The Sizewell C Project

8.5 Transport Assessment

Revision: 1.0
Applicable Regulation: Regulation 5(2)(q)
PINS Reference Number: EN010012

May 2020

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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Introduction

This **Transport Assessment** (Doc Ref. 8.5) has been prepared for SZC Co.'s proposed Sizewell C nuclear power station and associated developments. The **Transport Assessment** (Doc Ref. 8.5) is submitted as part of the Development Consent Order (DCO) application to the Planning Inspectorate under the Planning Act 2008.

SZC Co. is proposing to build a new nuclear power station known as Sizewell C. It would comprise two United Kingdom European Pressurised Reactor (UK EPR™) units with a combined expected net electrical output of approximately 3,340MW. The design of the UK EPR™ units is based on technology used successfully and safely around the world for many years, and which has been licenced and permitted at Hinkley Point C. Once operational, Sizewell C would be able to generate enough electricity to supply approximately six million homes in the UK.

In addition to the key operational elements of the UK EPR™ units, the Sizewell C Project comprises other permanent and temporary development to support the construction and operation of the Sizewell C nuclear power station.

Extensive pre-application scoping and discussions have been undertaken with Suffolk County Council (SCC) and East Suffolk Council (ESC) since 2012. SZC Co. has also held four stages of statutory public consultation relating to the proposed Sizewell C Project, as well as informal engagement and consultation outside these stages. The proposals and transport strategy have evolved throughout the consultation period to respond to strategic issues raised.

The **Transport Assessment** (Doc Ref. 8.5) has been prepared in accordance with relevant guidance and is a comprehensive document which summarises the systematic assessment of transport issues relating to Sizewell C and associated development. It identifies what measures will be taken to deal with the anticipated transport impacts of the Sizewell C Project and to improve accessibility and safety for all modes of travel.

Existing Conditions

Site location

The main development site is situated on the Suffolk Coast approximately halfway between Felixstowe and Lowestoft, and three kilometres north-east of the town of Leiston. The study area encompasses Felixstowe and Ipswich to the south, Diss to the west and Lowestoft and Beccles to the north of Sizewell C Project.

Roads

The local highway network is managed by SCC as the local highway authority. Nearly all the roads in the area are single carriageways.

Sizewell Gap is the main access to the existing Sizewell power station complex. It connects with Lover's Lane at the priority junction with King George's Avenue, east of Leiston.

Lover's Lane lies north-east of Leiston and connects Sizewell Gap to the B1122. The road provides access to farm land and a small number of residential properties and commercial premises.

King George's Avenue connects Sizewell Gap and Lover's Lane with the centre of Leiston. The road has residential properties and crosses over the Saxmundham to Leiston branch line at a level crossing. It provides access to Eastlands Industrial Estate to the east of Leiston. It connects with Sizewell Road to the east of Urban Road, which joins the B1122 High Street approximately 150m to the west of Urban Road.

The B1122 is an approximately 15 kilometre (km) long rural B-road that connects the A12 in Yoxford to the north with the A1094 in Aldeburgh to the south via Middleton Moor, Theberton, Leiston, and Aldringham. It is generally subject to the national speed limit outside the main settlements. A 30mph speed limit applies through Theberton, Aldringham, and Aldeburgh and there is a 20mph zone in Leiston.

The local highway network is also comprised of other rural A and B-roads including the B1125, B1069, A1094, A144, B1078, B1079, B1119, B1121, and the A1120.

The A12 is the main route between Ipswich and Lowestoft. It is principally single carriageway with a short section of dual carriageway between the A14 south-east of Ipswich and Woodbridge. The A12 south of the A14 is a trunk road managed by Highways England.

The A14 is a grade separated dual carriageway road which connects the M6 and M1 in Leicestershire with the Port of Felixstowe.

The A47 is an east-west A road connecting the A1 at Peterborough with Lowestoft, via King's Lynn, Norwich, and Great Yarmouth.

Traffic surveys were conducted in May 2015 across the study area. Traffic data indicated that Monday to Thursday mornings are consistently busier than Friday mornings, and that Friday afternoon and early evening traffic is consistently the busiest period of the week.

Most junctions surveyed were uncongested and operated within capacity, with small or negligible delays and queues, even during peak hours. However, congestion was observed at junctions along the A12 between the A14 and A1152 at Woodbridge, one junction in Saxmundham, and one on the A14.

Road safety

Personal injury collision data has been obtained from SCC for the most recent five-year period (1 May 2014 to 1 May 2019). The data was analysed across the study area, considering the location, type, and severity of collisions. These personal injury collisions did not occur in significant concentrations to be classified as 'accident clusters', and accident rates were typically within the range predicted by COBALT guidance (Ref 1) and the Department for Transport's Transport Analysis Guidance (TAG) data book (May 2019) (Ref 2).

Pedestrian and cycle networks

Walking and cycling have the potential to replace shorter car trips of under 2km for walking and 8km for cycling. Cycling and walking infrastructure in the study area around the Sizewell C main development site and associated development was reviewed through a mixture of desktop studies and site surveys.

Most northern sections of Leiston and Eastbridge are within walking distance of the main development site entrance roundabout. In addition, Leiston, Eastbridge, Theberton, Knodishall, Aldringham, Saxmundham rail station, and Yoxford are accessible by cycle.

The existing pedestrian network in the vicinity of the main development site is limited and generally restricted to the main urban settlements. The local highway network is largely unlit and unsuitable for pedestrians, but there is a shared footway/cycleway connection along Sizewell Gap between Leiston and the Sizewell power station complex.

An extensive network of public rights of way exist within the vicinity of the main development site and associated developments providing connectivity to surrounding towns and villages. These are generally across agricultural land, unpaved, and unlit. There are cycle routes near the main development site and associated developments including the Sustrans Regional Cycle Route and Suffolk coastal cycle route.

Bus

There are no existing bus services serving the Sizewell power station complex. The closest bus stops are in Leiston. There is an hourly service between Aldeburgh, Leiston, Saxmundham, Wickham Market, Woodbridge, and Ipswich. The bus network between Lowestoft, Stowmarket, and Felixstowe generally comprises low frequency services operating less than one bus per hour. Public bus services will only be used by the construction workforce for non-work-related trips.

Dedicated direct bus services will operate during the construction of Sizewell C for construction workers, utilising existing bus stop infrastructure where possible. The majority of bus stops within Ipswich town centre are of high quality with lit waiting areas, shelters, and timetable provision. All bus stops along London Road South in Lowestoft have lit waiting areas, and half of bus stops have a shelter. Most bus stops in Saxmundham are well connected to local footways but only two stops have shelters.

Rail

The closest passenger rail line to the Sizewell C main development site is the East Suffolk line, which runs between Ipswich and Lowestoft. The line is unelectrified and currently has a maximum permissible line speed of 55mph.

The East Suffolk line predominantly carries passenger services operated by Greater Anglia. Typically, 15 trains per day run from Ipswich to Lowestoft and 17 trains per day run from Lowestoft to Ipswich, with services stopping at all 12 stations along the line. The East Suffolk line also carries occasional nuclear flask trains for Sizewell A and B power stations.

The Saxmundham to Leiston branch line runs from Saxmundham Junction to Sizewell Halt and is unelectrified, with a maximum speed of 25mph. It does not currently host a regular train service; however, there is one daily freight path to and from Sizewell Halt, which is currently unused.

The nearest station to the main development site is Saxmundham on the East Suffolk line, approximately 13km to the west of the site. Darsham and Wickham Market stations on the East Suffolk line are the nearest stations to the two proposed park and ride sites which form part of the associated development.

Other railway lines include the Great Eastern main line, which is a 184km major railway line which connects Liverpool Street station in central London with destinations in East Anglia, including Chelmsford, Colchester, Ipswich and Norwich. The Felixstowe branch line is a 19km branch line off the East Suffolk line that runs in a south-east direction between Westerfield and Felixstowe. The Ipswich to Ely line connects East Anglia and the Midlands via Ely. The Ipswich to Cambridge line is a 71km route connecting East Anglia and the Midlands via Cambridge.

Policy

The proposed Sizewell C power station constitutes a nationally significant infrastructure project (NSIP) within the meaning of the Planning Act 2008. Consent for NSIPs takes the form of a DCO, and applications are determined in the context of the relevant National Policy Statements (NPSs) which set out the primary policy considerations.

The relevant NPSs are the Overarching National Policy Statement for Energy (EN-1) (Ref 3) and the National Policy Statement for Nuclear Power Generation (EN-6) (Ref 4). NPS EN-1 and NPS EN-6 were considered by Parliament and formally designated in July 2011. Together, NPS EN-1 and NPS EN-6 provide the framework for development consent decisions on applications for new nuclear power stations which are capable of deployment by the end of 2025. Whilst SZC Co. remains confident that Sizewell is suitable for the deployment of a new nuclear power station, it is no longer possible for deployment to take place by the end of 2025.

As explained in further detail in the **Planning Statement** (Doc Ref. 8.4), NPS EN-1 and EN-6 do not formally have effect for the Sizewell C DCO application, as it is no longer possible for deployment to take place by the end of 2025. However, the Government has confirmed that both NPS EN-1 and NPS EN-6 incorporate information, assessments and statements, including statements concerning the need for nuclear power, which continue to be important and relevant for the Sizewell C Project. As there has been no relevant change of circumstances since the NPSs were designated, significant weight should be given to the policies in NPS EN-1 and NPS EN-6.

Transport Strategy

The main constituent parts of the transport strategy are:

- a strategy to transport the construction workforce to the main development site and associated development sites, whilst minimising the impact on local roads and communities; and
- a freight management strategy for transporting freight and materials associated with the construction of the Sizewell C Project, whilst minimising the impact on local roads and communities.

Table 1 illustrates the components of the strategy for the movement of people and the freight management strategy during the construction phase and how they meet the transport objectives.

Table 1.1: Transport strategy

Objective	Movement of People	Freight Management Strategy
Minimise the volume of traffic associated with the construction of the Sizewell C Project as far as reasonably practicable.	Accommodation campus. Caravan site at Land east of Eastlands Industrial Estate (LEEIE). Park and ride facilities. Direct buses. Constrained car parking / car sharing. Walk and cycle improvements.	Beach landing facility. Saxmundham to Leiston branch line upgrades. Rail siding at LEEIE. Green rail route. Postal consolidation facility.
Maximise the safe, efficient and sustainable movement of people and materials required for the construction of the	As above as well as: Construction worker travel plan.	As above as well as: Construction traffic management plan. Delivery management system Freight management facility

Objective	Movement of People	Freight Management Strategy
Sizewell C Project as far as reasonably practicable		
Minimise the impacts both for the local community and visitors to the area using the road network as far as reasonably practicable.	Everything above as well as: Two village bypass. Sizewell link road. Yoxford roundabout. Other highway improvement works.	Everything above as well as: Two village bypass. Sizewell link road. Yoxford roundabout. Other highway improvement works.
Provide long-term, legacy benefits for the local community from new infrastructure, where appropriate	Highway and public rights of way improvements.	Highway and public rights of way improvements.
Take reasonable steps to ensure the resilience of the transport network in the event of an incident	Communication with workforce.	Traffic incident management plan. Freight management facility. Traffic incident management area at southern park and ride facility. Communication with hauliers.

Once Sizewell C is operational, the park and ride facilities, freight management facility, accommodation campus, LEEIE, and the green rail route would all be removed and reinstated.

An operational travel plan will be prepared and agreed with Suffolk County Council prior to the operational phase, which would encourage operational staff to walk, cycle or car share whenever possible. The preparation, approval and implementation of the operational travel plan will be secured through an obligation in the Section 106 Agreement (see draft **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)).

