national highways

Lower Thames Crossing

9.72 NTEM 8 and Common Analytical Scenarios (Clean version)

Infrastructure Planning (Examination Procedure) Rules 2010

Volume 9

DATE: August 2023
DEADLINE: 3

Planning Inspectorate Scheme Ref: TR010032
Examination Document Ref: TR010032/EXAM/9.72

VERSION: 1.0

Lower Thames Crossing

9.72 NTEM 8 and Common Analytical Scenarios (Clean version)

List of contents

Page number

List of plates

Page number

List of tables

Page number

1 Executive summary

1.1.1 This report sets out a series of different model run outputs that that have been prepared using the Lower Thames Area Model (LTAM) incorporating updates and reflecting different scenarios published by the DfT in November 2022. It is intended to demonstrate the sensitivity of the model to the updated guidance published since the preparation of the traffic forecasts reported in the Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522]. It records the model runs undertaken using the revised traffic growth factors, known as TEMPro 8, definitively released by the Department for Transport (DfT) in November 2022 (DfT, 2022a).

1.1.2 The following four areas of change are reported on in this report:

a. Published traffic growth factors known as NTEM 8, and commonly referred to as TEMPro 8, definitively released by the Department of Transport (DfT) in November 2022.

b. Release of the Transport Analysis Guidance (TAG) Uncertainty Toolkit by DfT in November 2022 which included Common Analytical Scenarios which enabled traffic forecasts for these to be produced using the LTAM.

c. Published DfT revised traffic forecasts for goods vehicles in December 2022.

d. Effect of the Written Ministerial Statement in March 2023 which announced a rephasing of construction by two years, with a revised opening date of 2032. The LTAM was used to produce traffic forecasts for a 2032 opening date.

1.1.3 This report presents:

a. the forecast cross river traffic forecasts,

b. a comparison of cross river traffic forecasts (in both the opening and design years) between the flows contained within the core scenario presented in the DCO Application (TEMPro 7.2) and those forecast using TEMPro 8

c. a comparison of the variation in cross river traffic forecasts for each of the Common Analytical Scenarios (CAS).

1.1.4 The comparison of the core scenarios shows that there is only a very small difference in the forecast traffic flows. The difference in total PCU flows is less than 2% other than in two instances. The greatest difference is the forecast traffic flow in the opening year, PM peak hour for the Lower Thames Crossing, where the 2032 TEMPro 8 forecast is 4% lower than the 2030 TEMPro 7.2 forecast.

1.1.5 The CAS results in a slighter larger variation in forecast traffic flows at the river crossings. In all time periods and for all of the CAS, the change in flows at the Dartford Crossing, with the Project, is less than 9.5%. The greatest reduction is in the behavioural change scenario where flows reduce by 9.1% in the 2047 average inter-peak and evening peak hour. The greatest increase is in the high economy scenario where traffic flows increase by 8.1% in the 2047 average inter-peak hour.

1.1.6 The percentage change in traffic flows at the Lower Thames Crossing with each of the CAS compared to the TEMPro 8 core scenario is also less than 9% for all but three modelled hours in two scenarios. The three largest impacts are for the behavioural change scenario in the 2047 average inter-peak hour where flows reduce by 12.6% and the mode-balanced decarbonisation scenario reduces by 9%. In the high economy scenario in the 2047 average inter-peak hour the traffic flows increase by 10.2%.

1.1.7 The change from an opening year of 2030 and TEMPro 7.2 to an opening year of 2032 and TEMPro 8 results in a variance in flows at both the Dartford Crossing and Lower Thames Crossing of less than 4%.

1.1.8 The comparisons of the CAS presented in this report show that the variation from the core scenario presented within the DCO application would also be small.

1.1.9 For both the opening and design years, in each modelled time period, and for each CAS that the Project would provide relief to the Dartford Crossing.

1.1.10 Overall therefore, it is considered that the need for the Project (as set out in Need for the Project [APP-494]) remains valid as the Project would provide relief to the Dartford Crossing in every scenario.

2 Introduction

2.1 Purpose of this report

2.1.1 This report sets out a series of different model run outputs that that have been prepared using the Lower Thames Area Model (LTAM) incorporating updates and reflecting different scenarios published by the DfT in November 2022. It is intended to demonstrate the sensitivity of the model to the updated guidance published since the preparation of the traffic forecasts reported in the Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522]. It records the model runs undertaken using the revised traffic growth factors, known as TEMPro 8, definitively released by the Department for Transport (DfT) in November 2022 (DfT, 2022a).

2.1.2 The traffic growth forecasts are produced by DfT using their National Trip End Model (NTEM). They are released using TEMPro software. The NTEM 8 traffic growth forecasts are commonly also referred to as the TEMPro 8 forecasts.

2.1.3 DfT also published the traffic growth factors for the Common Analytical Scenarios (CAS) in November 2022 which enabled traffic forecasts for these scenarios to be produced using the LTAM. DfT also published revised traffic forecasts for goods vehicles in December 2022.

2.1.4 The Written Ministerial Statement in March 2023 (UK Parliament, 2023) announced a rephasing of construction of the A122 Lower Thames Crossing (the Project) by two years, with a revised opening date of 2032. The LTAM has been used to produce traffic forecasts for a 2032 opening date, and these findings are also presented below.

2.1.5 The report also records that the coding of the network has been revised to incorporate a recently published dataset of records of existing traffic restrictions, including bans on vehicles of specific weight, on the highway network. This new dataset allows for the more accurate inclusion of HGV bans across the modelled area.

2.2 Lower Thames Area Model

2.2.1 The LTAM was developed to predict the traffic flows, speeds and journey times on the road network in the Lower Thames area in the future. Details on the development of the LTAM is provided in the Combined Modelling and Appraisal Report [APP-518], and in Combined Modelling and Appraisal Report Appendix B: Transport Model Package [APP-520].

2.2.2 The future year matrices are created by applying traffic growth factors produced for each part of England and Wales by the DfT, as reported in paragraphs 6.3.1 to 6.3.5 of the Combined Modelling and Appraisal Report [APP-518].

‘*The future year trip matrices are produced by starting with the validated base year matrices and applying traffic growth factors by area within the model. These factors come from the DfT’s National Trip End Model (NTEM). Further spatial information on the locations of this growth is provided by explicitly adding the trips associated with new developments into the future year matrices, with the overall total increase in the number of trips matching the total increase in the wider area forecast by the NTEM*.’ (paragraph 6.3.1)

'*This is the method set out in TAG guidance. It is designed to ensure that all new road schemes in the country are assessed on a level playing field, with the forecast of the amount of traffic growth in different parts of the country coming from a single national traffic model. This approach means that scheme promoters cannot over-exaggerate the number of people using their schemes by using an exceptionally high forecast for the increase in the number of trips in their area.*' (paragraph 6.3.2)

2.2.3 The 'TAG guidance' referred to above is the Transport Analysis Guidance written by the DfT.

2.2.4 The NTEM produces forecasts of the number of vehicles going to and from each part of England and Wales. The zoning system used in NTEM is the Middle Super Output Area geography produced by the Office for National Statistics. The forecast change in the number of vehicles going to and from each zone is known as the traffic growth forecasts. The output data from the DfT's NTEM, which shows these traffic growth factors, are published in freely available software known as TEMPro.

2.2.5 When the Development Consent Order (DCO) application was prepared, the set of traffic growth forecasts that were current were the set known as TEMPro 7.2.

2.3 Updates to growth forecasts and release of TAG Uncertainty Toolkit

2.3.1 In November 2022 the DfT published a definitive set of revised traffic growth forecasts known as TEMPro 8. These traffic growth factors apply to car trips.

2.3.2 In November 2022, DfT also updated the TAG guidance on handling uncertainty in appraisal, through the release of the TAG Uncertainty Toolkit. It introduced and outlined seven Common Analytical Scenarios (CAS). These were developed to enable appraisals to reflect seven different scenarios of the future. A full description of the scenarios is provided in Table 6 of the TAG Uncertainty Toolkit (May 2023) which is reproduced in Table 2.1.

2.3.3 In summary the seven scenarios are:

a. High Economy – economic productivity, migration and population increases above official forecasts

b. Low Economy – economic productivity, migration and population grows at a lower rate than official forecasts

c. Regional – people leave London, the South East, and East of England in search of more affordable housing, with lower employment and population growth in these regions

d. Behavioural Change –people embrace new ways of working, shopping and travelling

e. Technology – a high take up of connected autonomous vehicles makes road travel far more attractive and accessible

f. Vehicle-led decarbonisation – a high take up of electric and zero emission vehicles, resulting in increasing road traffic and reduced public transport use

g. Mode-balanced decarbonisation – similar to vehicle-led decarbonisation, but with an unspecified intervention which equalises electric vehicle costs with petrol and diesel, and maintains public transport mode share

2.3.4 The traffic growth forecasts associated with each of these CAS were published as part of the provisional TEMPro 8 release in August 2022 and became definitive guidance in November 2022.

2.3.5 In December 2022, DfT published a definitive set of revised traffic growth forecasts for light and heavy goods vehicles in the National Road Traffic Projections (NRTP) 2022.

2.3.6 Neither the definitive TEMPro 8 traffic growth forecasts nor LTAM model runs using these factors were available at the time of the submission of the DCO application in October 2022.

Table 2.1 Description of CAS in TAG Uncertainty Toolkit

Scenario	Narrative: "*This scenario captures a future where…*"	Core features or components
High Economy	… productivity growth returns to its long-term trend, and people become richer than we currently expect. Migration, and population in general, increases above official forecasts.	**GDP** – 10% higher in 2050 relative to core assumptions **Population** - GB total reaches 77.7m by 2050 **Employment** - 12% higher in 2050 relative to core assumptions
Low Economy	… productivity growth fails to return to historic levels and inwards migration is subdued, causing low levels of total population growth.	**GDP** – 31% lower in 2050 relative to core assumptions **Population** - GB total reaches 64.6m by 2050 **Employment** - 7% lower in 2050 relative to core assumptions
Regional	…people leave London, the South East and the East of England in search of more affordable housing. As a result, there is lower employment and population growth in these regions relative to the rest of the country. Areas outside of the South increase their relative level of competitiveness through an increase in productivity.	**Population/ Households/ Employment** – core redistributed, so that regions outside London, the South East and the East of England grow at *at least* the growth rate of the whole country, if not already higher. London, the South East and the East of England are then adjusted downwards, so that the whole country's growth rate is maintained.
Behavioural Change	… people embrace new ways of working, shopping and travelling. Important behavioural trends which have emerged in recent years accelerate, in part because of the Covid-19 pandemic, which include: changes in the travel behaviour of young people; increased flexible working; and increased online shopping.	**Trip Rates** - extrapolation of existing trip rate trends by purpose, meaning overall trips continue to fall, although some purposes do increase **Licence Holding** - reduced rates among younger cohorts throughout forecast period **LGV (Light Goods Vehicles, vans) trips** - increased, reflecting reductions in shopping trips and an increase in deliveries from online shopping.
Technology	.. road travel becomes far more attractive and accessible to road users because of a high take-up of connected autonomous vehicles (CAVs), which enter the fleet in the 2020s and make up to 50% of it by 2047.	**Trip Rates** – elderly trips rates increase after 2031 **Licence Holding** – rates increase after 2031 to over 92% by 2061, reflecting improved accessibility due to availability of CAVs **Electric Vehicles** – high uptake **Value of Time** – perceived time cost of travel falls **Car occupancy** – reduced to account for zero occupancy (empty running) trips.

Vehicle-led Decarbonisation	… there is a high take up of electric and zero-emission vehicles (ZEVs). Tailpipe emissions fall. There is no intervention by government to increase electric vehicle costs, resulting in increasing road traffic.	**Electric Vehicles** – high uptake for both cars and freight, with no adjustment made to current costs **Public transport** – reduced as electric vehicles have a cost advantage
Mode-balanced Decarbonisation	… there is a high take up of electric and zero-emission vehicles (ZEVs). Tailpipe emissions fall. An unspecified intervention leads to electric vehicle costs being equalised with petrol and diesel costs, so that public transport modal share is maintained.	**Electric Vehicles** - high uptake for both cars and freight, with running costs (fuel and non-fuel) equalised to internal combustion engine vehicles **Public transport** - modal share higher than the core. [note 30]

2.4 Written Ministerial Statement

2.4.1 On 9 March 2023, a Written Ministerial Statement was made by the Secretary of State for Transport (UK Parliament, 2023). This statement made reference to the Project:

'*To date we have spent over £800 million on planning the Lower Thames Crossing. It is one of the largest planning applications ever, and it is important we get this right. We remain committed to the Lower Thames Crossing, and the development consent order process will be an important opportunity to consult further to ensure there is an effective and deliverable plan. In order to allow time for this process and given wider pressures on* [Road Investment Strategy] *RIS, we will look to rephase construction by two years*.'

2.4.2 The Applicant provided a response to the Examining Authority on 30 March 2023 [AS-086] regarding potential implications on the assessments contained within the DCO application.

2.4.3 However, notwithstanding the Applicant's position articulated therein, the Applicant has prepared forecasts within this report for an opening year of 2032 and a design year of 2047 to provide further assurance of the Applicant's position.

2.5 The Project

2.5.1 The A122 Lower Thames Crossing (the Project) would provide a connection between the A2 and M2 in Kent and the M25 south of junction 29, crossing under the River Thames through a tunnel. The Project route is presented in Plate 2.1.

2.5.2 The A122 would be approximately 23km long, 4.25km of which would be in tunnel. On the south side of the River Thames, the Project route would link the tunnel to the A2 and M2. On the north side, it would link to the A13, M25 junction 29 and the M25 south of junction 29. The tunnel entrances would be located to the east of the village of Chalk on the south of the River Thames and to the west of East Tilbury on the north side.

2.5.3 Junctions are proposed at the following locations:

a. New junction with the A2 to the south-east of Gravesend

b. Modified junction with the A13/A1089 in Thurrock

c. New junction with the M25 between junctions 29 and 30

2.5.4 To align with National Policy Statement for National Networks (DfT, 2014) policy and to help the Project meet the Scheme Objectives, it is proposed that road user charges would be levied in line with the Dartford Crossing. Vehicles would be charged for using the new tunnel.

