Document 5.29.2.2.1

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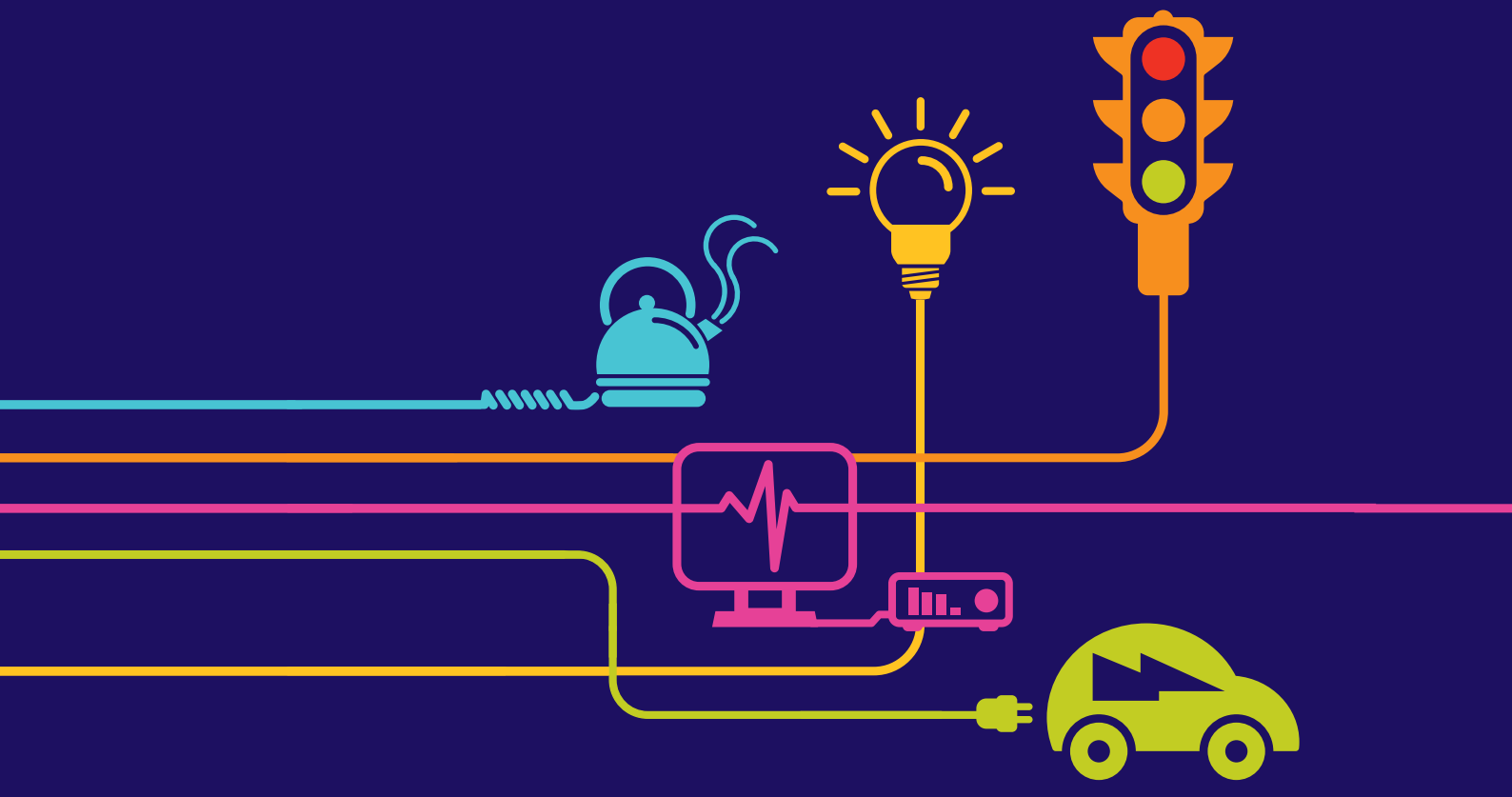
Environmental Statement
Transport Assessment Sensitivity Test

Hinkley Point C Connection Project

Regulation 5(2)(q) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009



Application Reference EN020001

September 2014

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Environmental Statement Sensitivity Test

Hinkley Point C Connection Project

5.29.2 – Environmental Statement Supporting Documents- Sensitivity Test

(orange highlight indicates the contents of this Volume)

Volume	Title
5.29.2.1	The Applicant's Report to Support Habitats Regulations Assessment Sensitivity Test
5.29.2.2.1	Transport Assessment Sensitivity Test
5.29.2.2.2	Transport Assessment Sensitivity Test Appendix A- Revised Construction Programme
5.29.2.2.2	Transport Assessment Sensitivity Test Appendix B Assessment Tables
5.29.2.2.2	Transport Assessment Sensitivity Test Appendix C Junction Profile Graphs
5.29.2.2.3	Transport Assessment Sensitivity Test Appendix D Revised Capacity Model Outputs
5.29.2.3	Flood Risk Assessment Sensitivity Test
5.29.2.4	Draft Construction Environmental Management Plan Sensitivity Test

Transport Assessment Sensitivity Test

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Hinkley Point C Connection Project

OCTOBER 2014

VOLUME 5.29.2.2.1- TRANSPORT ASSESSMENT SENSITIVITY TEST

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1 INTRODUCTION

1.1 Background

1.1.1 National Grid Electricity Transmission plc (National Grid) has submitted an application under the Planning Act 2008 to seek powers to construct, operate and maintain a new 400,000 volt (400kV) connection between Bridgwater, Somerset and Seabank Substation, north of Avonmouth, together with various associated development and other works ('the Proposed Development').

1.1.2 The application was submitted to the Planning Inspectorate (PINS) on the 28 May 2014. PINS confirmed that the application has been accepted for examination on 17 June 2014 (reference number. EN020001).

1.1.3 Under the terms of its transmission licence, National Grid is obliged to make an offer of connection in response to each valid application made. In September 2007, National Grid received an application from EdF Energy for the connection of a proposed new nuclear power station at Hinkley Point, Somerset (Hinkley Point C Power Station) to the high voltage electricity transmission system. This connection, as well as others in the South West and South Wales, triggered the need for new transmission capacity in the region.

1.1.4 That part of the Proposed Development that comprises an electric line above ground within section 16 of the Planning Act 2008 is a Nationally Significant Infrastructure Project (NSIP) for the purposes of that Act. Under Section 31 of the Planning Act 2008, development consent is required for development to the extent that it is or forms part of an NSIP. Development consent is granted by the making of a Development Consent Order (DCO) for which application may be made under section 37 of the Planning Act 2008.

1.1.5 An Environmental Statement (ES), was submitted as part of the DCO application (the submitted ES). The submitted ES was prepared in accordance with the Planning Act 2008, The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 (SI 2009/2263) ('the 2009 Regulations') and The Infrastructure Planning (Applications: Prescribed Forms and Procedures) Regulations 2009. The submitted ES comprises **Volumes 5.1** to **5.27** of the DCO application submission with the submitted Transport Assessment (TA) located at **Volume 5.22**.

1.1.6 Following the submission of the DCO application, further information related to the submitted TA (**Volume 5.22**) was provided to the Joint Councils on 20 August 2014. The further information provided additional detail and clarification in response to discussions with the Joint Councils and the Highways Agency (HA) on the following matters:

- Junction traffic profiles – Proposed Development construction vehicle activity profiles;
- Junction mitigation measures;
- Mitigation Junction Capacity Assessments;
- Highways Agency Junction Modelling;
- Traffic Regulations Orders (TROs); and
- Transport and Access Plans.

1.1.7 The further information is referenced in the TA Sensitivity Test where relevant.

1.2 Modifications to Connection Date

1.2.1 National Grid has received an application from EdF Energy for a modification to the connection date for the Hinkley Point C Power Station that seeks connection two years later than the present connection date described in the submitted DCO application.

1.2.2 As a result of the application from EdF Energy, on the 19 August 2014 a formal offer for a revised connection date was made by National Grid to EdF Energy.

1.2.3 EdF Energy has advised National Grid that, although technically this offer is confidential until signed, National Grid can inform PINS that an offer has been made.

1.2.4 To achieve the revised connection date offered the construction programme, as presented and assessed in the submitted ES (**Volume 5.3.2**, **Appendix 3.B**), has also been revised.

1.2.5 The revisions to the construction programme are greater than moving the start of construction to a later date than presented in the submitted ES. The duration of the construction of the various individual proposed development components has changed; the duration of some development components have increased, others have decreased. The changes are described and explained in Chapter 4 of this sensitivity test.

1.3 Purpose of this Document

1.3.1 In light of the modifications to the connection date and the Revised Construction Programme, a review of the submitted TA (**Volume 5.22** of the submitted ES) has been undertaken.

1.3.2 The purpose of this document is to provide a sensitivity test of the submitted TA to consider whether there are changes to the traffic and transportation effects described in the submitted document as a result of the Revised Construction Programme.

1.3.3 This TA Sensitivity Assessment should be read in conjunction with the following documents:

- Environmental Statement Sensitivity Test- Chapter 12 – Traffic and Transport (**Volume 5.29.1.1**);
- Transport Assessment (**Volume 5.22** of the submitted ES, dated May 2014);
- Environmental Statement Chapter 12 – Traffic and Transport (**Volume 5.12** of the submitted ES, dated May 2014);
- Transport Assessment Further Information (submitted to Joint Councils on 20 August 2014);
- Draft Construction Traffic Management Plan (**Volume 5.26.5** of the submitted ES); and

- Public Rights of Way Management Plan (**Volume 5.26.6** of the submitted ES).

1.3.4 Together, these documents present a thorough sensitivity assessment of all the traffic and transportation aspects of the Revised Construction Programme.

1.4 Transport Assessment Sensitivity Test Structure

1.4.1 This document follows the structure set out within the submitted TA which is as follows:

- Section 1 – Introduction;
- Section 2 – Scoping and Consultation;
- Section 3 – Policy and Legislation;
- Section 4 – Development Proposals;
- Section 5 – Baseline Environment;
- Section 6 – Road Safety;
- Section 7 – Construction Traffic Routes;
- Section 8 – Assessment Methodology;
- Section 9 – Traffic Growth and Committed Development;
- Section 10 – Construction Traffic Predicted Trip Generation and Distribution;
- Section 11 – Junction Assessment Scope;
- Section 12 – Highway Impact;
- Section 13 – Strategic Road Network Assessment;
- Section 14 – Mitigation Controls and Measures;
- Section 15 – Framework Travel Plan; and
- Section 16 – Summary and Conclusions.

1.4.2 Where there is no material change within a Section as a result of the Revised Construction Programme this has been stated.

1.5 Figures and Appendices

1.5.1 Where appropriate, revised TA appendices have been prepared for the assessment of effects of the Revised Construction Programme and are provided at **Volume 5.29.2.2.2** and **Volume 5.29.2.2.3**). The submitted TA figures do not change as a result of the Revised Construction Programme.

2 SCOPING AND ENGAGEMENT

2.1.1 National Grid have undertaken extensive consultation to inform the submitted TA (**Volume 5.22**). Consultation took place over a period of eight weeks between 3 September and 29 October 2013 in accordance with the Planning Act 2008. Statutory and non-statutory consultees and members of the public were included in the consultation. Various methods of consultation and engagement were used in accordance with the Statement of Community Consultation (SoCC) including letters, website, public exhibitions, publicity and advertising, inspection of documentation at selected locations and Parish and Town Council briefings.

3 POLICY, LEGISLATION AND GUIDANCE

3.1.1 There are no changes or additions to the legislation, policy and guidance identified and discussed within the submitted TA (**Volume 5.22**) which are relevant to the Revised Construction Programme.

4 DEVELOPMENT PROPOSALS

4.1 Introduction

4.1.1 This chapter provides a description of the Revised Construction Programme required to meet the revised connection offer date. The chapter provides a comparison of the Revised Construction Programme against the Preliminary Construction Programme detailed and assessed within the submitted ES (**Volume 5.3.1**, **Table 3.3** and **Volume 5.3.2**, **Appendix 3B**).

4.1.2 This chapter provides a description of the Revised Construction Programme only; all other aspects of the Proposed Development remain as described in Chapter 4 of the submitted TA (**Volume 5.22**). This includes the form and location of all required construction bellmouths along with described construction methods.

4.2 Requirement for Changes in the Revised Construction Programme Duration

4.2.1 National Grid's transmission licence requires it to ensure the security of the supply of high voltage electricity. Part of National Grid's role involves balancing the supply of electricity between generators and users. This supply of electricity has to be delivered in combination with the need to allow for works on the National Grid transmission system (such as maintenance operations, carrying out repairs and making new connections).

4.2.2 To ensure the safety of those working on or near overhead power lines during works to the transmission system, the electricity flowing through the lines is usually turned off. These periods are known as "outages" and refer to when the normal power operation of the overhead lines is interrupted by some of the live electricity circuits being temporarily turned off, whilst at all times allowing sufficient power to continue to flow through other parts of the transmission system to maintain supply.

4.2.3 All outages have to be co-ordinated nationally and regionally within National Grid and with affected Distribution Network Operators (DNOs). The outages have to be "booked" several years in advance of need and normally can only occur during British Summer Time from March to October, when there is a lower power demand on the National Grid system.

4.2.4 To ensure that the Hinkley Point C Connection Project could be delivered by the proposed revised connection offer date, a Revised Construction Programme has been developed which is spread over a number of known and planned outage periods, having regard to the need to continue to provide high voltage electricity efficiently and reliably whilst works progress and also the need to carry out work in a safe manner.

4.2.5 Accordingly, the revisions to the construction programme arising from a later connection offer date are greater than simply moving the start of construction to a later date than presented in the submitted ES. The Revised Construction Programme has to be planned to fit within the existing outages periods already scheduled by National Grid and the DNO (Western Power Distribution (WPD)). There are changes in the construction duration for a number of individual proposed development components (both increases and decreases in duration) and the length of the overall construction programme increases because of the different outages that apply to the Revised Construction Programme.

4.3 Revised Construction Programme

4.3.1 To achieve the revised connection offer date, National Grid would start construction in December 2015, two months later than the Preliminary Construction Programme set out in the submitted ES (**Volume 5.3.1**, **Table 3.3** and **Volume 5.3.2, Appendix 3B**). Construction of the Proposed Development is anticipated to be completed by March 2022.

4.3.2 The duration of the total Revised Construction Programme is 76 months which is 25 months longer than the Preliminary Construction Programme detailed in the submitted ES. As described above, this extension in duration is due to the need to connect the Hinkley Point C Power Station to the National Grid system within EdF's requested revised connection programme. This requires re-planning of the construction programme assessed in the submitted ES.

4.3.3 The construction methods described in Chapter 4 of the submitted TA do not alter as a result of the Revised Construction Programme, with the exception of the 400kV Underground Cables through the Mendip Hills and construction at Sandford substation where works would be undertaken in a phased manner and restricted to a maximum working stretch of 3km. Further information is provided within the Draft Construction Environmental Management Plan Sensitivity Test (**Volume 5.29.2.4**).

4.3.4 The total construction vehicle movements associated with each of the individual proposed development components of the Proposed Development do not change as a result of the Revised Construction Programme; this is discussed in more detailed in this document.

The Revised Construction Programme is set out below in **Table 4.1** and provided in **Appendix A** of this document. The table below also provides a comparison with the Preliminary Construction Programme assessed in the submitted TA. In some instances the Revised Construction Programme provides further detail as to the timing of each development component when compared to the Preliminary Construction Programme and this is identified in the table below.

