

Lower Thames Crossing

**Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2
(D1 and D2)**

Baseline Journey Times – Appendix B

Thurrock Council

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Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline
Journey Times Appendix B
Lower Thames Crossing

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Contents

1	Introduction.....	1
1.1	Introduction.....	Error! Bookmark not defined.
2	Source of Observed Journey Times.....	2
2.1	Observed Journey Time Routes.....	2
2.2	Observed Journey Times.....	4
2.3	Journey Time Validation.....	8
3	Source of Future Journey Times.....	9
3.1	Future Journey Times.....	9
3.2	2030 Link Based Journey Times.....	9
3.3	2045 Link Based journey times.....	12
3.4	Summary Tabulation of Results.....	14

Figures

Figure 2-1: LTAM Development Journey Time Routes.....	2
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Tables

Table 2-1: LTAM Model Development Journey Time Routes.....	3
Table 2-2: Observed Median Journey Times – AM peak.....	5
Table 2-3: Observed Median Journey Times – Inter peak.....	6
Table 2-4: Observed Median Journey Times – PM peak.....	7
Table 3-1: 2030 AM Peak Link Based Journey Time Comparison.....	9
Table 3-2: 2030 Inter Peak Link Based Journey Time Comparison.....	10
Table 3-3: 2030 PM Peak Link Based Journey Time Comparison.....	11
Table 3-4: Table 3-5 2045 AM Peak Link Based Journey Time Comparison.....	12
Table 3-5: 2045 Inter Peak Link Based Journey Time Comparison.....	13
Table 3-6: 2045 PM Peak Link Based Journey Time Comparison.....	14
Table 3-7: Summary of Journey Time Results – AM Peak.....	15
Table 3-8: Summary of Journey Time Results – Inter Peak.....	16
Table 3-9: Summary of Journey Time Results – PM Peak.....	17

Annexes

Annex A	Journey Time Validation
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1 Introduction

1.1 Overview

- 1.1.1 This note examines baseline journey times for LTC. The aim has been to understand the context of the journey time changes due to the Lower Thames Crossing (LTC) as forecast by the Lower Thames Assignment Model (LTAM) and documented in the DCO.
- 1.1.2 In particular, the Council considers it important to understand forecast future journey times in the context of baseline journey times as represented by the LTAM 2016 Base year model.
- 1.1.3 In particular paragraph 6.5.17 of the Combined Modelling and Appraisal report ([APP-518](#)) states that the LTC provides some journey time savings across the Dartford Crossing as follows:

6.5.17 At the Dartford Crossing, journey times would be shorter in the future with the Project than without it. The predicted average journey time in the morning peak hour in 2030 between the M25 junction 2 (with the A2) south of the River Thames and the M25 junction 31 (for Lakeside Shopping Centre) north of the River Thames is forecast to fall from 13 minutes to seven minutes if the Project is built. By 2045, the journey time would be almost halved from around 16 minutes without the Project to just under eight minutes with the Project.

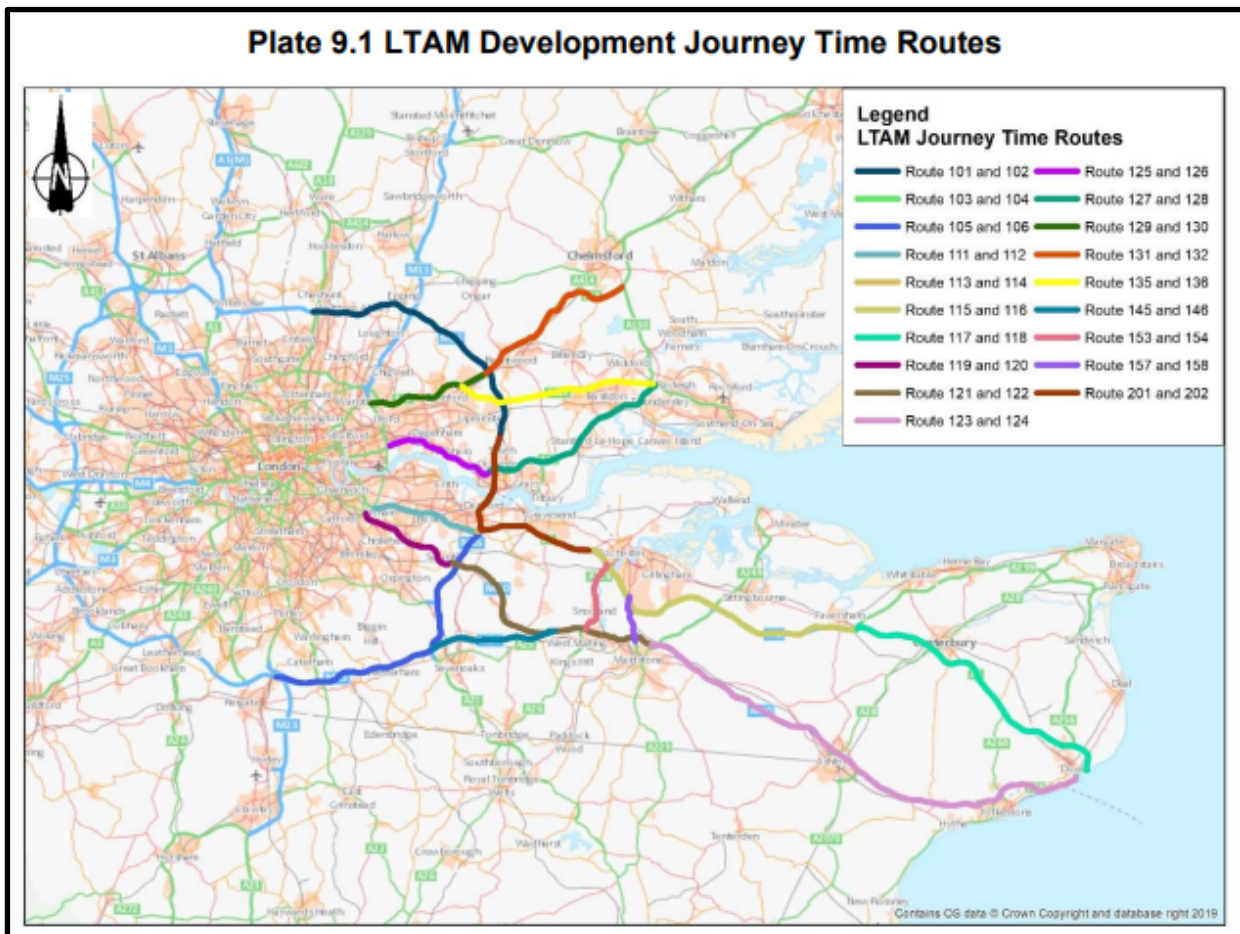
- 1.1.4 The DCO documents do not explicitly statement base year journey times and this note summarises how these journey times can be estimated using information provided by the application.
- 1.1.5 The following documents have been used to inform this analysis:
- Combined Modelling and Appraisal Report ([APP-518](#))
 - Combined Modelling and Appraisal Report - Appendix A - Transport Data Package ([APP-519](#))
 - Combined Modelling and Appraisal Report - Appendix B - Transport Model Package ([APP-520](#))
 - Combined Modelling and Appraisal Report - Appendix C - Transport Forecasting Package Annexes ([APP-523](#))

2 Source of Observed Journey Times

2.1 Observed Journey Time Routes

- 2.1.1 The observed 2016 journey time data has been obtained from Chapter 9 of the Combined Modelling and Appraisal report ([APP-519](#)).
- 2.1.2 Plate 9.1 from the document reproduced below as Figure 2-1, illustrates the routes uses to assess observed journey times.

Figure 2-1: LTAM Development Journey Time Routes



- 2.1.3 Descriptions of the LTAM journey time routes are given in Table 9.1 reproduced as Table 2-1.

