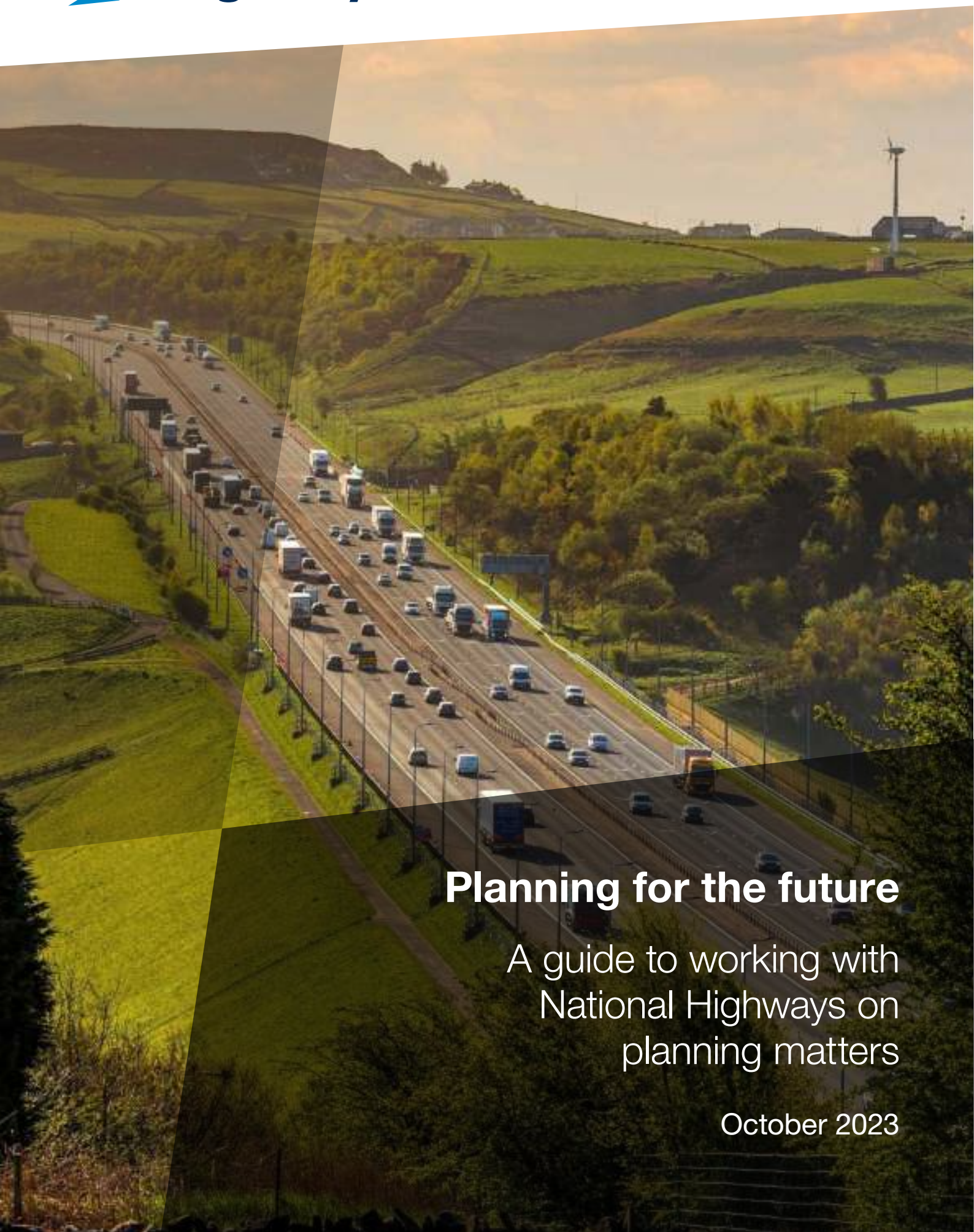
APPENDIX 3

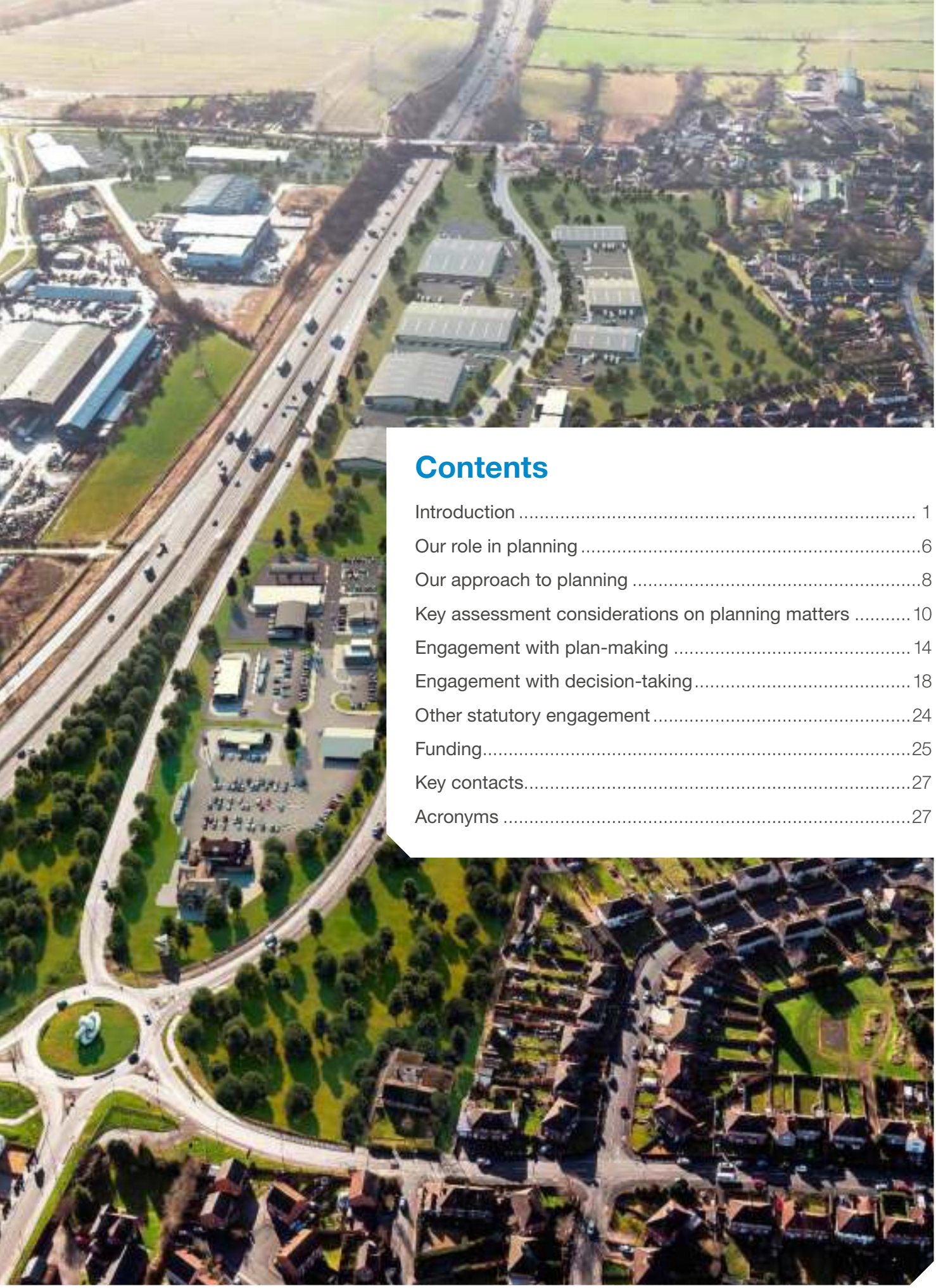
national highways



Planning for the future

A guide to working with National Highways on planning matters

October 2023



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Introduction

1. This document, our planning guide[1], describes the approach we take to engaging in the planning system and the issues we look at when considering draft planning documents and planning applications. It should be read in conjunction with the Department for Transport (DfT) Circular 01/2022[2]: *Strategic road network and the delivery of sustainable development*, which explains how National Highways will engage in the planning system and sets out the policy of the Secretary of State for Transport in relation to the strategic road network (SRN).

2. The guide provides further advice on the information we would like to see included in a planning proposal and outlines the support we can offer at every stage of the planning process. Like DfT Circular 01/2022, it is aimed at development promoters and their consultants, strategic policy-making authorities, local highway authorities, sub-national transport bodies, local enterprise partnerships, community groups and others involved in development proposals which may result in any traffic or other impact on the SRN.

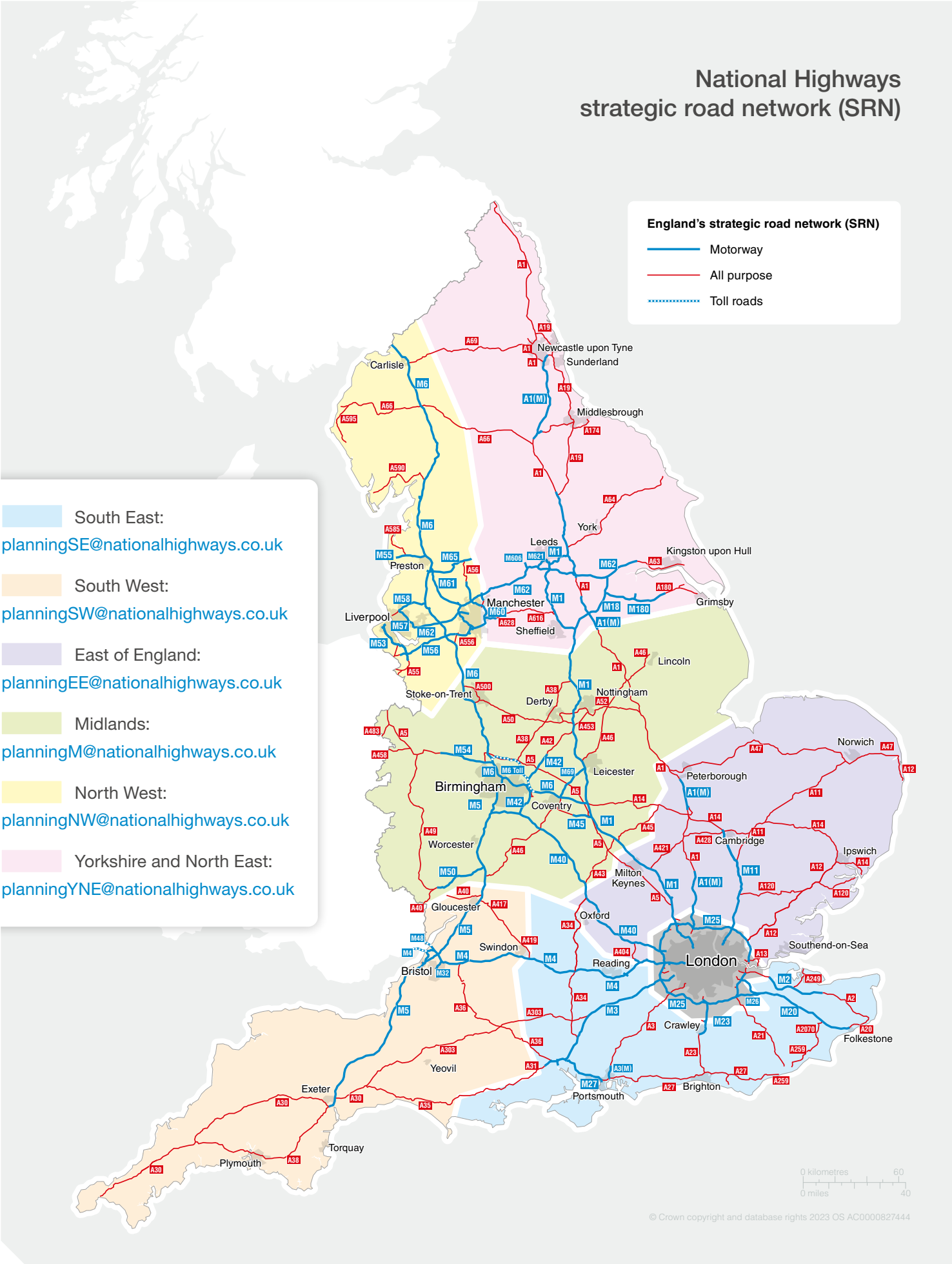
3. This guide is written in the context of statutory responsibilities as set out in our operating licence and in planning legislation, and in support of Government policy including the *National Planning Policy Framework* (NPPF) and the DfT Circular 01/2022.

The role of the SRN in supporting a net zero Britain

4. The SRN is arguably the biggest and single most important piece of infrastructure in the country (at 31 March 2022, the assets we hold were valued at £144.2 billion). The trunk motorways and all-purpose trunk roads that comprise the SRN are the most heavily used part of the national road network; they carry a third of all traffic and two-thirds of all freight.

1 This version replaces the initial Planning Guide published in 2015.
2 https://www.gov.uk/government/publications/strategic-road-network-and-the-delivery-of-sustainable-development

Figure A: SRN and regional spatial planning areas



5. As set out in the *Road investment strategy 2: 2020 to 2025*[3], the principal purpose of the SRN is to enable safe, reliable, predictable, efficient, often long distance journeys of both people (whether as drivers or passengers) and goods in England between:

   - main centres of population
   - major ports, airports and rail terminals
   - geographically peripheral regions of England
   - chief cross-border routes to Scotland and Wales

6. The SRN therefore provides critical links between our cities and other urban areas, serves as a gateway to global markets and travel destinations, connects our communities with families and job opportunities, and binds and strengthens our union. It drives productivity and prosperity by unlocking growth, encouraging trade and attracting investment, and plays a vital role in levelling up the country.

7. As set out in *Connecting the country: our long-term strategic plan to 2050*[4], National Highways' 2050 vision is for the SRN to be part of a seamlessly-integrated transport system that meets our customers' needs by connecting the country safely and reliably, delivering economic prosperity, social value and a thriving environment.

8. Today, however, roads are seen by many to work against the ambitions of a zero carbon economy. Yet to deliver a net zero economy, our roads have to be net zero too. This is why:

   - **Britain relies on roads today** - roads and cars are an integral part of our transport system.
   - **Road travel will decarbonise fast** - while road travel represents a higher carbon way to travel in the UK today, this is changing fast.
   - **A new zero Britain will still travel by road in 2050** - while we support investment in all zero carbon transport options, investment in other forms of transport, such as rail, will make only a limited impact on how Britain moves.
   - **Investment in Britain's roads supports a thriving net zero economy** - today every £1 investment in the SRN returns over £2 to the economy. Our roads directly support sectors which employ 7.4 million people in the UK and contribute £314 billion Gross Value Added to the economy. The industries that rely on the road network are expected to grow by 35% by 2030, which will generate an additional £110 billion of UK growth.

9. For more information see *Net zero highways: our 2030 / 2040 / 2050 plan*[5] which aims to ensure our roads support the social and economic goals of our nation, while making sure we do so in an environmentally sound way.

3 https://www.gov.uk/government/publications/road-investment-strategy-2-ris2-2020-to-2025
4 https://nationalhighways.co.uk/our-roads/future-roads/connecting-the-country/
5 https://nationalhighways.co.uk/netzerohighways/

Working with us - early engagement

10. National Highways is a statutory consultee in the planning system. In discharging this responsibility, we act as a proactive partner. This guide aims to help you get the best out of your relationship with us and to show what you can expect from us. It sets out our approach to planning and what we look for when preparing and making decisions on plans and development proposals. The pages that follow explain our position, providing guidance and clarity on the matters that we shall have regard to, and what we are likely to find acceptable and unacceptable, to help you shape your proposals and ensure that they are sustainable in every sense.

11. This guide sets out how we, along with those acting on our behalf, will work to help you to assess and successfully manage the relationship between your proposed development and the SRN. We encourage all parties promoting and preparing plans or planning applications that could have an impact on the SRN to engage with us as early as possible.

12. Engaging with us early helps to ensure that issues which may take time to analyse and resolve are identified as soon as possible. We can then work together to establish a shared vision for the plan or proposed development, including:

    - considering the most appropriate locations for development
    - assessing the potential impact of development proposals on the SRN
    - enabling appropriate sustainable development (including considering how best to deliver the development, and any associated mitigation works, whilst minimising the adverse impacts that it might give rise to)
    - promoting journeys made by a range of modes other than private car, for example, by considering public transport, walking and cycling routes, whilst
    - maintaining the safety and efficiency of the SRN

Contacting us

13. Our response to planning enquiries is locally led through regional spatial planning teams who know and understand the SRN in their areas (see Figure A). This enables us to provide:

    a) strong intelligence, evidence and an understanding of how the SRN and surrounding local transport networks operate

    b) information on relevant local factors

    c) named contacts who are able to establish positive and productive relationships with all involved in the planning process

14. We would advise local stakeholders – planning officers, highways officers and development promoters – to focus their engagement with us via our regional spatial planning teams:

    - **South-East:** planningSE@nationalhighways.co.uk
    - **South-West:** planningSW@nationalhighways.co.uk
    - **East of England:** planningEE@nationalhighways.co.uk
    - **Midlands:** planningM@nationalhighways.co.uk
    - **North-West:** planningNW@nationalhighways.co.uk
    - **Yorkshire and North-East:** planningYNE@nationalhighways.co.uk

15. We also have a national spatial planning policy team who lead our corporate approach around supporting growth and our engagement with the planning system, including the writing of this guide. You can contact us at: spatialplanning@nationalhighways.co.uk.

16. In certain circumstances our Third Party Infrastructure team leads on our engagement with a given project. This is typically for Nationally Significant Infrastructure Projects (NSIPs) where the scale of the application itself or impact on the SRN requires a more strategic approach and longer-term, more resource-intensive engagement. Where this is the case, we will clearly communicate this with the development promoter and other relevant parties.

Limitations of this document

17. While this document sets out general principles by which we seek to engage and support the planning process, it cannot provide answers to all the questions that might arise. If you are uncertain about how to engage with us, or how we might approach a particular issue, please contact us at the email addresses provided.

Our role in planning

18. National Highways was appointed by the Secretary of State for Transport as a strategic highway company under the provisions of the Infrastructure Act 2015. We are responsible for operating, maintaining and improving the strategic road network (SRN) in England, in accordance with our operating licence issued by the Secretary of State for Transport, and Government policies and objectives.

19. Paragraph 7 of the Department for Transport (DfT) Circular 01/2022 establishes three overarching objectives for us when engaging in the planning system:

    - To enable the delivery of sustainable development.
    - To support the needs of the freight and logistics sector.
    - To mitigate the impact of growth on the natural environment.

20. In exercising our function as a statutory consultee in the planning system, we must co-operate as reasonably practicable with other parties with regards to highways or planning[6]. We must also have regard to the environment and the safety of our road users. Consequently, we are obliged to consider all proposals received and to provide appropriate, timely and substantive responses to the local planning authority as the decision maker.

21. Our desire to be a proactive planning partner goes beyond just our statutory role and follows the spirit of our operating licence which stipulates that we should support local and national economic growth and regeneration. We would therefore strongly encourage you to engage with us as early as possible when considering planning matters that might have an impact on the SRN.

22. We also commit to co-operating with local highway authorities and recognise that we have a responsibility to support and develop a more coordinated approach to planning on the SRN and the local highway network, as well as with neighbouring jurisdictions and other key infrastructure providers.

Road Investment Strategy funding

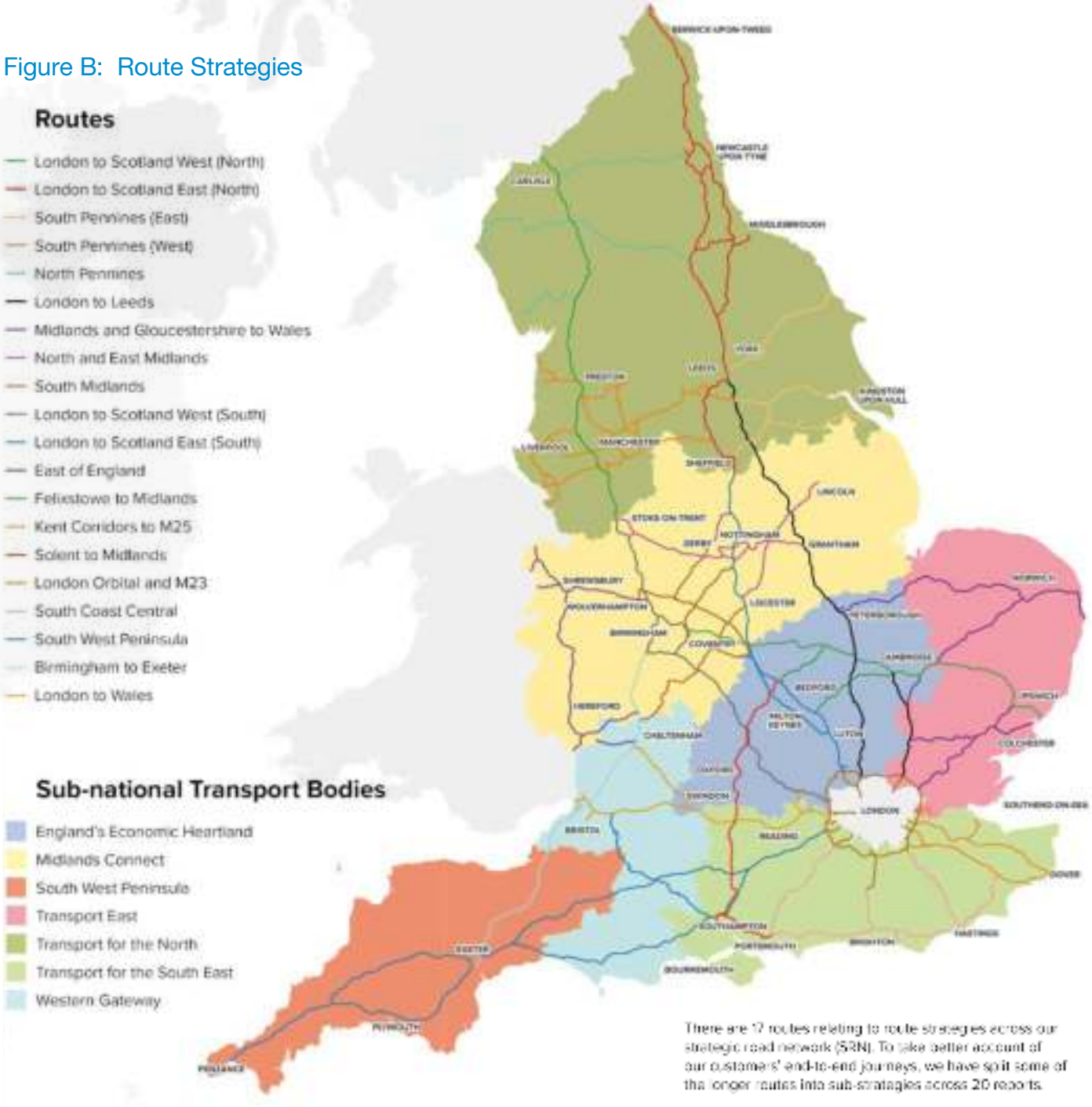
23. The Road Investment Strategy (RIS) programme is the Government's primary means of investing significantly in the SRN. It provides 5-year programmes of funding to enable National Highways to operate, maintain and enhance the SRN in the context of the key priorities set out in each RIS. The ambitions for our network over the 5-year periods are set out in our *Strategic business plan*[7] with our *Delivery plan*[8] detailing how we will invest our funding.

24. Route strategies are one of the key steps of initial research in the development of a RIS - in May 2023 we published our Route Strategy Initial Overview Reports[9]. National Highways has produced route strategies since 2015 and these have guided the vision, performance expectations and investment plans for the SRN. In developing the latest route strategies, we have set out:

    - A planned set of future requirements for the network that is responsive to environmental needs; that accounts for the performance of today as well as the challenges and opportunities of the future.
    - Actions and investment that improve the performance of our roads for future road periods that are grounded in evidence and informed by interested parties and road user input.

6 Section 5 of the Infrastructure Act 2015
7 https://nationalhighways.co.uk/strategic-business-plan/
8 https://nationalhighways.co.uk/delivery-plan/
9 https://nationalhighways.co.uk/our-roads/our-route-strategies/

Figure B: Route Strategies



- Opportunities for investment and integrated interventions that benefit the performance of our roads and meet wider connectivity needs of communities and economies.

25. In particular, we have identified future requirements for each route through collaboration with interested parties and road users, balancing the strategic need of our roads with the local needs of those using or living alongside them through:

    - relevant local plans and priorities concerning local roads and other transport networks, wider socio-economic developments, and government policy
    - the need for effective integration with the rest of the transport system, including carrying out joint studies with other organisations where it benefits the SRN
    - the needs of each place contributing to connecting communities and supporting their growth aspirations
    - the views of relevant national and local interested parties and road users

Our approach to planning

Planning values

26. We are committed to six values that describe how we will always try to work when we engage in the planning system. We will:

Maintain safety

- We want everyone who uses and works on our roads to get home safe and well. By planning and designing roads that meet the highest levels of safety, we can reduce the number of fatal or serious injuries.

Engage early

- We encourage all parties promoting and preparing plans or planning applications that may have an impact on the strategic road network (SRN) to engage with us as early as possible so we can work together to deliver positive outcomes as quickly as possible. Our pre-application engagement service is offered in confidence[10].
- Engaging early, such as through a pre-application process, gives all parties maximum time to understand the impacts of proposed development on the SRN, the level of assessment required to understand impacts, and to agree the most appropriate actions required as a result to help ensure the development proposal is sound and deliverable.

Work openly

- We are committed to being a proactive partner and will, at the earliest opportunity, assign a named officer who will work openly and collaboratively with you as you develop your plan or development proposal.

Share evidence

- Our *Route strategy initial overview reports*[11] set out our mid to long term strategies and needs for the SRN. Each report includes information on:
  - route characteristics
  - engagement with customers and neighbours
  - network collaboration
  - challenges and issues
  - initial route objectives
  - locational areas for consideration and potential collaboration
  - next steps

10 It should be noted that the Levelling-up and Regeneration Bill includes the following clause: "Power of certain bodies [including National Highways] to charge fees for advice in relation to applications under the planning Acts".
11 https://routestrategies.nationalhighways.co.uk/

- In addition, we collect and analyse significant amounts of information about the SRN and how it interacts with the local road network. This can be found on our Open Data website[12] and includes:
  - automated traffic count information, which is made available online through Webtris[13]
  - speed and flow information, which we can provide on request where it is available
  - several validated traffic models[14] and land use models for certain areas of the network, which can be used by local authorities and development promoters to support decision-making and forecast the highways-related impact of future development
  - accident data
  - information on known local environmental issues
- We can provide access to other information and intelligence we hold about our network, where this is available, relevant to the development or proposal, and where we are legally entitled to do so.
- We can advise on how information should be used to identify and analyse potential highways-related impacts of your plans or proposed development, and to support the development of a robust transport evidence base for your plan or proposal.
- Where data needs to be extracted through a re-run of an existing model, we may make a reasonable charge for providing this and will provide quotes to those seeking such data at the earliest opportunity.
- Where the relevant data and models are not available, we work with the local planning authority, local highway authority and the development promoter to scope the work required.

Share knowledge and experience

- Our teams are highly experienced and knowledgeable about the complex issues of traffic management, driver behaviour, and the processes involved in the development, design and delivery of traffic schemes. We willingly share this knowledge and experience to help you ensure your plans and proposals are robust, appropriate and deliverable.

Work collaboratively

- We respond formally to consultations in a timely manner and with full regard to statutory requirements, as required at each stage of the planning process, whether this is for local plans, other statutory plans or planning applications.
- We also work with local authorities and other plan-making bodies prior to and between formal consultation periods to contribute to their thinking on the relevant plan, and support the analysis of options and development of robust plans and proposals that take full account of highways issues.

12 https://opendata.nationalhighways.co.uk/
13 https://webtris.nationalhighways.co.uk/
14 Models are released under licence and may have limitations.

Key assessment considerations on planning matters

Principles of sustainable development[15]

27. In accordance with our operating licence, we will act in a manner which conforms to the principles of sustainable development and fulfil our role as a statutory consultee in the planning system.

28. New development should be facilitating a reduction in the need to travel by private car and focused on locations that are or can be made sustainable. Developments in the right places and served by the right sustainable infrastructure delivered alongside or ahead of occupancy must be a key consideration when planning for growth in all local authority areas.

29. Where developments are located, how they are designed and how well delivery and public transport services are integrated has a huge impact on people's mode of travel for short journeys. It is also important to ensure that associated business uses and infrastructure are well sited – for example, employment space or the location of freight and logistics facilities. We will therefore expect those responsible for preparing local and neighbourhood plans to only promote development at locations that are or can be made sustainable and where opportunities to maximise walking, wheeling, cycling, public transport and shared travel have been identified.

30. The Government has recognised, however, that local planning and highway authorities need help when planning for sustainable transport and developing innovative policies to reduce car dependency. One of the ways the Department for Transport (DfT) has addressed this is by publishing a toolkit to provide advice to local authorities on planning and taking measures to reduce carbon emissions from transport[16]. More recently the Government has established Active Travel England[17].

31. Another includes moving away from transport planning based on predicting future demand to provide capacity ('predict and provide') to planning that sets an outcome communities want to achieve and provides the transport solutions to deliver those outcomes (vision-led approaches including 'vision and validate,' 'decide and provide' or 'monitor and manage'). We will support local authorities in achieving this aim through engagement at both plan-making and decision-taking stages, while recognising the varying challenges that will be presented by certain sites based on their land use, scale and/or location.

Vision-led approaches

32. Approaches such as 'decide and provide' involve two important elements: being vision-led and accommodating uncertainty. Both of these have been central in the creation of our long-term *Connecting the country*[18] plan where we recognise that the future is uncertain and have adopted a 'decide and provide' approach where we have a clearer sense than ever before of our preferred vision for the future and the steps needed to make this a reality.

33. In broad terms, a vision-led approach can be summarised as follows:

    1. Establish a vision - understand the relevant national and local policy context; identify the drivers of change/key external factors acting on the plan or proposed development; set-out a place-based vision statement with associated outcomes that supports the principles of sustainable development.
    2. Develop scenarios - develop plausible future scenarios that help to understand the uncertainties that may impact on the ability to deliver the vision.

15 See paragraphs 11 to 17 in DfT Circular 01/2022.
16 https://www.gov.uk/government/collections/transport-decarbonisation-local-authority-toolkit
17 https://www.gov.uk/government/organisations/active-travel-england
18 https://nationalhighways.co.uk/our-roads/future-roads/connecting-the-country/

3. Generate options – generate, sift and prioritise options that can help achieve the vision.
4. Test options – test how the prioritised options perform in each of the plausible future scenarios (for example, is every option effective in all scenarios or are some less resilient and have some significant risks?).
5. Produce a vision strategy – produce a strategy for realising the vision that accounts for the identified uncertainty and includes a 'monitor and manage' approach to identify and address when the vision is unlikely to be achieved.

34. The vision-led approach is relevant to both the plan-making and decision-taking stages (proportionate to the scale, sensitivity and complexity of the development proposal).

35. The DfT has addressed future uncertainty in the transport system in its *TAG Uncertainty Toolkit*[19] and it is anticipated that further guidance on vision-led approaches will be forthcoming in due course, including in the Local Transport Plan Guidance due to be published by the DfT in late 2023. In the interim, there is relevant advice in the public domain including from TRICS Consortium Ltd[20] and Mott Macdonald/University of the West of England[21].

36. In engaging with local authorities and development promoters, we will seek to use our *Connecting the county* plan and relevant route strategy/strategies[22] to help inform the vision for a local plan or development proposal.

Ensuring highways issues are addressed

37. Chapter 9 of the *National Planning Policy Framework* (NPPF) states that development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe. The policy test on whether the residual cumulative impacts on the SRN would be 'severe' will be assessed on a case-by-case basis. This will take into account the performance and character of the relevant link or junction of the SRN, and the predicted effects of the development on its safe operation.

38. In terms of infrastructure provision to support the freight and logistics sector, the NPPF further states that planning policies and decisions should recognise the importance of providing adequate overnight lorry parking facilities, taking into account any local shortages, to reduce the risk of parking in locations that lack proper facilities or could cause a nuisance.

39. Transport assessments should be carried out in line with prevailing government guidance and industry standards in agreement with us, through pre-application and scoping[23]. Where modifications to the SRN are proposed, schemes must be subject to road safety, environmental and any other relevant assessment. Local authorities and developers also need to ensure that their proposals comply with requirements for access, design and audit as set out in the *Design Manual for Roads and Bridges* (DMRB)[24].

19 https://www.gov.uk/government/publications/tag-uncertainty-toolkit
20 https://www.trics.org/decideandprovideguidance.html
21 https://www.mottmac.com/article/59966/futures-vision-led-planning-for-an-uncertain-world
22 https://nationalhighways.co.uk/our-roads/our-route-strategies/
23 See also paragraphs 47 to 54 in DfT Circular 01/2022.
24 https://nationalhighways.co.uk/suppliers/design-standards-and-specifications/design-manual-for-roads-and-bridges-dmrb/

40. Although identification of the scale and nature of action required to support a particular development is the responsibility of the development promoter, we will advise on options for this and share with you any relevant information we hold to help you make informed decisions. The issues can be complex and take some time to work through, so we encourage engagement with us at the earliest opportunity.

41. It is important to note that the continued safe operation of the SRN will remain our primary consideration, even where proposals would not result in capacity issues.

New connections and capacity enhancements[25]

42. We recommend any third party looking to propose works on the SRN engage with us as early as possible. This is so we can establish whether the principle of proposed works is acceptable, or what is needed to determine this, and to identify the potential impacts of any schemes on the SRN.

43. Where relevant, planning conditions will be recommended to the local planning authority to ensure any third party works on the SRN are delivered as agreed.

44. Where third party works are proposed as part of a Nationally Significant Infrastructure Project (NSIP) this may be subject to additional guidance and processes. For more information on NSIPs please see the 'Other statutory engagement' section.

Environmental impact[26]

45. Development promoters will need to provide sufficient environmental information to satisfy the relevant local planning authority, and any other consenting authorities, that all environmental implications of the proposals have been appropriately considered.

46. We will expect to see measures implemented that fully mitigate all environmental impacts arising from and relating to the interaction between developments and the SRN. There are four aspects to this:

    - The environmental impacts arising from the temporary construction works.
    - The environmental impacts of the permanent transport solution associated with the development.
    - The environmental impacts of the road network upon the development itself (for example, vehicle emissions).
    - The environmental impacts of any decommissioning phase.

47. To assist in this process, we will willingly participate in the screening and scoping processes to help identify any significant transport-related environmental impacts of proposals.

48. To avoid potential delay or challenge, transport assessments and environmental statements should be mutually consistent and pay due regard to each other.

49. If a development promoter wishes to use land within the highway boundary (including landscaped areas) for the storage of construction materials or other such reasons, they should discuss this at the earliest opportunity with the relevant regional spatial planning team.

25 See paragraphs 18 to 25 in DfT Circular 01/2022.
26 See paragraph 55 in DfT Circular 01/2022.

Physical impact of development on the SRN[27]

50. There may be development proposals that the relevant local planning authority is not statutorily required to consult us on, but which nonetheless have the potential to impact the SRN. Examples include where there are considerations relevant to fire hazard, glint and glare, stability of embankments and cuttings, integrity of structures, water run-off, air quality, highway schemes on the local road network, or visibility of traffic signs. Development promoters and local authorities are encouraged to identify such potential risks and discuss these with us at the earliest opportunity so they can be quantified and addressed as necessary and appropriate.

Roadside facilities[28]

51. We recognise the importance of roadside facilities for the safety and welfare of road users. We also recognise that lorry parking and adequate facilities are key to enabling the freight and logistics sector to operate safely and efficiently.

52. New and existing roadside facilities are subject to the provisions in DfT Circular 01/2022 which sets the framework for local planning authorities to consider the planning proposals for such developments and requirements for which operators must comply in order to be signed from the SRN.

53. Local planning authorities, development promoters and operators are encouraged to discuss with us at the earliest opportunity any proposals to develop new roadside facilities or to alter and/or sign existing sites. All such proposals should be referred to: roadsidefacilities@nationalhighways.co.uk.

Special types of development[29]

54. The DfT Circular 01/2022 provides policy advice in relation to the following 'special types of development':

- advertisements
- gateway structures and public art
- electronic communications apparatus
- on-shore wind turbines
- developments with solar reflection

55. Other 'special types of development' will be kept under review where they have the potential to impact on the SRN.

27 See paragraphs 57 to 59 in DfT Circular 01/2022.
28 See paragraphs 71 to 112 and Annex A in DfT Circular 01/2022.
29 See paragraphs 60 to 70 in DfT Circular 01/2022.

Engagement with plan-making[30]

General principles

56. Local plans and spatial development strategies set out policies and allocations to guide development in a locality, including proposals for specific sites to meet the housing, employment, environmental and social needs of the area. The suitability of sites for any of these uses depends on several factors, including local traffic flow, road and transport connections, and options for sustainable travel.

57. The preparation of plans and strategies provides an opportunity to support developments that reduce the need to travel, minimise journey lengths, encourage sustainable travel, and promote accessibility for all. This can contribute to the achievement of net zero carbon objectives and reduce the cost to the economy arising from the environmental, business and social impacts associated with traffic generation and congestion.

58. For all these reasons, we are keen to contribute to the development of local plans and spatial development strategies. We can help you identify the most suitable locations for development that make best use of the capacity on the strategic road network (SRN); so, we encourage plan-making authorities to engage with us from the earliest stages of preparation. Figure C, at the end of this section, sets out how we see ourselves engaging with plan-making authorities.

Evidence base

59. Paragraphs 31 to 33 of the Department for Transport (DfT) Circular 01/2022 set out the key considerations relating to the transport evidence base that should inform decisions at the plan-making stage. This includes the expectation that this process will explore all options to reduce a reliance on the SRN for local journeys including a reduction in the need to travel and integrating land use considerations with the need to maximise opportunities for walking, wheeling, cycling, public transport and shared travel.

60. We will support evidence base work where we are able to, as well as share evidence that we have, and input our knowledge and experience of the SRN.

Location of development

61. Development should be promoted at locations that are or can be made sustainable, that facilitate the uptake of sustainable transport modes, support wider social and health objectives, and which support existing business sectors as well as enabling new growth.

62. We will work with plan-making authorities, highway authorities and development promoters to identify opportunities to introduce travel reduction and demand management measures through the plan-making process.

30 See paragraphs 26 to 38 in DfT Circular 01/2022.

Site allocations

63. When a local plan or spatial development strategy proposes site-specific allocations, we will want to ensure that all relevant transport impacts and requirements are considered. To this end, we will work with plan-making authorities to:

    - identify the impact that the proposed allocations are likely to have on the SRN on an individual and, insofar as is necessary, a cumulative basis, factoring in the demands arising from development planned in adjacent authorities where appropriate
    - assess the impact of the SRN on the development potential of sites that are proposed to be allocated (for example, vehicle emissions, light pollution and noise)
    - consider travel plan, travel demand and off-network improvements
    - as necessary, identify the infrastructure requirements and delivery of strategic infrastructure for the proposed allocations

64. Whilst allocating land for particular uses is a matter ultimately for plan-making authorities, we will provide comment on the suitability of locations where there is potential impact on the SRN, including from a safety, congestion, amenity and carbon emissions perspective. Certain allocations should also recognise the importance of providing and retaining adequate provision of lorry parking facilities, particularly in relation to proposals for new or expanded goods distribution centres and roadside facilities.

New connections and capacity enhancements (local plans)

65. Paragraphs 19 and 29 of DfT Circular 01/2022 set out that new connections and capacity enhancements to the SRN which are necessary to deliver strategic growth should be identified as part of the plan-making process. Where all reasonable options to deliver modal shift, promote active travel and public transport use, and locate development in areas of high accessibility have been exhausted, we will work with plan-making authorities in identifying funding mechanisms for planned works to the SRN.

Summary of local plan considerations

66. When formally consulted on development plan documents we will seek to provide a recommendation as to the appropriateness of proposed policies and allocations in relation to their interaction with the SRN. Where we have been engaged in the development of the plan or strategy, this process should be straight-forward.

67. The list below highlights matters which we are likely to have particular interest in when engaging in the plan-making process, which is grouped into four categories:

    Sustainability

    - The **sustainability of policies** including how they have addressed the principles of sustainable development[31] and support a place-based vision-led approach (informed by our Connecting the County[32] plan and relevant route strategy/strategies[33]).
    - The **economic, social, and environmental benefits** of development plan policies and proposed site allocations.

31 See paragraphs 11 to 17 in DfT Circular 01/2022.
32 https://nationalhighways.co.uk/our-roads/future-roads/connecting-the-country/
33 https://nationalhighways.co.uk/our-roads/our-route-strategies/

Integration with other plans and strategies

- **Proposed works** to the transport network, including measures relating to sustainable travel infrastructure and delivery plans, including the anticipated costs and funding source(s) as well as the forecast outcome of the enhancement(s).
- **Our investment priorities** as identified in our *Delivery plan*[34] and route strategies[35].
- The **consistency** between the policy approach being promoted in the plan or strategy and any associated evidence base documents such as infrastructure delivery plans, where these would impact the SRN.
- The relationship between the plan or strategy and the relevant Sub-national Transport Body's **Strategic Transport Plan**.

Impacts

- The way in which the size, type and location of development proposals **impact on the operation of the SRN**.
- The **cumulative impacts** on the SRN associated with any known development sites within the plan area and in adjacent areas.
- Any **residual impacts** arising from the proposals that will not be mitigated by new connections or capacity enhancements.

Robustness and consistency

- The **robustness of the evidence base** that has informed decisions.
- The **methodology** used to determine the quantities, locations, likely phasing and mix, and viability of housing and employment development.
- The **accessibility** of sites that are proposed to be allocated.

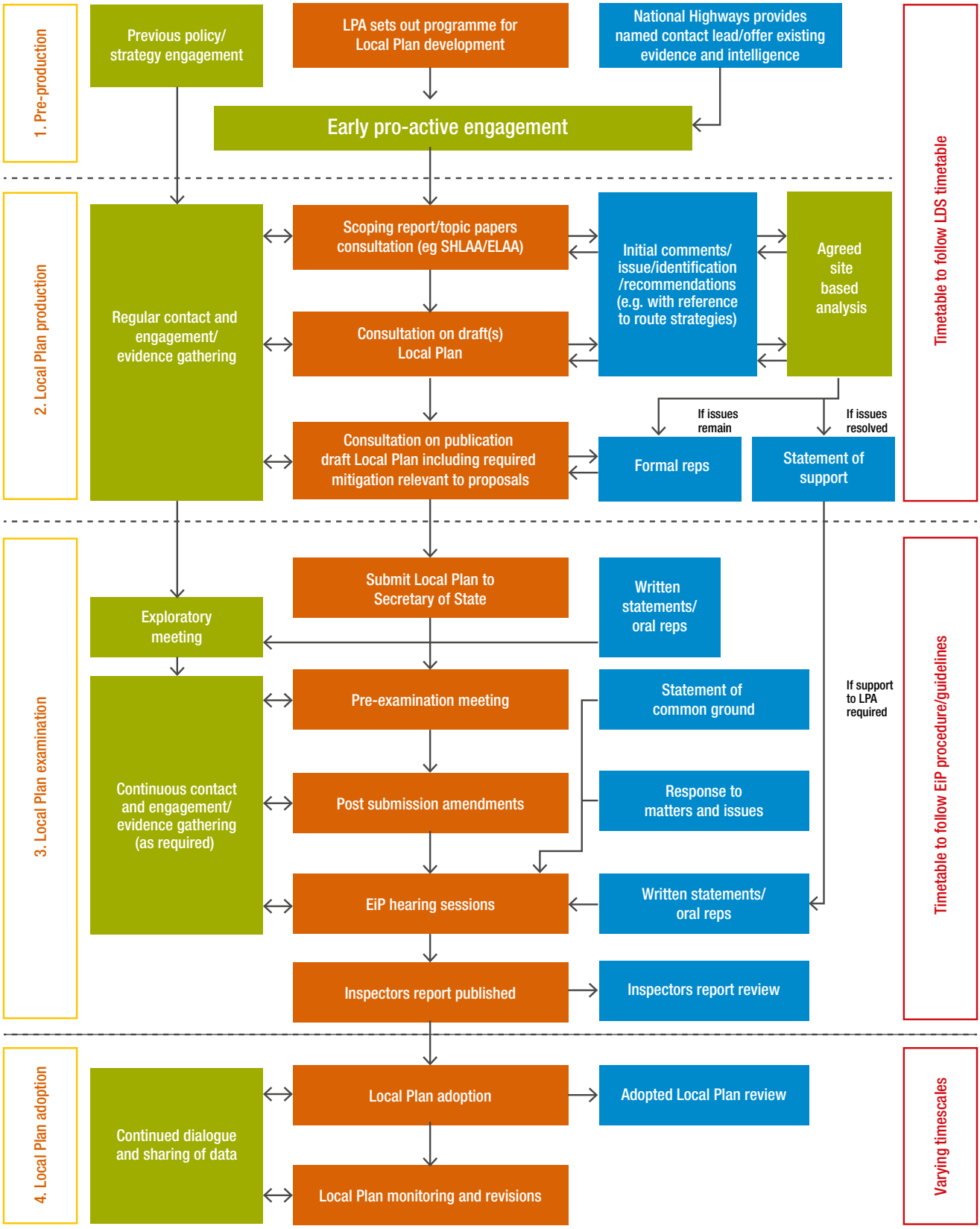
68. Where appropriate, we will seek to participate in the plan examination.