Table 4.1 Revised Construction Programme

Proposed Development Component	**Revised Start Date**	**Revised Finish Date**	**Duration of works in submitted ES** (months)	**Revised Duration of works** (months)
400kV Overhead Line 400kV Route (South)	Q2 2018	Q2 2020	45 (total route)	27
400kV Overhead Line 400kv Route (North)	Q3 2018	Q3 2021	45 (total route)	39
400kV Overhead Line 400kV Route (Huntspill to Bridgewater Tee)	Q3 2019	Q2 2020	45 (total route)	12

Proposed Development Component	**Revised Start Date**	**Revised Finish Date**	**Duration of works in submitted ES** (months)	**Revised Duration of works** (months)
400kV Cable Mendip Hills Route- works between A38 Bristol Road to Tower head Road (including South of Mendip Hills CSE Compound, A38 Bristol Road (UGC) Compound and haul Road	Q1 2016	Q2 2020	48 (all works between Sandford Substation and A38)	54
400kV Cable Mendip Hills Route – works between Towerhead Road and Sandford Substation	Q1 2018	Q2 2020	48 (all works between Sandford Substation and A38)	30
400kV Cable – works between Towerhead Road and Sandford Substation (haul road and compound only)	Q1 2017	Q3 2021	48 (all works between Sandford Substation and A38)	45
Bridgwater Tee 400kV Cable Route	Q3 2019	Q3 2020	12	27
AT Route Underground and Overhead Line	Q4 2019	Q3 2020	12	12
W Route	Q2 2017	Q2 2019	24	27
BW Route Avonmouth Option A	Q4 2018	Q2 2019	21	9
BW Route Portishead Option B	Q4 2018	Q4 2019	21	15
G Route	Q3 2019	Q3 2020	13	15
Seabank Line Entries BW Route	December 2015	Q2 2016	30 (all Seabank Line Entries)	9
Seabank Line Entries G Route	Q1 2016	Q3 2016	30 (all Seabank Line Entries)	9
Seabank Line Entries DA Route	Q1 2018	Q3 2018	30 (all Seabank Line Entries)	9
N Route Overhead Line (including disconnection and removal)	Q3 2019	Q2 2020	9 (all N route works)	12

Proposed Development Component	**Revised Start Date**	**Revised Finish Date**	**Duration of works in submitted ES** (months)	**Revised Duration of works** (months)
Hinkley Line Entries	Q3 2018	March 2022	36	45
Y Route Churchill	Q1 2018	Q4 2018	12	12
W Route Churchill	Q3 2018	Q3 2018	12	3
Sandford 400/132kV Substation	Q1 2018	Q3 2020	24	33
Seabank 400/132kV Substation	Q4 2019	Q4 2021	24	24
Churchill 132/33kV WPD Substation	December 2015	Q4 2018	24	39 (works from Q4 2015 to Q1 2017 within substation boundary only)
Portishead 132/33kV WPD Substation	Q3 2018	Q2 2019	8	12
Avonmouth132/33kV WPD Substation	Q3 2019	Q2 2020	9	12
Removal of Southern Half F Route	Q3 2019	Q4 2019	12	6
Removal of Northern Half F Route	Q2 2020	Q2 2021	27	15
Removal of 132kV G Route	Q3 2019	Q3 2020	13	15

4.3.5 As described above, all of the construction works for the individual development components of the Proposed Development have been rescheduled to fit within the total Revised Construction Programme, taking account of the system outages available within the transmission region. This results in variations to the construction programme in the submitted ES, with some development components being constructed over a longer duration and others over a shorter duration.

Proposed Development Component – Increased Construction Duration

4.3.6 Under the Revised Construction Programme, the duration of a number of development components of the Proposed Development increases. These development components are set out below with an explanation as to why the duration of construction is greater than that described in the submitted ES and TA.

400kV Cable Mendip Hills Route

4.3.7 The overall duration of works for the 400kV cable Mendip Hills route would increase from that described in the submitted ES and TA. However this development component is separated out into two stages which align with Section C and D as follows and detailed in **Table 4.1**:

- 400kV Cable Mendip Hills Route- works between A38 Bristol Road to Tower head Road (including South of Mendip Hills CSE Compound, A38 Bristol Road (UGC) Compound and haul Road- (Section C)
- 400kV Cable Mendip Hills Route – works between Towerhead Road and Sandford Substation- (Section D)

4.3.8 Work in each Section is typically similar to that assessed in the submitted ES and TA, however to reduce the duration of habitat loss under the Revised Construction Programme, the 400kV cable construction works would be delivered in a phased manner. The active working area would be limited to a maximum 3km length at any one time.

4.3.9 As detailed in the submitted ES and TA, the working area along the length of the underground cables route would be approximately 100m wide and protected by post and wire fencing. Once the cables have been laid and trenches backfilled, habitat reinstatement would be phased as works are completed in each length. Whilst the cables would be laid in a phased manner, the haul road for this development component would remain in place for the duration of works.

Bridgwater Tee 400kV Cable Route

4.3.10 The works associated with the Bridgwater Tee cable sealing end compounds and 400kV cable include the construction of a new 400kV tower, which for safety and security of supply requires a temporary diversion of the existing high voltage electricity route, with one circuit diverted at a time. The diversion can only be removed following the installation, commissioning and testing of the proposed underground cable route and sealing end compounds. System constraints and the availability of outages required for construction have resulted in this development component being programmed over a longer duration than detailed in the submitted ES and TA.

W Route

4.3.11 A temporary diversion of WPD circuit is required to allow the construction of a new tower with a cable sealing end platform. The extended duration of these works is required to maintain the regional high voltage supply within the constraints of the programmed outages available to both National Grid and WPD, which has resulted in this development component being programmed over a longer duration than detailed in the submitted ES and TA.

G Route (including 132kV overhead removal)

4.3.12 The works to remove and underground the 132kV overhead line and construction of the 400kV overhead line have been programmed to be accommodated within the power demand requirements and outages of both National Grid and WPD over the Revised Construction Programme. This has resulted in this development component being programmed over a longer duration than detailed in the submitted ES and TA.

Seabank BW, G, DA Routes

4.3.13 The extended duration of the Revised Construction Programme for this development component is due to constraints arising from access to outages on the WPD transmission system. The Revised Construction Programme incorporates a gap between construction works on the DA, G and BW routes. This was not

required by the construction programme in the submitted ES and TA, which had allowed the development component to be completed within a single system outage.

N Route Overhead Line

4.3.14 This component of the proposed development can only be constructed following the completion of overhead line refurbishment works programmed by WPD, which are not part of the DCO application. The revised duration responds to changes in WPD programmed works and the outages available to meet the revised connection offer date.

Hinkley Line Entries

4.3.15 The final connections from Hinkley Point C Power Station onto the National Grid high voltage electricity transmission system would occur later than programmed in the submitted ES; this is due to the later completion of the required connection infrastructure within Hinkley Point C Power Station.

Sandford 400/132kV Substation

4.3.16 The Revised Construction Programme for this development component has extended in duration. Construction is required to start earlier to prepare the land for the 132kV substation and to allow for the energisation of the 132kV substation when system access will permit. To minimise the period of habitat loss at Sandford Substation associated with the extended duration of works under the Revised Construction Programme, the initial site clearance and levelling works would be undertaken during 2018 thereby facilitating early reinstatement of some habitats. **Figure 7.35.6** (**Volume 5.29.1.3** of ES Sensitivity Test) presents the Sandford Substation Landscape Mitigation Phasing Plan which identifies the timings of habitat reinstatement.

Churchill 132/33kV WPD Substation

4.3.17 The duration of works for this development component has increased due to constraints associated with the available outages. The total active construction site time would not alter although the works have to be carried out over a longer construction period. All construction works from Q4 2015 to Q1 2017 would take place entirely within the substation boundary.

Portishead 132/33kV WPD Substation

4.3.18 The duration of works for this development component has increased. The construction is linked directly to the W route works (as described above). The extended duration for works on the W route would necessitate a corresponding extension to the duration of the works for the Portishead substation.

Avonmouth Substation

4.3.19 The duration of works for this development component has increased. The construction is linked directly to the G route works (as described above). The extended duration for works on the G route necessitates a corresponding extension to the duration of the works for the Avonmouth substation.

Proposed Development Component – Decreased Construction Duration

4.3.20 Under the Revised Construction Programme, the duration of a number of development components of the Proposed Development decreases. These development components are set out below with an explanation as to why the duration of construction is less than that described in the submitted ES.

400kV Overhead Line Route

4.3.21 The decrease in duration is due to efficiencies identified in the revised outage programme which allows for the building of certain sections offline where there is no interface with the WPD F Route.

BW Route Avonmouth Option A

4.3.22 Under the Revised Construction Programme the construction of this development component would move from 2016 to 2018/19. This is to utilise an outage sequence on the WPD Network that is more efficient. Accordingly construction for this development component is programmed over a shorter duration than detailed in the submitted ES.

BW Route Portishead Option B

4.3.23 Although construction of this development component would be longer than Option A above, it is still shorter than the construction programme duration in the submitted ES due to the utilisation of outage sequences on the WPD network which allows more efficient working. The overall increase in duration over that for Option A is due to the requirement to install a longer length of cable into Portishead Substation.

W Route Churchill

4.3.24 The availability of outages to allow safe working access to the system has allowed a shorter duration of construction period to be utilised for this component of the proposed development than that included within the construction programme in the submitted ES and TA.

Removal of Southern Half F Route

4.3.25 Timing of the release of this part of the route is very close to the completion date of the Southern LD Route, which necessitates a shorter removal time than that included within the construction programme in the submitted ES and TA.

Removal of Northern Half F Route

4.3.26 The timing of the release of this route is very close to the completion date of the Southern LD Route, which provides for a shorter removal period than that included within the construction programme in the submitted ES and TA.

Proposed Development Component – No Change in Construction Duration

4.3.27 The duration of works at the AT Route (Underground and Overhead Line), Y Route Churchill and Seabank Substation remain the same in the Revised Construction Programme as that detailed in the submitted ES and TA.

Summary Construction Methods

4.3.28 As detailed in the submitted ES, construction of all components of the Proposed Development would commence with the preparation and installation of temporary access roads and working areas, where necessary improvements to the existing highway network would be undertaken to facilitate construction access and activities. Temporary contractor's compounds, offices and welfare facilities would also be established along the proposed route to house the staff, equipment and materials for the works. This does not alter as a result of the Revised Construction Programme. However, the temporary construction compounds start dates as alter to reflect the revised start date for each of the components parts of the development. The revised temporary construction compound start dates required as a result of the Revised Construction Programme are set out in **Table 4.2** and **Appendix A**:

Table 4.2 Revised Temporary Construction Compounds Start Dates

Compound Name	**Local Authority**	**Proposed Development Component**	**Anticipated Revised Start Date**
1: Bridgwater Tee (Bath Road)	Sedgemoor District Council	Bridgwater Tee	July 2019
2: A38 Bristol Road (underground cables)	Sedgemoor District Council	400kV underground cables	March 2016
3: A38 Bristol Road (overhead lines)	Sedgemoor District Council	400kV overhead lines	April 2018
4: South of the Mendip Hills (Hams Lane)	Sedgemoor District Council	400kV underground cables	March 2016
5: Barton Road	Sedgemoor District Council	400kV underground cables	April 2016
6: Castle Hill	North Somerset Council	400kV underground cables	March 2016
7: Towerhead Road	North Somerset Council	400kV underground cables	January 2017
8: Sandford Substation	North Somerset Council	Sandford	March 2016
9: AT Route	North Somerset Council	AT Route	November 2019
10: Churchill	North Somerset Council	Churchill	January 2017

Compound Name	Local Authority	Proposed Development Component	Anticipated Revised Start Date
11: Engine Lane	North Somerset Council	W Route underground cables	March 2018
12: Nailsea	North Somerset Council	W Route	March 2018
13: Church lane	North Somerset Council	W Route	March 2018
14: Clevedon Road	North Somerset Council	W Route underground cables	March 2018
15: Whitehouse Lane	North Somerset Council	W Route underground cables	March 2018
16:Caswell Hill	North Somerset Council	W Route	March 2018
17: Sheepway	North Somerset Council	W Route	March 2018
18: BW Route (west)	North Somerset Council	BW Route	April 2018
19: BW Route (east)	North Somerset Council	BW Route	April 2018
20: St Andrews Road	Bristol City Council	400kV overhead lines	April 2018
21: Kings Weston Lane	Bristol City Council	G Route	June 2018
22: G Route (east of M49)	Bristol City Council	G Route underground cables	June 2018
23: Seabank (Severn Road)	Bristol City Council	Seabank	October 2019

4.3.29 As detailed in the submitted ES and TA, any topsoil and subsoil excavated would be stored separately along the working area in accordance with the Draft Construction Environmental Management Plan (CEMP) (see **Volume 5.26.1** of the submitted ES) so that it can be put back once construction activities are complete. The construction compounds would take approximately four weeks to establish and would be in use for the same duration as the Revised Construction Programme of the associated development component set out in **Table 4.1** above.

4.3.30 All other construction works associated with the Revised Construction Programme remain the same as stated in the submitted ES and TA.

Decommissioning

4.3.31 As set out in the submitted ES and TA, if the connection is no longer required the Proposed Development would be decommissioned and project components may be removed. The decommissioning timescales, methods and access remain as stated in the submitted ES and TA and do not change as a result of the revised connection offer date and construction programme.

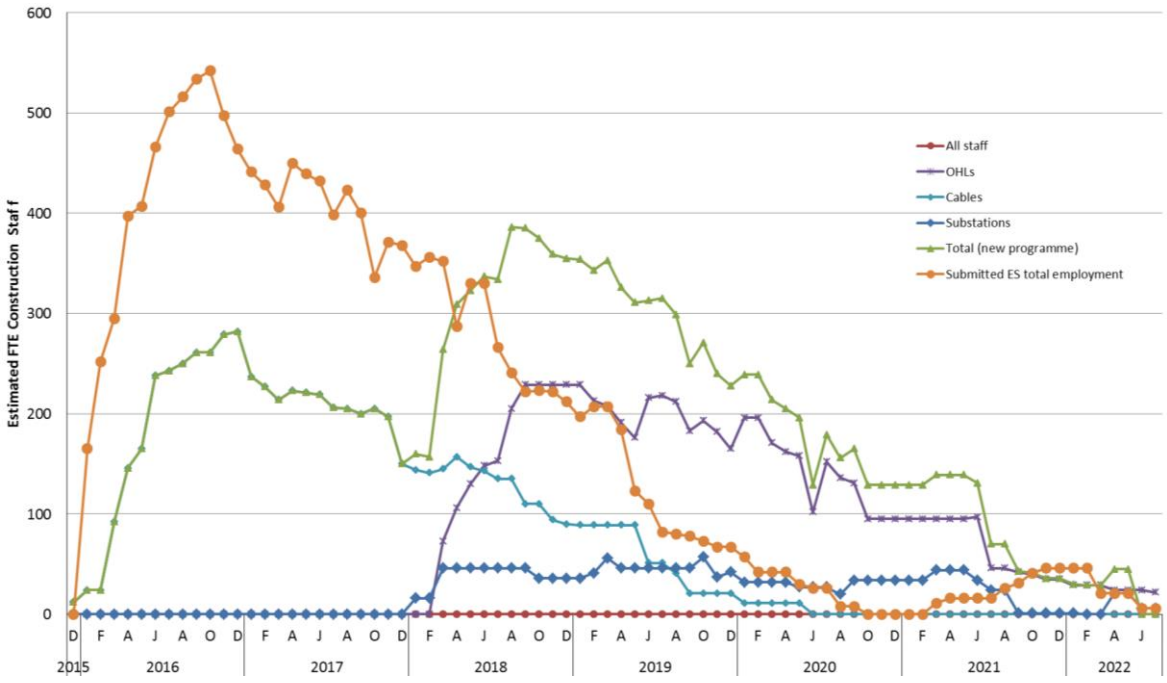
Staff

Construction Employment

4.3.32 The employment profile of the Proposed Development based on the Revised Construction Programme is provided in Chapter 15 of the ES Sensitivity Test (**Volume 5.29.1.1**) and is summarised in this section.

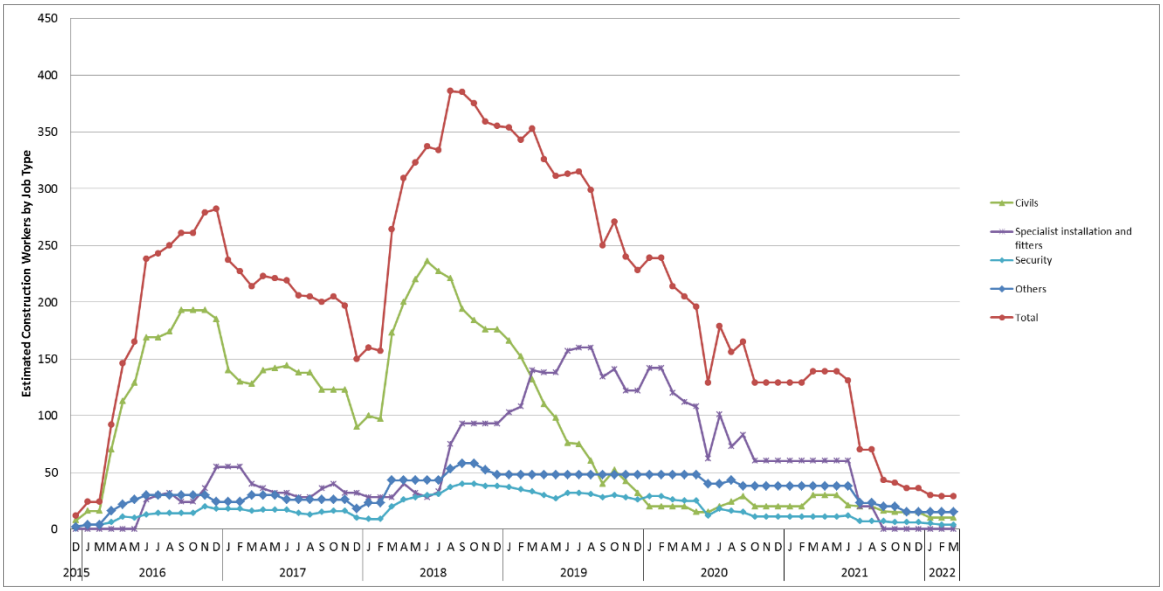
4.3.33 Inset 4.1 below shows the Total Employment Profile Type of the Proposed Development as a result of the Revised Construction Programme, alongside the Total Employment Profile included within the submitted ES.

