Response to ExA's Second Written Questions:

Principal Issue 12 Transportation and Traffic

August 2015

The Infrastructure Planning (Examination Procedure) Rules 2010
A14 Cambridge to Huntingdon improvement scheme

Development Consent Order Application
Response to ExA’s Second Written Questions:
Principal Issue 12 Transportation and Traffic

HE/A14/EX/89
August 2015
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Question 2.12.1

Why is Scenario 1, which uses the same assumptions as in the 2013 Road Traffic Forecasts, the most directly comparable with the 2015 Road Traffic Forecasts? (REP2-013, para5)

Response

Clarification

1. In Highways England’s response to question 1.12.1, as set out in Response to the First Written Questions (Report 12: Transportation and Traffic) (Applicant reference HE/A14/EX/39, PINS reference REP2-013) there is a typographical error. The sentence in paragraph 5 of the response that reads “Scenario 1 uses the same assumptions as in RTF13; this is therefore the most directly comparable with RTF15”, should instead read “Scenario 1 uses the same assumptions as in RTF13; this is therefore the most directly comparable with RTF13”.

Response

2. As noted in the response to question 1.12.1, the Cambridge to Huntingdon A14 Road Model (CHARM3a) traffic forecasts contain some elements of growth that are based on the Department for Transport’s (DfT) Road Traffic Forecasts 2013 (RTF13).

3. RTF13 data have been used to provide traffic growth forecasts for External-to-External Heavy Goods Vehicle (HGV) movements (i.e. trips passing through the Study Area); growth in internal-based HGV movements has been derived from the Cambridge Sub-Regional Model (CSRM). RTF data are therefore only used to provide growth assumptions for these external-to-external movements, which form a small proportion of the overall demand matrix.

4. DfT released the 2015 RTF (RTF15) data on 12 March 2015, after completion of the CHARM3a model updates. RTF15 utilises a scenario-based approach to forecasting to reflect better uncertainty around the drivers and trends associated with traffic growth, while previous RTF releases provided only a single set of forecasts.
5. Paragraph 1.19 of Road Traffic Forecasts 2015 (DfT, March 2015) states that, with the exception of some “slight improvements”, RTF15 Scenario 1 uses the same assumptions as RTF13 to forecast traffic growth. The scenario is based on the assumption that the number of trips people make remains constant at the historic average; that incomes and costs affect travel choices in the same way as previously modelled; and uses Office for Budget Responsibility (OBR) and Department of Energy and Climate Change (DECC) central forecasts for future changes in incomes and fuel price. The improvements to the methodology are detailed in chapter 2 of the DfT report.

6. Based on the data from DfT and the commentary provided in the Road Traffic Forecasts 2015 report, it is therefore concluded that RTF15 Scenario 1 is most directly comparable to RTF13, used in the formation of the CHARM3a traffic forecasts.
Question 2.12.2
Why is there a higher percentage change in relation to traffic on The Avenue between the ‘with’ the scheme and ‘without’ scenarios in 2035 than in 2020? (REP2-013, para18)

Response

7. As set out in the response to question 1.12.36 in Highways England’s Response to the First Written Questions Report 12: Transportation and Traffic (Applicant reference HE/A14/EX/39, PINS reference REP2-013) traffic using The Avenue to the north of Madingley in 2020 and 2035 is drawn from a variety of locations. Around half of the traffic is forecast to originate in Madingley village, with the remainder forecast to be through traffic from south-west Cambridge and the villages of Coton, Hardwick, Comberton and Barton to the south towards the villages of Oakington, Longstanton and the Northstowe development to the north-west or towards Cambridge (via Huntingdon Road) and Girton to the east.

8. Traffic flows along The Avenue to the north of Madingley are forecast to increase in both 2020 and 2035 as a result of the scheme. In 2020, traffic flows are forecast to increase from 3,800 vehicles per day (vpd) without the scheme to 4,300 vpd with the scheme, an increase of 500 vpd (+13%). By 2035, traffic flows are forecast to increase from 4,200 vpd without the scheme to 6,400 vpd with the scheme, an increase of 2,200 vpd (+52%).

9. Analysis of the origin and destination of traffic routeing through Madingley indicates that there are several reasons for the forecast increase in the impact of the scheme on The Avenue between 2020 and 2035, including:
   - Additional traffic generated by the Northstowe Phase 2 development, which is dependent on the A14 scheme and therefore is included in the ‘with scheme’ scenario but not in the ‘without scheme’ scenario (100-200 vpd);
   - Traffic travelling from villages to the south of Madingley towards Oakington switching from the route via the M11 and A14 to the route via The Avenue and the Local Access Road (500-600 vpd);
   - Traffic from Bar Hill and the A14 West travelling towards Madingley and villages to the south transferring from the route via Oakington Road to the route via The Avenue (600-700 vpd); and
   - Traffic from Madingley village travelling towards central Cambridge switching from the route via Cambridge Road and Madingley Road to the route via The Avenue and Huntingdon Road (400-500 vpd).
10. These changes are discussed in more detail below. There are a number of other minor changes in traffic routeing as a result of the scheme between 2020 and 2035 but these are generally less than 100 vehicles per day and are therefore not considered to represent a material change in routeing as a result of the scheme.

11. Some of the additional traffic using The Avenue can be attributed to the Northstowe Phase 2 development, which is dependent on the A14 scheme and therefore included in the ‘with scheme’ scenario but not in the ‘without scheme’ scenario. Without the scheme, the Northstowe development is assumed to comprise 1,500 homes in both 2020 and 2035. With the scheme, the development is assumed to comprise approximately 2,300 homes in 2020 and 5,000 homes in 2035. As a result of the additional development growth between 2020 and 2035, it is estimated that an additional 100-200 vehicles per day from the development would travel through Madingley via The Avenue in 2035 compared with 2020.

12. There is also forecast to be an increase in the volume of local traffic using The Avenue to travel between the villages to the south of Madingley (Comberton, Barton and Coton) and Oakington between 2020 and 2035. Both with and without the scheme, traffic travelling between these areas would have a choice of routes. Traffic could either travel via the M11 and A14 or use local roads through Madingley. Journey time analysis indicates that the route via the M11 and A14 would be shorter and quicker than the route through Madingley in all cases. However the differential in journey times between the two routes is smaller in 2035 than in 2020, which makes the route through Madingley a more attractive choice for some drivers. Consequently, in 2020, the majority of traffic is forecast to use the M11 and A14, with only a small volume using the route through Madingley. In 2035, most of the traffic continues to use the M11 and A14, but a larger number of vehicles are forecast to use local roads through Madingley. It is estimated that an additional 500-600 vehicles per day would use the route through Madingley in 2035 compared with 2020.
13. There is forecast to be some rerouting of traffic travelling from Bar Hill and the A14 to the west travelling towards Madingley and south-west Cambridge. In 2020 without the scheme this traffic is forecast to leave the A14 at the Girton Interchange (Junction 31) and then use The Avenue to access the village. By 2035, due to increased congestion around Girton without the scheme, this traffic would leave the A14 at the Dry Drayton junction (Junction 30) and use Oakington Road and Dry Drayton Road to reach the village. With the scheme, traffic can no longer leave the A14 at Dry Drayton due to the closure of the slip roads, therefore it either leaves the A14 at Bar Hill (Junction 29) and travels to Madingley via the Local Access Road, Oakington Road and Dry Drayton Road or it continues on the A14 to Girton (Junction 31), where it joins the Local Access Road and then uses The Avenue to access Madingley from the north. As a result of these changes to traffic routing, it is estimated that an additional 600-700 vehicles per day would transfer from Oakington Road to The Avenue between 2020 and 2035 as a result of the scheme.