69. We would wish to be advised of the publication of the Inspector's Report as soon as is practicable so we can consider the implications of the recommendations in a timely manner, and then work with the plan-making authority on modifications as necessary.

70. Once development plan documents are adopted, we will continue to work with plan-making authorities to ensure that relevant National Highways teams are fully cognisant of their policies and proposals, to confirm that up-to-date information about the SRN is used when such plans are reviewed, and to support the delivery of development.

34 https://nationalhighways.co.uk/delivery-plan/
35 https://nationalhighways.co.uk/our-roads/our-route-strategies/

Figure C: National Highways engagement with plan-making authorities



Key:

- The **blue boxes** identify what we will do.
- The **orange boxes** identify the key stages in the plan-making process from the perspective of the plan-making authority.
- The **green boxes** identify actions for both parties and relate mainly to engagement between ourselves and the plan-making authority.

Engagement with decision-taking[36]

General principles

71. We encourage stakeholders to talk with us as early as possible where we are likely to be consulted on a planning application. This allows time for us to guide applicants and their consultants on preparing all the information we will need to fully consider the proposed development. Effective pre-application engagement is essential in meeting statutory deadlines later in the planning process. Figure D, at the end of this section, sets out how we engage with development proposals.

72. Where we are made aware that significant development proposals are being prepared that might impact the strategic road network (SRN), and we have not been engaged in pre-application discussions, we may contact the applicant through the local planning authority and invite them to scope the submission with us.

73. Paragraph 48 of the Department for Transport (DfT) Circular 01/2022 states that where a transport assessment is required, this should start with a vision of what the development is seeking to achieve and then test a set of scenarios to determine the optimum design and transport infrastructure to realise this vision. Where such development has not been identified in an up-to-date development plan (or an emerging plan that is at an advanced stage), developers should demonstrate that the development would be located in an area of high accessibility by sustainable transport modes and would not create a significant constraint to the delivery of any planned improvements to the transport network or allocated sites.

74. In submitting a planning application, the development promoter should provide all the information we will need to fully consider the interaction of the development with the SRN, and the suitability of any related actions proposed.

75. We will provide the relevant authority with our response to the assessed transport impact in line with DfT Circular 01/2022, the principles in this document and our statutory requirements. Our advice will reflect our conclusions on the likely impact of the proposal, as a result of assessing the transport-related information provided with the application, and drawing on our own expertise, knowledge and experience of the SRN and transport issues.

76. Where appropriate, we will recommend that planning conditions be attached to any planning permission granted, in order to address or reduce the effects that are predicted to occur. Wherever possible, we will make this recommendation in discussion with the applicant and local planning and highway authorities, as appropriate.

36 See also paragraphs 39 to 59 in DfT Circular 01/2022.

Pre-application stage

77. The *Town and Country Planning (Development Management Procedure) (England) Order 2015* sets out the legal requirements for local planning authorities to consult with us at application stage. However, we would encourage development promoters to engage with us earlier and to think more broadly than these minimum thresholds.

78. Pre-application discussions are an effective means of gaining a good, early understanding of the development, its benefits, its likely impacts and its infrastructure needs. Engaging with us at pre-application stage will ensure that the transport assessment is appropriately scoped and based on the most relevant and up-to-date data. It will also ensure that the development promoter is made aware of, and can take account of, any SRN issues that might have a bearing on how the development is planned and/or delivered. This, in turn, helps to avoid abortive work being undertaken.

79. When contacted in respect of any development proposal, we will engage in line with our planning principles. Specifically, we will:

    - **Acknowledge** within 7 days to a request for initial discussion.
    - Provide a **named contact** for discussions, which will be someone with knowledge and experience of the area.
    - Advise the promoter whether the development proposal is likely to be **of interest** to us.
    - Advise the promoter of **known potential constraints** to the development, and jointly explore **potential solutions** within the context of a **vision-led approach** that facilitates a reduction in the need to travel by private car.
    - **Share** data and models relevant to the proposal, where this is available, and where we are legally entitled to do so.
    - Review, comment on and, where acceptable, agree the **methodology** for assessing the likely impacts of the proposed development, as relevant to the SRN and net zero carbon considerations.
    - Review, comment on and, where acceptable, agree the principles of the scale and nature of **mitigation** required.
    - Review, comment on and, where appropriate, agree the principles of the **monitor and manage** strategy.
    - Discuss any other elements of the development or its likely impact that might be of interest to us.

80. Where it is likely that a proposal will be considered unacceptable in terms of its impact on the SRN, we will provide guidance as to what, if any, steps could be taken to address the concerns that we have.

81. Depending on the nature of the site and the proposed development, the development promoter may submit a written scoping report or arrange a meeting with us. Where a meeting is arranged, we would encourage other relevant parties to attend as necessary, including the local planning and highway authorities; we would particularly recommend this for larger and more complex sites.

82. If a scoping report is to be prepared, we would advise this includes:

    - **details of the development**, such as location, access arrangements, use class, size or number of units, likely phasing, number of parking spaces and any other relevant information
    - a proposed methodology for the **vision-led approach** (including a monitor and manage strategy) that facilitates a reduction in the need to travel by private car
    - a proposed methodology for estimating the **vehicular trip generation** and distribution on the SRN, and resulting trip generation figures

- a proposed methodology for assessing the **impact** of this trip generation on the SRN and our assets
- a proposed methodology for assessing the **environmental consequences** of the transport impacts of the development, and proposals to address net-zero carbon considerations

83. We will allow local authorities and development promoters access to all relevant data and models that we hold where this is readily available, free of charge. However, usage of data and models may be restricted at later stages in the process by our need to assess a proposed development within statutory timeframes.

Travel plans

84. In support of the principles of sustainable development and a place-based vision-led approach, we expect development promoters to bring forward sites in highly accessible locations and support initiatives that reduce the traffic impact of proposals. This is particularly necessary where the potential impact is on sections of the SRN that could experience capacity problems in the foreseeable future.

85. Early engagement enables us to support this thinking, and we will work with development promoters and local planning authorities to identify appropriate measures to facilitate the delivery of sustainable development.

86. The preparation, implementation, monitoring and updating of a robust travel plan that promotes the use of sustainable transport modes (such as walking, wheeling, cycling and public transport) can be an effective means of managing the impact of development on the road network, and reducing the need for major transport infrastructure. This contributes to the ongoing effectiveness of the SRN in ensuring swift connections nationally and regionally, minimising delays and congestion. Retaining some network capacity within the SRN also facilitates the provision for further developments.

87. We will cooperate with local planning authorities, local highway authorities, Active Travel England and development promoters in the creation of travel plans that identify opportunities to introduce route-based and/or area-wide travel plan measures that will support sustainable transport. We expect such plans to be supported by robust performance indicators which can be effectively monitored.

88. However, quite often the implementation of travel plan measures alone will not be sufficient to reduce the traffic demand of proposed developments to acceptable levels. In such instances we will work with relevant authorities to determine whether the implementation of other measures (e.g. more direct demand management measures) could regulate traffic flows. This will support the delivery of the travel plan outcomes and maximise efficient use of available capacity on the SRN.

New connections and capacity enhancements (planning applications)

89. As stated previously, paragraphs 19 and 29 of DfT Circular 01/2022 set out that new connections and capacity enhancements to the SRN which are necessary to deliver strategic growth should be identified as part of the plan-making process. Paragraph 43 adds that we expect development promoters to enable a reduction in the need to travel by private car and prioritise sustainable transport opportunities ahead of capacity enhancements and new connections on the SRN.

90. Where the principle of such works is accepted, we will work with a developer's transport consultant and other key stakeholders to establish the mitigation that is needed to appropriately support the scale and type of development. In circumstances where there is insufficient information to determine whether there would be an unacceptable impact on highway safety or the residual cumulative impacts on the road network would be severe, we will recommend that the application is not approved until further assessment work has

been carried out, allowing for a more definitive recommendation.

91. Where physical changes to the SRN are proposed to support a planning application, a Walking, Cycling & Horse-Riding Assessment and Review, and a Stage 1 Road Safety Audit should be prepared before planning permission is applied for. Pre-application engagement with us is particularly important in this situation.

92. Measures to address a development's impact upon the SRN will normally be delivered by means of a funding agreement between the development promoter(s) and ourselves, such as an agreement under Section 278 of the Highways Act.

Preliminary design requirements

93. The design elements that are considered essential and that should be provided prior to planning permission being granted, to enable us to properly assess the impact of proposals on the SRN, are as follows:

General Arrangement drawings

- General Arrangement drawings should include the existing and proposed road or site layout, drainage outfalls and any proposed attenuation, any environmental mitigation such as noise barriers or landscaping, and visibility splays for any proposed development access from our network. Depending on the scale and complexity of the proposals, development promoters may also be required to provide us with other drawings, such as land ownership, proposed cross section/levels and the existing ground levels.

Statement of compliance with Design Manual for Roads and Bridges (DMRB) standards

- Development promoters should provide a clear statement identifying which standards have been used in the development of the design and evidence of any discussions around departures from standards. Where proposals include a departure from standards, they will need to be shown on the General Arrangement drawings.

Traffic Regulation Order

- Where development promoters have agreed a Traffic Regulation Order with the relevant local highway authority, or have a proposed Traffic Regulation Order not yet agreed, these should also be provided. Any agreed speed limits, parking restrictions, weight limits, one-way streets and prohibited turns should also be identified on the General Arrangement drawings.

Drainage strategy

- For developments adjacent to the SRN, a document should be provided identifying the site-specific drainage strategy and discharge requirements. This should include, but is not limited to, how the development meets drainage regulations, proposed outfalls and discharge rates, proposed attenuation requirements, surface and sub-surface water collection methodology and maintenance, pipe network methodology and maintenance and flood modelling results.

Lighting strategy

- This should identify all areas of proposed lighting compliant with the methodology set out in the DMRB, specifically TA 501, and allow us to assess the environmental impact of proposals. Lighting should also be clearly identified in the General Arrangement drawings.

94. Each scheme is different, and these are general guidelines for the information we need to progress our response to planning application consultations. Detailed design guidance is provided in the DMRB, and for larger and more complex schemes our team will provide more tailored guidance and advice as to what design elements are essential at the planning application stage.

95. On occasion we may also require the following, but this will be on an as-needed basis or subject to planning conditions. These are as follows:

- Highway engineering details
- Geotechnical investigation or design
- Approval in principle or technical approval of structures
- Detailed drainage design and specification
- Road lighting designs
- Glint and glare assessment
- Detailed traffic management proposals
- Detailed technical specification

Our formal responses to local planning authorities

96. Within the statutory consultation period for a planning application, we will respond in writing to local planning authorities with a formal recommendation that will take one of the following four forms:

    a. Offering no objection to the development.

    b. Recommending conditions that should be attached to any planning permission that may be granted by the local planning authority.

    c. Recommending that permission not be granted for a specified period, usually to allow for the provision of any missing information or to allow for negotiations with the development promoter.

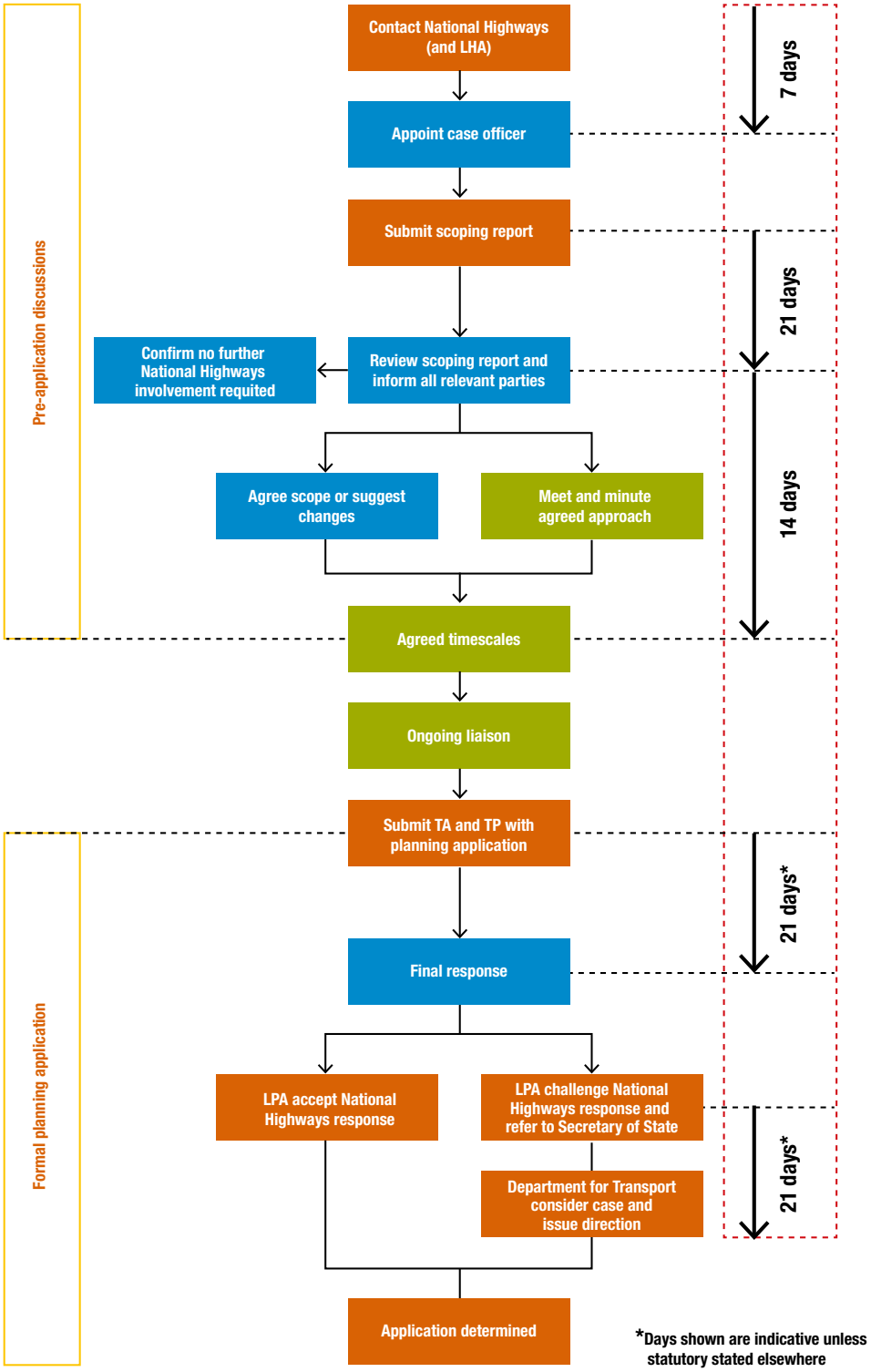
    d. Recommending refusal.

97. For all the above we will provide the local planning authority with a statement explaining our position and the assessment and analysis behind it. As per the conditions of our licence, we will also copy these responses to the Secretary of State for Transport.

98. Where a local planning authority decides that it does not wish to accept our recommendation, they must refer the case to the Secretary of State for Transport as soon as practicable[37]. The decision of the Secretary of State will be binding on all parties.

37 https://www.gov.uk/guidance/development-affecting-trunk-roads-how-local-planning-authorities-can-challenge-a-national-highways-recommendation

Figure D: How we engage with development proposals



Key:

- The **blue boxes** identify what we will do.
- The **orange boxes** identify the key stages in the decision-taking process from the perspective of the development promoter or local planning authority.
- The **green boxes** identify actions for both parties and relate mainly to engagement between us and the local planning authority.
- The flow chart indicates a desired maximum duration for these stages to be completed, unless longer timescales are agreed beforehand by the relevant parties, such as on large or complex applications.

Other statutory engagement

Nationally Significant Infrastructure Projects

99. As a statutory consultee in respect of Nationally Significant Infrastructure Projects (NSIPs), the promoters of such developments are required to consult with us where their proposals are likely to affect road or transport operations and/or planning on roads for which we are the highway authority. As with other planning matters, we recommend that you enter discussions with us at the earliest opportunity.

100. Promoters are encouraged to seek consensus with interested parties, including us where applicable, in order to satisfy the Planning Inspectorate that full and thorough pre-application consultation with interested parties has been carried out. Where possible, we will work towards agreeing a Statement of Common Ground at an early stage so that this can be an input to the examination.

101. In any case, when submitting the application and draft submission to the Planning Inspectorate (known as a Development Consent Order), promoters must provide sufficient detail to allow the assessment of the impact of their proposals on the SRN, and the suitability and deliverability of their proposed transport arrangements, including means of access.

102. Where necessary we will make representations on proposals and seek to ensure that requirements we deem essential are incorporated in the Development Consent Order. These actions will be carried out based on discussions held and the information provided to us.

Local Development Orders and Neighbourhood Development Orders

103. Local Development Orders and Neighbourhood Development Orders will be assessed in the same manner as planning applications. The relevant processes allow for compliance conditions to be imposed by the body making the Order. Should we consider that compliance conditions must be applied to mitigate the anticipated impact of development, we will work with the body making the Order with the intention of agreeing the inclusion of appropriate conditions. This might include conditions on the timing, scale or design of development.

Other development plans

104. Neighbourhood Development Plans and associated Orders[38] also have the potential to impact the strategic road network (SRN). Therefore, we will work proactively and collaboratively with parish councils and neighbourhood forums in the development and implementation of their proposals, applying the approach described above.

38 Including Community Right to Build Orders.

Funding

105. Where a landowner or development promoter proposes changes to the strategic road network (SRN) to serve a particular development, they are usually required to enter into an agreement with us to make these changes. Funding is often required to resource these interventions, but the scale of funding required will vary from case to case.

106. With this in mind, this document does not comprehensively cover each funding mechanism or scenario. Instead, we set out our general approach, having particular regard to the process under Section 278 of the Highways Act, the most common mechanism used for procuring works.

107. We will support proposals for third party investment into transport and highways schemes that enable sustainable development whilst maintaining the safe and efficient movement of goods and people on the SRN.

108. Our teams are experienced in exploring funding options and in delivering funding agreements for transport schemes and will be able to advise on the specific requirements of a particular scheme. As with other stages of the planning process, we encourage engagement with us as early as possible. Where public funding is sought to support schemes, we expect to be consulted and may contribute towards the application process.

Third party funding agreements

109. Where a Section 278 agreement is appropriate, a named officer will be identified as the development promoter's main point of contact for all matters related to the delivery of the agreement and works. This may be different from the individual leading on our involvement in the planning application process. Where this is the case, we will ensure a joined-up approach and that where necessary, any handover is comprehensive.

110. In order to enable the scheme to be delivered expediently, the development promoter may seek to progress the detailed design and draft the Section 278 agreement in parallel with the planning process rather than delaying this work until planning approval is given. Nonetheless, the Section 278 agreement cannot be entered into and works cannot commence until planning permission for the development is in place and any relevant conditions have been satisfactorily discharged.

111. A programme for reporting on progress will be agreed and an 'open book' approach taken to the assessment of scheme costs. Our administrative costs will be based on the published schedule; the development promoter will be required to meet all costs associated with the development and delivery of the Section 278 agreement.

112. Depending on the form of agreement and the likely cost of the scheme, payment(s) may be made in stages, unless agreed otherwise. Under normal circumstances further work will only be undertaken when: we have received money from the promoter to cover the costs of that work; or an Abortive Cost Undertaking backed by a financial undertaking has been entered into by the promoter.

113. Underspend(s) left over at the end of each task or stage can be rolled over to meet costs of the next stage or repaid to the development promoter. Any money which has been paid to us that has not been spent in delivering the scheme will be repaid to the development promoter once the scheme is complete or cancelled.

114. Where possible, in situations where the Section 278 agreement involves both us and local highway authorities, a single agreement will be proposed with all the respective highway bodies working collaboratively on the agreed mitigation.

115. For further information about third party funding for mitigation, development promoters are encouraged to contact the relevant regional spatial planning team.

Key contacts

Location based planning enquiries:

South East:
planningSE@nationalhighways.co.uk

South West:
planningSW@nationalhighways.co.uk

East of England:
planningEE@nationalhighways.co.uk

Midlands:
planningM@nationalhighways.co.uk

North West:
planningNW@nationalhighways.co.uk

Yorkshire and North East:
planningYNE@nationalhighways.co.uk

Other planning enquiries:

Roadside Facilities:
roadsidefacilities@nationalhighways.co.uk

This document, as well as strategic planning issues: spatialplanning@nationalhighways.co.uk

Acronyms

DfT .....Department for Transport

DMRB .....Design Manual for Roads and Bridges

EiP.....Examination in Public

ELAA.....Employment Land Availability Assessment

LHA .....Local Highway Authority

LPA.....Local Planning Authority

NPPF .....National Planning Policy Framework

NSIP .....Nationally Significant Infrastructure Project

RIS .....Road Investment Strategy

SHLAA .....Strategic Housing Land Availability Assessment

SRN.....Strategic Road Network

TA .....Transport Assessment

TP .....Travel Plan

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APPENDIX 4

Route Strategy Initial Overview Report

Kent Corridors to M25

May 2023

national highways

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The routes

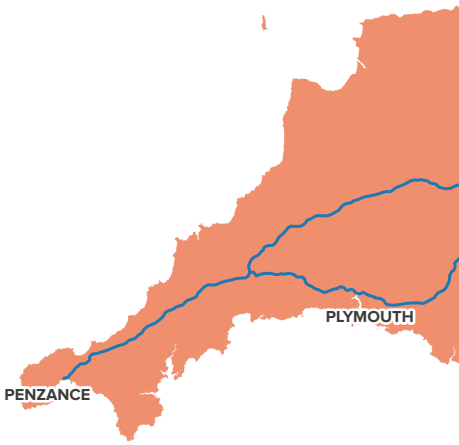
Routes

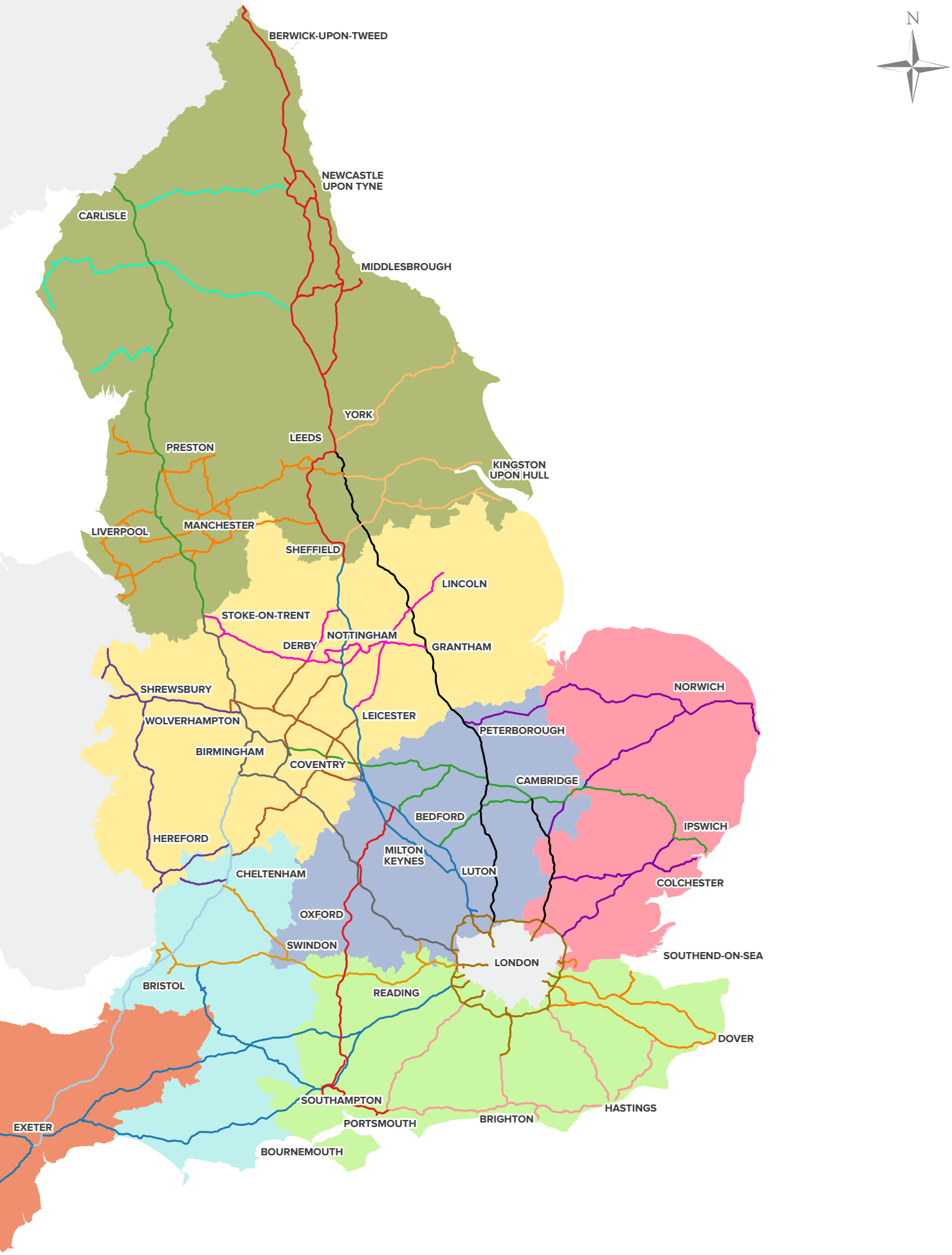
- London to Scotland West (North)
- London to Scotland East (North)
- South Pennines (East)
- South Pennines (West)
- North Pennines
- London to Leeds
- Midlands and Gloucestershire to Wales
- North and East Midlands
- South Midlands
- London to Scotland West (South)
- London to Scotland East (South)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

Sub-national Transport Bodies

- England's Economic Heartland
- Midlands Connect
- South West Peninsula
- Transport East
- Transport for the North
- Transport for the South East
- Western Gateway

There are 17 routes relating to route strategies across our strategic road network (SRN). To take better account of our customers' end-to-end journeys, we have split some of the longer routes into sub-strategies across 20 reports.




N
BERWICK-UPON-TWEED
NEWCASTLE UPON TYNE
CARLISLE
MIDDLESBROUGH
YORK
LEEDS
PRESTON
KINGSTON UPON HULL
LIVERPOOL
MANCHESTER
SHEFFIELD
LINCOLN
STOKE-ON-TRENT
NOTTINGHAM
DERBY
GRANTHAM
SHREWSBURY
NORWICH
WOLVERHAMPTON
LEICESTER
PETERBOROUGH
BIRMINGHAM
COVENTRY
CAMBRIDGE
BEDFORD
IPSWICH
HEREFORD
MILTON KEYNES
LUTON
CHELTENHAM
COLCHESTER
OXFORD
SWINDON
LONDON
SOUTHEND-ON-SEA
BRISTOL
READING
DOVER
SOUTHAMPTON
HASTINGS
PORTSMOUTH
BRIGHTON
EXETER
BOURNEMOUTH

Executive summary

Introduction

Our strategic road network (SRN) is the backbone of the country. Over 4,500 miles of motorways and major A-roads connect people, build communities, create opportunities and help the nation thrive. To plan for the future, we take a long-term view of our network and the trends that could impact transport, road travel, and personal and commercial mobility. Route strategies are at the centre of this dynamic future planning of our network, informing how we operate, maintain and renew our network. This report is the Initial overview report for the Kent Corridors to M25 and summarises the outcomes of the route strategy. The report builds on the first two rounds of route strategies in 2015 and 2017. It aims to be more forward looking, integrated and collaborative, while being dynamic enough to respond to the future needs of our customers and neighbours.

In this report, we detail the route context, current constraints on the route, and opportunities for improved connections with local roads and rail links. We set out intelligence-led route objectives aligned with the Department for Transport's (DfT's) six strategic objectives. These objectives aim to ensure the route can serve its function, while mitigating the identified constraints and challenges. They conclude with locations for further consideration to achieve the route objectives. The route objectives and locations for further consideration will be presented to the Department for Transport to inform future decision-making about investment planning through the Road investment strategy (RIS). It should be recognised that not all aspirations outlined in this report can be funded or delivered.

DFT'S SIX STRATEGIC OBJECTIVES FOR THE STRATEGIC ROAD NETWORK

- Improving safety for all
- Network performance
- Improved environmental outcomes
- Growing the economy
- Managing and planning the SRN for the future
- A technology-enabled network

For clarity, this document does not:

- identify committed schemes for delivery as part of future RIS periods. This will be part of the wider RIS setting process
- commit to the delivery of local plans or economic growth developments mentioned
- guarantee funding for any locations identified for further studying to understand the challenges and issues in more detail
- preclude the inclusion of other locations for consideration in the light of other evidence or imperatives

Customers and neighbours

Engagement with our customers and neighbours has been central to developing our route strategies. We have already gathered a wealth of evidence from the previous rounds of route strategies and through our ongoing monitoring of road condition and performance.

Our performance is monitored through the National Highways' Performance Framework. This Performance Framework was established at the start of the second road period (2020-2025) and sets out National Highways' commitments to 2025. It is outlined in the RIS2 *Delivery plan (2020-2025)*[1]. We will continue this monitoring approach into the third road period (2025 – 2030).

To add to this existing evidence, we carried out a detailed engagement programme for this round of route strategies to understand the current and future needs of those using and living alongside the SRN.

The route

The Kent Corridors to M25 route provides access to the key international gateways of Dover, Folkestone, Sheerness, the Channel Tunnel, and the Thames ports (London Gateway and Tilbury), which form part of the Thames Freeport. It covers over approximately 145 miles of the SRN within Kent and Essex.

The route consists of the M20/A20 and M2/A2 corridors connecting the Channel Tunnel, Folkestone and Dover to the M25. The A249 spur from the M2 provides a link to Sheerness, and the A13 / A1089 connects Tilbury Port to the M25, providing a link to DP World London Gateway, all of which formpart of Thames Freeport.

This route strategy report can be read alongside other interacting route strategy reports, including:

- London Orbital and M23
- South Coast Central

Challenges and issues

We have identified challenges and issues of those using the route and living alongside it. These correspond to the DfT's six strategic objectives, which are the strategic objectives for RIS3. They were agreed by National Highways and the DfT, and are set out in the RIS3 *Planning ahead*[2] document in December 2021.

Challenges and issues on the route have been identified which correspond to the the DfT's six strategic objectives:

Improving safety for all:

- The safety levels built in to the route (based on the International Road Assessment Programme) are rated as either 1-star or 2-star, on the A1 between Aylesham and Dover, the A249 north of the M2 and the A1089
- Higher collision rates and a higher proportion of collisions where someone has been killed or seriously injured occurred at key locations on the coastbound M20 and M2
- A higher percentage of collisions where someone has been killed or seriously injured involving walkers, cyclists or horse riders can be found on the A2 and A249, and involving motorcyclists on the A20, A2, A249 and M26
- The orientation of the route can result in safety issues due to sun glare

1 Highways England *Delivery Plan 2020-2025*, https://nationalhighways.co.uk/media/vh0byhfl/5-year-delivery-plan-2020-2025-final.pdf

2 Department for Transport December 2021, *Planning ahead for the Strategic Road Network: Developing the third Road Investment Strategy*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1045938/planning-ahead-for-the-strategic-road-network-developing-the-third-road-investment-strategy.pdf

Network performance

- Congestion related delay occurs on sections of the A2, A249, M20 at Maidstone, the A2 and A20 at Dover, and the A13 and A1089
- Local roads, including the MRN, that interface with the SRN can suffer from consequential impact of the lack of SRN alternative routes, and capacity and reliability issues
- When there is disruption at the international gateways, freight traffic queues can extend onto the network, including through towns and residential communities
- Diversion routes are often less suitable for high volumes of freight or general traffic, which can result in secondary impacts such as increased congestion, reduced air quality, and increased noise
- Limited technology provision makes it more difficult to manage disruptive incidents and communicate information to users
- Delay can occur at junctions when traffic diverts (or in some cases during typical operation), particularly where the MRN and LRN interact with the SRN. This includes the M2 Junction 7 (Brenley Corner), the A2 Whitfield and Duke of York Roundabouts, the A13 / A1089 Junction, the M2 Junction 3 (Bluebell Hill), and M20 Junction 6 LRN operation can also result in local traffic 'junction hopping'
- Delays are exacerbated by seasonality due to travel to coastal destinations and Europe, for example on the A2 on approach to Dover
- Delays are expected to worsen by 2031 at several locations, particularly along sections of the A2 and A20 at Dover and the M2 at Stockbury and Faversham

Improved environmental outcomes

- Reliance of freight movement on the road network to connect to the wider UK
- Significant ecological, cultural and environmental sensitivities, particularly the Kent Downs Areas of Outstanding National Beauty and Special Areas of Conservation directly adjacent to the M20 and A2 Traffic related severance, noise and air quality can impact on local communities with existing Air Quality Management Areas (AQMA) and Noise Important Areas (NIA) in place
- There are a number of receptors along sections of the route which may be more sensitive to air quality issues, including sections of the M20, the A2 and the A20
- There are a number of receptors along sections of the route which may be more sensitive to noise issues, predominantly on the M20 around Maidstone, Ashford and Aylesford
- Aspiration to minimise greenhouse gas emissions and building resilience to future climate change
- There may be a risk of flooding on the A249 and on the M2 east of Gillingham, and susceptibility to adverse weather conditions
- Access to ports can be affected by adverse weather conditions, resulting in challenges in crossing the Channel and associated SRN disruption due to delayed vehicles waiting to use the Ports or Channel Tunnel

Growing the economy

- The route plays a pivotal role in international connectivity, linking the UK and mainland Europe via Dover, Folkestone, Sheerness, the Channel Tunnel and the Thames Ports (London Gateway and Tilbury), which form part of the Thames Freeport
- The route provides the primary access to significant urban areas of high-value economic activity
- There are dedicated economic opportunity areas at Dover and Sheerness, and planned growth at the Thames Freeport sites, Port of Dover and Medway Ports. High levels of planned housing and employment development within the region are expected to exacerbate pressure on the route
- Congestion issues at various junctions could inhibit economic growth, with several Kent local authorities identified as government priorities for levelling up, including Gravesham, Swale, Canterbury, Dover, and Folkestone and Hythe
- There is poor east-west connectivity via rail and slow links between Kent and the south coast, and a concentration of High Speed 1 services on a single corridor

Managing and planning the SRN for the future

- Contributing toward the national target of 96.2% or more of carriageway being in good condition
- Maintaining the good condition of the strategic road network's geotechnical assets
- Ensuring that drainage assets are maintained so that their good structural and service conditions can be upheld

A technology-enabled network

- Lack of technology across the route to inform drivers of the best routes to use, as some diversion routes are less suitable for high volumes of freight and/or general traffic
- Lack of coordinated infrastructure to communicate conditions or issues to road users
- Lack of technology to support operation

M25
A13
A1089
GRAYS
TILBURY
DARTFORD
GRAVESEND
A2
M25
A249
M20
GILLINGHAM
M2
M26
SEVENOAKS
MAIDSTONE
TUNBRIDGE WELLS
A21
Kent Corrdiors to M25 route
SRN
MRN
Local roads

SHEERNESS
INGBOURNE
M2
CANTERBURY
A2
ASHFORD
A20
DOVER
FOLKESTONE
A2070
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Initial route objectives

We want to provide safer and more reliable journeys for all those who use or live alongside our network, and support the route in achieving the economic and housing growth ambitions of surrounding areas. Based on our engagement and data analysis, we have defined a set of objectives for the route. The table below shows the route objectives and how they contribute to the DfT's six strategic objectives for the SRN as a whole.

		DfT's strategic objectives for our network					
Ref.	**Route objective**	**Improving safety for all**	**Network performance**	**Improved environmental outcomes**	**Growing the economy**	**Managing and planning the SRN for the future**	**A technology-enabled network**
A	**Support safe and efficient freight movement to and from air, rail, sea and freeports in the Kent Corridors**. Support driver welfare, including supporting provision of appropriate driver facilities and reducing delay, particularly on the M2/A2, A249 and A13 / A1089	✓	✓		✓		
B	**Support sustainable development within Kent and Thurrock**. Support effective local and regional connectivity through improved integration with sustainable transport modes to minimise the impact of short distanced trips from key growth areas and strategic development sites to benefit the economy		✓		✓		
C	**Promote the Kent Corridors as a region that sets the standard in supporting the use of technology.** Improve communication technology to better inform users during periods of disruption, providing an enhanced end to end journey experience on the Kent Corridors. Maximise the use of emerging technologies to support the net zero economy, and use schemes such as the Lower Thames Crossing to test low carbon innovation and approaches		✓			✓	✓
D	**Improve resilience of routes from Dover, Sheerness, Tilbury and Thames Gateway Ports to the M25.** Provision of safe, suitable, and efficient routes to further improve resilience between the M20/A20 - M2/A2 corridors and A13/ A1089, improving journey time reliability and reducing impact on the Local Road Network	✓	✓				
E	**Promote sustainable connectivity in region.** Improve connectivity to ports and airports and the rail network (including access to high-speed services and east-west connectivity), to broaden mode and route choice and reduce vehicle use where possible		✓	✓	✓	✓	
F	**Be a better neighbour by safeguarding the environment and reducing the impact of air quality and noise on local communities including Dover, Maidstone, Aylesford, Ashford and Canterbury.** Support schemes that reduce the impact of travel on neighbours, and protect areas with environmental designation around the route notably the Kent Downs Area of Outstanding Natural Beauty (AONB) and Special Areas of Conservation (SAC) as far as practicable which lie directly adjacent to the M20 and A2			✓			

Next steps

The 20 route strategy Initial overview reports will combine with other related evidence to inform the broader *SRN initial report*[3] as part of the RIS process for the third road period (2025-2030). The *SRN initial report* includes an assessment of the current state of the network and user needs from it, potential maintenance and enhancement priorities, and future developmental needs and prospects. The DfT will consult on this *SRN Initial report*, which will serve to inform the RIS and *Strategic business plan*[4].

We will finalise the Route strategy overview reports following feedback on the publication of these Initial overview reports. They will be used as a forward planning tool by National Highways to help identify investment opportunities for enhancements, as well as to support decisions around operating and maintaining our network. Providing an understanding of the strategies for each route will also help inform the decisions taken by our interested parties. These finalised Route strategy overview reports will also serve to inform the RIS and *Strategic business plan*.

3 National Highways 2023 *Strategic Road Network Initial Report*, https://nationalhighways.co.uk/futureroads
4 National Highways 2023 *Connecting the country; Our long-term strategic plan*, https://nationalhighways.co.uk/futureroads

Helping the nation to thrive

01 Introduction

Our strategic road network (SRN) is the backbone of the country. Over 4,500 miles of motorways and major A-roads connect people, build communities, create opportunities and help the nation thrive.

Our network provides safe, high-speed connections that:

- enable businesses to transport products and services
- provide access to jobs and suppliers
- facilitate trade and investment
- support commercial and housing development that is integrated with local roads and other modes of transport

The SRN also supports leisure journeys, connecting people and places, and will play a central role in delivering the social, economic and environmental needs of the nation, especially as we seek to reduce the carbon footprint of our network.

To plan for the future, we are taking a long-term view of our network and the trends that could impact transport, road travel and personal and commercial mobility. We consider factors ranging from climate change and low-carbon transport to increasing automation, digital technologies and changing travel preferences. Route strategies are at the centre of this dynamic future planning of our network. They build on our *Connecting the country: Our long-term strategic plan to 2050*[5] that sets out our vision and plan for the SRN until 2050, aligning with the government's *Ten point plan for a green industrial revolution*[6].

Purpose of route strategies

Our route strategies are based on 17 routes across England, with some split into two sub-strategies where this better reflects our customers' end-to-end journeys. There are 20 reports in total. We outline the objectives of each route along with the constraints faced and the current and predicted future performance based on analysis and widespread engagement with our customers and neighbours. Our customers and neighbours include:

- local authorities, devolved administrations, and Sub-national Transport Bodies
- other transport network operators (including local highway authorities, Network Rail, port and airport operators)
- operational partners (including, but not limited to, the emergency services)
- road users
- local communities
- other relevant interested parties with a significant stake in the long-term development of the network
- Members of Parliament

We also provide a list of locations for further consideration to inform investment planning across National Highways and for the Road investment strategy (RIS). We develop and publish these route strategies to:

- help us develop an understanding of the future state of the routes
- identify the locations for further consideration to inform our investment programmes and guide our vision

5 National Highways (2023) *Connecting the country: Our long-term strategic plan to 2050* https://nationalhighways.co.uk/connectingthecountry
6 HM Government (November 2020) *The Ten Point Plan for a Green Industrial Revolution: Building back better, supporting green jobs, and accelerating our path to net zero.* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf

- give a practical tool to National Highways as a whole, while supporting external interested parties who anchor their infrastructure planning and investment around our network
- help ensure that all investment delivers safer and more reliable journeys for our customers and neighbours

For clarity, this document does not:

- identify committed schemes for delivery as part of future RIS periods. This will be part of the wider RIS setting process
- commit to the delivery of local plans or economic growth developments mentioned
- guarantee funding for any locations identified for further studying to understand the challenges and issues in more detail
- preclude the inclusion of other locations for consideration in the light of other evidence or imperatives

Route strategy reports

These Route strategy initial overview reports have informed the *SRN initial report*[7] that sets out our vision and proposed priorities for the third road period (2025-2030) and beyond.

The final Route strategy reports will be published by the end of the RIS period, which covers 2020-2025. The three delivery phases of route strategies are shown in Figure 1.

Purpose of the report

This report is the route strategy for East of England. In this report, we detail the route context, current constraints on the route, and opportunities for improved connections with local roads and rail links. We set out intelligence-led route objectives aligned with the DfT's six strategic objectives. These objectives aim to ensure the route can serve its function, while mitigating the identified constraints and challenges. They conclude with locations for further consideration to achieve the route objectives.