Inset 4.1: Total Employment Profile Type of the Proposed Development (as a result of Revised Construction Programme), alongside the Total Employment Profile included within the submitted ES.



4.3.34 Inset 4.2 below shows the Total Employment Profile Type of the Proposed Development (as a result of the Revised Construction Programme), alongside the Total Employment Profile included within the submitted ES.

Inset 4.2: Total Employment Profile by Job Type (as a result of the Revised Construction Programme).



4.3.35 As a result of the Revised Construction Programme, the various components of the Proposed Development change as follows:

- overhead line construction and removal:
  - peak staff demand changes from 230 during July to November 2016, to 230 during September 2018 to January 2019; the average monthly staff demand estimate changes from 185 people per month (full time equivalent (FTE)) during the previous 55 month construction programme, to 135 during the new 49 month programme for this element;

- underground cable and CSE compound construction:
  - peak staff demand changes from 285 during October 2016, to 280 staff during December 2016;
  - the average monthly staff demand decreases from 155 people per month FTE to 130 during the 54 month construction programme for this element;

- substation construction:
  - peak staff demand changes from 67 during June 2018, to 55 during October 2019; and
  - average monthly staff demand changes from 25 over a construction programme of 64 months, to 35 staff on average over a 49 month programme for this element.

4.3.36 The variations in staff demand between the submitted ES and the revised construction traffic does not increase the predicted construction traffic associated with the Revised Construction Programme.

5 BASELINE ENVIRONMENT

5.1.1 There have been no material changes to the baseline environment from that previously presented in the submitted TA (**Section 5**, **Volume 5.22.1**) that would require re-assessment as part of this sensitivity test; no aspects of the baseline environment presented as part of the submitted TA are anticipated to materially change as a result of the Revised Construction Programme.

6 ROAD SAFETY

6.1.1 The Proposed Development construction traffic is not considered to have a material impact on highway safety at junctions or along the proposed highway links to be used during the Revised Construction Programme. Accordingly, there is no material change to the conclusions reached in the submitted TA (**Volume 5.22, section 6**) in regard to accidents and safety as a result of the Revised Construction Programme.

7 CONSTRUCTION TRAFFIC ROUTES

7.1.1 There are no changes to the proposed routing strategy for vehicles to access the Proposed Development as a result of the Revised Construction Programme. Accordingly, there is no material change to the conclusions reached in the submitted TA (**Volume 5.22, section 7**) in regard to construction traffic routes.

8 ASSESSMENT METHODOLOGY

8.1 Introduction

8.1.1 This section discusses the assessment methodology undertaken for the sensitivity test of the Revised Construction Programme.

8.1.2 As discussed within the submitted TA the key factors determining the potential impacts on the local road network (LRN) and strategic road network (SRN) are:

- Baseline traffic flows (surveyed traffic flows);
- Committed development traffic; and
- Proposed Development predicted construction traffic.

8.2 Baseline Survey Data

8.2.1 No changes to the Baseline survey data presented in the submitted TA (**Volume 5.22.8, section 8**, paragraphs 8.2.1 to 8.2.22) are anticipated as a result of the Revised Construction Programme.

8.3 Committed Development Data

8.3.1 Under the Revised Construction Programme, some of the peak cumulative years of assessment change in line with the revised predicted construction vehicle trip generation profile of the Proposed Development.

8.3.2 As such, TEMPro software has been used to calculate the appropriate growth factors for the appropriate Future Baseline assessment years as a result of the Revised Construction Programme. This is discussed in detail in Section 9 of this document.

8.4 Proposed Development Construction Traffic Data

8.4.1 As detailed in the submitted TA (**Volume 5.22**), National Grid provided the predicted traffic generation data for the construction of the Proposed Development for a five year period from 1 January 2016 to 31 December 2020.

8.4.2 The Revised Construction Programme is 76 months (December 2015 to March 2022), as detailed in Sections 1 and 4 above. To allow the sensitivity testing of the Revised Construction Programme, the predicted traffic data has been realigned in accordance with the construction activities revised start and end dates.

8.4.3 Under the Revised Construction Programme, works commence in December 2015. Construction works in December are related to the existing Churchill and Seabank substations and would be minor (anticipated a total of 12 personnel would be employed during this time; approximately six at each of the substations). No highways infrastructure or new highways accesses are proposed during this time and existing accesses and bellmouths would be used. In addition, given the level of construction traffic associated with works in December 2015, it is not anticipated to have a material effect on junction capacity or highway safety. As such the traffic

data provided by National Grid, and used in this Transport Assessment Sensitivity Test, relates to construction vehicle works starting in early January 2016.

8.4.4 Construction traffic profiles for each development component (and associated bellmouths) have been moved to correspond to the new start and finish dates associated with the Revised Construction Programme.

8.4.5 Where the profile for traffic relating to an element of construction falls within the Revised Construction Programme, the traffic data profiles have not been reduced or extended over a longer time period to fit with the start and new finish dates for a particular element of construction. It is considered that this represents a worst case assessment, as it ensures that the previously identified peak daily traffic generation for each development component of the Proposed Development is assessed.

8.4.6 In instances where the duration of the construction for a development component is shorter than the assessment presented in the submitted TA, days of inactivity for that element of construction were removed. This ensures the traffic profiles fall within the Revised Construction Programme start and end dates.

8.4.7 A cumulative assessment was undertaken on the Revised Construction Programme and it was found that peak cumulative group values for predicted construction data are equal to or did not exceed those assessed in the submitted TA (**Volume 5.22**).

8.4.8 The primary reasons for there being no predicted increase in overall construction traffic vehicle trips and daily vehicle trips as a result of the Revised Construction Programme are as follows:

- No new development is proposed as a result of the Revised Construction Programme. Therefore the same total volume of vehicles is required to complete the Proposed Development; however, the timeframes under which each of the development components is to be constructed has changed;
- The submitted TA and ES assesses the construction programme where the majority of construction activities are aligned to start in late 2015 and early 2016. Under the Revised Construction Programme, the construction of the different development components are more staggered in their start times; and
- Under the Revised Construction Programme, the duration of the construction of a number of the development components has increased. Where this occurs the daily peak in construction activity identified in the submitted ES has been assessed.

Light, Medium and Heavy Goods Vehicles by Vehicle Type

8.4.9 As a result of the Revised Construction Programme, the vehicle specifications relating to the predicted construction traffic data provided in the submitted TA (**Section 8, Volume 5.22.8, Table 8.2**) has not changed.

Abnormal Indivisible Loads (AILs)

8.4.10 As a result of the Revised Construction Programme, the assessment of abnormal indivisible loads does not change from that set out in the submitted TA (**Section 8, Volume 5.22.8, paragraphs 8.3.5 to 8.3.6**).

Trip Distribution by Grouping

8.4.11 Vehicle distribution and grouping associated with the Revised Construction Programme does not change and remains as stated in the submitted TA (**Section 8, Volume 5.22.8, paragraphs 8.3.7 to 8.3.10**Revised Construction Programme).

9 TRAFFIC GROWTH AND COMMITTED DEVELOPMENT

9.1 Introduction

9.1.1 In order to generate Future Baseline traffic flows for assessment of the Revised Construction Programme, it is necessary to apply a growth factor to the observed traffic flows and include additional traffic from committed developments.

9.1.2 As part of the submitted TA (**Volume 5.22**) a methodology was agreed with the Local Planning Authorities (LPAs) and the Highways Agency (HA) in regard applying appropriate growth factors to the observed traffic across the network. This included the use of industry standard software TEMPro to factor up (increase) the background traffic while also adding traffic flows from known committed developments which were specified.

9.1.3 This methodology has been used to undertake the sensitivity test of the Revised Construction Programme.

9.1.4 When considering which future years to generate growth factors for the Revised Construction Programme, it has been necessary to consider the peak generation of each Assessment Group (groups of bellmouths, as detailed in **Table 8.4** of the submitted TA (**Volume 5.22**)). It is not considered appropriate to assess a single future year scenario as in many instances each Assessment Group generates a peak number of vehicles in a different year to the next and would therefore not represent the worst case scenario.

9.1.5 As a result of the Revised Construction Programme, the year in which the peak volumes of traffic predicted for a particular area changes in a number of instances.

9.1.6 Therefore each Assessment Group, or combination of Assessment Groups, has been assessed during its respective peak cumulative generating year in accordance with the Revised Construction Programme. As a result growth factors for 2016, 2017, 2018, 2019, 2020 and 2021 have been extracted.

9.1.7 **Table 9.1** below sets out each Assessment Group and details the peak traffic generating year in the submitted TA (**Volume 5.22, Table 9.1**) and the peak traffic generating year associated with the Revised Construction Programme. **Table 9.1** also shows the resulting growth factors as extracted from TEMPro and the National Transport Model (NTM) for the Revised Construction Programme.

Table 9.1 Growth Factors

Group	Location	Submitted TA Peak year	Revised Construction Programme Peak year	Revised Construction Programme Growth Factors			
				AM Growth factor (LGV from 2013 – peak year)	AM Growth factor (HGV from 2013 – peak year)	PM Growth factor (LGV from 2013 – peak year)	PM Growth factor (HGV from 2013 – peak year)
1	Somerset	2016	2021	1.1190	1.0492	1.1287	1.0492
2	Somerset	2016	2021	1.1190	1.0492	1.1287	1.0492
3	Somerset	2018	2016	1.0255	1.0152	1.0284	1.0152
4	Somerset	2018	2016	1.0255	1.0152	1.0284	1.0152
5	Somerset	2018	2016	1.0255	1.0152	1.0284	1.0152
6	North Somerset	2018	2018	1.0763	1.0286	1.0777	1.0286
7	North Somerset	2018	2018	1.0763	1.0286	1.0777	1.0286
8	North Somerset	2018	2018	1.0763	1.0286	1.0777	1.0286
9	North Somerset	2018	2018	1.0763	1.0286	1.0777	1.0286
10	North Somerset	2019	2019	1.0964	1.0354	1.0964	1.035
11	North Somerset	2019	2019	1.0964	1.0354	1.0964	1.035
12	North Somerset	2019	2019	1.0964	1.0354	1.0964	1.035
13	North Somerset	2019	2018	1.0964	1.0354	1.0964	1.035
14	North Somerset	2019	2019	1.0964	1.0354	1.0964	1.035
15	North Somerset	2019	2019	1.0964	1.0354	1.0964	1.035
16	North Somerset	2019	2019	1.0964	1.0354	1.0964	1.035
17	North Somerset	2019	2019	1.0964	1.0354	1.0964	1.035
18	North Somerset	2019	2019	1.0964	1.0354	1.0964	1.035
19	North Somerset	2019	2019	1.0964	1.0354	1.0964	1.035
20	Bristol	2017	2019	1.1119	1.0354	1.1080	1.035
21	Bristol	2017	2018	1.1119	1.0354	1.1080	1.035
22	Bristol	2017	2018	1.1119	1.0354	1.1080	1.035
23	Bristol	2017	2018	1.1119	1.0354	1.1080	1.035

9.1.8 The new assessment year represents the year for each group with the highest trip generation on a single day.

9.1.9 Where two or more combined groups have different peak years as a result of the Revised Construction Programme, the growth factor used for future capacity assessments has been taken as the furthest in the future, which is equal to the larger growth factor. For example, groups 3, 4, 5 have a peak year of 2016 and

group 8 has a peak year of 2018. Therefore the peak assessment year for groups 3, 4, 5 and 8 would have peak combined year of 2018. As such the larger growth factor has been applied for this sensitivity test and the combined assessment, groups 3, 4, 5 and 8 has used the 2018 growth factor and this is the year of assessment for the Revised Construction Programme.

9.1.10 Using the methodology detailed in the submitted TA (**Volume 5.22, Section 9**), the approach of peak traffic generation year for construction traffic and the highest year (furthest year) ensures that the worst case scenario is assessed in terms of predicted construction traffic and background traffic associated with the Revised Construction Programme.

9.2 Committed Development

9.2.1 As agreed with the Joint Councils and the HA during the scoping consultation period ahead of the submitted TA (**Volume 5.22**), Future Baseline traffic flows would also incorporate traffic flows from a number of committed developments.

9.2.2 These traffic flows would be distributed through the highway network and would be added to the future baseline traffic established through the use of TEMPro growth factors (as discussed above).

9.2.3 During previous discussions with the LPAs it was identified that seven committed developments should be included within a cumulative assessment of the Proposed Development. These seven committed developments and their respective locations being:

- Hinkley Point C Power Station (plus three associated developments (Somerset);
- Huntspill Energy Park (ROF, Somerset);
- North West Nailsea (see land allocation within draft local plan) – approximately 450 dwellings (North Somerset);
- Weston Villages, (build out would be approx. 2,435 by 2020) (North Somerset);
- Rockingham Park Development (Bristol); and
- Former Rodia Site (ASDA distribution warehouse) (Bristol).

9.2.4 An overview of each of the committed developments is provided in the submitted TA (**Volume 5.22, Section 9.4**) including key traffic generation and routeing details which would be included within the assessment of the Proposed Development contained herein.

9.2.5 No new committed development sites have been added to the cumulative development flows as part of this sensitivity test. It is considered that the traffic generation from any further future developments identified in Chapter 17 of the ES Sensitivity Test (**Volume 5.29.1.1**) would be accounted for with the use of the TEMPro software and applied traffic growth rates.

10 PREDICTED TRIP GENERATION

10.1 Introduction

10.1.1 This section of the TA Sensitivity Test discusses the predicted vehicle trip generating components associated with the Revised Construction Programme that would impact on the LRN and SRN (including the trip generation of the Proposed Development).

10.1.2 **Table 10.1** below provides an overview of the changes to the trip generating data sources used in the submitted TA (**Volume 5.22**) as a result of the Revised Construction Programme.

Table 10.1 Trip Generating Data

Source	Changes Required as a result of the Revised Construction Programme	Comments
Baseline traffic flows (Surveyed Traffic) 2013/2014	None	2013/ 2014 surveyed junction data still valid for application of growth for future background traffic levels.
Future Baseline traffic flows	Changes to peak year cumulative data resulting from Revised Construction Programme	Future Baseline traffic has been calculated using the same methodology as in the submitted TA **(Volume 5.22).** Growth factors have been applied to light and heavy goods vehicles in accordance with the peak cumulative year of assessment as discussed in Section 9 above.
Committed Development traffic flows	Changes required to Future Baseline flows	Additional committed developments to be accounted for within the TEMPro growth factors.
Predicted Construction Traffic	Changes to timeline of predicted construction vehicle activity.	Predicted construction activity (vehicle movements) have been revised to meet the start and end dates in line with the Revised Construction Programme. The cumulative peak values of the predicted construction traffic on the LRN and SRN are equal to or lower than those used in the submitted TA **(Volume 5.22**).

10.1.3 The remainder of this section discusses each of the data sources detailed in Table 10.1 as used within the submitted TA (**Volume 5.22**) and its application to the assessment of the Proposed Development as a result of the Revised Construction Programme.

10.2 Baseline Traffic Flows

10.2.1 Baseline traffic data was collected as part of the assessment contained in the submitted TA (**Volume 5.22**). The data collected still represents the baseline traffic flows recorded and is still valid for the purposes of this sensitivity test.

10.3 Baseline Traffic Flows plus Growth Factors

10.3.1 As detailed in Section 9, as a result of the Revised Construction Programme, the peak years of assessment of some of the Assessment Groups have change.

10.3.2 **Tables 10.2** and **10.3** contained within **Appendix B** of this document (**Volume 5.29.2.2.2**) show a comparison between the assessment years used as part of the submitted TA (**Volume 5.22**) and the assessment years required as a result of the Revised Construction Programme. The data provided is shown against the appropriate junction and also the relevant LPA and has been split to give AM and PM peak comparisons.