Development Proposals

The proposed development will comprise the main development site and off-site associated development.

Main development site

The main development site would comprise:

- main platform for the Sizewell C nuclear power station;
- Sizewell B relocated facilities and National Grid infrastructure;
- offshore cooling water infrastructure and other marine works;

- temporary construction area to support construction activity on the main platform, including an accommodation campus; and
- LEEIE to support construction on the main platform and the temporary construction area.

The temporary construction area for the main development site comprises:

- fabrication areas, approximately six concrete batching plants, access and storage areas, logistical facilities, waste handling areas, water treatment plants, water pumping stations and pre-cast concrete production areas;
- a railway terminal for offloading goods, railway tracks, railway sidings and a passing loop;
- material management areas, borrow pits and stockpiles;
- approximately 1,000 car parking spaces and approximately 75 heavy good vehicle (HGV) parking spaces;
- construction worker accommodation campus of up to 2,400 bed spaces, non-residential welfare and recreation buildings, associated infrastructure and an accommodation campus car park for approximately 1,360 car parking spaces (of which 60 would be accessible spaces); and
- water resource storage facilities for non-potable water.

The green rail route will also run directly into the temporary construction area, entering the site at the approximate location of the existing B1122 / Lover's Lane junction.

LEEIE comprises:

- temporary material management areas, including stockpiles and a material transfer laydown area;
- a temporary 400-pitch caravan park with associated facilities for 600 staff, welfare and amenity buildings and a new vehicle access onto Valley Road;
- a temporary freight management facility with up to 80 HGV parking spaces and associated infrastructure, including a new vehicle access onto Lover's Lane;
- a temporary park and ride facility comprising 600 car parking spaces, and a bus parking and terminal area;
- provision of a new vehicle access onto King George's Avenue; and
- construction of a temporary single railway track with railway sidings and a passing loop for the locomotive.

A new shared footway and cycleway will be created alongside Lover's Lane, B1122 Abbey Road and Eastbridge Road to divert Bridleway 19.

Main development site accesses

The main development site access will be a new five-arm roundabout just north of the existing Eastbridge Road / B1122 junction.

A secondary vehicular access to the temporary construction area will be a new priority junction on the northern side of Lover's Lane, a short distance west of the Kenton Hills car park.

LEEIE is accessed with new junctions onto Valley Road, Lover's Lane and King George's Avenue.

Off-site associated development

The off-site associated development comprises:

- temporary park and ride facilities at Darsham (northern) and Wickham Market (southern) to reduce the amount of traffic generated by the construction workforce on local roads and through local villages;
- the "two village bypass" of Stratford St Andrew and Farnham on the A12 to accommodate Sizewell C generated traffic volumes;
- the "Sizewell link road" from the A12 south of Yoxford to the Sizewell C main development site to alleviate traffic from the B1122 through Theberton and Middleton Moor;
- highway improvements at Yoxford (a new roundabout) to mitigate the effects of Sizewell C construction traffic;
- a temporary freight management facility to the south-east of the A12/A14 junction to manage the flow of freight to the main development site; and
- part of the green rail route from the Saxmundham to Leiston branch line to approximately the existing B1122 / Lover's Lane junction and other permanent rail improvements on the branch line, to transport freight by rail in order to remove large numbers of HGVs from the regional and local road network.

In addition to the above, a package of other highway works are also proposed, which are:

- A1094/B1069 junction south of Knodishall – improvements of visibility splays and provision of signage and road markings. SZC Co. would also seek to reduce the speed limit from 60mph to 40mph.

- A12/A144 junction south of Bramfield – provision of a central reservation island and waiting area.
- A12/B1119 junction at Saxmundham – improvements of visibility splays and provision of signage and road markings.

SZC Co. will also implement or provide a contribution to fund road safety improvements on the B1078 corridor at the A140/B1078 junction west of Coddenham and on the B1078 in the vicinity of Easton & Otley College to mitigate potential highway safety issues.

SZC Co. will also provide transport related funding through a Section 106 Agreement for:

- pedestrian, cycle, and public realm improvements at Wickham Market to mitigate impacts on driver and passenger delay by directing traffic to use the A12 rather than reassign to less suitable routes, such as the B1078 through Wickham Market.
- pedestrian, cycle, and public realm improvements at Leiston to mitigate impacts of additional traffic flows through the town.
- maintenance of the B1122 prior to the completion of the Sizewell link road to mitigate impacts of Sizewell C construction traffic using the early construction phase.

Modelling Approach

To assess the impacts of Sizewell C traffic on the surrounding highway network, two forms of traffic modelling have been undertaken:

- strategic highway assignment modelling; and
- standalone modelling, which has two elements:
  - junction modelling; and
  - micro-simulation modelling.

These models are summarised in the following sections.

Strategic Modelling

A VISUM highway assignment model has been developed for the purpose of assessing the potential impact of Sizewell C traffic on the surrounding highway network. The 2015 base model was produced to represent seven weekday hourly periods, agreed with SCC, to cover existing network peaks and periods when Sizewell C development-related traffic is expected to be higher. These are:

- 06:00–09:00 hours in the weekday morning period; and

- 15:00–19:00 hours in the weekday afternoon/evening period.

Reference case (without Sizewell C traffic) models were produced, covering these seven hours, for three forecast years to assess key phases of the Sizewell C Project:

- 2023 – early years construction phase;
- 2028 – peak construction phase; and
- 2034 – operational traffic.

The reference case models include traffic generated by committed developments, agreed with SCC, and background traffic growth, as well as committed or completed highway infrastructure schemes. In addition, traffic generated by periodical outage at Sizewell B (which takes place at eighteen month intervals per unit and lasts up to two months) has been included in all forecast year scenarios for robustness.

'With Sizewell C' scenarios were produced for each forecast year to represent the likely traffic conditions during construction and operation. On some days during peak construction, the number of HGV deliveries would be higher than on a 'typical day', so a 'busiest day' was also assessed. The development scenarios are:

- 2023 early years;
- 2028 peak construction 'typical day';
- 2028 peak construction 'busiest day'; and
- 2034 operational traffic.

In order to provide a robust assessment, all of the associated development sites and transport mitigation have been assumed to be being constructed concurrently during the Sizewell C early years scenario. In addition, traffic associated with the Sizewell B Relocated Facilities works are included in the Sizewell C early years scenario as these works would likely overlap. The proposed indicative phasing schedule and anticipated duration of works for the construction of the Sizewell C Project is set out in the **Implementation Plan** presented in an appendix to the **Planning Statement** (Doc Ref. 8.4).

SZC Co. will implement a **Construction Traffic Management Plan (CTMP)** (Doc Ref. 8.7) during the construction of Sizewell C. As set out in the **CTMP**, SZC Co. will limit the number of HGV movements from the wider highway network to the main development site to no more than 600 movements (300 deliveries) in the early years and 1,000 movements per day (500 deliveries) in the peak construction phase. The HGV traffic movements modelled in the early years and peak construction 'busiest day' 'With Sizewell C' scenarios were based on these HGV movement limits in order to provide a robust assessment.

Additionally, a ‘cumulative’ scenario has been produced in the 2023 and 2028 forecast years which includes traffic generated by Scottish Power’s proposed East Anglia 1 North (EA1N) and East Anglia 2 (EA2) developments, whose construction would overlap with that of Sizewell C.

Analysis of the likely impacts on daily traffic flows and journey times has been undertaken. The journey time analysis is based on a number of key routes through the study area.

During the early years, none of the physical mitigation measures (i.e. highway infrastructure improvements, the park and ride facilities, and the freight management facility) will have been completed (see the indicative phasing schedule in the **Implementation Plan** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)). Before the mitigation is in place, there are no locations where the increase in daily traffic volume generated by the early years phase of Sizewell C construction causes the link capacity to be exceeded.

The journey times on all except one of the assessed routes through the study area would have less than 2% increase in the 08:00–09:00 peak hour. Journey times on the A12 between the A14 Seven Hills junction and the A1214 at Martlesham would increase by 15–17 seconds (7% of the journey time). This is mainly due to the level of existing congestion, which is exacerbated by Adastral Park development proposals, which include partial signalisation of the junctions, and the short distance of the journey time route. In the 17:00–18:00 peak hour the journey time changes on all except one of the assessed routes are within 5% of the reference case travel time, which is less than daily variation. The exception to this is on route 11 southbound, on the A12 between the A1214 and A14 Seven Hills, for the same reasons as mentioned for the 08:00-09:00 peak hour.

At peak construction, with the proposed mitigation in place (see the indicative phasing schedule in the **Implementation Plan** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)), there would be substantial reductions in traffic flow on the A12 at Farnham and Stratford St. Andrew and on the B1122 at Theberton and Middleton Moor, as a result of the proposed bypasses around these villages. Some locations would experience a large proportionate increase though these are generally from low existing flow levels.

With regards to journey times, at peak construction, with the proposed mitigation in place, some routes show small journey time increases but these are generally less than one minute, or within 5% of the reference case travel time, and unlikely to be distinguishable from daily travel time variation. Where larger increases occur, for example southbound during 17:00–18:00 hours on the A12 near Woodbridge, proportionately these are still within 5% of reference case travel time and are unlikely to be noticeable day to day.

During the operational phase, following the removal and reinstatement of the temporary on-site and off-site associated developments, Sizewell C traffic volumes would be much lower than during construction and would have a negligible impact on the highway network.

Junction Modelling and VISSIM

Junction modelling of some 42 junctions across the study area, using industry-standard software, has been completed. Micro-simulation modelling has also been undertaken around Yoxford in order to assess the interaction between neighbouring junctions of A12/B1122 and A12/A1120.

The junctions assessed cover both the immediate area around Sizewell and the wider study area. In order to provide a worst case assessment, the junction modelling includes traffic associated with the Scottish Power development (EAN1 and EA2). Where junctions are shown to experience queuing and delay, sensitivity testing has been undertaken without the Scottish Power development to determine the effects of Sizewell C in isolation.

Most of these junctions are unlikely to experience an observable change in their operational performance because of Sizewell C. The impact is low at 29 of the 42 junctions (69%) assessed due to either:

- the Sizewell C proposals would not generate significant traffic at the junction; or
- the existing junction has sufficient spare capacity to adequately cater for any additional traffic; or
- proposed highway improvement schemes as part of the Sizewell C Project mitigate the predicted impact.

The impacts at the remaining junctions are described below.

B1078 / B1079, near Easton and Otley College

The junction currently operates with spare capacity. The assessment shows that additional traffic, primarily from the Ipswich Garden Suburb development, will cause significant queuing in the reference case (i.e. without Sizewell C). Early years traffic increases from Sizewell C would have minimal impact but peak construction traffic would exacerbate queuing.

Modelling shows that only a major scheme involving third party land and likely property demolition would resolve these issues. Such a scheme would be primarily required to mitigate the effects of the Ipswich Garden Suburb rather than Sizewell C. Given this, SZC Co. propose limited safety measures to improve visibility at the junction. No impact is predicted at this location during the operational phase.

A1094 / B1069 south of Knodishall

The junction currently has spare capacity. Additional traffic, unrelated to Sizewell C, causes queuing on the B1069 arm in the morning and evening peak hours and Sizewell C early years traffic slightly increases this queuing during these periods. Sizewell C peak construction traffic flows would be lower than early years flows because the southern park and ride would be in operation. The operation of the junction would be similar to the early years during this period.

SZC Co.'s proposed improvements to visibility and reducing the speed limit from 60 mph to 40mph should help B1069 drivers with turning onto the A1094.