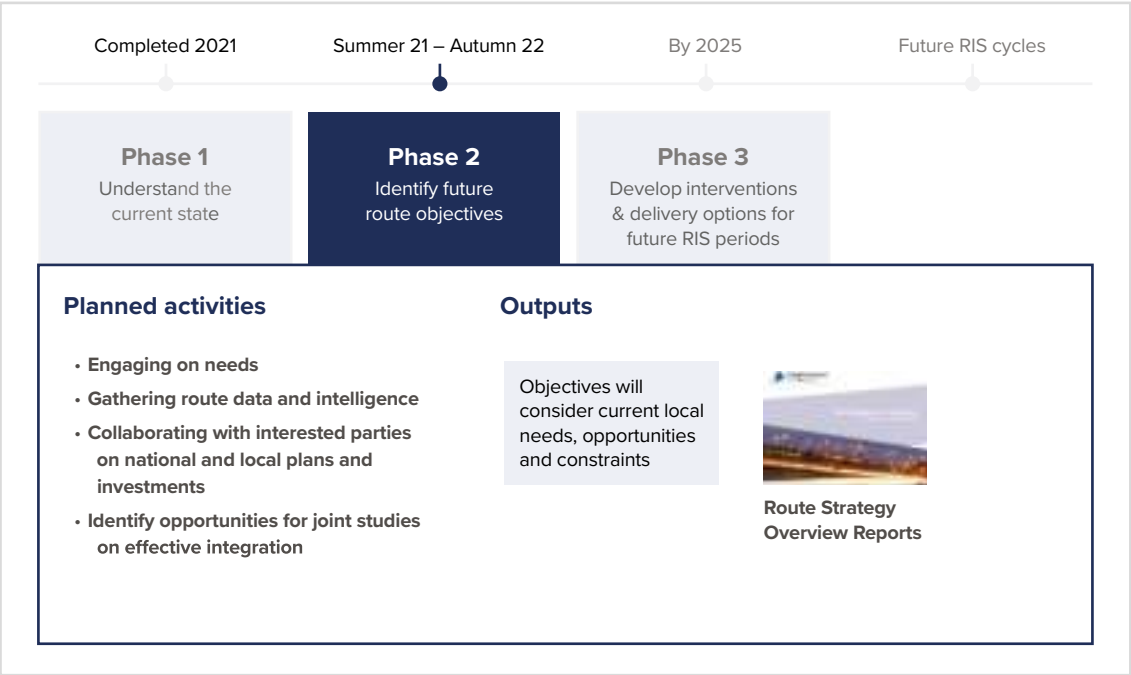

Figure 1: The route strategies delivery phases

7 National Highways, 2023, *Strategic Road Network Initial Report*, https://nationalhighways.co.uk/futureroads

The route objectives and locations for further consideration will be presented to DfT to inform future decision-making about investment planning through the RIS. It should be recognised that not all aspirations outlined in this report can be funded or delivered.

The development cycle for the third Road Investment Strategy (RIS3)

Preparing route strategies is a requirement under the Infrastructure Act as well as a National Highways Licence requirement. The Licence sets out the Secretary of State for Transport's statutory directions and guidance to National Highways. It states that we must periodically prepare and publish route strategies covering the whole of the network to maintain an understanding of how the network is performing, while identifying any potential challenges. Each set of route strategies informs each RIS outlined by government, as well as supporting decision-making for the ongoing management and development of the network.

Route strategies are one of the key steps of research required by DfT to inform the setting of a RIS. Following the setting of RIS1 and RIS2, which covered the first road period (2015-2020) and second road period (2020-2025), we are now in our third round of route strategy planning informing RIS3 for the third road period (2025-2030) and beyond.

Looking across the whole of the SRN, our route strategies form one of the most important parts of the 'research' phase of the RIS3 development cycle. These strategies explore the current performance and future pressures on every stretch of the SRN, covering matters such as safety, reliability, congestion, environmental impacts, and local ambitions for economic and housing growth. Through the extensive engagement we have undertaken to inform the strategies, we provide insight to DfT and government into local, regional and national priorities for the SRN to support investment decisions for RIS3 and beyond. Grounded in evidence, the strategies identify the immediate needs of the network as well as highlighting longer-term issues or potential opportunities as shown in Figure 2.

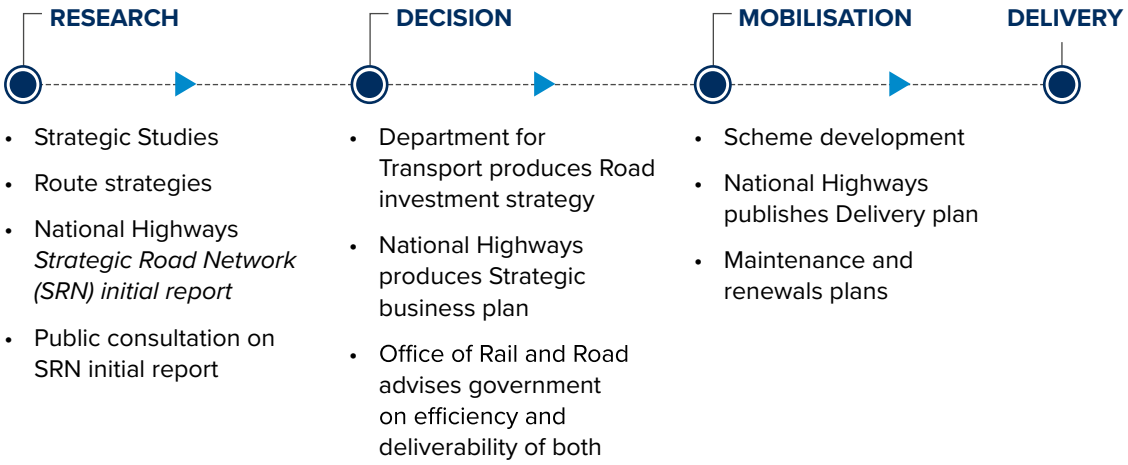

Figure 2: The RIS development cycle

We have developed a revised approach to route strategies, building on past versions, to ensure they respond to the current and future needs of our customers and neighbours. The approach for route strategies is outlined in our approach document *Vision for route strategies: Planning for the future of our roads*[8].

Our ambitions for route strategies, summarised in Figure 3, are to be forward-looking, widely supported, and integrated with other networks and modes of travel. They will consider the implications of local development plans and government ambitions and be dynamic to respond to the changing needs of ou customers and neighbours in how they use and interact with our network. Such needs may evolve as a result of how people use our network due to COVID-19, environment considerations, or the need to support strategic connections and integrated solutions that connect locations, all of which will have an influence on the scale and type of future investments. We will work with interested parties to ensure that the route strategies are widely supported and integrated into regional and local strategies.

Engagement with customers and neighbours

Engagement with customers and neighbours has been central to developing our route strategies. We have already gathered a wealth of evidence from the previous rounds of route strategies and through our ongoing monitoring of road condition and performance.

Building on engagement to date, we have worked with Sub-national Transport Bodies, Office of Rail and Road, Department for Transport, and Transport Focus to ensure a diverse range of people and their views are represented. This has allowed us to further improve our understanding of our customers and neighbours' requirements, helping us identify locations for further consideration to improve the SRN.

We will continue to evolve this engagement process for future cycles of route strategies. We used a range of methods to gather information from customers and neighbours throughout the route strategies' evidence collection period, which ran from August to December 2021 (Figure 7). These included round tables, workshops, and an online feedback form and we designed the approach to be more inclusive by engaging with, and learning from, a wide range of interested parties.

Thinking about how the SRN integrates with the surrounding rail and road network, including parts of the Major Road Network (MRN) and local roads, we designed our engagement around the following objectives:

- to understand the current role of the SRN and how it could better support the aspirations of customers and neighbours of the future
- to gather views and seek evidence on current and future issues, challenges and opportunities – both local and strategic

We have also gained an in-depth understanding of what our road users want nationally from Transport Focus' *Strategic roads user survey 2021/22*[9] into road users' priorities for improvements to journeys on the SRN. This research was based on focus groups and interviews with all types of road users across the country, alongside a survey of more than 5,000 drivers. It asked for users' views on key issues, such as sustainability and electric vehicles, and the stress of driving on the SRN.

From this research, Transport Focus identified that the majority of road users want the focus of investment to be on keeping National Highways' existing roads in good order before building new ones. Their top priority for improvement to journeys on the SRN is road surface quality, followed by the safer design and upkeep of roads.

8 Highways England, 2021, *Vision for route strategies Planning for the future of our roads*, https://nationalhighways.co.uk/media/w0vhd3un/vision-for-route-strategies.pdf
9 Transport Focus, 2022, *Strategic Roads User Survey - 2021/22 Summary Report*, https://www.transportfocus.org.uk/publication/strategic-roads-user-survey-2021-22-summary-report/

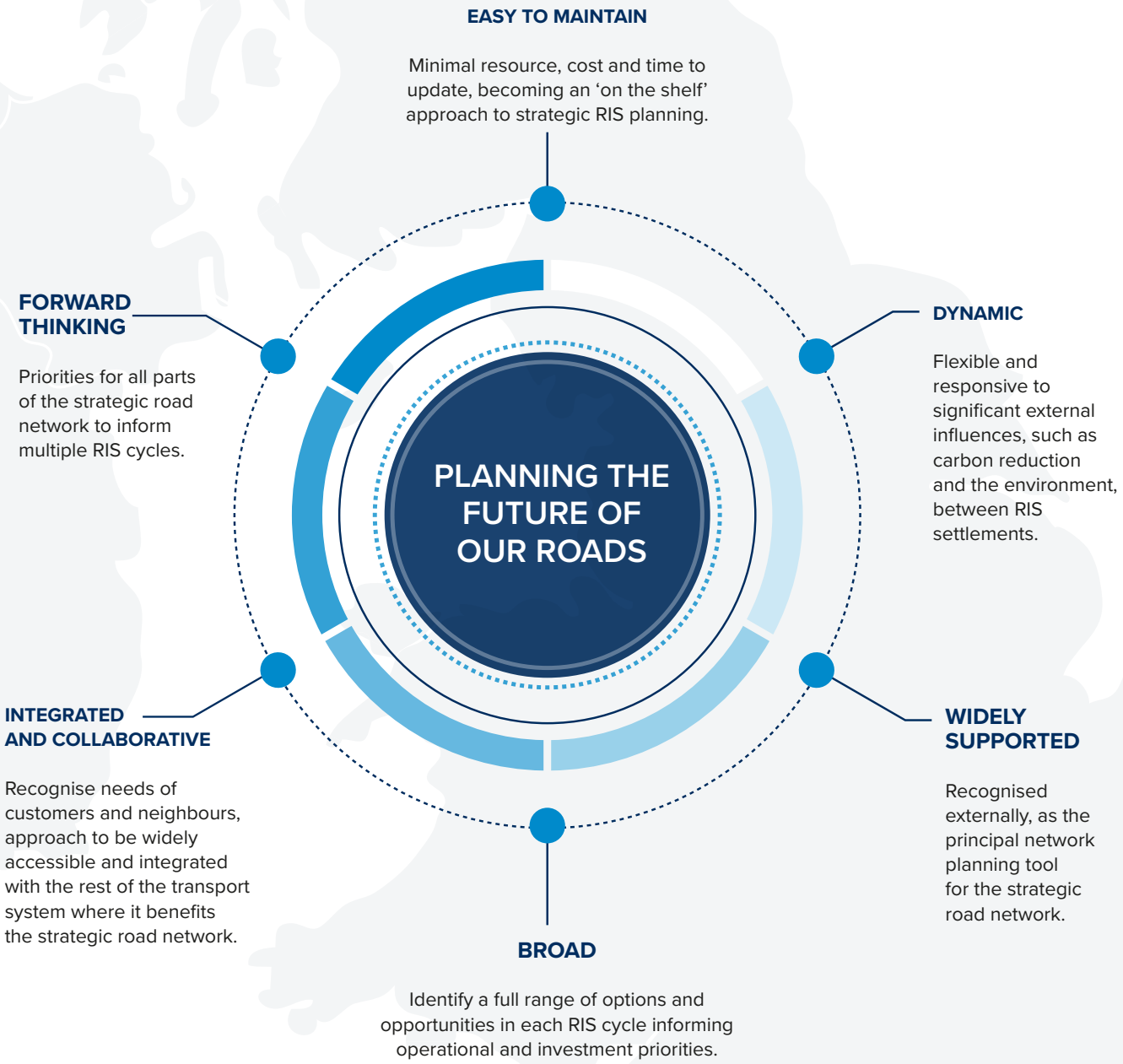

Figure 3: Our ambition for route strategies

Users also want to see better management of roadworks and of unplanned delays, such as incidents or breakdowns, and better information about unplanned disruptions to journeys. Walkers, cyclists and horse riders using the SRN highlighted concerns about the speed of traffic and want action on lighting and litter. This research will be used by Transport Focus to make recommendations about what National Highways should be required to deliver during the third road period (2025-2030).

The findings from the Transport Focus survey align with findings from our route strategies engagement with customers and neighbours across the SRN.

Engagement during workshops with interested parties (shown in Figure 6) identified the following national priorities:

- Better driver education aimed at teaching road users about new technology
- Deeper consideration of environmental constraints at the earliest stage of planning, and consideration for key environmental issues such as biodiversity, air quality and sustainable transport
- A resilient and reliable SRN to support economic growth
- Better integration between the SRN and local road network to improve journey times
- Greater support for the freight industry in terms of:
  - The future of low emission vehicles and commercial fleet
  - The impact of congestion on productivity, fuel cost, driver breaks, lorry park locations and delivery times
- Greater collaboration and early engagement with interested parties, and greater alignment between network operators, including consideration for joint funding opportunities

In addition, feedback on the SRN provided by communities and neighbours via the online tool, showed similar national priorities. The breakdown of the 1,700 responses we received via the online feedback tool are shown in Figure 4 and Figure 5.

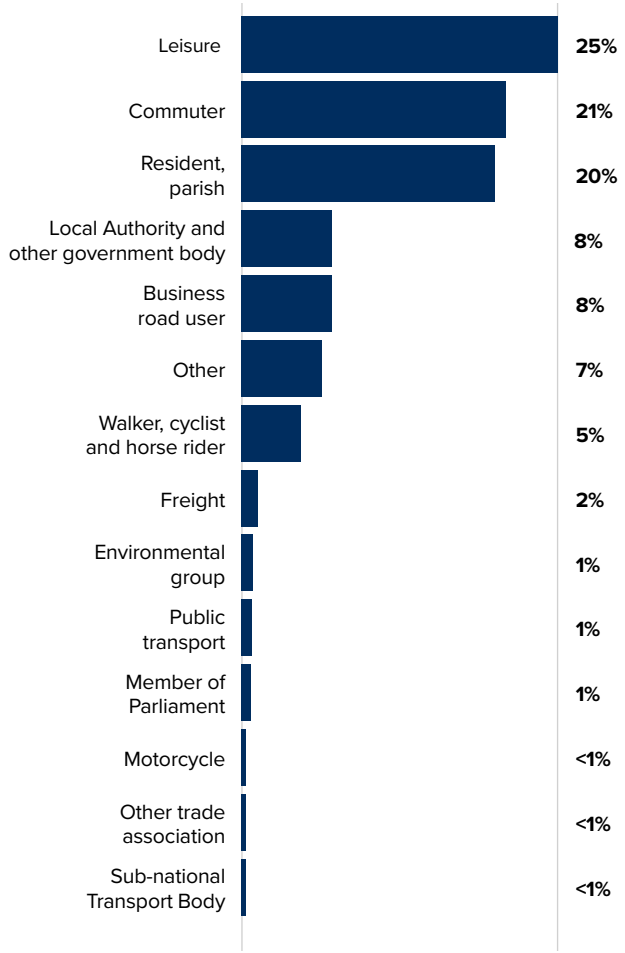

Figure 4: All responses to online tool by participant type

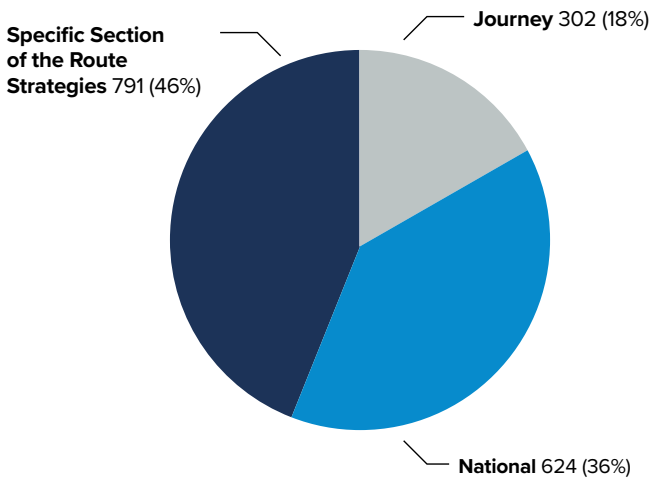

Figure 5: All response to online tool by type

A breakdown of the national issues and general feedback raised is shown in Figure 8, which highlights that, in terms of the issues identified:

- 26% were related to safety
- 23% were related to congestion
- 28% were related to the environment or carbon

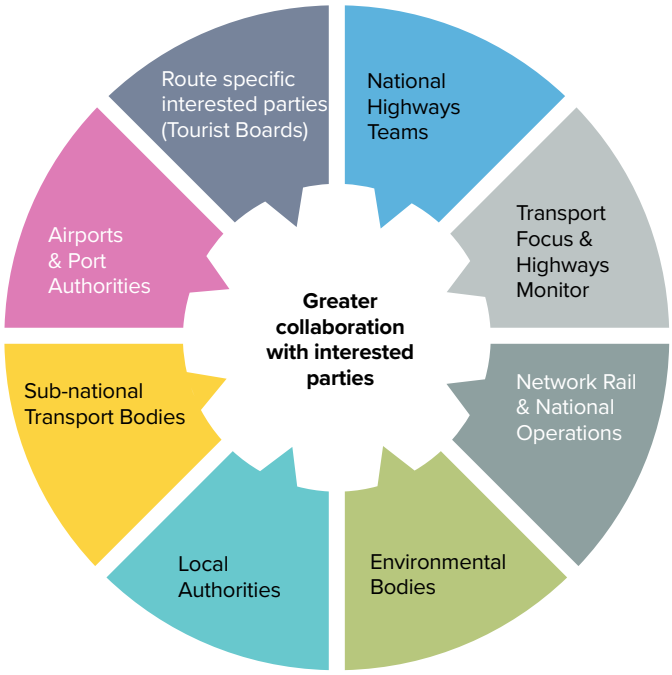

Figure 6: Interested parties involved in the route strategy engagement

Online tool for road users, communities and regional interested parties (August 2021 to 31 Dec 2021)

↓

Workshops for key interested parties at national and regional level (Autumn 2021)

↓

MP round tables (Autumn 2021)

Figure 7: Timeline of engagement with interested parties

DfT's strategic objectives for the strategic road network

DfT have published six objectives for the SRN. These are the strategic objectives for RIS3 (2025-2030) that have been agreed between National Highways and DfT and were set out in the *RIS3 Planning ahead*[10] document in December 2021. They cover safety, network performance, environment, economy, management and planning for the future and technology.

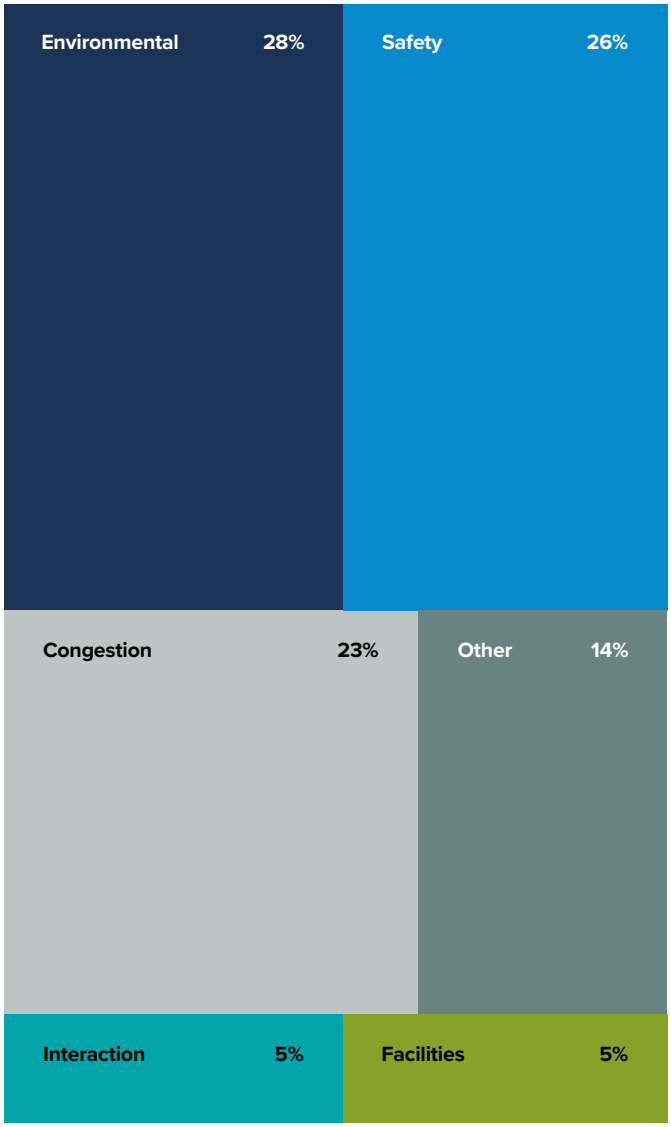

Figure 8: National themes from feedback through the online tool

10 Department for Transport, December 2021, *Planning ahead for the Strategic Road Network: Developing the third Road Investment Strategy,* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1045938/planning-ahead-for-the-strategic-road-network-developing-the-third-road-investment-strategy.pdf

All our route strategies need to show how they contribute to the delivery of the DfT's six strategic objectives for our network, to ensure we meet future challenges. These help us create relevant, meaningful and effective strategies that address evolving concerns. Such concerns include decarbonisation, ecology, the need for new homes and the desire for a better-connected country.

This aligns with the Infrastructure Act 2015, where National Highways has a statutory obligation to have regard to the effect of its functions on the environment, and the safety of users of highways.

At a national level, National Highways has existing commitments and ambitions to contribute to the DfT strategic objectives, as outlined below. The strategies for each route are aligned with these. They include:

DFT'S SIX STRATEGIC OBJECTIVES FOR THE STRATEGIC ROAD NETWORK

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- Managing and planning the SRN for the future
- A technology-enabled network

i) Improving safety for all

- Our safety approach

ii) Network performance

- Expectations over COVID-19 and travel demand
- Our ambition for supporting freight, logistics and the coach industry
- Our ambition for supporting end-to-end journeys for a variety of modes
- Our approach to trunking and de-trunking for SRN

iii) Improved environmental outcomes

- *Net zero highways: Our 2030/2040/2050 plan*[11]
- Our plan for net zero carbon travel on our roads covering emissions from the vehicles using the SRN
- Our approach to improved environmental outcomes

iv) Growing the economy

- Our contribution to growing the economy and levelling up
- Our approach to spatial planning

v) Managing and planning the SRN of the future

- Our approach to asset management

vi) A technology-enabled network

- Our ambition for digital roads

11 National Highways (2021) *Net zero highways: our 2030 / 2040 / 2050 plan*. https://nationalhighways.co.uk/media/eispcjem/net-zero-highways-our-2030-2040-2050-plan.pdf

IMPROVING SAFETY FOR ALL

OUR SAFETY APPROACH: We are committed to reducing the number of road users killed or seriously injured on the strategic road network, by 50% (from the 2005-2009 baseline) by the end of 2025, with a long-term vision to eliminate harm arising from use of the SRN. We recognise:

- safety is National Highways' top priority. We believe that everyone who travels or works on our roads should get home safe and well
- billions of miles are travelled on the SRN each year, with the vast majority of these safe and reliable journeys
- our roads are some of the safest in the world, but we know there is more we can do. Every death or serious injury on our roads is a tragedy and we are committed to creating the safest roads in the world

NETWORK PERFORMANCE

EXPECTATIONS OVER COVID-19 AND TRAVEL DEMAND: COVID-19 has had the biggest single-year impact on road traffic since records began in 1949. But car traffic on the SRN is now back to approximately 95% of pre-pandemic levels.

At the time of writing, while the onset of COVID-19 and the rapid rise in homeworking initially decreased demand for both public and private transport, the greatest impact has been on public transport, with private vehicle travel the first mode to rebound. Homeworking has not noticeably reduced demand for the SRN. An estimated 43% of UK jobs can be done entirely from home, but nearly two-fifths of businesses expect 75% of their workforce to eventually return to their normal place of work.

It is unclear if the scale of homeworking will continue or how it will affect long-term travel demand. For the short-term, transport flow data has generally shown that traffic peaks have become flatter but broader, with traffic more evenly spread across the day, suggesting some behaviour change.

Continued hybrid working could see a redistribution of demand, flattening the daily morning and afternoon peaks, and instead creating a mid-week peak.

The pandemic has also brought wider uncertainties, such as whether these loosened physical ties to employment locations could see increases in suburban living, as workers that are more 'knowledge-based' than 'location based' take advantage of greater geographic mobility across the country.

Changes in leisure trends caused by the pandemic could also have implications for the SRN, such as the changing demand for high street retail or choices around domestic versus overseas holiday-making. Such needs may evolve, all of which will have an influence on the scale and type of future investments.

SUPPORTING FREIGHT, LOGISTICS AND THE COACH INDUSTRY: We continue to collaborate with our freight and logistics customers to better understand how the SRN can support their operations, and work with wider government in the delivery of their *Future of freight plan*[12]. We recognise that lorry parking and facilities are key to enabling freight and logistics businesses to operate safely and efficiently. A lack of parking and good quality facilities impacts the recruitment and retention of drivers into a sector that is crucial to the country's economy. We are keen to play our part in ensuring good quality facilities are in the right places and that we support the sector in recruiting and retaining a diverse pool of drivers.

Our ambition is to improve lorry parking by:

- intervening where the market is not meeting the demand for lorry parking (areas of high demand with insufficient facilities)
- working with operators to improve the quality of existing facilities
- ensuring our major projects consider the needs of lorry drivers

12 Department for Transport (June 2022) *Future of Freight: a long-term plan*. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1085917/future-of-freight-plan.pdf

In addition to supporting lorry parking, we remain focused on:

- reducing congestion on the SRN, which affects the speed, reliability and cost of logistics, as well as driver safety when journeys exceed regulated driving time
- improving the suitability of alternative routes and diversions off the SRN
- supporting the industry in achieving net zero carbon emissions by facilitating the adoption of alternative fuels linked to parking facilities
- ensuring resilience on key freight routes, such as between ports, airports, wharves and rail freight interchanges
- increased data sharing on incidents, roadworks and diversions
- understanding changes in how our freight and logistics customers use the SRN so we can continue to provide the best possible service

IMPROVING END-TO-END JOURNEYS FOR A VARIETY OF MODES: The SRN plays an important role in supporting a wide range of customer journeys by different modes of transport. We are exploring how to support customers' end-to-end journeys by creating travel choices that deliver our target of net zero carbon customer journeys by 2050. We recognise our role in supporting an integrated transport network that allows our current and future customers to re-route, re-time, re-mode and reduce their journeys, especially at peak times and during major disruption.

Through understanding National Highways' role in influencing and improving travel, we will identify how to support customers utilise the right mode for the right journey. By working closely with operators, we will ensure our network supports bus and coach services.

And through the development of active travel networks we can help deliver health and wider social benefits.

Our focus is on delivering net-zero customer journeys by 2050 through behaviour change towards sustainable travel by:

- understanding travel behaviours to identify customer needs for end-to-end journeys, supporting the development of a travel demand management strategy
- ensuring our customers have the information they need to make the travel choices that are right for them
- improving integration of different modes of travel by working with key interested parties to deliver a range of active travel and public transport interventions
- using behaviour change and techniques to manage future travel demand and minimise disruption from major works
- continuously improving our offer for walkers, cyclists and horse riders

SRN TRUNKING/DETRUNKING: For RIS2 (2020-2025), we were asked to explore changes to the SRN to ensure the network aligns with RIS2 strategic priorities, reflected in the *Strategic business plan*. This plan relates to improving connections between main urban centres, to international gateways, to peripheral regions (for levelling up) and strategic cross-border routes (to strengthen union connectivity). It included a commitment to explore potential asset ownership changes between ourselves and local highway authorities that could be implemented no earlier than the start of RIS3 (2025-2030). DfT have produced a shortlist of 18 trunking and two de-trunking candidates, identified following the draft RIS2 public consultation in 2018, for us to assess desirability and viability of asset transfer.

De-trunking is the process of returning a National Highways road to the local highway authority control and visa versa for trunking. These candidates were put forward by a range of external interested parties, including local authorities, Local Enterprise Partnerships and Chambers of Commerce, then shortlisted by DfT.

These candidates were put forward by a range of external interested parties, including local authorities, Local Enterprise Partnerships and Chambers of Commerce, then shortlisted by DfT. There is ongoing work to review the assessment evidence and recommendations, after which government ministers are expected to announce the candidates that will progress to the detailed development stage, which will be led by National Highways and incorporated in the forward study programme and wider RIS3 process.

IMPROVED ENVIRONMENTAL OUTCOMES

NET ZERO HIGHWAYS:
NATIONAL HIGHWAYS' 2030/2040/2050 PLAN[13]. We are committed to being a Net Zero Carbon Company by 2050 (2040 for Maintenance and Construction emissions).

We published our ambitious net zero carbon plan in July 2021. It details how we will achieve net zero emissions for: our corporate space by 2030, our maintenance and construction emissions by 2040, and road user emissions by 2050. We're keen to support a sustainable future and know that road travel is vital to enabling a thriving net zero economy. Our plan strengthens the decarbonisation of the transport sector, which remains the biggest emitting sector of greenhouse gases in the country.

We also need to consider how the SRN will be resilient to climate change. Our route strategies will need to recognise that the schemes we construct are likely to be subjected to changes to the climate, such as flooding.

Our route strategies demonstrate how we will continue to connect the country and ensure that the SRN is environmentally sustainable and resilient to climate change. This includes understanding the right schemes and options that support integration across different modes of travel, improve the SRN's capacity through digital roads, and deliver broader environmental enhancements.

This will change the way we work both internally and with our supply chain and wider interested parties.

As part of our net zero commitment, we need to consider the contribution our schemes make to sustainable development. We are adopting the PAS2080 Carbon Management in Infrastructure Standard that will help us invest only where we can achieve our zero carbon goals. Guided by the PAS2080 Standard, we will use an investment hierarchy where we favour opportunities to deliver whole life value without undertaking construction. We will demonstrate that we have considered all interventions during our planning stages and that every effort is made to avoid negative impacts and maximise environmental benefits throughout the lifecycles of schemes. We will also work with government and the private sector to set out a clear proposition by 2023 for electric vehicle charging on our network. This will cover both customer need and the infrastructure required to deliver this.

More than ever we need to support the Government's wider plans for decarbonising transport. The SRN plays a pivotal role in supporting the transition to zero carbon cars, vans and heavy goods vehicles (HGVs), but we also recognise that we need to better integrate with other modes of transport too, including public transport and active travel.

NET ZERO CARBON TRAVEL ON OUR ROADS COVERING EMISSIONS FROM THE VEHICLES USING THE STRATEGIC ROAD NETWORK:
We have set an ambition for all of our customers to be travelling using net zero transport by 2050, in line with the UK Climate Change Act. Many of the actions that will deliver this ambition are out of our direct control, but that does not mean we cannot play our part. Our priorities are to help roll-out solutions to decarbonise HGVs and support the uptake of electric cars and vans. We will also continue our work on integrating the SRN with other transport modes, while working to improve the efficiency of the network.

13 National Highways (2021) *Net zero highways: our 2030 / 2040 / 2050 plan*. https://nationalhighways.co.uk/media/eispcjem/net-zero-highways-our-2030-2040-2050-plan.pdf

Our actions relating to reducing emissions from road users of our network include:

- publishing our proposed approach to zero carbon HGV trials by the end of 2022
- publishing a blueprint for electric vehicle charging services on our roads by 2023
- integrating a strong modal shift programme in the third road period (2025-2030), building on our work to date

IMPROVED ENVIRONMENTAL OUTCOMES: We know there's a requirement to balance people's need to travel on our roads with doing all we can to protect and improve the environment. That means we will continue to consider a wider range of environmental factors in our future planning, such as improving biodiversity, protecting ancient woodlands, reducing pollution in Air Quality Management Areas, and protecting Sites of Special Scientific Interest. These will form part of our considerations during our early planning. In response to these emerging issues, our latest route strategies take a more balanced view on expanding the future capacity of the SRN. We now seek to develop strategies that produce balanced investment plans with schemes of different magnitudes, delivering across multiple objectives: safety, journey time improvements, network resilience, maintenance and renewals, technology, environmental enhancement, and integration with more sustainable transport modes. The outcome will be an SRN that supports the economy but also delivers on the wider environmental challenges.

GROWING THE ECONOMY

GROWING THE ECONOMY AND LEVELLING UP: The SRN is a vital part of England's – and the UK's – transport infrastructure. It facilitates the movement of people and goods nationally, regionally and locally through connections to the major road network and other transport infrastructure. The Government's levelling up agenda places emphasis on ensuring no community is left behind, particularly as we recover from the COVID-19 pandemic. With such a vital role in supporting the economy and facilitating connectivity - enabling access to jobs and homes, international gateways and supporting road-reliant sectors – National Highways and the SRN have a role to play in supporting the levelling up agenda and the wider aim of economic prosperity.

The Government is committed to strengthening transport connections across the UK. Sir Peter Hendy's *Union connectivity review*[14] was published in late 2021. The Review recommends the creation of UKNET, a strategic transport network spanning the entire United Kingdom based on a series of principal transport corridors between key urban and economic centres, including international gateways. The findings of this report have been considered in the context of our route strategies and will be a key objective for our cross-border routes and the roads connecting to important ports.

Additionally, the SRN plays a critical role in enabling international connectivity and trade by providing reliable and resilient access routes to global markets via the country's network of international ports, airports and the Channel Tunnel. Enhancing these links and supporting these gateway locations to thrive, including maximising the opportunities of Freeports, is a key part of National Highways' role in supporting the national economy.

14 Hendy, P. (November 2021) *Union Connectivity Review: Final Report.* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1036027/union-connectivity-review-final-report.pdf

SPATIAL PLANNING: We recognise that businesses operate from the location that best suits their business requirements in terms of access to customers, the supply chain and employees. Location is equally critical to decision-making in the residential market, both for the house builder and the potential purchaser or occupier. In enabling new employment spaces and homes to be developed, at National Highways we engage fully and positively as a statutory consultee in the planning system.

This is in line with our statutory responsibilities as set out in our Licence, and in support of wider government policy and regulation. Our focus is on securing sustainable development, managing cumulative impacts of strategic growth, and minimising the potential for any negative impacts on the SRN.

MANAGING AND PLANNING THE SRN FOR THE FUTURE

We recognise that asset management is our core business. It is the service we provide to maintain, operate, and enhance the SRN safely, reliably and effectively for all our customers. We manage more than 4,500 miles of road, over 20,000 structures and 12 road tunnels, as well as drainage, earthworks, and technology equipment. We recognise that our customers rely on our roads to travel approximately 95 billion miles every year, and our work helps unlock housing and employment sites across the country. One of our main priorities is managing these assets effectively and efficiently, to deliver the outcomes our customers and interested parties want.

We have adopted an asset management approach in order to align our strategy and planning activities to create, maintain, operate, and renew all of the assets that make up our network. Asset management links all our activities and supports our three imperatives: safety, customer service and delivery.

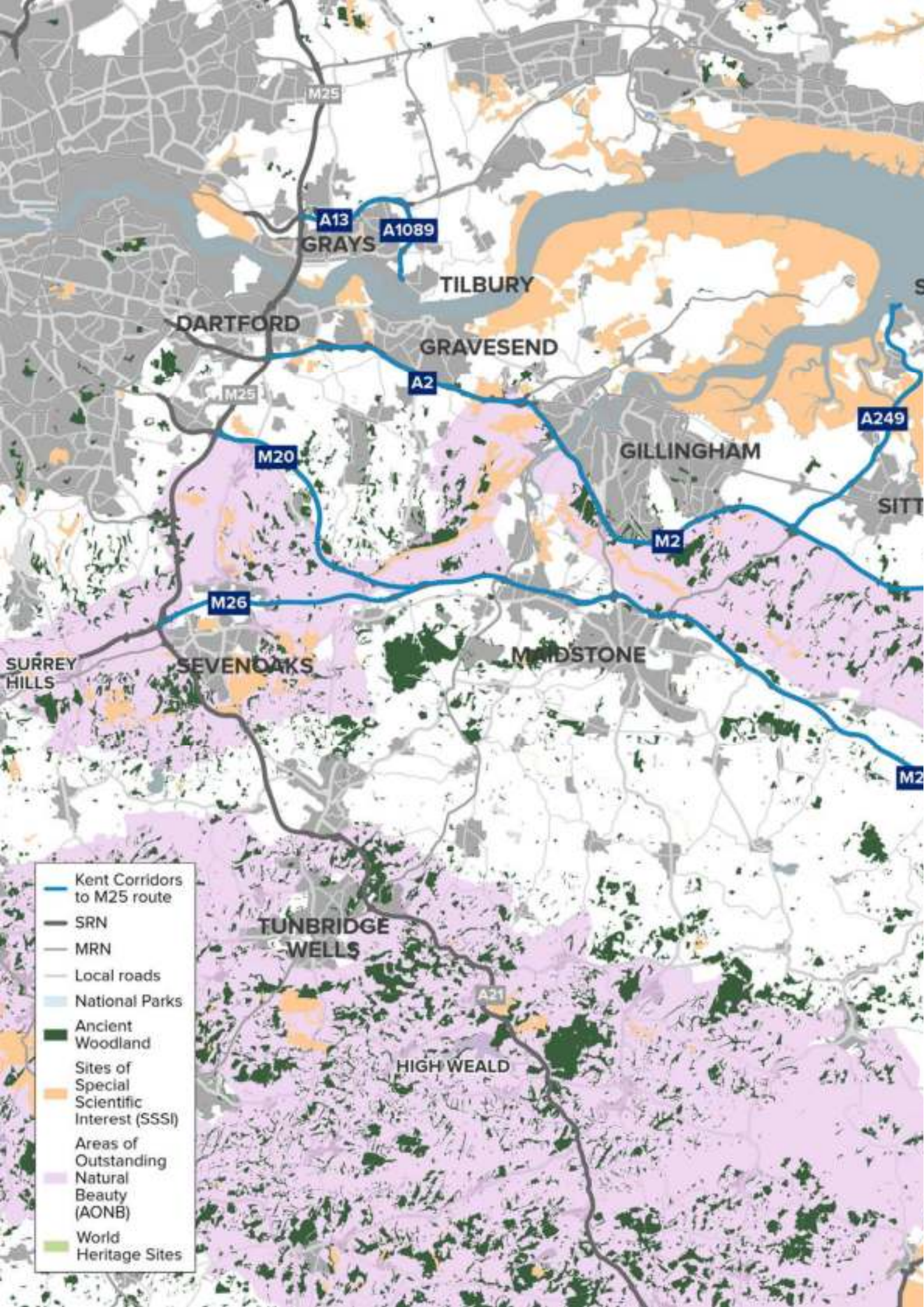
We know that good asset management is about understanding our customers and interested parties, identifying what they need and then using our assets effectively to deliver the right level of service. We are working to understand what satisfies our customers, and what we can do to influence this.

Our vision is to create an approach and establish ways of working that make sure all our asset management activity is aligned by following the key principles set out in our asset management policy. We work across the whole asset lifecycle, understanding that asset decisions we make may affect future service provision. This means that we are planning and accounting for emerging and evolving challenges around customer expectation, climate change and new technology. Since the beginning of the second road period we have continued on our journey to increase our asset management maturity, and our organisational objectives have developed significantly in light of COVID-19 and the Government's carbon plans.

A TECHNOLOGY-ENABLED NETWORK

DIGITAL ROADS: Our ambition for digital roads is to continue to harness data, technology and connectivity of people to places and communities and networks to improve the way the SRN is designed, built, operated and used. Our recently published *Digital roads strategy* (September 2021)[15] sets out how we will harness data, technology and connectivity to improve the way the SRN is designed, built, operated and used. This will also support our ambitions to achieve net zero carbon on the SRN. We have established three themes: Digital design and construction, digital operations and digital for customer. These themes will continue to frame our vision towards 2030 and beyond, increasing connectivity, automation and data.

15 National Highways (2021) *Digital roads*. https://nationalhighways.co.uk/our-work/digital-data-and-technology/digital-roads/


M25
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A1089
GRAYS
TILBURY
DARTFORD
GRAVESEND
A2
M25
A249
M20
GILLINGHAM
M2
M26
SURREY HILLS
SEVENOAKS
MAIDSTONE
TUNBRIDGE WELLS
A21
HIGH WEALD
Kent Corridors to M25 route
SRN
MRN
Local roads
National Parks
Ancient Woodland
Sites of Special Scientific Interest (SSSI)
Areas of Outstanding Natural Beauty (AONB)
World Heritage Sites

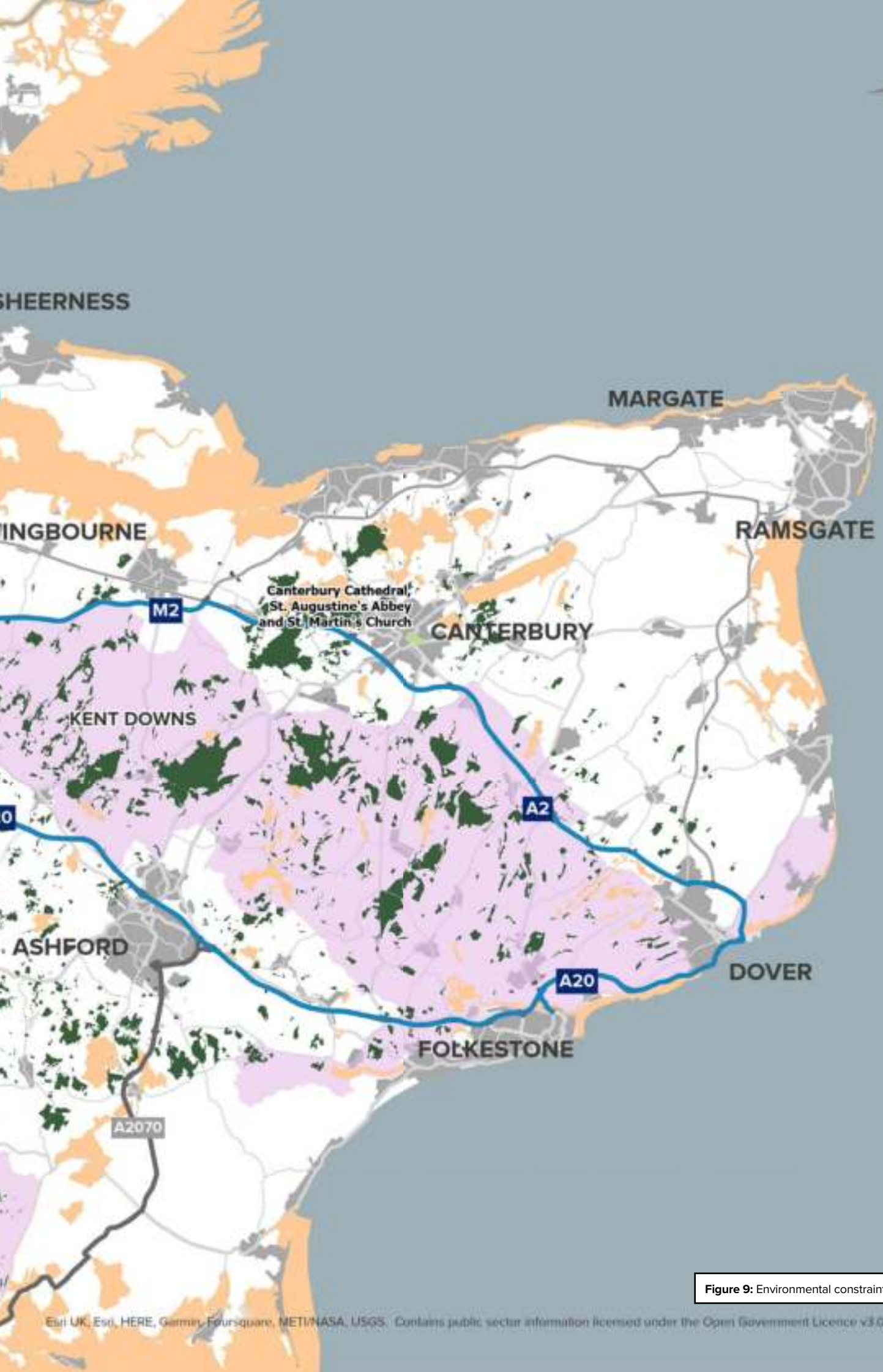


Figure 9: Environmental constraints

Our network connects the country

02 The route

The Kent Corridors to M25 route provides access to the key international gateways of Dover, Folkestone, Sheerness, the Channel Tunnel, and the Thames ports (London Gateway and Tilbury), which form part of the Thames Freeport. It covers approximately 145 miles of the SRN within Kent and Essex.