10.3.3 The data in the table shows that there is a variance in the submitted TA peak cumulative year assessment background traffic growth between -2% and +9% as a result of the Revised Construction Programme.

10.3.4 The key findings from Table 10.2 (AM Peak associated with the Revised Construction Programme) are:

- Somerset (Junctions 13, 14, 15 and 19) – There would be a 3% increase in background as a result of the peak cumulative year of assessment changing from 2016 (submitted TA, **Volume 5.22**) to 2018 (Revised Construction Programme);
- Somerset (Junctions 16,17, 18 and 20) – There would be a 4% increase in background as a result of the peak cumulative year of assessment changing from 2016 (submitted TA, **Volume 5.22**) to 2018 (Revised Construction Programme);
- Bristol (Junctions 38, 41 and 43) – There would be a 5% increase in background traffic as a result of the peak cumulative year of assessment changing from 2017 (submitted **TA, Volume 5.22**) to 2020 (Revised Construction Programme);
- Bristol (Junctions 39, 40, 42, 44, 45 and 46) – There would be a 6% increase in background traffic as a result of the peak cumulative year of assessment changing from 2017 (submitted TA**, Volume 5.22**) to 2020 (Revised Construction Programme);
- Somerset (Junctions 1, 2 and 3) – There would be a 8% increase in background traffic in Somerset as a result of the peak cumulative year of assessment changing from 2016 (submitted TA, **Volume 5.22**) to 2021 (Revised Construction Programme);

- Somerset (Junctions 3, 4, 5, 6, 7, and 8) – There would be a 9% increase in background traffic in Somerset as a result of the peak cumulative year of assessment changing from 2016 (submitted TA, **Volume 5.22**) to 2021 (Revised Construction Programme);
- North Somerset (Junctions 21, 22, 23, 49, 50 and 51) – There would be a 2% decrease in background traffic as a result of the peak cumulative year of assessment changing from 2018 (submitted TA, **Volume 5.22**) to 2017 (Revised Construction Programme); and
- North Somerset (Junctions 24, 25, 26, 27, 28, 29 and 30) – There would be a 3% decrease in background traffic as a result of the peak cumulative year of assessment changing from 2019 (submitted TA, **Volume 5.22**) to 2018 (Revised Construction Programme);

10.3.5 The key findings from **Table 10.3** (PM Peak associated with the Revised Construction Programme) are:

- Somerset (Junctions 13, 14, 15, 16, 17, 18, 19 and 20) – There would be a 4% increase in background as a result of the peak cumulative year of assessment changing from 2016 (submitted TA, **Volume 5.22**) to 2018 (Revised Construction Programme);
- Bristol (Junctions 38, 39, 40, 41 and 43) – There would be a 5% increase in background as a result of the peak cumulative year of assessment changing from 2017 (submitted TA, **Volume 5.22**) to 2020 (Revised Construction Programme);
- Bristol (Junctions 39, 40, 42, 44, 45 and 46) – There would be a 6% increase in background as a result of the peak cumulative year of assessment changing from 2017 (submitted TA, **Volume 5.22**) to 2020 (Revised Construction Programme);
- Somerset (Junctions 13, 14, 15 and 16) – There would be a 9% increase in background traffic in Somerset as a result of the peak cumulative year of assessment changing from 2016 (submitted TA, **Volume 5.22**) to 2021 (Revised Construction Programme);
- North Somerset (Junctions 49, 50 and 51) – There would be a 2% decrease in background traffic as a result of the peak cumulative year of assessment changing from 2019 (submitted TA, **Volume 5.22**) to 2018 (Revised Construction Programme); and
- North Somerset (Junctions 21, 22 and 23) – There would be a 3% decrease in background traffic as a result of the peak cumulative year of assessment changing from 2018 (submitted TA, **Volume 5.22**) to 2017 (Revised Construction Programme).
- North Somerset (Junctions 21, 22, 23, 24, 25, 26, 27, 28, 29 and 30) – There would be a 3% decrease in background traffic as a result of the peak cumulative year of assessment changing from 2019 (submitted TA, **Volume 5.22**) to 20 (Revised Construction Programme).

10.3.6 The assessment of the AM and PM peak cumulative year background traffic growth shows that no junction would experience a growth of higher than 9% in either the AM or PM peak as a result of the Revised Construction Programme. It should be noted that the Institute of Environmental Assessment (IEA) Guidelines for Environmental Assessment of Road Traffic, Rule 1, paragraph 3.16 states: "It should be noted that the day to day variation of traffic on a road is frequently at least some + or -10%."

10.3.7 All of the changes in background traffic flows as a result of the change of assessment years required are within typically accepted levels of daily variation.

10.3.8 The above analysis of the revised cumulative year of assessment indicates that 16 junctions increased baseline (background) traffic flows as a results of a later year of assessment. It is therefore considered that these require further capacity assessments to be undertaken for the Future Baseline and Future Baseline plus Development scenarios. These junctions are:

- Junction 3 – Hillside/A39 Puriton Hill;
- Junction 5 – A39/Bawdrip Lane;
- Junction 7 – Old Mill Road/B3141 Woolavington Hill;
- Junction 8 –Woolavington Hill/Higher Road/Vicarage Road;
- Junction 17 – Quantock Way/Homberg Way;
- Junction 18 – A39/Main Road;
- Junction 19 – A39/High Street;
- Junction 20 – High Street/Fore Street/Rodway;
- Junction 38 – A403 Chittening Road/Severn Road;
- Junction 39 – A403 Smoke Lane/Poplar Way West;
- Junction 40 – Poplar Way West/Poplar Way East/Merebank Road/Moorend Farm Avenue;
- Junction 42 – St. Andrew's Road/St. George's Industrial Estate;
- Junction 43 – St. Andrew's Road/King Road Avenue/Crowley Way;
- Junction 44 – M5/A4/Avonmouth Way;
- Junction 45 – A4 Bristow Broadway/Avonmouth Road/Portway/M5; and
- Junction 46 – A4 Portway/West Town Road.

10.3.9 Capacity assessments have been undertaken at these 16 junctions and the results of the Future Baseline and Future Baseline plus Development are presented in Section 11 of this Sensitivity Test.

10.4 Committed Development Traffic

10.4.1 The capacity assessments undertaken within the submitted TA (**Volume 5.22**) included trips generated by seven committed developments which were considered at the request of the LPAs. These trips are still considered valid for the Revised Construction Programme; the developments they are associated with fall within the Revised Construction Programme duration of 2015 to 2022.

10.5 Predicted Construction Traffic - Proposed Development

10.5.1 The peak vehicle trip generation for the Proposed Development Revised Construction Programme are equal to or less than that set out within the submitted TA (**Volume 5.22**).

10.6 Construction Traffic Vehicle Generation Durations

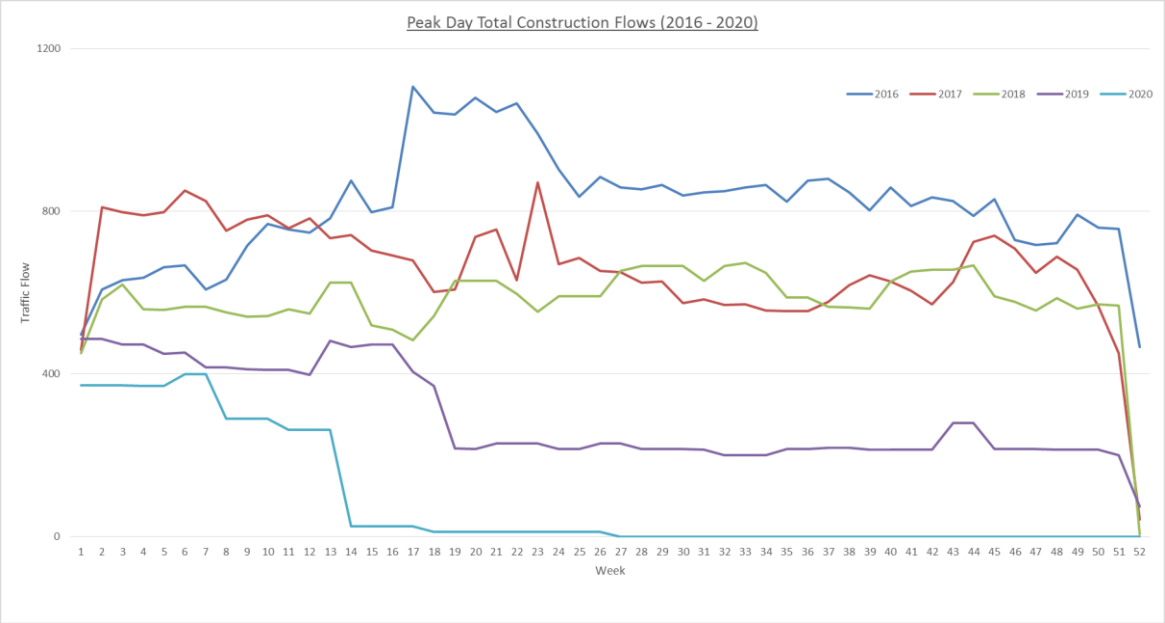
10.6.1 As a result of the Revised Construction Programme, works would commence in December 2015. Construction works in December are related to the existing Churchill and Seabank substations and would be minor (anticipated a total of 12 personnel would be employed during this time; approximately six at each of the substations). No highways infrastructure or new highways accesses are proposed during this time and existing accesses and bellmouths would be used. In addition, given the level of construction traffic it is not anticipated to have a material effect on junction capacity or highway safety. As such the traffic data provided by National Grid, and used in this Transport Assessment Sensitivity Test, relates to construction vehicle works starting in early January 2016.

10.6.2 Construction traffic vehicle durations have been taken from the traffic profile graphs generated from the predicted construction traffic data (01/01/2016 to 31/12/2020 and 01/01/2016 to 31/12/2022) for the submitted and Revised Construction Programmes.

10.6.3 Inset 10.1 and 10.2 below shows total traffic profile in the submitted TA and total traffic profile associated with the Revised Construction Programme.

10.6.4 Inset 10.1 shows the peak day total construction flows for the construction programme (2016 – 2020) in the submitted TA (**Volume 5.22**).

Inset 10.1: Peak Day Total Two-way Construction Traffic Flows (2016- 2020) in submitted TA (**Volume 5.22**).



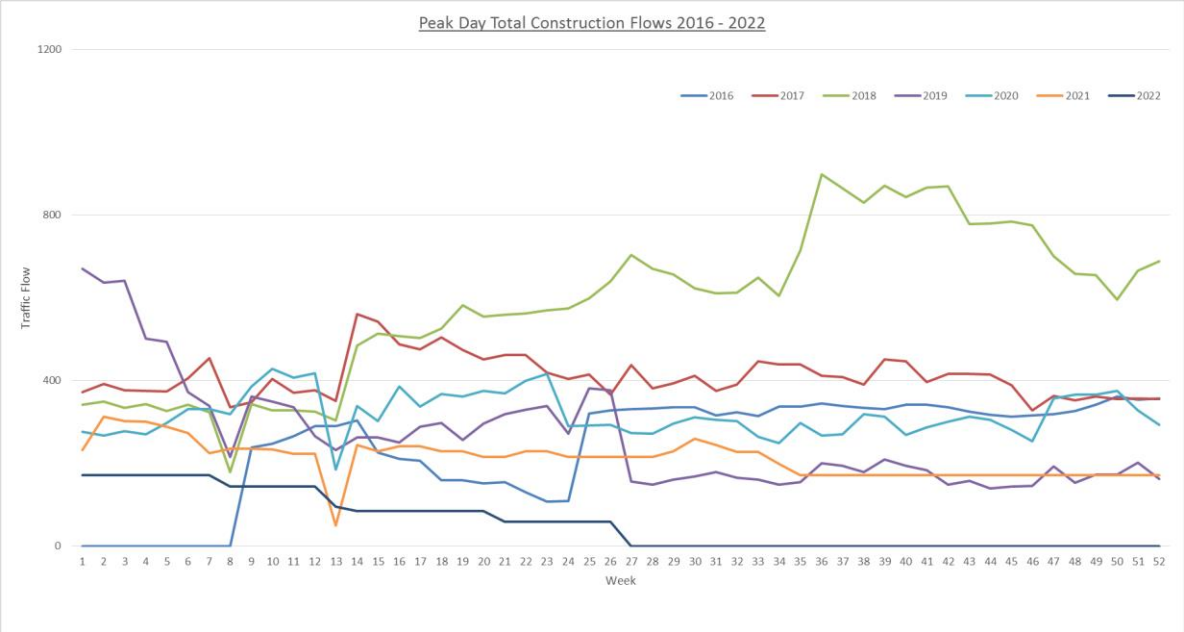
10.6.5 **Table 10.4** below provides a summary of the peak day total construction traffic flows for 2016 – 2020 construction programme as assessed in the submitted TA (**Volume 5.22**) and presented in Inset 10.1.

Table 10.5 Summary of the Peak Day Construction Flows (2016 – 2020) from the submitted TA (**Volume 5.22**)

Year	Peak daily Traffic Flow (two-way)	Week(s) of Activity	Total Duration (weeks)
2016	1106	17	1
2017	870	23	1
2018	668	44	1
2019	486	1 – 2	2
2020	399	6 - 7	2

10.6.6 Inset 10.2 shows the predicted construction traffic profile for the Revised Construction Programme (2016 – 2022).

Inset 10.2: Peak Day Total Two-way Construction Traffic Flows (2016- 2022) associated with the Revised Construction Programme



10.6.7 **Table 10.6** below provides a summary of the peak day total construction traffic flows for the 2016 – 2022 associated with the Revised Construction Programme as presented in Inset 10.2.

Table 10.6 Summary of the Peak Day Construction Flows (2016 – 2022)

Year	Peak daily Traffic Flow (two-way trips)	Week(s) No of Activity within the Year	Total Duration (weeks)
2016	303	14	1
2017	561	14	1
2018	898	36	1
2019	670	1	1
2020	428	10	1
2021	312	2	1
2022	171	1 - 7	7

10.6.8 A comparison of the data contained in Tables 10.3 and 10.4 shows that:

- 2016 – there would be 803 less daily two-way trips as a result of the Revised Construction Programme;
- 2017 – there would be 309 less daily two-way trips as a result of the Revised Construction Programme;
- 2018 – there would be 230 additional daily two-way trips as a result of the Revised Construction Programme;
- 2019 – there would be 184 additional daily two-way trips as a result of the Revised Construction Programme; and

- 2020 – there would be 29 additional daily two-way trips as a result of the Revised Construction Programme.

10.7 Peak Cumulative Construction Traffic Generation Profiles per Junction

10.7.1 The above allows the construction traffic generation associated with the Revised Construction Programme to be viewed on a weekly basis across the whole development. The raw data supplied by National Grid allows for the daily vehicle profiles to be interrogated per bellmouth or cumulatively by junction as per the grouping and the distribution of the predicted construction traffic to/ from each bellmouth.

10.7.2 A number of graphs were submitted as part of the submitted TA (**Volume 5.22 Appendix 22G**) which show the profiles for all of the groups within the assessment. The graphs illustrate the fluctuation in the trips generated within each group as a result of the fluctuations of the trips generated at each junction in their respective peak cumulative years of assessment.

10.7.3 These graphs have been reproduced based on the Revised Construction Programme and are contained within **Appendix C** (**Volume 5.29.2.2.2**). Further to these, **Table 10.7** below represents the peak daily two-way traffic generation occurring at each junction and also shows the duration of that peak. It should be noted the daily peak could occur on single day or multiple days within a week. The junction names are provided in **Appendix B** of this document (**Volume 5.29.2.2.2**). This table has been produced to provide additional information to that which is contained within the submitted TA (**Volume 5.22**). **Table 10.3** of the submitted TA (**Volume 5.22**) provides peak daily two-way traffic generation by vehicle type by group. At the request of the LPAs, this information has been provided by junction.

10.7.4 The table shows the peak daily two-way traffic generation by vehicle type, per junction as a result of the Revised Construction Programme. The total peak two-way flows indicated in the table are not necessarily the sum of the peak light, medium and heavy flows indicated but the highest combination of all three vehicle types occurring on the same day. For example, the total peak two-way traffic generation for junction 1 is 174 vehicles. This means that highest traffic generation associated at junction 1 would be 174 vehicles for a period of three weeks in 2021. This is not the sum of the individual peaks of light, medium and heavy movements (130+31+32) as these peaks would not occur on the same day as one another.

Table 10.7 Junction Assessment Years - Duration of Peak Traffic as a result of the Revised Construction Programme.