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 2-1: LTAM Model Development Journey Time Routes

Table 9.1 LTAM Model Development Journey Time Routes		
JT Route No	Journey Time Route Description	Route Distance (km)
Route 101	M25 junction 25 - junction 30 CW	38.5
Route 102	M25 junction 30 - junction 25 ACW	38.4
Route 103	M25 junction 30 - junction 2 CW (A282)	9.5
Route 104	M25 junction 2 - junction 30 ACW (A282)	9.5
Route 105	M25 junction 2 - junction 7 CW	37.9
Route 106	M25 junction 7 - junction 2 ACW	38.1
Route 111	A2 South Circular - M25 junction EB	13.9
Route 112	A2 M25 junction - South Circular WB	13.8
Route 113	A2 M25 junction - M2 junction 1 EB	15.1
Route 114	A2 M2 junction 1 - M25 junction WB	14.9
Route 115	M2 junction 1 - junction 7 EB	40.7
Route 116	M2 junction 7 - junction 1 WB	41.0
Route 117	A2 M2 junction - Dover EB	38.5
Route 118	A2 Dover - M2 Junction WB	38.3
Route 119	A20 South Circular - M25 junction EB	14.0
Route 120	A20 M25 junction - South Circular WB	13.8
Route 121	M20 junction 1 - junction 7 EB	30.9
Route 122	M20 junction 7 - junction 1 WB	31.2
Route 123	M20/A20 junction 7 - Dover EB	64.3
Route 124	M20/A20 Dover - junction 7 WB	64.3
Route 125	A13 North Circular - M25 Junction EB	14.7
Route 126	A13 M25 junction - North Circular WB	14.8
Route 127	A13 M25 junction - Basildon EB	25.6
Route 128	A13 Basildon - M25 junction WB	25.4
Route 129	A12 North Circular - M25 junction EB	16.1
Route 130	A12 M25 junction - North Circular WB	16.1
Route 131	A12 M25 junction - Chelmsford EB	22.7
Route 132	A12 Chelmsford - M25 Junction WB	22.7
Route 135	A127 Gallows Corner - Basildon EB	25.4
Route 136	A127 Basildon - Gallows Corner WB	25.4
Route 145	M26 M25 junction - M20 junction EB	15.9
Route 146	M26 M20 junction - M25 junction WB	16.0
Route 153	A228 M20 junction - M2 junction NB	9.7
Route 154	A228 M2 junction - M20 junction SB	9.7
Route 157	A229 M20 junction - M2 junction NB	6.0
Route 158	A229 M2 junction - M20 junction SB	5.9
JT Route No	Journey Time Route Description	Route Distance (km)
Route 201	M25 junction 30 – M2 junction 1	23.48
Route 202	M2 junction 1 – M25 junction 30	23.76

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

- 2.1.4 Analysis of this information shows that there is no direct observed route that directly matches the route quoted in paragraph 6.5.17 of [\(APP-518\)](#) and quoted in paragraph 1.1.2 of this document. The required route for analysis is '**between the M25 junction 2 (with the A2) south of the River Thames and the M25 junction 31 (for Lakeside Shopping Centre) north of the River Thames**'.
- 2.1.5 Looking at the table above describing the LTAM observed journey times routes, the one that best contains the route of interest is '**Route 104 – M25 junction 2 - junction 30 ACW (282)**'.
- 2.1.6 However, this route terminates one junction further north at M25 junction 30 instead of at M25 junction 31. In order to provide a like-for-like comparison, it was necessary to include the additional section between M25 junction 30 and M25 junction 31 in the analysis of journey times. This is discussed further in Section 3.
- 2.1.7 It is worth pointing out here that in Plate 9.1 illustration of journey time routes, Route 104 and its equivalent opposite direction Route 103, do not appear to be clearly marked. It could be that they are obscured by Routes 201 and 202 and Routes 105 and 106 which have common sections with Route 104 and Route 103.

2.2 Observed Journey Times

- 2.2.1 The observed journey times are provided in Section 9.2 of [\(APP-519\)](#). The observed journey times are provided separately as median journey times in minutes for Light Vehicles (LV) and Heavy Vehicles (HV) for each of AM peak, Inter peak and PM peak. They are reproduced below.

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 2-2: Observed Median Journey Times – AM peak

JT Route No	AM			
	Lights		Heavy	
	Median Time (mins)	Speed (km/h)	Median Time (mins)	Speed (km/h)
Route 101	22.55	102.57	26.56	87.07
Route 102	26.37	87.44	29.79	77.41
Route 103	7.26	78.63	7.75	73.59
Route 104	8.47	67.18	8.91	63.83
Route 105	32.42	70.09	36.44	62.36
Route 106	21.26	107.48	26.24	87.08
Route 111	9.95	83.70	10.98	75.85
Route 112	15.11	55.01	15.51	53.59
Route 113	8.62	105.18	10.49	86.47
Route 114	15.50	57.52	17.25	51.69
Route 115	22.85	106.95	28.05	87.12
Route 116	24.16	101.82	28.39	86.66
Route 117	25.02	92.23	31.08	74.26
Route 118	24.01	95.71	30.26	75.93
Route 119	12.07	69.48	14.85	56.48
Route 120	19.37	42.78	22.06	37.56
Route 121	16.87	109.83	21.56	85.93
Route 122	25.15	74.43	30.06	62.28
Route 123	39.58	97.59	49.11	78.65
Route 124	37.19	103.66	47.74	80.75
Route 125	11.01	80.00	11.43	77.09
Route 126	25.21	35.29	26.75	33.27
Route 127	17.21	89.19	19.85	77.32
Route 128	28.68	53.26	31.89	47.90
Route 129	20.89	46.19	23.11	41.75
Route 130	37.41	25.87	46.96	20.61

JT Route No	AM			
	Lights		Heavy	
	Median Time (mins)	Speed (km/h)	Median Time (mins)	Speed (km/h)
Route 131	13.31	102.54	15.18	89.90
Route 132	18.66	72.89	22.39	60.76
Route 135	24.41	62.47	26.03	58.59
Route 136	30.57	49.93	35.08	43.51
Route 145	8.39	114.11	10.66	89.81
Route 146	9.01	106.68	10.97	87.61
Route 153	9.31	62.65	10.62	54.93
Route 154	11.41	51.21	12.92	45.23
Route 157	4.23	85.31	5.07	71.06
Route 158	4.55	77.83	4.92	71.88
Route 201	15.27	92.27	17.45	80.73
Route 202	23.67	60.22	25.86	55.13

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 2-3: Observed Median Journey Times – Inter peak

JT Route No	IP			
	Lights		Heavy	
	Median Time (mins)	Speed (km/h)	Median Time (mins)	Speed (km/h)
Route 101	22.73	101.75	26.62	86.85
Route 102	22.22	103.79	26.29	87.70
Route 103	6.98	81.75	7.30	78.15
Route 104	8.05	70.65	8.43	67.46
Route 105	21.44	105.96	25.94	87.59
Route 106	21.43	106.64	26.02	87.82
Route 111	10.20	81.68	10.70	77.84
Route 112	9.62	86.38	10.25	81.04
Route 113	8.61	105.33	10.44	86.87
Route 114	8.43	105.79	10.61	84.05
Route 115	22.37	109.25	27.77	88.00
JT Route No	IP			
	Lights		Heavy	
	Median Time (mins)	Speed (km/h)	Median Time (mins)	Speed (km/h)
Route 116	22.58	108.92	27.98	87.92
Route 117	24.86	92.83	29.43	78.40
Route 118	24.10	95.34	28.69	80.09
Route 119	12.16	68.98	13.59	61.73
Route 120	12.61	65.73	13.94	59.44
Route 121	16.84	110.04	21.31	86.93
Route 122	17.02	110.00	21.24	88.13
Route 123	39.76	97.15	49.74	77.66
Route 124	37.16	103.75	46.58	82.76
Route 125	11.48	76.76	11.95	73.68
Route 126	11.60	76.72	11.99	74.22
Route 127	17.06	89.99	19.20	79.94
Route 128	20.15	75.80	22.75	67.14
Route 129	22.03	43.79	23.36	41.29
Route 130	22.42	43.17	23.64	40.94
Route 131	13.34	102.29	15.67	87.06
Route 132	13.08	103.99	15.42	88.22
Route 135	22.58	67.55	24.53	62.17
Route 136	19.04	80.17	20.51	74.43
Route 145	8.88	107.81	10.74	89.07
Route 146	8.76	109.76	10.84	88.70
Route 153	9.45	61.73	10.03	58.13
Route 154	9.95	58.76	10.71	54.56
Route 157	4.25	84.83	5.08	71.00
Route 158	4.19	84.43	4.47	79.14
Route 201	15.00	93.91	16.97	83.04
Route 202	16.26	87.68	18.72	76.14

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 2-4: Observed Median Journey Times – PM peak