14. Finally, there are also some changes to the routeing of traffic from Madingley and the villages to the south towards Girton and north-west Cambridge. Without the scheme, this traffic is forecast to travel in to Cambridge on the A1303 Madingley Road via Cambridge Road and then use local roads within Cambridge to reach Girton and north-west Cambridge. With the scheme, the junction where The Avenue meets the Local Access Road would permit all movements and therefore some of the traffic from Madingley and the villages to the south is forecast to use the A1307 Huntingdon Road to access Cambridge, travelling via The Avenue and the new Local Access Road as this would be a shorter and quicker route to Girton and destinations in north-west Cambridge. It is estimated that an additional 400-500 vehicles per day would switch from Madingley Road to Huntingdon Road in 2035 compared with 2020.
Question 2.12.3

Why, from the improved connectivity at its junction with the Local Access Road, is The Avenue being made available for traffic wishing to travel into Cambridge via Huntingdon Road avoiding the A14? How does the ‘with’ scheme availability of this alternative route along The Avenue compare with the provision of Government funding in 2003/04 to discourage ‘rat running’ in the village of Madingley? (REP2-013, para19)

Response

15. Improving connectivity at the junction between The Avenue and the new Local Access Road is mainly required to maintain access to the A14 westbound. However, it would also benefit the residents of Madingley and villages to the south by providing a more direct route into north-west Cambridge.

16. Currently, The Avenue at Madingley is connected directly to the A14 westbound on-slip at the Girton Interchange (Junction 31) via an at-grade left in-left out junction. As a consequence, the only available direct connection for traffic leaving Madingley via The Avenue is on to the A14 westbound. All other destinations to the north and east of Madingley (i.e. A14 eastbound, M11 southbound, A1307 eastbound or Girton/Oakington area) require traffic to either use The Avenue to join the A14 westbound, leaving at the Dry Drayton junction (Junction 30) to access local routes or return along the A14 eastbound; or to use alternative local routes. It is currently possible for vehicles to enter the north side of Madingley via The Avenue from M11 northbound, A14 westbound, A1307 westbound and A14 eastbound (via the Girton Interchange). The A14 Cambridge to Huntingdon improvement scheme includes the closure of all existing minor at grade accesses and junctions on the A14 (including The Avenue and Dry Drayton Junction) to improve safety for road users. Alternative access would be provided via an off-line local access road running parallel with the A14 between Swavesey (Junction 28) and Girton (Junction 31). Access to Madingley via The Avenue would be maintained by providing a junction with the section of the new Local Access Road between Dry Drayton and Girton to the south of the A14.
17. Simple major/minor priority junctions which allow all movements are typically used for the majority of junctions between minor roads. In the case of the junction of The Avenue with the new Local Access Road, in order to maintain the connection between Madingley and the A14 westbound, it is necessary to permit traffic to turn right out of The Avenue onto the new Local Access Road so that it can access the A14 westbound slip road from Girton Roundabout West. This would also provide a more direct route for traffic travelling from The Avenue to north-west Cambridge via the A1307 Huntingdon Road. Traffic travelling towards the A14 eastbound or M11 southbound would have to turn left along the new Local Access Road and continue to Bar Hill Junction before it could turn back along the A14 eastbound, making this a less desirable route for non-local traffic and thereby discouraging rat-running through Madingley.

18. Where specific manoeuvres need to be prevented for traffic or safety reasons, more extensive engineered solutions are required to physically prevent vehicles from making undesirable manoeuvres. It is not currently proposed to impose any physical restrictions or make any manoeuvre illegal at the junction between The Avenue and the new Local Access Road. The scheme does not, however, preclude future works to the junction to prevent certain manoeuvres or the introduction of turning restrictions, should the local highway authority identify the need for this in the future.

19. The traffic figures referred to in paragraph 19 of Highways England’s Response to the First Written Questions: Report 12: Transportation and Traffic (Applicant reference HE/A14/EX/39, PINS reference REP2-013) indicate that in 2035, whilst traffic flows are forecast to increase on The Avenue, traffic is forecast to remain the same or decrease on all routes to the south of the village (Church Lane and Cambridge Road). This indicates that the increase in traffic along The Avenue would largely be due to residents of Madingley using The Avenue to access north-west Cambridge (via the Local Access Road and A1307) or traffic switching from Oakington Road on to The Avenue due to the improved connectivity at the junction with the new Local Access Road. In both cases, these changes would not result in a significant change in the volume of traffic routeing though Madingley village.

20. Table 12-54 in Highways England’s Response to the First Written Questions: Report 12: Transportation and Traffic indicate that around half of the traffic using The Avenue is from Madingley, while Tables 12-55 and 12-56 indicate that the majority of the ‘through’ traffic is drawn from villages to the north and south of Madingley. The route through Madingley is an appropriate route for these local traffic movements and they are not considered to be ‘rat-running’.
21. Following a recommendation in the Cambridge to Huntingdon Multi-Modal Study (CHUMMS), published in 2001, Government funding of £2M was allocated for traffic calming within 21 villages along the A14 corridor. Madingley was one of the villages to benefit from this, and a number of traffic calming measures were introduced in the village in 2003/2004 to discourage rat-running traffic and reduce traffic speeds. These measures included a 30 mph speed limit through the village; “entrance gates” to the village; single lane width restrictions; and electronic speed warning signs. The proposed scheme would not affect the operation of the existing traffic calming features which would continue to regulate the speed of vehicles travelling through the village.
Question 2.12.4

Notwithstanding the fact that the full closure of The Avenue to through traffic is not part of the A14 scheme, is the increased connectivity between The Avenue and the Local Access Road part of the scheme? (REP2-013, para29)

Response

23. The increased connectivity between The Avenue and the Local Access Road is part of the scheme.

24. Currently, The Avenue at Madingley is connected directly to the A14 westbound slip road at the Girton Interchange (Junction 31) via an at-grade left in-left out junction. These turning restrictions are in place because the slip road is a one-way link to the westbound direction of the A14 and therefore other turning movements are not directly permitted. Traffic from Madingley can use The Avenue to travel west on the A14, and east on the A14 or into Cambridge via the Dry Drayton junction. Traffic from the east on the A14, or M11 or Cambridge can use The Avenue to access Madingley. Traffic from the west on the A14 can also access Madingley via The Avenue using a U-turn facility at the Girton interchange. Therefore at present The Avenue can be used by traffic travelling to and from all directions, although only some are direct.

25. The A14 Cambridge to Huntingdon improvement scheme includes the closure of all existing minor at-grade accesses and junctions on the A14 between Girton and Swavesey to improve safety for road users. Local traffic is catered for by the Local Access Road. The existing junction between The Avenue and the A14 westbound on-slip will be closed, therefore a junction is proposed where the Local Access Road will cut across The Avenue in order to maintain access to Madingley Village in this location. The Local Highway Authority has not indicated that it does not wish for a junction to be maintained in this location. In the absence of any instruction to the contrary, Highways England is bound to maintain a connection to The Avenue.