As shown in Figure 10, the M20/ A20 and M2/A2 form corridors connecting the Channel Tunnel, Folkestone and Dover to the M25. The A249 spur from the M2 provides a link to Sheerness. The A13 / A1089 connects Tilbury Port to the M25, and provides a link to DP World London Gateway, all of which form part of Thames Freeport. The M20 and M2/A2 both provide onward connection to the Dartford Crossing (via the M25 / A282), providing access to the Midlands and wider road network nationally, and in this respect are an integral part of the UK logistics network.

The route is situated within the County of Kent and the unitary area of Thurrock. It interfaces with the M25 London Orbital Routes, linking key international gateways to the M25 and the rest of the UK. One-seventh of all UK trade passes through the Port of Dover, thus the port is of strategic importance nationally. The Thames Ports at both Tilbury and London Gateway are also of national importance for international trade, particularly given their Freeport designation.

The route connects traffic to and from these crucial international gateways, as well as linking major conurbations in the county, such as Medway, Maidstone and Canterbury, to each other and the rest of the country. It also plays a significant role in local connectivity. For example, the A2/A20 in Dover provides a route for traffic to avoid the town centre.

The route runs alongside or through much of the Kent Downs Area of Outstanding Natural Beauty (AONB), a nationally protected landscape stretching from the White Cliffs of Dover to the Surrey and London boundaries.

'Operation Brock' is at times implemented on the M20 between Junctions 8 and 9 when there is cross-Channel disruption to help keep Kent moving and safely manage heavy goods vehicles (HGVs) travelling from the UK to the continent. HGVs travelling to the Port of Dover or Channel Tunnel use the coastbound carriageway with a 30 miles per hour speed limit in place, and all other traffic uses a contraflow system on the London-bound carriageway. The Dover Traffic Access Protocol (TAP) is also sometimes activated on the A20 to minimise disruption from traffic using the Port of Dover; this protocol queues port-bound lorries in one lane of the A20 to prevent Dover becoming congested with traffic.

The A2 is an unsuitable alternative primary route for cross-Channel traffic. This is due to variable route consistency and at-grade junctions at regular intervals to integrate with the local highway network, which can worsen disruption. There is also limited provision of technology across the route.

The M20/A20 and M2/A2 are used by HGVs travelling to and from the international gateways, and tourists for international travel. The A13 and A1089 are dominated by freight traffic.

The route provides the primary access to significant urban areas of high-value economic activity, with wider geographic areas that have significant capacity for development. It also provides connectivity between these areas and other international gateways served by the M25 London Orbital, such as Heathrow Airport. The Major Road Network (MRN) and Local Road Network (LRN) work in combination with the SRN to support the movement of goods and people, particularly in providing alternative routes to and from the international gateways when there are incidents.

There are high levels of planned housing and employment development within the region, including those identified in Local Plans prepared by local planning authorities, setting out the vision for future development in the borough. Notable growth areas are around Dartford, Ebbsfleet, Gravesend, Tilbury, Maidstone, Sittingbourne, Canterbury, Ashford and Dover. This means that the route will need to support both the projected growth of freight and tourism entering the UK, as well as housing and employment growth.

This route strategy is based on the road network as of the start of the second road period (2020 - 2025). During RIS1 and RIS2 the following schemes were opened to traffic:

- M20 Junctions 3 to 5
- M20 Junction 10A
- A2 Bean and Ebbsfleet improvements

The M2 Junction 5 improvements is currently under construction. The following additional schemes are committed for the second road period:

- A249 Swale Infrastructure (HIF)
- Lower Thames Crossing

It is recognised that some of the journeys on this route are part of longer trips and therefore need to be considered in conjunction with strategies on other routes.

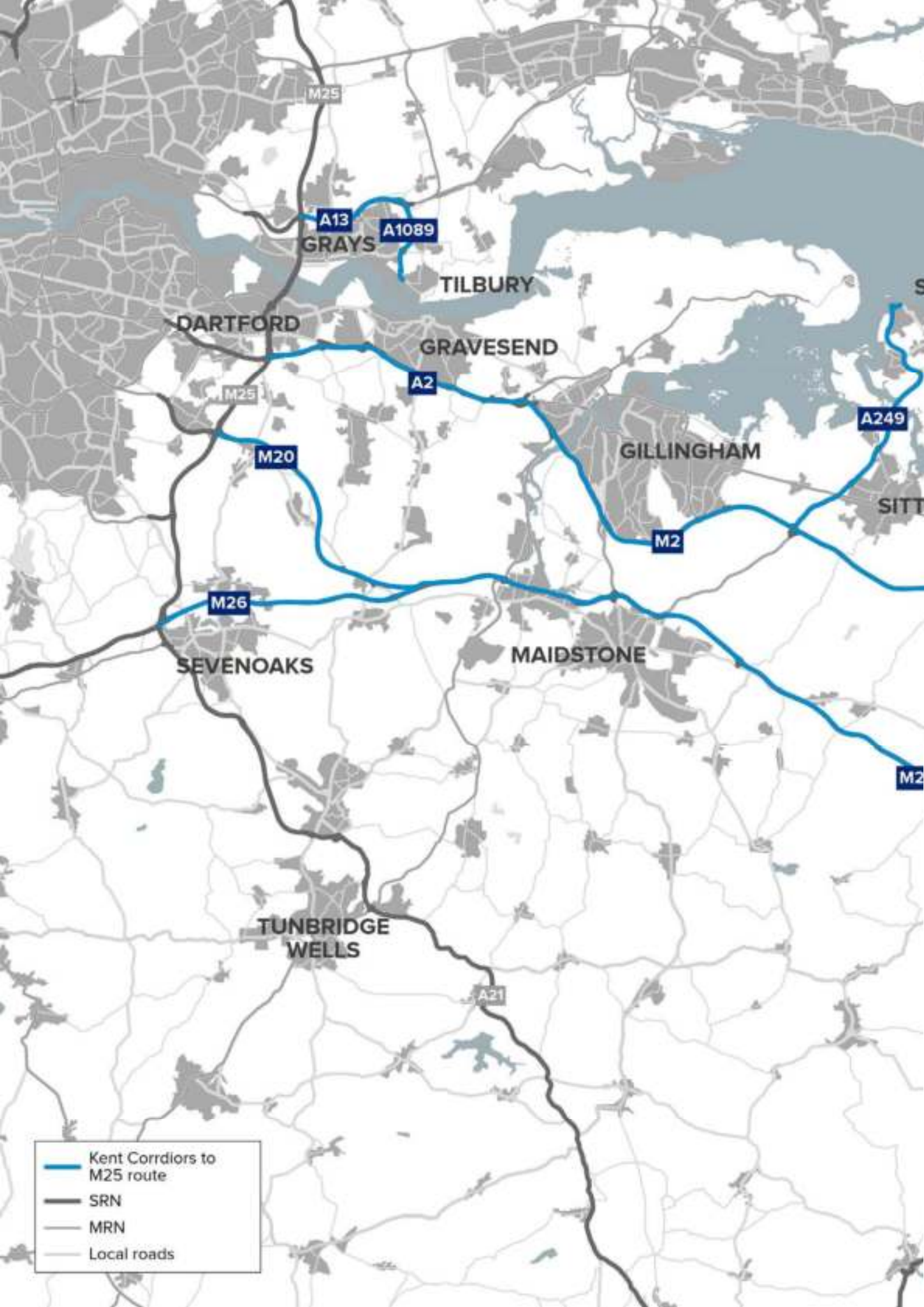

M25
A13
A1089
GRAYS
TILBURY
DARTFORD
GRAVESEND
A2
M25
A249
M20
GILLINGHAM
M2
M26
SEVENOAKS
MAIDSTONE
TUNBRIDGE WELLS
A21
Kent Corrdiors to M25 route
SRN
MRN
Local roads

Figure 10: The route

Listening to your feedback

03 Engagement with customers and neighbours

Engagement with customers and neighbours has been central to developing our route strategies. The development of the route strategies is one of the key steps of initial research in the development of the Road investment strategy (RIS). This engagement, together with data analysis, will inform RIS3 (2025 to 2030) and beyond. It builds on a wealth of evidence from previous route strategies and our ongoing monitoring of road condition and performance.

Engagement with customers and neighbours in the Kent Corridors to M25 area

Early engagement with the Department for Transport (DfT), Office of Rail and Road, Transport Focus, Transport for the South East and Transport East (Sub-national Transport Bodies) and Network Rail shaped our engagement with customers and neighbours in the Kent Corridors to M25 area. We gathered evidence from a cross-section of Members of Parliament (MPs), interested parties, road users and communities at a route level to understand their needs for the future. This built on engagement that had taken place with national interested parties, such as environmental groups, organisations representing road users, business organisations and transport campaigning groups. This engagement has informed the development of the route objectives.

Engagement took place through:

MP roundtables: MPs were invited to a regional roundtable with the Roads Minister to share their views on priorities for our customers and neighbours within their constituencies.

Regional workshops: As part of a programme of workshops with interested parties at a national and regional level, we invited interested parties to workshops on route strategies for the Kent Corridors to M25 route in late 2021. Attendees included local authorities, airports and port authorities, transport operators, and other key route-based interested parties, such as major businesses.

We designed the workshops to seek views on both current and future challenges and opportunities for the strategic road network (SRN), in relation to the DfT's six strategic objectives. Views were sought on how the routes interacted with the major road network (MRN), local roads, public transport, walking and cycling, and links to the wider SRN. Interested parties also provided insight into key growth proposals and locations along the route, including committed and emerging economic and housing growth and infrastructure proposals. Interested parties shared their own data, studies and observations of the route area.

Route strategies online feedback form: Local interested parties, road users and communities were invited to give their feedback on specific locations on motorways and A-roads and routes, and general comments on the road network, through the route strategies online feedback form. For the Kent Corridors to M25 route, regional interested parties were invited to workshops or to use the online form to share their views and feedback.

The information gathered was a mix of evidence, studies and personal experience. All the evidence gathered through these engagement methods was considered alongside route analysis and data to inform the development of the route objectives. The evidence was supplemented by route-based information from Transport Focus' *Strategic Road User Survey*[16] to gain an understanding of the breadth of feedback.

Key themes from engagement

We have drawn out the common themes that emerged from our engagement with our customers and neighbours on the Kent Corridors to M25 route to inform our route objectives. The themes have been aligned with the DfT's six strategic objectives:

i) Views on: Improving safety for all

- The large number of at grade junctions, where conflicting traffic flows meet in the same place, on dual carriageway sections of the route lead to delays and safety issues
- Low safety ratings on single carriageway sections

ii) Views on: Network performance

- Concern over congestion and journey time reliability across whole network
- Need to consider the congestion due to Inland Border Facilities and how it impacts on users
- Need to consider the impact of challenges with crossing to Europe across the whole length of M20, not just at portals (Eurotunnel and ports)
- Concerns of network performance when Dover Traffic Access Protocol is in place
- Challenge of accommodating traffic moving between M2 and M20. Potential trunking of A229, A249 and A299 should be considered to address lack of suitable link between the M20/A20 and M2/A2
- Lack of resilience on the M20 and M2/A2, and a need to dual the A2 to combat this
- Essential need for suitable rest areas to stop heavy goods vehicles (HGVs) using existing laybys as overnight sleep stops. Off-road parking for HGVs does not meet demand and HGV drivers often arrive at parking to find it full and lacking facilities. This is exacerbated when there are challenges with crossing to Europe
- Constraints at Whitfield and Duke of York Roundabouts regarding access to Dover
- A229 Bluebell Hill results in congestion on LRN links, M2 Junction 3 and M20 Junction 6
- Brenley Corner (M2 Junction 7) is a key interface with local roads, but currently experiences significant issues
- Lack of high speed services from Dover and Folkestone. Rail users drive to stations to catch High Speed services (e.g. Ebbsfleet) or station in other towns for convenience ("railheading")
- Lack of access across the Thames
- Potential impact of Lower Thames Crossing on LRN and other SRN routes. Lower Thames Crossing may change traffic flows on links between M2/A2 and M20 - A229, A228, A228
- Wider impacts of Lower Thames Crossing and sequencing with other transport schemes. Potential change of network use may result in changes to traffic flows on MRN

16 Transport Focus, 2022, *Transport Focus Website,* https://www.transportfocus.org.uk/insight/strategic-roads-user-survey/

iii) Views on: Improved environmental outcomes

- Poor access to Dover Port via sustainable or active modes
- Poor east-west connectivity via rail and slow links between Kent and the south coast (e.g. Maidstone to Brighton)
- Need to understand the role of the SRN in decarbonisation, and how use of and improvements to the SRN (creating more use) becomes compatible with this
- Potential adverse air quality impacts on residential receptors due to planned works
- Need further input in early stages of plan-making and future planning to avoid car dependent housing development
- Aspirations to shift more freight to rail subject to address significant constraints in regions
- No priority for public transport on the SRN

iv) Views on: Growing the economy

- Capacity issues at various junctions across the network inhibits housing and employment growth
- A number of new housing developments are designed for easy access to the SRN, but there are challenges in providing direct connections
- Role of SRN in supporting (not just mitigating) the significant regeneration and growth planned for this region
- Importance of improved network resilience to support the efficient running of Dover Port and, therefore, economic growth
- Opportunity to leverage growth to develop better mass transit systems
- The South East is seen as an affluent area, but there are pockets of deprivation that need help via the levelling up agenda
- Additional pressure on the MRN links between the M2 and M20 due to commuting from Medway or Swale to Maidstone

v) Views on: Managing and planning the SRN for the future

- Junction improvements that address current congestion and Local Plan growth should be future proofed

vi) Views on: A Technology-enabled network

- Essential that technology is increased for routing to the ports, border control points and inland border facilities
- Management systems (such as Dover Traffic Access Protocol) are manually monitored and triggered
- Communication infrastructure is needed for when there is disruption on the road network
- Electric vehicle charging infrastructure and alternative fuel infrastructure is required to support low carbon fuels
- Lack of technology (including communications and signage) on M2
- More road signage to communicate travel conditions across channel
- Impact of automated vehicles and infrastructure to enable use
- Limited infrastructure for vehicles to refuel or recharge
- Needs to be enough electric vehicle charging provision at motorway service areas
- Uncertainty of the future roll out of all lane running smart motorways

Engagement quotes from customers and neighbours

"With freight usage of Eurotunnel and Port of Dover increasing year on year, it is essential that the M20/M2 Corridor is improved with technology and rest areas for HGV [drivers]"

(Route Strategies Engagement)

"At-grade junctions on otherwise free flow routes such as the A11, A120 and A47 cause congestion and safety issues"

(Route Strategies Engagement)

"Improvements to Blue Bell Hill [would] support traffic moving between the M2 and M20"

(Route Strategies Engagement)

"Good flow of traffic. No pot holes, got to my destination quick"

(Transport Focus, SRUS)

"Links between M2 and M20 [are] limited, which would help with resilience"

(Route Strategies Engagement)

"M2 Junction 7 Brenley Corner upgrade needed to deliver Local Plan growth"

(Route Strategies Engagement)

"Lack of technology on M2 along with lane capacity"

(Route Strategies Engagement)

"[There are] concerns of performance of A20 when Dover Traffic Access Protocol (TAP) is in place"

(Route Strategies Engagement)

"Roads genuinely smooth, well sign posted, little traffic"

(Transport Focus, SRUS)

"Increased border controls means longer waiting and potential queues at [M20] Junction 11A"

(Route Strategies Engagement)

Figure 11: Quotes from customers and neighbours

"People drive to Ebbsfleet [International Station] to catch High Speed – from all over"

(Route Strategies Engagement)

"[A key issue is] access (freight) to Port of Tilbury (freeport plans) and London Gateway"

(Route Strategies Engagement)

"It was an easy journey, no hold ups but the M26 is not lit which I don't like."

(Transport Focus, SRUS)

"A249 [creates] severance for rural communities"

(Route Strategies Engagement)

"Essential that technology usage [is] increased for routing to the Ports and the Border Control Posts (BCPs) and Inland Border Facility (IBFs)"

(Route Strategies Engagement)

"Impact of LTC across the wider network, and potentially also the relative priority/sequencing of delivering other interventions depending on its timing"

(Route Strategies Engagement)

"[There are] congestion and journey time reliability issues across the whole network"

(Route Strategies Engagement)

"Capacity issues at various junctions across the network inhibits housing and employment growth"

(Route Strategies Engagement)

"With more HGVs using facilities in Kent, essential for suitable rest areas to stop HGVs using existing laybys as overnight sleep stops"

(Route Strategies Engagement)

Route satisfaction

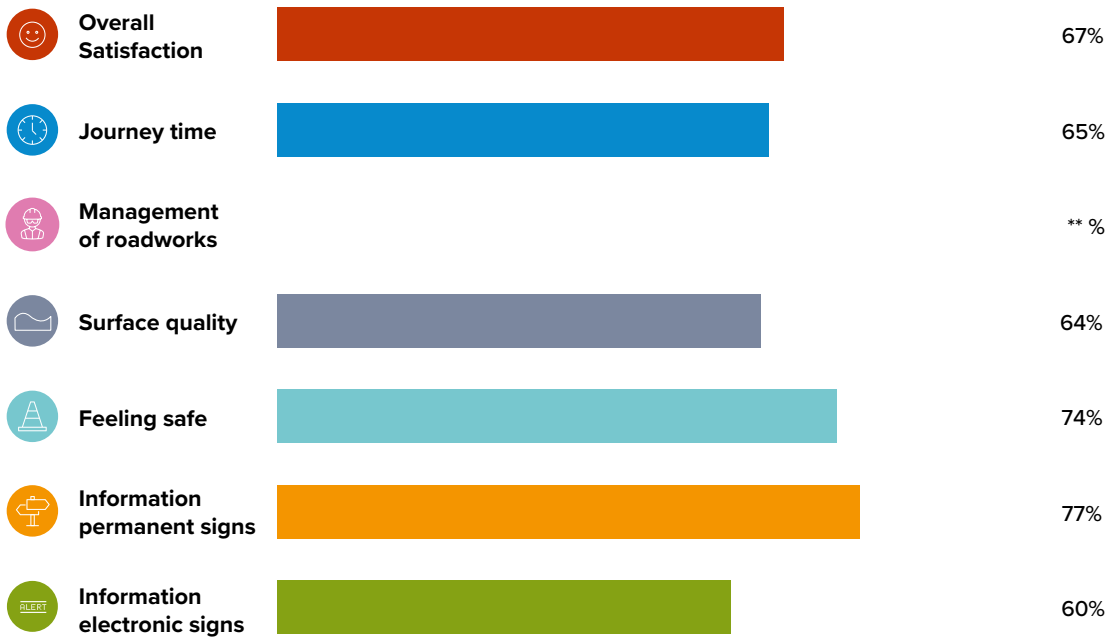
Satisfaction scores have been obtained from Transport Focus through their Strategic Roads User Satisfaction Survey from the last 12 months to May 2022. It covers the roads in this route but it should be noted that the satisfaction scores may not fully align with the extent of the roads in the route. Figure 12 shows how satisfied drivers were with aspects of their journey and how they felt during their journey.

Additional comments and data from the Transport Focus survey of drivers on the SRN can be found on the Transport Focus website data hub[17].

The engagement themes and feedback from MPs, interested parties, road users and communities has been considered as part of the wider analysis in Chapter 5.

Strategic roads user survey satisfaction scores

The survey was not run between April 2020 and March 2021 due to COVID-19. It restarted in April 2021 with a new methodology, so results prior to March 2020 and from April 2021 are not directly comparable.



National Highways Region South M25, South East
National Highways Areas Area 4 Kent, Sussex
Individual road M2, M20, M26, A2, A13, A20, A249, A1089
Last 12 months* May 2022 (last 12 months)

** Result hidden as less than 75 responses
*** Before March 2019 and from April 2021 to February 2022 this is year-to-date, not past 12 months

Figure 12: Satisfaction scores from headline results

17 Transport Focus data hub: https://transportfocusdatahub.org.uk/

Working with our partners

04 Network collaboration

The strategic road network (SRN) does not exist in isolation. Most journeys on the SRN are part of a longer journey, involving other road networks or different transport modes.

To deliver safe and efficient journeys for our customers and to support economic and housing growth, at National Highways we have built relationships with other organisations to ensure the SRN maximises its contribution to the overall transport system, which includes local roads, rail networks, links with the devolved nations and international connectivity. We work with other network operators (such as Network Rail), airports and ports, Sub-national Transport Bodies, Transport for Wales and Transport Scotland, as well as combined authorities and local highway authorities. This is in line with National Highways' Licence requirements to consider opportunities for collaborative solutions. We recognise that joint early planning of interventions outside our network will ultimately improve the SRN and deliver greater benefit to the customer than could be achieved alone, where this delivers value for money.

An integrated transport network

Route strategies recognise the role that the SRN plays within the wider transport network. In planning for the future of the SRN, we recognise the importance of working closely with other network planners and operators to ensure our transport networks work well together, and that our investment priorities are aligned where possible.

Sub-national Transport Bodies have a key role in their regions in creating transport strategy and identifying key areas for investment, including for highways. There are seven such bodies in England, who are tasked with developing transport strategies and studies for their particular area.

Through the collection of evidence with their local authorities and Local Enterprise Partnerships, their work highlights multimodal issues, needs and opportunities. A list of potential interventions for transport are then provided to the Secretary of State for Transport, including where to prioritise investment in the major road network (MRN). We work closely with the Sub-national Transport Bodies on interdependencies and align our approaches where possible. The Sub-national Transport Bodies that cover the route are:

- Transport for the South East
- Transport East

National Highways and Sub-national Transport Bodies have worked together to develop an engagement framework. The need for closer working was highlighted as a priority in DfT's *Road investment strategy 2*[18], and within our *Strategic business plan*[19] and *Delivery plan*[20]. It enables National Highways and Sub-national Transport Bodies to work together to achieve mutually beneficial outcomes for transport users, regional economies and the environment. Our approach to engagement is contained in *Our vision for route strategies*[21], which sets out a shared commitment for a continued open, constructive and collaborative relationship. This is supported by engagement and action plans for each sub-national transport body, which are proving instrumental in ensuring consistency and transparency in the information we share. The plans are monitored and reviewed regularly, with annual reviews occurring ahead of each new financial year.

18 Department for Transport, March 2020, *Road Investment Strategy 2: 2020 - 2025,* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951100/road-investment-strategy-2-2020-2025.pdf
19 Highways England, 2020, *Strategic Business Plan: 2020-2025*, https://nationalhighways.co.uk/strategic-business-plan
20 Highways England, 2020, *Delivery Plan*: 2020-2025, https://nationalhighways.co.uk/delivery-plan/
21 National Highways, 2021, *Vision for route strategies,* https://nationalhighways.co.uk/media/w0vhd3un/vision-for-route-strategies.pdf

At a more local level we also work with local authorities, who are the highway authorities for local roads, including those on the MRN.

This collaboration ranges from operational matters to more strategic issues to ensure that the overall highway network operates safely, efficiently and effectively, providing high quality and seamless customer journeys.The local authority planning teams work closely with our spatial planning teams. In enabling new employment spaces and homes to be developed, we engage appropriately as a statutory consultee in the planning system and the evidence collected through the route strategies will support this decision making.

Transport for the South East

Transport for the South East (TfSE) published its *Transport strategy*[22] for the South East in 2020. The plan has been created with the support of the 16 Local Transport Authorities within the TfSE area, along with the five Local Enterprise Partnerships, 46 district and borough councils, and other key interested parties, such as Network Rail.

The Strategy sets out the TfSE's 30 year vision for the region, with their strategic goals and priorities. Their 15 strategic priorities sit under three strategic goals: **economy** (to improve productivity and attract investment in the global marketplace), **society** (to improve health, safety, wellbeing, quality of life, and access to opportunities for everyone), and **environmental** (to protect and enhance the South East's environment).

The **economic priorities** are as follows:

- better connectivity between our major economic hubs and international gateways (ports, airports and rail terminals), and their markets
- more reliable journeys for people and goods travelling between the South East's major economic hubs, and to and from international gateways
- a transport network that is more resilient to incidents, extreme weather and the impacts of changing climate
- a more integrated approach to land use and transport planning that helps our partners across the South East meet future housing, employment and regeneration needs sustainably
- a 'smart' transport network that uses digital technology to manage transport demand, encourages shared transport and makes more efficient use of our roads and railways

Social priorities are as follows:

- a network that promotes active travel and active lifestyles to improve our health and wellbeing
- improved air quality supported by initiatives to reduce congestion and encourage further shifts to public transport
- an affordable, accessible transport network for all that promotes social inclusion and reduces barriers to employment, learning, social, leisure, physical and cultural activity
- a seamless, integrated transport network with passengers at its heart, making it simpler and easier to plan and pay for journeys and to use and interchange between different forms of transport
- a safely planned, delivered and operated transport network with no fatalities or serious injuries among transport users, workforce or the wider public

22 Transport for the South East (TfSE), 2020, *TfSE Transport strategy* https://transportforthesoutheast.org.uk/app/uploads/2020/09/TfSE-transport-strategy.pdf

The **environmental priorities** are as follows:

- a reduction in carbon emissions to net zero by 2050 at the latest, to minimise the contribution of transport and travel to climate change
- a reduction in the need to travel, particularly by private car, to reduce the impact of transport on people and the environment
- a transport network that protects and enhances our natural, built and historic environments
- use of the principle of 'biodiversity net gain' (i.e. development that leaves biodiversity in a better state than before) in all transport initiatives
- minimisation of transport's consumption of resources and energy

The strategic priorities set out in the TfSE Transport Strategy provide a clear framework to inform future decision-making. The strategy is intended to support the creation of a 'more productive, healthier, happier and more sustainable South East'.

The Strategy highlights that the rail and road routes that connect the South East to the Midlands and North of England are particularly important for freight. A key challenge identified is that the roads serving the Port of Dover and Eurotunnel routinely suffer from poor resilience due to port and border operations on both sides of the English Channel, which can cause freight traffic to build up on the M20. The Strategy suggests that the A2 trunk road east of Canterbury could be further developed to strengthen the resilience of both corridors serving these two important gateways.

Transport East

Transport East published its Draft transport strategy in November 2021[23]. It aims to overcome some of the transport challenges experienced by delivering a fit for purpose, high quality, inclusive and sustainable transport network that will be able to accommodate future growth in the area. Transport East's vision is "A thriving economy for the East, with fast, safe, reliable and resilient transport infrastructure driving forward a future of inclusive and sustainable growth for decades to come".

There are four strategic priorities to deliver this vision:

- **Decarbonisation to net zero -** Working to achieve net zero carbon emissions from transport, building on the region's status as the UK's premier renewable energy region
- **Connecting growing towns and cities** Providing enhanced links between our fastest growing places and business clusters, improving access for people to jobs, suppliers, services, and learning; enabling the area to function as a coherent economy and improving productivity
- **Energising coastal and rural communities** A reinvented sustainable coast for the 21st century, which powers the UK through energy generation. Supporting the region's productive rural communities and attracting visitors all year round
- **Unlocking international gateways** Better connected ports and airports to help UK businesses thrive, boosting the nation's economy through better access to international markets and facilitating foreign investment

Six core corridors have been identified that are the road and rail links between the region and the rest of the UK.

23 Transport East (2021), *Transport East draft transport strategy,* https://www.transporteast.org.uk/wp-content/uploads/TransportEastStrategy.v6.pdf

Interaction with the major road network and local roads

The Major Road Network (MRN) is the middle tier of England's road network, comprising the busiest and most economically important local authority A-roads. It is key to supporting the economic vitality of England, particularly with its role, along with the SRN, of delivering 'first and last mile' connections and onward journeys. It acts as a connecting spine for the SRN, with one of the objectives in establishing the MRN being to support the SRN through improving journeys across both networks. The MRN represents the roads that our partners in local authorities and Sub-national Transport Bodies see as being strategically most important, along with the SRN.

The relationship between the SRN and MRN is complex. The two networks connect people with economically important locations across England, as well as providing resilience for each other. Interventions on one network can also significantly influence travel behaviours on the other. Most SRN journeys involve elements of both networks.

It is therefore important that decisions about the SRN, MRN and other local roads are made in a joined-up way to ensure that the networks are consistent, coherent and complementary. We recognise that the key to the success of the Road Investment Strategy is ensuring the impacts of any interventions are appropriately considered across all networks as well as at their junctions. Both networks play a key role in customers' journeys, and they expect a seamless transition between the two. We are continually seeking to identify collaborative solutions that meet our obligations under the National Highways Licence to improve network performance and provide integration benefits. In developing the route strategies, we aim to ensure the planning for the SRN, MRN and other local roads is complementary.

In the Kent Corridors area, the MRN and Local Road Network (LRN) work in combination with the SRN to support the movement of goods and people, particularly in providing alternative routes to and from the international gateways when there are incidents. Diversion routes are made up of roads that connect the M20 and M2 (including parts of the A228, A229, A251 and non-SRN sections of the A249) and routes parallel to the SRN (including parts of the non-SRN sections of the A2 and A20, A250, A289, A226, and A227).

As part of the Lower Thames Crossing project, National Highways is proposing a Wider Network Impacts Management and Monitoring Plan which would provide data to local highway authorities. That data will enable further collaboration, and allow local highway authorities to prepare applications to fund improvements from existing central government streams

Freight and logistics

The *Future of Freight: a long-term plan* (DfT June 2022)[24] sets out priorities for the UK's freight industry. It recognises that in 2019 the sector contributed 10% of the UK non-financial business economy and £127 billion gross value added (GVA) through more than 200,000 enterprises, noting that, with imports and exports comprising 63% of gross domestic product (GDP) in 2019, we are reliant on the freight and logistics sector for our economic wellbeing.

The National survey of lorry parking[25] undertaken by the Department of Transport showed that Kent was repeatedly discussed during consultation. Parking issues relate to the Port of Dover and the Channel Tunnel (Folkestone). Issues identified relating to lorry parking include a shortage of between 1,000 and 1,200 heavy goods vehicle (HGV) parking spaces in Kent.

24 Department for Transport, 2022, *Future of Freight: a long-term plan, Department for Transport* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1085917/future-of-freight-plan.pdf
25 Department for Transport, 2018, *National Lorry Park Survey, Department for Transport* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/723349/national-survey-of-lorry-parking-report.pdf

The report highlights that additional parking capacity is required in the following areas or at existing facilities within Kent: Gravesend or Cobham, Lydden, Northeast Maidstone, Sevenoaks (M25/M26), Ashford and Stop 24 Folkestone.

The area between London and the South East coast leading to Dover Port has an excess of vehicles parking off-site, including on hard-shoulders and slip roads, and a high number of critically defined Truckstops (service areas which are primarily aimed at lorry drivers, providing somewhere to park, eat and use toilets and showers). Almost all lorry parks within Kent were identified as being at critical levels of utilisation.

Diversionary routes

To operate a resilient road network, we need to be able to effectively divert traffic off the SRN in the event of unplanned incidents (such as collisions or emergency roadworks), or as part of planned closures (such as planned improvement schemes). The MRN, along with the rest of the Local Road Network, supports the SRN as diversion routes during these events.

We have agreed diversion routes for emergency events with local authorities. Diversion routes for planned events are discussed and agreed with local authorities on a case-by-case basis. These routes are dependent upon the nature of the incident, and the suitability and availability of the surrounding network.

In some cases, the diversion route may not be suitable for certain types of traffic, such as heavy goods vehicles (HGVs), or non-motorway traffic, such as cycles and tractors. In other cases, diversionary routes may not be available due to events on the Local Road Network. We work closely with local authorities to ensure that suitable diversion routes are available.

There are a number of diversion routes that run alongside or broadly parallel to the M20/A20 on the western side of the route. However, limited options for the other sections of the route include the M2/A2 between Faversham and Dover, A249, A13 and A1089. Some M20 diversion routes are less suitable for high volumes of freight or general traffic.

This is particularly notable on the A2, because of route inconsistencies (variable route standard and number of lanes), and on the A249 and A229, which are used as links between the M20 and M2. A lack of alternative diversion routes to and from Dover can lead to congestion within the wider region during periods of disruption.

Based on the current situation, the Lower Thames Crossing aims to provide additional resilience in the event of diversions and widen driver choice.

There is also a lack of technology to support the redistribution of traffic, and limited access to network conditions, including collisions and diversions for port operators and SRN users.

The provision of diversion routes is dependent on the nature of the incident and the suitability and availability of the surrounding network. In some instances, the diversion route may be less suitable for the use of HGVs. We are currently reviewing the quality and coverage of these routes. We work closely with local authorities, namely Kent County Council and Essex County Council to ensure all diversion routes are available.

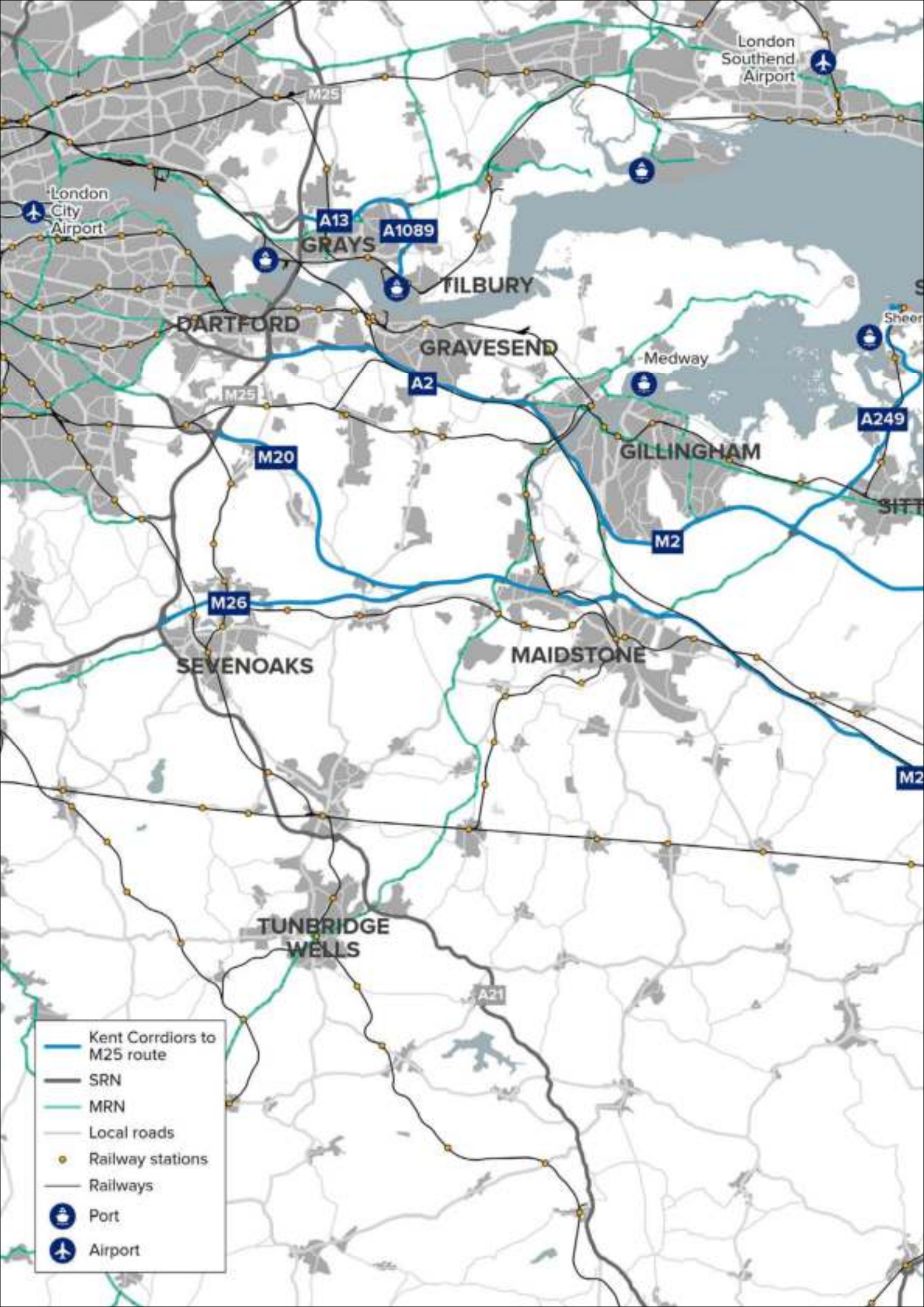

London Southend Airport
M25
London City Airport
A13
A1089
GRAYS
TILBURY
DARTFORD
GRAVESEND
Medway
A2
M25
A249
M20
GILLINGHAM
M2
M26
SEVENOAKS
MAIDSTONE
M2
TUNBRIDGE WELLS
A21
Kent Corrdiors to M25 route
SRN
MRN
Local roads
Railway stations
Railways
Port
Airport

Figure 13: Network integration

Network Rail and other network operators

The SRN plays an important role in the movement of passengers and freight across England, and it needs to be considered alongside the wider transport network. The rail network is also important in moving freight and people over longer distances and helping commuters travel into congested cities.

Better integration between road and rail can help to transfer more journeys onto rail. This can help to relieve congestion on the SRN, as well as improve the environment by increasing the use of more sustainable transport modes.

The Network Rail Strategy[26] presents a vision of 'putting passengers and freight users first', recognising that Network Rail can improve the daily lives of people across the country by striving to constantly improve the quality of service across the whole railway system.

Network Rail seeks to deliver its vision through a regional structure committed to responding to the needs of local customers and stakeholders, more quickly than if such decisions were made at a national level.

At a strategic level, we work closely with Network Rail and train operators to find opportunities to better integrate the two networks to benefit the movement of freight and people. This involves seeking opportunities to place rail stations in strategically important locations with easy access to the SRN.

The route provides access to numerous transport hubs and services used for both local and international travel, including the Port of Dover, The Channel Tunnel, High Speed 1 and DP World London Gateway. The Kent rail network is one of the busiest and most *congested in the country*[27]. In addition, the network provides links for onward travel beyond the region, including key destinations on the south coast (via Ashford), and internationally (via Europe and the Channel Tunnel).

Poor rail connectivity other than between Kent and London, and slow links between Kent and the south coast (e.g. Maidstone to Brighton), can result in travellers choosing to drive rather than using sustainable travel services. The contained nature of the High Speed rail network and lack of east-west connectivity means that some rail users drive to stations to catch High Speed services (such as Ebbsfleet), or stations in other towns for convenience. This is known as 'railheading'.

Our route strategies understand the key role in which the SRN plays in providing access to and from these services.

The Network Rail South East Route: *Kent Area Route Study*[28] identifies a lack of intermodal traffic on the Kent routes due to gauge constraints. Strategic rail freight interchanges would be required across Kent to supplement any further mode shift.

We also work with the operators and promoters of urban rapid transit systems where there are opportunities for better integration. For example, through the creation of park and ride sites to remove traffic from the road network.

26 Network Rail, February 2018, *Our delivery plan for 2019 – 2024*, https://www.networkrail.co.uk/who-we-are/publications-and-resources/our-delivery-plan-for-2019-2024/
27 https://www.networkrail.co.uk/running-the-railway/our-routes/kent/
28 Kent County Council, September 2021, *Kent Rail Strategy 2021 Consultation Draft,* https://democracy.kent.gov.uk/documents/s98715/

Strategic connectivity

The SRN plays a key social and economic role in connecting England with the devolved authorities of the UK, particularly Wales and Scotland, but also, via ports, Northern Ireland. We work closely with Transport for Wales and Transport Scotland to ensure our key cross-border routes are joined up effectively with those in Wales and Scotland to ensure easy journeys for our customers. This strategic connectivity is reflected in the Government's commitment to strengthening transport connections across the UK, guided by *Sir Peter Hendy's Union connectivity review published in late 2021*[29]. The report recommends the creation of UKNET, a strategic transport network spanning the entire United Kingdom.

UKNET would be based on a series of principal transport corridors between key urban and economic centres, including international gateways. The findings of this report have been considered in our route strategies, particularly for our cross-border routes and roads connecting to important ports.

As part of the proposed UKNET, the Kent Corridors to M25 route itself plays a pivotal role in enabling international connectivity and trade by providing access routes to global markets via international gateways. There are major air, rail, sea and Freeports in the region that support the national economy and rely on the key transport corridors to connect to the M25 and, in turn, the wider UK. The route is important for both passengers and freight, and the SRN is considered within this broader context.

International connectivity

One of the objectives of the SRN is to support the important economic activity involved in international passenger and freight movement via good connections to ports and airports.

A key aspect of route strategies is ensuring that future investment continues to support these essential movements.

Along the Kent Corridors to M25 route, this means that the M20/A20, A2/M2 and A13/A1089 need to be considered not only within the context of the local access they provide, but also the connectivity they provide to international centres. These include the Port of Dover, Channel Tunnel, Medway Ports Cluster (Sheerness and Chatham Ports), Port of Tilbury, Thames Freeport and DP World London Gateway. The overall route provides connectivity between these international centres to the M25 and, in turn, the wider UK.

29 Sir Peter Hendy CBE, 2021, *Union Connectivity Review Final Report*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1036027/union-connectivity-review-final-report.pdf

Challenges and issues on the route

05 Challenges and issues

We recognise that there are existing challenges and issues on the network and these are outlined against the Department for Transport's six strategic objectives as part of the route strategy evidence base.

1. Improving safety for all

The International Road Assessment Programme (iRAP) star ratings are based on road inspection data and provide a simple and objective measure of the level of safety which is 'built-in' to the road. The higher the star rating, the safer the road. iRAP star ratings are produced for each 100-metre section of road, based on detailed inspections of roadside features as well as traffic flow, speed, pedestrian and cyclist use, and crash data.

iRAP data helps us to predict future risk within a wider Safe System approach. Safe System thinking accepts that humans will make mistakes but considers what is within the scope of our influence to limit the injuries sustained. The iRAP approach to managing future risk complements the more traditional approach of analysing historical incident data provided by STATS19 as a means of predicting future collisions and casualties.

STATS19 data are the statistical data published by the Office for National Statistics about personal-injury road traffic collisions reported to the police. STATS19 remains the most detailed, complete, and reliable single source of information on road casualties covering the whole of Great Britain, in particular for monitoring trends over time.

For the purposes of National Highways Route Strategies, the total fatal and serious injuries are aggregated by the section of road on which they occurred, based on the National Traffic Information Service (NTIS) network.

The NTIS network used for displaying traffic data is the full extent of the roads for which National Highways are the highway authority. The NTIS network is modelled for each side of the carriageway, such that NTIS links are one-directional and split at junctions. The data used only includes main carriageways; slip roads, roundabouts and other types of road are not modelled in this dataset. The length of an NTIS link can vary greatly depending on what part of the network it represents. Use of the NTIS network provides a common geometry which can be used to compare the STATS19 data with network performance and other metric data.