Sensitivity analysis shows that without the Scottish Power traffic, the junction would operate satisfactorily.

B1122/B1119 Leiston

The junction is signal controlled so there is some limited queuing and delay but the junction operates within capacity currently and would continue to do so during the early years of Sizewell C construction. At peak construction, the junction would operate at capacity in the afternoon and evening peak hours with some additional queuing and delay. In the operational phase, the junction is at capacity in the morning peak hour causing some additional queuing and delay.

SCC has informed SZC Co. that the signal controller will be upgraded at this junction with MOVA, which would help to manage traffic demand more efficiently. In addition to the signal improvements through MOVA, SZC Co. is to fund pedestrian, cycle, and public realm improvements at Leiston (secured through the Section 106 Agreement) to mitigate impacts of additional traffic flows through the town.

A12/A144

The junction currently has consistent queues on the A144 approach during the modelled periods but negligible queues on the A12. The impact of Sizewell C traffic on overall junction performance occurs before the morning peak hour. Queuing and delay is moderate, the junction operates within capacity and queues do not grow over this early morning period.

SZC Co. proposes to upgrade this junction to a single lane dualled T-junction to make it easier for vehicles to turn right from the A144. This mitigation is expected to reduce the impact of Sizewell C traffic at this junction.

No impact is predicted in the operational phase.

A1094/B1069 north of Snape

The junction operates within capacity currently and in both the early years and peak construction of Sizewell C. In the operational phase, the junction just reaches capacity in the morning peak hour. Given that the impact of Sizewell C is minimal, no mitigation is proposed.

A12/A14 Seven Hills

There is currently moderate peak period queueing on the A12 north and A1156 approaches and longer queues on the A14 westbound exit slip road. The junction will become partially signal controlled, with additional traffic lanes, as part of the Adastral Park committed development. This would lead to a minor improvement in junction performance.

Sizewell C would increase traffic volumes at these junctions by circa 2% in both the early years and peak construction scenarios. This increase is small and no mitigation is proposed. The increase in traffic volumes as a result of Sizewell C traffic is less than 1% in the operational phase, and again no mitigation is proposed to address this minimal impact.

A12 Martlesham

The four A12 junctions from Foxhall Road to the A1214 all currently exhibit queuing and congestion during peak periods. There will be additional traffic due to the consented Adastral Park development. Sizewell C adds around 2% to traffic at these junctions during the early years, 1% during peak construction and less than 1% in the operational phase.

The Adastral Park development will signalise the Foxhall Road and Barrack Square junctions. These improvements would result in some improvements to junction performance but queueing and delay would remain during some peak hours. The Adastral Park development would also signalise the Anson Road roundabout but not until after Sizewell C peak construction. There are no committed or proposed improvement works to modify the A1214 roundabout, which is already signalled.

The Sizewell C traffic increases are less than typical day to day variation in volume and, given the modifications already agreed at these junctions as part of the Adastral Park development, SZC Co. do not propose further mitigation measures.

A12 Woodbridge

The three A12 junctions from B1438 to the A1152 all currently exhibit queuing and congestion during peak periods. Without the Sizewell C Project, there would be increased queuing in future years largely due to background traffic growth.

Sizewell C adds around 3% to traffic at these junctions during the early years, 1%-3% during peak construction, and less than 1% in the operational phase.

Road Safety and Off-site Highway Improvements

The latest publically available data from SCC on personal injury collisions on the road network, i.e. May 2014 to April 2019 was analysed.

The road safety aspects of the main development site accesses, the associated development accesses, level crossings on the green rail route, and the highway works at the off-site associated developments were considered, together with the road safety aspects of other junctions identified by SCC in public consultation responses but where no mitigation is proposed.

All proposed highway schemes have been designed to Design Manual for Roads and Bridges design standards (Ref 5) and subject to a Stage 1 road safety audit. Subsequent detailed design development would be subject to Stage 2 road safety audit and SCC technical approval. There would be Stage 3 and Stage 4 audits after the schemes were opened to traffic. These processes minimise the risk of collisions occurring at the new highway works.

At the locations for the proposed main site access, secondary site access, accesses to the LEEIE site, and level crossings on the green rail route, there have been few accidents in the last five years. Traffic volumes in the area would increase because of the Sizewell C Project in the early years, at peak construction and during the operational phase. As a result of the increase in traffic, SZC Co. anticipate a small increase in collisions in these areas.

At both the northern and southern park and ride sites, there have been similarly few accidents over the past five years. New highway accesses and additional traffic in the area in the early years and at peak construction are likely to result in a small increase in collisions. There would be a negligible increase in traffic during the operational phase, when the temporary northern and southern park and ride sites would have been reinstated.

During construction of the two village bypass, Sizewell link road, and Yoxford roundabout, there is likely to be a small increase in accidents as a result of the roadworks. However, once completed, the two village bypass would reduce collisions in the area, significantly at the A12/A1094 Friday Street junction. The Sizewell link road would remove nearly all traffic from the B1122 and would reduce collisions. At Yoxford roundabout, it is considered that the number of collisions would not change despite the additional traffic volume due to the provision of the proposed roundabout.

There is forecast to be a negligible effect on collisions at the freight management facility.

For the off-site highway improvements:

- A1094/B1069 - fewer collisions due to the introduction of a lower speed limit;
- A12/A144 - likely a small increase in collisions due to the additional traffic volume despite the improved junction layout; and
- A12/B1119 - a negligible change.

For the B1078 Transport Safety Measures (to be provided through the Section 106 Agreement (see the draft **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)):

- B1078 near Easton and Otley College – a reduction in collisions due to better signage; and
- A140/B1078 – a reduction in collisions due to better signage at the junction.

At the A14 junctions from the A140 to the A12 north, there would be a very small increase in traffic volume, which would have no significant effect on collisions at these junctions.

The A12 junctions at Seven Hills, around Martlesham, and to the west of Woodbridge already experience congestion in the peak periods and a low level of collisions. Committed development at Adastral Park will add further traffic. Sizewell C would contribute a further small increase to these traffic volumes that is unlikely to have any significant effect on the number of collisions.

Further north, no mitigation is proposed at the A12 junctions near Blythburgh. The additional traffic during early years and at peak construction is likely to result in a small increase in personal injury collisions at these junctions. There would be a negligible increase in traffic during the operational phase. To the south of Blythburgh, on the B1125, there is likely to be a small increase in collisions during the early years but once the northern park and ride site is in use, the effect on B1125 collisions would be insignificant.

At other junctions, there is likely to be a negligible effect on collisions as a result of the Sizewell C traffic volumes.

Rail Strategy

Rail transport would be used to move construction material to build Sizewell C and thereby reduce the number of HGVs on the road. The rail proposals compromise:

- LEEIE sidings and passing loop used during the early years of construction;
- green rail route; and

- Saxmundham to Leiston branch line upgrades.

Rail infrastructure

Prior to the operation of the green rail route, two trains (four movements) per day would use the East Suffolk line and Saxmundham to Leiston branch line to the LEEIE. Trains would pass through Leiston on the Saxmundham to Leiston branch line. The rail extension into the LEEIE would comprise a single track, sidings, and a passing loop. There would be no night-time deliveries through Leiston into the LEEIE.

The proposed green rail route would be a temporary route which branches off the existing Saxmundham to Leiston branch line and extend approximately 4.5km into the main construction area. It is made up of three main parts:

- Saxmundham Road to Buckleswood Road.
- Buckleswood Road to B1122 (Abbey Road).
- B1122 (Abbey Road) to Sizewell C main development site.

The proposed green rail route would leave the existing Saxmundham to Leiston branch line at a new junction approximately 500m east of the Saxmundham Road level crossing. New level crossings would be constructed at Buckleswood Road and at B1122/Abbey Road. These level crossings would be of a modern, automatic type. The route would enter the main development site at approximately the existing B1122 (Abbey Road) / Lover's Lane junction.

Once the green rail route is operational, three trains (six movements) per day will travel along the Saxmundham to Leiston branch line and the proposed rail extension route to the new terminal within the main development site.

The proposed rail extension route would operate throughout the construction programme. When no longer needed, it would be removed, the land reinstated to agricultural use, and the temporary level crossings reinstated to highway.

The proposed rail improvement works on the Saxmundham to Leiston branch line comprise:

- track replacement; and
- upgrade works to up to eight level crossings.

These level crossings would be upgraded to mitigate the level crossing risk relating to an increased number of trains using the Saxmundham to Leiston branch line.

Operation

The early years rail operation would consist of up to two return freight trains per day operating once the Saxmundham to Leiston branch line has been upgraded and the sidings have been constructed in the LEEIE.

Following construction of the green rail route there would be the capability for up to three return freight trains per day delivering construction material to the Sizewell C main development site.

Once the construction phase of Sizewell C is complete there will no longer be a requirement for trains to access the main development site. The green rail route and sidings at LEEIE would be reinstated to their original use.

Walk and Cycle

The Transport Assessment sets out the infrastructure improvements that would be made to the local walking and cycling network to help facilitate sustainable travel by construction workers living within Leiston and other villages immediately surrounding the Sizewell C main development site, as well as the temporary and permanent public right of way diversions required to mitigate the impact of the Sizewell C Project on existing public rights of way.

Given the relatively remote location of the Sizewell C main development site, walking and cycling infrastructure improvements are principally focused on the routes between Leiston and the Sizewell C main development site and includes a new shared use foot, cycle and equestrian route along Lover's Lane and the B1122 (Bridleway 19).

The walking and cycling strategy set out in the Transport Assessment also considers the potential for construction workers living in towns and villages surrounding the Sizewell C main development site to cycle, with preferred cycle routes identified for Leiston, Snape, Saxmundham, Aldebugh, Thorpness, Westleston and Dunwich, Yoxford, and Darsham. The preferred routes utilise lightly trafficked roads, bridleways, and new cycling infrastructure proposed within the immediate vicinity of the Sizewell C main development site.

The construction and operation of the Sizewell C main development site and associated development sites would require several public rights of way to be temporarily and permanently stopped up, particularly along the alignments of the Sizewell link road and the two village bypass. In locations where this is required, temporary or permanent diversions are proposed via existing and new walking and cycling infrastructure.

In many instances, the new walking and cycling infrastructure proposed as a part of the Sizewell C Project would provide a permanent improvement to the existing situation and significantly enhance walking and cycling connectivity for local residents, visitors, and workers.

Conclusions

The transport implications of Sizewell C are set out, as required by NPS EN-1, following the guidelines contained in New Approach to Appraisal (NATA)/Web-based Transport Analysis Guidance (WebTAG) (Ref 6), The Ministry for Housing, Communities and Local Government publications (Ref 7) and the National Planning Policy Framework (Ref 8).

SZC Co.'s proposals for maximising the use of existing and proposed transport infrastructure and promoting the use of sustainable modes of transport, materials and workers are set out below.

Materials

The beach landing facility adjacent to the main development site maximises the potential for sea transport and delivers the largest material components directly on the shoreline.

Upgrading the existing Saxmundham to Leiston branch line and building the new rail link directly to the main development site (the green rail route) will facilitate material transport by non-road means, removing trips from the road network. During the early years, materials would be transported to LEEIE using existing rail infrastructure prior to the construction of the green rail route.

Goods vehicles from the south would use the freight management facility to manage deliveries across the day.

SZC Co. will implement the **Construction Traffic Management Plan (CTMP)** (Doc Ref. 8.7) which provides a mechanism through which construction freight traffic will be managed. The implementation of the **CTMP** will be secured through an obligation in a Section 106 Agreement (see the draft **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)).