2.5.5 The Project route would be three lanes in both directions, except for:

a. link roads

b. stretches of the carriageway through junctions

c. the southbound carriageway from the M25 to the junction with the A13/A1089, which would be two lanes

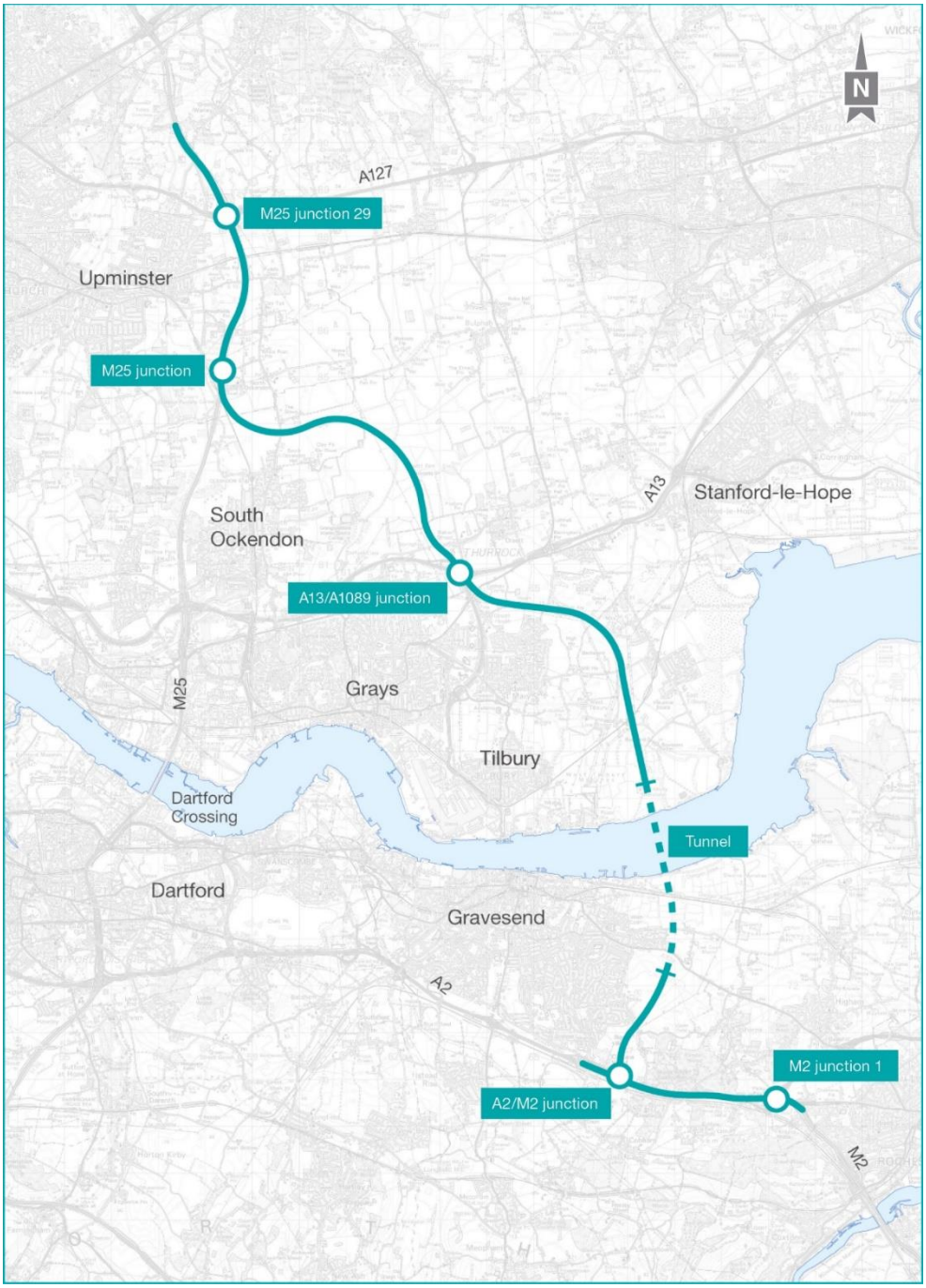
2.5.6 In common with most A-roads, the A122 would operate with no hard shoulder but would feature a 1m hard strip on either side of the carriageway. It would also feature technology including stopped vehicle and incident detection, lane control, variable speed limits and electronic signage and signalling. The A122 design outside of the tunnel would include emergency areas. The tunnel would include a range of enhanced systems and response measures instead of emergency areas.

2.5.7 The A122 would be classified as an ‘all-purpose trunk road’ with green signs. For safety reasons, walkers, cyclists, horse-riders and slow-moving vehicles would be prohibited from using it.

2.5.8 The Project would include adjustment to a number of local roads. There would also be changes to a number of Public Rights of Way, used by walkers, cyclists and horse riders. Construction of the Project would also require the installation and diversion of a number of utilities, including gas pipelines, overhead electricity powerlines and underground electricity cables, as well as water supplies and telecommunications assets and associated infrastructure.

2.5.9 The Project has been developed to avoid or minimise significant effects on the environment. The measures adopted include landscaping, noise mitigation, green bridges, floodplain compensation, new areas of ecological habitat and two new parks.

Plate 2.1 Lower Thames Crossing route



2.6 Structure of this report

2.6.1 The remainder of this report contains the following chapters:

a. Chapter 3 sets out the cross river traffic forecasts.

b. Chapter 4 provides core scenario comparisons.

c. Chapter 5 details the variation in cross river traffic forecasts.

d. Chapter 6 sets out the conclusions.

3 Cross river traffic forecasts

3.1.1 A series of traffic forecasts has been produced that reflect the updated guidance. The traffic forecasts reported in the Transport Assessment [APP-529] are as set out in Scenario 1 in Table 2.1; that is with NTEM 7.2 core scenario growth for cars and Road Traffic Forecasts 2018 (RTF18) (DfT, 2018) for light and heavy goods vehicles.

3.1.2 Table 3.1 summarises the model runs that have been produced following the updates in guidance issued by DfT. It includes the Run ID for each set of traffic forecasts (and whether these are reflect the Do-Minimum (DM), that is without the Project, or Do-Something (DS), with the Project.

Table 3.1 LTAM runs

Scenario Number	Scenario	Run ID	Based on	Changes from base run	Modelled opening year
1	TEMPro 7.2 Core	CM49 (DM) CS72 (DS)	DCO network	NTEM7.2 growth for core scenario Goods Vehicle (GV) growth based on RTF18	2030
2	TEMPro 8 Core	CM49_T8C2 (DM) CS72_T8C2 (DS)	DCO network	NTEM8 growth for core scenario GV growth based on National Road Traffic Projections 2022 (NRTP22) (DfT, 2022b)	2030
3	TEMPro 8 Core	CMT04 (DM) CST04 (DS)	Revised Heavy Goods Vehicle (HGV) bans	NTEM8 growth for core scenario GV growth based on NRTP22	2030
4	TEMPro 8 Core	CMT06 (DM) CST06 (DS)	Revised HGV bans	NTEM8 growth for core scenario GV growth based on NRTP22	2032
5	High Economy	CMT12 (DM) CST15 (DS)	Revised HGV bans	NTEM8 growth for high economy scenario GV growth based on NRTP22	2032
6	Low Economy	CMT13 (DM) CST16 (DS)	Revised HGV bans	NTEM8 growth for low economy scenario GV growth based on NRTP22	2032
7	Regional	CMT09 (DM) CST12 (DS)	Revised HGV bans	NTEM8 growth for regional scenario GV growth based on NRTP22	2032
8	Behavioural Change	CMT10 (DM) CST13 (DS)	Revised HGV bans	NTEM8 growth for behavioural change scenario GV growth based on NRTP22	2032

Scenario Number	Scenario	Run ID	Based on	Changes from base run	Modelled opening year
9	Technology	CMT15 (DM) CST19 (DS)	Revised HGV bans	NTEM8 growth for technology scenario GV growth based on NRTP22	2032
10	Vehicle-led Decarbonisation	CMT11 (DM) CST14 (DS)	Revised HGV bans	NTEM8 growth for vehicle-led decarbonisation scenario GV growth based on NRTP22	2032
11	Mode-balanced decarbonisation	CMT16 (DM) CST20 (DS)	Revised HGV bans	NTEM8 growth for mode-balanced decarbonisation scenario GV growth based on NRTP22	2032

3.1.3 Table 3.2, Table 3.3 and Table 3.4 show the forecast traffic flows at the Dartford Crossing and the Project in 2030 or 2032. The flows are presented in Passenger Car Units (PCUs). A single HGV has a PCU factor of 2.5 as it uses more road space than a car, which has a PCU factor of 1. The same traffic flows presented as numbers of vehicles are provided in Annex A.

3.1.4 In the tables, all northbound flows at the Dartford Crossing are reported for the network on the approach to the Traffic Management Cell.

3.1.5 Table 3.5, Table 3.6 and Table 3.7 present the traffic forecasts for 2045 and 2047.

3.1.6 The first sets of model runs are for an opening year of 2030. The TEMPro 7.2 runs are those reported in Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522] and the Transport Assessment [APP-529]. This shows that the change to TEMPro 8 growth forecasts from the TEMPro 7.2 forecasts produces slightly lower traffic flows at the Dartford Crossing and on the Lower Thames Crossing.

3.1.7 Since the production of the traffic forecasts reported in Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522], more data has also become available on traffic restrictions on the network, particularly HGV bans on roads in the Fully Modelled Area. Previously, the data on these bans was obtained by inspection of road signs and they were incorporated in the network in the area in the vicinity of the Project.

3.1.8 The inclusion of this additional data on traffic restrictions also results in a reduction in traffic flows across the river.

3.1.9 The LTAM runs for a 2032 opening year all include these additional traffic restrictions. The cross river flows are reported for the TEMPro 8 core scenario and for each of the CAS.

3.1.10 A set of maps showing the absolute and percentage change in traffic flows for TEMPro 7.2 and TEMPro 8 both without and with the Project are presented in Annex B.

Table 3.2 Cross river flows (PCUs), AM peak, opening year

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2030 opening year							
CM49	TEMPro 7.2 DM	7,210	3,110	5,700	-	-	-
CM49_T8C2	TEMPro 8 DM	6,970	3,230	5,860	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	6,750	3,270	5,930	-	-	-
CS72	TEMPro 7.2 DS	6,640	2,550	4,090	5,060	880	2,100
CS72_T8C2	TEMPro 8 DS	6,460	2,640	4,180	4,890	920	2,190
CST04	TEMPro 8 DS (HGV bans)	6,030	2,620	4,200	4,580	920	2,140
2032 opening year							
CMT06	TEMPro 8 DM Core	6,830	3,300	5,900	-	-	-
CMT12	TEMPro 8 DM High Economy	6,780	3,450	5,940	-	-	-
CMT13	TEMPro 8 DM Low Economy	6,830	3,170	5,960	-	-	-
CMT09	TEMPro 8 DM Regional	6,800	3,300	5,920	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	6,300	3,520	6,090	-	-	-
CMT15	TEMPro 8 DM Technology	6,970	3,320	5,840	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	6,960	3,320	5,850	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	6,480	3,420	6,010	-	-	-
CST06	TEMPro 8 DS Core	6,270	2,690	4,270	4,780	930	2,140
CST15	TEMPro 8 DS High Economy	6,530	2,870	4,440	4,970	990	2,170
CST16	TEMPro 8 DS Low Economy	6,090	2,540	4,230	4,640	890	2,150
CST12	TEMPro 8 DS Regional	6,230	2,690	4,270	4,740	930	2,150
CST13	TEMPro 8 DS Behavioural Change	5,560	2,870	4,230	4,140	940	2,290
CST19	TEMPro 8 DS Technology	6,560	2,750	4,260	5,020	940	2,140
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	6,550	2,750	4,270	5,010	940	2,140
CST20	TEMPro 8 DS Mode-balanced Decarbonisation	5,780	2,760	4,320	4,350	930	2,150

Table 3.3 Cross river flows (PCUs), inter-peak, opening year

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2030 opening year							
CM49	TEMPro 7.2 DM	6,330	1,760	6,310	-	-	-
CM49_T8C2	TEMPro 8 DM	6,100	1,830	6,510	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	5,700	1,820	6,480	-	-	-
CS72	TEMPro 7.2 DS	5,410	1,350	4,010	3,510	490	2,500
CS72_T8C2	TEMPro 8 DS	5,240	1,400	4,140	3,380	510	2,600
CST04	TEMPro 8 DS (HGV bans)	4,770	1,390	4,110	3,080	510	2,570
2032 opening year							
CMT06	TEMPro 8 DM Core	5,930	1,860	6,560	-	-	-
CMT12	TEMPro 8 DM High Economy	6,090	1,970	6,740	-	-	-
CMT13	TEMPro 8 DM Low Economy	5,760	1,760	6,510	-	-	-
CMT09	TEMPro 8 DM Regional	5,890	1,860	6,560	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	5,200	1,930	6,590	-	-	-
CMT15	TEMPro 8 DM Technology	6,220	1,880	6,570	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	6,210	1,880	6,560	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	5,390	1,890	6,610	-	-	-
CST06	TEMPro 8 DS Core	5,060	1,420	4,180	3,270	520	2,600
CST15	TEMPro 8 DS High Economy	5,410	1,530	4,400	3,530	560	2,650
CST16	TEMPro 8 DS Low Economy	4,820	1,350	4,130	3,120	490	2,580
CST12	TEMPro 8 DS Regional	5,010	1,420	4,180	3,240	520	2,600
CST13	TEMPro 8 DS Behavioural Change	4,290	1,470	4,100	2,680	530	2,680
CST19	TEMPro 8 DS Technology	5,410	1,460	4,220	3,550	530	2,610
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	5,410	1,460	4,220	3,540	530	2,610
CST20	TEMPro 8 DS Mode-balanced Decarbonisation	4,520	1,440	4,200	2,880	530	2,610

Table 3.4 Cross river flows (PCUs), PM peak, opening year (2032)

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2030 opening year							
CM49	TEMPro 7.2 DM	9,230	2,060	4,020	-	-	-
CM49_T8C2	TEMPro 8 DM	9,040	2,140	4,160	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	8,690	2,140	4,160	-	-	-
CS72	TEMPro 7.2 DS	7,830	1,620	2,580	5,880	550	1,550
CS72_T8C2	TEMPro 8 DS	7,670	1,670	2,650	5,730	590	1,620
CST04	TEMPro 8 DS (HGV bans)	7,190	1,660	2,650	5,390	590	1,610
2032 opening year							
CMT06	TEMPro 8 DM Core	8,810	2,170	4,270	-	-	-
CMT12	TEMPro 8 DM High Economy	8,920	2,300	4,380	-	-	-
CMT13	TEMPro 8 DM Low Economy	8,700	2,070	4,250	-	-	-
CMT09	TEMPro 8 DM Regional	8,780	2,170	4,270	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	8,170	2,290	4,330	-	-	-
CMT15	TEMPro 8 DM Technology	9,010	2,210	4,270	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	9,010	2,210	4,270	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	8,380	2,220	4,300	-	-	-
CST06	TEMPro 8 DS Core	7,410	1,690	2,940	5,610	600	1,430
CST15	TEMPro 8 DS High Economy	7,720	1,790	3,100	5,870	640	1,420
CST16	TEMPro 8 DS Low Economy	7,180	1,610	2,920	5,440	570	1,420
CST12	TEMPro 8 DS Regional	7,360	1,690	2,930	5,580	600	1,450
CST13	TEMPro 8 DS Behavioural Change	6,550	1,760	2,990	4,900	640	1,430
CST19	TEMPro 8 DS Technology	7,710	1,730	2,980	5,870	610	1,410
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	7,690	1,730	2,980	5,860	610	1,410
CST20	TEMPro 8 DS Mode-balanced Decarbonisation	6,890	1,730	3,000	5,190	610	1,400

Table 3.5 Cross river flows (PCUs), AM peak, design year (15 years after opening)

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2045 design year							
CM49	TEMPro 7.2 DM	7,300	3,440	5,520	-	-	-
CM49_T8C2	TEMPro 8 DM	7,010	3,600	5,690	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	7,010	3,600	5,710	-	-	-
CS72	TEMPro 7.2 DS	7,500	2,960	4,410	5,800	1,040	2,110
CS72_T8C2	TEMPro 8 DS	7,190	3,090	4,500	5,490	1,090	2,200
CST04	TEMPro 8 DS (HGV bans)	7,260	3,130	4,540	5,550	1,080	2,200
2047 design year							
CMT06	TEMPro 8 DM Core	7,070	3,590	5,690	-	-	-
CMT12	TEMPro 8 DM High Economy	6,610	4,060	5,770	-	-	-
CMT13	TEMPro 8 DM Low Economy	7,110	3,320	5,840	-	-	-
CMT09	TEMPro 8 DM Regional	7,720	3,060	5,480	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	6,170	4,090	6,050	-	-	-
CMT15	TEMPro 8 DM Technology	6,880	3,960	5,530	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	6,830	3,990	5,580	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	6,210	4,200	5,860	-	-	-
CST06	TEMPro 8 DS Core	7,360	3,140	4,540	5,650	1,080	2,200
CST15	TEMPro 8 DS High Economy	7,250	3,580	4,630	5,910	1,250	2,290
CST16	TEMPro 8 DS Low Economy	7,000	2,800	4,440	5,300	960	2,200
CST12	TEMPro 8 DS Regional	7,580	2,580	4,240	5,740	890	2,010
CST13	TEMPro 8 DS Behavioural Change	6,230	3,520	4,640	4,670	1,220	2,410
CST19	TEMPro 8 DS Technology	7,390	3,530	4,430	5,900	1,210	2,200
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	7,330	3,560	4,470	5,850	1,220	2,230
CST20	TEMPro 8 DS Mode-balanced Decarbonisation	6,460	3,650	4,670	4,870	1,240	2,250