A combination of star ratings and historic data can help us prioritise route treatment. Where the density of incidents resulting in death or serious injury is high, and the star rating is low (poor), it indicates something can be done to prevent future collisions where people are killed or seriously injured.

Road Safety Foundation (RSF) produce maps that show the statistical risk of fatal or serious injury crash occurring. The risk is calculated by comparing the frequency of road crashes that result in death and serious injury with how much traffic each road is carrying. For example. the risk on a road carrying 10,000 vehicles a day with 20 crashes is ten times the risk on a road that has the same number of crashes but which carries 100,000 vehicles.

Using the latest available data it shows that the following sections of the route have the iRAP star ratings of 1 or 2:

- A1089
- A249 north of the M2
- A2 between Aylesham and Dover

STATS19 data shows that there are concentrations of collisions on sections of the route where people were killed or seriously injured – including:

- coast-bound on the M20 between Maidstone and Ashford
- coast-bound on the M2 between the A249 and the A251

Using the latest available crash density data, the following parts of the route are classified as medium-risk roads by the Road Safety Foundation:

- the A2 between M2 and M25

The highest percentage of collisions resulting in death or serious injury of walkers, cyclists or horse riders, are on the A2 between the M2 and Dover, and the A249 north of the M2.

The data shows that between 26 and 50% of collisions resulting in death or serious injury involved motorcyclists on the A2, A249 north of the M2 and M26 sections of the route. This increases to 67% of recorded collisions on the A20 between Dover and Folkestone (from a small sample size).

Much of the route is east-west facing, resulting in safety issues due to sun glare.

Improving safety and minimising collision rates is a key consideration for all our routes

Key challenges

- The safety levels built in to the route (based on the International Road Assessment Programme) are rated as either 1-star or 2-star, on the A1 between Aylesham and Dover, the A249 north of the M2 and the A1089
- Higher collision rates and a higher proportion of collisions where someone has been killed or seriously injured occurred at key locations on the coastbound M20 and M2
- A higher percentage of collisions where someone has been killed or seriously injured involving walkers, cyclists or horse riders can be found on the A2 and A249, and involving motorcyclists on the A20, A2, A249 and M26
- The orientation of the route can result in safety issues due to sun glare

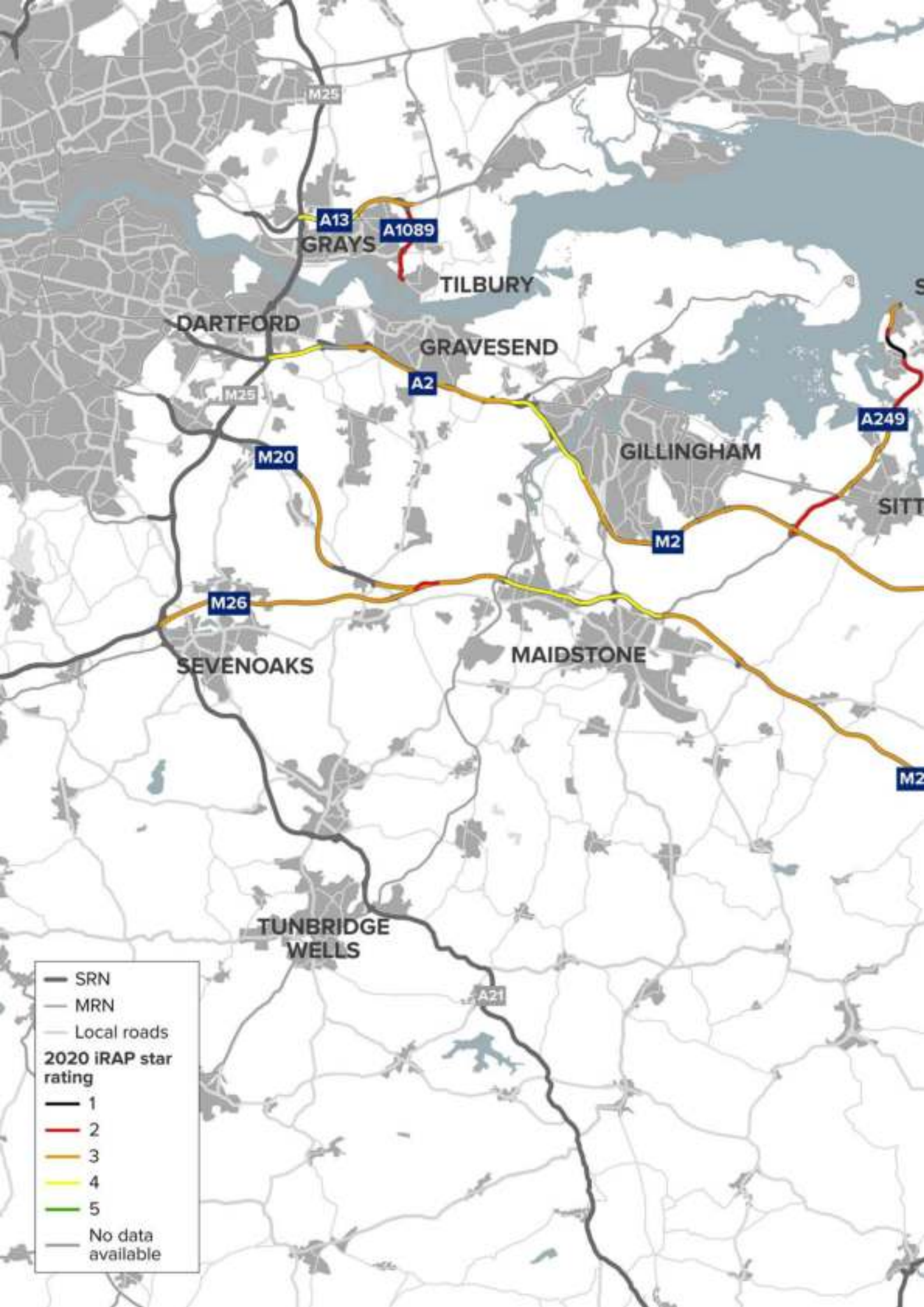

M25
A13
A1089
GRAYS
TILBURY
DARTFORD
GRAVESEND
A2
M25
A249
M20
GILLINGHAM
M2
M26
SEVENOAKS
MAIDSTONE
TUNBRIDGE WELLS
A21
SRN
MRN
Local roads
2020 iRAP star rating
1
2
3
4
5
No data available

Figure 14: 2020 iRAP star rating

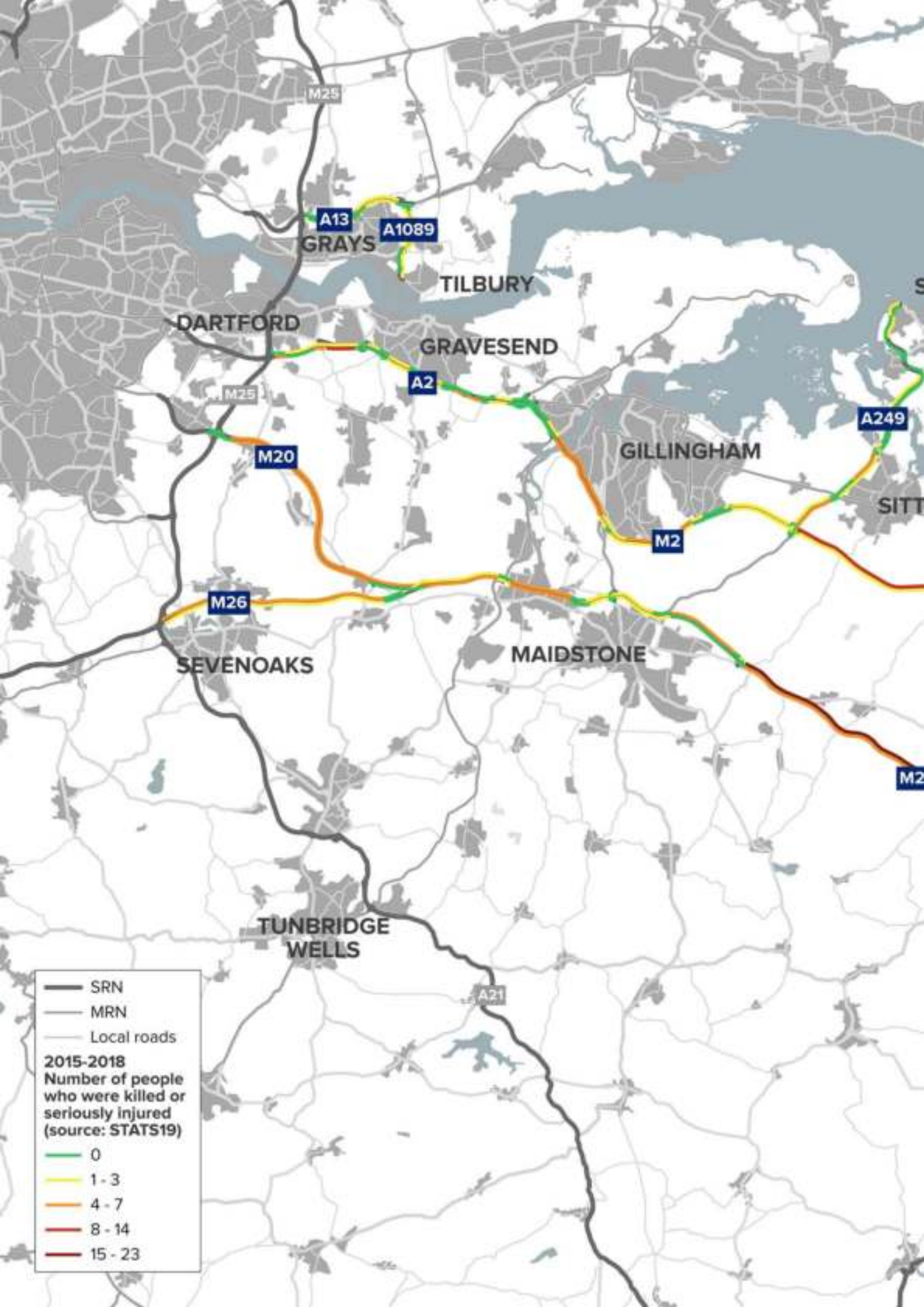

M25
A13
A1089
GRAYS
TILBURY
DARTFORD
GRAVESEND
A2
M25
A249
M20
GILLINGHAM
M2
M26
SEVENOAKS
MAIDSTONE
TUNBRIDGE WELLS
A21
SRN
MRN
Local roads
2015-2018
Number of people who were killed or seriously injured (source: STATS19)
0
1 - 3
4 - 7
8 - 14
15 - 23

Figure 15: 2015-2018 Number of people who were killed or seriously injured (source: STATS19)

2. Network performance

Network performance is measured by average delay, seasonal delay and journey time reliability. Many sections of the Kent Corridors to M25 route experience one or more of these types of delay.

Figure 16 shows the delay caused by congestion during the morning peak in 2019. The lengthiest delays experienced on the Kent Corridors to M25 route are:

- A249 Sittingbourne southbound to the M2 Junction (up to 112 seconds pvpm)
- M20 Maidstone (up to 58 seconds pvpm)
- A2 and A20 Dover (up to 42 seconds pvpm)
- A2 at Gravesend (up to 38 seconds pvpm)

On the Kent Corridors to M25 route, delays are exacerbated by seasonality due to travel to coastal destinations and Europe via the Port of Dover and the Channel Tunnel, particularly:

We want to improve journey times on route sections which currently experience high levels of delay and are expected to worsen in the future

- on the A2 between Gravesend and the M25
- around the Junction of the M20/M26
- on the A2 on approach to Dover
- on the A249 approach to M2 Junction 5

The Major Road Network (MRN) connects strategic locations and the SRN, as well as providing alternative routes. Local roads, including the MRN, that interface with the SRN can suffer from impacts of the lack of SRN alternative routes and capacity or reliability issues.

Average peak period delay is measured in seconds per vehicle mile and is the difference between average delay in the morning or afternoon peak period and the average delay during free flow conditions.

Seasonal delay refers to the difference between the average afternoon peak delay for Fridays in August 2019 (high demand in summer holidays) and the average delay during very low demand periods (in this case, Christmas day is used). This measure is designed to reflect the parts of the network that do not appear to have a problem on average over the year but have seasonal peaks.

Seasonal delay is of interest to tourist traffic, particularly people travelling to airports, or other destinations where arriving later than intended could have significant implications.

Reliability is the difference between the typical travel time, allowing for recurring delays, and the observed travel time. This measures the amount of variation due to unexpected variations or unplanned events. Like delay, it is measured in seconds per vehicle mile. It is a concern for most drivers, but particularly affects just-in-time freight traffic and other strategic journeys.

When there is disruption at the international gateways, freight traffic queues can extend onto the network, including through towns and residential communities. With forecast freight usage increasing, this will place additional pressure on already constrained facilities. Diversion routes are often less suitable for high volumes of freight or general traffic, which can result in secondary impacts, such as increased congestion, reduced air quality and increased noise. This lack of suitable alternative routes means that incidents can result in severe disruption across both the SRN and MRN, as well as local roads. Limited technology provision makes it more difficult to manage disruptive incidents and communicate information to users.

Some junctions suffer from delay when traffic diverts (or in some cases during typical operation), particularly where the MRN and LRN interact with the SRN. Junctions mentioned by interested parties include the:

- M2 Junction 7 (Brenley Corner), due to there being no freeflow movement for traffic travelling between the M2 and A2
- A2 Whitfield and Duke of York Roundabouts, due to insufficient capacity to accommodate traffic volumes
- A13/A1089 Junction, the M2 Junction 3 (Bluebell Hill) and M20 Junction 6, due to rerouting traffic using the A229

Committed Housing Infrastructure Fund schemes are expected to improve congestion at two junctions on the A249 north of the M2. Local Road Network operation can also result in local traffic 'junction hopping', for example at Ashford, Maidstone, Medway, Gravesham and Dartford.

The A229 plays a significant role in supporting the SRN, but does not form part of the SRN. It is the shortest and most direct connection between the M20 and A2, and supports freight movement. However, it also provides an important link for local traffic travelling between key towns and settlements in Kent.

Kent County Council[30] are investigating options to improve the A229 Blue Bell Hill between M20 Junction 7 and M2 Junction 3 to increase journey time reliability, reduce delays and enhance road safety.

The route serves as a trading route internationally, with high volumes of heavy goods vehicle (HGV) traffic using it daily. During typical operation, delays are apparent on the links to international gateways, including:

- M20 at Maidstone and Ashford
- A249 north of the M2
- In and around Dover
- A13 / A1089 east of the M25
- A2 on approach to the M25

National Highways has a suite of five regional traffic models (RTMs) covering England's SRN. The models allow us to identify future performance and delay on the network, assisting with the development of the route strategies.

The RTM models use projected growth, expected trends and changes to the network (including National Highway's RIS2 schemes) to forecast the performance of the network in 2031.

30 https://www.kent.gov.uk/roads-and-travel/road-projects/planned-road-projects/a229-blue-bell-hill

Figure 17 highlights the morning peak delays for 2031, based upon forecasts. The data shows that delays (measured in seconds pvpm) are expected to worsen by 2031 at several locations, particularly the A2 and A20 at Dover and the M2 at Stockbury and Faversham.

The Dartford Crossing's unique position as the only road crossing of the Thames east of London makes it one of the UK's most vital roads, but due to the huge demand it is also the most congested and least reliable. Problems at the Dartford Crossing frequently result in significant issues to traffic flow, not just at the crossing itself, but along the M25 and rippling out along other parts of the strategic and local road networks. As demand on the network grows, these effects will become more acute.

On its day of opening The Lower Thames Crossing will take around 22% of traffic off the Dartford Crossing, improving its reliability by easing congestion and reducing the likelihood of incidents at Dartford (including weather resilience), while also providing a free flowing alternative to the existing crossing.

The implementation of the Lower Thames Crossing scheme is expected to provide benefit to freight movement across the SRN within the Kent Corridors area with some sections of the strategic road network seeing higher or lower volumes of freight traffic.

Key challenges

- Congestion related delay occurs on sections of the A2, A249, M20 at Maidstone, the A2 and A20 at Dover, and the A13 and A1089
- Local roads, including the MRN, that interface with the SRN can suffer from consequential impact of the lack of SRN alternative routes, and capacity and reliability issues
- When there is disruption at the international gateways, freight traffic queues can extend onto the network, including through towns and residential communities
- Diversion routes are often less suitable for high volumes of freight or general traffic, which can result in secondary impacts such as increased congestion, reduced air quality, and increased noise
- Limited technology provision makes it more difficult to manage disruptive incidents and communicate information to users
- Delay can occur at junctions when traffic diverts (or in some cases during typical operation), particularly where the MRN and LRN interact with the SRN. This includes the M2 Junction 7 (Brenley Corner), the A2 Whitfield and Duke of York Roundabouts, the A13 / A1089 Junction, the M2 Junction 3 (Bluebell Hill), and M20 Junction 6 LRN operation can also result in local traffic 'junction hopping'
- Delays are exacerbated by seasonality due to travel to coastal destinations and Europe, for example on the A2 on approach to Dover
- Delays are expected to worsen by 2031 at several locations, particularly along sections of the A2 and A20 at Dover and the M2 at Stockbury and Faversham

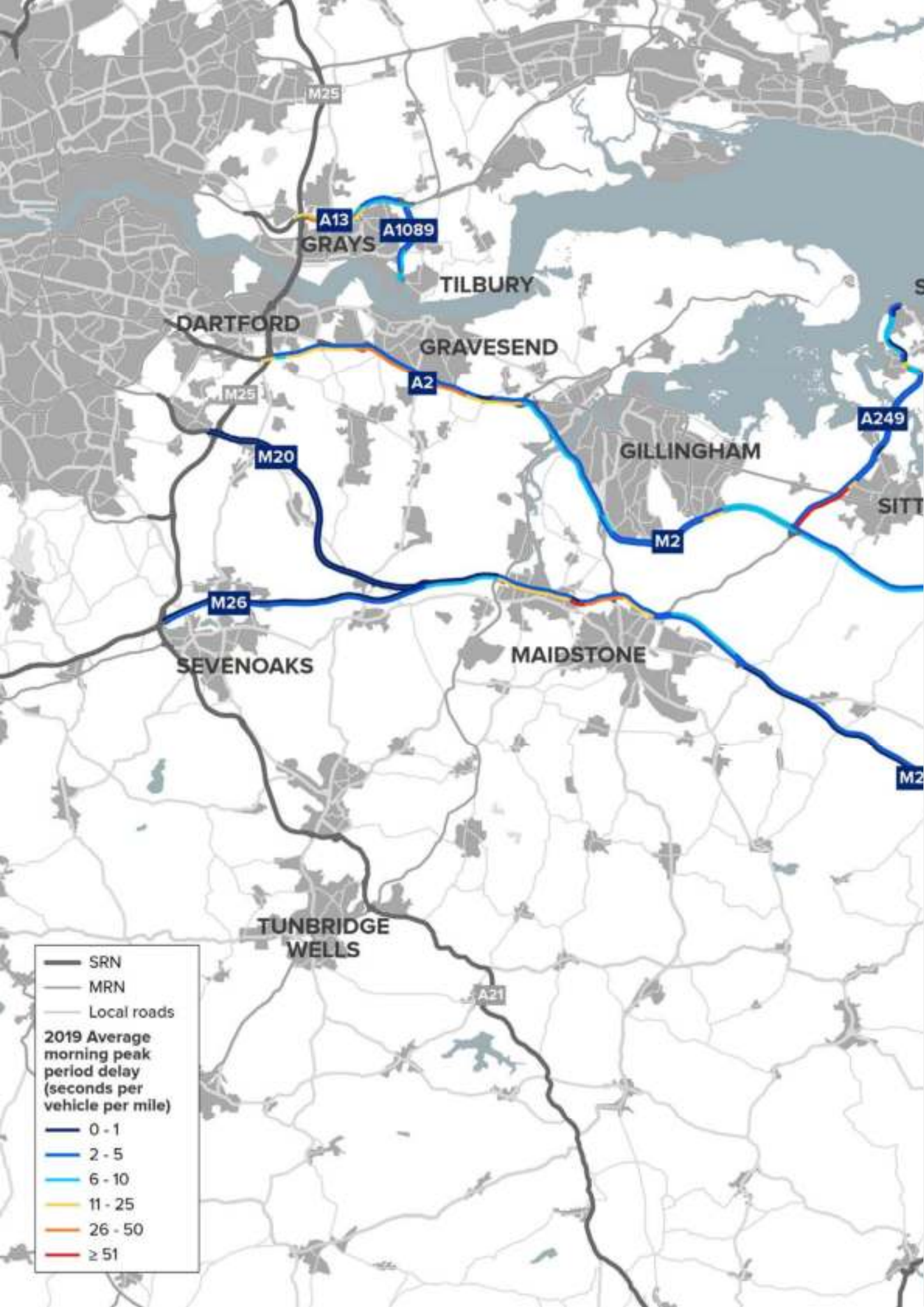

M25
A13
A1089
GRAYS
TILBURY
DARTFORD
GRAVESEND
A2
M25
A249
M20
GILLINGHAM
M2
M26
SEVENOAKS
MAIDSTONE
TUNBRIDGE WELLS
A21
SRN
MRN
Local roads
2019 Average morning peak period delay (seconds per vehicle per mile)
0 - 1
2 - 5
6 - 10
11 - 25
26 - 50
≥ 51

Figure 16: 2019 Average morning peak delay (source: NTIS)

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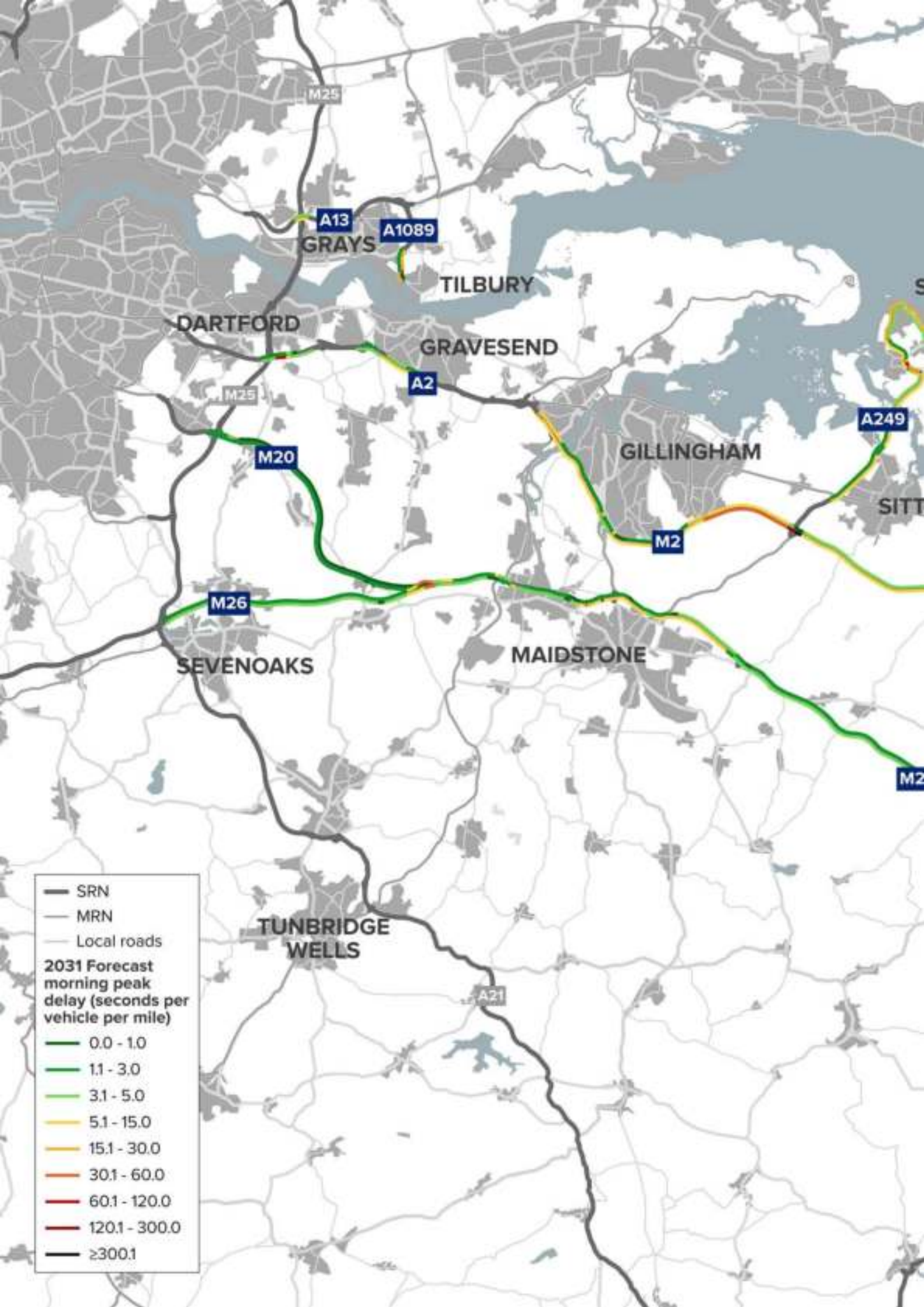

M25
A13
A1089
GRAYS
TILBURY
DARTFORD
GRAVESEND
A2
M25
A249
M20
GILLINGHAM
M2
M26
SEVENOAKS
MAIDSTONE
TUNBRIDGE WELLS
A21
SRN
MRN
Local roads
2031 Forecast morning peak delay (seconds per vehicle per mile)
0.0 - 1.0
1.1 - 3.0
3.1 - 5.0
5.1 - 15.0
15.1 - 30.0
30.1 - 60.0
60.1 - 120.0
120.1 - 300.0
≥300.1

Figure 17: 2031 Forecast morning peak delay (source: RTM)

3. Improved environmental outcomes

Climate change is affecting society as a whole, and the transport sector is no exception. As a government-owned company tasked with building and maintaining the strategic road network, we need to show both how we can help tackle the causes of climate change and how we are preparing for a changing climate. In 2021 we published our *Net zero highways plan*[31] to show how we will meet the target of net zero greenhouse gas emissions.

The latest climate projections from the Met Office have helped us to understand how the climate is changing, including that summers will on average be hotter and drier, while winters will be milder and wetter and critically, that extreme weather will become more common. We have also seen, from reports such as the *Climate Change Committee's*[32] third and most recent independent assessment of climate risk, that there are key risks from a changing climate for infrastructure, such as risks to bridges from flooding and erosion and risks to subterranean and surface infrastructure from subsidence.

We are committed to net zero carbon construction by 2040 and net zero carbon travel by 2050. This will involve significant changes to the way we build and manage our network, including in the Kent Corridors to M25 area. We will need to consider better integration with other transport modes and how to support the transition to electric cars and zero carbon heavy goods vehicles (HGVs).

The route has significant ecological, cultural and environmental sensitivities. The route runs alongside or through much of the Kent Downs Area of Outstanding Natural Beauty (AONB), a nationally protected landscape stretching from the White Cliffs of Dover to the Surrey and London border. There are also Special Areas of Conservation (SACs) directly adjacent to the M20 and A2 at Folkestone and Dover respectively.

The route passes through and between numerous urban areas, creating severance and impacting walking and cycling.

Air quality describes how polluted the air we breathe is. Poor air quality can cause both short-term and long-term effects on the health of humans and other living beings. The amount of air pollution depends on the concentrations of different substances in the atmosphere, such as sulphur dioxide, oxides of nitrogen, and particulate matter. In the UK, the concentrations of these pollutants are regulated and regularly monitored. If a local authority identifies any locations within its boundaries where targets are not being achieved, it must declare an Air Quality Management Area (AQMA) and put together a plan to improve air quality in that area.

While noise is often an inevitable consequence of societal activities, it can have serious implications for human health, quality of life, economic prosperity and the natural environment.

Elevated levels of noise, particularly from traffic, can be associated with heart attacks, strokes and hearing impairment, as well as sleep disturbance and annoyance. While there's no legal limit to road noise, environmental noise regulations in the UK require regular noise mapping and the creation of action plans for Noise Important Areas (areas exposed to the highest levels of noise).

Severance is where transport infrastructure or motorised traffic passes through settlements and acts as a physical or psychological barrier, limiting people's ability or desire to move through that area. This can reduce accessibility to key services, and damage local social networks and community cohesion.

31 National Highways, 2021, *Net zero highways: our 2030 / 2040 / 2050 plan*, https://nationalhighways.co.uk/media/eispcjem/net-zero-highways-our-2030-2040-2050-plan.pdf
32 Climate Change Committee, 2021, *Independent Assessment of Climate Risk*, https://www.theccc.org.uk/publication/independent-assessment-of-uk-climate-risk/

In terms of air quality, there are receptors within 100 metres of the strategic road network which may be more likely to experience adverse air quality impacts: and therefore most likely affected by poor air quality, are on the M20 west of Maidstone and at Ashford, the A2 west of Canterbury at Boughton under Blean, and the A20 west of Dover. Air Quality Management Areas (AQMAs) either surround roads (such as the A13) or larger areas (for example Dartford Borough).

There are receptors within 300 metres of the SRN which may be more sensitive to high noise levels on the M20 between Maidstone and Ashford and London-bound near Aylesford. Noise Important Areas (NIAs) have been identified along the route, for example the A2 and M2 Canterbury to Rochester, M20 Wrotham to Harrietsham, and A20 at Dover.

Freight movement is reliant on the road network to connect to the wider UK. For example, the Port of Dover has no dedicated freight railheads. It relies solely on the M20/A20 and M2/A2 to access the wider region and connections to major warehousing and distribution centres, and end consumers. Similarly, the London Freeports are reliant on the A13 and A1089. The Medway Ports cluster has rail links, and there are aspirations to return intermodal traffic from Thamesport, which would provide opportunities for modal shift from Sheerness. However, it also relies on the efficient operation of the A249 and A2/M2 corridor for road freight.

The Kent County Council Bus service improvement plan[33] highlights a vision to improve public transport choices and encourage more travel to school by bus, which will help reduce congestion. The Plan identified initiatives to embed the 'mobility as a service' concept as part of future provision in the county.

Where possible we will seek to protect environmentally important locations and reduce air quality and noise impacts on communities served by the route

The proposed Lower Thames Crossing scheme is named within our Net zero highways 2030/2040/2050 plan as a key project to test and commercialise low carbon innovation and approaches to support the construction industry in meeting its net zero targets.

There may be a risk of flooding on the A249 and on the M2 east of Gillingham. Some areas are also susceptible to adverse weather events, such as the A20 Folkestone to Dover, A249 Sheppey Bridge and M2 Junctions 2 to 4. Access to ports can also be affected by adverse weather conditions. For example, the Port of Dover closes to all shipping movements when the sustained wind speed in the harbour exceeds 55 knots in particular directions. When visibility reduces to less than 500 metres only vessels equipped with suitable radars are permitted to move within the harbour. This in turn can impact on the operation of the SRN due to delayed vehicles waiting to use the ports or Channel Tunnel.

Interested parties would like to see reduced greenhouse gas emissions by providing alternative modes of travel and encouraging a lower share of journeys to be made by car.

33 https://letstalk.kent.gov.uk/busfuture

Key challenges

- Reliance of freight movement on the road network to connect to the wider UK
- Significant ecological, cultural and environmental sensitivities, particularly the Kent Downs Areas of Outstanding National Beauty and Special Areas of Conservation directly adjacent to the M20 and A2
- Traffic related severance, noise and air quality can impact on local communities with existing Air Quality Management Areas (AQMA) and Noise Important Areas (NIA) in place
- There are a number of receptors along sections of the route which may be more sensitive to air quality issues, including sections of the M20, the A2 and the A20
- There are a number of receptors along sections of the route which may be more sensitive to noise issues, predominantly on the M20 around Maidstone, Ashford and Aylesford
- Aspiration to minimise greenhouse gas emissions and building resilience to future climate change
- There may be a risk of flooding on the A249 and on the M2 east of Gillingham, and susceptibility to adverse weather conditions
- Access to ports can be affected by adverse weather conditions, resulting in challenges in crossing the Channel and associated SRN disruption due to delayed vehicles waiting to use the Ports or Channel Tunnel

4. Growing the economy

In order to understand the economic and housing growth aspirations of the area along the route we have considered key growth locations, such as those held in local plans and freeports.

The route provides access to global markets via international gateways. The Kent Corridor (M25 to Dover) is identified as part of the proposed UKNET, the strategic transport network for the whole United Kingdom, within the *Union connectivity review*[34] led by Sir Peter Hendy CB. It plays a pivotal role in international connectivity and trade, linking the UK and mainland Europe via Dover, Folkestone, Sheerness, the Channel Tunnel and the Thames Ports and Thames Freeport, and attracting significant freight movements as well as passengers.

The future of freight: A long-term plan, published by the Department for Transport in June 2022, notes that, with imports and exports comprising 62.9% of GDP in 2019, we are reliant on the freight and logistics sector for our economic wellbeing. One-seventh of all UK trade passes through the Port of Dover. The Thames Ports at both Tilbury and London Gateway are also of strategic national importance for international trade, particularly given their Freeport designation. Border control points and inland border facilities are located at Ebbsfleet and Sevington, with additional facilities proposed at Dover.

The route also provides the primary access to significant urban areas of high-value economic activity. There are dedicated economic opportunity areas at Dover and Sheerness, and planned growth at the Thames Freeport sites, Port of Dover and Medway Ports.

> The strategic road network has a critical economic function in supporting national and cross-border connectivity and areas with high levels of deprivation

There are high levels of planned housing and employment development within the region, notably around the Thames Estuary, Dartford, Gravesend, Tilbury, Maidstone, Sittingbourne, Canterbury, Ashford and Dover. Government targets for new homes in Kent are annually in the order of 10,000.

According to Kent County Council's *Growth and infrastructure framework*[35], in Kent and Medway the population is expected to increase to 2.1 million by 2031, up from 1.8 million in 2015. The substantial development and growth planned within the region will exacerbate pressure on the route.

The index of priority places for the Levelling Up Fund places local authorities into categories 1, 2 or 3, depending on their identified level of need, with category 1 representing places deemed in most need of investment through this Fund. Kent and Essex are seen as affluent counties, but there are pockets of deprivation. Several Kent local authorities were ranked as category 1 authorities, including Gravesham, Swale, Canterbury, Dover, and Folkestone and Hythe.

34 Sir Peter Hendy CBE, 2021, *Union Connectivity Review Final Report,* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1036027/union-connectivity-review-final-report.pdf
35 Kent County Council, 2018, *2018 Update of the Kent and Medway Growth and Infrastructure Framework* https://www.kent.gov.uk/__data/assets/pdf_file/0009/79920/GIF-2050-Picture.pdf

Despite levelling up being a key goal within the region around the route, the Kent corridors remain critical in also supporting levelling up across the UK as they play a key role in connecting people and jobs, and companies to customers internationally.

Both the projected growth of freight and tourism entering the UK, as well as housing and employment growth, could impact the route. Congestion issues at various junctions could inhibit economic growth and levelling up.

This is because local roads that interface with the SRN currently are impacted as a result of congestion, and a lack of alternative routes on the SRN. There is poor east-west connectivity via rail and slow links between Kent and the south coast. Finally, the concentration of High Speed 1 services on a single corridor can result in rail users driving to stations in other towns.

Key challenges

- The route plays a pivotal role in international connectivity, linking the UK and mainland Europe via Dover, Folkestone, Sheerness, the Channel Tunnel and the Thames Ports (London Gateway and Tilbury), which form part of the Thames Freeport
- The route provides the primary access to significant urban areas of high-value economic activity
- There are dedicated economic opportunity areas at Dover and Sheerness, and planned growth at the Thames Freeport sites, Port of Dover and Medway Ports. High levels of planned housing and employment development within the region are expected to exacerbate pressure on the route
- Congestion issues at various junctions could inhibit economic growth, with several Kent local authorities identified as government priorities for levelling up, including Gravesham, Swale, Canterbury, Dover, and Folkestone and Hythe
- There is poor east-west connectivity via rail and slow links between Kent and the south coast, and a concentration of High Speed 1 services on a single corridor

5. Managing and planning the SRN for the future

Maintaining the strategic road network

We deliver a comprehensive programme of maintenance to keep our assets in the right condition to provide our customers with the right level of service; ensuring that the road network remains safe and fully open for use. We collect data on the condition of all of our assets so that our teams of specialist engineers can fully understand their current condition and identify the optimum time to intervene, maintaining the asset and replacing parts before they fail and impact customer journeys.

Our asset inspections to collect much needed condition data are undertaken through a number of methods - survey vehicles collecting road surface condition for the whole of the network every year right through to structures inspections, where we undertake over 23,000 inspections of individual structures every two years. The majority of our asset routine maintenance activities and the replacement of thousands of asset components as they near end of life are undertaken at night to minimise customer disruption, meaning that most of this work is never seen.

Road surface

The measure for road surface condition has been updated for 2022/23 onwards. The condition is reported as one of our Key Performance Indicators (KPI3) and shows the condition of all available lanes of the main carriageway based on 3 elements of the road surface condition namely - the levels of surface rutting (caused by wheel tracks being formed in the surfacing), skid resistance (how slippery the road is) and longitudinal profile (how bumpy the road feels) with a target of 96.2% or more in good condition. At the time of publication, the road surface had a score of 96.7% in good condition, thereby meeting the national surfacing condition target.

This route consists of approximately 1,050 lane-kilometers of road surfacing. The surface condition across the route is considered to be sound, with 97% of pavement asset not requiring investigation for possible maintenance.

Bridges, tunnels and structures

There are 722 structures across the route, including bridges and large culverts. According to an analysis of current data, 96% of our structures are in very good or good condition. By carrying out inspections of each individual structure every two years, we identify any defects that may require maintenance, thereby helping to ensure that structural components are replaced before they fail.

Figure 18 shows how investment in this route has improved the average condition scores of structures, since 2006. The average condition score is derived from asset inspections on structural components, accounting for the relative importance and size of each component. If no maintenance or renewals were planned, the scores would be expected to decline from 100 (perfect) as the structures deteriorate over time. We have a rolling renewals programme to replace asset components identified in our inspection programme, improving the structure condition to ensure all structures remain in a safe condition and fully open for use.

We have identified significant structures renewals for RIS3, and these schemes affect 10 structures in this route. This route has only one tunnel, the Roundhill tunnel, which opened to traffic in 1992. The management of tunnel assets vary from the management of other structures in two ways. Firstly, the assets within a tunnel have a wide variety of design lives, from 120 years for the tunnel structure, to far less for the technology systems for operations and fire life safety. Secondly, tunnel systems require 24/7 control by our operations centres, to maintain safe operation.

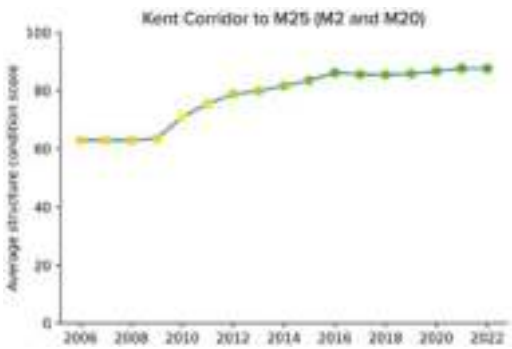


Figure 18: Average condition scores of structures, since 2006

Drainage

Drainage assets are represented by both linear assets (for example underground pipes, channels, ditches, drains) and nonlinear assets (for example gullies and chambers). At national level, 90% of the drainage assets are in good structural condition and 87% are in good service condition.

Geotechnical features

The geotechnical asset, comprising over 12,000 kilometers of earthworks embankments and cuttings carrying the road network is assessed through a programme of inspections and rated for its ability to provide the right level of safe functionality. The condition assessment of this asset is that 99.61% is in good condition to continue to function correctly. We use the inspection surveys to identify where any of our geotechnical features may require maintenance now or in the future, to ensure they are never at risk of failure.

Future developments

We have been transforming our approach to maintenance through our Operational Excellence and Asset Management Transformation Programmes. Bringing our key asset maintenance decision making and planning activities back in-house so that our own staff are responsible for planning maintenance activities, along with improving the consistency of our end to end maintenance and asset replacement programmes will bring significant benefits. Our asset management transformation also includes the improved analysis to identify the investment required on the strategic road network during the next road period. The business case will provide evidence to support future maintenance investment, clearly articulating the costs and benefits of delivering an effective maintenance and asset replacement programme.

Operations

We are establishing a nationally consistent approach to the management of our operational capability through our Operational Excellence change programme. This will deepen our understanding of how our interventions impact on the performance of the network and on the journeys of our customers. We are using the latest analytical software to process traffic data and gain insight into:

- how our operational services can improve safety and provide security to road users
- how the attendance of a traffic officer has an impact on incident durations
- how information provided by National Highways can benefit road users who plan their journeys beforehand and then while on their journeys

By better understanding our current operational performance, we can create a baseline from which we can identify opportunities for improvement.

Key challenges

- Contributing toward the national target of 96.2% or more of carriageway being in good condition
- Maintaining the good condition of the strategic road network's geotechnical assets
- Ensuring that drainage assets are maintained so that their good structural and service conditions can be upheld

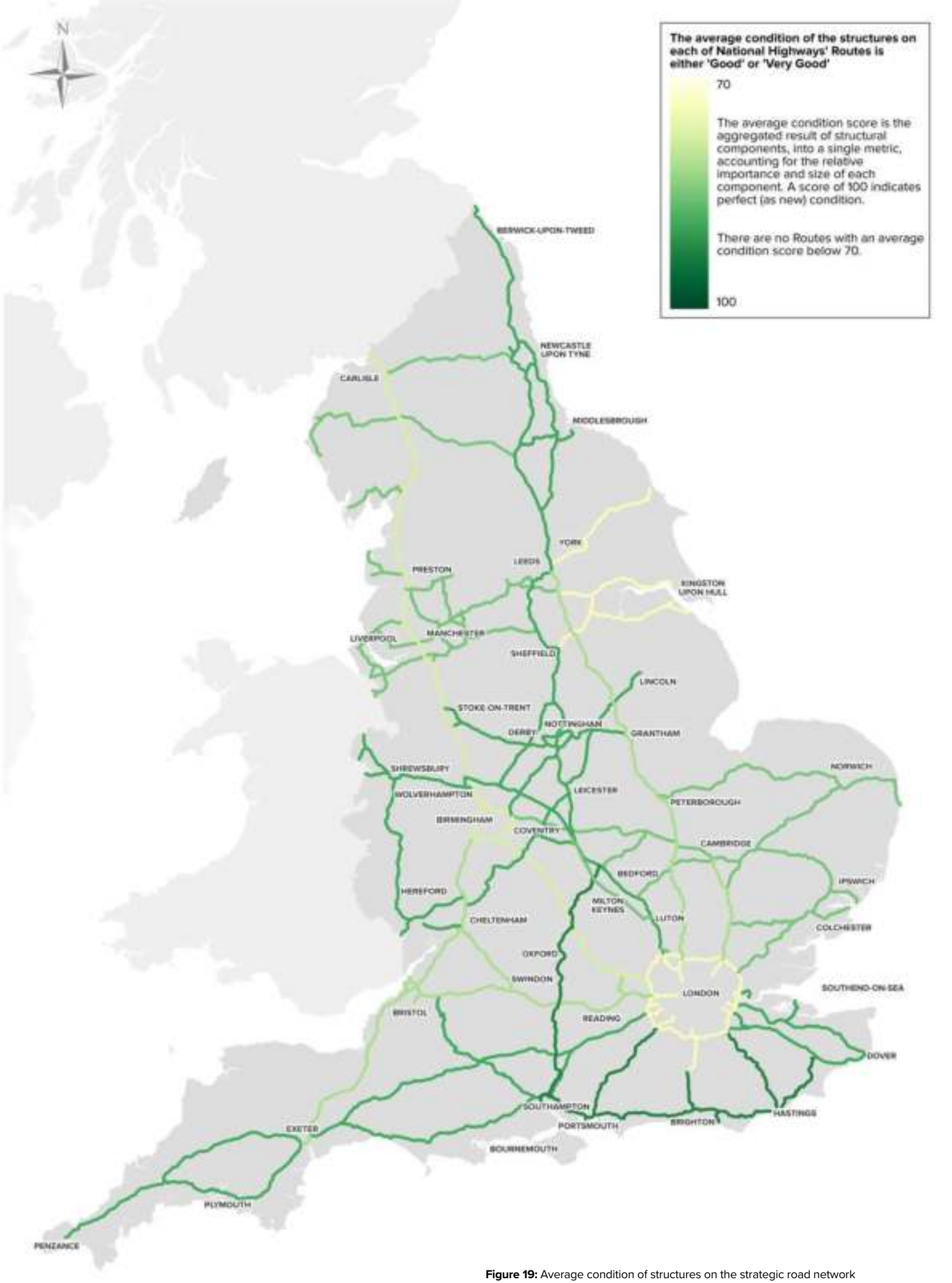


Figure 19: Average condition of structures on the strategic road network

6. A technology-enabled network

Facilities to improve journey quality and network efficiency on the strategic road network (SRN) are of key concern to our interested parties, road users and communities. High quality travel information before and during travel helps to:

- reduce day-to-day delays and improve reliability of the SRN
- minimise the adverse impacts of incidents
- improve quality of journey experience
- allow people to make more informed travel choices, including about when and how to travel

There is a lack of technology across the route. The route serves as one of the most important trading routes for the UK. An essential component of a resilient network is the ability to effectively divert traffic. There are a lack of alternative routes to Dover and Tilbury that are suitable for freight, and some diversion routes are less suitable for high volumes of freight or general traffic. This is particularly notable on the A2 due to route inconsistencies (variable route standard and number of lanes) and on the A249 and A229, which are used as informal links between the M20 and M2. A lack of technology to inform drivers of the best routes to use, and a lack of alternative routes to and from Dover and Tilbury, can result in secondary impacts such as increased congestion, reduced air quality and greater noise for local communities.