Junction	Assessment Year	Light		Medium		Heavy		Total	
		Two-way Traffic	Peak Duration (weeks)	Two-way Traffic	Peak Duration (weeks)	Two-way Traffic	Peak Duration (weeks)	Two-way Traffic	Peak Duration (weeks)
1	2021	130	3	31	3	32	1	174	3
2	2018	128	2	32	2	44	8	204	2
3	2018	128	2	32	2	44	8	204	2

Junction	Assessment Year	Light		Medium		Heavy		Total	
		Two-way Traffic	Peak Duration (weeks)	Two-way Traffic	Peak Duration (weeks)	Two-way Traffic	Peak Duration (weeks)	Two-way Traffic	Peak Duration (weeks)
4	2018	128	2	32	2	44	8	204	2
5	2018	128	2	32	2	44	8	204	2
6	2018	128	2	32	2	44	8	204	2
7	2018	128	2	32	2	44	8	204	2
8	2018	128	2	32	2	44	8	204	2
9	2018	128	2	32	2	44	8	204	2
10	2021	130	3	31	3	32	1	174	3
11	2021	130	3	31	3	32	1	174	3
12	2021	130	3	31	3	32	1	174	3
13	2021	130	3	31	3	32	1	174	3
14	2021	130	3	31	3	32	1	174	3
15	2021	130	3	31	3	32	1	174	3
16	2021	130	3	31	3	32	1	174	3
17	2018	219	1	35	2	86	2	460	1
18	2018	197	1	28	1	85	4	432	1
19	2018	197	1	28	1	85	4	432	1
20	2018	197	1	28	1	85	4	432	1
21	2018	137	8	6	1	81	2	158	3
22	2018	137	8	6	1	81	2	158	3
23	2018	137	8	6	1	81	2	158	3
24	2018	105	1	52	1	72	3	196	1
25	2018	105	1	52	1	72	3	196	1
26	2018	37	1	23	3	57	1	112	1
27	2018	37	1	23	3	57	1	112	1
28	2018	37	1	23	3	57	1	112	1
29	2018	37	1	23	3	57	1	112	1
30	2018	37	1	23	3	57	1	112	1

Junction	Assessment Year	Light		Medium		Heavy		Total	
		Two-way Traffic	Peak Duration (weeks)	Two-way Traffic	Peak Duration (weeks)	Two-way Traffic	Peak Duration (weeks)	Two-way Traffic	Peak Duration (weeks)
31	2019	101	2	44	2	24	10	149	2
32	2019	101	2	44	2	24	10	149	2
33	2019	101	2	44	2	24	10	149	2
34	2019	12	13	4	13	3	13	19	13
35	2019	45	2	22	2	1	4	67	2
38	2020	21	1	25	3	32	1	49	1
39	2020	107	1	33	3	39	1	143	2
40	2020	86	1	10	2	25	5	108	1
41	2020	107	1	33	3	39	1	143	2
42	2020	107	1	33	3	39	1	143	2
43	2020	107	1	33	3	39	1	143	2
44	2020	118	1	47	1	48	1	180	1
45	2020	118	1	47	1	48	1	180	1
46	2020	22	1	11	1	1	8	33	1
49	2018	0	0	9	4	51	1	58	1
50	2018	0	0	9	4	51	1	58	1
51	2018	0	0	9	4	51	1	58	1

10.7.5 **Table 10.7** above shows the highest vehicle flows are expected to occur for a limited time (for approximately thirteen weeks at Junction 34 (The Portbury Hundred/ Station Road) Revised Construction Programme throughout the revised construction period after which they are anticipated to reduce significantly.

10.8 Contingency

10.8.1 No changes have been made to the contingency factors set out in the submitted TA (**Volume 5.22, section 10,** paragraphs 10.4.1 to 10.4.3). The same contingency factors have been applied to the construction traffic anticipated under the Revised Construction Programme.

10.9 Cumulative Peak Daily Two-way Traffic Flows

10.9.1 For the purposes of this sensitivity test, there has been no change in the assumptions set out in regard to the AM Peak and PM Peak hour development traffic as set out in the submitted TA (**Volume 5.22, section 10,** paragraphs 10.4.1 to 10.5.1).

10.10 Quarries – Stone and Aggregate Deliveries

10.10.1 For the purposes of this sensitivity test, there has been no change in the assumptions concerning stone and aggregate deliveries from Mendip quarries as a result of the Revised Construction Programme being required. See in the submitted TA (**Volume 5.22, section 10,** paragraphs 10.6.1 to 10.6.3 and **Table 10.4**).

10.10.2 All deliveries have been assessed in the new peak year of assessment ensuring a worst case scenario has been tested.

10.11 Key Assumptions and Considerations

10.11.1 There are no changes to the key assumptions and considerations detailed within the submitted TA (**Volume 5.22, section 10**, paragraphs 10.7.1 to 10.7.3) as a result of the Revised Construction Programme.

10.12 Staff Trip Generation

10.12.1 There are no changes to staff trip generations as a result of the Revised Construction Programme. Staff trip generation would be as stated in the submitted TA (**Volume 5.22, section 10,** paragraphs 10.8.1 to 10.8.3).

11 JUNCTION ASSESSMENT SCOPE

11.1.1 As a result of the scoping consultation with the Joint Councils, 47 junctions were identified at which capacity assessments were required to be undertaken, the results of these capacity assessments are included within the submitted TA (**Volume 5.22, section 11**).

11.1.2 It has been established that as a result of the Revised Construction Programme the peak cumulative year of assessment for 25 junctions changes to a later year and therefore the Baseline (background) traffic would increase.

11.1.3 Of these 25 junctions nine were shown to be operating at or over capacity within the original assessment. As such these results remain valid and the remaining junctions shown to be operating with junction capacity have been reassessed.

11.1.4 Therefore the junction assessment scope in the context of this TA Sensitivity Test includes junction capacity assessment to be undertaken for the following junctions:

- Junction 3 – Hillside/A39 Puriton Hill;
- Junction 5 – A39/Bawdrip Lane;
- Junction 7 – Old Mill Road/B3141 Woolavington Hill;
- Junction 8 –Woolavington Hill/Higher Road/Vicarage Road;
- Junction 17 – Quantock Way/Homberg Way;
- Junction 18 – A39/Main Road;
- Junction 19 – A39/High Street;
- Junction 20 – High Street/Fore Street/Rodway;
- Junction 38 – A403 Chittening Road/Severn Road;
- Junction 39 – A403 Smoke Lane/Poplar Way West;
- Junction 40 – Poplar Way West/Poplar Way East/Merebank Road/Moorend Farm Avenue;
- Junction 42 – St. Andrew's Road/St. George's Industrial Estate;
- Junction 43 – St. Andrew's Road/King Road Avenue/Crowley Way;
- Junction 44 – M5/A4/Avonmouth Way;
- Junction 45 – A4 Bristol Boradway/Avonmouth Road/Portway/M5; and
- Junction 46 – A4 Portway/West Town Road.

11.1.5 As discussed above, following the submission of the DCO application, further information related to the submitted TA (**Volume 5.22**) was provided to the Joint Councils on 20 August 2014. This information contained a revision to the geometries to eight junctions, the additional information presented the results of the revised capacity assessments which incorporated the geometrical changes requested by the HA.

11.1.6 These geometrical changes included Junctions:

- Junction 43 – St. Andrew's Road/King Road Avenue/Crowley Way;
- Junction 44 – M5/A4/Avonmouth Way; and
- Junction 45 – A4 Bristol Boradway/Avonmouth Road/Portway/M5.

11.1.7 It should be noted that these geometrical changes to the junction capacity models have been included within the junction capacity assessments conducted as part of the assessment of the Revised Construction Programme contained herein.

11.1.8 The remainder of the junction assessment scope details do not change from the detail contained in the submitted TA (**Volume 5.22**) as a consequence of the Revised Construction Programme.

11.1.9 Reference should be made to the submitted TA (**Volume 5.22, section 11**, paragraphs 10.9.1 to 10.9.4).

12 HIGHWAY IMPACT

12.1 Introduction

12.1.1 There is no increase in the total or peak daily volumes of traffic generated by the Proposed Development as a result of the Revised Construction Programme. All data sources and predicted traffic generation remain the same as the assessed construction programme (2016 – 2020) in the submitted TA with the exception of the background traffic growth.

12.1.2 Revised background traffic growth factors, quantities of traffic and variation of background traffic flows between the submitted TA (**Volume 5.22**) and the Revised Construction Programme assessments have been identified in **Tables 10.2** and **10.3** (AM and PM Peak periods associated with the Revised Construction Programme).

12.1.3 This assessment identifies that 25 of the 47 considered junctions would have a positive increase in background traffic flows in the revised peak periods as a result of the Revised Construction Programme.

12.1.4 All of the increases in background traffic flows associated with the implementation of the Revised Construction Programme are within limits typically regarded as being within the daily ranges of variation.

12.1.5 The increases in background traffic have the greatest change in regard to Future Baseline junction modelling undertaken as part of the submitted TA (**Volume 5.22**).

12.1.6 It is therefore considered that the impacts of the predicted construction traffic associated with the Proposed Development as a result of the Revised Construction Programme have varying impacts at junctions, dependant on the forecast Future Baseline conditions at each junction.

12.1.7 The junction conditions therefore fall into three categories of background traffic growth, these being:

- Decrease in background traffic – resulting from an earlier peak year cumulative assessment for a development component as a result of the Revised Construction Programme;
- No change – where the peak cumulative year of assessment remains the same as a result of the Revised Construction Programme; and
- Increase in background traffic – resulting from a later peak year cumulative assessment due to the duration of construction falling between 2015 to 2022 as a result of the Revised Construction Programme.

Decrease in background traffic

12.1.8 An earlier year of assessment results in a decrease in background traffic in the Future Baseline and would result in additional capacity at each junction. This occurs when the peak traffic associated with a particular element of construction has been brought forward as part of the Revised Construction Programme.

12.1.9 As such the results presented within the submitted TA (**Volume 5.22**) remain valid for the purpose of this assessment and no further assessment is required.

12.1.10 Furthermore it is also considered that the mitigation set out in the submitted Construction Traffic Management Plan (CTMP) (**Volume 5.26.5**) is proportionate to the potential impacts at the junction and would not require any amendments as a result of the Revised Construction Programme being implemented.

No Change in background traffic

12.1.11 Where is no change to the peak year of assessment (i.e. no change between the peak predicted construction vehicle year of assessment between the construction programme within the submitted TA (**Volume 5.22**) and the Revised Construction Programme) the results presented within the submitted TA (**Volume 5.22**) remain valid and no further junction modelling is required.

Increase in background traffic

12.1.12 An increase in background traffic is the result of the peak cumulative year of assessment being later as a result of the Revised Construction Programme.

12.1.13 The increase in background traffic on the LRN and SRN results in lowered residual capacity at each junction as a result of the Revised Construction Programme.

12.2 Future Baseline and Future Baseline with Development Capacity Assessment Results

12.2.1 As identified in Section 10, the Baseline traffic for 16 junctions has increased and therefore these junctions require further capacity assessments to be undertaken to assess the impacts of the Revised Construction Programme.

12.2.2 The remainder of this section of the TA Sensitivity Test presents the results from the junction capacity assessments undertaken for the 16 junctions identified for analysis in Section 10 for the following scenarios:

- Future Baseline (observed traffic data plus traffic growth to assessment year with traffic growth, plus committed development); and
- Future Baseline plus Proposed Development.

Junction 3 – Hillside/A39 Puriton Hill – 2021 Baseline

12.2.3 **Table 12.1** below provides the 2021 Baseline capacity assessment results for the Hillside/ Puriton Hill junction.

Table 12.1 – Junction 3 - A39/Puriton Hill 2021 Future Baseline results summary

Arm		AM Future Baseline 2021		PM Future Baseline 2021	
From	To	RFC*	Queue (Vehs)	RFC	Queue (Vehs)
Southern Arm	A39 & Hillside	0.00	0.00	0.00	0.00
A39 (E)	Southern Arm, A39 (W) & Hillside	0.03	0.03	0.08	0.09
Hillside	A39 & Southern Arm	0.21	0.26	0.21	0.26
A39 (W)	A39 (E), Southern Arm & Hillside	0.01	0.01	0.00	0.00

Capacity

12.2.4 The 2021 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.5 The 2021 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 3 – Hillside/ A39 Puriton Hill – 2021 Future Baseline with Development

12.2.6 **Table 12.2** below provides the 2021 Future Baseline with development capacity assessment results for the Hillside/ Puriton Hill junction.

Table 12.2 – Junction 3 - A39/Puriton Hill 2021 Future Baseline with Development results summary

Arm		AM Future Baseline With Dev 2021		PM Future Baseline With Dev 2021	
From	**To**	**RFC**	**Queue (Vehs)**	**RFC**	**Queue (Vehs)**
Southern Arm	A39 & Hillside	0.00	0.00	0.08	0.00
A39 (E)	Southern Arm, A39 (W) & Hillside	0.04	0.04	0.00	0.09
Hillside	A39 & Southern Arm	0.23	0.30	0.22	0.28
A39 (W)	A39 (E), Southern Arm & Hillside	0.01	0.01	0.00	0.00

Capacity

12.2.7 The 2021 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.8 The 2021 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction 5 – A39/Bawdrip Lane 2021 Future Baseline

12.2.9 **Table 12.3** below provides the 2021 Future Baseline capacity assessment results for the A39/Bawdrip Lane junction.

Table 12.3 – Junction 5 - A39/Bawdrip Lane 2021 Future Baseline results summary

Arm		AM Future Baseline 2021		PM Future Baseline 2021	
From	To	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Bawdrip Lane	A39 (W) & Northern Arm	0.03	0.03	0.02	0.02
Bawdrip Lane	A39 (E) & Northern Arm	0.10	0.11	0.09	0.09
A39 (E)	Bawdrip Lane, A39 (W) & Northern Arm	0.00	0.00	0.00	0.00
Northern Arm	A39 (E), Bawdrip Lane & A39 (W)	0.00	0.00	0.00	0.00
A39 (W)	A39 (E), Bawdrip Lane & Northern Arm	0.04	0.06	0.04	0.05

Capacity

12.2.10 The 2021 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.11 The 2021 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 5 – A39/Bawdrip Lane 2021 Baseline with Development

12.2.12 **Table 12.4** below provides the 2021 Future Baseline with development capacity assessment results for the A39/Bawdrip Lane junction.

Table 12.4 – Junction 5 - A39/Bawdrip Lane 2021 Future Baseline with Development results summary

Arm		AM Future Baseline With Dev 2021		PM Future Baseline With Dev 2021	
From	To	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Bawdrip Lane	A39 (W) & Northern Arm	0.03	0.03	0.02	0.02
Bawdrip Lane	A39 (E) & Northern Arm	0.11	0.11	0.10	0.11
A39 (E)	Bawdrip Lane, A39 (W) & Northern Arm	0.00	0.00	0.00	0.00
Northern Arm	A39 (E), Bawdrip Lane & A39 (W)	0.00	0.00	0.00	0.00
A39 (W)	A39 (E), Bawdrip Lane & Northern Arm	0.04	0.06	0.04	0.06

Capacity

12.2.13 The 2021 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.14 The 2021 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction 7 – Old Mill Road/B3141 Woolavington Hill 2021 Baseline

12.2.15 **Table 12.5** below provides the 2021 Future Baseline capacity assessment results for the Old Mill Road/B3141/Woolavington Hill junction.

Table 12.5 – Junction 7 - Old Mill Road / B3141 Woolavington Hill 2021 Future Baseline results summary

Arm		AM Future Baseline 2021		PM Future Baseline 2021	
From	To	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Old Mill Road	B3141 (N)	0.06	0.07	0.03	0.03
Old Mill Road	B3141 (S)	0.19	0.24	0.18	0.22
B3141 (N)	B3141 (S) & Old Mill Road	0.02	0.03	0.08	0.14

Capacity

12.2.16 The 2021 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.17 The 2021 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 7 – Old Mill Road/B3141 Woolavington Hill 2021 Future Baseline 2021 with Development

12.2.18 **Table 12.6** below provides the 2021 Baseline capacity with development assessment results for the Old Mill Road/B3141/Woolavington Hill junction.

Table 12.6 – Junction 7 - Old Mill Road / B3141 Woolavington Hill 2021 Future Baseline with Development results summary

Arm		AM Future Baseline With Dev 2021		PM Future Baseline With Dev 2021	
From	To	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Old Mill Road	B3141 (N)	0.06	0.07	0.03	0.03
Old Mill Road	B3141 (S)	0.21	0.26	0.19	0.23
B3141 (N)	B3141 (S) & Old Mill Road	0.02	0.03	0.09	0.18

Capacity

12.2.19 The 2021 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.20 The 2021 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction 8 – Woolavington Hill/Higher Road/Vicarage Road 2021 Future Baseline

12.2.21 **Table 12.7** below provides the 2021 Future Baseline capacity assessment results for the Old Mill Woolavington Hill/Higher Road/Vicarage Road junction.