JT Route No	PM			
	Lights		Heavy	
	Median Time (mins)	Speed (km/h)	Median Time (mins)	Speed (km/h)
Route 101	23.35	99.04	26.35	87.75
Route 102	22.04	104.63	26.25	87.85
Route 103	7.16	79.66	7.72	73.94
Route 104	9.63	59.09	10.00	56.85
Route 105	20.67	109.91	25.80	88.08
Route 106	22.69	100.73	26.60	85.91
Route 111	15.21	54.77	16.50	50.47
Route 112	10.84	76.64	12.23	67.97
Route 113	10.36	87.55	11.54	78.64
Route 114	8.30	107.36	10.09	88.39
Route 115	24.20	100.98	29.20	83.70
Route 116	22.64	108.67	28.17	87.34
Route 117	25.87	89.20	30.73	75.09
Route 118	25.07	91.65	31.42	73.13
Route 119	13.41	62.55	18.92	44.33
Route 120	14.72	56.28	16.90	49.02
Route 121	20.61	89.89	25.08	73.88
Route 122	16.63	112.56	21.28	87.98
Route 123	39.31	98.28	51.80	74.57
Route 124	36.43	105.83	45.93	83.93
Route 125	17.25	51.05	17.41	50.59
Route 126	11.65	76.37	12.17	73.09
Route 127	21.57	71.14	23.32	65.83
Route 128	20.54	74.39	25.44	60.05
Route 129	29.27	32.96	34.18	28.23
Route 130	26.64	36.33	30.39	31.85
Route 131	14.35	95.06	16.20	84.23
Route 132	13.15	103.46	15.59	87.28
Route 135	38.35	39.77	46.41	32.86
Route 136	21.01	72.65	23.10	66.08
Route 145	10.51	91.02	14.16	67.59
Route 146	8.47	113.53	10.86	88.52
Route 153	10.28	56.75	11.19	52.13
Route 154	10.38	56.30	11.24	51.97

JT Route No	PM			
	Lights		Heavy	
	Median Time (mins)	Speed (km/h)	Median Time (mins)	Speed (km/h)
Route 157	4.51	79.94	5.57	64.75
Route 158	4.17	84.88	4.48	78.93
Route 201	16.46	85.62	17.99	78.32
Route 202	17.65	80.77	19.81	71.95

2.3 Journey Time Validation

- 2.3.1 Journey time validation information comparing modelled vs observed journey times for the journey time routes is given in Section 9.3 of ([APP- 520](#)). The validation is reported by time period for LV and HV separately. The journey time tables can be seen in Appendix A of this note.

3 Assessment of Future Journey Times

3.1 Future Journey Times

3.1.1 The Core Scenario future journey times used in this analysis were obtained from document ([APP – 523](#)). The link-by-link presentation of journey times enabled a future equivalent route of the observed journey time Route 104 to be 'constructed' for comparison. The Annex C Lower Thames Crossing Scheme Impacts Detailed Link Based Journey Time Comparisons have provided the inputs to 'construct' future journey times for the analysed years 2030 and 2045. The journey times have been analysed for the northbound direction for the Do Minimum and the Do Something. This is the same direction as Route 104.

3.2 2030 Link Based Journey Times

3.2.1 The link-by-link journey times for 2030 are reproduced below.

Table 3-1: 2030 AM Peak Link Based Journey Time Comparison

Section	DM			DS		
	Dist (m)	Time (mins)	Speed (kph)	Dist (m)	Time (mins)	Speed (kph)
M2: J4 to J3	6,084	3.7	99	6,084	3.7	98
M2: J3 to J2	6,189	3.6	104	6,189	3.8	97
M2: J2 to J1	2,896	1.7	100	2,343	1.8	76
A2: M2 J1 to Gravesend E	3,872	3.9	60	4,488	2.7	100
A2: Gravesend E to A227	1,829	2.3	47	1,752	1.8	58
A2: A227 to Pepper Hill	2,203	3.7	36	2,203	2.3	57
A2: Pepper Hill to Ebbsfleet	1,735	2.1	49	1,735	1.9	56
A2: Ebbsfleet to Bean	2,091	3.3	38	2,091	2.2	58
A2: Bean to M25 link Rd	1,951	1.4	81	1,951	1.4	86
A2-A282 Link Road	1,481	1.9	46	1,481	1.0	93
M25: A2 link Rd to J1b	1,048	1.0	61	1,048	0.7	86
M25: J1b to J1a	1,333	2.5	32	1,333	1.2	68
M25: J1a to TMC	587	3.8	9	587	0.7	50
M25: TMC to J31	3,875	4.0	58	3,875	3.5	66
M25: J31 to J30	1,082	1.1	60	1,082	0.7	90
M25: J30 to J29	8,860	5.5	97	9,822	5.9	99
M25: J29 to J28	4,582	3.2	85	3,669	3.5	62
M25: J28 to J27	12,293	8.9	83	12,293	10.0	74
M25: J27 to J26	6,788	4.8	86	6,788	5.0	81
Overall Total	70,777	62.5	68	70,812	53.9	79
Overall Difference				35	-8.6	10.9

3.2.2 The table indicates that in 2030 AM peak over the whole northbound route from M2 J4 to M25 J26, there is a journey time saving of 8.6 minutes with the LTC in place with the journey time going from 62.5 minutes without the LTC to 53.9 minutes with the LTC.

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

3.2.3 The section covered by Route 104 is that encompassing links 'A2-A282 Link Road' to 'M25:J31 to J30' in the table above. This forecasts a reduction in journey times of 6.50 minutes from 14.30 minutes to 7.80 minutes without and with the LTC respectively. The observed 2016 median journey time was estimated to be 8.47 minutes for light vehicles (LV) and 8.91 minutes for heavy vehicles (HV) in 2016 as can be seen from Table 2-2. The observed average journey time was observed to be 8.6 minutes for LV and 9 minutes for HV. These can be found in the AM peak journey time validation tables in Appendix A.

Table 3-2: 2030 Inter Peak Link Based Journey Time Comparison

Section	DM			DS		
	Dist (m)	Time (mins)	Speed (kph)	Dist (m)	Time (mins)	Speed (kph)
M2: J4 to J3	6,084	3.4	108	6,084	3.4	107
M2: J3 to J2	6,189	3.4	109	6,189	3.5	106
M2: J2 to J1	2,896	1.6	107	2,343	1.4	102
A2: M2 J1 to Gravesend E	3,872	2.4	97	4,488	2.5	106
A2: Gravesend E to A227	1,829	1.5	75	1,752	1.1	99
A2: A227 to Pepper Hill	2,203	1.8	73	2,203	1.4	98
A2: Pepper Hill to Ebbsfleet	1,735	1.3	80	1,735	1.1	99
A2: Ebbsfleet to Bean	2,091	1.7	73	2,091	1.2	101
A2: Bean to M25 link Rd	1,951	1.3	89	1,951	1.2	98
A2-A282 Link Road	1,481	3.0	29	1,481	1.0	94
M25: A2 link Rd to J1b	1,048	1.0	66	1,048	0.7	88
M25: J1b to J1a	1,333	1.3	61	1,333	1.1	71
M25: J1a to TMC	587	3.8	9	587	0.7	49
M25: TMC to J31	3,875	4.0	59	3,875	3.4	68
M25: J31 to J30	1,082	1.0	63	1,082	0.7	92
M25: J30 to J29	8,860	5.3	101	9,822	5.6	104
M25: J29 to J28	4,582	2.9	96	3,669	2.5	87
M25: J28 to J27	12,293	7.6	97	12,293	8.1	91
M25: J27 to J26	6,788	4.1	99	6,788	4.2	97
Overall Total	70,777	52.4	81	70,812	44.9	95
Overall Difference				35	-7.5	13.6

3.2.4 The table indicates that in the 2030 Inter peak over the whole northbound route from M2 J4 to M25 J26, there is a journey time saving of 7.5 minutes with the LTC in place with the journey time going from 52.4 minutes without the LTC to 44.9 minutes with the LTC.

3.2.5 The section covered by Route 104 is that encompassing links 'A2-A282 Link Road' to 'M25:J31 to J30' in the table above. This forecasts a reduction of journey times of 6.50 minutes from 14.10 minutes to 7.60 minutes without and with the LTC respectively. The observed 2016 median journey time was estimated to be 8.057 minutes for light vehicles (LV) and 8.43 minutes for heavy vehicles (HV) in 2016 as can be seen in Table 23. The observed average journey time was observed to be 8.2 minutes for LV and 8.6 minutes for HV. These can be found in the Inter Peak journey time validation tables in Appendix A.