Congestion and traffic issues along the M20 and A13 results in uncontrolled redistribution of strategic traffic using other routes (including local roads) as there is a lack of coordinated infrastructure to communicate conditions or issues to road users.

We will support improved communications and facilities for all

There is also a lack of technology to support operation of the international gateways, including routing between them and border control points, inland border facilities and rest areas. *The National survey of lorry parking undertaken* by the Department of Transport in showed that Kent facilities were repeatedly discussed during consultation. The area between London and the South East coast leading to Dover Port can be seen to have an excess of vehicles parking off-site and a high number of critically defined Truckstops. Almost all lorry parks within Kent were identified as being at critical levels of utilisation, which can lead to drivers visiting multiple rest stops before finding a space.

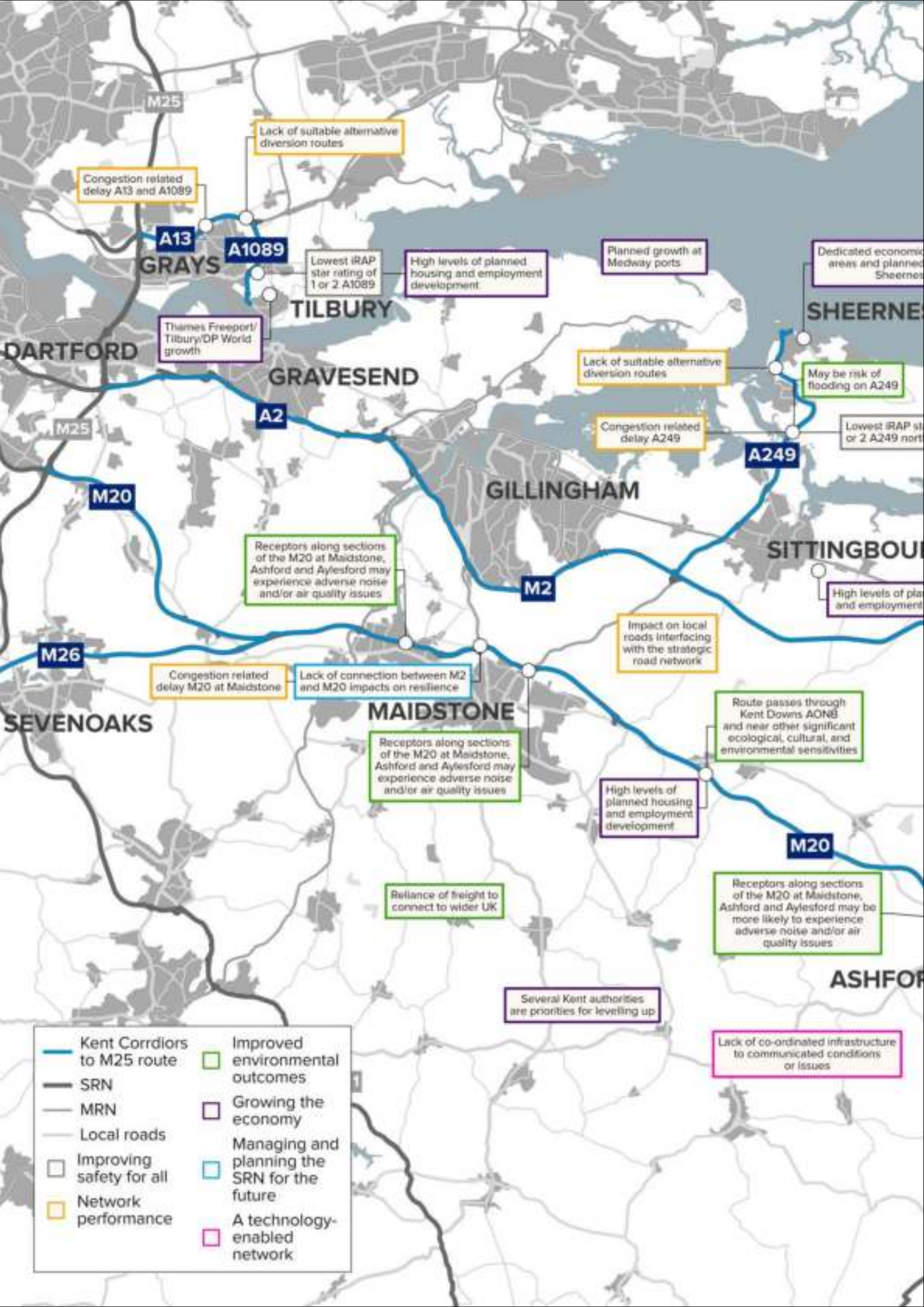
There are notable gaps in electric vehicle charging provision across the route, with the majority provided in urban areas, meaning SRN users have to divert.

The Government's March 2022 *Electric Vehicle Taking charge: the electric vehicle infrastructure strategy*[36] sets out a vision for 2030 where charging infrastructure will be removed as both a perceived and real barrier to the adoption of electric vehicles. The Strategy outlines the intention to accelerate the rollout of high-powered chargers on the SRN through the £950m *Rapid Charging Fund*[37].

36 HM Government, March 2022, *Taking charge: the electric vehicle infrastructure strategy*, https://www.gov.uk/government/publications/uk-electric-vehicle-infrastructure-strategy
37 https://www.gov.uk/guidance/rapid-charging-fund

Key challenges

- Lack of technology across the route to inform drivers of the best routes to use, as some diversion routes are less suitable for high volumes of freight and/or general traffic
- Lack of coordinated infrastructure to communicate conditions or issues to road users
- Lack of technology to support operation


M25
Lack of suitable alternative diversion routes
Congestion related delay A13 and A1089
A13
A1089
GRAYS
Lowest iRAP star rating of 1 or 2 A1089
High levels of planned housing and employment development
Planned growth at Medway ports
Dedicated economic areas and planned
Sheerness
TILBURY
Thames Freeport/ Tilbury/DP World growth
DARTFORD
GRAVESEND
Lack of suitable alternative diversion routes
May be risk of flooding on A249
A2
M25
Congestion related delay A249
Lowest iRAP st or 2 A249 nort
A249
M20
GILLINGHAM
Receptors along sections of the M20 at Maidstone, Ashford and Aylesford may experience adverse noise and/or air quality issues
SITTINGBOU
M2
High levels of pla and employment
Impact on local roads interfacing with the strategic road network
M26
Congestion related delay M20 at Maidstone
Lack of connection between M2 and M20 impacts on resilience
MAIDSTONE
SEVENOAKS
Route passes through Kent Downs AONB and near other significant ecological, cultural, and environmental sensitivities
Receptors along sections of the M20 at Maidstone, Ashford and Aylesford may experience adverse noise and/or air quality issues
High levels of planned housing and employment development
M20
Reliance of freight to connect to wider UK
Receptors along sections of the M20 at Maidstone, Ashford and Aylesford may be more likely to experience adverse noise and/or air quality issues
ASHFOR
Several Kent authorities are priorities for levelling up
Lack of co-ordinated infrastructure to communicated conditions or issues
Kent Corridors to M25 route
SRN
MRN
Local roads
Improving safety for all
Network performance
Improved environmental outcomes
Growing the economy
Managing and planning the SRN for the future
A technology-enabled network

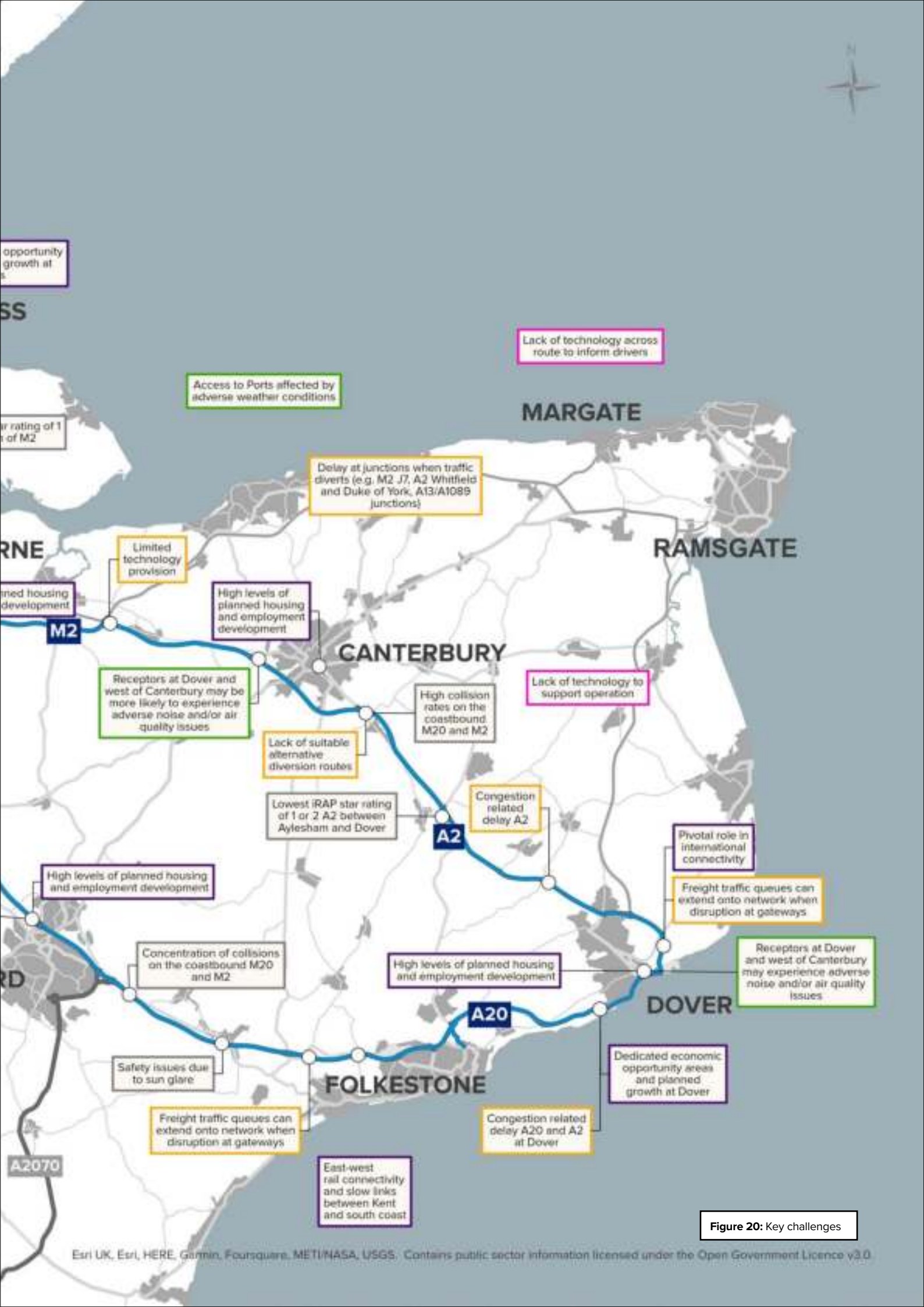


Figure 20: Key challenges

Our ambition for the route

06 Initial route objectives

We want to provide safer and more reliable journeys for all those who use or live alongside our network on the Kent Corridors to M25 route, and help the region achieve its economic and housing growth ambitions. Based on our engagement and data analysis, we have defined seven route objectives for the area.

We developed the route objectives based on:

- feedback from customers and neighbours outlined in Chapter 3
- opportunities to collaborate with other network operators, outlined in Chapter 4
- constraints and challenges, as highlighted in Chapter 5
- how best to contribute to the Department for Transport's (DfT's) six strategic objectives

Each route strategy includes a series of specific route-based objectives. These objectives, informed by extensive data analysis and engagement with customers and neighbours, set out our ambition for each route. Although route objectives are route-specific, they should also be considered in the context of our commitments and ambitions for the whole network, as per our Licence agreement. This means that, while we may identify certain locations within a route for further consideration, we will seek to address these locations in line with our ongoing commitment to achieving our safety, environmental and technology obligations across the strategic road network.

It should be noted that there is overlap between the objectives, and we recognise they cannot be considered in isolation from each other. They should be considered alongside our asset plan.

The route objectives, their supporting narratives, and locations for further consideration will together inform the development of the Road investment strategy (RIS). They do not represent a commitment to road-based interventions but are intended to enable multimodal interventions to be explored as part of later study phases. It should be noted that the route objectives do not signify an assurance of investment in a particular route, nor do they remove the need to follow statutory processes.

As these are initial route objectives subject to wider feedback, we have not at this stage set out in detail how we will measure progress against them. Understanding how interventions and initiatives have addressed the challenges identified is a complex and long-term task and the approach to it will need to be devised alongside the wider performance specification for the third road period. We expect to set out our approach to this more clearly in the finalised route strategy overview reports to be published alongside our *Strategic business plan* and *Delivery plan* later in this road period.

Route objectives and DfT's strategic objectives

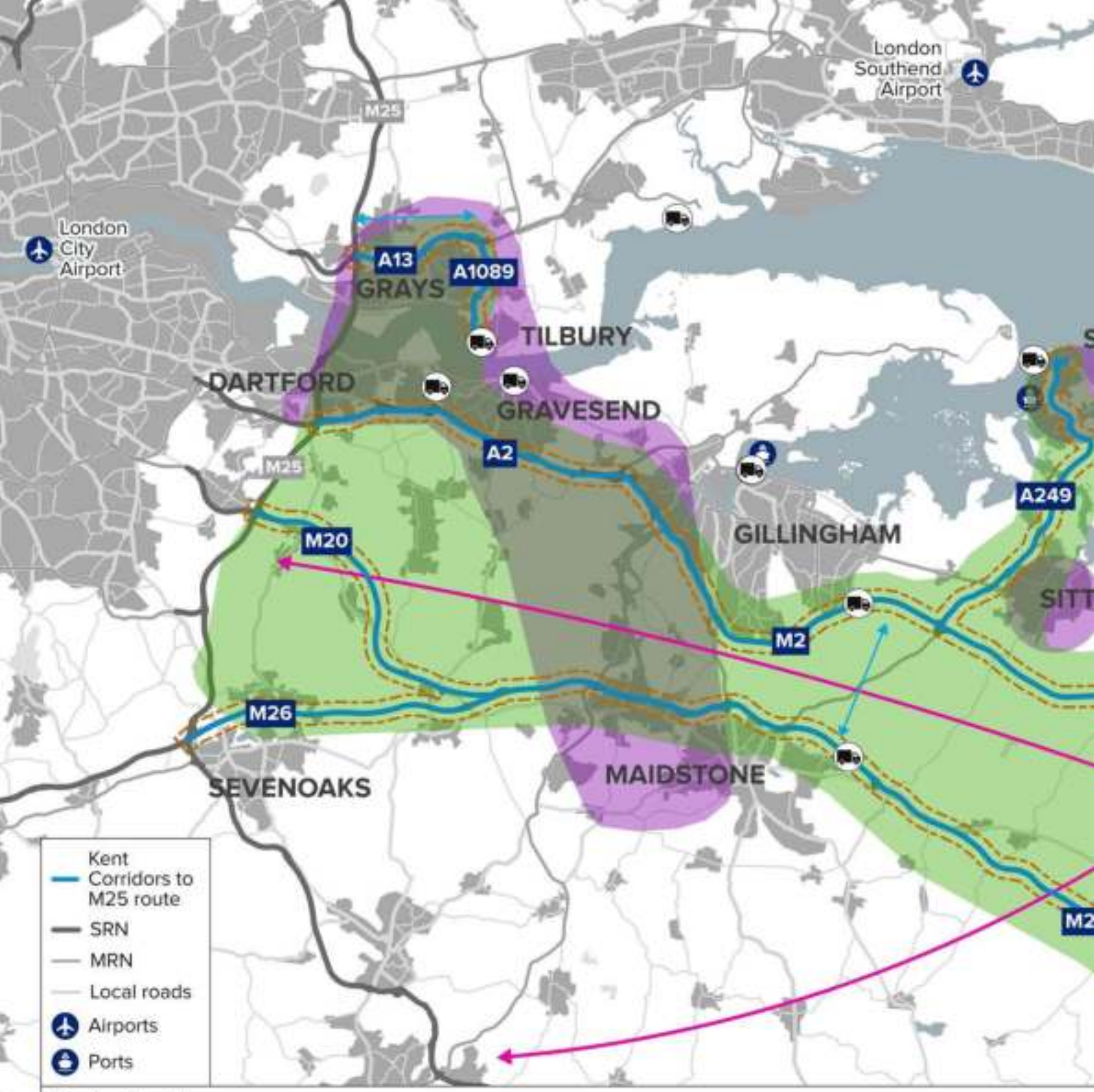
In Figure 21 we illustrate the seven route objectives on our route map and, in Table 1, we show how they contribute to the Government's strategic objectives for our network as a whole.

Table 1: How the route objectives map to the DfT's strategic objectives

	Ref.	Route objective
	A	**Support safe and efficient freight movement to and from air, rail, sea and freeports in the Kent Corridors.** Support driver welfare, including supporting provision of appropriate driver facilities and reducing delay, particularly on the M2/A2, A249 and A13 / A1089
	B	**Support sustainable development within Kent and Thurrock.** Support effective local and regional connectivity through improved integration with sustainable transport modes to minimise the impact of short distanced trips from key growth areas and strategic development sites to benefit the economy
	C	**Promote the Kent Corridors as a region that sets the standard in supporting the use of technology.** Improve communication technology to better inform users during periods of disruption, providing an enhanced end to end journey experience on the Kent Corridors. Maximise the use of emerging technologies to support the net zero economy, and use schemes such as the Lower Thames Crossing to test low carbon innovation and approaches
	D	**Improve resilience of routes from Dover, Sheerness, Tilbury and Thames Gateway Ports to the M25.** Provision of safe, suitable, and efficient routes to further improve resilience between the M20/A20 - M2/A2 corridors and A13/ A1089, improving journey time reliability and reducing impact on the Local Road Network
	E	**Promote sustainable connectivity in region.** Improve connectivity to ports and airports and the rail network (including access to high-speed services and east-west connectivity), to broaden mode and route choice and reduce vehicle use where possible
	F	**Be a better neighbour by safeguarding the environment and reducing the impact of air quality and noise on local communities including Dover, Maidstone, Aylesford, Ashford and Canterbury.** Support schemes that reduce the impact of travel on neighbours, and protect areas with environmental designation around the route notably the Kent Downs Area of Outstanding Natural Beauty (AONB) and Special Areas of Conservation (SAC) as far as practicable which lie directly adjacent to the M20 and A2

DfT's strategic objectives for our route

Improving safety for all	Network performance	Improved environmental outcomes	Growing the economy	Managing and planning the SRN for the future	A technologyi-enabled network
✓	✓		✓		
	✓		✓		
	✓			✓	✓
✓	✓				
	✓	✓	✓	✓	
		✓			



Route objectives

A. Support safe and efficient freight movement to and from air, rail, sea and freeports in the Kent Corridors. Support driver welfare, including supporting provision of appropriate driver facilities and reducing delay, particularly on the M2/A2, A249 and A13/A1089

B. Support sustainable development within Kent and Thurrock. Support effective local and regional connectivity through improved integration with sustainable transport modes to minimise the impact of short distanced trips from key growth areas and strategic development sites to benefit the economy

C. Promote the Kent Corridors as a region that sets the standard in supporting the use of technology. Improve communication technology to better inform users during periods of disruption, providing an enhanced end to end journey experience on the Kent Corridors. Maximise the use of emerging technologies to support the net zero economy, and use schemes such as the Lower Thames Crossing to test low carbon innovation and approaches

D. Improve resilience of routes from Dover, Sheerness, Tilbury and Thames Gateway Ports to the M25. Provision of safe, suitable, and efficient routes to further improve resilience between the M20/A20 - M2/A2 corridors and A13/A1089, improving journey time reliability and reducing impact on the local road network

E. Promote sustainable connectivity in region. Improve connectivity to ports and airports and the rail network (including access to high speed services and east-west connectivity), to broaden mode and route choice and reduce vehicle use where possible

F. Be a better neighbour by safeguarding the environment and reducing the impact of air quality and noise on local communities including Dover, Maidstone, Aylesford, Ashford and Canterbury. Support schemes that reduce the impact of travel on neighbours, and protect areas with environmental designation around the route, notably the Kent Downs Area of Outstanding Natural Beauty (AONB) and Special Areas of Conservations (SAC) as far as practicable, which lie directly adjacent to the M20 and A2

Figure 21: Route objectives

A. Support safe and efficient freight movement to and from air, rail, sea and freeports in the Kent Corridors

Objective

Support driver welfare, including supporting provision of appropriate driver facilities and reducing delay, particularly on the M2/A2, A249 and A13 / A1089

Context

The Kent Corridors play a pivotal role in enabling international gateways connectivity and trade by providing access routes to global markets. Key freight movements are shown in Figure 22. There are major air, rail, sea and freeports in the region which support the national economy:

- Port of Dover – one-seventh of all UK trade passes through this port (the value of freight passing through is £144 billion, accounting for around 33% of all trade with the EU)
- The Channel Tunnel – around €140 million of goods passes through per year, representing approximately 26% of trade between the UK and the EU
- Medway Ports cluster – 12.5million tonnes of freight entered the UK via these ports in 2019
- Port of Tilbury – annual throughput of 16 million tonnes, estimated to value approximately £8.5 billion, which represents 4% of UK sea freight
- Thames Freeport – forecast to generate £2.6billion of contribution to the economy in terms of gross value added (GVA)
- DP World London Gateway - with capacity for c.1,875 million 20-ft shipping containers per annum

The Department for Transport's 2022 *The future of freight:* A long-term plan notes that we are reliant on the freight and logistics sector for our economic wellbeing. The Union connectivity review, led by Sir Peter Hendy CBE, identifies the need to secure better connectivity for freight across the UK with ports and Freeports. One of Transport East's four strategic priorities is unlocking international gateways, and these gateways have ambitious expansion plans so a reliable network with appropriate facilities for drivers is essential.

The National survey of lorry parking published by the Department of Transport showed that Kent was repeatedly discussed during consultation. The area between London and the South East coast leading to Dover Port can be seen to have an excess of vehicles parking off-site and a high number of critically defined Truckstops. Engagement with interested parties highlighted that heavy goods vehicles (HGVs) use existing laybys as overnight stops, there are a lack of welfare facilities, and drivers often arrive at parking to find it full.

Interested parties raised that there are visibility and access challenges at particular junctions across the route, including connections with the Major and Local Road Networks.

There are sections of the route that have the lowest iRAP star ratings of 1 or 2, and the highest percentage of collisions where someone is killed or seriously injured that involve walkers, cyclists, horse riders or motorcyclists.

Data indicates that congestion-related delays occur on various sections across the route, and delays are expected to worsen by 2031 at several locations. It is well documented that when there is disruption at the international gateways, freight traffic queues can extend onto the network, including through towns and residential communities. Interested parties noted that there is also a need to consider the impact of challenges with crossing to Europe across the whole M20, not just near the ports, and that there are congestion and journey time reliability challenges across the whole network.

Our network considerations

The route is critical for freight movement connecting gateways and freight-focused centres to the wider UK. When there is disruption on the M20, drivers divert to other routes, such as the M2/A2 and local A-roads. There are delays at junctions when traffic diverts (or in some cases during typical operation), particularly where the Major and Local Road Networks interact with the SRN, including M2 Junction 7 (Brenley Corner), the A2 Whitfield and Duke of York Roundabouts, the A13/A1089 Junction, the M2 Junction 3 (Bluebell Hill) and M20 Junction 6.

Figure 22: International gateways

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Data indicates that congestion related delays occur across the route during typical operation on the A2, A249, M20, and the A2 and A20 near Dover. During typical operation, delays are apparent on the M20 at Maidstone and Ashford, A249 north of the M2, in and around Dover, A13 / A1089 east of the M25 and A2 on approach to the M25. Delays are exacerbated by seasonality due to travel to coastal destinations and Europe, for example on the A2 on approach to Dover.

Delays are expected to worsen by 2031 at several locations, particularly the A2 and A20 at Dover with a decrease in traffic use of Dartford, an increase in traffic crossing the river from South Essex to Kent and higher volumes of freight traffic opting to use the M2/ A2 corridor and A13 than currently. The implementation of the Lower Thames Crossing scheme may change the profile of traffic using the route by widening driver choice in route selection.

Interested parties have highlighted that static queueing traffic can be a cause of safety concerns when the ports are busy, and variable road standards can impact the safety of the route, particularly along the A2. The A2 between Aylesham and Dover, along with the A1089, has one of the lowest iRAP star ratings. The A2 between the M2 and Dover has one of the highest percentage of collisions where someone is killed or seriously injured that involves walkers, cyclists and horse riders. Overall between 26 and 50% of collisions resulting in death or serious injury involved a motorcyclist on the A2.

The A249 north of the M2, another key freight route, has one of the highest percentage of collisions where someone is killed or seriously injured involving walkers, cyclists, horse riders and motorcyclists, and the A20 between Dover and Folkestone involving motorcyclists.

The National survey of lorry parking published by the Department for Transport indicated that almost all lorry parks within Kent were identified as being at critical levels of use. The current lack of suitable parking and facilities for freight drivers can result in HGVs parking in inappropriate locations. A lack of suitable holding areas results in freight traffic queues extending onto the network, including through residential communities, when there are challenges with crossings to Europe. This can have an impact on air quality and worsen noise pollution. When lengthy static queues occur, this can also lead to safety issues.

The orientation of the route can also result in safety issues due to sun glare.

Outcomes

- Regional and national economy supported through safe and efficient access to international air, rail and sea ports
- More freight parking and suitable welfare facilities for HGV drivers, and provision of holding areas
- Improved reliability and fewer delays along the M2/ A2, A13 / A1089 and A249

DfT's Strategic objectives

- Improving safety for all
- Network performance
- Growing the economy

Timeframe based on the issues and constraints identified

Now — **Unreliability of journey times and existing delays and queuing along the M2/A2, A13 / A1089 and A249**

Future Road Periods — **Anticipated increase in journey times, delays and queueing due to freight expansion plans**

B. Support sustainable development within Kent and Thurrock

Objective

Support effective local and regional connectivity through improved integration with sustainable transport modes to minimise the impact of short distanced trips from key growth areas and strategic development sites to benefit the economy.

Context

The route serves an area of high-value economic activity and high levels of planned housing and employment development. Economic Opportunities are shown in Figure 23. Engagement with interested parties highlighted the importance of the role of the SRN in both supporting regeneration and growth and mitigating the impacts of it on the road network.

Transport for the South East's (TfSE) priorities identify a need for a more integrated approach to land use and transport planning, and for there to be a reduction in the need to travel, particularly by private car, to reduce the impact of transport on people and the environment. Interested parties suggested that there is a need for future planning to avoid car dependent housing development.

Several Kent local authorities were ranked by the Government as in the priority category to receive funding from the Levelling Up Fund. As most large settlements in the region are located along or close to the SRN, businesses and residents rely heavily on it, meaning it will be integral for levelling up ambitions. A number of roads classified as the Major Road Network (MRN) connect strategic locations and the SRN, as well as providing alternative routes to the SRN.

Interested parties raised that capacity issues at various junctions across the network inhibits housing and employment growth. Data indicates that congestion-related delay occurs across the route, and there are delays apparent during typical operation. Delays are expected to worsen by 2031 at several locations.

There is poor east-west connectivity via rail and slow links between Kent and the south coast, and a concentration of High Speed 1 services on a single corridor.

Our network considerations

Congestion at junctions threatens to inhibit economic growth and levelling up, with local roads, including the MRN that interface with the SRN suffering from lack of alternative routes, capacity and reliability issues. Examples include the M2 Junction 7, A229 Bluebell Hill, A13/A1089 and M20 Junctions 5-7. Existing delay and journey time reliability issues are also prevalent on roads that provide access to key areas of growth, including the A2 (at Gravesend and near Dover), A249, M20 (at Maidstone and Ashford), and A13/A1089. Delays are expected to worsen by 2031 around Dover and Faversham.

Significant growth is expected, with notable Local Plan allocations and economic opportunity areas in areas surrounding the route. These include, development for North Kent and the Thames Estuary, major residential and employment growth areas at and around Tilbury, land allocations for housing and employment in urban centres along the M20 and the M2/A2 corridor, and significant growth planned at international gateways.

Interested parties have mentioned that while Kent and Essex are seen as affluent counties, several Kent local authorities were ranked as category 1 (most priority) locations when it comes to allocating funds from the Levelling Up Fund. These locations include Gravesham, Swale, Canterbury, Dover and Folkestone and Hythe.

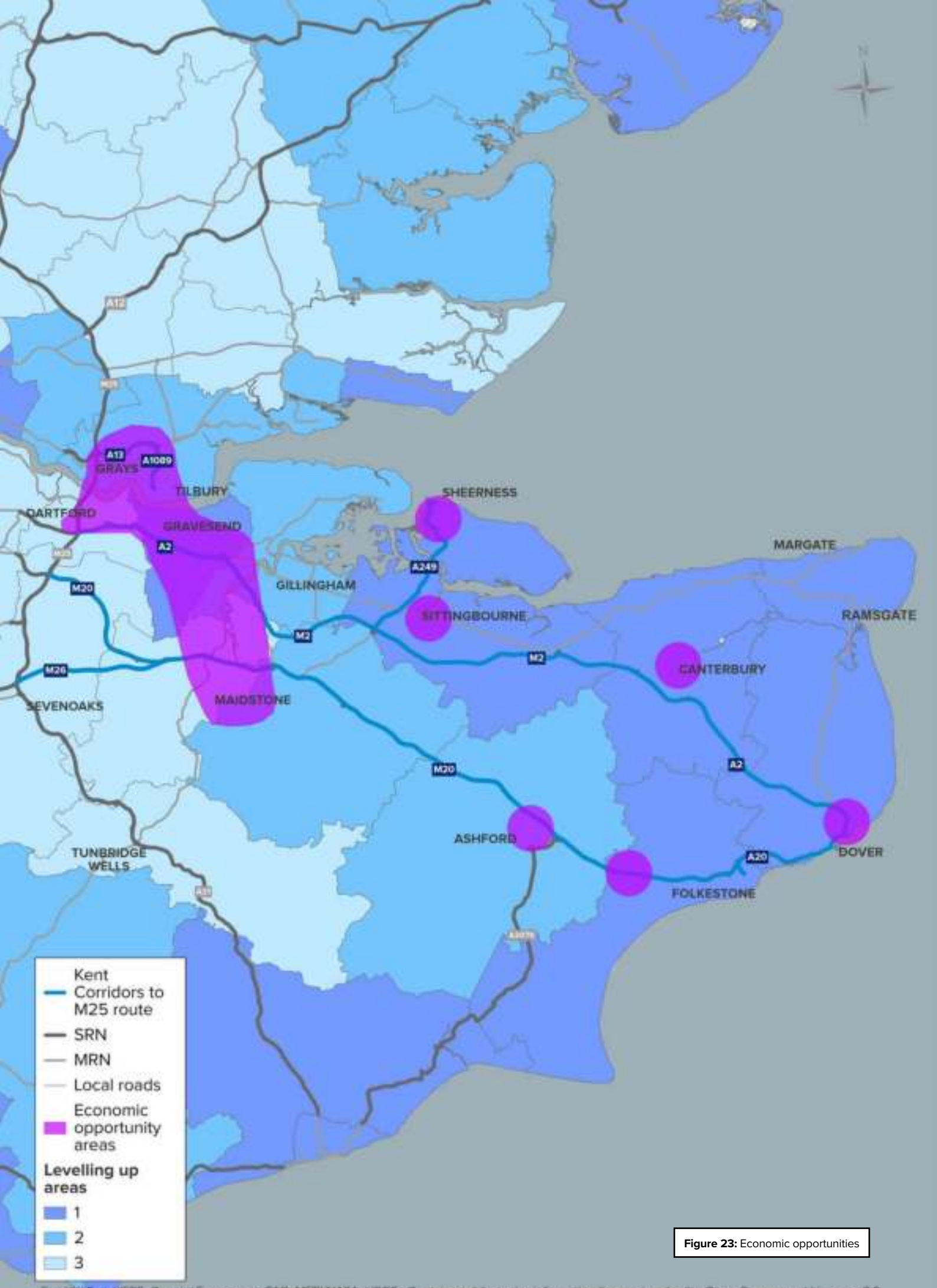

Figure 23: Economic opportunities

Esri UK, Esri, HERE, Garmin, Foursquare, FAO, METI/NASA, USGS. Contains public sector information licensed under the Open Government Licence v3.0.

The Kent Corridors remain critical in supporting levelling up across the UK as they play a key role in connecting people and jobs, and companies to customers internationally. Investment in transport networks is essential for levelling up, unlocking development sites and improving connectivity and capacity of the major routes.

Interested parties highlighted that poor rail connectivity other than between Kent and London, and slow links between Kent and the south coast (such as Maidstone to Brighton), can result in travellers choosing to drive rather than using sustainable travel services. The attraction of particular High Speed 1 services results in rail users driving to stations in other towns.

Outcomes

- Improved reliability and fewer delays along the M2/A2 corridor, the M20 and the A13/A1089
- Sustainable growth supported through improved multimodal connectivity
- Benefits to local and regional economies through job creation and economic investment
- Capacity and reliability issues addressed at interfaces with the Major Road Network (MRN)

DfT's Strategic objectives

Network performance

Growing the economy

Timeframe based on the issues and constraints identified

Now — **Existing delays and unreliability along the M2/A2 corridor, the M20 and the A13/A1089**

Future Road Periods — **Anticipated increase in delays due to growth in region, particularly at interfaces with the MRN**

C. Promote the Kent Corridors as a region that sets the standard in supporting the use of technology

Objective

Improve communication technology to better inform users during periods of disruption, providing an enhanced end to end journey experience on the Kent Corridors. Maximise the use of emerging technologies to support the net zero economy, and use schemes such as the Lower Thames Crossing to test low carbon innovation and approaches

Context

The Kent Corridors play a strategic economic role in the movement of goods, and the Union connectivity review led by Sir Peter Hendy CBE highlights that the route is important for both passengers and freight. Given the key role the route plays in the movement of goods nationally, it is important that it is also capable of adapting to future changes and responding to the Government's plan to decarbonise transport.

TfSE priorities include a seamless, integrated transport network, making it simpler and easier to plan journeys. TfSE priorities also highlight the desire for a network that is more resilient to incidents, extreme weather and the impacts of a changing climate, and a 'smart' transport network that uses digital technology to manage transport demand.

TfSE are aiming for a reduction in carbon emissions to net zero by 2050 at the latest. Transport East priorities also include decarbonisation to net zero.

There is limited technology provision on the route, and a lack of technology to support the operation of the international gateways. Interested parties highlighted the need for increased technology for routing to ports, border control points and international border facilities.

Data indicates that congestion-related delay occurs on sections of the route, which can be exacerbated by seasonality, and delays are expected to worsen by 2031 at several locations. Engagement with interested parties highlighted concerns about the impact of challenges of crossing to Europe via the whole length of the M20, and raised the need for communication infrastructure for when there is disruption on the road network and more road signage to communicate travel conditions across the channel.

Electric vehicle charging points (EVCPs) are available, but there are gaps in provision. There are no hydrogen refuelling stations in the region.

Engagement with interested parties highlighted concerns on the impact of automated vehicles and infrastructure to enable their use needs, and a lack of understanding of what the future role of all lane running might be.

Our network considerations

Data indicates that congestion-related delay occurs on sections of the A2 at Gravesend, A249 north of the M2, M20 at Maidstone, and on and A2 and A20 near Dover. Delays are expected to worsen by 2031 at several locations, particularly the A2 and A20 at Dover, and the M2 at Stockbury and Faversham. Network performance issues experienced across the year are exacerbated by seasonality, due to summer travel to coastal destinations and access to international gateways on the coast. This particularly impacts the M20 / M26, Dover and A2 to the east of the M25. Interested parties highlighted that congestion due to inland border facilities can impact on road users.

There is a lack of technology across the route to inform drivers of the best routes to use, with some diversion routes being less suitable for high volumes of traffic. Across the route, technology is only on M20 Junctions 3 to 5 (Junctions 5 to 7 is controlled motorway). Management systems (such as Dover Traffic Access Protocol, or TAP) are also manually monitored and triggered, and operators have limited access to network conditions. The limited technology provision makes it more difficult to manage disruptive incidents and communicate information to users. This can result in the uncontrolled redistribution of SRN traffic using other routes (including local roads), and may contribute to congestion and traffic issues along the M20 and A2.

There is also limited technology available to support routing between international gateways, border control posts, inland border facilities and rest areas. This can result in drivers visiting multiple rest stops before finding a space, or parking in less ideal locations to adhere to drivers' hours rules. During periods of disruption, this can also pose challenges in the management of the release of vehicles from rest areas and lorry areas.

Electric vehicle charging points are available. However, there is limited provision of charging points for the strategic movements to and from the gateways and freight focused areas. Interested parties highlighted a lack of refueling provision for alternative fuels, and the need for associated infrastructure at motorway service areas.

Planning for the future increasingly requires planning for uncertainty. This is driven both by climate change and technological advances, such as automated vehicles, HGV platooning (using driver assistance systems to allow HGVs to safely travel close together) and other similar technologies. We recognise that, in the future, these types of changes will impact on how freight operators conduct journeys and what their needs will be when interacting with the SRN.

Given the limited provision of technology on the route, there is currently limited ability to utilise existing infrastructure to respond to future technologies.

Provision of infrastructure to facilitate communication of route conditions to road users will maximise the opportunities offered by new technologies and support growth in it.

Communicating effectively will also improve freight movement, and benefit the overall experience for all users. Provision of technology will be key in ensuring that the network is fit for the future and that international gateways are able to continue to operate effectively.

Net zero highways: *Our 2030/2040/2050 plan*[38] outlines National Highways' ambition to lead the industry and play a key role in decarbonisation. The proposed Lower Thames Crossing scheme is named as a key project to test low carbon innovation and approaches across every aspect of the project.

Outcomes

- Improved communication of up-to-date route conditions to customers, to re-route vehicles during periods of disruption if required, or encourage sustainable choices
- Drivers better informed of conditions along the route and at Portals, rest areas and international gateways
- Effectively accommodated and protected network for changing freight needs
- Improved provision of and information on electric vehicle and alternative fuel charging
- Integrated low carbon and future proofing measures as part of delivery of nationally significant infrastructure schemes within the region
- Mode shift of freight to rail to meet net zero carbon travel by 2050

DfT's Strategic objectives

- Network performance
- Managing and planning the SRN for the future
- A technology-enabled network

Timeframe based on the issues and constraints identified

Now

Existing delays and queueing during periods of disruption

Existing lack of alternative fuelling infrastructure

Future Road Periods

Anticipated increase in delays and queueing due to growth in region

Lack of provision for future technologies, international gateways unable to operate efficiently

38 National Highways, 2022, *Net zero highways: Our 2030 /2040 / 2050 plan,* https://nationalhighways.co.uk/media/eispcjem/net-zero-highways-our-2030-2040-2050-plan.pdf

D. Improve resilience of routes from Dover, Sheerness, Tilbury and Thames Gateway Ports to the M25

Objective

Provision of safe, suitable, and efficient routes to further improve resilience between the M20/ A20 - M2/A2 corridors and A13/ A1089, improving journey time reliability and reducing impact on the Local Road Network

Context

The future of freight: A long-term plan, published by the Department for Transport in June 2022, notes that we are reliant on the freight and logistics sector for our economic wellbeing. As an important trading route to Europe, the route plays a pivotal role in enabling international connectivity and trade by providing routes to global markets. It provides access to international gateways, including the Port of Dover, Channel Tunnel, Medway Ports cluster, Port of Tilbury and Thames Gateway Ports. It thus supports the movement of goods and services between Europe and the rest of the UK.

TfSE priorities include more reliable journeys for people and goods travelling between the South East's major economic hubs and to and from international gateways. The TfSE strategy highlights that the rail and road routes in this region are particularly important for freight.

A key challenge identified is that the roads serving the Port of Dover and Eurotunnel routinely suffer from poor resilience due to port and border operations on both sides of the English Channel, which can cause freight traffic to build up on the M20.

In the Kent Corridors area, the MRN and LRN work in combination with the SRN to support the movement of goods and people, particularly in providing alternative routes to and from the international gateways when there are incidents. There are limited diversion options for some sections of the route. Consequently, local roads, including the MRN, that interface with the SRN can suffer from the lack of local SRN alternative routes, as well as from capacity and reliability issues.

Delays are notable at junctions when traffic diverts (or in some cases during typical operation), particularly where the Major Road and Local Road Networks interact with the SRN. Delays are exacerbated by seasonality due to travel to coastal destinations and Europe via the Port of Dover and the Channel Tunnel. Delays are expected to worsen by 2031 at several locations.

There are sections of the route that have the lowest iRAP star ratings of 1 or 2, and the highest percentage of collisions where someone is killed or seriously injured involving walkers, cyclists, horse riders and motorcyclists

It is well documented that when there is disruption at the international gateways, freight traffic queues can extend onto the network, including through towns and residential communities. Interested parties expressed concerns about performance when Dover Traffic Access Protocol is in place, and the challenge of accommodating traffic moving between the M2 and M20.

There is constrained access across the Thames. Engagement with interested parties identified concerns around the potential impact of Lower Thames Crossing on the LRN and other SRN routes.

Our network considerations

Resilience and access to international gateways is constrained by the lack of reliable alternatives to the M20/ A20 and A2/M2, and to the A13 / A1089. There are a number of diversion routes that run alongside or broadly parallel to the M20/A20 on the western side of the route. However, there are limited options for the other sections of the route, including the M2/A2, A249 and A13/A1089. Alternative routes are often unsuitable for high volumes of traffic, particularly on the A2 because of route inconsistencies (variable route standard and number of lanes), and on the A249 and A229, which are used as links between the M20 and M2. This can result in secondary impacts such as increased congestion, reduced air quality and increased noise.