Table 12.7 – Junction 8 – Woolavington Hill/Higher Road/Vicarage Road 2021 Future Baseline results summary

Arm		AM Future Baseline 2021		PM Future Baseline 2021	
From	To	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Vicarage Road	B3141 (N), B3141 (S) & Higher Road	0.07	0.08	0.07	0.08
B3141 (N)	Vicarage Road, B3141 (S) & Higher Road	0.05	0.07	0.07	0.11
Higher Road	B3141 (N), Vicarage Road & B3141 (S)	0.21	0.26	0.43	0.74
A3141 (S)	B3141 (N), Vicarage Road & Higher Road	0.01	0.02	0.02	0.03

Capacity

12.2.22 The 2021 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.23 The 2021 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 8 –Woolavington Hill/Higher Road/Vicarage Road 2021 Future Baseline with Development

12.2.24 **Table 12.8** below provides the 2021 Future Baseline with Development capacity assessment results for the Old Mill Woolavington Hill/Higher Road/Vicarage Road junction.

Table 12.8 – Junction 8 – Woolavington Hill/Higher Road/Vicarage Road 2021 Future Baseline with Development results summary

Arm		AM Future Baseline With Dev 2021		PM Future Baseline With Dev 2021	
From	To	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Vicarage Road	B3141 (N), B3141 (S) & Higher Road	0.08	0.08	0.08	0.08
B3141 (N)	Vicarage Road, B3141 (S) & Higher Road	0.05	0.08	0.07	0.13
Higher Road	B3141 (N), Vicarage Road & B3141 (S)	0.21	0.27	0.44	0.78
A3141 (S)	B3141 (N), Vicarage Road & Higher Road	0.01	0.02	0.03	0.03

Capacity

12.2.25 The 2021 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.26 The 2021 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction 17 – Quantock Way/Homberg Way 2018 Future Baseline

12.2.27 **Table 12.9** below provides the 2018 Future Baseline capacity assessment results for the Quantock Road/Homberg Way junction.

Table 12.9 – Junction 17 – Quantock Way/Homberg Way 2018 Future Baseline results summary

Arm	AM Future Baseline 2018		PM Future Baseline 2018	
	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Quantock Road	0.48	0.99	0.62	1.72
A39	0.50	1.08	0.54	1.30
Quantock Meadow	0.05	0.05	0.03	0.03
Homberg Way	0.52	1.12	0.42	0.78

Capacity

12.2.28 The 2018 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.29 The 2018 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 17 – Quantock Way/Homberg Way 2018 Future Baseline with Development

12.2.30 **Table 12.10** below provides the 2018 Future Baseline with Development capacity assessment results for the Quantock Road/Homberg Way junction.

Table 12.10 – Junction 17 – Quantock Way/Homberg Way 2018 Future Baseline with Development results summary

Arm	AM Future Baseline with Dev 2018		PM Future Baseline with Dev 2018	
	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Quantock Road	0.50	1.08	0.63	1.74
A39	0.50	1.10	0.60	1.63
Quantock Meadow	0.05	0.05	0.03	0.03
Homberg Way	0.57	1.43	0.43	0.80

Capacity

12.2.31 The 2018 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.32 The 2018 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction 18 – A39/Main Road 2018 Future Baseline

12.2.33 **Table 12.11** below provides the 2018 Future Baseline capacity assessment results for the A39/Main Road junction.

Table 12.10 – Junction 18 – A39/Main Road 2018 Future Baseline results summary

Arm	AM Future Baseline 2018		PM Future Baseline 2018	
	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Main Road south	0.42	0.81	0.48	0.99
A39	0.28	0.44	0.29	0.48
Main Road north	0.59	1.48	0.70	2.31

Capacity

12.2.34 The 2018 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.35 The 2018 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 18 – A39/Main Road 2018 Baseline 2018 with Development

12.2.36 **Table 12.12** below provides the 2018 with Development capacity assessment results for the A39/Main Road junction.

Table 12.12 – Junction 18 – A39/Main Road 2018 Future Baseline with Development results summary

Arm	AM Future Baseline with Dev 2018		PM Future Baseline with Dev 2018	
	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Main Road south	0.47	0.99	0.49	1.03
A39	0.28	0.46	0.35	0.62
Main Road north	0.60	1.51	0.75	2.98

Capacity

12.2.37 The 2018 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.38 The 2018 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction 19 – A39/High Street 2018 Future Baseline

12.2.39 **Table 12.13** below provides the 2018 Future Baseline capacity assessment results for the A39/High Street junction.

Table 12.13 – Junction 19 – A39/High Street 2018 Future Baseline results summary

Arm	AM Future Baseline 2018		PM Future Baseline 2018	
	RFC	Queue (Vehs)	RFC	RFC
High Street	0.11	0.17	0.15	0.24
A39 south	0.21	0.33	0.30	0.49
A39 west	0.24	0.33	0.18	0.22

Capacity

12.2.40 The 2018 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.41 The 2018 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 19 – A39/High Street 2018 Future Baseline 2018 with Development

12.2.42 **Table 12.14** below provides the 2018 Future Baseline with Development capacity assessment results for the A39/High Street junction.

Table 12.14 – Junction 19 – A39/High Street 2018 Future Baseline with Development results summary

Arm	AM Future Baseline with Dev 2018		PM Future Baseline with Dev 2018	
	RFC	Queue (Vehs)	RFC	Queue (Vehs)
High Street	0.12	0.19	0.21	0.34
A39 south	0.28	0.45	0.31	0.51
A39 west	0.25	0.35	0.18	0.23

Capacity

12.2.43 The 2018 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.44 The 2018 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction 20 – High Street/Fore Street/Rodway 2018 Future Baseline

12.2.45 **Table 12.15 and 12.16** below provides the 2018 Future Baseline capacity assessment results for the High Street/Fore Street/Rodway east and west junctions respectively.

Table 12.15 – Junction 20 – High Street/Fore Street (east) 2018 Future Baseline results summary

Arm		AM Future Baseline 2018		PM Future Baseline 2018	
From	**To**	**RFC**	**Queue (Vehs)**	**RFC**	**Queue (Vehs)**
Rodway	High Street	0.47	0.91	0.70	2.30
Fore Street	Rodway	0.61	1.72	0.42	0.82

Table 12.16 – Junction 20 – High Street/Fore Street (west) 2018 Future Baseline results summary

Arm		AM Future Baseline 2018		PM Future Baseline 2018	
From	**To**	**RFC**	**Queue (Vehs)**	**RFC**	**Queue (Vehs)**
High Street	Rodway south	0.21	0.39	0.19	0.46
Rodway north	High Street	0.27	0.66	0.53	2.08

Capacity

12.2.46 The 2018 Future Baseline capacity assessment results indicate that there are no capacity issues associated with the High Street/Fore Street (east) or High Street/Fore Street (west).

Queues

12.2.47 The 2018 Future Baseline capacity assessment results indicate that there are no issues associated with queuing with the High Street/Fore Street (east) or High Street/Fore Street (west).

Junction 20 – High Street/Fore Street/Rodway 2018 Future Baseline 2018 with Development

12.2.48 **Tables 12.17** and **12.18** below provides the 2018 Future Baseline with Development capacity assessment results for the High Street/Fore Street/Rodway east and west junctions respectively.

Table 12.17 – Junction 20 – High Street/Fore Street (east) 2018 Future Baseline with Development results summary

Arm		AM Future Baseline with Dev 2018		PM Future Baseline with Dev 2018	
From	**To**	**RFC**	**Queue (Vehs)**	**RFC**	**Queue (Vehs)**
Rodway	High Street	0.48	0.94	0.70	2.31
Fore Street	Rodway	0.63	1.91	0.42	0.83

Table 12.18 – Junction 20 – High Street/Fore Street (west) 2018 Future Baseline with Development results summary.

Arm		AM Future Baseline with Dev 2018		PM Future Baseline with Dev 2018	
From	**To**	**RFC**	**Queue (Vehs)**	**RFC**	**Queue (Vehs)**
High Street	Rodway south	0.38	0.77	0.22	0.53
Rodway north	High Street	0.30	0.76	0.78	5.70

Capacity

12.2.49 The 2018 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.50 The 2018 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction 38 – A403 Chittening Road/Severn Road 2020 Future Baseline

12.2.51 **Table 12.19** below provides the 2020 Future Baseline capacity assessment results for the A403 Chittening Road/Severn Road junction.

Table 12.19 – Junction 20 – A403 Chittening Road/Severn Road 2020 Future Baseline results summary.

Arm		AM Future Baseline 2020		PM Future Baseline 2020	
From	**To**	**RFC**	**Queue (Vehs)**	**RFC**	**Queue (Vehs)**
Severn Road east	Chittening Road	0.25	0.43	0.09	0.11
Severn Road east	Severn Road north	0.33	0.54	0.25	0.34
Chittening Road	Severn Road east	0.23	0.40	0.42	0.90

Capacity

12.2.52 The 2020 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.53 The 2018 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 38 – A403 Chittening Road/Severn Road 2020 Future Baseline with Development

12.2.54 **Table 12.20** below provides the 2020 Future Baseline with Development capacity assessment results for the A403 Chittening Road/Severn Road junction.

Table 12.20 – Junction 20 – A403 Chittening Road/Severn Road 2020 Future Baseline with Development results summary.

Arm		AM Future Baseline with Dev 2020		PM Future Baseline with Dev 2020	
From	To	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Severn Road east	Chittening Road	0.25	0.43	0.12	0.16
Severn Road east	Severn Road north	0.34	0.54	0.26	0.36
Chittening Road	Severn Road east	0.28	0.40	0.43	0.93

Capacity

12.2.55 The 2020 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.56 The 2018 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction 39 – A403 Smoke Lane/Poplar Way West 2020 Future Baseline

12.2.57 **Table 12.21** below provides the 2020 Future Baseline capacity assessment results for the A403 Smoke Lane/Poplar Way West junction.

Table 12.21 – Junction 39 – A403 Smoke Lane/Poplar Way West 2020 Future Baseline results summary.

Arm	AM Future Baseline 2020		PM Future Baseline 2020	
	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Smoke Lane	0.47	1.00	0.35	0.61
Poplar Way West	0.14	0.19	0.17	0.22
St Andrew's Road	0.36	0.66	0.38	0.71
Access	0.03	0.0.3	0.05	0.05

Capacity

12.2.58 The 2020 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.59 The 2020 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 39 – A403 Smoke Lane/Poplar Way West 2018 Future Baseline 2020 with Development

12.2.60 **Table 12.22** below provides the 2020 Future Baseline with Development capacity assessment results for the A39/High Street junction.

Table 12.22 – Junction 39 – A403 Smoke Lane/Poplar Way West 2020 Future Baseline with Development results summary.

Arm	AM Future Baseline with Dev 2020		PM Future Baseline with Dev 2020	
	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Smoke Lane	0.48	1.06	0.37	0.64
Poplar Way West	0.14	0.19	0.22	0.30
St Andrew's Road	0.42	0.84	0.38	0.72
Access	0.03	0.04	0.05	0.05

Capacity

12.2.61 The 2020 Future Baseline with Development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.62 The 2020 Future Baseline with Development capacity assessment results indicate that there are no issues associated with queuing.

Junction 40 – Poplar Way West/Poplar Way East/Merebank Road/Moorend Farm Avenue 2020 Future Baseline

12.2.63 **Table 12.23** below provides the 2020Future Baseline capacity assessment results for the Poplar way West/Poplar Way East/Merebank Road/Moorend Farm Avenue junction.

Table 12.23 – Junction 40 – Poplar Way West/Poplar Way East/Merebank Road/Moorend Farm Avenue 2020Future Baseline results summary.

Arm	AM Future Baseline 2020		PM Future Baseline 2020	
	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Poplar Way east	0.08	0.13	0.19	0.26
Merebank Road	0.23	0.32	0.11	0.15
Poplar Way west	0.11	0.14	0.12	0.15
Moorend Farm Avenue	0.03	0.04	0.08	0.10

Capacity

12.2.64 The 2020 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.65 The 2020Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 40 – Poplar Way West/Poplar Way East/Merebank Road/Moorend Farm Avenue 2020 Future Baseline with Development

12.2.66 **Table 12.24** below provides the 2020 with Development capacity assessment results for the Poplar way West/Poplar Way East/Merebank Road/Moorend Farm Avenue junction.

Table 12.24 – Junction 40 – Poplar Way West/Poplar Way East/Merebank Road/Moorend Farm Avenue 2020 Future Baseline with Development results summary

Arm	AM Future Baseline with Dev 2020		PM Future Baseline with Dev 2020	
	RFC	Queue (Vehs)	RFC	Queue (Vehs)
Poplar Way east	0.09	0.13	0.23	0.32
Merebank Road	0.23	0.32	0.11	0.16
Poplar Way west	0.14	0.18	0.12	0.15
Moorend Farm Avenue	0.03	0.04	0.08	0.10

Capacity

12.2.67 The 2020 Future Baseline with Development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.68 The 2020 Future Baseline with Development capacity assessment results indicate that there are no issues associated with queuing.

Junction 42 – St. Andrew's Road/St. George's Industrial Estate 2020 Future Baseline

12.2.69 **Table 12.25** below provides the 2020Baseline capacity assessment results for the St. Andrew's Road/St. George's Industrial Estate junction.

Table 12.25 – Junction 42 – St Andrew's Road/St George Industrial 2020 Future Baseline results summary

Item	Lane Description	AM Future Baseline 2020			PM Future Baseline 2020		
		DoS* (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
1/1	St Andrews Road (N) Left Ahead	86.8%	33.6	7.1	76.9%	24.1	4.6
1/2	St Andrews Road (N) Right	11.1%	0.5	0.3	11.1%	0.5	0.3
2/1	Distribution Centre Left	8.2%	0.0	0.0	5.8%	0.0	0.0
2/2	Distribution Centre Ahead Right	12.8%	0.5	0.3	8.5%	0.4	0.2
3/1	St Andrews Road (S) Left Ahead	64.5%	19.5	2.5	72.6%	25.4	3.4
3/2	St Andrews Road (S) Right	64.5%	3.7	2.2	21.5%	1.0	0.6
4/1	St Georges Industrial Estate Left	19.7%	0.8	0.5	11.1%	0.5	0.3
4/2	St Georges Industrial Estate Ahead Right	32.0%	1.6	0.9	13.7%	0.6	0.3

Capacity

12.2.70 The 2020 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.71 The 2020 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 42 – St. Andrew's Road/St. George's Industrial Estate 2020 Future Baseline with Development

12.2.72 **Table 12.26** below provides the 2020 with Development capacity assessment results for the St. Andrew's Road/St. George's Industrial Estate junction.

Table 12.26 – Junction 42 – St Andrew's Road/St George Industrial 2020 Future Baseline with Development results summary

Item	Lane Description	AM Future Baseline with Dev 2020			PM Future Baseline with Dev 2020		
		DoS (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
1/1	St Andrews Road (N) Left Ahead	87.3%	34.3	7.3	81.7%	28.3	5.6
1/2	St Andrews Road (N) Right	11.1%	0.5	0.3	20.6%	1.0	0.5
2/1	Distribution Centre Left	8.2%	0.0	0.0	5.8%	0.0	0.0
2/2	Distribution Centre Ahead Right	12.8%	0.5	0.3	8.5%	0.4	0.2
3/1	St Andrews Road (S) Left Ahead	70.5%	23.6	3.2	73.0%	25.5	3.5
3/2	St Andrews Road (S) Right	64.5%	3.7	2.2	21.5%	1.0	0.6
4/1	St Georges Industrial Estate Left	19.7%	0.8	0.5	11.1%	0.5	0.3
4/2	St Georges Industrial Estate Ahead Right	32.0%	1.6	0.9	13.7%	0.6	0.3

Capacity

12.2.73 The 2020 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.74 The 2020 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction 43 – St. Andrew's Road/King Road Avenue/Crowley Way 2020 Future Baseline

12.2.75 **Table 12.27** below provides the 2020 Future Baseline capacity assessment results for the St. Andrew's Road/King Road Avenue/Crowley Way Estate junction.