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 3-3: 2030 PM Peak Link Based Journey Time Comparison

Section	DM			DS		
	Dist (m)	Time (mins)	Speed (kph)	Dist (m)	Time (mins)	Speed (kph)
M2: J4 to J3	6,084	3.5	105	6,084	3.5	104
M2: J3 to J2	6,189	3.5	105	6,189	3.7	101
M2: J2 to J1	2,896	1.7	103	2,343	1.4	98
A2: M2 J1 to Gravesend E	3,872	2.8	84	4,488	2.5	106
A2: Gravesend E to A227	1,829	1.6	67	1,752	1.3	79
A2: A227 to Pepper Hill	2,203	1.8	75	2,203	1.5	91
A2: Pepper Hill to Ebbsfleet	1,735	1.4	72	1,735	1.1	96
A2: Ebbsfleet to Bean	2,091	2.9	43	2,091	1.9	67
A2: Bean to M25 link Rd	1,951	1.4	81	1,951	1.3	88
A2-A282 Link Road	1,481	1.6	56	1,481	1.0	92
M25: A2 link Rd to J1b	1,048	0.9	72	1,048	0.7	89
M25: J1b to J1a	1,333	1.3	64	1,333	1.1	70
M25: J1a to TMC	587	4.1	9	587	0.8	44
M25: TMC to J31	3,875	3.9	60	3,875	3.5	66
M25: J31 to J30	1,082	1.0	67	1,082	0.7	90
M25: J30 to J29	8,860	5.4	99	9,822	5.8	102
M25: J29 to J28	4,582	2.9	96	3,669	2.6	84
M25: J28 to J27	12,293	7.5	98	12,293	7.9	93
M25: J27 to J26	6,788	4.1	99	6,788	4.2	97
Overall Total	70,777	53.2	80	70,812	46.6	91
Overall Difference				35	-6.5	11.2

- 3.2.6 The table indicates that in 2030 PM peak over the whole northbound route from M2 J4 to M25 J26, there is a journey time saving of 6.5 minutes with the LTC in place with the journey time going from 53.2 minutes without the LTC to 46.6 minutes with the LTC.
- 3.2.7 The section covered by Route 104 is that encompassing links 'A2-A282 Link Road' to 'M25:J31 to J30' in the table above. This predicts a reduction of journey times of 5 minutes from 12.80 minutes to 7.80 minutes without and with the LTC respectively. The observed 2016 median journey time was estimated to be 9.63 minutes for light vehicles (LV) and 10 minutes for heavy vehicles (HV) in 2016 as can be seen in Table 2-4. The observed average journey time was observed to be 9.70 minutes for LV and 10.10 minutes for HV. These can be found in the PM peak journey time validation tables in Appendix A.

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

3.3 2045 Link Based journey times

3.3.1 The link-by-link journey times for 2045 are reproduced below.

Table 3-4: Table 3-5 2045 AM Peak Link Based Journey Time Comparison

Section	DM			DS		
	Dist (m)	Time (mins)	Speed (kph)	Dist (m)	Time (mins)	Speed (kph)
M2: J4 to J3	6,084	3.9	94.2	6,084	4.0	90.7
M2: J3 to J2	6,189	3.7	100.4	6,189	4.0	92.2
M2: J2 to J1	2,896	1.8	95.3	2,343	2.2	64.6
A2: M2 J1 to Gravesend E	3,872	4.3	53.9	4,488	2.7	98.9
A2: Gravesend E to A227	1,829	3.4	31.9	1,752	2.0	52.1
A2: A227 to Pepper Hill	2,203	3.8	35.2	2,203	2.6	51.4
A2: Pepper Hill to Ebbsfleet	1,735	2.3	45.8	1,735	2.0	52.8
A2: Ebbsfleet to Bean	2,091	3.9	32.1	2,091	2.4	52.5
A2: Bean to M25 link Rd	1,951	1.5	78.3	1,951	1.4	83.9
A2-A282 Link Road	1,481	1.9	45.9	1,481	1.0	92.9
M25: A2 link Rd to J1b	1,048	1.2	53.8	1,048	0.8	75.5
M25: J1b to J1a	1,333	3.2	24.7	1,333	1.2	65.1
M25: J1a to TMC	587	5.0	7.0	587	0.9	38.6
M25: TMC to J31	3,875	4.1	57.4	3,875	3.6	63.8
M25: J31 to J30	1,082	1.1	59.6	1,082	0.7	87.4
M25: J30 to J29	8,860	5.8	91.3	9,822	6.6	88.9
M25: J29 to J28	4,582	3.6	76.9	3,669	4.8	45.9
M25: J28 to J27	12,293	9.3	79.6	12,293	10.5	70.0
M25: J27 to J26	6,788	5.2	77.6	6,788	5.6	72.4
Overall Total	70,777	69.0	61.5	70,812	59.2	71.8
Overall Difference				35	-9.8	10.2

3.3.2 The table indicates that in 2045 AM peak over the whole northbound route from M2 J4 to M25 J26, there is a journey time saving of 9.8 minutes with the LTC in place with the journey time going from 69.0 minutes without the LTC to 59.2 minutes with the LTC.

3.3.3 The section covered by Route 104 is that encompassing links 'A2-A282 Link Road' to 'M25:J31 to J30' in the table above. This predicts a reduction of journey times of 8.3 minutes from 16.5 minutes to 8.2 minutes without and with the LTC respectively. The observed 2016 median journey time was estimated to be 8.057 minutes for light vehicles (LV) and 8.43 minutes for heavy vehicles (HV) in 2016. The observed average journey time was observed to be 8.2 minutes for LV and 8.6 minutes for HV.

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 3-5: 2045 Inter Peak Link Based Journey Time Comparison

Section	DM			DS		
	Dist (m)	Time (mins)	Speed (kph)	Dist (m)	Time (mins)	Speed (kph)
M2: J4 to J3	6,084	3.5	105.1	6,084	3.5	103.9
M2: J3 to J2	6,189	3.4	107.7	6,189	3.7	101.5
M2: J2 to J1	2,896	1.7	105.2	2,343	1.5	96.5
A2: M2 J1 to Gravesend E	3,872	2.7	85.1	4,488	2.6	104.1
A2: Gravesend E to A227	1,829	1.8	62.6	1,752	1.3	83.7
A2: A227 to Pepper Hill	2,203	2.1	62.8	2,203	1.6	84.2
A2: Pepper Hill to Ebbsfleet	1,735	1.5	67.6	1,735	1.1	94.7
A2: Ebbsfleet to Bean	2,091	2.0	62.3	2,091	1.3	96.7
A2: Bean to M25 link Rd	1,951	1.4	85.6	1,951	1.3	93.4
A2-A282 Link Road	1,481	2.3	38.6	1,481	1.0	92.4
M25: A2 link Rd to J1b	1,048	1.2	51.9	1,048	0.8	77.7
M25: J1b to J1a	1,333	2.8	28.2	1,333	1.2	65.1
M25: J1a to TMC	587	5.5	6.4	587	1.0	36.5
M25: TMC to J31	3,875	4.0	58.8	3,875	3.6	64.5
M25: J31 to J30	1,082	1.0	62.8	1,082	0.7	88.6
M25: J30 to J29	8,860	5.4	98.5	9,822	5.9	100.4
M25: J29 to J28	4,582	3.0	90.3	3,669	3.2	69.2
M25: J28 to J27	12,293	8.0	92.7	12,293	8.9	83.0
M25: J27 to J26	6,788	4.4	91.7	6,788	4.7	86.5
Overall Total	70,777	57.8	73.5	70,812	48.6	87.3
Overall Difference				35	-9.2	13.9

3.3.4 The table indicates that in 2045 Inter peak over the whole northbound route from M2 J4 to M25 J26, there is a journey time saving of 9.2 minutes with the LTC in place with the journey time going from 57.8 minutes without the LTC to 48.6 minutes with the LTC.

3.3.5 The section covered by Route 104 is that encompassing links 'A2-A282 Link Road' to 'M25:J31 to J30' in the table above. This forecasts a reduction of journey times of 8.5 minutes from 16.80 minutes to 8.30 minutes without and with the LTC respectively. The observed 2016 median journey time was estimated to be 8.057 minutes for light vehicles (LV) and 8.43 minutes for heavy vehicles (HV) in 2016. The observed average journey time was observed to be 8.2 minutes for LV and 8.6 minutes for HV.