The A2 between Aylesham and Dover, the A249 north of the M2, and the A1089, all key routes to international gateways, have the lowest iRAP Star Ratings of 1 or 2. Higher collision rates and proportions of collisions were someone is killed or seriously injured are also apparent at key locations on the coast-bound M20 and M2. The highest percentage of collisions resulting in death or serious injury that involves walkers, cyclists or horse riders are on the A2 between the M2 and Dover, and the A249 north of the M2. The data shows that between 26 and 50% of collisions where some has been killed or seriously injured involved motorcyclists on the A2, A249 north of the M2, and M26 sections of the route. This increases to 67% of recorded collisions resulting in death or serious injury on the A20 between Dover and Folkestone.

Delay is notable at junctions when traffic diverts (or in some cases during typical operation), particularly where the MRN and LRN interact with the SRN, including M2 Junction 7, the A2 Whitfield and Duke of York Roundabouts, the A13/A1089 Junction, the M2 Junction 3 and M20 Junction 6. Data indicates that congestion related delay occurs on sections of the A2 at Gravesend, A249 north of the M2, M20 at Maidstone, and on and A2 and A20 near Dover. During typical operation, delays are apparent on the M20 at Maidstone and Ashford, A249 north of the M2, in and around Dover, A13 / A1089 east of the M25 and A2 on approach to the M25.

Delays are expected to worsen by 2031 at several locations, particularly the A2 and A20 at Dover and the M2 at Stockbury and Faversham. Delays are expected to worsen by 2031 at several locations, particularly the A2 and A20 at Dover.

Delays are exacerbated by seasonality. For example, interested parties highlighted the A2 on approach to Dover was a constraint, particularly the Whitfield and Duke of York Roundabouts.

Network constraints and associated congestion and queuing are exacerbated by incidents at the Gateways, resulting in long delays for freight vehicles and local users alike. A lack of alternative diversion routes can lead to congestion within the wider region during periods of disruption.

The challenge of accommodating traffic moving between the M2 and M20 (currently and in a future growth scenario with local growth and Lower Thames Crossing open) was highlighted by interested parties, which adds additional pressure to M2 Junction 3 (Bluebell Hill) and M20 Junction 6. Kent County Council are investigating options to improve the A229 Blue Bell Hill between M20 Junction 7 and M2 Junction 3 to increase journey time reliability, reduce delays and enhance road safety on the route. Furthermore, the implementation of the Lower Thames Crossing scheme may change the profile of traffic using the route, aiming to provide additional resilience in the event of diversions and accommodate a significant number of forecast new journeys on the network.

Outcomes

- Improved reliability of link(s) between the M2/A2 and M20/A20
- Improved resilience with alternative routes that are of a suitable standard for high volumes of freight
- Reduced delay points on the corridors, such as the M2 Junction 7 (Brenley Corner), A2 Whitfield Roundabout, A13/A126
- Improved connectivity through supported schemes, such as Tilbury Link Road

DfT's Strategic objectives

Improving safety for all

Network performance

Timeframe based on the issues and constraints identified

Now

Existing delay and safety on A2/M2 between Aylesham and Dover, and A13/A1089

Lack of reliability of link(s) between M2/A2 and M20/A20, existing delay at M2 Junction 2 and M20 Junction 6

Future Road Periods

Anticipated increase in delays and reduction in reliability

E. Promote sustainable connectivity in region

Objective

Improve connectivity to ports and airports and the rail network (including access to high speed services and east-west connectivity), to broaden mode and route choice and reduce vehicle use where possible

Context

The route provides access to numerous transport hubs and services used for local and international travel:

- Port of Dover - 11.8million passengers in 2018
- The Channel Tunnel - 21.5million passengers in 2019, including 4.2million passenger and freight vehicles
- High Speed 1 - 37,000 daily domestic journeys of which 18,000 are commuting trips
- Tilbury / Gravesend Ferry – approximately 150,000 journeys made on the Ferry each year
- Kent International Airport – closed currently, Development Consent Order submitted to reopen

TfSE priorities include a network that promotes active travel and active lifestyles, and better connectivity between the region's major economic hubs, international gateways (ports, airports and rail terminals) and their markets.

Priorities also include improved air quality, supported by initiatives to reduce congestion and encourage further shifts to public transport. Similarly,

Transport East has identified a priority to provide enhanced links between growing places and business clusters, improving access for people and enabling the area to function as a coherent economy.

The Kent rail network is one of the busiest and most congested routes in the country. In addition, the network provides links for onward travel beyond the region, including key destinations on the south coast (via Ashford), and Europe (via the Channel Tunnel). Interested parties highlighted that there is a lack of access across the Thames, but that improvement works may have an adverse impact on air quality.

The Kent rail strategy[39] identifies a lack of intermodal traffic on the Kent routes due to gauge capability. Strategic rail freight interchanges would be required across Kent to supplement any further mode shift.

Congestion related delay occurs on sections of the route, and delays are exacerbated by seasonality. Delays are expected to worsen by 2031 at several locations.

The Kent County Council Bus service improvement plan highlights a vision to improve public transport choices and encourage more travel to school by bus, which will help reduce congestion.

The Plan identified initiatives to embed the 'Mobility as a Service' concept as part of future provision in the county.

The route passes through the Kent Downs Area of Outstanding Natural Beauty (AONB), a nationally protected landscape, and between numerous urban areas.

Our network considerations

The international gateways rely on the M2, M20 and A13, alongside existing passenger rail facilities, for staff and passenger access. Poor east-west connectivity via rail, and slow links between Kent and the south coast, and lack of linkage across the Thames Estuary, can all contribute to travellers choosing to drive, and using already constrained sections of the SRN. The self-contained nature of the High Speed rail network and lack of east-west connectivity means that some rail users drive to stations to catch High Speed services, including stations in other towns. This can lead to delays at local access points, including around Maidstone, Ashford, Dover and on the A249 and A13/A1089.

Congestion related delay occurs on sections of the A2 at Gravesend, A249 north of the M2, M20 at Maidstone, and on and A2 and A20 near Dover. During typical operation, delays are apparent on the M20 at Maidstone and Ashford, A249 north of the M2, in and around Dover, A13 and A1089 east of the M25, and A2 on approach to the M25.

39 Kent County Council, March 2021, *Kent Rail Strategy 2021,* https://democracy.kent.gov.uk/documents/s98715/Item%2012%20Appenidx%20-%20Kent%20Rail%20Strategy%202021%20-%20Main%20Doc.Draft%20v04.13.08.20.CMM-ETCC%20Version.pdf

Delays are worsened by seasonality, due to travel to coastal destinations and Europe, for example on the A2 on approach to Dover. Delays are expected to worsen by 2031 at several locations, particularly the A2 and A20 at Dover and the M2 at Stockbury and Faversham. Interested parties raised that there is additional pressure on the Major Road Network (MRN) between the M2 and M20 due to commuting from Medway or Swale to Maidstone.

Sustainable travel network constraints and existing congestion-related delay risk inhibiting growth, with several Kent local authorities identified as priorities for levelling up, including Gravesham, Swale, Canterbury, Dover, and Folkestone and Hythe.

The route passes between numerous urban areas, creating severance and impacting walkers, cyclists or horse riders. Collision data indicates that the A2 (between the M2 and Dover) and the A249 north of the M2 have highest percentage of collisions where someone is killed or seriously injured involving walkers, cyclists or horse riders.

The Kent Corridors frame the *Kent Downs Area of Outstanding Natural Beauty (AONB*), and there is also a concentration of Special Areas of Conservation that lie directly adjacent to the M20 and A2. Managing impacts on these important areas can be supported through provision of multi-modal transport solutions.

Outcomes

- Improved connectivity on east-west routes and across the River Thames Estuary, and improved active travel connectivity
- Improved connectivity to commuter settlements by public transport
- Increased sustainable travel options to international gateways
- Reduction in severance impacts on walkers, cyclists or horse riders

DfT's Strategic objectives

- Network performance
- Improved environmental outcomes
- Growing the economy
- Managing and planning the SRN for the future

Timeframe based on the issues and constraints identified

Now	**Existing demand for facilities to support sustainable travel modes**
Future Road Periods	**Increasing demand due to growth in region**

F. Be a better neighbour by safeguarding the environment and reducing the impact of air quality and noise on local communities including Dover, Maidstone, Aylesford, Ashford and Canterbury

Objective

Support schemes that reduce the impact of travel on neighbours, and protect areas with environmental designation around the route notably the Kent Downs Area of Outstanding Natural Beauty (AONB) and Special Areas of Conservation (SAC) as far as practicable which lie directly adjacent to the M20 and A2

Context

The Kent Corridors play a strategic economic role in the movement of goods, as well as serving existing areas of high-value economic activity, housing and employment and areas with high levels of planned housing and employment development.

The route, which has high volumes of HGV traffic using the network daily, passes through areas of significant, cultural and environmental sensitivities.

TfSE priorities include improved air quality, supported by initiatives to reduce congestion and encourage further shifts to public transport. Traffic-related severance, noise and air quality issues can impact on local communities with existing AQMAs and NIAs.

Interested parties also raised concerns of potential adverse air quality on residential receptors due to planned works.

The National survey of lorry parking undertaken by the Department of Transport showed that Kent was repeatedly discussed during consultation. The Report highlights that the area between London and the South East coast leading to Dover Port can be seen to have an excess of vehicles parking off-site. Interested parties have also highlighted that HGVs use existing laybys as overnight sleep stops and there is a lack of facilities for drivers.

During engagement with interested parties, the role of the SRN in decarbonisation was raised. TfSE priorities aim to use the principle of 'biodiversity net gain' in all transport initiatives (i.e. transport initiatives leaving biodiversity in a better state than before).

Some areas across the route are susceptible to adverse weather conditions. In addition, climate change impacts have the potential to create major safety risks, for example heat stress and low soil moisture causing traffic delays, closures, safety incidents and structural failures.

Our network considerations

The route, which has high volumes of HGV traffic using the network daily, passes through the Kent Downs Area of Outstanding Natural Beauty (AONB), a nationally protected landscape. Special Areas of Conservation lie directly adjacent to the M20 and A2.

The route also passes between numerous urban areas, creating severance and impacting walkers, cyclists or horse riders. For example, the A2/A20 in Dover, which forms part of the SRN, plays a significant role in local connectivity as it provides a route for traffic to avoid the town centre. However, the A2 at Dover has one of the highest percentage of collisions where someone is killed or seriously injured that involves walkers, cyclists or horse riders. This may lead to severance-related issues for local residents and visitors.

Existing AQMAs are in place around roads, such as the A13, and larger areas, such as Dartford Borough. NIAs are in place along the route, including sections of the A2/M2, M20 and A20. Receptor locations may be more likely affected on sections of the M20 (west of Maidstone and at Ashford), A2 (west of Canterbury) and A20 (west of Dover).

Receptor locations may be more likely affect by higher noise on sections of the M20 (between Maidstone and Ashford, and London-bound near Aylesford).

Much of the route is east-west facing, resulting in safety issues due to sun glare. There may be a risk of flooding on the A249 and on the M2 east of Gillingham. Some areas are also susceptible to adverse weather events, such as the A20 Folkestone to Dover, A249 Sheppey Bridge and M2 Junctions 2 to 4.

Access to ports can be affected by adverse weather conditions, resulting in challenges in crossing the Channel and associated SRN disruption due to delayed vehicles waiting to use the Ports or Channel Tunnel. This can place additional pressure on the resilience of the road network during these periods, and have a consequential impact on air quality and noise pollution.

A lack of parking can result in HGVs parking in existing laybys and alternative areas. Local communities may be affected by the consequential impact of a lack of facilities (including toilets and refuse bins), and noise relating to parked refrigerated HGVs.

In 2021 we published our *Net zero highways plan*[40] to show how we will meet the target of net zero greenhouse gas emissions.

Outcomes

- Working with partners to maximise natural capital and achieve biodiversity net gain
- A climate resilient network that improves the way we respond to and plan for environmental conditions

DfT's Strategic objectives

Improved environmental outcomes

Timeframe based on the issues and constraints identified

Now

Impact of SRN and its users on the environment of neighbouring designated landscapes and communities

Future Road Periods

Continued impact of SRN and its users on the environment of neighbouring designated landscapes and communities

40 National Highways, 2022, *Net zero highways: Our 2030 /2040 / 2050 plan,* https://nationalhighways.co.uk/media/eispcjem/net-zero-highways-our-2030-2040-2050-plan.pdf

Table 2: Evidence used to inform objectives

Objective		Extent	Chapter 3 Views raised by our customers and neighbours	Chapter 4 Integration with our partners' strategies and priorities	Chapter 5 Challenges and issues identified
A	**Support safe and efficient freight movement to and from air, rail, sea and freeports in the Kent Corridors.** Support driver welfare, including supporting provision of appropriate driver facilities and reducing delay, particularly on the M2/A2, A249 and A13 / A1089.	Route wide but particularly on the M2/A2, A249 and A13 / A1089.	Concerns of interested parties related to road safety and movement on: • static, queuing traffic when Dover Port is busy • there are visibility and access challenges at particular junctions including M20 Junction 11a and connections with the Major Road Network / Local Road Network from the A2 • a need for suitable rest areas to stop HGVs using existing laybys as overnight sleep stops. Off-road parking for HGVs does not meet demand, HGV drivers often arrive at parking to find it full and a lack of facilities • a need to consider the impact of challenges with crossing to Europe across whole lengths of M20, not just at Portals • a need to address congestion and journey time reliability challenges • a need to consider network performance when Dover Traffic Access Protocol is in place	Transport for the South East social priorities identify the need for a safely planned, delivered and operated transport network with no fatalities or serious injuries among transport users, the workforce or the wider public. One of the four Transport East strategic priorities is unlocking international gateways. Better connected ports and airports to help UK businesses thrive, boosting the nation's economy through better access to international markets and facilitating foreign investment.	The A2 between Aylesham and Dover, A249 north of the M2 and A1089 have an iRap one or two star rating. Higher collision rates and proportion of people being killed or seriously injured at key locations on the coast-bound M20 and M2. The orientation of the route can result in safety issues due to sun glare. A higher percentage of collisions resulting in someone being killed or seriously injured involving: • walkers, cycles or horse riders on the A2 between the M2 and Dover, and the A249 north of the M2 • motorcyclists on the A2, A249 north of the M2 and M26 sections Congestion related delay occurs on sections of the A2 at Gravesend, A249 north of the M2, M20 at Maidstone, and on and A2 and A20 near Dover and the A13 / A1089 east of the M25. Delays are expected to worsen by 2031, including the A2 and A20 at Dover and the M2 at Stockbury and Faversham. Delays are exacerbated by seasonality due to travel to coastal destinations and Europe, for example on the A2 on approach to Dover. When there is disruption at the international gateways, freight traffic queues can extend onto the network including through towns and residential communities. Delay at junctions when traffic diverts, particularly where the Major Road and Local Road Networks interact with the SRN, including M2 Junction 7 (Brenley Corner), the A2 Whitfield and Duke of York Roundabouts, the A13/A1089 junction, the M2 Junction 3 (Bluebell Hill) and M20 Junction 6. The route plays a pivotal role in international connectivity, linking the UK and mainland Europe via Dover, Folkestone, Sheerness, the Channel Tunnel and the Thames Ports / Freeport. The implementation of the Lower Thames Crossing scheme is expected to provide benefit to freight movement across the SRN within the Kent Corridors area.

Objective		Extent	Chapter 3 Views raised by our customers and neighbours	Chapter 4 Integration with our partners' strategies and priorities	Chapter 5 Challenges and issues identified
B	**Support sustainable development within Kent and Thurrock.** Support effective local and regional connectivity through improved integration with sustainable transport modes to minimise the impact of short distanced trips from key growth areas and strategic development sites to benefit the economy.	Areas of growth including (but not limited to) Local Plan allocations and Economic Opportunity Areas.	Concerns of interested parties related to sustainable development on: • there is a need for further input in early stages of plan-making and future planning to avoid car dependent housing development • capacity issues at various junctions across the network inhibits housing and employment growth • a number of new housing developments are designed for easy access to the strategic road network (SRN), but there are challenges in providing direct connections • significant growth is planned in this region, the SRN has a role in supporting (not just mitigating) regeneration and growth • the South East is seen as an affluent area, but there pockets of deprivation that need help and levelling up	Transport for the South East economic priorities identify the need for a more integrated approach to land use and transport planning that helps partners across the South East meet future housing, employment and regeneration needs sustainably. Transport East's vision is "A thriving economy for the East, with fast, safe, reliable and resilient transport infrastructure driving forward a future of inclusive and sustainable growth for decades to come".	Delay at junctions when traffic diverts (or in some cases during typical operation), particularly where the Major Road and Local Road Networks interact with the SRN, including M2 Junction 7 (Brenley Corner), the A2 Whitfield and Duke of York Roundabouts, the A13/A1089 junction, the M2 Junction 3 (Bluebell Hill) and M20 Junction 6. The route provides the primary access to significant urban areas of high-value economic activity. There are dedicated Opportunity Areas at Dover and Sheerness, and planned growth at the Thames Freeport sites, Port of Dover and Medway Ports. High levels of planned housing and employment development within the region will exacerbate pressure on the route. There are high levels of planned housing and employment development within the region, notably around the Thames Estuary, Dartford, Gravesend, Tilbury, Maidstone, Sittingbourne, Canterbury, Ashford and Dover. The substantial development and growth planned within the region will exacerbate pressure on the route. Congestion issues at various junctions threaten to inhibit economic growth, with several Kent Local Authorities identified as priorities for levelling up including Gravesham, Swale, Canterbury, Dover and Folkestone & Hythe There is poor east-west connectivity via rail and slow links between Kent and the South Coast, and a concentration of High-Speed 1 services on a single corridor. Congestion related delay occurs on sections of the A2 at Gravesend, A249 north of the M2, M20 at Maidstone, and on and A2 and A20 near Dover. During typical operation, delays are apparent on the M20 at Maidstone and Ashford, A249 north of the M2, in and around Dover, A13 / A1089 east of the M25 and A2 on approach to the M25. Delays are expected to worsen by 2031 at several locations.

Objective		Extent	Chapter 3 Views raised by our customers and neighbours	Chapter 4 Integration with our partners' strategies and priorities	Chapter 5 Challenges and issues identified
C	**Promote the Kent Corridors as a region that sets the standard in supporting the use of technology.** Improve communication technology to better inform users during periods of disruption, providing an enhanced end to end journey experience on the Kent Corridors. Maximise the use of emerging technologies to support the net zero economy, and use schemes such as the Lower Thames Crossing to test low carbon innovation and approaches.	Route-wide however focused on international gateways, inland border facilities, border control points and lorry parks plus key decision points along the route.	Concerns of interested parties related to technology: • there needs to be consideration of the impact of challenges with crossing to Europe across whole length of M20, not just at Portals • congestion due to Inland Border Facilities and how they impact on users needs to be considered • it is essential that technology is increased for routing to Ports, Border Control Points and International Border Facilities • management systems (such as Dover Traffic Access Protocol, or TAP) are manually monitored and triggered • communication infrastructure is needed for when there is disruption on the road network, and more road signage is needed to communicate travel conditions across the channel • there is a lack of charging for alternative fuels, and Electric Vehicle Charging infrastructure / infrastructure is required to support low fuels. There needs to be enough provision at Motorway Service Areas • the impact of automated vehicles and infrastructure to enable their use needs to be considered. There is currently a lack of technology • uncertainty of the future roll out of all lane running smart motorways	Transport for the South East social priorities include a seamless, integrated transport network with passengers at its heart, making it simpler and easier to plan journeys. One of Transport East's four strategic priorities is to decarbonise to net zero, building on the region's status as the UK's premier renewable energy region.	Delays are exacerbated by seasonality due to travel to coastal destinations and Europe, for example on the A2 on approach to Dover. Limited technology provision makes it more difficult to manage disruptive incidents and communicate information to users. Lack of technology across the report to inform drivers of the best routes to use, as some diversion routes are less suitable for high volumes of freight and/or general traffic. Lack of coordinated infrastructure to communicate conditions or issues to road users. Lack of technology to support operation of the international gateways, including routing between them and Border Control Points, Inland Border Facilities and rest areas. Notable gaps in Electric Vehicle Charging Points across the route, with the majority provided in urban areas. Congestion related delay occurs on sections of the A2 at Gravesend, A249 north of the M2, M20 at Maidstone, and on and A2 and A20 near Dover. Delays are expected to worsen by 2031 at several locations, particularly the A2 and A20 at Dover and the M2 at Stockbury and Faversham.

Objective		Extent	Chapter 3 Views raised by our customers and neighbours	Chapter 4 Integration with our partners' strategies and priorities	Chapter 5 Challenges and issues identified
D	**Improve resilience of routes from Dover, Sheerness, Tilbury and Thames Gateway Ports to the M25.** Provision of safe, suitable, and efficient routes to further improve resilience between the M20/A20 - M2/A2 corridors and A13/ A1089, improving journey time reliability and reducing impact on the Local Road Network.	The following sections of the route: Between M20/A20 and M2/A2 corridors, and on the A2 to Dover and A13 / A1089.	Concerns of interested parties related to resilience: • there is lack of resilience on the M20 and M2/A2 • links between M2 and M20 [are] limited, which would help with resilience • there are concerns on performance with Dover Traffic Access Protocol (TAP) is in place • accommodating traffic moving between the M2 and M20 is a challenge. Potential trunking of A229, A249 and A299 should be considered to address the lack of suitable link between the M20/A20 and M2/A2 • access to Dover is constrained at Whitfield and Duke of York Roundabouts • there is lack of access across the Thames, however there is concern around the potential impact of Lower Thames Crossing on the Local Road Network and other SRN routes	Transport for the South East economic priorities include a more reliable journey for people and goods travelling between the South East's major economic hubs and to and from international gateways, as well as a transport network that is more resilient to incidents, extreme weather and the impacts of changing climate. One of Transport East's four strategic priorities is Unlocking international gateways. Better connected ports and airports to help UK businesses thrive, boosting the nation's economy through better access to international markets and facilitating foreign investment.	Local roads, including the major road network (MRN), that interface with the strategic road network (SRN) can suffer from consequential impact of the lack of local of SRN alternative routes and capacity/reliability issues. When there is disruption at the international gateways, freight traffic queues can extend onto the network including through towns and residential communities. Diversion routes are often less suitable for high volumes of freight and / or general traffic, which can result in secondary impacts such as increased congestion, reduced air quality and increased noise. Delay at junctions when traffic diverts (or in some cases during typical operation), particularly where the Major Road and Local Road Networks interact with the SRN, including M2 Junction 7 (Brenley Corner), the A2 Whitfield and Duke of York Roundabouts, the A13/A1089 junction, the M2 Junction 3 (Bluebell Hill) and M20 Junction 6. Congestion related delay occurs on sections of the A2 at Gravesend, A249 north of the M2, M20 at Maidstone, and on and A2 and A20 near Dover. During typical operation, delays are apparent on the M20 at Maidstone and Ashford, A249 north of the M2, in and around Dover, A13 / A1089 east of the M25 and A2 on approach to the M25. Delays are expected to worsen by 2031 at several locations, particularly the A2 and A20 at Dover and the M2 at Stockbury and Faversham. Delays are exacerbated by seasonality due to travel to coastal destinations and Europe, for example on the A2 on approach to Dover.

Objective		Extent	Chapter 3 Views raised by our customers and neighbours	Chapter 4 Integration with our partners' strategies and priorities	Chapter 5 Challenges and issues identified
E	**Promote sustainable connectivity in region.** Improve connectivity to ports and airports and the rail network (including access to high-speed services and east-west connectivity), to broaden mode and route choice and reduce vehicle use where possible.	Route wide however focused on international gateways, rail network and connectivity on east-west routes and across the River Thames Estuary	Concerns of interested parties related to sustainable connectivity: • there is lack of access across the Thames • works may have a potential adverse air quality impact on residential receptors • there is additional pressure on the MRN links between the M2 and M20 due to commuting from Medway / Swale to Maidstone • need to consider the impact of challenges with crossing to Europe across the whole length of M20, not just at portals (Eurotunnel and ports) • poor access to Dover Port via sustainable or active modes	A Transport for the South East economic priority is for better connectivity between the region's major economic hubs, international gateways (ports, airports and rail terminals) and their markets. Transport for the South East social priorities include improved air quality supported by initiatives to reduce congestion and encourage further shifts to public transport. One of Transport East's four strategic priorities is connecting growing towns and cities, providing enhanced links between growing places and business clusters, improving access for people and enabling the area to function as a coherent economy.	The highest percentage of killed or seriously injured collisions involving walkers, cyclists and horse riders are on the A2 between the M2 and Dover, and the A249 north of the M2. The data shows that between 26 and 50% of collisions classified as killed or seriously injured involved motorcyclists on the A2, A249 north of the M2 and M26 section of the route. This increases to 67% of recorded killed or seriously injured collisions on the A20 between Dover and Folkestone (from a small sample size). Congestion related delay occurs on sections of the A2 at Gravesend, A249 north of the M2, M20 at Maidstone, and on and A2 and A20 near Dover. During typical operation, delays are apparent on the M20 at Maidstone and Ashford, A249 north of the M2, in and around Dover, A13 / A1089 east of the M25 and A2 on approach to the M25. Delays are expected to worsen by 2031 at several locations, particularly the A2 and A20 at Dover and the M2 at Stockbury and Faversham. Delays are exacerbated by seasonality due to travel to coastal destinations and Europe, for example on the A2 on approach to Dover. The Kent County Council Bus Service Improvement Plan highlights a vision to improve public transport choices and encourage more travel to school by bus, which will help reduce congestion. The Plan identified initiatives to embed the 'Mobility as a Service' (MaaS) concept as part of future provision in the county. Significant ecological, cultural and environmental sensitivities, particularly the Kent Downs AONB and SACS directly adjacent to the M20 and A2. Reliance of freight movement on the road network to connect to the wider UK. The route plays a pivotal role in international connectivity, linking the UK and mainland Europe via Dover, Folkestone, Sheerness, the Channel Tunnel and the Thames Ports / Freeport. There is poor east-west connectivity via rail and slow links between Kent and the South Coast, and a concentration of High-Speed 1 services on a single corridor.

Objective		Extent	Chapter 3 Views raised by our customers and neighbours	Chapter 4 Integration with our partners' strategies and priorities	Chapter 5 Challenges and issues identified
F	**Be a better neighbour by safeguarding the environment and reducing the impact of air quality and noise on local communities including Dover, Maidstone, Aylesford, Ashford and Canterbury.** Support schemes that reduce the impact of travel on neighbours, and protect areas with environmental designation around the route notably the Kent Downs Area of Outstanding Natural Beauty (AONB) and Special Areas of Conservation (SAC) as far as practicable which lie directly adjacent to the M20 and A2.	Route wide but particularly affecting communities such as Dover, Maidstone, Aylesford, Ashford and Canterbury.	Concerns of interested parties related to safeguarding the environment: • there is the potential adverse air quality impact on residential receptors due to planned works • there is a need to consider decarbonisation • there is a need for suitable rest areas to stop HGVs using existing laybys as overnight sleep stops • off-road parking for HGVs does not meet demand, HGV drivers often arrive at parking to find it full and a lack of facilities	Transport for the South East social priorities include improved air quality supported by initiatives to reduce congestion end encourage further shifts to public transport. A Transport for the South East environmental priority is the use of the principle of 'biodiversity net gain' (i.e. development that leaves biodiversity in a better state than before) in all transport initiatives. One of Transport East's four strategic priorities to deliver their vision is decarbonisation to net zero. Working to achieve net zero carbon emissions from transport, building on the region's status as the UK's premier renewable energy region.	Significant ecological, cultural and environmental sensitivities, particularly the Kent Downs AONB and SACS directly adjacent to the M20 and A2. Traffic related severance noise and air quality impacts on local communities with existing AQMAs (such as the A13 and Dartford Borough) and NIAs (such as the A2/M2 Canterbury to Rochester, M20 Wrotham to Harrietsham, and A20 at Dover) in place. Receptors may be more likely affected by poor air quality on sections of the M20 (west of Maidstone and at Ashford), A2 (west of Canterbury) and A20 (west of Dover). Receptors may be more likely to be affected by higher noise on sections of the M20 (between Maidstone and Ashford, and London-bound near Aylesford) There may be a risk of flooding on the A249 and on the M2 east of Gillingham. Some areas are also susceptible to adverse weather conditions, particularly affecting access to ports. There are high levels of planned housing and employment development within the region, notably around the Thames Estuary, Dartford, Gravesend, Tilbury, Maidstone, Sittingbourne, Canterbury, Ashford and Dover.

Unlocking regional potential

07 Locational areas for consideration and potential collaboration

We know the importance that investment in our network can make locally, regionally and nationally. It can make areas more attractive for inward investment, unlock new sites for employment and housing and facilitate regeneration. It can also ease congestion, improve our customers' journeys and support environmental improvements.

In this chapter, we outline our proposed locational areas for further consideration, which will be explored in future road periods to achieve the Kent Corridors to M25 route objectives the Department for Transport's (DfT's) six strategic objectives. These do not represent a commitment as funding will be considered as part of the development of the third Road investment strategy (RIS) and other investment processes.

Furthermore, they do not represent a final list of our potential investment locations and will be refined in our final Route strategy overview report, published alongside our RIS3 *Strategic business plan* and *Delivery plan for 2025-2030*.

Alignment with government objectives

Route strategies are aligned to the DfT's six strategic objectives and will also contribute to the RIS3 performance metrics set as part of the RIS-setting process.

Improving safety for all

Safety is our top priority and we are committed in the second road period (2020-2025) to reducing the number of road users killed or seriously injured on the Strategic Road Network (SRN), by 50% (from the 2005-2009 baseline) by the end of 2025, with a vision of zero harm. This includes our contractors adopting a safe system approach to ensure roadworker safety. Our operational and strategic planning teams continue to work to prevent incidents from occurring and are focussed on reducing incident severity through a package of activities to promote safer roads, safer people, safer vehicles and coordinated collision response. We are also learning from other organisations and interested parties about what works best and collaborate with them to improve safety for all. Safety is embedded in our study programme to inform future investment priorities for RIS3 and beyond.

Network performance

Our operational and strategic planning teams continue to explore what steps can be taken to make journeys more reliable and not subject to delay, as well as safer, while protecting and respecting the environment. This involves working with our partners such as sub national transport bodies and other operators such as Network Rail to consider interventions to improve network performance as we recognise the SRN does not stand alone from other transport infrastructure, in particular local roads, and users expect journeys to be seamless regardless of transport mode or ownership. Through our study programme we will identify appropriate types of intervention recognising the need for integration, environmental and digital consideration balanced against costs.

Improved environmental outcomes

We are continuously working to ensure our roads work more harmoniously with the communities that live alongside them and the environments that surround them. We embed environmental considerations into all our activities, ranging from infrastructure design to scheme delivery and ensuring we meet our statutory obligations, and the way we manage and operate our network. In developing our intervention programmes, we will consider a broad range of interventions including technology enabled solutions and integration with other operators' networks as we understand the gravity of the climate situation and are committed to playing its part in reducing carbon emissions. Our carbon policy commitments are:

- as a net zero Britain will still travel by road in 2050, we will ensure a properly maintained, future-ready road network, that is fitted to support the transition to electric vehicles, is key to reducing emissions from transport
- this programmatic coordinated delivery approach will act as a catalyst for: production management, off-site construction, reducing network disruptions, unlocking economies of scale, and supporting delivery of Net Zero targets
- it will also help us understand how interventions should be delivered, either through grouping or as standalone projects
- we expect this approach will create opportunities for increased efficiencies, enable us to deliver more within our funding. We also expect this approach to help us support Government's long-term aims for the nation, such as contributing to net zero carbon, and social values

Growing the economy

We recognise that the SRN is a significant economic asset for the UK and is essential for people to access jobs, and for businesses and logistics firms moving goods around the country. Our regional planning teams continue to work closely with local planning authorities to support sustainable growth and development aspirations, including integration with other modes. We also continue to work with businesses to understand their needs such as quality lorry parking facilities and ensuring reliable and resilient integration with ports, airports and rail terminals through which we access global markets. The SRN also has a role in achieving the Government's moral, social and economic programme of levelling up the United Kingdom. Our forward intervention programme will seek to support the growth agenda where possible and appropriate.

Managing and planning the SRN for the future

We recognise that our network is complex and varied and requires careful stewardship to keep it in good condition. Our ongoing maintenance programme is essential to safety and keeping our roads open, while our renewals activity allows us to maintain, safeguard and modernise all our assets, and providing resilience in relation to extreme weather. Research and data help us to understand what our network needs over the short and long term and to inform our planning. We continue to be committed to delivering our work in a way that minimises disruption to our customers and maximises value to taxpayers.

A technology-enabled network

In designing our intervention programmes, we will consider our Digital Roads vision for how we harness data, technology, and connectivity to improve the way the strategic road network is designed, built, operated and used for the future. This will enable safer journeys, faster delivery and an enhanced customer experience for all, recognising the specific challenges of delivering technology and relevant information in more rural and remote parts of the network. The vision is structured around three themes: Design & Construction; Operations; Customers. The approach embeds digital, data and technology across the intervention programmes, providing the building blocks for a digital future for roads.

Programmatic approach to investment

As part of our new route strategies process, we are developing a more programmatic approach to how we develop our investment plans. This will help us determine the complexity of potential investments and what high value interventions are more deliverable.

This programmatic coordinated delivery approach will act as a catalyst for; production management, off-site construction, reducing network disruptions, unlocking economies of scale and supporting delivery of Net Zero targets.

It will also help us understand how interventions should be delivered, either through grouping or as standalone projects.

We expect this approach will create opportunities for increased efficiency, enable us to deliver more within our funding and in collaboration with other investment programmes.

We also expect this approach to help us support the Government's long-term aims for the UK, such as contributing to net zero carbon.

Figure 24 shows how the route objectives defined in the route strategies, along with the associated cluster analysis of performance metrics, help to refine an initial set of locations for future investigation. Further iterations of sifting as information and analysis evolves will help to inform the Government's setting of RIS3 (2025-2030) and beyond. The input from route strategies early on in this process will ensure that all schemes which are ultimately taken forward align with the route objectives.

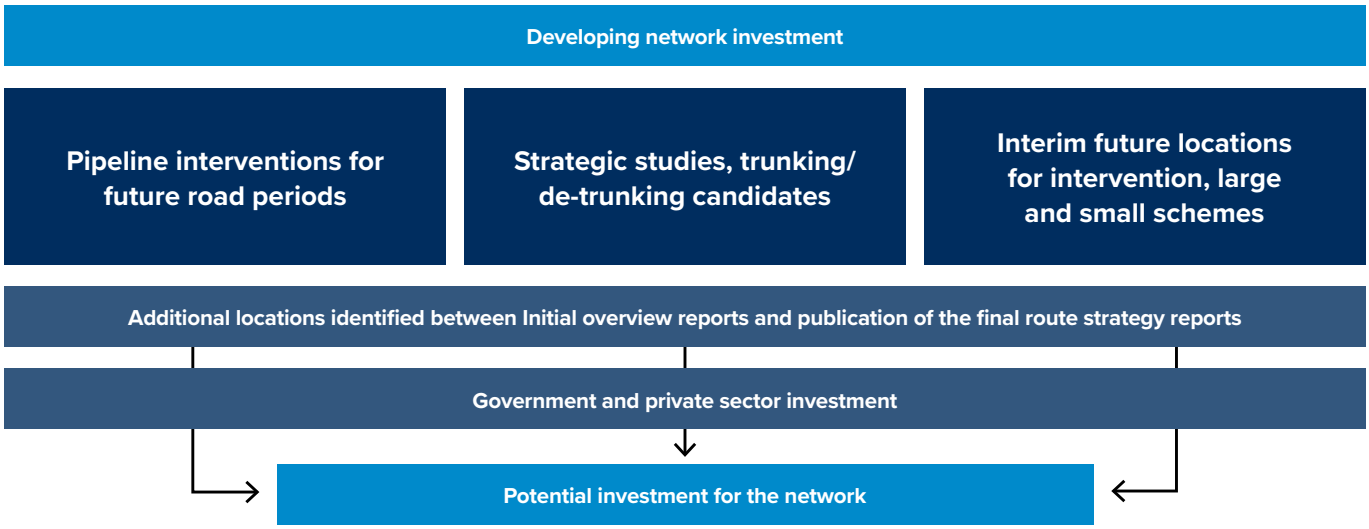

Figure 24: Process to identify potential investment on the network

Types of investment and funding sources

There are a variety of funding streams which enable us to invest in our network and which form part of our investment planning. These are summarised in the following section, along with the current committed schemes associated with each funding source for the Kent Corridors to M25 route. Key funding sources include:

- RIS Funding – a funding stream administered by National Highways, set by the Government's publication of the RIS:
  - RIS2 schemes are committed by DfT to be delivered as part of the Road Investment Strategy, as outlined in the following RIS2 table. The statement of funding confirmed that £24 billion will be provided during the second road period (2020-2025) to deliver this work, noting that some RIS2 commitments will continue into the third road period
  - RIS4 (2030-2035) pipeline schemes, previously earmarked for RIS3 (2025-2030), will continue to be developed in line with our statutory processes and considered for inclusion within RIS4. These are potential future schemes originally identified by National Highways and set as part of RIS2 by DfT. These schemes are not currently committed for construction.
- maintenance funding and asset renewal – within National Highways there is funding set aside for network maintenance and renewing ageing assets across the network. The budget for these is included in the RIS settlement
- potential targeted funding streams that may be made available to National Highways during the third road period as part of the wider RIS settlement, focused on making improvements that will make the biggest difference and deliver lasting benefits
- other external sources of funding for delivering infrastructure enhancements on, or close to, the SRN including Government, third parties, private sector developments, and inward investment

RIS2

The following schemes are committed for the second road period (2020-2025) on the Kent Corridors to M25 route:

Scheme number	Scheme	Description	Start of works	Open for traffic
Committed for the second road period (2020-2025)				
1	Lower Thames Crossing	The Lower Thames Crossing is part of the biggest investment in the country's road network for a generation and an essential component in the UK's future transport infrastructure. On the south side of the River Thames, the new road would link to the A2 and M2 in Kent. On the north side, it would link to the A13 in Thurrock and the M25 in Havering.	2024-25 Q4[41]	Road Period 3
2	M2 Junction 5	Improvements to the slip roads and junction approaches at the M2 Junction 5. One aim is to improve journey times, reduce delays and improve the safety of the junction for all road users. The improvements will support economic growth as increasing capacity at the junction will support the future housing and employment growth in the area.	Started	2024-25

RIS4 pipeline

The following uncommitted schemes are in the pipeline for the fourth road period (2030-2035) on the Kent Corridors to M25 route:

Scheme number	Scheme	Description
1	A2 Brenley Corner	Upgrading the A2 Brenley Corner junction near Faversham in Kent.
2	A2 Dover Access	Upgrading sections of the A2 to improve traffic flow and resilience between Lydden Hill and Dover in Kent.
3	Tilbury Link Road	In development.

41 Date revised due to planning constraints and stakeholder input

Other notable schemes

On the Kent Corridors to M25 Route, in addition to the committed schemes listed above, there are several notable schemes of relevance (not National Highways schemes) that are either under construction or where planning is in advanced stages[42].

A249 Junctions – Kent County Council have been awarded £38.1million from the Housing and Infrastructure Fund to deliver highway improvements at two junctions at Grovehurst Road / A249 Junction and at Key Street (A249 /A2) roundabout. Construction is due to commence in January 2023. Existing congestion has restricted development and the following improvement scheme will increase capacity and enable Swale's adopted local plan to be delivered.

Bluebell Hill – this area is currently congested and restricted in its development. There are 4,628 new homes planned on the A249 corridor from the junction with the M2 to the Isle of Sheppey. The improvement scheme will increase capacity on the road network, and provide the infrastructure needed for the housing plans in Swale's adopted local plan to be delivered.

A20 Coldharbour Roundabout – the scheme is due to start Autumn 2022 and will enlarge the roundabout and remove traffic signals to improve the capacity of the roundabout.

Dover Fastrack – is a new bus rapid transit system that will connect Whitfield, Dover town centre and Dover Priory Station, to provide a reliable, high-quality, and frequent bus service. The buses will have priority over other traffic on the route. The Dover Fastrack will use existing roads, new roads and dedicated busways and link the proposed housing developments of Whitfield Urban Expansion and Connaught Barracks, White Cliffs Business Park, the new leisure centre and Dover Castle. Construction is due to complete in late summer 2023.

A249 Bearsted Road – The proposed scheme aims to accommodate increased traffic volume by signalising the A249 Bearsted Road roundabout and enlarging the New Cut Road roundabout, whilst widening between the two. Additional smart technology will help ease congestion and improve traffic flow. Construction is due to commence in autumn 2022 and complete in late summer 2023.

Thanet Parkway Railway Station – a new railway station in Thanet on the Ashford International to Ramsgate line. Thanet Parking will increase rail connectivity between East Kent, London and the wider Kent area by providing access to mainline and high-speed services. Opening is due in May 2023.

42 https://www.kent.gov.uk/roads-and-travel/road-projects

Strategic studies, trunking and de-trunking

National Highways undertakes Strategic Studies to analyse complex problems that may need to be addressed over multiple road periods. Strategic Studies can involve close working with key partners including STBs and the DfT, the consideration of options for improvements, and can be used to help to decide on whether to fund any proposed improvements in the future.

There are no Strategic Studies currently identified on the Kent Corridors to M25 route.

National Highways was asked to explore changes to the SRN to ensure the network aligns with RIS2 strategic priorities reflected in the *Strategic business Plan*[43]. This plan relates to improving connections between main urban centres, to international gateways, to peripheral regions (for levelling up) and strategic cross-border routes (to strengthen union connectivity). It included a commitment to explore potential asset ownership changes between ourselves and local highway authorities that could be implemented no earlier than the start of RIS3. The DfT has produced a shortlist of 18 trunking and two de-trunking candidates, identified following the draft RIS2 public consultation in 2018, for us to assess desirability and viability of asset transfer. De-trunking is the process of returning a National Highway road to the local Highway Authority control and vice versa for trunking. These candidates were put forward by a range of external stakeholders including local authorities, Local Enterprise Partnerships and Chambers of Commerce, then shortlisted by the DfT. There is ongoing work to review the assessment evidence and recommendations, after which government ministers are expected to announce the candidates that will progress to the detailed development stage, which will be led by National Highways and incorporated in the forward study programme and wider RIS 3 process.

Locations identified through route strategies for future investigation

National Highways undertakes route studies to investigate locations across the network. In addition, locations of interest have been raised by Interested Parties through the route strategy engagement process.

To supplement this, as part of the route strategies process outlined in this document, National Highways has used cluster analysis to identify further locations for future investigation and undertaken an exercise to align these locations to the route objectives for the Kent Corridors to M25 route.

The cluster analysis allows decision-makers to easily identify which sections of roads should be prioritised for further investigation. The assessment is a two-part process. In the first part, for each route strategy, the objectives are defined geospatially. This allows us to identify over which sections of the SRN the objectives converge, therefore quickly identifying the links that helps us to achieve the maximum number of objectives. The second part of the assessment uses our understanding of the network from performance data to allow a further filter to remove links that are already performing well. This results in a filtered shortlist of SRN links or sections of roads that should be prioritised for further investigation. These have been grouped into areas of interest where they are in close proximity geographically. Should a location not be identified for further investigation as part of this initial process, this does not preclude it from being added to the list of areas of interest in the future.