Table 3.6 Cross river flows (PCUs), inter-peak, design year (15 years after opening)

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2045 design year							
CM49	TEMPro 7.2 DM	7,040	2,010	6,610	-	-	-
CM49_T8C2	TEMPro 8 DM	6,650	2,110	6,820	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	6,690	2,120	6,830	-	-	-
CS72	TEMPro 7.2 DS	6,590	1,620	4,560	4,530	590	2,470
CS72_T8C2	TEMPro 8 DS	6,230	1,680	4,630	4,200	620	2,620
CST04	TEMPro 8 DS (HGV bans)	6,310	1,710	4,670	4,210	620	2,610
2047 design year							
CMT06	TEMPro 8 DM Core	6,780	2,120	6,830	-	-	-
CMT12	TEMPro 8 DM High Economy	6,750	2,430	7,080	-	-	-
CMT13	TEMPro 8 DM Low Economy	6,480	1,910	6,730	-	-	-
CMT09	TEMPro 8 DM Regional	7,110	1,770	6,330	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	5,690	2,350	7,030	-	-	-
CMT15	TEMPro 8 DM Technology	6,900	2,380	6,800	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	6,880	2,390	6,810	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	5,850	2,450	7,060	-	-	-
CST06	TEMPro 8 DS Core	6,450	1,710	4,690	4,320	630	2,600
CST15	TEMPro 8 DS High Economy	6,740	1,990	5,150	4,860	770	2,690
CST16	TEMPro 8 DS Low Economy	5,880	1,510	4,430	3,790	540	2,620
CST12	TEMPro 8 DS Regional	6,430	1,410	4,220	4,180	500	2,410
CST13	TEMPro 8 DS Behavioural Change	5,190	1,850	4,620	3,170	680	2,750
CST19	TEMPro 8 DS Technology	6,680	1,940	4,840	4,780	730	2,580
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	6,690	1,940	4,820	4,720	740	2,610
CST20	TEMPro 8 DS Mode-balanced Decarbonisation	5,490	1,960	4,850	3,520	720	2,600

Table 3.7 Cross river flows (PCUs), PM peak, design year (15 years after opening)

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2045 design year							
CM49	TEMPro 7.2 DM	9,740	2,350	4,190	-	-	-
CM49_T8C2	TEMPro 8 DM	9,440	2,460	4,320	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	9,470	2,470	4,330	-	-	-
CS72	TEMPro 7.2 DS	8,840	1,870	2,830	6,690	640	1,500
CS72_T8C2	TEMPro 8 DS	8,580	1,920	2,890	6,370	690	1,590
CST04	TEMPro 8 DS (HGV bans)	8,660	1,940	3,000	6,460	710	1,510
2047 design year							
CMT06	TEMPro 8 DM Core	9,580	2,470	4,220	-	-	-
CMT12	TEMPro 8 DM High Economy	9,290	2,780	4,280	-	-	-
CMT13	TEMPro 8 DM Low Economy	9,400	2,240	4,220	-	-	-
CMT09	TEMPro 8 DM Regional	9,960	2,070	3,970	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	8,590	2,790	4,410	-	-	-
CMT15	TEMPro 8 DM Technology	9,410	2,750	4,120	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	9,390	2,750	4,140	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	8,780	2,900	4,300	-	-	-
CST06	TEMPro 8 DS Core	8,750	1,940	3,010	6,550	710	1,500
CST15	TEMPro 8 DS High Economy	8,830	2,240	3,160	6,920	830	1,580
CST16	TEMPro 8 DS Low Economy	8,310	1,760	2,800	6,120	620	1,610
CST12	TEMPro 8 DS Regional	8,810	1,630	2,750	6,540	560	1,420
CST13	TEMPro 8 DS Behavioural Change	7,510	2,180	2,840	5,470	800	1,810
CST19	TEMPro 8 DS Technology	8,820	2,190	2,980	6,760	790	1,520
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	8,820	2,210	2,980	6,760	810	1,540
CST20	TEMPro 8 DS Mode-balanced Decarbonisation	7,860	2,270	3,090	5,860	810	1,570

4 Core scenario comparisons

4.1.1 Paragraph 1.1.4 of TAG Unit M4 (DfT, 2023b) defines the core scenario as '*a scenario based on central assumptions for the exogenous drivers of future demand, and reflecting 'firm and funded' government policy commitments. This underpins the core appraisal results presented in the appraisal summary table (AST), and provides a 'common comparator' to assess all projects and options against*'.

4.1.2 The traffic forecasts for cross river flows from using the TEMPro 7.2 core scenario with 2030 opening year, model Run ID CM49 and CS72, reported in Combined Modelling and Appraisal Report Appendix C: Transport Forecasting Package [APP-522], are compared in Table 4.1 to Table 4.6 with the traffic flows from the latest LTAM core scenario model run, using TEMPro 8 and a 2032 opening year, model Run ID CMT06 and CST06.

4.1.3 The comparison of the core scenarios shows that there is only a very small difference in the forecast traffic flows. The difference in total PCU flows is less than 2% other than in two instances. The greatest difference is the forecast traffic flow in the opening year, PM peak hour for the Lower Thames Crossing, where the 2032 TEMPro 8 forecast is 4.3% lower than the 2030 TEMPro 7.2 forecast.

4.1.4 The traffic growth forecasts are slightly lower for cars in TEMPro 8 core scenario than in the TEMPro 7.2 forecasts. This is offset by the growth factors for goods vehicles generally being higher in the National Road Traffic Projections 2022 (DfT, 2022b) than in the Road Traffic Forecasts 2018 (DfT, 2018).

Table 4.1 Comparison of cross river flows, opening year, AM peak hour

Model ID	Description	Opening year	Dartford Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CM49	TEMPro 7.2 DM	2030	7,210	3,110	5,700	16,020
CMT06	TEMPro 8 DM Core	2032	6,830	3,300	5,900	16,030
Change in flows, actual			-377	186	206	15
Change in flows, percentage			-5.2%	6.0%	3.6%	0.1%
CS72	TEMPro 7.2 DS	2030	6,640	2,550	4,090	13,280
CST06	TEMPro 8 DS Core	2032	6,270	2,690	4,270	13,230
Change in flows, actual			-373	148	181	-44
Change in flows, percentage			-5.6%	5.8%	4.4%	-0.3%

Model ID	Description	Opening year	Lower Thames Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CS72	TEMPro 7.2 DS	2030	5,060	880	2,100	8,040
CST06	TEMPro 8 DS Core	2032	4,780	930	2,140	7,850
Change in flows, actual			-285	50	43	-192
Change in flows, percentage			-5.6%	5.7%	2.0%	-2.4%

Table 4.2 Comparison of cross river flows, design year, AM peak hour

Model ID	Description	Design year	Dartford Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CM49	TEMPro 7.2 DM	2045	7,300	3,440	5,520	16,260
CMT06	TEMPro 8 DM Core	2047	7,070	3,590	5,690	16,350
Change in flows, actual			-236	152	171	88
Change in flows, percentage			-3.2%	4.4%	3.1%	0.5%
CS72	TEMPro 7.2 DS	2045	7,500	2,960	4,410	14,870
CST06	TEMPro 8 DS Core	2047	7,360	3,140	4,540	15,040
Change in flows, actual			-136	181	130	175
Change in flows, percentage			-1.8%	6.1%	2.9%	1.2%

Model ID	Description	Design year	Lower Thames Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CS72	TEMPro 7.2 DS	2045	5,800	1,040	2,110	8,940
CST06	TEMPro 8 DS Core	2047	5,650	1,080	2,200	8,930
Change in flows, actual			-147	36	96	-16
Change in flows, percentage			-2.5%	3.5%	4.5%	-0.2%

Table 4.3 Comparison of cross river flows, opening year, inter-peak hour

Model ID	Description	Opening year	Dartford Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CM49	TEMPro 7.2 DM	2030	6,330	1,760	6,310	14,410
CMT06	TEMPro 8 DM Core	2032	5,930	1,860	6,560	14,340
Change in flows, actual			-410	94	249	-66
Change in flows, percentage			-6.5%	5.3%	3.9%	-0.5%
CS72	TEMPro 7.2 DS	2030	5,410	1,350	4,010	10,780
CST06	TEMPro 8 DS Core	2032	5,060	1,420	4,180	10,660
Change in flows, actual			-351	69	169	-114
Change in flows, percentage			-6.5%	5.1%	4.2%	-1.1%

Model ID	Description	Opening year	Lower Thames Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CS72	TEMPro 7.2 DS	2030	3,510	490	2,500	6,510
CST06	TEMPro 8 DS Core	2032	3,270	520	2,600	6,390
Change in flows, actual			-241	30	94	-117
Change in flows, percentage			-6.9%	6.1%	3.8%	-1.8%

Table 4.4 Comparison of cross river flows, design year, inter-peak hour

Model ID	Description	Design year	Dartford Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CM49	TEMPro 7.2 DM	2045	7,040	2,010	6,610	15,660
CMT06	TEMPro 8 DM Core	2047	6,780	2,120	6,830	15,730
Change in flows, actual			-252	105	219	71
Change in flows, percentage			-3.6%	5.2%	3.3%	0.5%
CS72	TEMPro 7.2 DS	2045	6,590	1,620	4,560	12,770
CST06	TEMPro 8 DS Core	2047	6,450	1,710	4,690	12,840
Change in flows, actual			-146	89	125	67
Change in flows, percentage			-2.2%	5.5%	2.7%	0.5%

Model ID	Description	Design year	Lower Thames Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CS72	TEMPro 7.2 DS	2045	4,530	590	2,470	7,590
CST06	TEMPro 8 DS Core	2047	4,320	630	2,600	7,550
Change in flows, actual			-210	38	128	-44
Change in flows, percentage			-4.6%	6.5%	5.2%	-0.6%

Table 4.5 Comparison of cross river flows, opening year, PM peak hour

Model ID	Description	Opening year	Dartford Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CM49	TEMPro 7.2 DM	2030	9,230	2,060	4,020	15,310
CMT06	TEMPro 8 DM Core	2032	8,810	2,170	4,270	15,250
Change in flows, actual			-427	114	246	-67
Change in flows, percentage			-4.6%	5.5%	6.1%	-0.4%
CS72	TEMPro 7.2 DS	2030	7,830	1,620	2,580	12,020
CST06	TEMPro 8 DS Core	2032	7,410	1,690	2,940	12,040
Change in flows, actual			-417	74	360	17
Change in flows, percentage			-5.3%	4.6%	14.0%	0.1%

Model ID	Description	Opening year	Lower Thames Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CS72	TEMPro 7.2 DS	2030	5,880	550	1,550	7,990
CST06	TEMPro 8 DS Core	2032	5,610	600	1,430	7,650
Change in flows, actual			-269	46	-117	-340
Change in flows, percentage			-4.6%	8.3%	-7.6%	-4.3%

Table 4.6 Comparison of cross river flows, design year, PM peak hour

Model ID	Description	Design year	Dartford Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CM49	TEMPro 7.2 DM	2045	9,740	2,350	4,190	16,280
CMT06	TEMPro 8 DM Core	2047	9,580	2,470	4,220	16,260
Change in flows, actual			-168	120	31	-17
Change in flows, percentage			-1.7%	5.1%	0.7%	-0.1%
CS72	TEMPro 7.2 DS	2045	8,840	1,870	2,830	13,540
CST06	TEMPro 8 DS Core	2047	8,750	1,940	3,010	13,690
Change in flows, actual			-98	71	179	152
Change in flows, percentage			-1.1%	3.8%	6.3%	1.1%

Model ID	Description	Design year	Lower Thames Crossing			
			Cars	LGVs	HGVs	Total, PCUs
CS72	TEMPro 7.2 DS	2045	6,690	640	1,500	8,830
CST06	TEMPro 8 DS Core	2047	6,550	710	1,500	8,750
Change in flows, actual			-140	65	0	-74
Change in flows, percentage			-2.1%	10.2%	0.0%	-0.8%

5 Variation in cross river traffic forecasts

5.1.1 The range in forecast traffic flows across the River Thames is presented in the following tables. The flows at the Dartford Crossing without the Project for each of the modelled scenarios is shown in Table 5.1. The forecast traffic flows at the Dartford Crossing with the Project are shown in Table 5.2. The forecasts are all for an opening year of 2032 and show the variation in flows across the River Thames when using the core scenario growth factors in the TEMPro 8 dataset and for each of the CAS.

5.1.2 When the forecast flows at the Dartford Crossing for each of the CAS are compared with the core scenario, there is a larger difference in the flows across the Dartford Crossing between the scenarios with the Project than without the Project.

5.1.3 Without the Project, the greatest range in traffic forecasts is 1,187 PCUs in the 2047 average inter-peak hour. With the Project, the flows at the Dartford Crossing are lower and the differences in flows between the different scenarios are greater, with the largest range being 2,209 PCUs in the 2047 average inter-peak hour.

5.1.4 The lack of spare capacity at the Dartford Crossing reduces the variation in forecast flows at the crossing between the different scenarios.

5.1.5 Table 5.3 presents the forecast flows at the Lower Thames Crossing for each of the CAS. The greatest range in forecast flows occurs in the average inter-peak hour in 2047.