26. The new Local Access Road would be a two-way single carriageway road. Consequently, the junction with The Avenue permits all turning movements directly (rather than some indirect movements as at the moment) and the consequence of this is the increased connectivity. The scheme does not, however, preclude future works to the junction to prevent certain manoeuvres or the introduction of turning restrictions, should the Local Highway Authority identify the need for this in the future.
Question 2.12.5

What is the route of the through traffic that would not be significantly impacted by the full closure of The Avenue to through traffic, with and without the closure in place and with the scheme in place? (REP2-013, para 29)

Response

27. As indicated in the response to question 1.12.36 (see Response to the First Written Questions Report 12: Transportation and Traffic) (Applicant reference HE/A14/EX/39, PINS reference REP2-013), the route through Madingley via The Avenue would be used by traffic travelling from southwest Cambridge, Coton, Comberton, Barton and Hardwick towards Oakington, Bar Hill, Longstanton and Swavesey.

28. With The Avenue open this traffic is forecast to travel on the High Street through Madingley and then use The Avenue to access the new Local Access Road as this is the shorter and quicker route.

29. If The Avenue was closed, this traffic would continue to use the High Street through Madingley, but would re-route through Dry Drayton village via Dry Drayton Road and Oakington Road, joining the new Local Access Road at the reconfigured Dry Drayton junction (Junction 30).

30. Thus, whether or not The Avenue is closed, the forecast traffic flows on the High Street through Madingley are not expected to be significantly affected.
Question 2.12.6

It is suggested that main contractors would be prevented from using certain construction site access routes in accordance with Drawing No. A14-JAC-ZZ-00-SK-Z-00001 Rev P00.1. How would this be enforced on a daily basis? The drawing shows non-permissible haul routes. What is the difference between haul routes and construction site access routes? (REP2-013, para35)

Response

Enforcement of Construction Access Routes

31. To ensure the correct use of non-permissible and permissible routes by construction vehicles a number of procedures would be in place:

- Highways England and its contractors are under an obligation to comply with the provisions of the Code of Construction Practice (CoCP) (Applicant reference HE/A14/EX/64, PINS reference REP4-026), as this is secured by the requirement contained at paragraph 4 of Part 1 of Schedule 2 to the draft DCO. This requirement states: "The authorised development must be carried out in accordance with the provisions of the code of construction practice". Accordingly, the Main Contractors will ensure that site inductions are tailored to inform new starters of the site rules and permissible traffic routes. The induction process will include a briefing pack with routes clearly indicated. Regular ‘Tool Box Talks’ and morning start-up briefings for the workforce, and in particular drivers, will be carried out to reinforce this message and inform them of any changes that may be made to established site traffic routes.

- The Main Contractors will provide to suppliers, as a process of their procurement procedures, information on the permissible traffic routes which they should use when making deliveries to the A14 site.

- Under the requirements contained in paragraph 9 of Part 1 of Schedule 2 to the DCO, prior to the commencement of development, a Traffic Management Plan (TMP) must be approved by Secretary of State following consultation with the local highway authority (i.e. Cambridgeshire County Council). The development must be carried out in accordance with the approved plan. Accordingly, the Main Contractors will each prepare a TMP. The TMP will include a process and regime for installing and maintaining signage at strategic points on the local road network in the proximity of the proposed A14 route which will exclude site traffic to ‘Non Permissible Haul Routes’. In addition directional signs will be installed on ‘Permissible Haul Routes’ to offer guidance to drivers making deliveries to the A14 site. These measures in the TMP will
be implemented during construction following consultation with the Local Highways Authority.

32. The CoCP commits the main contactors to producing a TMP which states in Section 15.1.5 that it will include details of:

“a list of roads which may be used by construction traffic in the vicinity of the site including any restrictions to construction traffic on these routes;”

and

“The name and contact details of the contractor’s traffic safety and control officer and information and advice for the public regarding ways to raise complaints or request information.”

33. Section 15.1.3 of the CoCP states:

“A traffic management working group (TMWG) will be formed for the Scheme at the construction phase which will be chaired by the employer’s representative and includes representatives from the employer, main contractors, local roads authorities and the emergency services. The main contractors will consult with the TMWG regarding traffic management and other traffic related measures (including NMU issues) to be implemented in accordance with the CoCP.

The members of the TMWG will agree a resolution procedure to be followed if there are any disputes regarding the traffic management and other traffic related measures to be implemented.”

34. Therefore, day to day enforcement would be by Highways England’s Main Contractors themselves, backed up by a process for the public or other authorities to raise complaints and for those complaints to be acted upon by the TMWG grouping.

**What is the difference between haul routes and construction site access routes? (REP2-013, para35)**

35. Construction site access routes are broadly those routes which would be used for access to the site for construction-related activity. Some of these access routes will permit heavy vehicles, but others may be restricted to light traffic only. This distinction is examined further in the paragraphs below.

36. There are two different forms of haul routes which make up all construction site access routes. The two types are shown in a preliminary drawing discussed in principle with Cambridgeshire County Council Drawing Reference Number: A14-JAC-ZZ-00-SK-Z-00001, Rev P00.1 (as attached to the response to Written Question 1.12.6 (REP2-013, para35)). ‘Non Permissible Haul Routes’ are shown in red and ‘Permissible Haul Routes’ are shown in blue.
37. Permissible Haul Routes are a subset of construction site access routes, and they permit the use by heavy construction vehicles. The routes would be used for heavy vehicles importing materials such as aggregates, drainage, technology, utilities and other construction materials and equipment to facilitate the construction of the A14 scheme.

38. Non-Permissible Haul Routes do not permit the use by heavy vehicles. Some of these routes may be suitable for light traffic, such as cars and light vans, to access the site. Others will not be permitted for any construction-related traffic.

39. Detailed proposals for permitted construction traffic routes would be proposed by the Main Contractors in the TMP and discussed and agreed with the TMWG.
Question 2.12.7
What effect would Phase 3 of the Northstowe development have on traffic forecasts on the new A14 between Swavesey and Girton in relation to its carriageway and junction design capacities? (REP2-013 para189)

Response

40. The effect of Phase 3 of the Northstowe development on future traffic forecasts in 2035 with the scheme and how this impacts on the new A14 between Swavesey and Girton junctions has been examined as part of traffic model sensitivity testing using version 3a of the Cambridge to Huntingdon A14 Road Model (CHARM3a).

41. The core growth scenario including Phase 2 of the Northstowe development is referred to as the ‘Do Something Plus’ (DS+) scenario, while the growth scenario that includes Phase 3 of the Northstowe development is referred to as the ‘Do Something Plus Plus’ (DS++) scenario. The sensitivity test has indicated that the proposed mainline and junction designs have sufficient capacity to accommodate the additional traffic associated with Phase 3 of the Northstowe Development.

42. To demonstrate the results of this sensitivity test, the following detailed response is separated into:

- Mainline capacity A14 between Swavesey and Girton; and
- Junction capacity at Swavesey, Bar Hill and Girton Junctions.