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 3-6: 2045 PM Peak Link Based Journey Time Comparison

Section	DM			DS		
	Dist (m)	Time (mins)	Speed (kph)	Dist (m)	Time (mins)	Speed (kph)
M2: J4 to J3	6,084	3.6	102.1	6,084	3.7	99.8
M2: J3 to J2	6,189	3.6	102.1	6,189	3.8	97.2
M2: J2 to J1	2,896	1.7	100.2	2,343	1.5	93.9
A2: M2 J1 to Gravesend E	3,872	3.2	73.3	4,488	2.6	104.1
A2: Gravesend E to A227	1,829	2.0	55.5	1,752	1.7	63.2
A2: A227 to Pepper Hill	2,203	2.0	64.5	2,203	1.7	79.9
A2: Pepper Hill to Ebbsfleet	1,735	1.8	56.9	1,735	1.3	81.1
A2: Ebbsfleet to Bean	2,091	4.4	28.3	2,091	2.3	53.9
A2: Bean to M25 link Rd	1,951	1.5	79.6	1,951	1.4	83.3
A2-A282 Link Road	1,481	1.4	63.4	1,481	1.0	90.8
M25: A2 link Rd to J1b	1,048	1.1	58.3	1,048	0.7	84.3
M25: J1b to J1a	1,333	1.5	54.0	1,333	1.2	65.9
M25: J1a to TMC	587	6.3	5.6	587	1.4	25.3
M25: TMC to J31	3,875	3.9	59.6	3,875	3.7	62.3
M25: J31 to J30	1,082	1.0	66.6	1,082	0.8	79.4
M25: J30 to J29	8,860	5.5	97.5	9,822	6.0	98.7
M25: J29 to J28	4,582	3.1	89.4	3,669	3.1	70.1
M25: J28 to J27	12,293	7.7	95.8	12,293	8.3	88.4
M25: J27 to J26	6,788	4.4	92.4	6,788	4.7	86.3
Overall Total	70,777	59.7	71.2	70,812	51.0	83.4
Overall Difference				35	-8.7	12.2

3.3.6 The table indicates that in 2045 PM peak over the whole northbound route from M2 J4 to M25 J26, there is a journey time saving of 8.7 minutes with the LTC in place with the journey time going from 59.7 minutes without the LTC to 51.0 minutes with the LTC.

3.3.7 The section covered by Route 104 is that encompassing links 'A2-A282 Link Road' to 'M25:J31 to J30' in the table above. This predicts a reduction of journey times of 6.4 minutes from 15.20 minutes to 8.80 minutes without and with the LTC respectively. The observed 2016 median journey time was estimated to be 9.63 minutes for light vehicles (LV) and 10 minutes for heavy vehicles (HV) in 2016. The observed average journey time was observed to be 9.70 minutes for LV and 10.10 minutes for HV.

3.4 Summary Tabulation of Results

3.4.1 Table 3-7, Table 3-8 and Table 3-9 below present a summary of the AM peak, Inter peak and PM peak for the above discussed results in relation to observed Route 104 journey times and comparison to equivalent forecast future journey times.

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 3-7: Summary of Journey Time Results – AM Peak

Section	Distance (km) -DM	Distance (km) -DS	Observed Journey Time (minutes) – Route 104		Modelled Journey Time (minutes)- Route 104		Modelled Future Journey Times (minutes) – Equivalent Route 104			
			LV	HV	LV	HV	2030DMAM	2030DSAM	2045DMAM	2045DSAM
A2-A282 Link Road	1.481	1.481					1.9	1	1.9	1
M25: A2 link Rd to J1b	1.048	1.048					1	0.7	1.2	0.8
M25: J1b to J1a	1.333	1.333					2.5	1.2	3.2	1.2
M25: J1a to TMC	0.587	0.587					3.8	0.7	5	0.9
M25: TMC to J31	3.875	3.875					4	3.5	4.1	3.6
M25: J31 to J30	1.082	1.082					1.1	0.7	1.1	0.7
Total	9.41	9.41					8.47 (median)	8.91 (median)	9.60	9.80
			8.6 (mean)	9.0 (mean)			Difference	-6.5		-8.3

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 3-8: Summary of Journey Time Results – Inter Peak

Section	Distance (km) -DM	Distance (km) -DS	Observed Journey Time (minutes) – Route 104		Modelled Journey Time (minutes)- Route 104		Modelled Future Journey Times (minutes) – Equivalent Route 104			
			LV	HV	LV	HV	2030DMIP	2030DSIP	2045DMIP	2045DSIP
A2-A282 Link Road	1.481	1.481					3	1	2.3	1
M25: A2 link Rd to J1b	1.048	1.048					1	0.7	1.2	0.8
M25: J1b to J1a	1.333	1.333					1.3	1.1	2.8	1.2
M25: J1a to TMC	0.587	0.587					3.8	0.7	5.5	1
M25: TMC to J31	3.875	3.875					4	3.4	4	3.6
M25: J31 to J30	1.082	1.082					1	0.7	1	0.7
Total	9.41	9.41	8.05 (median)	8.43 (median)	8.70	8.90	14.10	7.60	16.80	8.30
			8.2 (mean)	8.6 (mean)			Difference	-6.5		-8.5

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 3-9: Summary of Journey Time Results – PM Peak

Section	Distance (km) -DM	Distance (km) -DS	Observed Journey Time (minutes) – Route 104		Modelled Journey Time (minutes)- Route 104		Modelled Future Journey Times (minutes) – Equivalent Route 104			
			LV	HV	LV	HV	2030DMPM	2030DSPM	2045DMPM	2045DSPM
A2-A282 Link Road	1.481	1.481					1.6	1	1.4	1
M25: A2 link Rd to J1b	1.048	1.048					0.9	0.7	1.1	0.7
M25: J1b to J1a	1.333	1.333					1.3	1.1	1.5	1.2
M25: J1a to TMC	0.587	0.587					4.1	0.8	6.3	1.4
M25: TMC to J31	3.875	3.875					3.9	3.5	3.9	3.7
M25: J31 to J30	1.082	1.082					1	0.7	1	0.8
Total	9.41	9.41	9.6 (median)	10.0 (median)	8.9	9.1	12.80	7.80	15.20	8.80
			9.7 (mean)	10.1 (mean)			Difference	-5.50		-6.40

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline
Journey Times Appendix B
Lower Thames Crossing

Annex A Journey Time Validation

Extracts from Section 9.3 of Combined Modelling and Appraisal Report - Appendix B - Transport
Model Package [APP- 520](#)