Table 5.1 Comparison of forecast flows at the Dartford Crossing without the Project (PCUs)

Description	2032			2047		
	AM	IP	PM	AM	IP	PM
TEMPro 8 DM Core	16,030	14,340	15,250	16,350	15,730	16,260
TEMPro 8 DM High economy	16,180	14,800	15,600	16,440	16,260	16,350
TEMPro 8 DM Low economy	15,960	14,040	15,020	16,260	15,120	15,860
TEMPro 8 DM Regional	16,020	14,310	15,220	16,260	15,210	16,010
TEMPro 8 DM Behavioural Change	15,910	13,710	14,780	16,310	15,070	15,780
TEMPro 8 DM Technology	16,130	14,660	15,500	16,380	16,070	16,280
TEMPro 8 DM Vehicle-led Decarbonisation	16,120	14,660	15,490	16,400	16,090	16,280
TEMPro 8 DM Mode-balanced Decarbonisation	15,910	13,900	14,910	16,270	15,360	15,970
Difference from TEMPro 8 Core						
TEMPro 8 DM High economy	144	459	357	94	528	93
TEMPro 8 DM Low economy	-76	-306	-221	-84	-613	-402
TEMPro 8 DM Regional	-7	-35	-25	-90	-516	-253
TEMPro 8 DM Behavioural Change	-119	-627	-464	-38	-660	-476
TEMPro 8 DM Technology	95	322	250	30	343	19
TEMPro 8 DM Vehicle-led Decarbonisation	92	315	249	50	356	23
TEMPro 8 DM Mode-balanced Decarbonisation	-121	-444	-339	-79	-367	-287
Range	265	1,087	821	183	1,187	570

Table 5.2 Comparison of forecast flows at the Dartford Crossing with the Project (PCUs)

Description	2032			2047		
	AM	IP	PM	AM	IP	PM
TEMPro 8 DS Core	13,230	10,660	12,040	15,040	12,840	13,690
TEMPro 8 DS High economy	13,840	11,330	12,600	15,460	13,870	14,220
TEMPro 8 DS Low economy	12,850	10,290	11,700	14,240	11,820	12,870
TEMPro 8 DS Regional	13,190	10,620	11,980	14,390	12,060	13,180
TEMPro 8 DS Behavioural Change	12,660	9,850	11,300	14,390	11,670	12,530
TEMPro 8 DS Technology	13,580	11,090	12,420	15,340	13,450	13,990
TEMPro 8 DS Vehicle-led Decarbonisation	13,560	11,080	12,400	15,350	13,460	14,010
TEMPro 8 DS Mode-balanced Decarbonisation	12,860	10,160	11,620	14,780	12,300	13,210
Difference from TEMPro 8 Core						
TEMPro 8 DS High economy	607	672	566	415	1,035	529
TEMPro 8 DS Low economy	-378	-371	-334	-798	-1,022	-828
TEMPro 8 DS Regional	-42	-47	-57	-648	-782	-510
TEMPro 8 DS Behavioural Change	-576	-811	-742	-650	-1,174	-1,165
TEMPro 8 DS Technology	344	427	381	301	614	300
TEMPro 8 DS Vehicle-led Decarbonisation	332	421	364	312	616	312
TEMPro 8 DS Mode-balanced Decarbonisation	-376	-505	-416	-266	-545	-481
Range	1,183	1,483	1,308	1,213	2,209	1,695

Table 5.3 Comparison of flows at the Lower Thames Crossing (PCUs)

Description	2032			2047		
	AM	IP	PM	AM	IP	PM
TEMPro 8 DS Core	7,850	6,390	7,650	8,930	7,550	8,750
TEMPro 8 DS High economy	8,120	6,730	7,940	9,450	8,320	9,330
TEMPro 8 DS Low economy	7,670	6,190	7,430	8,450	6,960	8,350
TEMPro 8 DS Regional	7,820	6,350	7,630	8,630	7,090	8,520
TEMPro 8 DS Behavioural Change	7,370	5,900	6,970	8,300	6,600	8,080
TEMPro 8 DS Technology	8,100	6,700	7,880	9,320	8,090	9,070
TEMPro 8 DS Vehicle-led Decarbonisation	8,090	6,690	7,880	9,300	8,070	9,120
TEMPro 8 DS Mode-balanced Decarbonisation	7,430	6,010	7,200	8,360	6,840	8,240
Difference from TEMPro 8 Core						
TEMPro 8 DS High economy	278	344	288	526	771	580
TEMPro 8 DS Low economy	-171	-196	-215	-475	-588	-404
TEMPro 8 DS Regional	-21	-35	-22	-297	-451	-232
TEMPro 8 DS Behavioural Change	-480	-492	-678	-633	-950	-671
TEMPro 8 DS Technology	250	307	236	388	546	314
TEMPro 8 DS Vehicle-led Decarbonisation	245	299	234	373	525	361
TEMPro 8 DS Mode-balanced Decarbonisation	-414	-374	-450	-566	-709	-514
Range	758	836	966	1,158	1,721	1,251

5.1.6 The percentage change in traffic flows at the Dartford Crossing, with the Project in each of the CAS compared to the TEMPro 8 core scenario is shown in Table 5.4. In all time periods and for all of the CAS, the change in flows at the Dartford Crossing is less than 9.5%. The behavioural change scenario reduces flows in the 2047 average inter-peak and evening peak hour by 9.1%. The high economy scenario increases traffic flows by 8.1% in the 2047 average inter-peak hour.

Table 5.4 Percentage change in traffic flows at the Dartford Crossing, with the Project, in the CAS

Description	2032			2047		
	AM	IP	PM	AM	IP	PM
TEMPro 8 DS High economy	4.6%	6.3%	4.7%	2.8%	8.1%	3.9%
TEMPro 8 DS Low economy	-2.9%	-3.5%	-2.8%	-5.3%	-8.0%	-6.0%
TEMPro 8 DS Regional	-0.3%	-0.4%	-0.5%	-4.3%	-6.1%	-3.7%
TEMPro 8 DS Behavioural Change	-4.4%	-7.6%	-6.2%	-4.3%	-9.1%	-8.5%
TEMPro 8 DS Technology	2.6%	4.0%	3.2%	2.0%	4.8%	2.2%
TEMPro 8 DS Vehicle-led Decarbonisation	2.5%	4.0%	3.0%	2.1%	4.8%	2.3%
TEMPro 8 DS Mode-balanced Decarbonisation	-2.8%	-4.7%	-3.5%	-1.8%	-4.2%	-3.5%

5.1.7 The percentage change in traffic flows at the Lower Thames Crossing for each of the CAS compared to the TEMPro 8 core scenario is shown in Table 5.5. All but three modelled hours would see a change of 9% or less. The three largest impacts are for the behavioural change scenario in the 2047 average inter-peak hour where flows reduce by 12.6% and the mode-balanced decarbonisation scenario reduces by 9%. In the high economy scenario in the 2047 average inter-peak hour when traffic flows increase by 10.2%.

Table 5.5 Percentage change in traffic flows at the Lower Thames Crossing, in the CAS

Description	2032			2047		
	AM	IP	PM	AM	IP	PM
TEMPro 8 DS High economy	3.5%	5.4%	3.8%	5.9%	10.2%	6.6%
TEMPro 8 DS Low economy	-2.2%	-3.1%	-2.8%	-5.3%	-7.8%	-4.6%
TEMPro 8 DS Regional	-0.3%	-0.5%	-0.3%	-3.3%	-6.0%	-2.7%
TEMPro 8 DS Behavioural Change	-6.1%	-7.7%	-8.9%	-7.1%	-12.6%	-7.7%
TEMPro 8 DS Technology	3.2%	4.8%	3.1%	4.3%	7.2%	3.6%
TEMPro 8 DS Vehicle-led Decarbonisation	3.1%	4.7%	3.1%	4.2%	7.0%	4.1%
TEMPro 8 DS Mode-balanced Decarbonisation	-5.3%	-5.9%	-5.9%	-6.3%	-9.4%	-5.9%

5.1.8 Table 5.6 and Table 5.7 show the forecast reduction in traffic flows at the Dartford Crossing with the Project in the opening and design years in each of the CAS.

5.1.9 These show that for both years, in each modelled time period and for each CAS that the Project would provide relief to the Dartford Crossing.

5.1.10 In the opening year, the DCO application forecast that the average reduction in traffic at the Dartford Crossing in the peak hours would be 19%. Table 5.6 shows that this would vary from between 17 and 22%.

5.1.11 In the design year, the DCO application forecast that the average reduction in traffic at the Dartford Crossing in the peak hours would be 12%. Table 5.6 shows that this would vary from between 10 and 16%.

Table 5.6 Change in flow at the Dartford Crossing with the Project, Opening year, PCUs

Scenario	AM				IP				PM			
	DM	DS	Change	% change	DM	DS	Change	% change	DM	DS	Change	% change
TEMPro 7.2 DM Core	16,020	13,280	-2,740	-17%	14,410	10,780	-3,630	-25%	15,310	12,020	-3,290	-21%
TEMPro 8 DM Core	16,030	13,230	-2,800	-17%	14,340	10,660	-3,680	-26%	15,250	12,040	-3,210	-21%
TEMPro 8 DM High economy	16,180	13,840	-2,340	-14%	14,800	11,330	-3,470	-23%	15,600	12,600	-3,000	-19%
TEMPro 8 DM Low economy	15,960	12,850	-3,100	-19%	14,040	10,290	-3,740	-27%	15,020	11,700	-3,320	-22%
TEMPro 8 DM Regional	16,020	13,190	-2,830	-18%	14,310	10,620	-3,690	-26%	15,220	11,980	-3,240	-21%
TEMPro 8 DM Behavioural Change	15,910	12,660	-3,260	-20%	13,710	9,850	-3,860	-28%	14,780	11,300	-3,490	-24%
TEMPro 8 DM Technology	16,130	13,580	-2,550	-16%	14,660	11,090	-3,570	-24%	15,500	12,420	-3,080	-20%
TEMPro 8 DM Vehicle-led Decarbonisation	16,120	13,560	-2,560	-16%	14,660	11,080	-3,570	-24%	15,490	12,400	-3,090	-20%
TEMPro 8 DM Mode-balanced Decarbonisation	15,910	12,860	-3,050	-19%	13,900	10,160	-3,740	-27%	14,910	11,620	-3,280	-22%

Table 5.7 Change in flow at the Dartford Crossing with the Project, Design year, PCUs

Scenario	AM				IP				PM			
	DM	DS	Change	% change	DM	DS	Change	% change	DM	DS	Change	% change
TEMPro 7.2 DM Core	16,260	14,870	-1,390	-9%	15,660	12,770	-2,890	-18%	16,280	13,540	-2,740	-17%
TEMPro 8 DM Core	16,350	15,040	-1,300	-8%	15,730	12,840	-2,890	-18%	16,260	13,690	-2,570	-16%
TEMPro 8 DM High economy	16,440	15,460	-980	-6%	16,260	13,870	-2,380	-15%	16,350	14,220	-2,130	-13%
TEMPro 8 DM Low economy	16,260	14,240	-2,020	-12%	15,120	11,820	-3,300	-22%	15,860	12,870	-2,990	-19%
TEMPro 8 DM Regional	16,260	14,390	-1,860	-11%	15,210	12,060	-3,160	-21%	16,010	13,180	-2,830	-18%
TEMPro 8 DM Behavioural Change	16,310	14,390	-1,920	-12%	15,070	11,670	-3,400	-23%	15,780	12,530	-3,260	-21%
TEMPro 8 DM Technology	16,380	15,340	-1,030	-6%	16,070	13,450	-2,620	-16%	16,280	13,990	-2,290	-14%
TEMPro 8 DM Vehicle-led Decarbonisation	16,400	15,350	-1,040	-6%	16,090	13,460	-2,630	-16%	16,280	14,010	-2,280	-14%
TEMPro 8 DM Mode-balanced Decarbonisation	16,270	14,780	-1,490	-9%	15,360	12,300	-3,070	-20%	15,970	13,210	-2,760	-17%

6 Conclusions

6.1.1 The comparison of the core scenarios using the TEMPro 7.2 and TEMPro 8 traffic growth forecasts shows that there is only a very small difference in the forecast traffic flows at each of the river crossings.

6.1.2 The difference in total PCU flows is less than 2%, other than in two instances. The greatest difference is the forecast traffic flow in the opening year, PM peak hour for the Lower Thames Crossing, where the 2032 TEMPro 8 forecast is 4% lower than the 2030 TEMPro 7.2 forecast.

6.1.3 The TEMPro 8 core scenario traffic growth forecasts for cars are slightly lower than in the TEMPro 7.2 forecasts. This is offset by the move of the opening year from 2030 to 2032 and the growth factors for goods vehicles generally being higher in the National Road Traffic Projections 2022 (DfT, 2022b) than in the Road Traffic Forecasts 2018 (DfT, 2018).

6.1.4 The CAS results in a slighter larger variation in forecast traffic flows at the river crossings. In all time periods and for all of the CAS, the change in flows at the Dartford Crossing, with the Project, is less than 9.5%. The greatest reduction is in the behavioural change scenario where flows reduce by 9.1% in the 2047 average inter-peak and evening peak hour. The greatest increase is in the high economy scenario where traffic flows increase by 8.1% in the 2047 average inter-peak hour.

6.1.5 The percentage change in traffic flows at the Lower Thames Crossing with each of the CAS compared to the TEMPro 8 core scenario is also less than 9% for all but three modelled hours in two scenarios. The three largest impacts are for the behavioural change scenario in the 2047 average inter-peak hour where flows reduce by 12.6% and the mode-balanced decarbonisation scenario reduces by 9%. In the high economy scenario in the 2047 average inter-peak hour when traffic flows increase by 10.2%.

6.1.6 The change from an opening year of 2030 and TEMPro 7.2 to an opening year of 2032 and TEMPro 8 results in a variance in flows at both the Dartford Crossing and Lower Thames Crossing of less than 4%.

6.1.7 The comparisons of the CAS presented in this report show that the variation from the core scenario presented within the DCO application would also be small.

6.1.8 For both the opening and design years, in each modelled time period, and for each CAS that the Project would provide relief to the Dartford Crossing.

6.1.9 Overall therefore, it is considered that the need for the Project (as set out in Need for the Project [APP-494]) remains valid as the Project would provide relief to the Dartford Crossing in every scenario.

Annex A Cross river flows (vehicles)

Table A.1 Cross river flows (vehicles), AM peak, DM and DS scenarios for opening year

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2030							
CM49	TEMPro 7.2 DM	7,210	3,110	2,280	-	-	-
CM49_T8C2	TEMPro 8 DM	6,970	3,230	2,340	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	6,750	3,270	2,370	-	-	-
CS72	TEMPro 7.2 DS	6,640	2,550	1,640	5,060	880	840
CS72_T8C2	TEMPro 8 DS	6,460	2,640	1,670	4,890	920	880
CST04	TEMPro 8 DM (HGV bans)	6,030	2,620	1,680	4,580	920	850
2032							
CMT06	TEMPro 8 DM Core	6,830	3,300	2,360	-	-	-
CMT12	TEMPro 8 DM High Economy	6,780	3,450	2,380	-	-	-
CMT13	TEMPro 8 DM Low Economy	6,830	3,170	2,380	-	-	-
CMT09	TEMPro 8 DM Regional	6,800	3,300	2,370	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	6,300	3,520	2,440	-	-	-
CMT15	TEMPro 8 DM Technology	6,970	3,320	2,340	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	6,960	3,320	2,340	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	6,480	3,420	2,410	-	-	-
CST06	TEMPro 8 DS Core	6,270	2,690	1,710	4,780	930	860
CST15	TEMPro 8 DS High Economy	6,530	2,870	1,780	4,970	990	870
CST16	TEMPro 8 DS Low Economy	6,090	2,540	1,690	4,640	890	860
CST12	TEMPro 8 DS Regional	6,230	2,690	1,710	4,740	930	860
CST13	TEMPro 8 DS Behavioural Change	5,560	2,870	1,690	4,140	940	920
CST19	TEMPro 8 DS Technology	6,560	2,750	1,710	5,020	940	860
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	6,550	2,750	1,710	5,010	940	860
CST20	TEMPro 8 DS Mode-balanced Decarbonisation	5,780	2,760	1,730	4,350	930	860

Table A.2 Cross river flows (vehicles), inter-peak, DM and DS scenarios for opening year

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2030							
CM49	TEMPro 7.2 DM	6,330	1,760	2,520	-	-	-
CM49_T8C2	TEMPro 8 DM	6,100	1,830	2,600	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	5,700	1,820	2,590	-	-	-
CS72	TEMPro 7.2 DS	5,410	1,350	1,600	3,510	490	1,000
CS72_T8C2	TEMPro 8 DS	5,240	1,400	1,650	3,380	510	1,040
CST04	TEMPro 8 DM (HGV bans)	4,770	1,390	1,640	3,080	510	1,030
2032							
CMT06	TEMPro 8 DM Core	5,930	1,860	2,620	-	-	-
CMT12	TEMPro 8 DM High Economy	6,090	1,970	2,700	-	-	-
CMT13	TEMPro 8 DM Low Economy	5,760	1,760	2,600	-	-	-
CMT09	TEMPro 8 DM Regional	5,890	1,860	2,620	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	5,200	1,930	2,640	-	-	-
CMT15	TEMPro 8 DM Technology	6,220	1,880	2,630	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	6,210	1,880	2,630	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	5,390	1,890	2,650	-	-	-
CST06	TEMPro 8 DS Core	5,060	1,420	1,670	3,270	520	1,040
CST15	TEMPro 8 DS High Economy	5,410	1,530	1,760	3,530	560	1,060
CST16	TEMPro 8 DS Low Economy	4,820	1,350	1,650	3,120	490	1,030
CST12	TEMPro 8 DS Regional	5,010	1,420	1,670	3,240	520	1,040
CST13	TEMPro 8 DS Behavioural Change	4,290	1,470	1,640	2,680	530	1,070
CST19	TEMPro 8 DS Technology	5,410	1,460	1,690	3,550	530	1,040
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	5,410	1,460	1,690	3,540	530	1,050
CST20	TEMPro 8 DS Mode-balanced Decarbonisation	4,520	1,440	1,680	2,880	530	1,040