Mainline Capacity

43. Highways England has provided a response to Suffolk County Council’s written representation, which suggested that the section of mainline A14 between Bar Hill and Swavesey should be future proofed to allow for the Phase 3 Northstowe development (pages 224-225, Highways England’s comments on the Written Representations Report 1: Local Authorities, Applicant reference HE/A14/EX/49, PINS reference REP4-011).

44. Highways England’s response indicates that the section of mainline between Swavesey and Bar Hill junctions would have sufficient capacity to accommodate increases in traffic flows of up to 15% before the ratio of flow to capacity exceeds 85% (corresponding to a degradation in flow conditions and congestion). It also states that Annual Average Daily Traffic (AADT) flows are forecast to increase by approximately 5% between the DS+ scenario and the DS++ scenario in 2035. It is therefore concluded that the link between Swavesey and Bar Hill would have sufficient capacity to accommodate the additional flows. It is noted that this response does not relate to the Bar Hill to Girton link, which is considered below.
45. The Bar Hill to Girton link would have a lower ratio of flow to capacity than the Swavesey to Bar Hill link (Table 3.7, page 51, *Traffic Modelling Update Report*, Applicant reference HE/14/EX/44, PINS reference REP2-018) and would therefore be able to accommodate increases in flows in excess of 15%. The forecast traffic flows on the Bar Hill to Girton A14 link in 2035 would be 127,500 vehicles per day in the DS+ scenario, increasing to 132,400 in the DS++ scenario (Table 12-24, page 69, *Response to the First Written Questions Report 12: Transportation and Traffic*, Applicant reference HE/A14/EX/39, PINS reference REP2-013). This represents an increase of 4% and therefore would not increase the ratio of flow to capacity above 85% (corresponding to a degradation in flow conditions and congestion).

46. Table 12.1 includes an update to the link capacity assessment (refer to Table 3.7 of the *Traffic Modelling Update Report* (Applicant reference HE/A14/EX/44, PINS reference REP2-018) for the Swavesey to Bar Hill and Bar Hill to Girton links to demonstrate the impact of DS++ flows. This demonstrates that there is sufficient capacity on the mainline at this location to accommodate the Phase 3 Northstowe development flows.

Table 12.1: Summary of A1 and A14 link capacity assessments between Swavesey and Girton junctions, 2035

<table>
<thead>
<tr>
<th>Section</th>
<th>Proposed standard</th>
<th>Method A (C’way Standard, DMRB method)</th>
<th>Method B (Congestion Reference Flow, ratio)</th>
<th>Method C (Lane Capacity, ratio)</th>
<th>Method D (Weaving Flows, number of lanes(^1) (number of lanes)(^2))</th>
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<td>CHARM 3a</td>
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<td></td>
<td>DS+</td>
<td>DS++</td>
<td>DS+</td>
<td>DS++</td>
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<td>A14 Swavesey to Bar Hill</td>
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<td>0.76</td>
<td>0.37</td>
<td>2.7 (2.4)</td>
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<td></td>
<td></td>
<td>N/A</td>
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<td>0.37</td>
<td>2.7 (2.4)</td>
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<td>0.74</td>
<td>0.37</td>
<td>2.9 (2.5)</td>
</tr>
</tbody>
</table>

\(^1\) Number of lanes using 1600vdp capacity.

\(^2\) Number of lanes using increased lane capacity calculated by Method C.

\(^3\) Includes Phases 1 and 2 of Northstowe Development.

\(^4\) Includes Phases 1, 2 and 3 of Northstowe Development.
Junction Capacity

47. Section 3.4 of the *Traffic Modelling Update Report* (pages 47-49) provides details of the impact of Phase 3 of the Northstowe development on junction capacity assessments between Swavesey and Girton junctions. Table 3.5 from this report is provided again in Table 12.2 below.

Table 12.2: 2035 DS++ junction capacity assessments, maximum Ratio to Flow Capacity / Degree of Saturation (%)

<table>
<thead>
<tr>
<th>Junction</th>
<th>AM Peak</th>
<th>PM Peak</th>
<th>% Change</th>
<th>AM Peak</th>
<th>PM Peak</th>
<th>% Change</th>
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<tr>
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<td>DS+</td>
<td>DS++</td>
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</tr>
<tr>
<td>Swavesey (North)</td>
<td>79%</td>
<td>88%</td>
<td>+9%</td>
<td>70%</td>
<td>96%</td>
<td>+26%</td>
</tr>
<tr>
<td>Swavesey (South)</td>
<td>61%</td>
<td>73%</td>
<td>+12%</td>
<td>69%</td>
<td>76%</td>
<td>+7%</td>
</tr>
<tr>
<td>Swavesey Services</td>
<td>27%</td>
<td>29%</td>
<td>+2%</td>
<td>41%</td>
<td>59%</td>
<td>+18%</td>
</tr>
<tr>
<td>Swavesey Anderson Road</td>
<td>48%</td>
<td>39%</td>
<td>-9%</td>
<td>55%</td>
<td>58%</td>
<td>+3%</td>
</tr>
<tr>
<td>Lolworth</td>
<td>3%</td>
<td>1%</td>
<td>-2%</td>
<td>2%</td>
<td>1%</td>
<td>-1%</td>
</tr>
<tr>
<td>Bar Hill (Main)</td>
<td>46%</td>
<td>64%</td>
<td>+18%</td>
<td>85%</td>
<td>78%</td>
<td>-7%</td>
</tr>
<tr>
<td>Bar Hill (South)</td>
<td>45%</td>
<td>47%</td>
<td>+2%</td>
<td>77%</td>
<td>82%</td>
<td>+5%</td>
</tr>
<tr>
<td>Bar Hill/Local Access Road(1)</td>
<td>90%</td>
<td>78%</td>
<td>-12%</td>
<td>84%</td>
<td>74%</td>
<td>-10%</td>
</tr>
<tr>
<td>Dry Drayton (North)</td>
<td>53%</td>
<td>66%</td>
<td>+13%</td>
<td>46%</td>
<td>68%</td>
<td>+22%</td>
</tr>
<tr>
<td>Dry Drayton (South)</td>
<td>49%</td>
<td>68%</td>
<td>+19%</td>
<td>47%</td>
<td>61%</td>
<td>+14%</td>
</tr>
<tr>
<td>Girton (W)</td>
<td>51%</td>
<td>55%</td>
<td>+4%</td>
<td>52%</td>
<td>58%</td>
<td>+6%</td>
</tr>
<tr>
<td>Girton (E)</td>
<td>75%</td>
<td>74%</td>
<td>-1%</td>
<td>85%</td>
<td>89%</td>
<td>+4%</td>
</tr>
</tbody>
</table>

48. The results indicate that all junctions operate within theoretical capacity (Degree of Saturation (DoS) of less than 100%) with the Phase 3 Northstowe development. A number of junctions are forecast to operate above design capacity (DoS of greater than 85%), indicating that short-term queuing and delays may occur at times during the peak hours. It should be noted that the DS++ test includes the Southern Access Road (East) between Northstowe (Phase 3) and Dry Drayton Road at Oakington. This would be provided as part of the Northstowe Phase 3 development. For further details, refer to pages 38-40 of the *Transport Assessment* (Applicant reference 7.2, PINS reference APP-756).
Question 2.12.8

What would be the dis-benefits of maintaining the left turn only nature of the junction between The Avenue and the new Local Access Road? (REP2-013, para217)

Response

49. Highways England proposes to provide an all-movements junction between The Avenue and the new Local Access Road, replacing the existing left in-left out arrangement where The Avenue meets the A14 westbound slip road at Girton (Junction 31).