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Route	Route name	Lights time (minutes)					Pass/fail
		Obs	Mod	Diff	Diff %age		
Route 101	M25 J25-J30 CW	22.5	24.1	1.5	6.74%	Pass	
Route 102	M25 J30-J25 ACW	26.3	23.9	-2.3	-8.81%	Pass	
Route 103	M25 J30-J2 CW (A282)	7.3	8.2	0.9	12.56%	Pass	
Route 104W	M25 J2-J30 ACW (A282) via West Tun	8.6	9.6	1.0	11.93%	Pass	
Route 104E	M25 J2-J30 ACW (A282) via East Tun	8.6	9.5	0.9	10.78%	Pass	
Route 105	M25 J2-J7 CW	32.4	25.1	-7.3	-22.46%	Fail	
Route 106	M25 J7-J2 ACW	21.3	22.6	1.3	6.25%	Pass	
Route 111	A2 South Circular-M25 Junction EB	9.9	10.8	0.9	8.89%	Pass	
Route 112	A2 M25 Junction-South Circular WB	15.1	15.9	0.8	5.20%	Pass	
Route 113	A2 M25 Junction-M2 J1 EB	8.6	8.6	0.0	0.21%	Pass	
Route 114	A2 M2 J1-M25 Junction WB	15.5	14.7	-0.8	-5.04%	Pass	
Route 115	M2 J1-J7 EB	22.8	23.3	0.4	1.82%	Pass	
Route 116	M2 J7-J1 WB	24.2	25.4	1.2	5.09%	Pass	
Route 117	A2 M2 Junction-Dover EB	24.9	24.5	-0.4	-1.79%	Pass	
Route 118	A2 Dover-M2 Junction WB	24.0	23.9	-0.1	-0.33%	Pass	
Route 119	A20 South Circular-M25 Junction EB	12.1	12.5	0.5	3.83%	Pass	
Route 120	A20 M25 Junction-South Circular WB	19.4	16.1	-3.3	-17.07%	Fail	
Route 121	M20 J1-J7 EB	16.9	17.3	0.4	2.61%	Pass	
Route 122	M20 J7-J1 WB	25.3	22.4	-2.9	-11.47%	Pass	
Route 123	M20/A20 J7-Dover EB	36.8	35.5	-1.3	-3.40%	Pass	
Route 124	M20/A20 Dover-J7 WB	33.6	35.9	2.3	6.90%	Pass	
Route 125	A13 North Circular-M25 Junction EB	11.0	11.8	0.8	7.15%	Pass	
Route 126	A13 M25 Junction-North Circular WB	25.2	20.2	-5.0	-19.79%	Fail	
Route 127	A13 M25 Junction-Basilidon EB	17.2	18.8	1.6	9.20%	Pass	
Route 128	A13 Basilidon - M25 Junction WB	28.4	26.9	-1.6	-5.52%	Pass	
Route 129	A12 North Circular - M25 Junction EB	20.9	24.6	3.7	17.55%	Fail	
Route 130	A12 M25 Junction-North Circular WB	37.4	34.1	-3.3	-8.84%	Pass	
Route	Route name	Lights time (minutes)					Pass/fail
		Obs	Mod	Diff	Diff %age		
Route 131	A12 M25 Junction-Chelmsford EB	13.3	15.1	1.8	13.73%	Pass	
Route 132	A12 Chelmsford-M25 Junction WB	18.7	20.9	2.2	11.76%	Pass	
Route 135	A127 Gallows Corner-Basilidon EB	19.6	22.2	2.6	13.43%	Pass	
Route 136	A127 Basilidon-Gallows Corner WB	30.6	30.4	-0.1	-0.45%	Pass	
Route 145	M26 M25 Junction-M20 Junction EB	8.4	9.0	0.6	6.99%	Pass	
Route 146	M26 M20 Junction-M25 Junction WB	8.7	9.4	0.7	7.90%	Pass	
Route 153	A228 M20 Junction-M2 Junction NB	9.3	10.2	0.9	9.91%	Pass	
Route 154	A228 M2 Junction-M20 Junction SB	11.4	11.9	0.5	4.06%	Pass	
Route 157	A229 M20 Junction-M2 Junction NB	4.2	4.7	0.5	11.05%	Pass	
Route 158	A229 M2 Junction-M20 Junction SB	4.5	5.2	0.6	13.61%	Pass	
Route 201	M25 J30-M2 J1	15.3	16.3	1.0	6.57%	Pass	
Route 202	M2 J1-M25 J30	23.4	25.2	1.8	7.86%	Pass	

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 9.27 Modelled vs observed journey times heavy vehicles AM peak

Route	Route name	HGV time (minutes)				Pass/fail
		Obs	Mod	Diff	Diff %age	
Route 101	M25 J25-J30 CW	26.6	29.3	2.7	10.16%	Pass
Route 102	M25 J30-J25 ACW	29.7	29.1	-0.5	-1.77%	Pass
Route 103	M25 J30-J2 CW (A282)	7.8	8.4	0.7	8.68%	Pass
Route 104W	M25 J2-J30 ACW (A282) via West Tun	9.0	9.8	0.8	8.40%	Pass
Route 104E	M25 J2-J30 ACW (A282) via East Tun	9.0	9.7	0.7	7.32%	Pass
Route 105	M25 J2-J7 CW	36.4	30.1	-6.3	-17.33%	Fail
Route 106	M25 J7-J2 ACW	26.2	27.7	1.5	5.54%	Pass
Route 111	A2 South Circular-M25 Junction EB	10.7	11.0	0.2	2.20%	Pass
Route 112	A2 M25 Junction-South Circular WB	15.5	16.5	1.0	6.47%	Pass
Route 113	A2 M25 Junction-M2 J1 EB	10.5	10.7	0.2	1.92%	Pass
Route 114	A2 M2 J1-M25 Junction WB	17.2	16.7	-0.6	-3.31%	Pass
Route 115	M2 J1-J7 EB	28.1	28.8	0.8	2.67%	Pass
Route 116	M2 J7-J1 WB	28.4	31.0	2.6	9.05%	Pass
Route 117	A2 M2 Junction-Dover EB	30.9	28.4	-2.6	-8.28%	Pass
Route 118	A2 Dover-M2 Junction WB	30.2	27.8	-2.5	-8.16%	Pass
Route 119	A20 South Circular-M25 Junction EB	14.9	13.3	-1.5	-10.25%	Pass
Route 120	A20 M25 Junction-South Circular WB	22.1	16.8	-5.2	-23.66%	Fail
Route 121	M20 J1-J7 EB	21.6	21.5	-0.1	-0.32%	Pass
Route 122	M20 J7-J1 WB	30.2	26.6	-3.6	-11.90%	Pass
Route	Route name	HGV time (minutes)				Pass/fail
		Obs	Mod	Diff	Diff %age	
Route 123	M20/A20 J7-Dover EB	45.7	42.9	-2.8	-6.08%	Pass
Route 124	M20/A20 Dover-J7 WB	42.4	43.4	1.0	2.28%	Pass
Route 125	A13 North Circular-M25 Junction EB	11.4	12.4	1.0	8.65%	Pass
Route 126	A13 M25 Junction-North Circular WB	26.7	20.0	-6.7	-25.13%	Fail
Route 127	A13 M25 Junction-Basildon EB	19.9	19.8	0.0	-0.01%	Pass
Route 128	A13 Basildon-M25 Junction WB	31.5	27.9	-3.6	-11.48%	Pass
Route 129	A12 North Circular-M25 Junction EB	23.1	24.6	1.4	6.24%	Pass
Route 130	A12 M25 Junction-North Circular WB	47.0	34.1	-12.9	-27.37%	Fail
Route 131	A12 M25 Junction-Chelmsford EB	15.2	14.9	-0.3	-1.88%	Pass
Route 132	A12 Chelmsford-M25 Junction WB	22.4	22.3	-0.1	-0.60%	Pass
Route 135	A127 Gallows Corner-Basildon EB	20.9	23.2	2.3	11.04%	Pass
Route 136	A127 Basildon-Gallows Corner WB	35.1	31.4	-3.7	-10.52%	Pass
Route 145	M26 M25 Junction-M20 Junction EB	10.7	11.1	0.5	4.29%	Pass
Route 146	M26 M20 Junction-M25 Junction WB	10.7	11.5	0.8	7.93%	Pass
Route 153	A228 M20 Junction-M2 Junction NB	10.6	10.3	-0.3	-3.12%	Pass
Route 154	A228 M2 Junction-M20 Junction SB	12.9	11.9	-1.0	-7.66%	Pass
Route 157	A229 M20 Junction - M2 Junction NB	5.1	4.8	-0.2	-4.44%	Pass
Route 158	A229 M2 Junction - M20 Junction SB	4.9	5.3	0.4	8.05%	Pass
Route 201	M25 J30-M2 J1	17.5	18.3	0.9	4.99%	Pass
Route 202	M2 J1-M25 J30	25.5	27.1	1.6	6.34%	Pass