The use of regional traffic models for the 2031 scenario has enabled the identification of locations for further investigation based on the forecast network operation in the future, to plan the future of the network beyond the current RIS3 cycle. Typically, this has resulted in the extension of some areas of interest, as shown in the table of locations overleaf. In the final publication version of the route strategy reports, additional data from the regional traffic models will also be considered, to enable the identification of locations for further investigation in future roads periods.

Further development of any proposed intervention at each location will follow National Highways' internal processes. In order to fund any proposed improvements, National Highways will draw on the funding streams as previously identified.

43 National Highways, *Strategic Business Plan: 2020-2025*, https://nationalhighways.co.uk/strategic-business-plan/

Route strategies and regional traffic models

The route strategies have utilised the National Highways regional traffic models (RTMs) to identify future performance and delay on the network, which is the best data currently available.

Working with key stakeholders and interested parties, we have set out a number of potential candidate intervention locations which may require further development upon validation to check their alignment with the route strategy objectives.

New national traffic growth forecasts have now been released by the Department for Transport and as we carry out this exercise, we will consider how updated growth forecasts will impact on the identified areas for further investigation.

Alongside these more traditional road improvement schemes we will also need to support and encourage modal shift through transport integration and embrace emerging technologies to improve the performance of the network.

The impact on carbon and the environment will be central to all our thinking on which interventions are proposed to be taken forward.

Identified locations for future investigation and collaboration

Our analysis has set out the potential constraints and opportunities across the network and, in parallel, we are developing a RIS programme that is resilient to changing priorities, the carbon and environment agenda.

We have a wide range of potential intervention types within our toolkit, such as both non-roads and road-based solutions, to help us achieve our objectives. These could include:

Potential non-road interventions:

- supporting wider network initiatives to improve the customer experience, such as provision and enhancements of facilities for the freight industry and electric vehicle charging
- exploiting technology to improve safety and network operation, including roll out of connected corridors
- delivering a portfolio of measures to encourage active travel
- making environmental enhancements to minimise the impact of the SRN on surrounding communities
- encourage modal integration and influencing demand for vehicles, particularly at interfaces with urban centres

Potential roads interventions:

- at a strategic level in addition to Lower Thames Crossing, we will continue to progress those remaining schemes in RIS1 and RIS2[44] that will not be in construction at the end of RP2, as well as the RIS4 pipeline
- the pipeline schemes announced in RIS2 is the most developed portfolio of potential interventions and we propose a renewed focus to ensure schemes: are resilient with an acceptable Value for Money; consider the Carbon Management in Infrastructure standard; are affordable, with lower cost options being developed; are environmentally responsible; are deliverable; and, have strong stakeholder support and / or are a good strategic fit with other Government strategy (e.g., ports, levelling up)

We will also develop a significant portfolio of smaller safety and congestion interventions that improve localised issues as well as route treatments that address comparably poor safety performance (International Road Assessment Programme 1-star and 2-star roads) along selected All Purpose Trunk Road corridors.

44 Plans for new smart motorways have now been cancelled and previously paused smart motorways will now not go ahead.

Table 3 and Figure 25 show the areas identified for further investigation, where interventions at these locations have the potential to help us achieve the majority of route objectives.

In line with National Highways' internal processes we will draw upon a wide range of funding streams, further developing any proposed intervention to the issues identified, exploring:

- collaboration and integration opportunities
- synergies with existing planned schemes
- opportunities with asset and maintenance priorities as set out in Chapter 5.5

As part of the ongoing evolution of the route strategies toward final publication we will further strengthen its role in being a strategic planning tool for interested parties who have a stake in the SRN and its future.

Table 3: Areas of interest for further investigation

Area location	Area of interest	Area issues	Now	Future road periods
		A249		
A249 (between Sheerness and Grovehurst)	**A**	There are **safety issues** on the A249 north of the Sheppey Bridge. There are high levels of **total delay** throughout, and **high peak hour, non-recurrent, and seasonal delay** around Neats Court. The A249 may also have an impact on **noise and air quality** where it passes close to receptors around Sheerness. The A249 Sheppey Bridge can be susceptible to adverse weather events, but there is **limited technology** to communicate route conditions to the wider area, and **limited diversion options**. There is also poor passenger rail connectivity, and there are aspirations to **provide opportunities for shifts in modes of transport** from Sheerness. In combination with the issues noted, at Sheerness and Swale there is a application for levelling up funding.	✓	✓
		A13 / A1089		
A1089 and A13 to M25	**B**	There are **safety concerns** on the A1089 south of the A13. There are high levels of **total delay** and **average delay** throughout this section of the route, but particularly near Tilbury. Delay is generally forecast to reduce by 2031 except **non-recurrent delay** near Tilbury. There is also **limited technology** to communicate route conditions to the wider area, and **limited diversion options.** In combination with the issues noted, **significant growth** is expected for the Thames Estuary, including major housing and employment at and around Tilbury. In 2031 **HGVs** are expected to form over 50% of total traffic on the route. The implementation of the Lower Thames Crossing may change the profile of traffic in the area, and the Tilbury Link Road is identified as a pipeline project for the third road period.	✓	✓
		A2/A20		
A2 (Barham to Dover and A20)	**C**	There are **safety concerns** between Barham and Dover (including around Dover Castle) on the A2 and A20, and the A2 between the M2 and Dover has a **higher percentage of collisions** involving motorcyclists, walkers and cyclists. There are high levels of **peak hour delay, average delay** and non-recurrent delay throughout, and particularly at Whitfield and Duke of York roundabout and central Dover. The route is characterised by **high proportions of HGVs,** which are forecast to increase by 2031 so resilience is a key concern. The implementation of the Lower Thames Crossing may change the profile of traffic. Access to Dover Port can be affected by challenges crossing the Channel and adverse weather conditions, resulting in associated SRN disruption. This is exacerbated by a **lack of lorry parking and facilities**. Alternative routes are often unsuitable, particularly on the A2 due to route inconsistencies. There is **limited technology** to communicate route conditions or support HGV routing, and the Dover Traffic Assessment Project (TAP) is manually operated. The corridor is in close proximity to **communities and environmentally sensitive assets** (including the Kent Downs AONB and SACs). Lack of intermodal (rail) traffic limits mode shift to rail, and there is both a **lack of sustainable access** and high speed services. In combination with the issues noted, there is **significant planned growth** at the international Gateways, in Dover and in urban centres along the A2. Dover is identified as a **priority for levelling up** activity.	✓	✓

Area location	Area of interest	Area issues	Now	Future road periods
		A20		
A2 (M2 Junction 7 Brenley Corner to Canterbury)	**D**	There are **peak hour, average, non-recurrent, seasonal and total delay** concerns at Brenley Corner, and total delay concerns around Dunkirk. **Non-recurrent and seasonal delays** are forecast to remain at Brenley Corner to 2031. Interested parties raised concerns that the M2 Junction 7 (Brenley Corner) suffers from delays for traffic travelling between the M2 and A2. Receptors, particularly around Canterbury and Dunkirk, may be more likely affected by **noise and air quality issues**. The route is characterised by **high proportions of HGVs**, so resilience is a key concern. The A2 supports **regional and local growth aspirations** and **levelling up** priority areas.	✓	✓
		A20		
A20 (A2 Dover to Folkestone)	**E**	There are **safety concerns** throughout this section of the route and higher than average motorcycle collision rates on the A20 between Dover and Folkestone. There is **peak hour delay, average delay and non-recurrent delay** at Central Dover, which is generally forecast to reduce by 2031. The route is characterised by **high proportions of HGVs**, so resilience is a key concern. Access to Dover Port can be affected by challenges crossing the Channel and adverse weather conditions, resulting in associated SRN disruption. This is exacerbated by a **lack of lorry parking and driver welfare facilities.** There is **limited technology** to communicate route conditions or support HGV routing. The corridor is in close proximity to **communities and environmentally sensitive assets** (including the Kent Downs AONB and SACs). Receptors located close to the A20, particularly at Dover, Folkestone and Aycliffe, may be more likely impacted by **noise and air quality issues**. Lack of intermodal (rail) traffic limits mode shift to rail, and there is both a **lack of sustainable access** and high speed services. In combination with the issues noted there is **significant planned growth** at the international gateways and in Dover, and Dover is identified as a **priority for levelling up** activity.	✓	✓

Area location	Area of interest	Area issues	Now	Future road periods
		M20 and M2		
M20 and M2 (LRN and MRN interaction with SRN)	**F**	There are Collisions near Strood and Farthing Corner typically involve a higher proportion of motorcycles. There are **peak hour, average, non-recurrent, seasonal and total delay** concerns throughout, but especially on the M20 around and between Maidstone and West Malling. This is expected to reduce on the M20 in 2031, but with **higher non-recurrent and total delays** on the M2. Interested parties raised concerns about the challenge of accommodating traffic moving between the M2 and M20, and associated delays at the M2 Junction 3 and M20 Junction 6. Alternative routes are often unsuitable for high volumes of freight and general traffic, particularly on the A249 and A229 which are used as links between the M2 and M20. The route is characterised by **high proportions of HGVs**, so **resilience** is a key concern. There is **limited technology** to communicate route conditions or support HGV routing. There are high levels of **planned housing and employment development**, notably around Sittingbourne and Maidstone. Both the M20 and M2 impact **noise and air quality** where they pass close to receptors, particularly at West Malling and Farthing Corner. There may be a higher risk of flooding around Maidstone and Sittingbourne.	✓	✓
		M20		
M20 (Maidstone to Ashford)	G	There are **safety concerns** coast-bound on this section of the route. This section of the route also experiences issues with **total delay** on the M20 between Maidstone and Ashford, although these are forecast to reduce by 2031. The route is characterised by **high proportions of HGVs,** so resilience is a key concern. Receptors located between Maidstone and Ashford on the M20 may be more likely impacted by **noise and air quality issues**. There are higher **incidents of flooding** around Ashford. In combination with the issues noted there are high levels of **planned housing and employment development**, notably around Ashford and Maidstone.	✓	✓

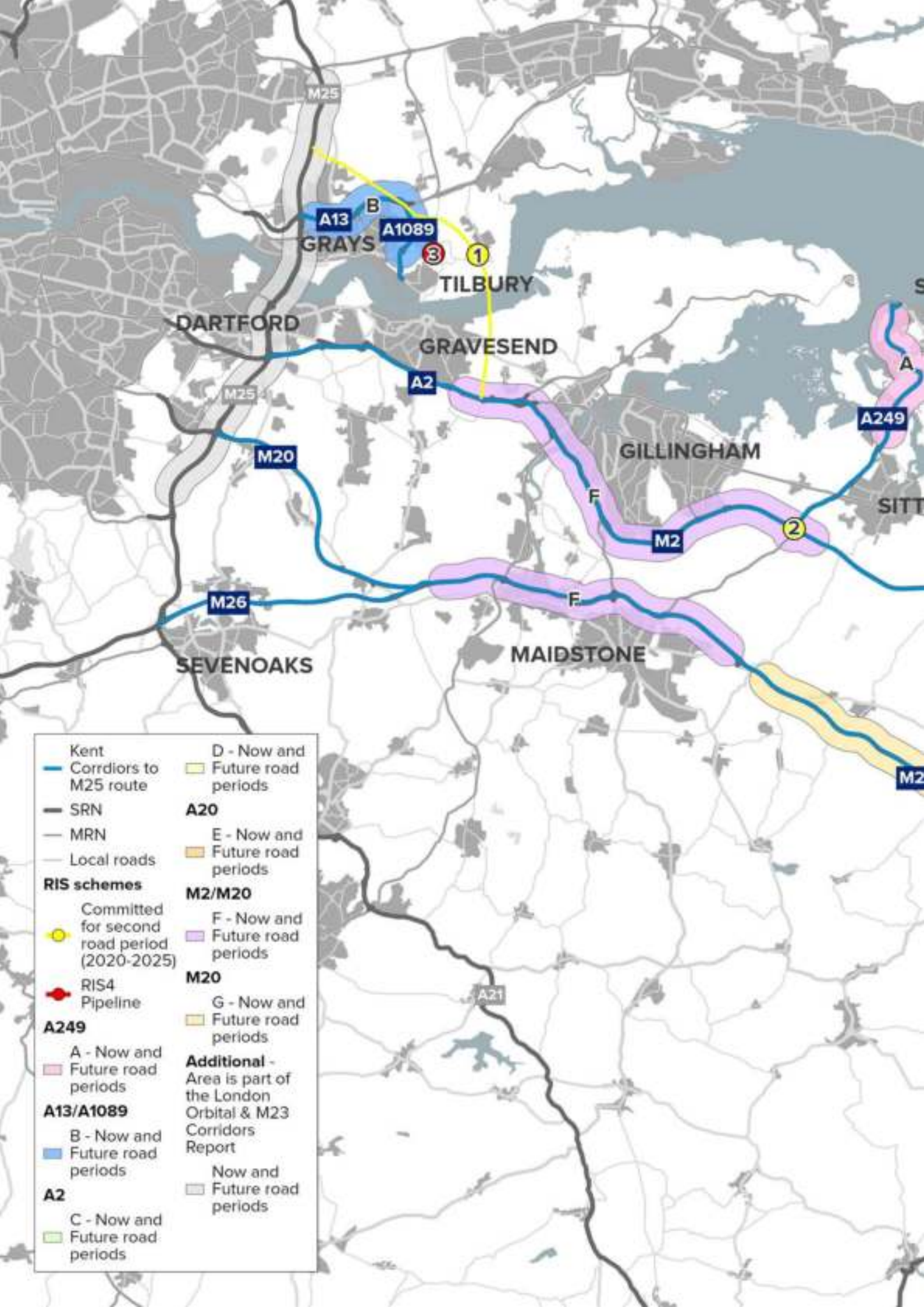
M25
A13
B
A1089
GRAYS
3
1
TILBURY
DARTFORD
GRAVESEND
A2
M25
M20
GILLINGHAM
A249
A
F
M2
2
M26
F
MAIDSTONE
SEVENOAKS
A21
Kent Corrdiors to M25 route
SRN
MRN
Local roads
RIS schemes
Committed for second road period (2020-2025)
RIS4 Pipeline
A249
A - Now and Future road periods
A13/A1089
B - Now and Future road periods
A2
C - Now and Future road periods
D - Now and Future road periods
A20
E - Now and Future road periods
M2/M20
F - Now and Future road periods
M20
G - Now and Future road periods
Additional - Area is part of the London Orbital & M23 Corridors Report
Now and Future road periods

Figure 25: Areas of interest for further investigation

What happens next

08 Next steps

Our route strategies allow informed decisions to be made about our network. They have informed our *Strategic Road Network* (SRN) *Initial report,* which sets our vision and priorities for the third road period (2025–2030) and beyond (from 2030). They are a forward planning tool for National Highways and our interested parties in their decision making, helping identify locations on our network for further consideration to inform investment opportunities, as well as to support decisions in prioritising potential solutions to enable us to continue to operate and maintain our network.

Alignment

They also align with the National Highways *Connecting the country: Our long-term strategic plan to 2050*[45] which sets out our 2050 vision for the SRN to be part of a seamlessly integrated transport system that meets our customers' needs by connecting the country safely and reliably, delivering economic prosperity, social value and a thriving environment. *Our long-term strategic plan to 2050* describes the short, medium and long-term steps to 2050 we believe are needed to make our vision a reality over successive road periods and has been informed by extensive horizon scanning, foresight analysis and engagement with key stakeholders across nine focus areas. The route objectives identified in the route strategies, which also respond to the needs of stakeholders, road users and communities, and the locations for further consideration to achieve these objectives are aligned with the 2050 vision.

Informing the next stage of planning

The route objectives and locations for further consideration will be used to inform our study programmes and consider opportunities for developing integrated and collaborative solutions with our interested parties.

The extensive engagement we have undertaken ensures feedback from our customers and neighbours is used to inform investment decisions. They will help us consider the interaction of our SRN with other transport networks, including the major road network and local roads. We also expect interested parties will use our route strategies to inform their wider investment programmes, supporting collaborative decision making.

For both the Route strategy initial overview reports and *Our long-term strategic plan to 2050*, there will be an opportunity for stakeholders, road users and communities to provide their feedback. This will be alongside DfT's separate consultation on the *SRN initial report* published at the same time.

The 20 finalised Route strategy reports and *Our long-term strategic plan to 2050* will be published by 2025, the end of the current road period (2020-2025), informing the *Strategic business plan* and *Delivery plan.*

Provide your feedback

To find out more about our route strategies and the development process, please visit our website: nationalhighways.co.uk/our-roads/our-route-strategies/

45 National Highways (2022) *Connecting the country: Our long-term strategic plan to 2050.* https://nationalhighways.co.uk/connectingthecountry

Glossary of terms

Term	Acronym	Description
Active users and active modes of transport		Active users and active modes of transport refers to walkers, cyclists and horse riders.
Air quality management area	AQMA	If a local authority identifies any locations within its boundaries where the Air Quality Objectives are not likely to be achieved, it must declare the area as an Air Quality Management Area (AQMA). The area may encompass just one or two streets, or it could be much bigger. The local authority is subsequently required to put together a plan to improve air quality in that area - a Local Air Quality Action Plan.
Area of Outstanding Natural Beauty	AONB	An area of outstanding natural beauty (AONB) is one of the classes of land protected by the Countryside and Rights of Way Act 2000 (CROW Act). It protects the land to conserve and enhance its natural beauty.
All Lane Running	ALR	All Lane Running (ALR) motorways apply controlled motorway technology, permanently converting the hard shoulder as a running lane, and feature emergency areas.
A-roads		Major roads intended to provide large-scale transport links between regional towns and cities.
Assets		National Highways assets include our infrastructure such as pavements, structures and tunnels
At-Grade Junction		An at-grade junction is a junction where two or more roads converge, diverge, meet or cross at the same height, as opposed to an interchange, which uses bridges or tunnels to separate different roads.
Clean Air Zone	CAZ	A clean air zone (CAZ) defines an area where targeted action is taken to improve air quality, and resources are prioritised and co-ordinated to deliver improved health benefits and support economic growth.
Collisions		The severity of a collision is based on the severity of the most severely injured casualty and is broken down into: • Slight collision: One in which at least one person is slightly injured but no person is killed or seriously injured • Serious collision: One in which at least one person is seriously injured but no person (other than a confirmed suicide) is killed • Fatal collision: A collision in which at least one person is killed

Term	Acronym	Description
Department for Transport	DfT	Department for Transport (DfT) plan and invest in transport infrastructure to keep the UK on the move. DfT work with agencies and partners to support the transport network that helps the UK's businesses and gets people and goods travelling around the country.
Design-Build-Finance-Operate arrangements	DBFO	With a design-build-finance-operate arrangement, the private party provides financing and design, then builds and operates the facility. The public partner provides funding while the project is being used or is active.
Diversionary Routes		National Highways agreed diversion routes represent the recommended routes for road users when a section of road has been closed.
Dynamic Hard Shoulder	DHS	Dynamic Hard Shoulder Running (DHS) motorways apply the controlled motorway technology and temporarily increase capacity by utilising the hard shoulder, and feature emergency areas. The hard shoulder is some of the time, but not always, used as a live running lane, with electronic signs to guide drivers when it is safe to use for live running.
Economic opportunity areas	EOAs	EOAs were developed to give us a more refined understanding of the types of priority economic growth opportunities that exist around the SRN and around the wider road and broader transport network. They are defined in terms of their common economic function and the spatial features of the location. These key growth areas are grouped by broad 'theme' (such as international gateways, multi-modal transport hubs, tourism destinations and housing locations) and their relative reliance on the SRN.
Freeport		Freeports are special areas within the UK's borders where different economic regulations apply. Freeports in England are centred around one or more air, rail, or seaport, but can extend up to 45 kilometres beyond the port(s)
Heavy Goods Vehicle	HGV	A heavy goods vehicle (HGV) is a large vehicle intended for the transportation of heavy loads.
Growth Boards		Growth Boards have been established by some counties as a joined-up way of managing local future growth and supporting economic recovery.
International connectivity		Transport connectivity of the United Kingdom with Europe and the rest of the world.
In-vehicle Technology		This can be in-car systems that typically take the form of a touchscreen or display that is mounted on the dashboard. It can be a collection of hardware and software, which can provide information, data and connectivity to infrastructure to support the customer experience. It can also be the data and technology capability to enable the operation of the car (this might be connected services, autonomous capability, parking sensors, cameras etc.). It can be any technology within a vehicle.

Glossary of terms

Term	Acronym	Description
Levelling up		Levelling up is a moral, social and economic programme for the whole of government. It places emphasis on ensuring no community is left behind.
Local Road Network		England's road network consists of motorways, major 'A' roads, and local classified and unclassified roads. The vast majority of motorways and major 'A' roads for the strategic road network (SRN) and are managed by National Highways. All other roads are managed by local authorities and make up the local road network (LRN)
Major Road Network	MRN	The major road network (MRN) is the middle tier of England's road network, comprising the busiest and most economically important local authority A-roads.
National Highways Licence		The Licence sets out the Secretary of State's statutory directions and guidance to National Highways.
Noise Action Plans		Noise action plans provide a framework to manage environmental noise and its effects. They also aim to protect quiet areas in agglomerations (large urban areas) where the noise quality is good. Noise Action Plans provide a framework for the local management of the Important Areas.
Noise Important Areas		Noise Important Areas (NIAs) for roads and railways are based upon the strategic noise maps results and are produced in line with the requirements set out in the noise action plans.
Office of Rail and Road	ORR	The Office of Rail and Road (ORR) is the independent safety and economic regulator for Britain's railways and monitor of National Highways
Park and ride		A park and ride offers parking with public transport connections that allows commuters and other people heading to city centres to leave their vehicles and transfer to bus, rail or car share for the remainder of the journey.
Platooning		Heavy Goods Vehicle (HGV) platooning is the use of technology to allow HGVs to travel safely in close proximity at speed with the driver of the lead vehicle controlling the speed, acceleration and braking of the whole 'platoon'.
Receptor (Air quality and Noise)		Location which is sensitive to noise/air quality issues
Regional Traffic Model	RTM	National Highways has a suite of five regional traffic models (RTMs) covering England's SRN. The models allow us to identify future performance and delay on the network, assisting with the development of the route strategies
Reliability		Reliability is the difference between the typical travel time, allowing for recurring delays, and the observed travel time. This measures the amount of variation due to unexpected variations or unplanned events. Like delay, it is measured in seconds per vehicle per mile. It is a concern for most drivers, but particularly affects just-in-time freight traffic and other strategic journeys.
Road investment strategy	RIS	A Road investment strategy (RIS) is a strategy that outlines a long-term programme for National Highways' motorways and major A-roads with the stable funding needed to plan ahead.

Term	Acronym	Description
Road period		The defined period of time over which the Government gives a funding commitment. The length of a road period will be specified at the beginning of the RIS development process. Road periods will be multi-year in order to provide the supply chain with increased certainty of investment and intent. Based on current practice within the other infrastructure sectors, it is expected that road periods will continue to be five years in length, though the actual length will be decided by the Government of the day.
Route objectives		Objectives for each route, informed by engagement and analysis, to support the current and future needs of customers and neighbours.
Safe System approach		The Safe System is the current best practice safety culture in road safety, developed over many years and derived most notably from the Swedish Vision Zero and Dutch Sustainable Safety strategies. A best practice road safety culture approach based on the principles that humans make mistakes which could lead to serious injury or death for which it is a shared responsibility of the road user, road managers, vehicle manufacturers, etc. to take appropriate actions to ensure road collisions do not lead to serious or fatal injuries.
Seasonal delay		Seasonal delay refers to the difference between the average afternoon peak delay for Fridays in August 2019 (high demand in summer holidays) and the average delay during very low demand periods (in this case, Christmas day is used). This measure is designed to reflect the parts of the network that do not appear to have a problem on average over the year but have seasonal peaks. Seasonal delay is of interest to tourist traffic, particularly people travelling to airports, or other destinations where arriving later than intended could have significant implications.
Severance		The separation of people from facilities and services they use within their community.
Sites of Special Scientific Interest	SSSIs	A Site of Special Scientific Interest (SSSI) is the land notified as an SSSI under the Wildlife and Countryside Act (1981), as amended. SSSI are the finest sites for wildlife and natural features in England, supporting many characteristic, rare and endangered species, habitats and natural features.
Smart motorway		A smart motorway is a section of motorway that employs active traffic management (ATM) techniques to increase capacity through the use of technology including variable speed limits. There are three types of smart motorway: 1. Controlled Motorway: variable speed limits with the hard shoulder operating as it would on a conventional motorway. 2. Dynamic Hard Shoulder (DHS) Running: Variable speed limits with the hard shoulder selectively opened as a running lane during periods where traffic levels are too high for only three lanes of running traffic. When activated, vehicles can use the hard shoulder as a running lane. 3. All Lane Running (ALR): variable speed limits with the hard shoulder removed and converted to a permanent running lane. Smart motorways have a whole system of inter-related safety features, not present on conventional motorways, working together to help keep drivers and their passengers moving safely. The system includes: • variable speed limits to help keep traffic moving, reducing frustrating stop-start traffic and making journeys quicker • clearly signed and orange-coloured emergency areas set back from the road and with telephones linking directly to our control rooms • detection systems to monitor traffic for changes in flows • CCTV cameras that our operators are able to move and zoom to monitor and manage congestion and incidents, where notified. The system has the ability to see 100% of the carriageway • signs and signals to provide better information to drivers which can alert drivers to hazards ahead and display Red X signs to close lanes to other traffic when a stopped vehicle is identified • enforcement cameras to deter the minority who break speed limits and ignore Red X signs • radar stopped vehicle detection

Glossary of terms

Term	Acronym	Description
Spatial planning		Spatial planning decides how land should be used or protected. It also organises, designs and makes decisions on where new homes, roads and other infrastructure should be built. Spatial planning aims to make places attractive, safe and environmentally friendly. National Highways is a statutory consultee in the planning system and we encouraged others to seek early advice from us if their development proposal is likely to impact the strategic road network.
Special Areas of Conservation	SACs	A Special Area of Conservation (SAC) is the land designated under Directive 92/43/ EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.
STATS19		Data on road traffic casualties on the roads in Great Britain are collected via the STATS19 process. These statistics are collected by police forces, either through officers attending the scene of incidents, from members of the public reporting the incident in police stations after the incident, or more recently online and then validated and published annually by DfT. STATS19 road traffic collision and casualty data is published annually by DfT in the Autumn and provides details of the previous calendar year. These reports have used the data available at the time of analysis, 2015-2018.
Statutory consultee		Statutory consultees are those organisations and bodies, defined by statute, which local planning authorities are legally required to consult before reaching a decision on relevant planning applications.
Strategic Rail Freight Interchange		A large multi-purpose rail freight interchange and distribution centre linked into both the rail and road system.
Strategic Road Network	SRN	The strategic road network (SRN) covers more than 4,500 miles of motorways and major A-roads.
Strategic Traffic / Strategic journeys		Long distance traffic / journeys
Sub-national Transport Bodies	STBs	Sub-national Transport Bodies (STBs) have a key role in formulating transport strategy and identifying investment priorities at the sub-national level, including for highways. There are seven STBs in England, which are tasked with developing transport strategies and studies for their region. Through the development of their evidence bases with their constituent local authorities and Local Enterprise Partnerships, their work highlights multi-modal issues, need and opportunities, with investment priorities provided to the Secretary of State for Transport.
Transport-related social exclusion		Where limited access to transport or other issues with the transport system means that people cannot fully participate in society in the way they would like
Trunking / De-trunking		De-trunking is the process of returning a National Highways road to the local highway authority control and vice versa for trunking
UNESCO World Heritage Site		Inscription as a UNESCO World Heritage Site is an acknowledgement of the global significance of such places.

Term	Acronym	Description
Union connectivity		Transport connectivity between the nations of the United Kingdom.
Variable Messaging Signs		The Traffic Signs Regulations and General Directions 2016 (TSRGD) define a variable message sign as a device "...capable of displaying, at different times, two or more aspects...". These aspects may take the form of a sign prescribed by the TSRGD, a legend in accordance with Schedule 16 to TSRGD, a non-prescribed temporary sign or a blank grey or blank black face. Thus, the expression "variable message sign" (VMS) encompasses all types of variable sign from simple flap-type signs to complex light-emitting panels
Vulnerable Road User		Walkers, cyclists and horse riders

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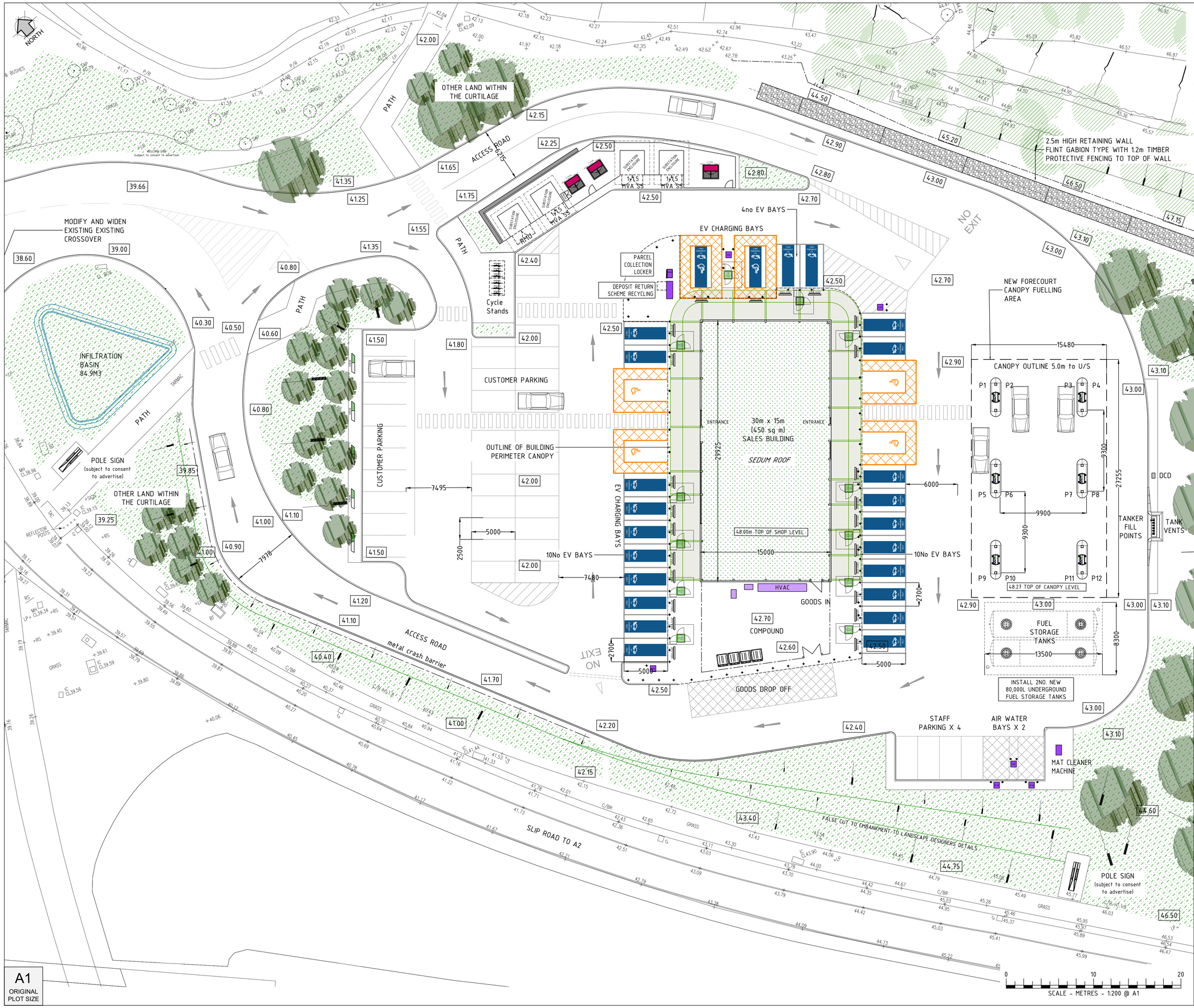
APPENDIX 5



GENERAL NOTES

This drawing has been prepared for the sole purpose of obtaining planning permission for a Electric Vehicle Charging Installation & Petrol Filling Station

This drawing is to be read in conjunction with drawings

EV005-PS-LAY-000-GB00015044-0001-001 Site Location Plan
EV005-PS-LAY-000-GB00015044-0003-001 Existing Site Layout
EV005-PS-LAY-000-GB00015044-0003-002 Existing Site Layout 1-500 Scale Plan
EV005-PS-LAY-000-GB00015044-0005-001 Proposed Site Layout
EV005-PS-LAY-000-GB00015044-0005-002 Proposed Site Layout 1-500 Scale Plan
EV005-PS-LAY-000-GB00015044-0007-001 Surfacing Site Layout
EV005-PS-LAY-000-GB00015044-0004-001 Proposed Site Elevations
EV005-PS-GAS-000-GB00015044-0001-001 Proposed Building Details
EV005-PS-GAS-000-GB00015044-0002-001 Equipment Details Sheet
EV005-PS-LAY-000-GB00015044-0009-001 Vehicle Tracking HGV
EV005-PS-LAY-000-GB00015044-0010-001 Vehicle Tracking Cars

Any advertisements are indicative and are subject to a separate advertisement application.

NR	DATE	DESCRIPTION
F	06.09.24	SHOP AMENDED PB
E	10.05.24	M&C FUEL CANOPY STANDARDS APPLIED PB
D	30.04.24	UPDATES TO RED BLUE LINES PSB
C	05.03.24	BP COMMENTS UPDATE PSB
B	14.02.24	PRIMARY SIGNS ADDED PSB
A	01.02.24	MINOR UPDATES PSB

REVISIONS

STATUS: DEFINE DRAWING

BP Pulse
Breckland, Linford Wood
Milton Keynes
Buckinghamshire
MK14 6GY

TOLLGATE SERVICE AREA
A2 WATLING STREET
NORTHFLEET, GRAVESEND
KENT DA11 7NP

–
PROPOSED SITE LAYOUT

DRAWN: PB
DATE: JAN 24
DESIGN CHECKED: –
DATE: –
APPROVED: –
DATE: –
DATE: –
SCALE: 1:200@A1

SCALED DIMENSIONS SHOULD NOT BE TAKEN FROM THIS DRAWING (APPROPRIATE FOR A1 ONLY)

BP DRAWING NUMBER	REV
EV005-PS-LAY-000-GB00015044-0005-001	B01

MBH DRAWING NUMBER	REV
14170-22	F

ARCHITECT: MBH

A1 ORIGINAL PLOT SIZE

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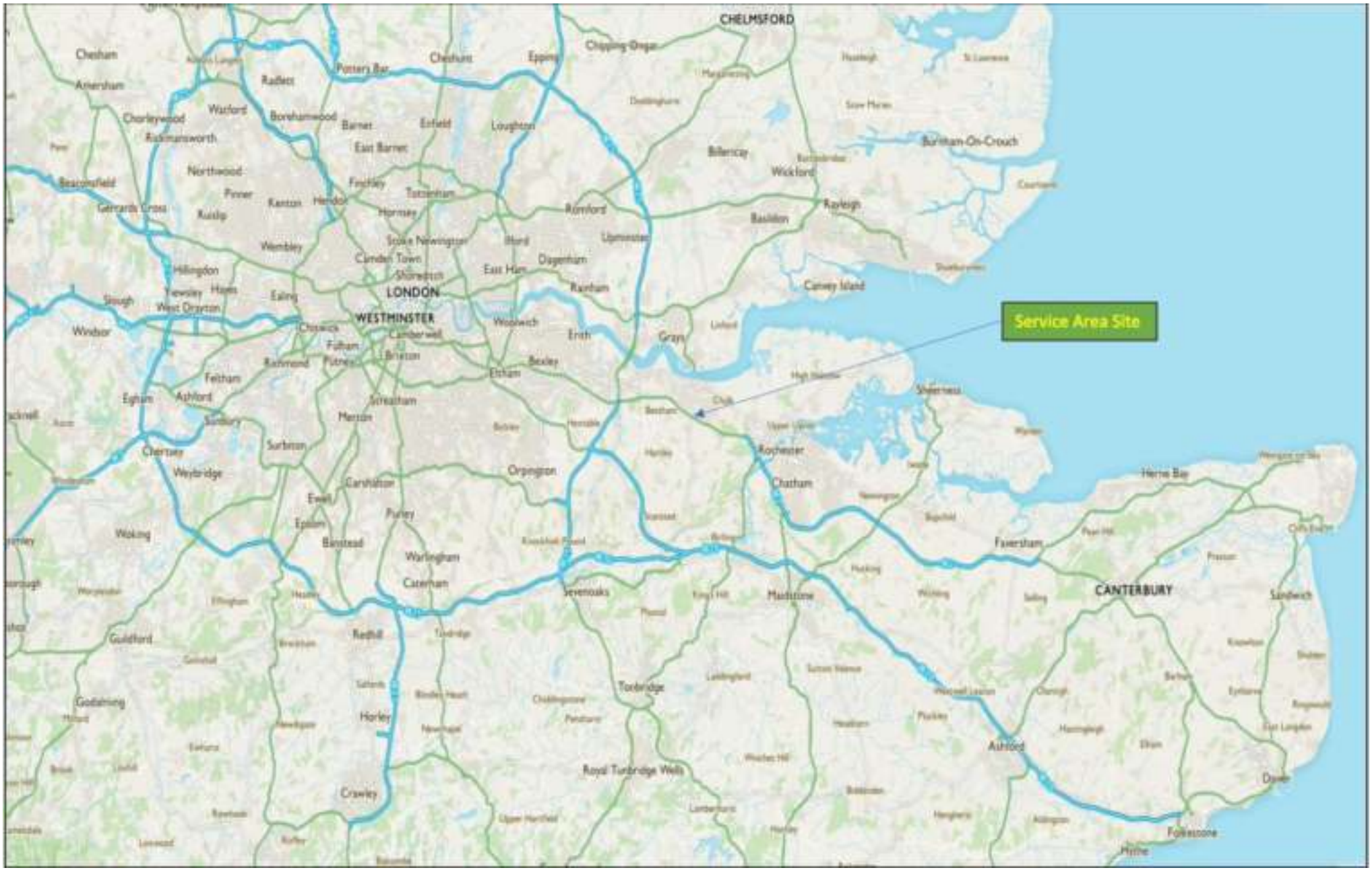
APPENDIX 6


Service Area Site
CHELMSFORD
Chesham
Amersham
Radlett
Potters Bar
Cheshunt
Epping
Chipping Ongar
Watford
Borehamwood
Barnet
Enfield
Loughton
Rickmansworth
East Barnet
Billericay
Burnham-On-Crouch
Wickford
Beaconsfield
Northwood
Pinner
Finchley
Tottenham
Gerrards Cross
Ruislip
Kenton
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Guildford
Redhill
Godalming
Tonbridge
Horley
Ashford
Royal Tunbridge Wells
Crawley
Dover
Folkestone
Hythe

APPENDIX 7

Road traffic statistics

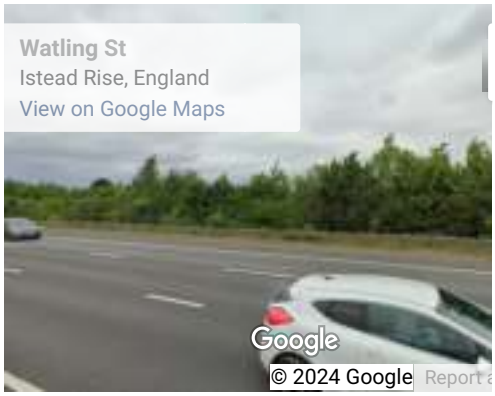
Manual count points

Site number: 81429

Site details

Region	South East
Local authority	Kent
Road name	A2
Road classification	'A' road
Managed by	Highways England
Road type	Major
Start junction	Sliproad off slip for A227
End junction	Sliproad on slip A227
Link length	1.10km (0.68 miles)
Easting, northing	564022, 171236
Latitude, longitude	51.41641500, 0.35737246

Location



Annual Average daily flow

Year	Count method	Pedal cycles	Two wheeled motor vehicles	Cars and taxis	Buses and coaches	Light goods vehicles	Heavy goods vehicles	All motor vehicles

2022	Estimated using previous year's AADF on this link	1	648	79008	196	22644	10443	112939
2021	Manual count	1	565	68496	183	20672	10190	100106
2020	Estimated using previous year's AADF on this link	0	951	65279	182	18197	10124	94733
2019	Estimated using previous year's AADF on this link	0	1612	97158	298	22892	11889	133849
2018	Manual count	0	1597	96344	312	22975	11913	133141
2017	Estimated using previous year's AADF on this link	0	1241	90867	415	19074	10715	122312
2016	Manual count	0	1232	90905	405	17904	10396	120842
2015	Manual count	0	1025	87628	342	16814	9005	114814
2014	Manual count	0	961	84053	377	16983	7619	109993
2013	Manual count	9	710	82881	299	16079	7534	107504
2012	Manual count	2	1609	91604	352	16675	8723	118962

2011	Estimated from nearby links	0	1189	89276	355	15267	8533	114620

Download data

Data disclaimer

Traffic figures at the regional and national level are robust, and are reported as National Statistics. However, DfT's traffic estimates for individual road links and small areas are less robust, as they are not always based on up-to-date counts made at these locations. Where other more up-to-date sources of traffic data are available (e.g. from local highways authorities), this may provide a more accurate estimate of traffic at these locations.

It is the responsibility of the user to decide which data are most appropriate for their purpose, and if DfT road link level traffic estimates are used, to make a note of the limitations in any published material.

Quality flags in data downloads

DfT's road link level traffic estimates are calculated using a variety of methods, with some methods likely to produce more accurate estimates than others.

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Data	Description	Records	Download
Site details	Manual count point site 81429 details.	1	JSON I CSV
Average annual daily flow	Number of vehicles that travel past the count point (in both directions) on an average day of the year.	12	JSON I CSV
Average annual daily flow by direction	Number of vehicles that travel past the count point on an average day of the year, by direction of travel.	23	JSON I CSV
Raw counts	Vehicle counts recorded at this count point.	216	JSON I CSV

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APPENDIX 8

Manual count points

Site number: 81433

Site details

Region	South East
Local authority	Kent
Road name	A227
Road classification	'A' road
Managed by	Local authority
Road type	Major
Start junction	Roundabout South A2
End junction	Roundabout North A2
Link length	0.20km (0.12 miles)
Easting, northing	564135, 171186
Latitude, longitude	51.41593300, 0.35897288

Location

Annual Average daily flow

Year	Count method	Pedal cycles	Two wheeled motor vehicles	Cars and taxis	Buses and coaches	Light goods vehicles	Heavy goods vehicles	All motor vehicles
2020	Estimated using previous year's AADF on this link	18	193	15904	70	2906	398	19471
2019	Estimated using previous year's AADF on this link	14	260	21778	110	3395	446	25989
2018	Manual count	12	242	21731	111	3406	442	25932
2017	Estimated using previous year's AADF on this link	9	194	19758	135	3070	549	23706
2016	Estimated using previous year's AADF on this link	9	200	19782	139	2901	533	23555
2015	Estimated using previous year's AADF on this link	9	200	19539	141	2687	510	23076
2014	Estimated using previous year's AADF on this link	10	193	18968	143	2417	482	22203
2013	Manual count	12	187	18540	127	2252	490	21596
2012	Estimated using previous year's AADF on this link	10	86	19743	115	2478	403	22824
2011	Estimated from nearby links	11	88	19886	113	2380	396	22863

Download data

Data disclaimer

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Data	Description	Records	Download
Site details	Manual count point site 81433 details.	1	JSON | CSV
Average annual daily flow	Number of vehicles that travel past the count point (in both directions) on an average day of the year.	10	JSON | CSV
Average annual daily flow by direction	Number of vehicles that travel past the count point on an average day of the year, by direction of travel.	20	JSON | CSV
Raw counts	Vehicle counts recorded at this count point.	48	JSON | CSV

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