Where they cannot be transported by sea, there are likely to be abnormal indivisible loads transported by road. To mitigate potential disruption, there would be regular liaison with the emergency services and the highway authorities in order to manage these deliveries as set out in **Construction Traffic Management Plan (CTMP)** (Doc Ref. 8.7).

The **Traffic Incident Management Plan (TIMP)** (Doc Ref. 8.6) sets out the management of Sizewell C construction HGVs and Sizewell C buses during an event or incident within the Incident Management Area, as defined in the **TIMP**. The **TIMP** would help minimise potential impacts of Sizewell C construction on response times and delivery of emergency services in the event of an incident. The implementation of the **TIMP** will be secured through an obligation in a Section 106 Agreement (see the draft **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)).

The Sizewell link road, two village bypasses, Yoxford roundabout, and other highway improvements would enable efficient road deliveries to Sizewell C and provide long-term benefits to the local community.

Workers

The 2,400-bed accommodation campus on the main development site and 400-pitch caravan site on the LEEIE for 600 workers will greatly reduce the number of journeys to work on the highway network as well as the time associated with travelling to/from the construction site. The park and ride sites will intercept traffic, removing trips from the highway network, and frequent buses will transfer workers from the park and ride sites to the construction site. Some workers may arrive at the northern park and ride by rail. Direct bus services will be provided by SZC Co. to connect the main development site to nearby towns, further reducing the trip numbers. The Bridleway 19 diversion, which would remain in place post-construction, and other walking and cycling improvement measures will create pedestrian and cycle routes from Leiston and LEEIE for workers travelling to the main development site. These measures maximise non-car accessibility to Sizewell C.

SZC Co. will implement the **Construction Worker Travel Plan (CWTP)** (Doc Ref. 8.8) which provides a mechanism through which non-car travel would be encouraged. The implementation of the **CWTP** (Doc Ref. 8.8) will be secured through an obligation in a Section 106 Agreement (see the draft **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)).

The transport strategy for the Sizewell C Project is not conventional. Rather than simply providing encouragement to use sustainable modes of transport, SZC Co. would require construction workers to use a prescribed travel mode. As a result, the transport strategy delivers a high non-car mode share due to the proposed transport infrastructure and services associated with the Sizewell C Project, together with strict procedures to enforce adherence. These procedures are set out in the **CWTP** (Doc Ref. 8.8).

Assessing impacts and implementing mitigation

Transport forms one part of the **Environmental Statement** (Doc Ref. Book 6) and concludes that adverse effects from additional traffic on the highway network would be mitigated by the proposed additional infrastructure and management measures.

The road safety analysis concluded that the expected increase in the number of accidents is small, taking into account the proposed road safety improvement schemes to be delivered or funded by SZC Co., which would provide a lasting legacy to residents.

The proposed rail infrastructure will be designed to the latest safety standards, including the proposed new and upgraded level crossings along the Saxmundham to Leiston branch line.

During the early years, before the construction of the off-site associated development sites which form part of the transport mitigation is completed, there would be residual effects on the A12 at Farnham and B1122 through Theberton. Therefore, the Section 106 Agreement will include an obligation to ensure that SZC Co. uses reasonable endeavours to deliver these mitigation measures (i.e. A12 / B1122 roundabout, two village bypass, and the Sizewell link road) in accordance with the **Implementation Plan** which is appended to the **Planning Statement** (Doc. Ref 8.4), unless otherwise agreed with the local authority (see the draft **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref. 8.5).

With the full highway mitigation package completed, the analysis shows that, even in the peak construction period, traffic volumes during the peak hours show only small impacts across the network, within the bounds of usual daily variation. Across the day, some roads would experience a notable increase in traffic although road capacity would not be exceeded and the junctions are shown to operate within capacity with the proposed mitigation in place. However, the B1122 through Theberton and Middleton Moor, and the A12 at Farnham and Stratford St. Andrew, show significant traffic reductions as a result of the proposed bypasses.

Once Sizewell C is operational, traffic impacts would be limited, with some significant improvements and legacy benefits from the proposed bypasses which would be permanent.

Compliance with Policy

As NPS-EN1 requires, this **Transport Assessment** (Doc Ref. 8.5) identifies the transport impacts and proposes mitigatory measures, which include:

- both rail and sea transport to reduce the number of road deliveries;
- constructing two new roads to bypass the villages which would otherwise experience the most significant traffic impacts;
- a park and ride system to mitigate the impact of construction worker car trips;
- a freight management facility and other measures to control HGV movements;
- facilities for non-motorised users at the main development site and associated off-site developments to encourage the use of sustainable travel modes, supported by the **CWTP** (Doc Ref. 8.8).

Potentially significant transport impacts have been addressed through the mitigation embedded within the development proposals. In addition, the implementation of transport management plans (the **CWTP** (Doc Ref. 8.8), the **TIMP** (Doc Ref. 8.6) and the **CTMP** (Doc Ref. 8.7)), which contain measures to mitigate transport impacts, will be secured through obligations in a Section 106 Agreement (see draft **Section 106 Heads of Terms**).

NPS-EN1 indicates that, providing that the applicant is willing to enter into the agreements or requirements necessary to deliver this mitigation, development consent should not be withheld, and appropriately limited weight should be applied to any residual effects on the transport network (paragraph 5.13.7). However, with the mitigation measures set out in this **Transport Assessment** (Doc Ref. 8.5), the Sizewell C Project would have addressed its residual significant transport impacts as far as practicable.

Based on these commitments, development consent should not be withheld on transport grounds.

1. Introduction

1.1 Overview

1.1.1 This **Transport Assessment** (Doc Ref. 8.5) has been prepared to support the application being made in relation to SZC Co.'s proposed Sizewell C nuclear power station and associated developments proposals, which together comprise the Sizewell C Project. It has been prepared by SZC Co. to describe the supporting transport strategy and assess the transport impacts. The **Transport Assessment** (Doc Ref. 8.5) informs aspects of the **Environmental Statement** (**ES**) (Doc Ref. Book 6) and is submitted as part of the Development Consent Order (DCO) application to the Planning Inspectorate under the Planning Act 2008.

1.1.2 The **Transport Assessment** (Doc Ref. 8.5) has assessed the following Sizewell C Project phases:

- early years construction phase when the main development site and associated development sites are under construction;
- peak construction phase when the main development site is under construction and the associated development sites are operational; and
- operational phase when the Sizewell C nuclear power station is operational, the permanent associated development sites are retained and the temporary associated development sites have been removed/restored.

1.2 The development proposals

1.2.1 SZC Co. is proposing to build a new nuclear power station at Sizewell in East Suffolk, known as Sizewell C. Located to the north of the existing Sizewell B power station, the Sizewell C site is located on the Suffolk coast, approximately halfway between Felixstowe and Lowestoft; to the north-east of the town of Leiston.

1.2.2 The proposed Sizewell C nuclear power station would comprise two UK European Pressurised Reactor™ (EPR™) units with an expected net electrical output of approximately 1,670 megawatts (MW) per unit, giving a total site capacity of approximately 3,340MW. The design of the UK EPR™ units is based on technology used successfully and safely around the world for many years, which has been enhanced by innovations to improve performance and safety. The UK EPR™ design has passed the Generic Design Assessment process undertaken by UK regulators (Office for Nuclear Regulation and Environment Agency), and has been licenced and permitted at Hinkley Point C. Once operational, Sizewell C would be able to generate enough electricity to supply approximately six million homes in the United Kingdom (UK).

1.2.3 In addition to the key operational elements of the UK EPR™ units, the Sizewell C Project comprises other permanent and temporary development to support the construction and operation of the Sizewell C nuclear power station. The key elements are the main development site comprising the Sizewell C nuclear power station itself, offshore works, land used temporarily to support construction including an accommodation campus, the provision of off-site sports facilities in Leiston, fen meadow and marsh harrier compensation habitat, and a series of off-site associated development sites in the local area. These are:

- Two temporary park and ride sites; one to the north-west of Sizewell C at Darsham (the ‘northern park and ride’), and one to the south-west at Wickham Market (the ‘southern park and ride’) to reduce the amount of traffic generated by the construction workforce on local roads and through local villages.
- Permanent road improvements on the A12 to bypass Stratford St Andrew and Farnham (referred to as ‘two village bypass’) to accommodate Sizewell C generated traffic volumes.
- A permanent road linking the A12 to the Sizewell C main development site (referred to as ‘Sizewell link road’) to alleviate traffic from the B1122 through Theberton and Middleton Moor.
- Permanent highway improvements at Yoxford roundabout and other road junctions to mitigate the effects of Sizewell C construction traffic.
- A temporary freight management facility at Seven Hills on land to the south-east of the A12/A14 junction to manage the flow of freight to the main development site.
- A temporary extension of the existing Saxmundham to Leiston branch line into the main development site (‘the green rail route’) and other permanent rail improvements on the Saxmundham to Leiston branch line, to transport freight by rail in order to remove large numbers of HGVs from the regional and local road network.

1.2.4 The components of the Sizewell C Project listed above are referred to collectively as the proposals within this chapter of the **Transport Assessment** (Doc Ref. 8.5). The location of the proposals is shown on **Figure 1.1.**

1.2.5 Construction of the Sizewell C nuclear power station is estimated to take 9 to12 years.

1.2.6 The construction of the off-site associated developments would be undertaken early in the construction programme. The construction period of each associated development would vary, although each is assumed to take no longer than 24 months.

1.2.7 Following construction, the associated development sites would remain operational for approximately ten years to support and mitigate the effects of the construction of the main development site. Once these facilities are no longer required, they would be removed and the land restored, where applicable.

1.2.8 An indicative phasing schedule for the Sizewell C Project is set out in the **Implementation Plan** provided as an appendix to the **Planning Statement** (Doc Ref 8.4). SZC Co. will be required through an obligation in a Section 106 Agreement to use reasonable endeavours to deliver the off-site associated developments in accordance with the **Implementation Plan** (see **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)).

1.3 The applicant

1.3.1 NNB Generation Company (SZC) Limited (referred to in this application as "SZC Co.") is the company within the EDF Energy group that is applying for development consent to construct, operate, and maintain Sizewell C.

1.3.2 EDF Energy Group is one of the largest businesses in the energy sector in the UK; producing around 20% of the nation's electricity and supplying electricity and gas to its residential and business customers. EDF Energy Group's installed capacity is around 16.5GW, and the company has over 5.5 million businesses and residential customers.

1.3.3 Currently, EDF Energy Group operates eight nuclear power stations across the UK, with a combined capacity of almost 9,000MW. These comprise seven Advanced Gas-cooled Reactor power stations (each with two reactors) at six locations on the coast of Britain, and a Pressurised Water Reactor located at Sizewell B. Notably, in addition to the eight existing, operational nuclear power plants, EDF Energy group was granted a Development Consent Order (DCO) to construct and operate a new nuclear power station in Somerset, known as Hinkley Point C, in March 2013[1]. Hinkley Point C is currently under construction and is expected to start generating in 2025. Hinkley Point C is the first new nuclear power station to be constructed in the UK for more than 20 years. Like Sizewell C, it will use the UK EPR™ technology.

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[1] Through NNB Generation Company (HPC) Limited (CRN: 06937084), whose registered office is at 90 Whitfield Street, London W1T 4EZ

1.4 Overarching legislative and policy context

1.4.1 The proposed Sizewell C power station (being an onshore generating station over 50MW) constitutes a Nationally Significant Infrastructure Project (NSIP) within the meaning of the Planning Act 2008. The Planning Act 2008 is the primary legislation which establishes the legal framework for applying for, examining, and determining applications for NSIPs. Consent for NSIPs takes the form of a DCO, and applications are determined in the context of the relevant National Policy Statements (NPS).