Table 12.27 – Junction 43 – St. Andrew's Road/King Road Avenue/Crowley Way Estate 2020 Baseline results summary

Item	Lane Description	AM Future Baseline 2020			PM Future Baseline 2020		
		DoS (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
1/1	A403 St. Andrew's Road Left	38.4%	5.9	1.5	59.2%	10.9	2.7
1/2	A403 St. Andrew's Road Left Ahead	45.8%	7.2	2.0	63.0%	13.0	3.2
1/3	A403 St. Andrew's Road Left Ahead	45.8%	7.2	2.0	63.0%	13.0	3.2
2/1	Crowley Road Left Ahead	56.5%	10.4	2.7	21.4%	2.9	0.7
2/2	Crowley Road Ahead	73.5%	13.1	4.5	36.4%	3.4	1.5
2/3	Crowley Road Ahead	73.5%	13.1	4.5	36.4%	3.4	1.51.4
3/1	McLaren Road Left Ahead	70.9%	5.7	3.1	58.0%	3.4	1.9
4/1	King Road Avenue Ahead Left	48.0%	2.5	1.4	57.1%	3.3	1.9
4/2	King Road Avenue Ahead	48.1%	2.6	1.5	56.7%	3.5	2.0
8/1	North Circ Ahead	24.5%	2.1	1.0	27.6%	2.0	1.0
8/2	North Circ Right	16.1%	0.7	0.3	19.6%	0.3	0.2
9/1	East Circ Ahead	12.2%	1.9	0.8	16.4%	2.1	0.9
9/2	East Circ Right	9.5%	1.6	0.7	1.4%	0.2	0.1
10/1	South Circ Ahead	39.5%	2.6	0.7	11.7%	0.5	0.1
10/2	South Circ Right	32.3%	1.0	0.4	16.1%	0.5	0.2
10/3	South Circ Right	32.4%	1.0	0.4	15.4%	0.5	0.2
11/1	West Circ Ahead	26.3%	0.9	0.3	10.3%	0.3	0.1
11/2	West Circ Ahead	33.7%	1.6	0.4	17.7%	1.0	0.2
11/3	West Circ Right Ahead	32.9%	1.5	0.4	18.4%	1.2	0.3

Capacity

12.2.76 The 2020 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.77 The 2020 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 43 – St. Andrew's Road/King Road Avenue/Crowley Way 2020 Future Baseline 2018 With Development

12.2.78 **Table 12.8** below provides the 2020 with Development capacity assessment results for the St. Andrew's Road/King Road Avenue/Crowley Way junction.

Table 12.28 – Junction 43 – St. Andrew's Road/King Road Avenue/Crowley Way Estate 2020 Future Baseline with Development results summary

Item	Lane Description	AM Future Baseline with Dev 2020			PM Future Baseline with Dev 2020		
		DoS (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
1/1	A403 St. Andrew's Road Left	38.6%	5.9	1.5	61.3%	11.5	2.9
1/2	A403 St. Andrew's Road Left Ahead	46.2%	7.5	2.0	64.9%	13.7	3.4
1/3	A403 St. Andrew's Road Ahead	46.2%	7.5	2.0	64.9%	13.7	3.4
2/1	Crowley Road Left Ahead	60.6%	11.6	3.0	21.3%	2.9	0.7
2/2	Crowley Road Ahead	76.9%	15.1	5.1	36.0%	3.4	1.4
2/3	Crowley Road Ahead	76.9%	15.1	5.1	36.0%	3.4	1.4
3/1	McLaren Road Left Ahead	70.9%	5.7	3.1	58.0%	3.4	1.9
4/1	King Road Avenue Ahead Left	48.0%	2.5	1.4	63.7%	3.6	2.1
4/2	King Road Avenue Ahead	48.1%	2.6	1.5	64.4%	3.8	2.2
8/1	North Circ Ahead	23.6%	1.9	0.9	26.5%	1.7	0.9
8/2	North Circ Right	16.9%	0.8	0.3	22.4%	0.6	0.3
9/1	East Circ Ahead	12.2%	1.9	0.8	17.0%	2.1	0.9
9/2	East Circ Right	9.5%	1.6	0.7	1.4%	0.2	0.1
10/1	South Circ Ahead	42.3%	2.7	0.8	11.9%	0.5	0.1
10/2	South Circ Right	33.9%	1.0	0.4	16.3%	0.5	0.2
10/3	South Circ Right	33.7%	1.0	0.4	15.3%	0.5	0.2
11/1	West Circ Ahead	29.3%	1.1	0.3	10.4%	0.3	0.1
11/2	West Circ Ahead	34.7%	1.6	0.4	17.6%	1.0	0.2
11/3	West Circ Right Ahead	34.2%	1.5	0.4	18.1%	1.2	0.3

Capacity

12.2.79 The 2020 Future Baseline with Development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.80 The 2020 Future Baseline with Development capacity assessment results indicate that there are no issues associated with queuing.

Junction 44 – M5/A4/Avonmouth Way 2020 Future Baseline

12.2.81 **Table 12.29** below provides the 2020 Future Baseline capacity assessment results for the M5/A4/Avonmouth Way junction.

Table 12.29 – Junction 44 – M5/A4/Avonmouth Way 2020 Future Baseline capacity assessment results summary

Item	Lane Description	AM Future Baseline 2020			PM Future Baseline 2020		
		DoS (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
1/1	Avonmouth Way Left	70.2%	4.4	4.0	86.9%	12.4	8.1
1/2	Avonmouth Way Ahead Left	70.2%	4.4	4.0	86.9%	12.4	8.1
1/3	Avonmouth Way Ahead	49.4%	2.7	1.5	62.5%	7.7	3.5
2/1	M5 Ahead Left	73.5%	12.2	4.9	31.8%	3.6	1.5
2/2	M5 Ahead	73.0%	12.8	5.1	32.6%	3.9	1.6
2/3	M5 Ahead	84.0%	15.6	7.2	48.7%	6.0	2.6
2/4	M5 Ahead	84.0%	15.6	7.2	48.7%	6.0	2.6
3/1	Bristow Broadway Left	56.7%	6.1	4.6	35.9%	2.9	2.4
3/2	Bristow Broadway Ahead Left	56.7%	6.1	4.6	34.6%	2.9	2.4
3/3	Bristow Broadway Ahead	80.2%	11.3	5.5	84.3%	9.2	5.3
4/1	Crowley Road Ahead Left	52.7%	7.1	2.9	86.3%	14.3	8.0
4/2	Crowley Road Ahead	52.7%	7.1	2.9	86.3%	14.3	8.0
4/3	Crowley Road Ahead	31.6%	4.2	1.5	74.2%	10.9	4.8
4/4	Crowley Road Ahead	39.2%	3.9	2.6	71.1%	7.6	5.7
4/5	Crowley Road Ahead	39.2%	3.9	2.6	71.1%	7.6	5.7
5/1	North Circ Ahead	18.3%	0.1	0.1	32.4%	1.5	0.6
5/2	North Circ Ahead	3.1%	0.7	0.0	24.8%	3.4	0.7
5/3	North Circ Ahead	19.1%	1.6	0.3	37.1%	2.3	0.9
5/4	North Circ Right	11.4%	0.1	0.1	22.6%	0.1	0.1
5/5	North Circ Right	12.1%	0.1	0.1	21.6%	0.2	0.1
6/1	East Circ Ahead	21.7%	4.8	1.1	25.5%	7.8	1.4
6/2	East Circ Right Ahead	26.3%	5.1	1.2	47.6%	7.8	1.6
6/3	East Circ Right	0.0%	0.0	0.0	0.0%	0.0	0.0
7/1	Ahead	41.3%	1.2	0.6	13.2%	0.4	0.1
7/2	Ahead	45.6%	11.1	0.8	16.1%	2.6	0.2
7/3	Right Ahead	41.1%	7.6	0.7	19.0%	4.4	0.2
7/4	Right	12.4%	0.7	0.2	1.4%	0.0	0.0
8/1	West Circ Ahead	70.1%	4.0	2.7	37.4%	1.0	0.7
8/2	West Circ Right Ahead	43.8%	4.0	1.1	18.4%	0.6	0.2
8/3	West Circ Right	8.8%	0.0	0.0	6.8%	0.0	0.0
9/1	W/B Exit Ahead	51.1%	1.7	0.7	20.1%	0.7	0.1
9/2	W/B Exit Ahead	52.7%	1.7	0.7	22.2%	0.8	0.2
9/3	W/B Exit Ahead	3.1%	0.0	0.0	4.5%	0.0	0.0

Capacity

12.2.82 The 2020 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.83 The 2020 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 44 – M5/A4/Avonmouth Way 2020 Future Baseline with Development

12.2.84 **Table 12.30** below provides the 2020 with Development capacity assessment results for the M5/A4/Avonmouth Way junction.

Table 12.30 Junction 44 - M5/A4/Avonmouth Way 2020 Future Baseline with Development capacity assessment results summary

Item	Lane Description	AM Future Baseline with Dev 2020			PM Future Baseline with Dev 2020		
		DoS (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
1/1	Avonmouth Way Ahead Left	73.6%	4.8	4.3	97.4%	23.4	14.6
1/2	Avonmouth Way Ahead	73.6%	4.8	4.3	97.4%	23.4	14.6
1/3	Avonmouth Way Ahead	53.4%	3.0	1.7	61.5%	8.7	3.6
2/1	M5 Ahead Left	80.5%	14.2	6.0	38.2%	4.2	1.8
2/2	M5 Ahead	80.0%	14.8	6.2	39.6%	4.6	1.9
2/3	M5 Ahead	88.3%	17.4	8.7	49.7%	5.8	2.6
2/4	M5 Ahead	88.3%	17.4	8.7	49.7%	5.8	2.6
3/1	Bristow Broadway Left	67.2%	7.7	5.9	51.4%	3.9	3.3
3/2	Bristow Broadway Ahead Left	67.2%	7.7	5.9	49.1%	3.9	3.3
3/3	Bristow Broadway Ahead	90.2%	14.9	8.1	91.4%	10.4	6.8
4/1	Crowley Road Ahead Left	53.2%	7.2	2.9	98.5%	24.1	16.7
4/2	Crowley Road Ahead	53.2%	7.2	2.9	98.5%	24.1	16.7
4/3	Crowley Road Ahead	32.2%	4.4	1.6	87.7%	14.0	7.3
4/4	Crowley Road Ahead	40.0%	4.0	2.7	85.4%	11.6	8.3
4/5	Crowley Road Ahead	40.0%	4.0	2.7	85.4%	11.6	8.3
5/1	North Circ Ahead	18.5%	0.1	0.1	37.0%	1.6	0.7
5/2	North Circ Ahead	3.0%	0.7	0.0	28.1%	3.4	0.8
5/3	North Circ Ahead	19.5%	1.8	0.3	43.4%	2.6	1.1
5/4	North Circ Right	11.7%	0.1	0.1	27.6%	0.2	0.2
5/5	North Circ Right	12.3%	0.1	0.1	25.6%	0.2	0.2
6/1	East Circ Ahead	22.3%	4.9	1.1	27.9%	8.8	1.4
6/2	East Circ Right Ahead	27.3%	5.2	1.2	52.2%	8.6	1.6
6/3	East Circ Right	0.0%	0.0	0.0	0.0%	0.0	0.0
7/1	Ahead	44.0%	1.3	0.7	14.0%	0.4	0.1
7/2	Ahead	49.6%	12.6	0.9	17.0%	3.2	0.2
7/3	Right Ahead	41.5%	7.1	0.7	17.4%	4.3	0.2
7/4	Right	16.9%	1.8	0.2	1.0%	0.0	0.0
8/1	West Circ Ahead	70.6%	4.4	2.9	53.3%	2.5	1.7
8/2	West Circ Right Ahead	53.4%	7.4	1.6	15.0%	0.4	0.1
8/3	West Circ Right	9.2%	0.1	0.1	7.3%	0.0	0.0
9/1	W/B Exit Ahead	56.7%	1.8	0.8	22.9%	0.5	0.2
9/2	W/B Exit Ahead	58.5%	1.8	0.8	22.3%	0.8	0.2
9/3	W/B Exit Ahead	3.5%	0.0	0.0	2.5%	0.0	0.0

Capacity

12.2.85 The 2020 Future Baseline with Development capacity assessment results indicate that the DoS on Avonmouth in the PM peak is predicted to be 97.4%. The results also indicate that the AM and PM peak DoS on Bristow Broadway (ahead) will be 90.2% and 91.4% respectively. The results indicate that both Avonmouth and Bristow Broadway would operate above the practical capacity DoS of 90% (0.90) under the Revised Construction Programme.

Queues

12.2.86 The 2020 Future Baseline with development capacity assessment results indicate that the queues on Avonmouth in PM peak is predicted 23.4 pcus. The results also indicate that the AM and PM peak queues on Bristow Broadway (ahead) would be 14.9 and 10.4 pcus respectively.

Junction 45 – A4 Bristow Broadway/Avonmouth Road/Portway/M5 2020 Future Baseline

12.2.87 **Table 12.31** below provides the 2020 Future Baseline capacity assessment results for the A4 Bristow Broadway/Avonmouth Road/Portway/M5 junction.

Table 12.31 Junction 45 – A4 Bristow Broadway/Avonmouth Road/Portway/M5 2020 Future Baseline capacity assessment results summary.

Item	Lane Description	AM Future Baseline 2020			PM Future Baseline 2020		
		DoS (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
1/1	M5 Left	63.8%	5.7	2.9	59.6%	5.8	3.1
1/2	M5 Ahead	63.8%	5.7	2.9	59.6%	5.8	3.1
1/3	M5 Ahead	52.1%	5.8	1.8	41.6%	4.1	1.7
1/4	M5 Ahead	52.1%	5.8	1.8	41.6%	4.1	1.7
2/1	B4054 Left	10.9%	0.8	0.3	7.6%	0.5	0.2
2/2	B4054 Ahead	75.9%	7.7	4.6	73.0%	6.7	4.0
2/3	B4054 Ahead	75.9%	7.7	4.6	73.0%	6.7	4.0
3/1	Portway (S) Ahead	79.0%	11.3	4.2	70.7%	7.9	3.5
3/2	Portway (S) Ahead	79.0%	11.3	4.2	70.7%	7.9	3.5
3/3	Portway (S) Ahead	65.0%	9.6	2.8	64.4%	9.2	2.9
3/4	Portway (S) Ahead	0.0%	9.6	2.8	0.0%	9.2	2.9
4/1	Portway (N) U-Turn Left	53.6%	4.7	2.1	80.7%	9.9	4.7
4/2	Portway (N) Left	39.1%	3.2	1.4	68.6%	7.4	3.3
6/1	Ahead	54.4%	1.5	0.8	51.1%	1.1	0.6
6/2	Ahead	56.8%	1.3	0.8	59.1%	1.4	0.8
7/1	Ahead	39.0%	6.0	0.9	22.4%	0.4	0.2
7/2	Ahead	35.4%	1.9	0.6	16.3%	1.2	0.3
9/1	East Circ Ahead	66.9%	6.2	2.3	60.8%	5.3	1.5
9/2	East Circ Ahead	71.0%	6.9	2.8	69.3%	10.0	2.2
9/3	East Circ Right	11.9%	0.5	0.2	12.4%	0.8	0.3
10/1	South Circ Right	58.0%	5.3	1.8	41.7%	3.8	1.1
10/2	South Circ Right	79.1%	2.4	1.9	57.6%	6.6	1.2
11/1	West Circ Ahead	55.1%	9.2	2.5	80.4%	6.6	3.7
11/2	West Circ Ahead	72.6%	4.5	2.4	82.0%	6.8	3.9
11/3	West Circ Right	0.0%	0.0	0.0	0.0%	0.0	0.0
11/4	West Circ Right	0.0%	0.0	0.0	0.0%	0.0	0.0

Item	Lane Description	AM Future Baseline 2020			PM Future Baseline 2020		
		DoS (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
12/1	North Circ Ahead	53.2%	4.8	1.9	57.6%	5.9	2.1
12/2	North Circ Right	33.7%	0.4	0.4	38.1%	0.3	0.3
12/3	North Circ Right	37.3%	0.5	0.4	57.6%	0.8	0.7

Capacity

12.2.88 The 2020 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.89 The 2020 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 45 – A4 Bristow Broadway/Avonmouth Road/Portway/M5 2020 Future Baseline with Development

12.2.90 **Table 12.32** below provides the 2020 Future Baseline with Development capacity assessment results for the A4 Bristow Broadway/Avonmouth Road/Portway/M5 junction.

Table 12.32 Junction 45 – A4 Bristow Broadway/Avonmouth Road/Portway/M5 2020 Future Baseline with Development capacity assessment results summary.