Table A.3 Cross river flows (vehicles), PM peak, DM and DS scenarios for opening year

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2030							
CM49	TEMPro 7.2 DM	9,230	2,060	1,610	-	-	-
CM49_T8C2	TEMPro 8 DM	9,040	2,140	1,660	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	8,690	2,140	1,660	-	-	-
CS72	TEMPro 7.2 DS	7,830	1,620	1,030	5,880	550	620
CS72_T8C2	TEMPro 8 DS	7,670	1,670	1,060	5,730	590	650
CST04	TEMPro 8 DM (HGV bans)	7,190	1,660	1,060	5,390	590	640
2032							
CMT06	TEMPro 8 DM Core	8,810	2,170	1,710	-	-	-
CMT12	TEMPro 8 DM High Economy	8,920	2,300	1,750	-	-	-
CMT13	TEMPro 8 DM Low Economy	8,700	2,070	1,700	-	-	-
CMT09	TEMPro 8 DM Regional	8,780	2,170	1,710	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	8,170	2,290	1,730	-	-	-
CMT15	TEMPro 8 DM Technology	9,010	2,210	1,710	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	9,010	2,210	1,710	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	8,380	2,220	1,720	-	-	-
CST06	TEMPro 8 DS Core	7,410	1,690	1,170	5,610	600	570
CST15	TEMPro 8 DS High Economy	7,720	1,790	1,240	5,870	640	570
CST16	TEMPro 8 DS Low Economy	7,180	1,610	1,170	5,440	570	570
CST12	TEMPro 8 DS Regional	7,360	1,690	1,170	5,580	600	580
CST13	TEMPro 8 DS Behavioural Change	6,550	1,760	1,190	4,900	640	570
CST19	TEMPro 8 DS Technology	7,710	1,730	1,190	5,870	610	560
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	7,690	1,730	1,190	5,860	610	560
CST16	TEMPro 8 DS Mode-balanced Decarbonisation	6,890	1,730	1,200	5,190	610	560

Table A.4 Cross river flows (vehicles), AM peak, DM and DS scenarios 15 years after opening

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2045							
CM49	TEMPro 7.2 DM	7,300	3,440	2,210	-	-	-
CM49_T8C2	TEMPro 8 DM	7,010	3,600	2,280	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	7,010	3,600	2,280	-	-	-
CS72	TEMPro 7.2 DS	7,500	2,960	1,760	5,800	1,040	840
CS72_T8C2	TEMPro 8 DS	7,190	3,090	1,800	5,490	1,090	880
CST04	TEMPro 8 DS (HGV bans)	7,260	3,130	1,820	5,550	1,080	880
2047							
CMT06	TEMPro 8 DM Core	7,070	3,590	2,280	-	-	-
CMT12	TEMPro 8 DM High Economy	6,610	4,060	2,310	-	-	-
CMT13	TEMPro 8 DM Low Economy	7,110	3,320	2,330	-	-	-
CMT09	TEMPro 8 DM Regional	7,720	3,060	2,190	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	6,170	4,090	2,420	-	-	-
CMT15	TEMPro 8 DM Technology	6,880	3,960	2,210	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	6,830	3,990	2,230	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	6,210	4,200	2,340	-	-	-
CST06	TEMPro 8 DS Core	7,360	3,140	1,820	5,650	1,080	880
CST15	TEMPro 8 DS High Economy	7,250	3,580	1,850	5,910	1,250	920
CST16	TEMPro 8 DS Low Economy	7,000	2,800	1,780	5,300	960	880
CST12	TEMPro 8 DS Regional	7,580	2,580	1,700	5,740	890	800
CST13	TEMPro 8 DS Behavioural Change	6,230	3,520	1,860	4,670	1,220	960
CST19	TEMPro 8 DS Technology	7,390	3,530	1,770	5,900	1,210	880
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	7,330	3,560	1,790	5,850	1,220	890
CST20	TEMPro 8 DS Mode-balanced Decarbonisation	6,460	3,650	1,870	4,870	1,240	900

Table A.5 Cross river flows (vehicles), inter-peak, DM and DS scenarios for 15 years after opening

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2045							
CM49	TEMPro 7.2 DM	7,040	2,010	2,640	-	-	-
CM49_T8C2	TEMPro 8 DM	6,650	2,110	2,730	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	6,690	2,120	2,730	-	-	-
CS72	TEMPro 7.2 DS	6,590	1,620	1,830	4,530	590	990
CS72_T8C2	TEMPro 8 DS	6,230	1,680	1,850	4,200	620	1,050
CST04	TEMPro 8 DM (HGV bans)	6,310	1,710	1,870	4,210	620	1,040
2047							
CMT06	TEMPro 8 DM Core	6,780	2,120	2,730	-	-	-
CMT12	TEMPro 8 DM High Economy	6,750	2,430	2,830	-	-	-
CMT13	TEMPro 8 DM Low Economy	6,480	1,910	2,690	-	-	-
CMT09	TEMPro 8 DM Regional	7,110	1,770	2,530	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	5,690	2,350	2,810	-	-	-
CMT15	TEMPro 8 DM Technology	6,900	2,380	2,720	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	6,880	2,390	2,720	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	5,850	2,450	2,830	-	-	-
CST06	TEMPro 8 DS Core	6,450	1,710	1,880	4,320	630	1,040
CST15	TEMPro 8 DS High Economy	6,740	1,990	2,060	4,860	770	1,080
CST16	TEMPro 8 DS Low Economy	5,880	1,510	1,770	3,790	540	1,050
CST12	TEMPro 8 DS Regional	6,430	1,410	1,690	4,180	500	970
CST13	TEMPro 8 DS Behavioural Change	5,190	1,850	1,850	3,170	680	1,100
CST19	TEMPro 8 DS Technology	6,680	1,940	1,930	4,780	730	1,030
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	6,690	1,940	1,930	4,720	740	1,050
CST20	TEMPro 8 DS Mode-balanced Decarbonisation	5,490	1,960	1,940	3,520	720	1,040

Table A.6 Cross river flows (vehicles), PM peak, DM and DS scenarios for 15 years after opening

Model ID	Description	Dartford Crossing			Lower Thames Crossing		
		Cars	LGVs	HGVs	Cars	LGVs	HGVs
2045							
CM49	TEMPro 7.2 DM	9,740	2,350	1,680	-	-	-
CM49_T8C2	TEMPro 8 DM	9,440	2,460	1,730	-	-	-
CMT04	TEMPro 8 DM (HGV bans)	9,470	2,470	1,730	-	-	-
CS72	TEMPro 7.2 DS	8,840	1,870	1,130	6,690	640	600
CS72_T8C2	TEMPro 8 DS	8,580	1,920	1,160	6,370	690	630
CST04	TEMPro 8 DM (HGV bans)	8,660	1,940	1,200	6,460	710	600
2047							
CMT06	TEMPro 8 DM Core	9,580	2,470	1,690	-	-	-
CMT12	TEMPro 8 DM High Economy	9,290	2,780	1,710	-	-	-
CMT13	TEMPro 8 DM Low Economy	9,400	2,240	1,690	-	-	-
CMT09	TEMPro 8 DM Regional	9,960	2,070	1,590	-	-	-
CMT10	TEMPro 8 DM Behavioural Change	8,590	2,790	1,760	-	-	-
CMT15	TEMPro 8 DM Technology	9,410	2,750	1,650	-	-	-
CMT11	TEMPro 8 DM Vehicle-led Decarbonisation	9,390	2,750	1,660	-	-	-
CMT16	TEMPro 8 DM Mode-balanced Decarbonisation	8,780	2,900	1,720	-	-	-
CST06	TEMPro 8 DS Core	8,750	1,940	1,200	6,550	710	600
CST15	TEMPro 8 DS High Economy	8,830	2,240	1,260	6,920	830	630
CST16	TEMPro 8 DS Low Economy	8,310	1,760	1,120	6,120	620	640
CST12	TEMPro 8 DS Regional	8,810	1,630	1,100	6,540	560	570
CST13	TEMPro 8 DS Behavioural Change	7,510	2,180	1,140	5,470	800	730
CST19	TEMPro 8 DS Technology	8,820	2,190	1,190	6,760	790	610
CST14	TEMPro 8 DS Vehicle-led Decarbonisation	8,820	2,210	1,190	6,760	810	620
CST20	TEMPro 8 DS Mode-balanced Decarbonisation	7,860	2,270	1,240	5,860	810	630

Annex B Maps showing changes in core scenario traffic flows

B.1.1 The following plates show the absolute and percentage changes between TEMPro 7.2 Core (2030) and TEMPro 8 Core (2032) for the Do Minimum and Do Something scenarios separately.

Plate B.1 Absolute change between TEMPro 7.2 core scenario 2030 and TEMPro 8 core scenario 2032 Do Minimum AM peak

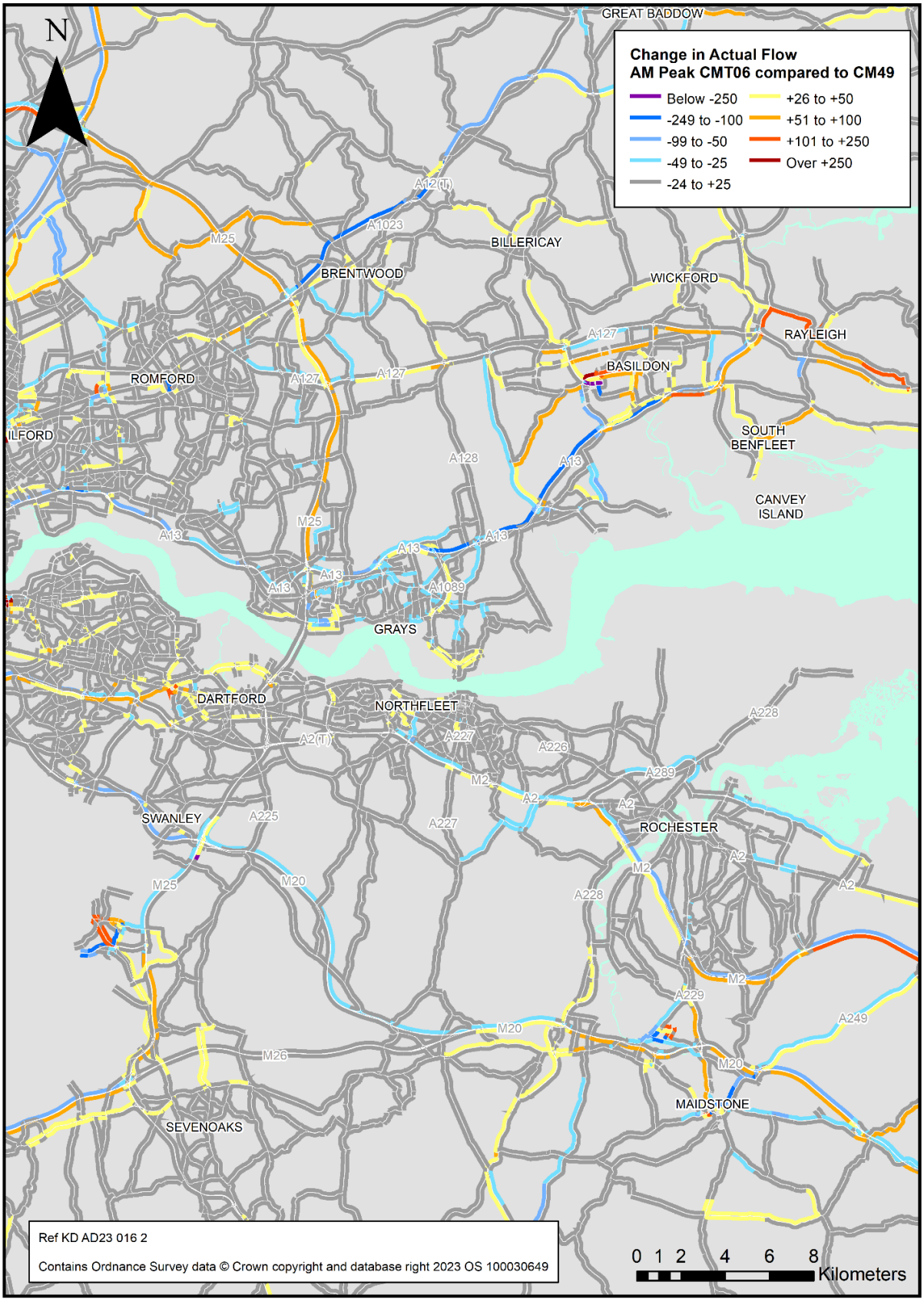


Plate B.2 Absolute change between TEMPro 7.2 Core scenario 2030 and TEMPro 8 Core scenario 2032 Do Minimum inter-peak

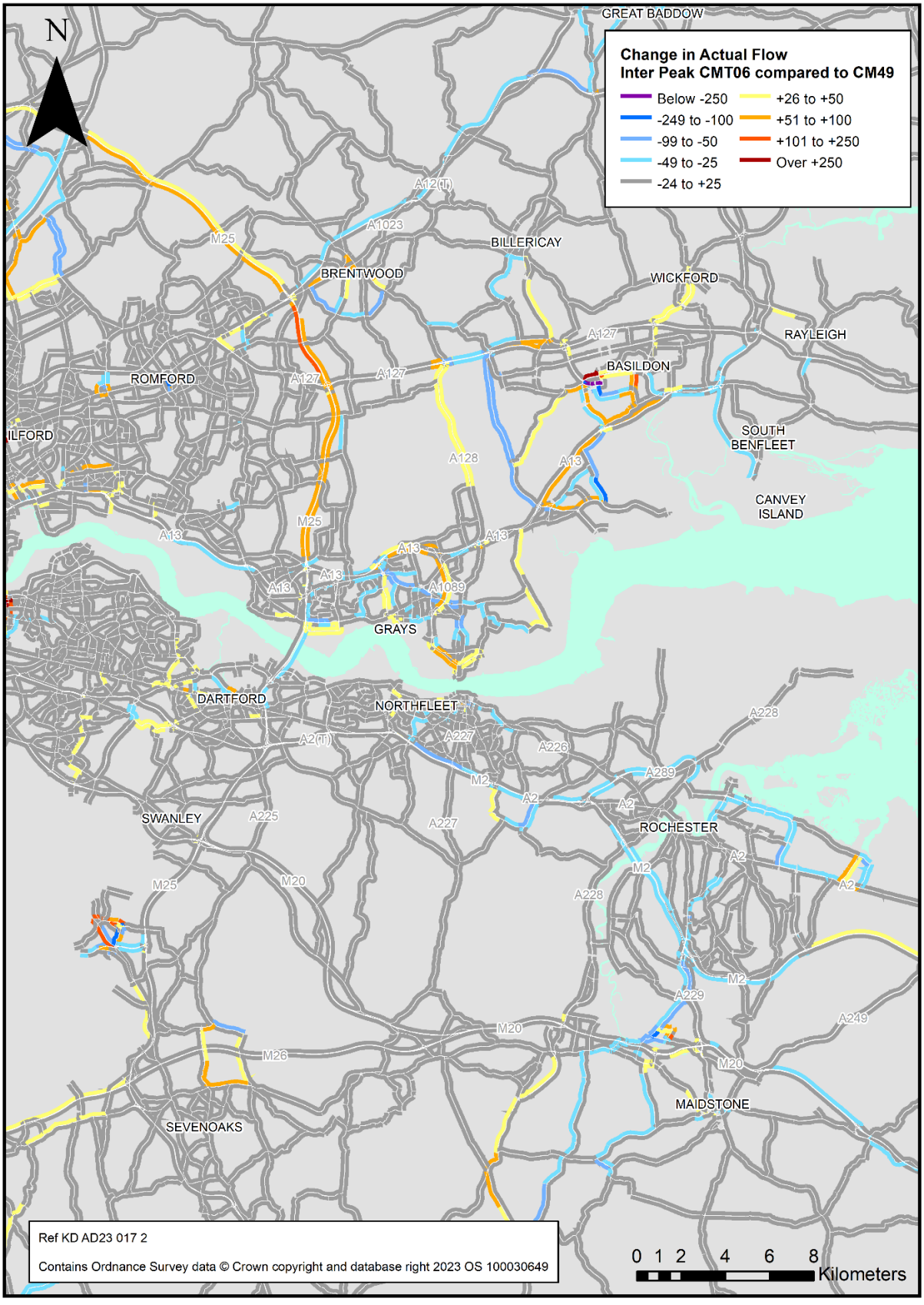


Plate B.3 Absolute change between TEMPro 7.2 Core scenario 2030 and TEMPro 8 Core scenario 2032 Do Minimum PM peak