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Route	Route name	Lights time (minutes)					Pass/fail
		Obs	Mod	Diff	Diff %age		
Route 101	M25 J25-J30 CW	22.7	23.1	0.4	1.85%	Pass	
Route 102	M25 J30-J25 ACW	22.1	22.4	0.3	1.29%	Pass	
Route 103	M25 J30-J2 CW (A282)	7.0	7.3	0.3	4.61%	Pass	
Route 104W	M25 J2-J30 ACW (A282) via West Tun	8.2	8.7	0.6	6.89%	Pass	
Route 104E	M25 J2-J30 ACW (A282) via East Tun	8.2	8.7	0.5	6.43%	Pass	
Route 105	M25 J2-J7 CW	21.4	22.0	0.6	2.68%	Pass	
Route 106	M25 J7-J2 ACW	21.4	22.2	0.8	3.57%	Pass	
Route 111	A2 South Circular-M25 Junction EB	10.2	11.3	1.1	10.99%	Pass	
Route 112	A2 M25 Junction-South Circular WB	9.6	10.9	1.2	12.94%	Pass	
Route 113	A2 M25 Junction-M2 J1 EB	8.6	8.6	-0.1	-0.67%	Pass	
Route 114	A2 M2 J1-M25 Junction WB	8.4	9.0	0.6	6.90%	Pass	
Route	Route name	Lights time (minutes)					Pass/fail
		Obs	Mod	Diff	Diff %age		
Route 115	M2 J1-J7 EB	22.4	22.7	0.3	1.47%	Pass	
Route 116	M2 J7-J1 WB	22.6	22.7	0.1	0.66%	Pass	
Route 117	A2 M2 Junction-Dover EB	24.8	24.4	-0.4	-1.51%	Pass	
Route 118	A2 Dover-M2 Junction WB	24.1	23.6	-0.5	-2.04%	Pass	
Route 119	A20 South Circular-M25 Junction EB	12.2	12.7	0.6	4.83%	Pass	
Route 120	A20 M25 Junction-South Circular WB	12.6	13.1	0.5	4.05%	Pass	
Route 121	M20 J1-J7 EB	16.8	17.1	0.3	1.49%	Pass	
Route 122	M20 J7-J1 WB	17.1	17.3	0.1	0.72%	Pass	
Route 123	M20/A20 J7-Dover EB	36.8	35.2	-1.6	-4.35%	Pass	
Route 124	M20/A20 Dover-J7 WB	34.0	34.9	0.8	2.42%	Pass	
Route 125	A13 North Circular-M25 Junction EB	11.5	12.5	1.0	8.53%	Pass	
Route 126	A13 M25 Junction-North Circular WB	11.6	12.4	0.8	6.91%	Pass	
Route 127	A13 M25 Junction-Basildon EB	17.1	18.9	1.8	10.78%	Pass	
Route 128	A13 Basildon-M25 Junction WB	20.0	20.4	0.4	2.13%	Pass	
Route 129	A12 North Circular-M25 Junction EB	22.0	23.6	1.6	7.24%	Pass	
Route 130	A12 M25 Junction-North Circular WB	22.4	24.2	1.8	7.97%	Pass	
Route 131	A12 M25 Junction-Chelmsford EB	13.3	14.9	1.6	11.66%	Pass	
Route 132	A12 Chelmsford-M25 Junction WB	13.1	14.6	1.6	11.97%	Pass	
Route 135	A127 Gallows Corner-Basildon EB	18.7	18.8	0.1	0.71%	Pass	
Route 136	A127 Basildon-Gallows Corner WB	19.0	19.7	0.6	3.22%	Pass	
Route 145	M26 M25 Junction-M20 Junction EB	8.9	9.1	0.2	2.74%	Pass	
Route 146	M26 M20 Junction-M25 Junction WB	8.5	8.9	0.4	4.24%	Pass	
Route 153	A228 M20 Junction-M2 Junction NB	9.4	10.0	0.5	5.45%	Pass	
Route 154	A228 M2 Junction-M20 Junction SB	9.9	10.8	0.8	8.26%	Pass	
Route 157	A229 M20 Junction-M2 Junction NB	4.3	4.5	0.2	4.76%	Pass	
Route 158	A229 M2 Junction-M20 Junction SB	4.2	4.5	0.3	7.22%	Pass	
Route 201	M25 J30-M2 J1	15.0	15.4	0.4	2.72%	Pass	
Route 202	M2 J1-M25 J30	16.0	18.0	2.0	12.34%	Pass	

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Route	Route name	HGV time (minutes)					Pass/fail
		Obs	Mod	Diff	Diff %age		
Route 101	M25 J25-J30 CW	26.6	28.3	1.7	6.44%	Pass	
Route 102	M25 J30-J25 ACW	26.2	27.6	1.4	5.41%	Pass	
Route 103	M25 J30-J2 CW (A282)	7.3	7.6	0.3	3.53%	Pass	
Route 104W	M25 J2-J30 ACW (A282) via West Tun	8.6	8.9	0.4	4.24%	Pass	
Route 104E	M25 J2-J30 ACW (A282) via East Tun	8.6	8.9	0.3	3.72%	Pass	
Route 105	M25 J2-J7 CW	25.9	27.0	1.1	4.11%	Pass	
Route 106	M25 J7-J2 ACW	26.0	27.3	1.3	4.92%	Pass	
Route 111	A2 South Circular-M25 Junction EB	10.7	11.4	0.7	6.97%	Pass	
Route 112	A2 M25 Junction-South Circular WB	10.3	11.5	1.2	11.96%	Pass	
Route 113	A2 M25 Junction-M2 J1 EB	10.4	10.6	0.2	1.54%	Pass	
Route 114	A2 M2 J1-M25 Junction WB	10.6	11.0	0.4	3.38%	Pass	
Route 115	M2 J1-J7 EB	27.8	28.2	0.5	1.68%	Pass	
Route 116	M2 J7-J1 WB	28.0	28.3	0.3	1.13%	Pass	
Route 117	A2 M2 Junction-Dover EB	29.3	28.3	-1.0	-3.48%	Pass	
Route 118	A2 Dover-M2 Junction WB	28.7	27.4	-1.2	-4.22%	Pass	
Route 119	A20 South Circular-M25 Junction EB	13.6	13.5	0.0	-0.35%	Pass	
Route 120	A20 M25 Junction-South Circular WB	13.9	13.9	0.0	-0.34%	Pass	
Route 121	M20 J1-J7 EB	21.3	21.3	0.0	-0.20%	Pass	
Route 122	M20 J7-J1 WB	21.4	21.5	0.1	0.56%	Pass	
Route 123	M20/A20 J7-Dover EB	46.5	42.6	-3.8	-8.26%	Pass	
Route 124	M20/A20 Dover-J7 WB	42.0	42.3	0.3	0.60%	Pass	
Route 125	A13 North Circular-M25 Junction EB	12.0	13.1	1.1	9.32%	Pass	
Route 126	A13 M25 Junction-North Circular WB	12.0	12.3	0.3	2.39%	Pass	
Route 127	A13 M25 Junction-Basildon EB	19.2	20.0	0.8	3.92%	Pass	
Route 128	A13 Basildon-M25 Junction WB	22.6	21.5	-1.1	-4.92%	Pass	
Route 129	A12 North Circular-M25 Junction EB	23.4	23.6	0.3	1.12%	Pass	
Route 130	A12 M25 Junction-North Circular WB	23.6	24.2	0.6	2.41%	Pass	
Route 131	A12 M25 Junction-Chelmsford EB	15.7	14.7	-1.0	-6.24%	Pass	
Route 132	A12 Chelmsford-M25 Junction WB	15.4	16.0	0.6	4.04%	Pass	
Route 135	A127 Gallows Corner-Basildon EB	20.2	19.8	-0.4	-2.06%	Pass	
Route 136	A127 Basildon-Gallows Corner WB	20.5	20.6	0.1	0.50%	Pass	
Route 145	M26 M25 Junction-M20 Junction EB	10.7	11.3	0.5	4.80%	Pass	
Route 146	M26 M20 Junction-M25 Junction WB	10.5	10.9	0.4	3.81%	Pass	
Route 153	A228 M20 Junction-M2 Junction NB	10.0	10.0	0.0	-0.15%	Pass	
Route 154	A228 M2 Junction-M20 Junction SB	10.7	10.8	0.1	1.03%	Pass	
Route	Route name	HGV time (minutes)					Pass/fail
		Obs	Mod	Diff	Diff %age		
Route 157	A229 M20 Junction-M2 Junction NB	5.1	4.6	-0.5	-9.27%	Pass	
Route 158	A229 M2 Junction-M20 Junction SB	4.5	4.6	0.2	3.92%	Pass	
Route 201	M25 J30-M2 J1	17.0	17.5	0.5	2.92%	Pass	
Route 202	M2 J1-M25 J30	18.4	19.9	1.5	8.06%	Pass	

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 9.30 Modelled vs observed journey times light vehicles PM peak