50. Restricting movements at the junction of The Avenue and the new Local Access Road to maintain the left only nature of the junction would have numerous dis-benefits to the local highway network.

51. Analysis has been undertaken to determine the origin and destination of traffic using The Avenue in 2035 with and without the proposed scheme (i.e. with all-movements permitted), as previously provided in Highways England’s response to question 1.12.36 (Tables 12-55 and 12-56, page 150, Response to the First Written Questions Report 12: Transportation and Traffic, Applicant reference HE/A14/EX/39, PINS reference REP2-013). These tables are recreated below with additional directional flow information. Table 12.3 summarises the forecast changes in the origin and destination of traffic to the north of Madingley. Table 12.4 summarises the forecast changes in the origin and destination of traffic to the south.
### Table 12.3: Routeing of traffic on The Avenue in 2035 Origins/destinations to the north of Madingley (based on CHARM3a)

<table>
<thead>
<tr>
<th>Origin/Destination</th>
<th>Without Scheme</th>
<th></th>
<th>With Scheme</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>North bound</td>
<td>South bound</td>
<td>North bound</td>
<td>South bound</td>
</tr>
<tr>
<td>A14 West</td>
<td>650</td>
<td>0</td>
<td>600</td>
<td>550</td>
</tr>
<tr>
<td>A14 East</td>
<td>150</td>
<td>600</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>M11 South</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cambridge (via A1307)</td>
<td>0</td>
<td>750</td>
<td>900</td>
<td>700</td>
</tr>
<tr>
<td>Girton (via A1307)</td>
<td>0</td>
<td>1,000</td>
<td>250</td>
<td>700</td>
</tr>
<tr>
<td>Histon and Impington (via New Road)</td>
<td>0</td>
<td>50</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Oakington (via Dry Drayton Road)</td>
<td>200</td>
<td>0</td>
<td>500</td>
<td>350</td>
</tr>
<tr>
<td>Girton (via Cambridge Road)</td>
<td>50</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>New Road (via Dry Drayton Road)</td>
<td>50</td>
<td>0</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Bar Hill</td>
<td>200</td>
<td>0</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>Longstanton (via B1050)</td>
<td>400</td>
<td>0</td>
<td>550</td>
<td>400</td>
</tr>
<tr>
<td>Swavesey (via Local Access Road)</td>
<td>-</td>
<td>-</td>
<td>50</td>
<td>150</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,800</strong></td>
<td><strong>2,400</strong></td>
<td><strong>3,150</strong></td>
<td><strong>3,250</strong></td>
</tr>
</tbody>
</table>

Units: vehicles per day, rounded to the nearest 50

### Table 12.4: Routeing of traffic on The Avenue in 2035 Origins/destinations to the south of Madingley (based on CHARM3a)

<table>
<thead>
<tr>
<th>Origin/Destination</th>
<th>Without Scheme</th>
<th></th>
<th>With Scheme</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>North bound</td>
<td>South bound</td>
<td>North bound</td>
<td>South bound</td>
</tr>
<tr>
<td>Madingley Village</td>
<td>1,000</td>
<td>700</td>
<td>1,550</td>
<td>1,550</td>
</tr>
<tr>
<td>A428 West</td>
<td>0</td>
<td>700</td>
<td>100</td>
<td>600</td>
</tr>
<tr>
<td>A428 East</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Cambridge (via A1303)</td>
<td>400</td>
<td>50</td>
<td>500</td>
<td>150</td>
</tr>
<tr>
<td>Coton (via Cambridge Road)</td>
<td>300</td>
<td>150</td>
<td>600</td>
<td>300</td>
</tr>
<tr>
<td>Hardwick (via St Neot's Road)</td>
<td>0</td>
<td>300</td>
<td>50</td>
<td>100</td>
</tr>
<tr>
<td>Comberton/Barton (via Long Road)</td>
<td>100</td>
<td>500</td>
<td>350</td>
<td>550</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,800</strong></td>
<td><strong>2,400</strong></td>
<td><strong>3,150</strong></td>
<td><strong>3,250</strong></td>
</tr>
</tbody>
</table>

Units: vehicles per day, rounded to the nearest 50
52. Table 12.3 indicates that with the proposed scheme, the majority of vehicles travelling northbound on The Avenue (up to 2,550 vehicles per day in 2035 – including traffic travelling to the A14 east and west, Cambridge, Bar Hill, Girton and Longstanton) are forecast to turn right towards the A14 westbound and Cambridge. This is based on the assumption that drivers would take the shortest duration journey; refer to the paragraphs below for further consideration of journey times. Table 12.4 also indicates that with the scheme the majority of the northbound traffic on The Avenue originates from Madingley village or local villages to the south (2,550 vehicles per day in 2035 – including Madingley, Coton, Hardwick and Comberton).

53. If the right turn manoeuvre is prohibited at the junction of The Avenue and the new Local Access Road, the number of vehicles using Madingley High Street would not change markedly. Rather, traffic would find alternative routes from Madingley, either via Dry Drayton, turning left onto the new Local Access Road and turning back at Oakington Road Roundabout or making a potentially dangerous U-turn manoeuvre on the Local Access Road. This would also result in an increase in the number of vehicles travelling towards Bar Hill along the new Local Access Road, potentially resulting in congestion at the Bar Hill junction.

54. Analysis of the comparable journey times for the 1,400 vehicles per day accessing the A14 westbound (including traffic to Longstanton and Bar Hill) from The Avenue indicates that traffic travelling by the A14 westbound would take 5.5 minutes to reach Bar Hill and traffic travelling by the Local Access Road would take 7.5 minutes. This is due to the additional delay associated with vehicles having to negotiate Dry Drayton and Bar Hill Junctions. The journey times for each option would be similar therefore it is likely that if right turns were prevented, both options would be used. The option of U-turning at the Oakington Road Roundabout to access the westbound A14 at Girton Interchange would result in additional vehicle kilometres, with associated increases in noise and emissions and potentially encourage unsafe manoeuvres. The option of continuing along the new Local Access Road to Bar Hill Junction would increase the likelihood of congestion at Bar Hill junction.

55. Of the 1,150 vehicles per day travelling between The Avenue and the A1307 Huntingdon Road, the majority (900 vehicles per day) would continue along the A1307 into Cambridge with only 250 vehicles per day turning along Girton Road. If right turns are permitted at The Avenue, the journey to Girton using the A1307 is forecast to take approximately 7 minutes. If the right turn was banned, there would still be a time saving for vehicles travelling to Girton using the A1307 (10 minutes with a left turn followed by a U-turn at Oakington Road Roundabout) in comparison to the route via Dry Drayton Road and Cambridge Road to the north of the A14 (11 minutes). Therefore preventing right turns would again result in additional vehicle kilometres for some drivers, with associated increases in noise and emissions.
56. The majority of vehicles travelling southbound on The Avenue originate from the north and west (totalling 1,850 vehicles per day with the scheme, including A14 west, Oakington, Bar Hill, Longstanton and Swavesey). Preventing right turns at this junction would either require vehicles to U-turn at Girton Roundabout West to turn left into The Avenue or travel through Dry Drayton, increasing the amount of ‘rat-running’ through Dry Drayton. However, the majority of this traffic would still travel through High Street, Madingley.