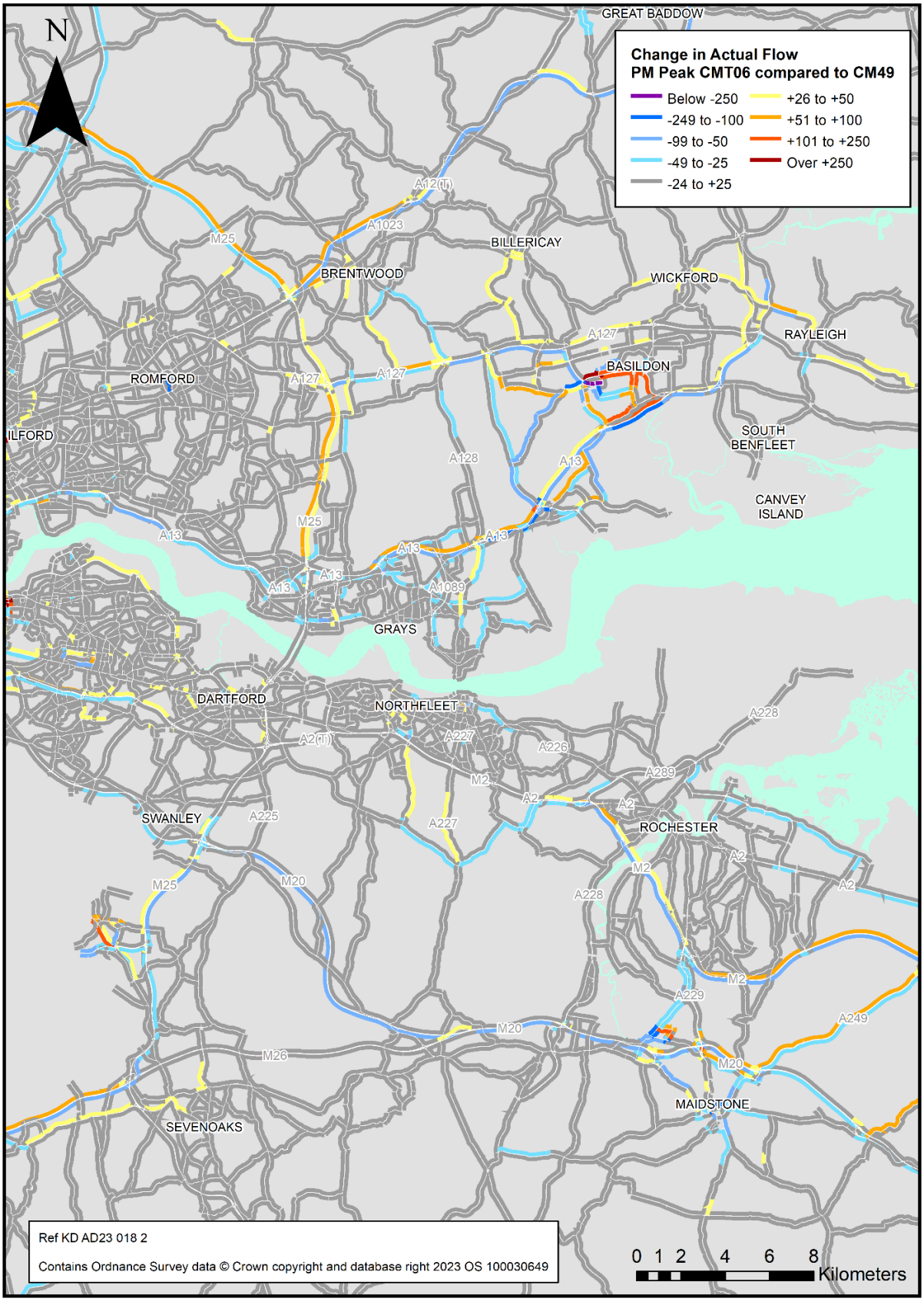


Plate B.4 Absolute change between TEMPro 7.2 Core scenario 2030 and TEMPro 8 Core scenario 2032 Do Something AM peak

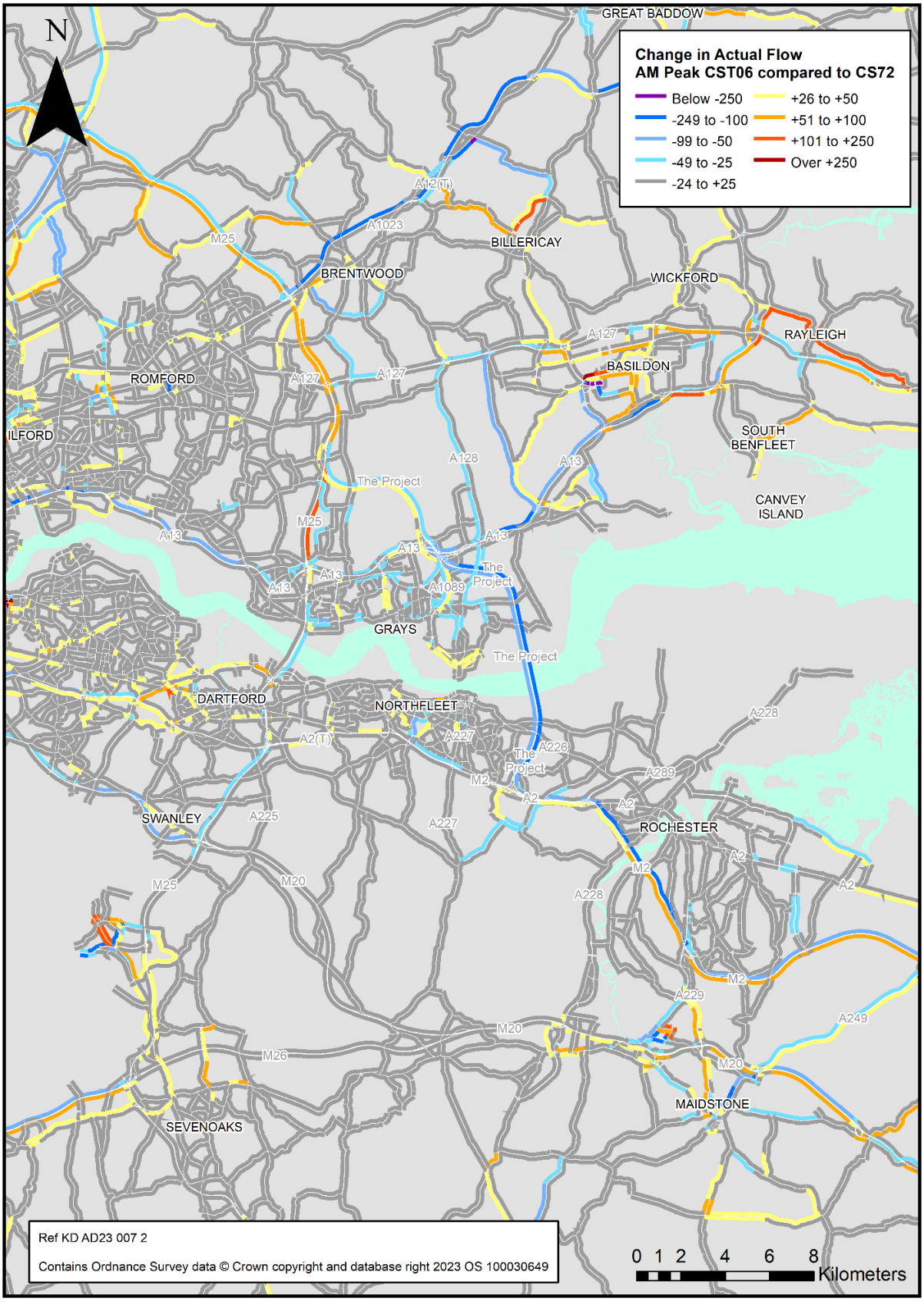


Plate B.5 Absolute change between TEMPro 7.2 Core scenario 2030 and TEMPro 8 Core scenario 2032 Do Something inter-peak

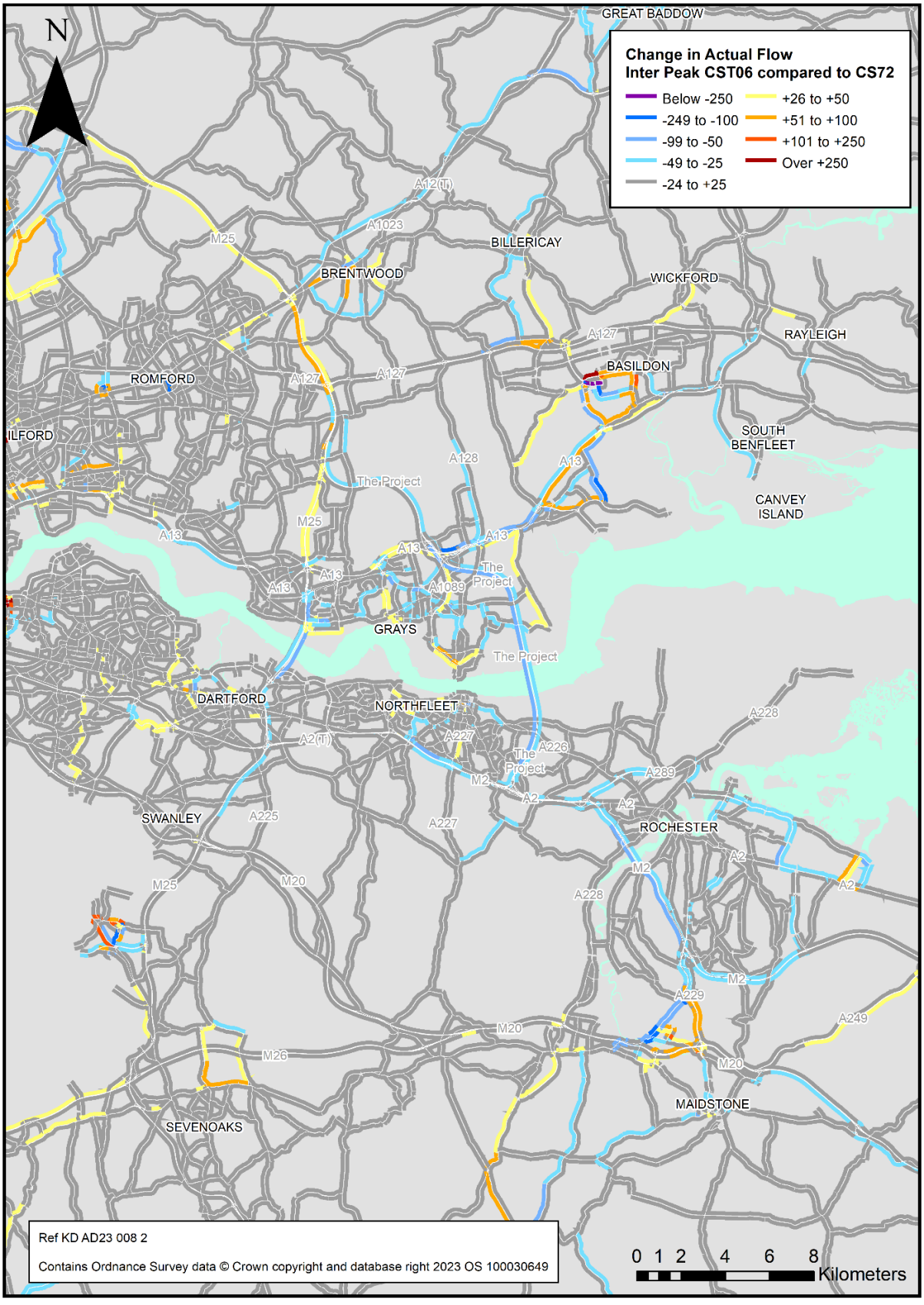


Plate B.6 Absolute change between TEMPro 7.2 Core scenario 2030 and TEMPro 8 Core scenario 2032 Do Something PM peak

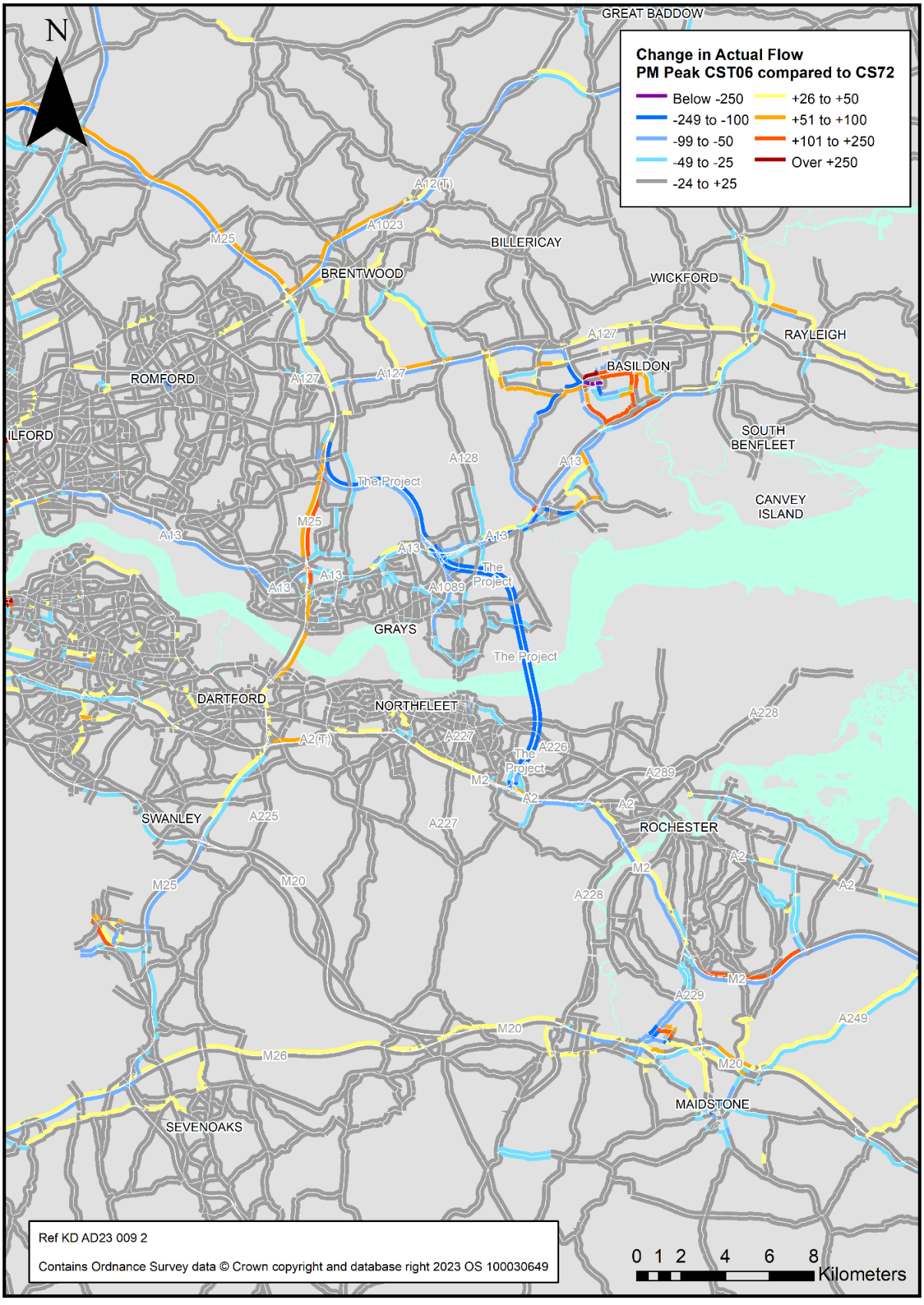


Plate B.7 Percentage change between TEMPro 7.2 Core scenario 2030 and TEMPro 8 Core scenario 2032 Do Minimum AM peak