1.4.2 The relevant NPSs are the Overarching National Policy Statement for Energy (EN-1) (Ref 1.1.) and the National Policy Statement for Nuclear Power Generation (EN-6) (Ref 1.2). NPS EN-1 and NPS EN-6 were considered by Parliament and formally designated in July 2011. Together, NPS EN-1 and NPS EN-6 provide the framework for development consent decisions on applications for new nuclear power stations which are capable of deployment by the end of 2025. Consent for the Sizewell C Project would take the form of a DCO and would be granted by the Secretary of State for Business, Energy and Industrial Strategy (BEIS). Applications for development consent are determined in accordance with any NPSs that have effect in relation to the development to which the DCO application relates.

1.4.3 Both NPS EN-1 and NPS EN-6, however, continue to be important and relevant for projects which will deploy after 2025 in advance of a new NPS for nuclear power generation being designated. The policy framework is described in **Chapter 3** of the **Planning Statement** (Doc. Ref, 8.4).

1.5 Other consents and licences

1.5.1 The DCO will include the legal powers and rights required in to construct, operate and maintain the Sizewell C Project. The DCO application may, however, need to be supplemented by other applications where:

- a specific consent cannot be contained in the DCO;
- a consenting authority declines to allow a consent to be obtained in the DCO; or
- it is not desirable, or it is inappropriate, to include a consent within the DCO due to the stage of design development and the level of detail available.

1.5.2 The **Schedule of Other Consents, Licences and Agreements** (Doc Ref. 5.11) identifies the other consents, licences and agreements that SZC Co. intends to obtain to allow the construction, operation, and maintenance of the Sizewell C Project.

1.5.3 The list of transport-related consents set out in that document includes:

- Movement Order for transport Abnormal Indivisible Loads (AILs).
- Temporary Access Licences.
- Street Works Licences (under section 50 of New Roads and Street Works Act 1991).
- Temporary signals on the highway.
- Temporary Traffic Management (Road Traffic Regulation Act 1984).

1.6 Basis of Transport Assessment

1.6.1 Extensive pre-application scoping and discussions have been undertaken with Suffolk County Council and East Suffolk Council since 2012 on the **Transport Assessment** (Doc Ref. 8.5), alongside the SZC Co. consultations that have been carried out with the local community and stakeholder interests. This **Transport Assessment** (Doc Ref. 8.5) has been based on the information and advice that has been made available through these discussions on the approach, methodology and the scope of the study area. The study area is shown on **Figure 1.2** and covers a wide area encompassing Felixstowe and Ipswich to the south, Diss to the west and Lowestoft and Beccles to the north. An audit of the existing provisions of the highway network, public transport routes (including rail), and walk and cycle network has been undertaken within this study area to gain a full appreciation of the site context to inform the scope of the **Transport Assessment** (Doc Ref. 8.5).

1.6.2 SZC Co. has actively sought to obtain views from a wide range of prescribed and non-prescribed consultees on matters including transport. Full details of these are set out in **Chapter 2** of the **Consultation Report** (Doc Ref. 4.1).

1.6.3 SZC Co. has held four stages of statutory public consultation relating to the proposed Sizewell C Project as well as informal engagement and consultation outside these stages. Throughout the consultation process, a number of strategic and detailed aspects of the proposals have been tested.

1.6.4 At Stage 1 the construction worker transport strategy was informed by the forecast distribution of the construction workforce and the proposal to build a temporary accommodation campus, with the remainder of the workforce to be either home-based or non-home-based and distributed across the local area and region. The consultation invited responses on all aspects of the development proposals, including locations of park and ride facilities, alternative rail options and marine infrastructure, and potential highway infrastructure to mitigate the residual highway impacts.

1.6.5 At Stage 2 consultation, the proposals were updated following Stage 1 with differences including:

- the rail options had been refined to either the green rail route to the main development site or the use of the rail terminal north of King George's Avenue;
- identifying Darsham and Wickham Market as the preferred options for the northern and southern park and ride sites respectively;
- four options to mitigate the transport effects at Farnham;
- progressing with proposals for an on-site accommodation campus, as opposed to an off-site location;
- a signalised junction or a roundabout at Yoxford; and
- no longer including a lorry park in the proposals.

1.6.6 Following Stage 2, further studies concluded that a marine-led transport strategy would not be possible. As a result, the transport strategy was revised, with two options put forward at Stage 3:

- rail-led, with up to five trains per day serving the main development site directly, with the rail terminal at land east of Eastland Industrial Estate (LEEIE) to be used during the green rail route's construction, together with a bypass of Theberton and upgrades to the East Suffolk line and Saxmundham to Leiston branch line; or
- road-led, with up to two trains per day serving the rail terminal at LEEIE, together with construction of a new link road from the A12 to the main development site as well as a freight management facility close to the A12/A14 junction.

1.6.7 In both strategies, a number of other transport schemes would be included, with consultees invited to indicate their preferred option for a number of schemes:

- mitigation of congestion along a section of the High Street in Wickham Market;
- a level crossing or temporary road closure at Buckleswood Road; and
- the location of the proposed rail terminal.

1.6.8 The principal change at Stage 4 was the inclusion of a third strategy, the integrated transport strategy, with up to three trains per day running directly into the main development site via the green rail route, and with the Sizewell link road also to be built. The rail-led and road-led strategies remained part of the consultation at Stage 4. Opinions were also sought from consultees on other issues, including:

- two options were presented for the design of a rail terminal north of King George's Avenue, in addition to the option of upgrading the existing Sizewell Halt; and
- in addition to the options at Wickham Market High Street to either remove on-street parking or upgrade the route via Easton Road, a third option would be to work with the Parish Council and Suffolk County Council to bring forward a public realm improvement scheme.

1.6.9 A Transport Assessment is a comprehensive and systematic process that sets out transport issues relating to a proposed development. It identifies what measures will be taken to promote the use of sustainable modes of travel and to mitigate the residual transport impacts of a project. The **Transport Assessment** (Doc Ref. 8.5) has been prepared in accordance with the Ministry of Housing, Communities & Local Government planning practice guidance (Ref 1.3) including Travel Plans, Transport Assessment and Statements (March 2014) and Transport evidence bases in plan making and decision taking (March 2015).

1.6.10 The guidance advises that the scope and level of detail in a Transport Assessment will vary by site, but that the following aspects should be considered:

- description of the proposed development, site layout, and transport access and layout;
- information about neighbouring uses, amenity, and character and the functional classification of nearby road network;
- description of existing public transport services and proposed changes;
- description of travel characteristics of the proposed development for all modes;
- an assessment of committed developments in the area;
- data about current traffic flows on links and junctions in the study area;
- an analysis of the injury accident records on the public highway;
- an assessment of the likely associated environmental impacts of transport related to the development;

- measures to improve the accessibility of the location (e.g. walk and cycle links) to make the development acceptable in planning terms;
- a description of parking facilities and parking strategy of the development;
- measures to encourage sustainability by reducing the need to travel; and
- measures to mitigate the residual impacts of developments.

1.6.11 The Transport Assessment approach also uses best practice approaches in determining and assessing the transport impacts in line with the Department for Transport's Web-based Transport Analysis Guidance (WebTAG) (Ref 1.4.)

1.6.12 WebTAG guidance is focussed on transport modelling and appraisal methods for highways and public transport interventions. Transport analysis using WebTAG guidance is a requirement for all interventions that require government funding. For interventions that do not require government approval this guidance would serve as a best practice guide. The transport interventions proposed as part of the Sizewell C Project are to be fully funded by SZC Co. and do not require any government funding. The application of WebTAG guidance has been used in this context.

1.6.13 A Transport Assessment assists the decision maker to assess the development's compatibility with the applicable planning policy framework and the relevant transport strategy, in this case NPS EN-1 and NPS EN-6, along with any regional and local policy that may be relevant. It also provides a comprehensive document for a full understanding of transport implications of the development in terms of network management responsibilities.

1.7 Transport Assessment structure

1.7.1 The remainder of this **Transport Assessment** (Doc Ref. 8.5) is structured as follows:

1.7.2 **Chapter 2: Existing Conditions** – provides details of the local area and site context in terms of the existing highway network including an assessment of accident data; the pedestrian and cycle network; and the public transport network and services including bus and rail.

1.7.3 **Chapter 3: Policy** – describes the policy context in relation to the proposals. The Sizewell C Project meets the criteria of a NSIP under section 15 of the Planning Act 2008. This chapter therefore describes the Planning Act (2008) as well as relevant national policies (NPS EN-1, NPS EN-6), regional and local level policies.

1.7.4 **Chapter 4: Transport Strategy** – discusses the proposed transport strategy for the Sizewell C Project. The chapter describes how the transport strategy minimises the need for travel, maximises the use of sustainable modes and mitigates residual impacts. It describes the strategy for workforce and freight movements.

1.7.5 **Chapter 5: Development Proposals** – describes the proposals for constructing and operating Sizewell C nuclear power station. The main development site comprises the nuclear power station itself, offshore works, land used temporarily to support construction including an accommodation campus, the enhancement of sports facilities in Leiston, fen meadow and marsh harrier compensation habitat, and a series of off-site associated development sites in the local area. The associated developments are presented for each of the development phases including the highway and rail strategy and improvements.

1.7.6 **Chapter 6: Modelling Approach** – the transport modelling assumptions and methodology are detailed in this chapter. To assess the impacts of Sizewell C on the surrounding highway network, two forms of traffic modelling have been undertaken: (a) strategic level network modelling, and (b) individual junction level modelling. The assessment scenarios are used covering the early years, peak construction and operational traffic phases.

1.7.7 **Chapter 7: Trip Generation, Distribution and Mode Split** – describes the derivation of Sizewell C traffic movements that informed the traffic modelling assessments. The peak construction traffic scenario is highlighted as the most significant in terms of potential impact.

1.7.8 **Chapter 8: Strategic Modelling** – describes the development and assessment of the strategic traffic modelling scenarios. It describes model forecasts for the 'with development' scenario compared against a 'without development' scenario to quantify traffic impacts across the assessment horizon.

1.7.9 **Chapter 9: Junction Modelling** – provides a summary of the capacity assessment of junctions within the study area and includes an assessment of associated development site accesses. Some of the junctions are located close to the site, whilst others are located on key strategic routes likely to be used for accessing the site. The methodology, assumptions and results are summarised within the chapter. Where required the chapter includes discussion of proposed mitigation measures.

1.7.10 **Chapter 10: Road Safety and Off-site Highway Improvements** – this chapter describes the road safety assessment of the Sizewell C Project and the proposed mitigation, including a package of off-site highway improvement schemes. Highway improvement schemes have been subject to a formal

Stage 1 Road Safety Audit. The road safety assessment findings are included within this chapter.

1.7.11 **Chapter 11: Rail Strategy** – the operational aspects of the rail proposals for the movement of construction materials are presented in this chapter. Detail on the infrastructure requirements and operational impacts of the proposed approach are also included.

1.7.12 **Chapter 12: Walk and Cycle Strategy** – describes the measures proposed to encourage Sizewell C workers to travel via cycling and walking. The chapter identifies proposed infrastructure improvements to the walking and cycling environment within the study area, to promote the use of these modes of travel.

1.7.13 **Chapter 13: Management Plans** – describes the three draft management plans have been prepared to manage the movement of people and freight during the construction phase: a **Construction Worker Travel Plan** (Doc Ref. 8.8); a **Construction Traffic Management Plan** (Doc Ref. 8.7); and a **Traffic Incident Management Plan** (Doc Ref. 8.6). The implementation of these management plans will be secured by a Section 106 Agreement (see **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)).