Item	Lane Description	AM Future Baseline with Dev 2020			PM Future Baseline with Dev 2020		
		DoS (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
1/1	M5 Left	65.63%	6.0	3.0	61.4%	6.0	3.4
1/2	M5 Ahead	65.6%	6.0	3.0	61.4%	6.0	3.4
1/3	M5 Ahead	57.8%	6.0	2.3	40.3%	3.9	1.7
1/4	M5 Ahead	57.8%	6.0	2.3	40.3%	3.9	1.7
2/1	B4054 Left	11.6%	0.8	0.3	7.6%	0.5	0.2
2/2	B4054 Ahead	79.3%	8.1	5.1	73.0%	6.7	4.0
2/3	B4054 Ahead	79.3%	8.1	5.1	73.0%	6.7	4.0
3/1	Portway (S) Ahead	81.1%	12.2	4.7	76.3%	9.9	4.3
3/2	Portway (S) Ahead	81.1%	12.2	4.7	76.3%	9.9	4.3
3/3	Portway (S) Ahead	67.1%	10.1	3.1	71.2%	10.7	3.6
3/4	Portway (S) Ahead	0.0%	10.1	3.1	0.0%	10.7	3.6
4/1	Portway (N) U-Turn Left	53.8%	4.8	2.1	86.9%	12.2	6.2
4/2	Portway (N) Left	39.4%	3.3	1.4	74.9%	8.9	3.9
6/1	Ahead	55.5%	2.1	0.9	48.7%	1.1	0.6
6/2	Ahead	58.0%	1.3	0.9	61.8%	1.6	0.9
7/1	Ahead	48.0%	8.8	1.1	23.7%	4.1	0.3
7/2	Ahead	37.4%	2.3	0.7	17.3%	1.1	0.3
9/1	East Circ Ahead	66.2%	6.2	2.3	57.7%	4.6	1.4
9/2	East Circ Ahead	70.1%	7.1	2.8	72.5%	11.1	2.5
9/3	East Circ Right	25.8%	1.2	0.6	14.0%	0.8	0.3
10/1	South Circ Right	82.2%	9.5	4.6	42.2%	4.0	1.2
10/2	South Circ Right	74.4%	1.4	1.4	54.7%	6.4	1.0
11/1	West Circ Ahead	56.8%	9.3	2.5	87.4%	8.1	5.3

Item	Lane Description	AM Future Baseline with Dev 2020			PM Future Baseline with Dev 2020		
		DoS (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
11/2	West Circ Ahead	75.1%	4.7	2.6	88.7%	8.2	5.4
11/3	West Circ Right	0.0%	0.0	0.0	0.0%	0.0	0.0
11/4	West Circ Right	0.0%	0.0	0.0	0.0%	0.0	0.0
12/1	North Circ Ahead	53.2%	5.1	2.0	55.7%	5.8	1.9
12/2	North Circ Right	33.7%	0.4	0.3	29.0%	0.2	0.2
12/3	North Circ Right	40.0%	0.5	0.4	63.4%	1.0	0.9

Capacity

12.2.91 The 2020 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.92 The 2020 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction 46 – A4 Portway/West Town Road 2020 Future Baseline

12.2.93 **Table 12.33** below provides the 2020 Future Baseline capacity assessment results for the A4 Portway/West Town Road junction.

Table 12.33 Junction 46 – A4 Portway/West Town Road 2020 Future Baseline capacity assessment results summary.

Item	Lane Description	AM Base 2020			PM Base 2020		
		DoS (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
1/2+1/1	A4 Portway (E) Left Ahead	67.3 : 67.3%	13.2	3.1	49.6 : 49.6%	8.3	1.9
1/3	A4 Portway (E) Ahead	64.7%	13.0	2.9	48.8%	8.2	1.8
2/1	W Town Road Left	35.9%	2.8	1.3	62.5%	6.0	2.9
3/1	A4 Portway (W) Ahead	84.0%	2.6	2.6	82.2%	2.3	2.3
3/2	A4 Portway (W) Right	54.0%	3.5	1.9	10.2%	0.7	0.3
3/3	A4 Portway (W) Right	54.0%	3.5	1.9	9.8%	0.6	0.3

Capacity

12.2.94 The 2020 Future Baseline capacity assessment results indicate that there are no capacity issues.

Queues

12.2.95 The 2020 Future Baseline capacity assessment results indicate that there are no issues associated with queuing.

Junction 46 – A4 Portway/West Town Road 2018 Future Baseline with Development

12.2.96 **Table 12.34** below provides the 2020 With Development capacity assessment results for the A4 Portway/West Town Road junction.

Table 12.34 Junction 46 – A4 Portway/West Town Road 2020 Future Baseline with Development capacity assessment results summary.

Item	Lane Description	AM With Dev 2020			PM With Dev 2020		
		DoS (%)	MMQ (pcu)	Delay (pcuHr)	DoS (%)	MMQ (pcu)	Delay (pcuHr)
1/2+1/1	A4 Portway (E) Left Ahead	67.4 : 67.4%	13.2	3.1	50.2 : 50.2%	8.4	1.9
1/3	A4 Portway (E) Ahead	64.8%	13.0	2.9	49.4%	8.3	1.9
2/1	W Town Road Left	35.9%	2.8	1.3	62.5%	6.0	2.9
3/1	A4 Portway (W) Ahead	84.7%	2.7	2.7	82.3%	2.3	2.3
3/2	A4 Portway (W) Right	54.0%	3.5	1.9	10.2%	0.7	0.3
3/3	A4 Portway (W) Right	54.0%	3.5	1.9	9.8%	0.6	0.3

Capacity

12.2.97 The 2020 Future Baseline with development capacity assessment results indicate that there are no capacity issues.

Queues

12.2.98 The 2020 Future Baseline with development capacity assessment results indicate that there are no issues associated with queuing.

Junction Capacity Assessment Model Outputs

12.2.99 All junction capacity assessment modal outputs are contained in **Appendix D** (**Volume 5.29.2.2.3**).

13 STRATEGIC ROAD NETWORK ASSESSMENT

13.1.1 Based on the assessment of the predicted construction traffic flows on the LRN and the SRN within Section 12 of this report, it is considered that there are no additional traffic movements associated with the Proposed Development on the SRN as a result of the Revised Construction Programme when compared with the previously undertaken merge and diverge assessments which are included within the submitted TA (**Volume 5.22, section 13**).

14 HIGHWAYS IMPACTS

14.1.1 As a result of the peak cumulative year of assessment for the Revised Construction Programme being later than the peak cumulative year of assessment for the construction programme within the submitted TA (**Volume 5.22**), 25 junctions had an increase in the volume of background traffic of which 16 had further capacity assessments undertaken.

14.1.2 It was therefore considered necessary to undertake the additional 16 junction capacity assessments to assess any potential impacts of the Proposed Development construction traffic as a result of the Revised Construction Programme.

14.1.3 With the exception of the number of junctions at which capacity assessments have been undertaken, the junction assessment scope within this TA Sensitivity Test is the same as the junction assessment scope contained in the submitted TA (**Volume 5.22**). Capacity assessments were undertaken to assess the following two scenarios:

- Future Baseline (observed traffic data plus traffic growth to assessment year with traffic growth, plus committed development); and
- Future Baseline plus Proposed Development.

14.1.4 Using standard industry methodologies, and the same methodology used in submitted TA (**Volume 5.22**) and the additional assessments contained in the Further Traffic and Transportation Information (August 2014) the following practical capacity thresholds were used to indicate where operational issues trigger for junctions:

- 0.85 RFC (Relative Flow to Capacity) – used for priority junctions or roundabouts modelled using PICADY/ARCADY, Junction 8 software; and
- 90% (0.90) DoS (Degree of Saturation) – used for signalised junctions using LinSig)

14.1.5 Based on the junction assessment scope, the junction capacity assessment for the Future Baseline indicates that each junction has some residual capacity. The results of the capacity assessments undertaken for the Future Baseline with Development scenario show that 15 of the 16 of the junctions assessed remain under the practical capacity thresholds as a result of the Revised Construction Programme.

14.1.6 As shown in **Table 12.30** the 2020 Future Baseline with Development junction capacity assessment results for the Junction 44, M5/A4/Avonmouth Way junction indicate that the practical capacity threshold is exceeded on two arms of the junction as a result of the Revised Construction Programme.

14.1.7 The results indicate that the DoS on Avonmouth in PM is predicted to be 97.4% with a queue of 23.4 pcus. The results also indicate that the AM and PM peak DoS on Bristow Broadway would be 90.2% and 91.4% respectively with queues of 14.9 and 10.4 pcus respectively.

14.1.8 It is therefore considered that as a result of the Revised Construction Programme, the M5/A4/Avonmouth junction would operate above its practical.

14.1.9 The junction capacity assessments also show that 15 junctions (which would have a peak cumulative year of assessment later than the peak cumulative year assessment identified in the submitted TA (**Volume 5.22**)) are not adversely impacted in terms of operation from the Proposed Development traffic as a result of the Revised Construction Programme.

14.1.10 Each of the 15 junctions would operate within its practical capacity level and there are anticipated to be no operational issues at any of the junctions.

14.1.11 Further to this, for those junctions not re-assessed above, the impact of the Proposed Development construction traffic identified within the submitted TA (**Volume 5.22**) is still valid in assessment terms for the Revised Construction Programme without warranting further capacity assessment for the revised Future Baseline plus development scenario.

14.1.12 The mitigation set out in the accompanying Construction Traffic Management Plan (CTMP) (**Volume 5.26.5**) is proportionate to the potential impacts at the junction associated with the Revised Construction Programme. However, it is noted that the M5/A4/Avonmouth will be included within the CTMP junction list for restrictions of peak period HGV traffic from the Proposed Development as a result of the Revised Construction Programme.

15 MITIGATION, CONTROLS AND MONITORING

15.1.1 It has been identified through the assessment of the Revised Construction Programme that there is no increase to the maximum number of trips generated by the construction traffic associated with the Proposed Development. Given that the peak cumulative volume of predicted construction traffic would be equal to or lower than in the submitted TA (**Volume 5.22**) it is considered that the impact of the predicted construction traffic from the Proposed Development will be equal to or less under the Revised Construction Programme, as those identified within the submitted TA (**Volume 5.22**).

15.1.2 The Revised Construction Programme results in the peak cumulative year of assessment for 16 junctions being later than peak cumulative year of assessment assessed in the submitted TA (**Volume 5.22**), in which case the volume of background traffic increases. As a result, the impact of the increase in background traffic on the junctions would be a reduction in junction capacity in the Future Baseline. To establish the impacts of the Proposed Development, additional junction capacity assessments have been undertaken at the 16 identified junctions for the Future Baseline and Future Baseline with Development.

15.1.3 The results of the capacity assessments undertaken for the 16 junctions re-assessed for the Revised Construction Programme indicate that there are no negative impacts as a result of the predicted construction traffic on peak period junction operations for the Future Baseline with Development scenario at 15 of the 16 junctions.

15.1.4 The capacity assessments indicate that the M5/A4/Avonmouth would operate above its practical capacity of 90% (0.90) as a result of the Revised Construction Programme.

15.1.5 As part of the submitted DCO planning application, a Draft Construction Traffic Management Plan (**Volume 5.26.5** of the submitted ES) has been was submitted.

15.1.6 As part of the mitigation package of measures contained within the CTMP (**Volume 5.26.5**), it has been agreed, through discussions and consultation with the LPAs, that construction traffic from the Proposed Development will not use any junctions operating over its practical capacity in either the Future Baseline or Future Baseline with Development scenarios.

15.1.7 The CTMP (**Volume 5.26.5**) identifies the following 12 junctions that will have complete peak period HGV movement restrictions in place

- (2) A39/Puriton Hill;
- (4) A39 Puriton Hill/Bath Road;
- (6) A39 Bath Road/Woolavington Hill;
- (10) A38 Bristol Road/Harp Road;
- (13) Dunball Roundabout;
- (14) A38 Bristol Road/The Drove;
- (15) A38 Bristol Road/Wylds Road;
- (16) Wylds Road/The Drove;

- (28) Central Way/Southern Way;
- (31) Northern Way/B3133 Tickenham Road;
- (32) Clevedon Road/B3128 Tickenham Hill; and
- (41) A403 St Andrew's Way/Kings Weston Way.

15.1.8 While no specific restriction is proposed on the SRN, all vehicles accessing the 12 LRN junctions will be required to use the SRN therefore limiting the vehicles that can use these junctions during the peak periods identified. This will significantly reduce the volume of constructions vehicles travelling through the SRN junctions that form part of the assessment contained in the submitted TA **(Volume 5.22)** and this Revised Construction Programme assessment.

15.1.9 From the assessment contained herein, it is therefore concluded that, Revised Construction Programme, Junction 44 M5/A4/Avonmouth will also be added to the CTMP (**Volume 5.26.5**) and the DCO requirement. This is detailed in the Construction Environmental Management Plan at **Volume 5.29.2.4** of the Sensitivity Test. AM and PM peak period HGV vehicle movement restrictions at this junction will mitigate the impacts of the Proposed Development Construction HGV vehicle movements under the Revised Construction Programme.

15.1.10 Similarly, AM and PM peak period HGV vehicle restrictions proposed within the mitigation strategy outlined within the submitted TA **(Volume 5.22, section 15)** submission and contained within the CTMP (**Volume 5.26.5**) are considered proportionate to the impacts identified within the submitted TA (**Volume 5.22**). Any HGV movement restrictions at this junction will mitigate the impacts of the Proposed Development Construction HGV vehicle movements under the submitted construction programme.

15.1.11 As part of the Further Traffic and Transport Information provided following the assessment of the submitted construction programme within the submitted TA (**Volume 5.22**), two mitigation measure junction capacity assessment scenarios were undertaken at 12 junctions which were predicted to operate over their practical capacity in the Future Baseline plus Development scenario. These junction capacity assessments were for the following mitigation measure scenarios:

- No HGV movements; and
- No HGV movements plus 5% of LGVs.

15.1.12 Given that the predicted construction traffic within the Revised Construction Programme is equal to or less than that assessed as part of the of the submitted TA (**Volume 5.22**) it is considered that the impacts would be equal to the impacts of the Proposed Development as a result of the Revised Construction Programme. Accordingly the mitigation measure capacity assessment, requested by the LPAs and described at paragraph 1.1.7 has not been undertaken as part of the assessment of the Revised Construction Programme.

15.1.13 It is considered that the mitigation measures and mechanisms for implementation identified in the submitted TA (**Volume 5.22**) and further detailed in the CTMP (**Volume 5.26.5**) are applicable and wholly valid and proportionate to the impacts of the Proposed Development. The mitigation measures of Proposed Development

construction HGV movement restrictions within the AM and PM peak periods will remove potential impacts from the Proposed Development HGV construction traffic.

16 FRAMEWORK TRAVEL PLAN

16.1.1 There are no changes to the Framework Travel Plan outlined within the submitted TA (**Volume 5.22, section 15**) as a result of the Revised Construction Programme.

17 SUMMARY AND CONCLUSIONS

17.1.1 This document has provided a sensitivity test of the submitted TA (**Volume 5.22**) to consider whether there are changes to the traffic and transportation effects described in the submitted document as a result of the Revised Construction Programme.

17.1.2 This Transport Assessment Sensitivity Test has set out all changes to the data and assessment methodologies where different from the submitted assessment and identifies the likely impacts of the changes as a result of the Revised Construction Programme.

17.1.3 The peak predicted trip generation for the Proposed Development would be temporary and the Revised Construction Programme trip generation is equal to or less than in the submitted assessment (TA, **Volume 5.22**).

17.1.4 Therefore, the Proposed Development would have little material impact on the operation of the surrounding highway network. In line with the submitted assessment it is acknowledged that there are some existing capacity issues during highway network peak periods at junctions in proximity to the Proposed Development.

17.1.5 Additional junction capacity assessments have been undertaken at 16 junctions where background traffic would increase. The results of the capacity assessments indicate that as a result of the revised peak year of assessment, with increased background traffic, a single junction, the M5/A4/Avonmouth junctions is predicted to exceed its practical capacity of 90% (0.90) DoS as a result of the Revised Construction Programme.

17.1.6 The remaining 15 junctions at which capacity assessments were undertaken would not exceed their practical capacity thresholds of either 0.85 RC of 90% (0.90) DoS. Therefore, at these junctions the impacts of the Proposed Development predicted construction traffic would not have an adverse impact and are therefore considered acceptable in capacity and operational terms.

17.1.7 As such, the mitigation strategy identified in the submitted (**Volume 5.22**) and further detailed in the Construction Traffic Management Plan (CTMP) (**Volume 5.26.4**) is considered wholly valid and proportionate to the impacts of the Proposed Development.