57. In summary, restricting the junction of The Avenue and the new Local Access Road to left in-left out operation would result in a number of dis-benefits in comparison to the proposed scheme with a full-movements junction, including:

- increasing the distance travelled and journey times for the majority of drivers;
- increasing rat running through surrounding villages;
- potentially increasing congestion at Bar Hill junction;
- potentially encouraging dangerous U-turn manoeuvres on the new Local Access Road; and
- increasing noise and emissions due to increased vehicle kilometres.
Question 2.12.9

What would the forecast RFC value be for the Bar Hill junction south roundabout under the 100% development scenario for Northstowe? (REP2-013, para300)

Response

58. The sensitivity check carried out against the 100% development scenario for Northstowe concluded that Bar Hill junction south roundabout would operate below ‘ratio to flow capacity’ (RFC) values of 85% in 2035. Further details of the sensitivity check can be found in Section 3.4 and Appendix C of the Traffic Modelling Update Report (Applicant reference HE/A14/EX/44, PINs reference REP2-018) submitted at Deadline 2. A summary of the RFC values calculated are also provided in Table 12.5 below.

Table 12.5: 2035 DS++ (100% Development) Junction Capacity Assessment, Bar Hill South Roundabout

<table>
<thead>
<tr>
<th>AM Peak</th>
<th></th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Delay</td>
<td>Total Delay</td>
</tr>
<tr>
<td>RFC (%)</td>
<td>Queue (Vehs) pcuHr</td>
<td>RFC (%)</td>
</tr>
<tr>
<td>Bar Hill South Roundabout</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Hatton’s Road (B1050)</td>
<td>47%</td>
</tr>
<tr>
<td>B</td>
<td>Golf Course</td>
<td>7%</td>
</tr>
<tr>
<td>C</td>
<td>Crafts Way</td>
<td>34%</td>
</tr>
<tr>
<td>D</td>
<td>Saxon Way</td>
<td>39%</td>
</tr>
</tbody>
</table>
Question 2.12.10
What is the forecast RFC value for the Bar Hill B1050 and Local Access Road (North) junction under the 100% Northstowe development scenario? (REP2-013, para310)

Response
59. The sensitivity check carried out against the 100% development scenario for Northstowe concluded Bar Hill B1050 and Local Access Road (North) junction would operate below the ‘ratio to flow capacity’ (RFC) values of 85% in 2035. Further details of the sensitivity check can be found in Section 3.4 and Appendix C of the Traffic Modelling Update Report (Applicant reference HE/A14/EX/44, PINs reference REP2-018) submitted at Deadline 2. A summary of the RFC values calculated are also indicated in Table 12.6.

Table 12.6: 2035 DS++ (100% Development) Junction Capacity Assessment, Bar Hill B1050 & Local Access Road (North) Junction

<table>
<thead>
<tr>
<th></th>
<th>AM Peak</th>
<th></th>
<th></th>
<th>PM Peak</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RFC (%)</td>
<td>Queue (Vehs)</td>
<td>Total Delay (pcuHr)</td>
<td>RFC (%)</td>
<td>Queue (Vehs)</td>
<td>Total Delay (pcuHr)</td>
</tr>
<tr>
<td>Bar Hill B1050 and Local Access Road (North)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>J1:7 Hattons Road (N)</td>
<td>78%</td>
<td>41</td>
<td>10.4</td>
<td>66%</td>
<td>25</td>
<td>8.2</td>
</tr>
<tr>
<td>J1:8 Link Road</td>
<td>27%</td>
<td>4</td>
<td>2.2</td>
<td>74%</td>
<td>9</td>
<td>3.5</td>
</tr>
<tr>
<td>J1:10 Hattons Road (S)</td>
<td>46%</td>
<td>11</td>
<td>2.8</td>
<td>70%</td>
<td>32</td>
<td>7.7</td>
</tr>
</tbody>
</table>
Response

60. The sensitivity check carried out against the 100% development scenario for Northstowe concluded that Bar Hill B1050 and Local Access Road (South) junction would operate below the ‘ratio to flow capacity’ (RFC) values of 85% in 2035. Further details of the sensitivity check can be found in Section 3.4 and Appendix C of the Traffic Modelling Update Report (applicant reference HE/A14/EX/44, PINs reference REP2-018 ) submitted at Deadline 2. A summary of the RFC values calculated are also indicated in Table 12.7.

Table 12.7: 2035 DS++ (100% Development) Junction Capacity Assessment, Bar Hill B1050 & Local Access Road (South) Junction

<table>
<thead>
<tr>
<th>Junction</th>
<th>AM Peak</th>
<th>PM Peak</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RFC (%)</td>
<td>Queue (Vehs)</td>
</tr>
<tr>
<td>Bar Hill B1050 and Local Access Road (South)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J1:2 Link Road</td>
<td>50%</td>
<td>3</td>
</tr>
<tr>
<td>J1:4 LAR (E)</td>
<td>27%</td>
<td>2</td>
</tr>
<tr>
<td>J1:6 LAR (W)</td>
<td>20%</td>
<td>3</td>
</tr>
</tbody>
</table>
Question 2.12.12

Would the provision of an additional lane on Brampton Road leading to the Edison Bell Way junction on the existing railway bridge be possible and could it improve the forecast RFCs in this area? If not, why not? (REP2-013, para 354)

Response

61. On the existing Brampton Road bridge over the railway, the cross-section would be different from that currently in place. With the removal of the Huntingdon viaduct, there is no need for the safety fencing provided in the northern verge between the carriageway and the footway/cycleway; this barrier having been provided to protect the strengthening to the viaduct above. With the removal of the barrier, the scheme General Arrangement drawing (Drawing reference A14-JAC-ZZ-HT-DR-Z-01002 Rev P00, PINS reference APP-014) shows the carriageway is widened to provide room for a right turning lane in the centre for the west station car park, so that traffic waiting to turn right would not block through traffic on Brampton Road.

62. On the bridge itself, the scheme General Arrangement Drawings show hatched road markings are provided in the centre of the carriageway between this right turning lane into the west station car park and the right turning lane at the Edison Bell Way junction, which develops 30m in advance of the traffic signals. These markings are in error; the design intention results is to provide a right turning lane of approximately 70m extending back to just beyond the right turning lane for the west station car park, resulting in two traffic lanes across the bridge. The results of the operational assessments in Appendix A of the Traffic Modelling Update Report (Applicant reference HE\A14\EX\44, PINS reference REP2-018) are consistent with this layout.
63. The potential effect of extending the right turn lane on this approach has been tested by increasing the length of the flare for traffic turning right into Mill Common Link. This would increase the capacity of the Brampton Road approach as it would allow more vehicles to enter the junction in each cycle. However, as a result of the increased capacity on this approach, the subsequent re-optimisation of the traffic signals would result in some green time being reallocated from Brampton Road to other movements that are also forecast to be operating at or close to theoretical capacity (e.g. the ahead and right movements from Edison Bell Way). This would thereby offset some of the benefits for traffic on the Brampton Road approach.