1.7.14 **Chapter 14: Conclusions** – describes the measures proposed to mitigate and manage the residual transport impacts identified through the Transport Assessment and demonstrates compliance with relevant policy.

2. Existing Conditions

2.1 Introduction

2.1.1 This chapter provides a summary of the existing context of the Sizewell C main development site and off-site associated development sites in terms of their location, current land uses, and surrounding transport networks.

2.2 Local area context

2.2.1 The locations of the main development site and proposed off-site associated developments are illustrated in **Figure 2.1**. **Figure 2.2** illustrates the boundary of the main development site.

a) Sizewell C location

2.2.2 The main development site is located on the Suffolk Coast, approximately halfway between Felixstowe and Lowestoft, and three kilometres (km) north-east of the town of Leiston. The site is bounded to the north by land of ecological sensitivity; to the east by the North Sea; to the south by two existing nuclear power stations, Sizewell A and Sizewell B; and to the west by agricultural land and the town of Leiston. Sizewell lies within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) in the centre of rural East Anglia. The main development site is located within the newly formed local authority district of East Suffolk.

2.2.3 The Sizewell A power station was in operation for 37 years until electricity generation ceased in 2006. Sizewell A, which is operated by Magnox South, is currently in the early stages of decommissioning which commenced in 2007. The 2018 workforce at the Sizewell A power station comprised 202 full time Magnox South employees, plus a fluctuating number of agency staff and sub-contractors.

2.2.4 The Sizewell B power station has been in operation since 1995 and is operated by EDF Energy. It is currently anticipated that the Sizewell B power station will remain operational until at least 2035, with the potential to extend operation until 2055. The 2019 workforce at Sizewell B power station currently comprises 520 full time employees plus over 250 full time contract partners. Approximately every 18 months a maintenance outage takes place per unit, lasting up to two months. During this time the number of staff working at the site rises to approximately 2,050.

b) Surrounding towns and infrastructure

2.2.5 The nearest town to the main development site is Leiston. The town is situated approximately 3km south-west of the main development site, outside the Suffolk Coast & Heaths AONB. Based on 2011 Census data (Ref 2.1) the town had a population of 5,508 residents. The town is connected to the main development site and the village of Sizewell via Sizewell Gap. This is an unclassified single carriageway road that provides the primary access to Sizewell B. Sizewell Gap is accessed via King George's Avenue through Leiston or via Lover's Lane to the north-east of the town. Further information on the existing highway network is detailed in **section 2.3** of this chapter.

2.2.6 Leiston has a wide range of local facilities, this includes: a primary school, secondary school, independent boarding school, leisure centre, food shops, pharmacy, pubs/restaurants/cafés, police station, doctor's surgery, dental clinics, and bed and breakfasts/guesthouses/hotels. The nearest rail station is at Saxmundham. The town is also served by bus services to Aldeburgh, Woodbridge, and Halesworth.

2.2.7 Saxmundham is a market town located approximately 6km to the west of Leiston and offers a similar range of local facilities to Leiston. In 2011 the town had a population of 3,644 residents (Ref 2.1). Saxmundham station is the closest rail station to the main development site. The station lies on the East Suffolk line which runs between Lowestoft and Ipswich.

2.2.8 Saxmundham is situated on the A12 corridor between Ipswich and Lowestoft. The A12 passes to the west of the town and provides access to a number of additional towns and villages in close proximity to the main development site, including Martlesham, Wickham Market and Yoxford.

2.2.9 Theberton is a village located approximately 6km northeast of Saxmundham and 4km north of Leiston. It offers a small range of local facilities including a village hall, two campsites and a pub. In 2011 the village had a population of 279 residents (Ref 2.1). Theberton is situated on the B1122 between Leiston and Yoxford, south of Middleton Moor.

2.2.10 The hamlet of Middleton Moor is located approximately 7km north-west of Leiston and 2.5km south-east of Yoxford. It is predominately characterised by a small number of residential properties which front the B1122 and a lack of local facilities. Middleton Moor is situated on the B1122 equidistant to Theberton and Yoxford. The main village of Middleton lies approximately 1km north-east of Middleton Moor.

2.2.11 Yoxford is a village located approximately 8km north of Saxmundham and 10km north-west of Leiston. It offers a range of local facilities including a church, a restaurant, antique shops, a primary school, two pubs, a convenience shop, and restaurant/cafés. In 2011 the village had a population of 726 residents (Ref 2.1). Within the village is the junction of the A12 trunk road and the A1120. Yoxford is served by Darsham rail station on the East Suffolk line, 1.6km north-east of the village.

2.2.12 Darsham is a village located approximately 6km northeast of Saxmundham and 8km south-west of Blythburgh. The village offers facilities including a petrol station, farm shop, seed and feed merchants, cafés/restaurants, a private nursing home and a bed and breakfast/hotel. In 2011 Darsham had a population of 300 residents (Ref 2.1). The village lies 0.5km east of the A12 and is served by Darsham rail station situated approximately 1.6km west of the village centre, on the Ipswich-Lowestoft East Suffolk line.

2.2.13 Westleton is a village located approximately 4km north of Leiston and 8km north-east of Saxmundham. In 2011 the village had a population of 349 residents (Ref 2.1). The village lies alongside the B1125, 3km east of Darsham rail station and the A12. Westleton offers a small range of local facilities including a church, post office, two bookshops, a garage, and two pubs.

2.2.14 Knodishall is a village located 2km south-west of Leiston and 6km south-east of Saxmundham. The village expanded and dispersed with the building of a small housing estate in the mid-1980s, with most of the village now located in Coldfair Green. Only a church and a few houses remain in the original village. In 2011 the village had a population of 852 residents (Ref 2.1).

2.2.15 Wickham Market is a village located on the A12 approximately 21km north-east of Ipswich and 19km south-west of Leiston. The village has a wide range of local facilities including several cafés/restaurants, a post office, a primary school, convenience shops, a veterinary practice and a care home. In 2011 the village had a population of 2,156 residents (Ref 2.1). The rail station for Wickham Market is located approximately 3.2km east of the village centre at Campsea Ashe on the East Suffolk line.

2.2.16 Aldeburgh is a seaside town on the Suffolk coast located approximately 2km to the south of Leiston. In 2011 the town had a population of 2,466 residents (Ref 2.1). Aldeburgh is connected to the A12 at Friday Street by the A1094. The town is also connected to Leiston via the A1094 and B1069, with a direct route from Aldeburgh to Leiston via the B1122 through Aldringham. The nearest rail station is at Saxmundham. The town is also served by bus services to Leiston, Woodbridge and Halesworth. Aldeburgh has a wide range of local facilities including a primary school, cinema, community hospital, library, care home, food shops, museum, pharmacy, pubs/restaurant/cafés, doctor’s surgery, dental clinics, and bed and breakfasts/guesthouses/hotels.

2.2.17 Woodbridge is a town located along the River Deben, approximately 11km south-west of Wickham Market and 14km north-east of Ipswich. The town is connected to the A12 via roundabouts with the B1438, B1079, and A1152. Woodbridge offers an extensive range of local facilities; this includes several primary schools, a co-educational independent school, two churches, numerous cafés/restaurants, a museum, several pubs, and a surgery. In 2011 Woodbridge had a population of 7,749 residents (Ref 2.1). Woodbridge rail station lies south of the town centre on the East Suffolk line.

2.2.18 Martlesham is a village located approximately 10km east of Ipswich and 3km southwest of Woodbridge. The village is connected to the A12 via the A12/A1214 junction to the west and the A12/B1438 junction to the north. Martlesham offers a small range of local facilities including the headquarters of the Suffolk Constabulary, the Ipswich park and ride service, two pubs, a sailing creek, a post office, a motor vehicle dealership, several nurseries, and a farm shop. Martlesham parish also contains a large retail park east of the A12. In 2011 the village had a population of 5,478 residents (Ref 2.1). The closest rail station to Martlesham is located in Woodbridge approximately 4km northeast of the village.

2.2.19 Other notable sites in the area include the RSPB Minsmere Bird Sanctuary (located approximately 3.5km to the north of Sizewell B), Thorpeness Golf Club (located approximately 3.5km to the south of Sizewell B), Orfordness-Havergate National Nature Reserve (located approximately 15km to the south of Sizewell B) and Ministry of Defence Woodbridge Rock Barracks (located approximately 21km to the south-west of Sizewell B).

2.3 Existing highway network

a) Study area

2.3.1 This section summarises the characteristics of the local and strategic road network within the Sizewell C study area.

2.3.2 The study area for the assessment of the highway impacts of the Sizewell C Project is shown in **Figure 2.3**. This area has been agreed with Suffolk County Council (SCC) and extends to Lowestoft to the north, Ipswich to the south and the A140 to the west, including the A12, A14, and key routes envisaged to be used by Sizewell C traffic.

2.3.3 The main local and strategic routes in the study area are described below.

b) Local authority roads

2.3.4 The highway network surrounding the vicinity of the Sizewell C main development site is comprised of local authority roads. These roads are managed by SCC as the local highway authority and include a combination of unclassified roads, B roads, and A roads. The main local roads in the vicinity of the Sizewell C main development site are described below.

i. Sizewell Gap

2.3.5 Sizewell Gap is the main access to the existing Sizewell power station complex. This is a single carriageway road of about six metres (m) in width. It is a non-through route providing vehicular access to the Sizewell power station complex, Sizewell Beach and a number of private residential dwellings. Sizewell Gap connects with Lover's Lane at the priority junction with King George's Avenue, east of Leiston. A shared foot and cycleway is provided along the south side of Sizewell Gap between King George's Avenue and the main access to the Sizewell power station complex.

ii. Lover's Lane

2.3.6 Lover's Lane is a single carriageway road of about 2km in length to the north-east of Leiston. It connects Sizewell Gap to the east with the B1122 to the north-west. The road is approximately 6m in width and provides access to farm land and a small number of residential properties and commercial premises. A footway is provided along the southern section of Lover's Lane between King George's Avenue and Valley Road where there is a small number of residential dwellings. The footway is partially overgrown with vegetation, has no street lighting, and is approximately 1.2m in width.

iii. King George's Avenue/Sizewell Road

2.3.7 King George's Avenue is a single carriageway road connecting Sizewell Gap and Lover's Lane to the east with the centre of Leiston to the west. It is the main route to Leiston from the Sizewell power station complex. The route is fronted by residential properties and provides access to the Eastland Industrial Estate to the east of the town.

2.3.8 King George's Avenue crosses the Saxmundham to Leiston branch line via a level crossing 330m to the west of Sizewell Gap. Existing rail freight sidings are situated to the south of King George's Avenue, east of the Saxmundham to Leiston branch line.

2.3.9 King George's Avenue connects with Sizewell Road to the east of Urban Road. This connects with the B1122 High Street approximately 150m to the west.

2.3.10 A footway is provided along the south side of King George's Avenue between Sizewell Gap and the Saxmundham to Leiston branch line. West of the railway, footways are provided on both sides of the carriageway.

iv. B1122

2.3.11 The B1122 is a rural B-road that connects the A12 in Yoxford to the north with the A1094 in Aldeburgh to the south. The road is approximately 15km in length and routes through the settlements of Middleton Moor, Theberton, Leiston, and Aldringham.

2.3.12 The B1122 is a single carriageway road and is generally derestricted outside of the main settlements along the corridor. The road has a 30 miles per hour (mph) speed limit through the village of Theberton, Aldringham, and Aldeburgh. The B1122 also has a 20mph zone through the centre of Leiston.