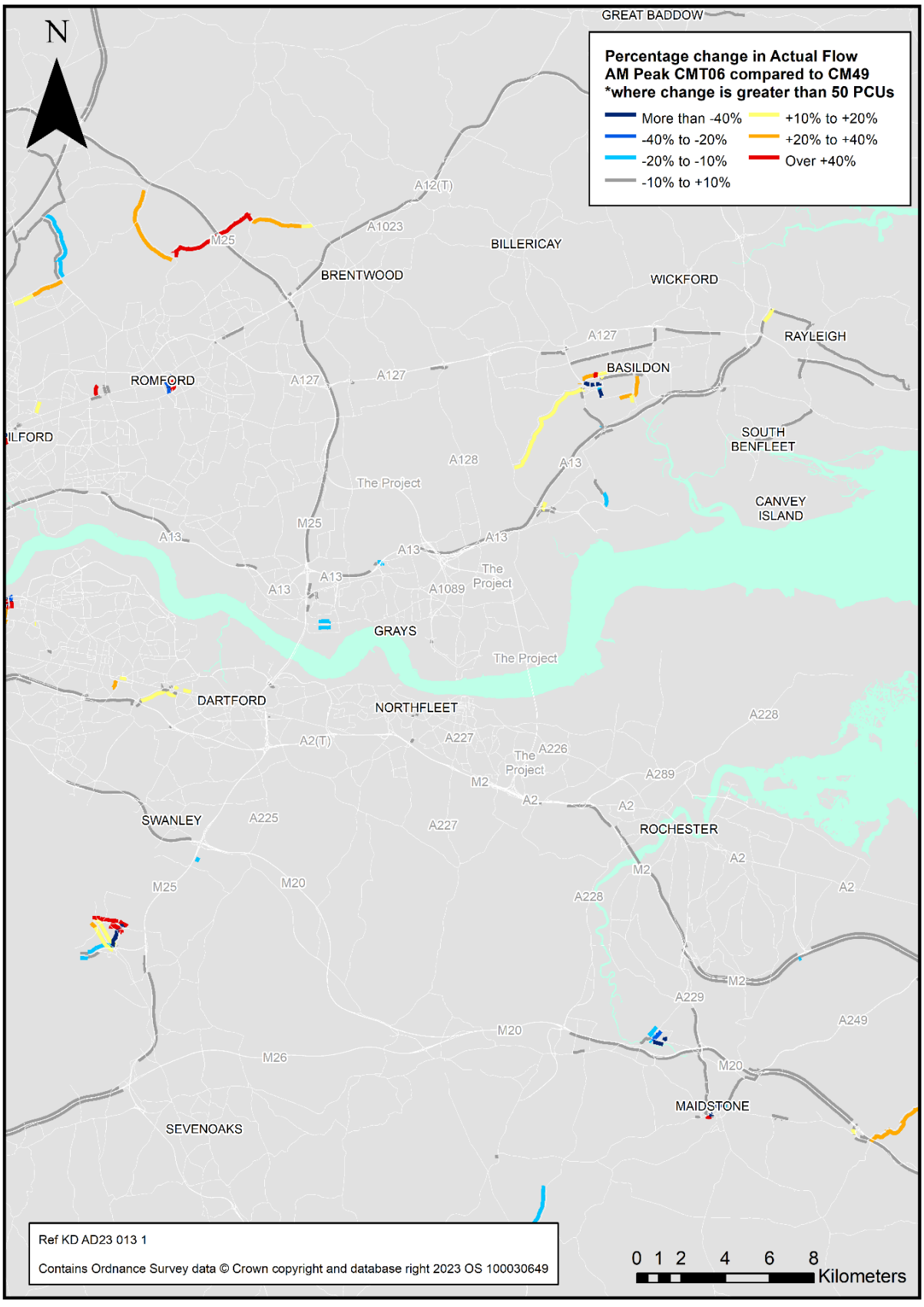


Plate B.8 Percentage change between TEMPro 7.2 Core scenario 2030 and TEMPro 8 Core scenario 2032 Do Minimum inter-peak

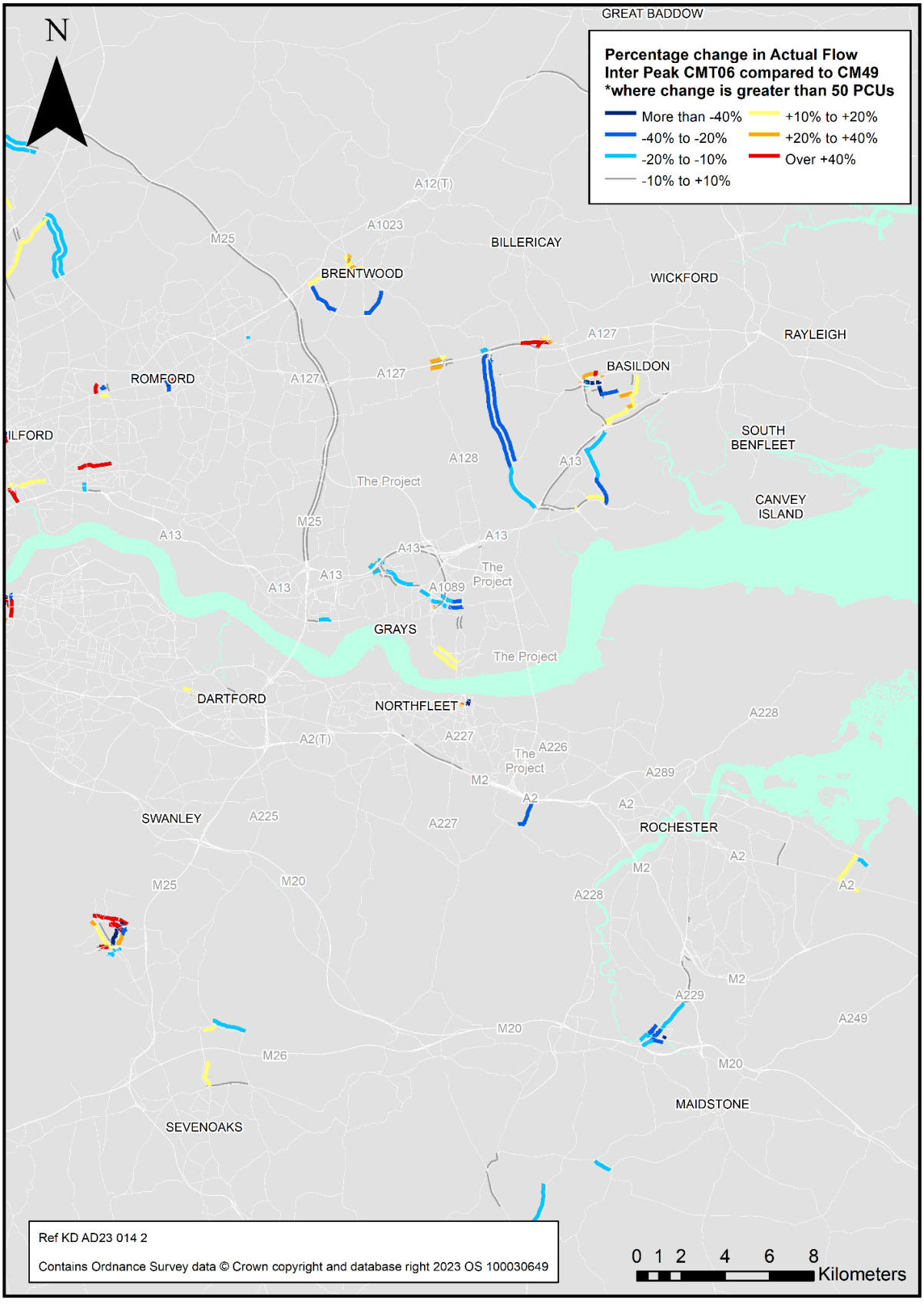


Plate B.9 Percentage change between TEMPro 7.2 Core scenario 2030 and TEMPro 8 Core scenario 2032 Do Minimum PM peak

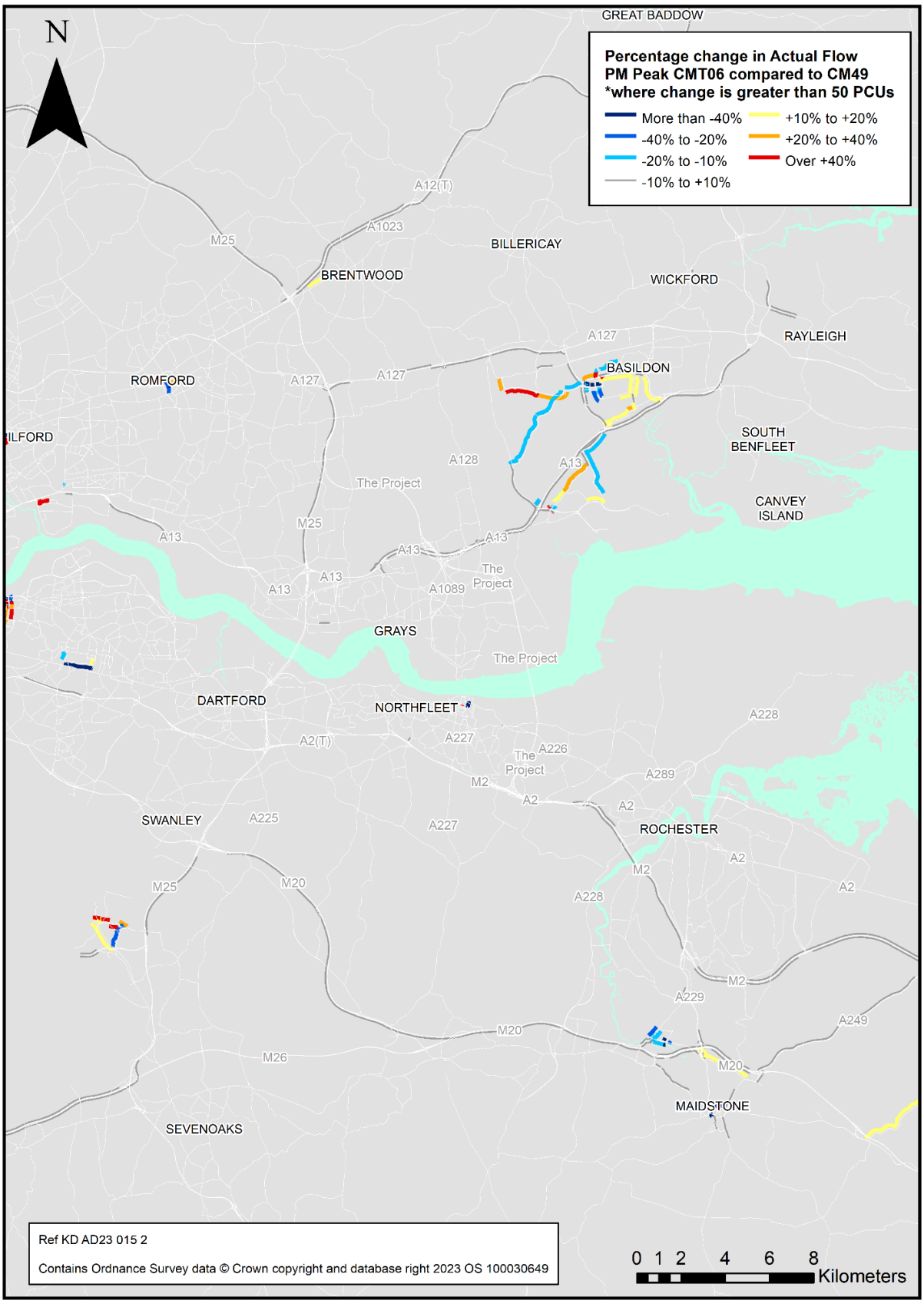


Plate B.10 Percentage change between TEMPro 7.2 Core scenario 2030 and TEMPro 8 Core scenario 2032 Do Something AM peak

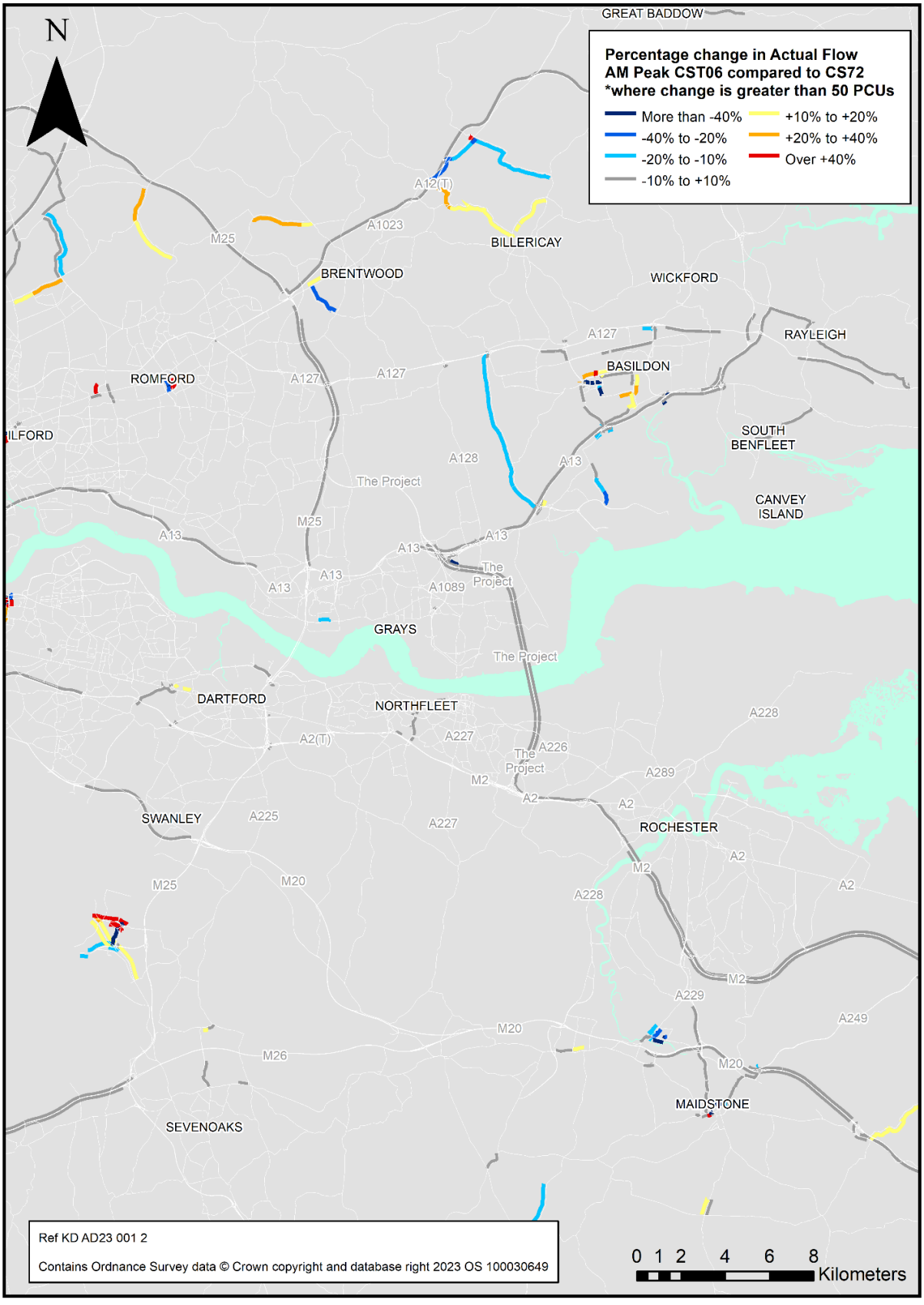


Plate B.11 Percentage change between TEMPro 7.2 Core scenario 2030 and TEMPro 8 Core scenario 2032 Do Something inter-peak