64. Sensitivity testing suggests that increasing the flare length to 100m would result in an improved Degree of Saturation (DoS) of approximately 88% in the AM peak hour and 95% in the PM peak hour in 2035 with the scheme (compared with the 93% and 98% respectively in in the Traffic Modelling Update Report). Flare lengths longer than 100m would result in minimal further improvements in the DoS; the additional road space would largely provide additional storage for queuing traffic.

65. Increasing the length of the flare to 100m is not possible as this would conflict with the right turning lane for the station car park and there would be insufficient width on the existing bridge to provide an additional lane and retain the right turn lane into the west station car park without reducing the width of the footway/cycleways on both sides. Reducing the width of the footway/cycleways is not possible due to the very high non-motorised user flows in this area. Hence it is considered that the current proposals represent the best layout that can be provided with the constraint of the existing bridge.
Question 2.12.13

The observations referred to in the question were made at approximately 15.30 and 17.30 and comprised stationary traffic. How do these relate to the model operational assessment? (REP2-013, para 366)

Response

66. The results of the operational assessments based on traffic forecasts from version 3a of the Cambridge to Huntingdon A14 Road Model (CHARM3a) are reported in Appendix A of the Traffic Modelling Update Report (Applicant reference HE/A14/EX/44, PINS reference REP2-018). Table A.31 reports the results of the operational assessments at the Brampton Road / Edison Bell Way junction. In the PM peak hour (17:00-18:00) the Brampton Road (W) approach to the Brampton Road / Edison Bell Way junction is forecast to operate with an average degree of saturation (DoS) of 78% without the scheme in 2020, with a mean maximum queue (MMQ) of 23 pcus (passenger car units), which equates to a queue length of approximately 130 metres. In 2035 without the scheme, the DoS is forecast to increase to 90%, with a MMQ length of 33 pcus, (which represents a length of approximately 190 metres).

67. As noted in the response to question 1.12.52 (Applicant reference HE/A14/EX/39, PINS reference REP2-013) on any road, there is variation in traffic flows. There is a regular variation between hours and days and there are random variations. Consequently, the length of queues at junctions will vary from one day to the next and may vary significantly over a single hour.

68. The results of the operational assessments represent average conditions over the modelled time period. However, within this period there may be periods of time where conditions are worse than the average conditions represented in the model. This may be the case in the early afternoon due to pick-up activity associated with the nearby Hinchinbrooke School, and in the evening (PM) peak hour, due to the concentrated peaks in traffic exiting the station car parks shortly after trains arrive at Huntingdon Station.

69. The queue lengths predicted by the operational model are mean maximum queues (MMQ) and therefore actual queue lengths will vary around this value depending on the prevailing traffic conditions. On arms that are operating within design capacity (DoS of less than 85%), actual queue lengths could vary by up to 50%. On arms that are operating at or close to theoretical capacity (DoS of 85-100%), the actual queue lengths could be up to twice the MMQ predicted by the operational model. On this basis, the maximum queue lengths on Brampton Road in the PM peak hour could be up to 200m in 2020 and 380m in 2035.
70. It should also be noted that the operational assessments are based on traffic flows from CHARM3a, which represents ‘normal’ conditions based on median journey times on the strategic road network (SRN) including the A14. By implication, traffic conditions on the A14 would be better than median 50% of the time and worse than median 50% of the time. When conditions on the A14 are worse than median it is likely that some traffic would divert from the A14 on to local roads to avoid congestion, resulting in more traffic using Brampton Road corridor to access Huntingdon than the model predicts. In such circumstances, the performance of the local road network would be made worse with a consequential increase in delay and queuing including on Brampton Road.

71. The afternoon period observed (15:00-16:00) has not been modelled, so it is not possible to comment on specific predicted queue conditions during this period, other than the observation at paragraph 3 above regarding pick-up activity associated with the nearby Hinchinbrooke School.
Question 2.12.14

The observations referred to in the question were made between 08.30 and 08.45 and comprised slow moving traffic. How do these relate to the model operational assessment? (REP2-013 para, 372)

Response

72. The results of the operational assessments based on traffic forecasts from version 3a of the Cambridge to Huntingdon A14 Road Model (CHARM3a) are reported in Appendix A of the Traffic Modelling Update Report (Applicant reference HE\A14\EX\44, PINS reference REP2-018). Table A.31 reports the results of the operational assessments at the Brampton Road / Edison Bell Way junction. In the AM peak hour (08:00-09:00) the Brampton Road (W) approach to the Brampton Road / Edison Bell Way junction is forecast to operate with an average degree of saturation (DoS) of 56% without the scheme in 2020, with a mean maximum queue (MMQ) of 11 pcus (passenger car units), which equates to a queue length of approximately 65 metres. In 2035 without the scheme, the DoS is forecast to increase to 65%, with a MMQ length of 15 pcus (90 metres).

73. As noted in the response to question 1.12.52 (Applicant reference HE/A14/EX/39, PINS reference REP2-013) on any road, there is variation in traffic flows. There is a regular variation between hours and days and there are random variations. Consequently, the length of queues at junctions will vary from one day to the next and may vary significantly over a single hour.

74. The operational assessments have been carried out using LINSIG, which is industry standard software for the assessment of individual signal controlled junctions and networks of signalised junctions. The results of the operational assessments represent average conditions over the modelled time period. The operational model reports the average Degree of Saturation (DoS) and the mean maximum queue (MMQ) on each link. The MMQ represents the estimated average number of stationary vehicles at the stopline as a direct result of the operational performance of the junction; it does not include the effects of slow moving traffic on the approaches to the junction caused by other network effects.

75. There are a number of possible reasons for the slow moving traffic on this section of Brampton Road, including:

- emergency vehicles accessing the nearby hospital, police and fire headquarters;
- drop-off activity associated with the nearby Hinchingbrooke School;
- vehicles turning into and out of the station car parks; and
- high pedestrian flows associated with the school and rail station with many pedestrians crossing the road away from designated crossing points.

76. In combination, these effects disrupt traffic flow on Brampton Road approaching the Brampton Road / Edison Bell Way junction, resulting in additional delays on the over and above those directly related to the performance of the junction itself. Consequently the observations of slow moving traffic on Brampton Road between 08:30 and 08:45 will not be apparent in the operational modelling results.
Question 2.12.15
What is the CHARM3a forecast impact of the scheme on Junction 26 of the A14 (A1096/B1040) and why is this forecast impact thought to occur? (REP2-013, para 447)

Response

78. Table 2.12 and Table 2.13 in the Traffic Modelling Update Report (Applicant reference HE/A14/EX/44, PINS reference REP2-018) compare the impact of the A14 improvement scheme on A14 junctions in the years 2020 and 2035 respectively based on the CHARM3a Core scenario traffic forecasts. These tables indicate that in 2020, traffic flows at the Galley Hill junction (Junction 26) are forecast to increase from 22,900 vehicles per day without the scheme to 25,900 vehicles per day with the scheme, an increase of 13%. In 2035, traffic flows are forecast to increase from 25,000 vehicles per day without the scheme to 29,400 vehicles per day with the scheme, an increase of 18%.

79. This increase is partially the result of the forecast increase in traffic flows on the A1096 which arises from the re-routeing of traffic travelling from St Ives to Huntingdon from the A1123 to the A1096. Traffic from St Ives and its environs is forecast to use the A14 rather than the A1123 to reach Huntingdon due to the reduction in congestion on the A14 and improved access to the town centre provided by the replacement of the Huntingdon Rail Viaduct with new local road connections. These alternative routes are shown in Figure 12.1 below.