Route	Route name	Lights time (minutes)					Pass/fail
		Obs	Mod	Diff	Diff %age		
Route 101	M25 J25–J30 CW	23.3	24.6	1.3	5.38%	Pass	
Route 102	M25 J30–J25 ACW	21.9	22.3	0.4	1.74%	Pass	
Route 103	M25 J30–J2 CW (A282)	7.2	7.7	0.6	7.93%	Pass	
Route 104W	M25 J2–J30 ACW (A282) via West Tun	9.7	8.9	-0.9	-9.06%	Pass	
Route 104E	M25 J2–J30 ACW (A282) via East Tun	9.8	8.8	-0.9	-9.66%	Pass	
Route 105	M25 J2–J7 CW	20.7	22.1	1.4	6.78%	Pass	
Route 106	M25 J7–J2 ACW	22.7	24.0	1.3	5.80%	Pass	
Route 111	A2 South Circular–M25 Junction EB	15.2	13.1	-2.1	-13.81%	Pass	
Route 112	A2 M25 Junction–South Circular WB	10.8	12.0	1.2	11.01%	Pass	
Route 113	A2 M25 Junction–M2 J1 EB	10.4	10.8	0.5	4.46%	Pass	
Route 114	A2 M2 J1–M25 Junction WB	8.3	9.4	1.1	12.87%	Pass	
Route 115	M2 J1–J7 EB	24.2	25.9	1.7	6.91%	Pass	
Route 116	M2 J7–J1 WB	22.6	23.5	0.8	3.73%	Pass	
Route 117	A2 M2 Junction–Dover EB	25.8	24.7	-1.0	-3.93%	Pass	
Route 118	A2 Dover–M2 Junction WB	25.0	24.5	-0.6	-2.30%	Pass	
Route 119	A20 South Circular–M25 Junction EB	13.4	15.6	2.2	16.49%	Fail	
Route 120	A20 M25 Junction–South Circular WB	14.7	14.5	-0.2	-1.51%	Pass	
Route 121	M20 J1–J7 EB	20.6	20.6	0.0	-0.18%	Pass	
Route 122	M20 J7–J1 WB	16.7	17.3	0.6	3.30%	Pass	
Route 123	M20/A20 J7–Dover EB	36.4	36.4	0.0	0.02%	Pass	
Route 124	M20/A20 Dover–J7 WB	33.1	35.1	2.0	6.01%	Pass	
Route 125	A13 North Circular–M25 Junction EB	17.3	14.2	-3.0	-17.62%	Fail	
Route 126	A13 M25 Junction–North Circular WB	11.7	12.2	0.5	4.64%	Pass	
Route 127	A13 M25 Junction–Basildon EB	21.6	22.4	0.8	3.74%	Pass	
Route 128	A13 Basildon–M25 Junction WB	20.4	21.1	0.8	3.84%	Pass	
Route 129	A12 North Circular–M25 Junction EB	29.3	25.9	-3.4	-11.67%	Pass	
Route 130	A12 M25 Junction–North Circular WB	26.6	25.4	-1.3	-4.82%	Pass	
Route	Route name	Lights time (minutes)					Pass/fail
		Obs	Mod	Diff	Diff %age		
Route 131	A12 M25 Junction–Chelmsford EB	14.4	16.2	1.9	13.16%	Pass	
Route 132	A12 Chelmsford–M25 Junction WB	13.1	14.9	1.8	13.64%	Pass	
Route 135	A127 Gallows Corner–Basildon EB	28.6	26.2	-2.3	-8.12%	Pass	
Route 136	A127 Basildon–Gallows Corner WB	21.0	22.0	1.0	4.71%	Pass	
Route 145	M26 M25 Junction–M20 Junction EB	10.5	10.0	-0.5	-4.75%	Pass	
Route 146	M26 M20 Junction–M25 Junction WB	8.2	8.7	0.5	5.97%	Pass	
Route 153	A228 M20 Junction–M2 Junction NB	10.3	11.7	1.4	13.55%	Pass	
Route 154	A228 M2 Junction–M20 Junction SB	10.4	11.1	0.7	6.59%	Pass	
Route 157	A229 M20 Junction–M2 Junction NB	4.5	4.8	0.3	5.66%	Pass	
Route 158	A229 M2 Junction–M20 Junction SB	4.2	4.8	0.7	15.62%	Fail	
Route 201	M25 J30–M2 J1	16.5	18.1	1.6	10.02%	Pass	
Route 202	M2 J1–M25 J30	17.4	17.8	0.4	2.18%	Pass	

Thurrock Council Comments on Applicant's Submissions at Deadline 1 and 2 (D1 & D2) – Baseline Journey Times Appendix B
Lower Thames Crossing

Table 9.31 Modelled vs observed journey times heavy vehicles PM peak

Route	Route name	HGV Time (minutes)				
		Obs	Mod	Diff	Diff %age	Pass/fail
Route 101	M25 J25-J30 CW	26.4	29.8	3.4	13.07%	Pass
Route 102	M25 J30-J25 ACW	26.1	27.5	1.4	5.29%	Pass
Route 103	M25 J30-J2 CW (A282)	7.7	8.0	0.3	3.54%	Pass
Route 104W	M25 J2-J30 ACW (A282) via West Tun	10.1	9.1	-1.1	-10.66%	Pass
Route 104E	M25 J2-J30 ACW (A282) via East Tun	10.3	9.0	-1.3	-12.61%	Pass
Route 105	M25 J2-J7 CW	25.8	27.1	1.3	4.91%	Pass
Route 106	M25 J7-J2 ACW	26.6	29.1	2.5	9.43%	Pass
Route 111	A2 South Circular-M25 Junction EB	16.5	13.2	-3.3	-20.30%	Fail
Route 112	A2 M25 Junction-South Circular WB	12.2	12.7	0.4	3.49%	Pass
Route 113	A2 M25 Junction-M2 J1 EB	11.5	12.9	1.3	11.58%	Pass
Route 114	A2 M2 J1-M25 Junction WB	10.1	11.3	1.2	12.31%	Pass
Route 115	M2 J1-J7 EB	29.2	31.4	2.2	7.58%	Pass
Route 116	M2 J7-J1 WB	28.2	29.0	0.9	3.12%	Pass
Route 117	A2 M2 Junction-Dover EB	30.6	28.7	-1.9	-6.32%	Pass
Route 118	A2 Dover-M2 Junction WB	31.4	28.3	-3.1	-9.75%	Pass
Route 119	A20 South Circular-M25 Junction EB	18.9	16.4	-2.5	-13.24%	Pass
Route 120	A20 M25 Junction-South Circular WB	16.9	15.3	-1.6	-9.61%	Pass
Route 121	M20 J1-J7 EB	25.1	24.8	-0.3	-1.28%	Pass
Route 122	M20 J7-J1 WB	21.4	21.5	0.1	0.61%	Pass
Route	Route name	HGV Time (minutes)				
		Obs	Mod	Diff	Diff %age	Pass/fail
Route 123	M20/A20 J7-Dover EB	47.9	43.8	-4.1	-8.64%	Pass
Route 124	M20/A20 Dover-J7 WB	41.4	42.6	1.1	2.74%	Pass
Route 125	A13 North Circular-M25 Junction EB	17.4	14.8	-2.6	-14.91%	Pass
Route 126	A13 M25 Junction-North Circular WB	12.2	12.1	-0.1	-0.85%	Pass
Route 127	A13 M25 Junction-Basildon EB	23.3	23.4	0.1	0.52%	Pass
Route 128	A13 Basildon-M25 Junction WB	25.2	22.2	-3.0	-12.01%	Pass
Route 129	A12 North Circular-M25 Junction EB	34.2	25.9	-8.3	-24.35%	Fail
Route 130	A12 M25 Junction-North Circular WB	30.4	25.4	-5.0	-16.55%	Fail
Route 131	A12 M25 Junction-Chelmsford EB	16.2	15.9	-0.3	-1.69%	Pass
Route 132	A12 Chelmsford-M25 Junction WB	15.6	16.3	0.8	4.81%	Pass
Route 135	A127 Gallows Corner-Basildon EB	33.4	27.2	-6.1	-18.42%	Fail
Route 136	A127 Basildon-Gallows Corner WB	23.1	23.0	-0.1	-0.60%	Pass
Route 145	M26 M25 Junction-M20 Junction EB	14.2	12.2	-2.0	-14.15%	Pass
Route 146	M26 M20 Junction-M25 Junction WB	10.6	10.8	0.2	2.03%	Pass
Route 153	A228 M20 Junction-M2 Junction NB	11.2	11.7	0.5	4.81%	Pass
Route 154	A228 M2 Junction-M20 Junction SB	11.2	11.1	-0.1	-1.12%	Pass
Route 157	A229 M20 Junction-M2 Junction NB	5.6	4.9	-0.6	-11.64%	Pass
Route 158	A229 M2 Junction-M20 Junction SB	4.5	5.0	0.5	10.95%	Pass
Route 201	M25 J30-M2 J1	18.0	20.2	2.2	12.04%	Pass
Route 202	M2 J1-M25 J30	19.5	19.7	0.2	1.00%	Pass