2.3.13 North of Leiston, the B1122 connects the Lover's Lane with the A12 at Yoxford. This section of the B1122 is a single carriageway road, approximately 6m in width, providing frontage access to a small number of residential dwellings and businesses in the village of Theberton and hamlet of Middleton Moor. Footways of about 1.2m in width are provided along sections of the B1122 through the village of Theberton. Outside of the main settlements along the corridor, the B1122 is principally unlit.

2.3.14 South of Leiston, the B1122 connects Sizewell Road with Aldeburgh via Aldeburgh Road. This section of the B1122 is a single carriageway road, approximately 6m in width, providing frontage access to a small number of residential dwellings and businesses in the village of Aldringham. Footways of approximately 1.2m width are provided along sections of the B1122 through Aldringham. Outside of Aldringham, the B1122 is predominantly unlit until it approaches north Aldeburgh.

v. B1125

2.3.15 The B1125 is a rural B-road that connects Blythburgh with the B1122 to the north of Theberton via Westleton and Middleton. The route is approximately 9km in length and routes alongside Westleton Heath National Nature Reserve to the east.

2.3.16 The B1125 is a single carriageway road which is derestricted outside of the main settlements along the corridor. The road has a 30mph speed limit from Blythburgh to 100m north of the B1387 staggered crossroads, and throughout Westleton. On approach to Middleton, the speed limit also reduces to 30mph before reducing further to 20mph on approach to the B1125/B1122 junction.

2.3.17 South of the junction with the A12, the B1125 is approximately 6m in width and provides frontage access to a small number of residential dwellings in Blythburgh, Westleton and Middleton, in addition to sections of 1.2m wide footways. However, for the majority of the route, the B1125 is unlit and is absent of pedestrian footways.

vi. B1069

2.3.18 The B1069 is a rural B road that connects Leiston with Rendlesham via the A1094 to the south-east of Friston. The route is approximately 15km in length and routes through the villages of Coldfair Green, Knodishall Common, Church Common, Snape, Snape Bridge, and Tunstall.

2.3.19 The B1069 is a single carriageway road which is derestricted outside of the main settlements along the corridor. The road has a speed limit of 30mph through the village of Knodishall Common, which then increases to 40mph between Knodishall Common and Snape. The speed limit reduces to 30mph between Snape and Snape Bridge and returns to derestricted between Snape Bridge and Tunstall. A speed limit of 30mph is imposed through Tunstall, before the road returns to derestricted on approach to Rendlesham.

2.3.20 North of the A1094, the B1069 is a single carriageway road, approximately 6m in width, providing access to a small number of residential dwellings at Knodishall Common and Coldfair Green. Footways of approximately 1.2m width are provided along sections of the B1069 through Knodishall Common and Coldfair Green. Between these settlements and Leiston, the B1069 is lit, however between Knodishall Common and the B1069/A1094 junction the B1069 is principally unlit.

2.3.21 South of the A1094, the B1069 is a single carriageway road, approximately 6m in width, providing access to a small number of residential dwellings and businesses in Snape, Snape Bridge and Tunstall. Footways of approximately 1m width are provided along sections of the B1069 through Snape, Snape Bridge and Tunstall. This section of the B1069 is unlit for its entire length.

vii. A1094

2.3.22 The A1094 is a rural A road that connects the A12 at Friday Street with the town of Aldeburgh. The route is approximately 11km in length and routes through the hamlets of Snape Watering and Church Common.

2.3.23 The A1094 is a single carriageway road and is generally derestricted with the exception of a 40mph section between Friday Street and Church Common, a 30mph section through Church Common and a 30mph section on the approach to Aldeburgh.

2.3.24 West of the A1094/B1069 junction, the A1094 is a single carriageway road approximately 6m in width, providing access to a small number of residential dwellings and farm shops. No footways are provided along this section of the A1094 and the road is unlit for this entire section.

2.3.25 East of the A1094/B1069 junction, the A1094 is a single carriageway road approximately 6m in width, providing access to a number of farms and

Aldeburgh Golf Course. No footways are provided along this section of the A1094 until the outskirts of Aldeburgh, at which point the A1094 also becomes lit.

viii. A144

2.3.26 The A144 is a rural A road that connects the town of Bungay at the A143 roundabout to the A12 trunk road near the village of Darsham. The route is approximately 23km in length and routes through the market town of Halesworth and the village of Bramfield.

2.3.27 The A144 is a single carriageway and is derestricted except through Bungay where there are 20mph and 30mph sections, a 30mph section through Stone Street, a 40mph section on approach to the A144/Church Lane/Noller’s Lane crossroads, a 30mph section between Broadway and Halesworth, and a 30mph section through Bramfield.

2.3.28 North of Halesworth, the A144 is a single carriageway road approximately 6m in width, providing access to a number of residential dwellings and a small number of farms. Footways and lighting are provided through Bungay, Stone Street, and Halesworth, however, the remaining route is unlit and absent of footways.

2.3.29 South of Halesworth the A144 is a single carriageway road approximately 6m in width and provides access to Halesworth Golf Club, several farms, and a small number of residential properties. Footways and lighting are provided on approach to Bramfield and throughout the village, whilst the remainder of the A144 is unlit and absent of footways.

ix. B1078

2.3.30 The B1078 is a rural B road that connects Bildeston on the B1115 to the B1084 near Sudbourne via Needham Market, Coddenham, Wickham Market, and Tunstall. The route is approximately 50km in length.

2.3.31 The B1078 is a single carriageway road and is generally derestricted outside of the main settlements along the corridor. The road has a 30mph speed limit through the hamlet of Nedging Tye, the village of Barking and throughout Needham Market. From the A14/A140 roundabout, the route follows the A140 before re-joining the original B1078 at Needham Road. This section of the A140 is dual carriageway. On approach to and throughout Coddenham, the B1078 has a speed limit of 30mph. In addition, the section of road on approach to the Easton and Otley College Otley Campus has a speed limit of 40mph. Following this, the B1078 remains derestricted until it routes through Wickham Market where it has a 30mph speed limit. The remainder of the route is derestricted with 30mph exceptions through Campsea Ashe and Tunstall.

2.3.32 West of the B1078/B1079 junction near Otley, the B1078 is a single carriageway road approximately 6m in width, providing access to residential dwellings in Nedging Tye, Barking, Needham Market and Coddenham. Footways of approximately 1m in width or narrower are provided along sections of the B1078 through Nedging Tye, Needham Market and Coddenham. Outside of the main settlements along this section of the B1078, the road is principally unlit.

2.3.33 A narrower section of the B1078 routes through Coddenham. SCC signposts west bound lorry movements around Coddenham via Rectory Road/Sandy Lane due to a 7.5 tonne (t) weight restriction at the junction of the B1078 and Rectory Road. Vehicles under 7.5ft can still travel westbound along the B1078 through Coddenham. All east bound traffic is permitted to travel though Coddenham on the B1078 as normal.

2.3.34 East of the B1078/B1079 junction near Otley, the B1078 is a single carriageway road approximately 6m in width, providing access to residential dwellings in Clopton Corner, Wickham Market, Campsea Ashe, and Tunstall. Footways of approximately 1m in width or narrower are provided along sections of the B1078 through Clopton Corner, Wickham Market, Campsea Ashe and Tunstall. Outside of the main settlements along this section of the B1078, the road is principally unlit.

x. B1079

2.3.35 The B1079 is a rural B road that connects the village of Helmingham to Woodbridge via Otley and Grundisburgh. The route is approximately 15km in length.

2.3.36 The B1079 is a single carriageway road and is generally derestricted outside of the main settlements along the corridor. The road has a 30mph speed limit on approach to and throughout the villages of Otley and Grundisburgh, as well as throughout the town of Woodbridge.

2.3.37 North of Grundisburgh the B1079 is a single carriageway road approximately 6m in width, predominantly providing access to numerous residential dwellings in Otley. In addition, a small number of pubs and bed and breakfasts can be accessed along this section of the B1079. Footways of approximately 1.2m in width are provided along sections of the B1079 through Otley and Grundisburgh. Outside of the main settlements along the corridor the B1079 is principally unlit.

2.3.38 South of Grundisburgh the B1079 is a single carriageway road approximately 6m in width, providing access to a small number of farms and farm shops on approach to the A12/B1079 roundabout. It also provides access to numerous residential properties on approach to Burkitt Road in Woodbridge. Footways of approximately 1.2m in width are provided along sections of the B1079 through Grundisburgh and Woodbridge. Outside of the main settlements along the corridor the B1079 is principally unlit.

xi. B1119

2.3.39 The B1119 is a rural B road that connects the A1120 at Saxtead Green with Leiston via Framlingham, Rendham, and Saxmundham. The route is approximately 21.7km in length.

2.3.40 The B1119 is a single carriageway road and is generally derestricted outside of the main settlements along the corridor. The road has a 30mph speed limit through the villages of Framlingham, Rendham, and Saxmundham. The B1122 also has a 20mph zone through the centre of Framlingham.

2.3.41 West of the junction with the A12 the B1119 is a single carriageway road approximately 6m in width, providing access to residential dwellings in Framlingham and Rendham. Footways of approximately 1.2m in width are provided along sections of the B1122 through Framlingham and Rendham. Outside of the main settlements along the corridor the B1119 is principally unlit.

2.3.42 East of the junction with the A12 the B1119 is a single carriageway road approximately 6m in width, providing access to residential dwellings in Saxmundham, in addition to Saxmundham rail station, several businesses and food shops. Footways of approximately 1.2m in width are provided along sections of the B1122 through Saxmundham. Outside of Saxmundham the B1119 is principally unlit until the outskirts of Leiston, at which point the B1119 also becomes lit.

xii. B1121

2.3.43 The B1121 is a rural B road that connects the A12 at Dorley's Corner with the A12 at Benhall via Saxmundham. The route is approximately 5km in length.

2.3.44 The B1121 is a single carriageway road which is subject to a 40mph speed limit between Dorley's Corner and Kelsale. On approach to Kelsale the speed limit reduces to 30mph and continues throughout Saxmundham. Between Saxmundham and Benhall, the speed limit returns to 40mph.

2.3.45 Throughout its length the B1121 is approximately 6m in width and provides frontage access to a small number of residential dwellings in Dorley's Corner and Benhall. In addition, the B1121 provides access to numerous shops and services throughout the centre of Saxmundham and offers sections of 1.2m wide footways on approach to and through the main settlements along the route. Outside of Saxmundham the B1121 is principally unlit.

xiii. A1120

2.3.46 The A1120 is a rural A road that connects the town of Stowmarket at the A1308/B1113 roundabout to the A140 at Angel Hill and further east to the A12 at Yoxford. The route is approximately 42km in length and routes through the villages of Stowupland, Stonham Aspal, Saxtead, Dennington, and Sibton.

2.3.47 The A1120 is a single carriageway throughout and is generally derestricted except through Stowupland, Forward Green, Stonham Aspal, Pettaugh, Earl Soham, Dennington, Peasenhall, and Yoxford where the speed limit reduces to 30mph.

2.3.48 Throughout its length, the A1120 is approximately 6m in width and provides frontage to a number of residential dwellings, shops and services throughout the villages it routes through. Sections of 1.2m wide footways are present through the main settlements along the route. The A1120 is principally unlit outside of the main villages it routes through.

xiv. A12

2.3.49 The A12 is the main route between Ipswich and Lowestoft. It is principally single carriageway with a short section of dual carriageway between the A14 south-east of Ipswich and Woodbridge. The A12 connects with the strategic road network at Junction 58 of the A14 to the south-east of Ipswich and A47 at the Bascule Bride across the Inner Harbour in Lowestoft.