Figure 12.1: Re-routeing of trips between St Ives and Huntingdon
80. The increase is also a result of the re-routeing of traffic from St Ives travelling towards Cambridge on the A14. Without the scheme, some of this traffic is forecast to use Low Road to access the A14 at Fenstanton (Junction 27) in order to avoid congestion on the A14. However, with the scheme, this traffic switches back to the A1096, joining the detrunked A14 at Galley Hill (Junction 26) instead. Traffic using Low Road would not pass through the Galley Hill junction, while traffic using the A1096 would use the Galley Hill junction to access the A14 eastbound, as indicated in Figure 12.2 below.

![Figure 12.2: Re-routeing of trips between St Ives and the Cambridge Area](image)

81. The Galley Hill junction would not be improved as part of the scheme due to uncertainties about Cambridgeshire County Council's plans for the detrunked A14 and uncertainties regarding planned future development in this area both of which may influence the nature of any proposals in this location. However, Highways England has agreed to the principle of carrying out monitoring in conjunction with Cambridgeshire County Council, although the exact locations to be monitored are yet to be agreed. If monitoring shows that there is an unforeseen adverse impact attributable to the A14 then HE will consider what appropriate mitigation measures are necessary to address the unpredicted impact of the A14 and will seek to agree the funding and implementation of those measures with Cambridgeshire County Council.
Question 2.12.16

What are the available options for an improvement scheme at this junction? (REP2-013, para 452)

Response

82. Section 7.9 of the Transport Assessment (Applicant reference 7.2, PINS reference APP-756) assessed the wider impacts of the A14 scheme, with four junctions identified for detailed operational assessment. The results of these operational assessments indicated that while the scheme may result in an increase in traffic volumes, it would not have a significant impact on the operation of the majority of the junctions, which would continue to operate within design capacity (RFC less than 85%) in both 2020 and 2035. The only exception was the A1096 / A14 eastbound slips T-junction on the northern side of the Galley Hill junction (A14 Junction 26) which was forecast to operate in excess of theoretical capacity in 2035, with conditions made worse by the increase in traffic at this junction associated with the scheme.

83. The Galley Hill junction would not be improved as part of the scheme, due to uncertainties about Cambridgeshire County Council’s plans for the detrunked A14 and uncertainties regarding planned future development in this area both of which may influence the nature of any proposals in this location. However, Highways England has committed to the principle of carrying out monitoring in conjunction with Cambridgeshire County Council, although the locations to be monitored are yet to be agreed. If monitoring shows that there is an unforeseen adverse impact attributable to the A14 then HE will consider what appropriate mitigation measures are necessary to address the unpredicted impact of the A14 and will seek to agree the funding and implementation of those measures with the County Council.

84. The available options to increase the capacity of the A1096 / A14 eastbound slips T-junction at the Galley Hill junction include:

- local widening/realignment of the existing junction possibly in conjunction with amended priorities;
- the introduction of traffic signals possibly in conjunction with local widening; or
- replacement of the existing junction with a compact roundabout.

85. The most appropriate form of improvement scheme would depend on the future traffic flows and turning movements at the junction, including which movements become overloaded and the degree to which they are overloaded, and the land available around the junction. Any improvements deemed necessary at this junction would be taken forward by the Local Highway Authority.
Question 2.12.17

What would be the specific consequences of the omission of the removal of the existing A14 Huntingdon viaduct and the associated road works from the scheme?

Response

86. This response is covered in the Huntingdon Viaduct Response Collated report (Response to ExA’s Second Written Questions: Huntingdon Viaduct, Applicant reference HE/A14/EX/93).
Question 2.12.18

Why is removal of the existing A14 Huntingdon viaduct and the associated road works a necessary element of the A14 improvement scheme?

Response

This response is covered in the Huntingdon Viaduct Response Collated report (Response to ExA’s Second Written Questions: Huntingdon Viaduct, Applicant reference HE/A14/EX/93).
Question 2.12.19

‘It is expected that a significant proportion of people would continue to use the existing A14’ if the existing viaduct was retained in the context of the availability of the re-routed A14 as now proposed. Has any modelling work been carried out to support this expectation? If so, please provide details; if not, why not? (REP5-029, page 22)

Response

This response is covered in the Huntingdon Viaduct Response Collated report (Response to ExA’s Second Written Questions: Huntingdon Viaduct, Applicant reference HE/A14/EX/93).
Question 2.12.20

Please provide plans showing the locations and details of any existing vehicle weight limits on roads within a corridor of 4km width to either side of the scheme from its junction with the A428 to its junction with the A1.

Response

89. Please refer to Appendix 12.1 Existing Vehicle Weight Limits appended to this report.

90. The plan shows the areas covered by weight restrictions in the vicinity of the A14 Cambridge to Huntingdon Scheme. There are three different types of weight restrictions in place:

- 24 hour restrictions on vehicles over 7.5 tonnes centred around Huntingdon, Fenstanton, Brampton and Hilton;
- A restriction on vehicles over 7.5 tonnes is in place on the B1040 in the area of Hilton between the hours of 11pm and 7am; and
- A 24 hour restriction on vehicles over 17 tonnes is shown west of Brampton and the A1 and south of the A14 in the vicinity of Ellington.
Question 2.12.21

If the closure of the junction of The Avenue with the A14, or indeed any other traffic restrictions such as weight limits on roads within the general A14 corridor, were thought to be necessary following the opening of the scheme, what arrangements could be put in place to provide funding for this to take place in association with the scheme, such as through a Section 106 agreement?

Response

91. The traffic information submitted to the examination sets out and fully justifies why closure of the Avenue and other restrictions are not, in Highways England's opinion, necessary. Without prejudice to that position, in order to give further comfort, consultation is ongoing between Highways England and Cambridgeshire County Council with respect to the monitoring of traffic conditions post scheme opening, to verify that future traffic conditions are as predicted. Although details of the method and location of this monitoring have yet to be agreed with the Council, it is envisaged that traffic conditions in specific agreed locations of concern would be monitored and that monitoring would also be undertaken in other locations as a control test, to take account of background changes in traffic conditions unrelated to the scheme.

92. Highways England would work with Cambridgeshire County Council to provide mitigation solutions at specific locations if agreed to be needed as a consequence of the scheme and appropriate. Should funding be required, this could be provided by Highways England as a commuted sum, however the most appropriate delivery route would be agreed with the Council on a case by case basis.

93. The above is recorded in the Statement of Common Ground between Highways England and Cambridgeshire County Council in which it states:

“Highways England considers that the CHARM3A and the local impact testing forms a robust justification for the Scheme and the County Council is considering its position. The County Council is considering the impact of the changes in local traffic routes and will include this assessment in the Local Impact Report for Deadline 8. Highways England will agree with the County Council a list of locations to be subject to monitoring of traffic flows before and after scheme construction. If monitoring shows that there is an unforeseen adverse impact attributable to the A14 then HE will consider what appropriate mitigation measures are necessary to address the unpredicted impact of the A14 and will seek to agree the funding and implementation of those measures with the County Council.”
Appendix 12.1: Question 2.12.20 Existing Vehicle Weight Limits