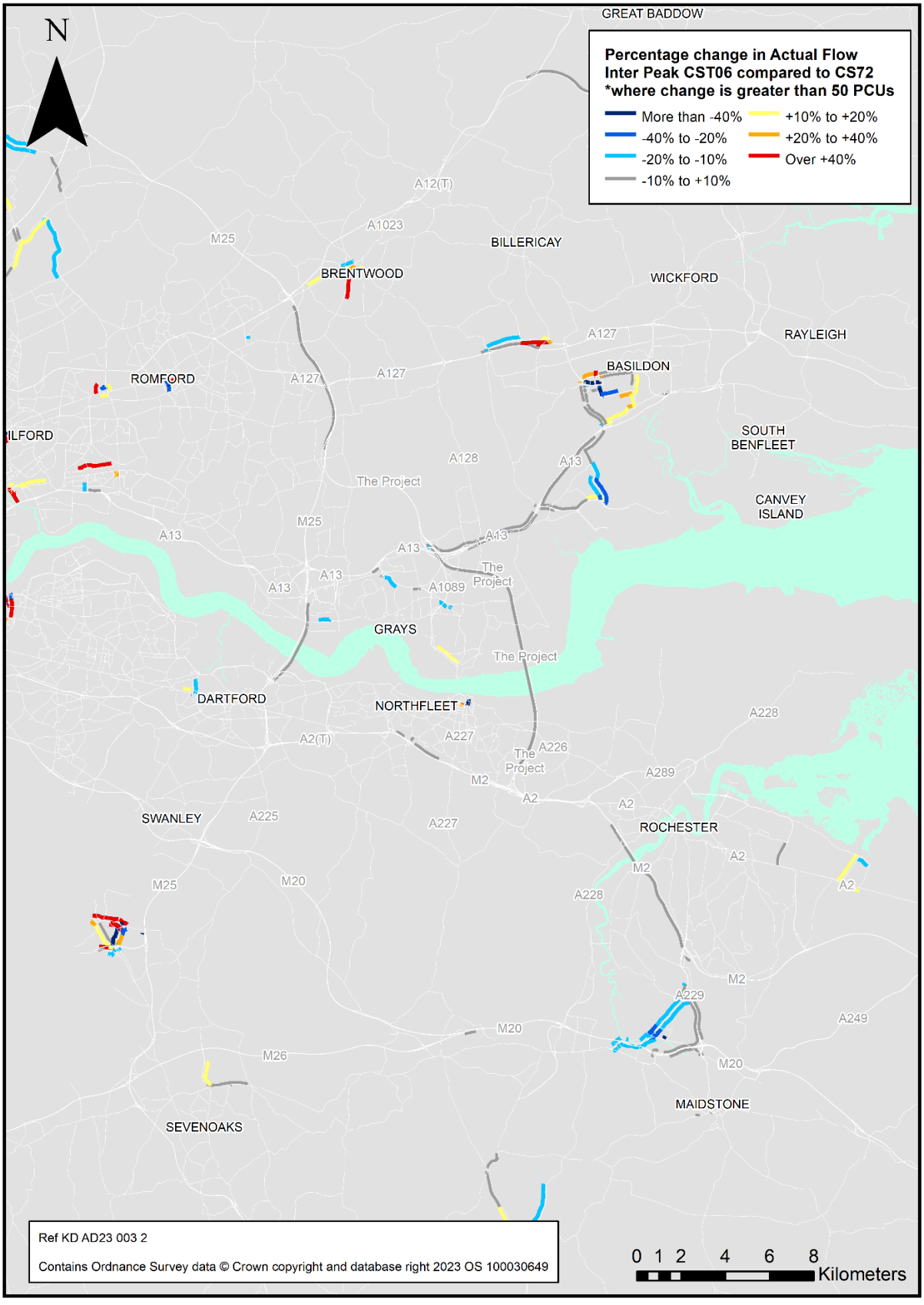
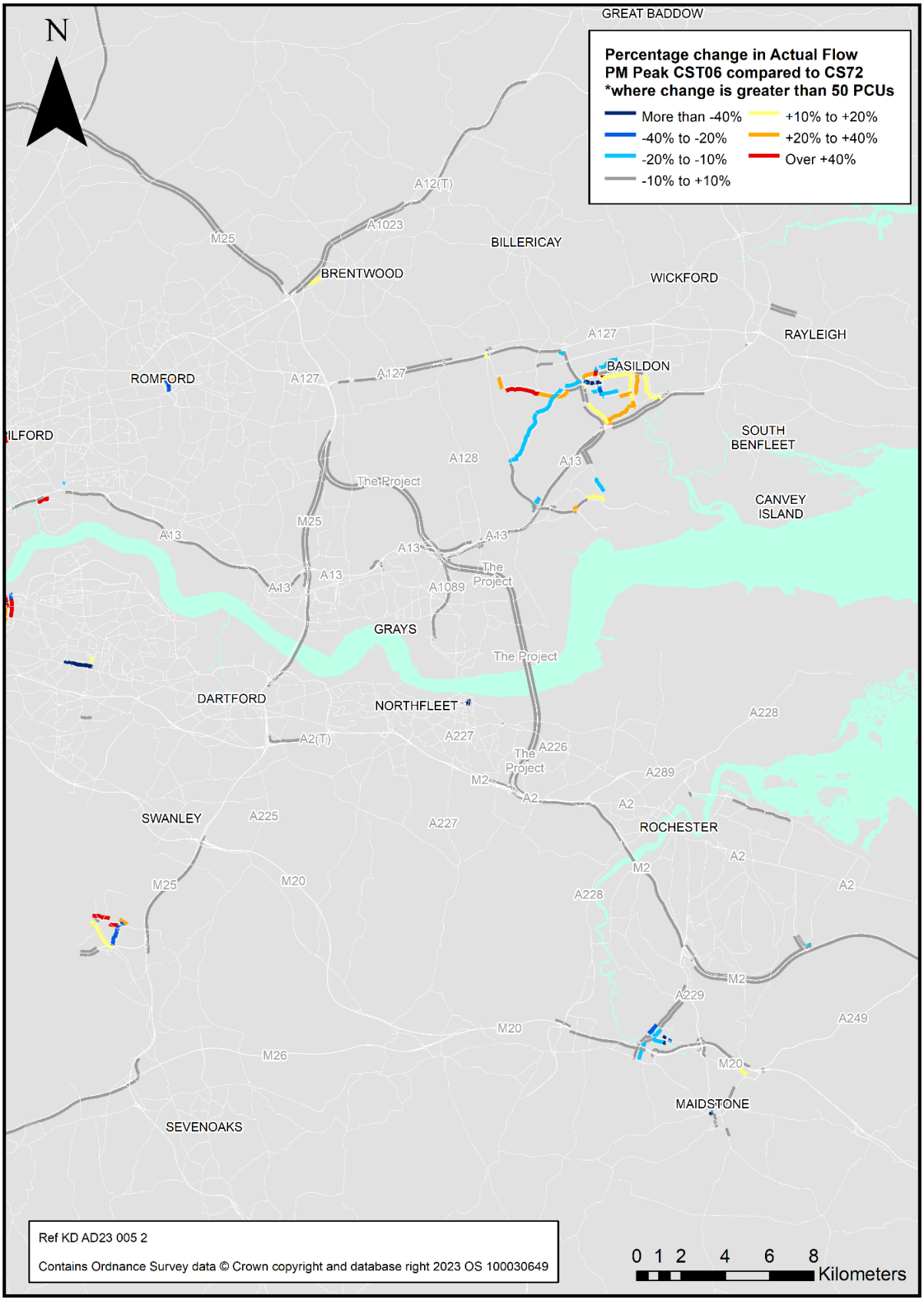


Plate B.12 Percentage change between TEMPro 7.2 Core scenario 2030 and TEMPro 8 Core scenario 2032 Do Something PM peak



References

Department for Transport (2014). National Policy Statement for National Networks.

Department for Transport (2018). Road Traffic Forecasts 2018. Accessed August 2023. https://www.gov.uk/government/publications/road-traffic-forecasts-2018.

Department for Transport (2022a). Trip End Model Presentation Program (TEMPro). Version 8. Accessed August 2023. https://www.gov.uk/government/publications/tempro-downloads.

Department for Transport (2022b). National Road Traffic Projections 2022. Accessed August 2023. https://www.gov.uk/government/publications/national-road-traffic-projections.

Department for Transport (2023a). Transport Analysis Guidance Uncertainty Toolkit. Accessed August 2023. https://www.gov.uk/government/publications/tag-uncertainty-toolkit.

Department for Transport (2023b). Transport Analysis Guidance Unit M4: Forecasting and Uncertainty. Accessed August 2023. https://www.gov.uk/government/publications/tag-unit-m4-forecasting-and-uncertainty.

UK Parliament (2023). Transport Update: Statement made on 9 March 2023,Statement UIN HCWS625. Accessed August 2023. https://questions-statements.parliament.uk/written-statements/detail/2023-03-09/hcws625.

Glossary

Term	Abbreviation	Explanation
2030 opening year		A modelled year in the Project's LTAM traffic model in which traffic flows and costs are estimated when the Project is opened, as presented in the DCO application
2032 opening year		A modelled year in the Project's LTAM traffic model in which traffic flows and costs are estimated when the Project is opened, following the Written Ministerial Statement of 9 March 2023.
2045 design year		A modelled year (as presented in the DCO application) in the Project's LTAM traffic model in which traffic flows and costs are estimated on which the Project design is based
2047 design year		A modelled year (following the Written Ministerial Statement of 9 March 2023) in the Project's LTAM traffic model in which traffic flows and costs are estimated on which the Project design is based
A122	**-**	The new A122 trunk road to be constructed as part of the Lower Thames Crossing project, including links, as defined in Part 2, Schedule 5 (Classification of Roads) in the draft DCO (Application Document 3.1)
A122 Lower Thames Crossing	**Project**	A proposed new crossing of the Thames Estuary linking the county of Kent with the county of Essex, at or east of the existing Dartford Crossing.
AM peak hour	**-**	The hour between 07:00–08:00 in the Project traffic model (LTAM).
AM peak period		The period between 06:00–-09:00 in the Project traffic model (LTAM).
Common Analytical Scenario	**CAS**	A set of seven standardised, off-the-shelf, cross-modal scenarios exploring national level uncertainties which have been developed by DfT for use in forecasting and appraisal
Department for Transport	**DfT**	The government department responsible for the English transport network and a limited number of transport matters in Scotland, Wales and Northern Ireland that have not been devolved.
Development Consent Order	**DCO**	Means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects (NSIP) under the Planning Act 2008.
Development Consent Order application	**DCO application**	The Project Application Documents, collectively known as the 'DCO application'.
Do Minimum	**DM**	A future year scenario in LTAM which includes changes to the road network and planned development that is forecast to go ahead, but not the Lower Thames Crossing.
Do Something	**DS**	A future year scenario in LTAM which includes changes to the road network and planned development that is forecast to go ahead, and the Lower Thames Crossing.
Fully Modelled Area	**FMA**	The area within the Project's transport model where all trip movements are represented, smaller model zones and a more detailed modelled network.
Goods Vehicle	**GV**	Either a light or heavy goods vehicle
Heavy Goods Vehicle	**HGV**	A large, heavy motor vehicle used for transporting cargo.

Term	Abbreviation	Explanation
Inter-peak	**IP**	An average hour within the Lower Thames transport model (LTAM) to represent an hour within the period 09:00–15:00.
Light Goods Vehicle	**LGV**	Vehicles meeting the Department for Transport VEH04 criteria.
Lower Thames Area Model	**LTAM**	Transport model designed to forecast impacts of providing additional road based capacity across the River Thames at locations at or east of the existing Dartford Crossing.
National Highways	**-**	A UK government-owned company with responsibility for managing the motorways and major roads in England. Formerly known as Highways England.
National Policy Statement for National Networks	**NPSNN**	Sets out the need for, and Government's policies to deliver, development of Nationally Significant Infrastructure Projects (NSIPs) on the national road and rail networks in England. It provides planning guidance for promoters of NSIPs on the road and rail networks, and the basis for the examination by the Examining Authority and decisions by the Secretary of State.
National Road Traffic Projections 2022	**NRTP22**	2022 report presenting the Department for Transport's updated strategic view of future road travel demand. Including long term projection data of road traffic, congestion and emissions in England and Wales from 2025 to 2060
National Trip End Model	**NTEM**	A model that forecasts the growth in trip origin-destinations (or productions-attractions) up to 2051 for use in transport modelling. The forecasts take into account national projections of population, employment, housing, car ownership and trip rates.
Northbound	**NB**	Direction of travel
Passenger Car Units	**PCUs**	A metric to allow different vehicle types within traffic flows in a traffic model to be assessed in a consistent manner. PCU factors used within the Project's transport model are: 1 for a car or Light Goods Vehicle; 2 for a bus, 2.5 for a Heavy Goods Vehicle.
PM peak hour	**-**	The hour between 17:00–18:00 within LTAM
PM peak period	**-**	The hours between 15:00-18:00 within LTAM
Road Traffic Forecasts 2018	**RTF18**	2018 report presenting the Department for Transport's strategic view of future road travel demand
Southbound	**SB**	Direction of travel
Traffic Management Cell	**TMC**	The area at the Dartford Crossing used when extracting overheight vehicles
Transport Analysis Guidance	**TAG**	National guidance document produced by the Department for Transport.
Trip End Model Presentation Program	**TEMPro**	DfT software for viewing data from the DfT's National Trip End Model

If you need help accessing this or any other National Highways information, please call **0300 123 5000** and we will help you.

If you have any enquiries about this publication email **info@nationalhighways.co.uk** or call **0300 123 5000***.

*Calls to 03 numbers cost no more than a national rate call to an 01 or 02 number and must count towards any inclusive minutes in the same way as 01 and 02 calls.

These rules apply to calls from any type of line including mobile, BT, other fixed line or payphone. Calls may be recorded or monitored.

Printed on paper from well-managed forests and other controlled sources when issued directly by National Highways.

Registered office Bridge House, 1 Walnut Tree Close, Guildford GU1 4LZ

National Highways Limited registered in England and Wales number 09346363