2.3.50 The A12 routes through the villages of Wrentham, Yoxford, Farnham, Stratford St Andrew, and Little Glenham and bypasses the villages of Saxmundham, Woodbridge, and Martlesham. Farnham bend is a pinch point along the route in the centre of the village of Farnham and located west of the A12/A1094 junction.

c) Strategic Road Network

2.3.51 The strategic road network is managed by Highways England and provides connectivity to the wider East Anglia region and UK as a whole. The strategic road network in the study area is described below.

i. A14

2.3.52 The A14 connects the M6 at the Catthorpe Interchange at the end of the M6 and Junction 19 of the M1 in Leicestershire with the Port of Felixstowe. It runs in an east-west direction serving Cambridge, Newmarket, Bury St Edmunds, Stowmarket, Ipswich and Felixstowe. The road provides connectivity to the wider strategic road network at Junction 55 for the A12. The road is a grade separated dual carriageway for its entire length.

ii. A12

2.3.53 This section of the A12 between London and Junction 55 of the A14 forms part of the strategic road network. The road varies between a two and three lane grade separated dual carriageway and provides access to settlements to the south of Ipswich, including Colchester and Chelmsford.

iii. A47

2.3.54 The A47 is an east-west A road connecting the A1 at Peterborough with Lowestoft, via King's Lynn, Norwich and Great Yarmouth. The A47 between Great Yarmouth and Lowestoft is single carriageway.

d) Network operation and performance

2.3.55 A summary of the observed traffic flows on key routes, in the network peak hours 08:00 to 09:00 and 17:00 to 18:00, is presented in **Table 2.1**.

Table 2.1: Observed 2015 two-way traffic flows in peak hours

Location	Two-way vehicles 08:00–09:00	Two-way vehicles 17:00–18:00
A14 south of Ipswich (Junction 57)	3,839	3,896
A12 south of Martlesham	3,235	3,305
A12 north of Woodbridge	1,977	1,895
A12 east of Farnham	1,401	1,486
A12 south of Yoxford	856	956
A12 north of Darsham	951	1,099
B1122 Theberton	420	335
B1125 Westleton	173	170
B1122 Abbey Road, Leiston	515	479
Lover's Lane	211	100
King George's Avenue	340	254
B1119 Waterloo Avenue, Leiston	273	345
A1094 Friday Street	556	575
B1069 Snape	184	287
A1120 Peasenhall	249	260
B1078 Wickham Market	264	267

2.3.56 During the network peak hours of 08:00 to 09:00 and 17:00 to 18:00 hours, the A12 in particular experiences queuing around the area of Woodbridge where the capacity is restricted by a reduction from two lanes to one lane in each direction at the junction of the A12 and B1079. This is an existing issue which SCC is aware of and is considering potential solutions to increase capacity through this stretch of the A12.

2.3.57 Most of the junctions that have been surveyed, as shown in **Plate 9.1** of **Chapter 9** of this **Transport Assessment** (Doc Ref. 8.5), are uncongested. Most operate within capacity, with small or negligible delays and queues, even during peak hours.

2.3.58 There are some junctions, however, where there are capacity issues and queuing occurs. The most congested junctions in the network are along the A12 to the east and north-east of Ipswich, along with a junction in Saxmundham and one on the A140. The traffic conditions at these junctions are detailed below.

ii. A12/A14/A1156 Seven Hills Interchange

2.3.59 The A12/A14 grade separated roundabout junction currently experiences congestion during both the morning and afternoon peak hours, with queues on the A12 southbound (approximately 10–15 vehicles), A1156 (approximately 10–15 vehicles), and A14 westbound off-slip (approximately 20 vehicles).

iii. A12/Foxhall Road/Newbourne Road

2.3.60 The junction of A12/Foxhall Road/Newbourne experiences queues during both peak periods. The queues are longest on the A12 northbound (approximately 15–20 vehicles) and on Foxhall Road (approximately 10–15 vehicles).

iv. A12/Eagle Way/Barrack Square

2.3.61 The A12/Eagle Way/Barrack Square roundabout experiences congestion during both peak periods, with queues on the A12 southbound (approximately 30 vehicles) between 08:00 to 09:00 and on Barrack Square (approximately 15 vehicles) between 17:00 to 18:00.

v. A12/Eagle Way/Anson Way

2.3.62 The roundabout at the junction of A12/Eagle Way/Anson Way has queues on both A12 approaches (approximately 10 vehicles) in the morning peak hour 08:00 to 09:00. In the afternoon peak hour 17:00 to 18:00 there are queues (approximately 20–25 vehicles) on the A12 northbound and Anson Road.

vi. A12/A214 Main Road/Park and Ride

2.3.63 The A12/A214 roundabout experiences queuing in both peak periods. There are queues on the A12 in both directions (approximately 15 vehicles in the AM peak and 25 vehicles in the PM peak) and on the A214 eastbound (approximately 20 vehicles). Internal blocking of the roundabout occurs during these times.

vii. A12/B1438

2.3.64 At the A12/B1438 roundabout, queues (approximately 10 vehicles) occur on the A12 in both directions during the morning peak. In the afternoon peak queues (approximately 15 vehicles) occur on the A12 northbound.

viii. A12/Grundisburgh Road/B1079

2.3.65 At the A12/Grundisburgh Road/B1079 roundabout, queues occur on the A12 southbound (approximately 36 vehicles) and queues (approximately 10 vehicles) on all the other approaches in the morning peak 08:00 to 09:00. During the afternoon, there is a short peak 15:55 to 16:25 when queues (approximately 25–30 vehicles) occur on Grundisburgh Road westbound and queuing occur on the other approaches. For the rest of the afternoon peak period, there are queues (approximately 10 vehicles) on the A12 in both directions.

ix. A12/A1152 Woods Lane

2.3.66 Queues (approximately 20 vehicles) occur on the A12 southbound at the roundabout junction with the A1152 Woods Lane in the morning peak hour 08:00 to 09:00. Queues (approximately 8 – 10 vehicles) occur on all approaches during the afternoon peak hour 17:00 to 18:00.

x. B1121/B1119/High Street/Chantry Road

2.3.67 Queuing occurs at the B1121/B1119 signalised junction in Saxmundham during the peak hour 17:00 to 18:00. Queues occur on the B1119 westbound (approximately 14 vehicles) and queues (approximately 8 vehicles) occur on the High Street and Chantry Road. There was no observed congestion during the morning peak hour.

xi. A140/B1078

2.3.68 The A140/B1078 junction is a priority junction. Queues (approximately 15 vehicles) occur on the minor arm B1078 westbound during a short period during the morning. Queues (approximately 10 vehicles) also occur on the right turn from the A140 northbound to the B1078. In the afternoon peak some shorter queues occur on these approaches.

e) Seasonality

2.3.69 During the Stage 1 and Stage 2 consultations, concerns were raised by some residents that additional traffic during holiday periods would compound issues relating to the effects of Sizewell C construction traffic, particularly along the A12. In response to this an assessment was undertaken to understand the current extent of seasonality on the highway network.

2.3.70 Traffic flow data collected on roads within the study area in May 2015 (which has been used for the development of the base traffic model) was compared with August 2015 data.

2.3.71 This analysis indicated that:

- much of the road network, including Ipswich, the A14 and other locations, exhibits no seasonality (i.e. daily traffic flows in August are broadly similar to those in May); and
- during the morning peak, traffic flows, including on the A12, are lower in August than in May.

2.3.72 The analysis did however suggest that 07:00 to 19:00 weekday traffic flows on the A12 north of Woodbridge are typically around 10% higher in August than in May, and that average weekday PM peak period traffic flows on this part of the network are around 10% to 35% higher in August than in May, varying across the length of the A12. This is shown in **Plate 2.1** and **Plate 2.2** of this chapter. These trends are consistent with a higher volume of tourism-related traffic on the A12 in August.

Plate 2.1: Morning (Monday to Thursday) and evening (Friday) weekday peak hour A12 flows during May and August at Farnham and Wangford

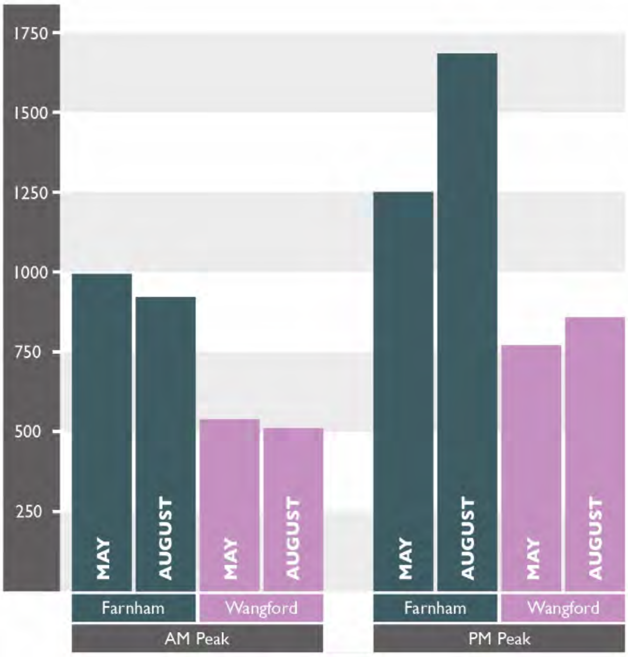
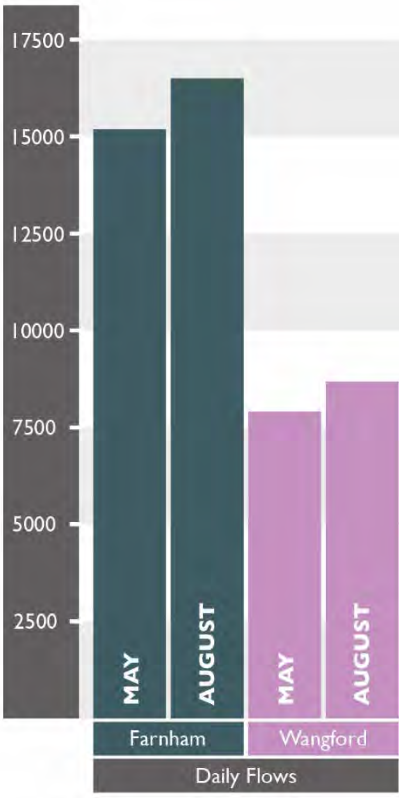


Plate 2.2: Monday to Friday 07:00 to 19:00 A12 flows during May and August at Farnham and Wangford



2.3.73 Whilst the analysis indicates that traffic flows on the A12 on a Friday afternoon/evening could be higher during August than the rest of the year, transport assessments should represent typical traffic conditions and are not intended to assess the absolute busiest day of year. The inclusion of other atypical traffic elements within the assessment, such as period outage at Sizewell B, described in **Chapter 8** of this **Transport Assessment** (Doc Ref. 8.5), provide a robust basis of assessment and, given this, it was not considered appropriate to base the assessment on August traffic flows.

f) Daily variation

2.3.74 Analysis of traffic flow data collected in May 2015 at a range of locations across the study area indicated that Monday to Thursday mornings are consistently busier than Friday mornings. The analysis also indicated that Friday afternoon and early evening traffic within the study area is consistently the busiest period of the week, and higher than any other weekday or weekend period in a neutral month.

2.3.75 The base strategic traffic model has been developed using observed average Monday to Thursday traffic flows for the morning hours and Friday traffic flows for the afternoon and early evening hours. It therefore provides a robust approach to the assessment.

2.3.76 **Table 2.2** summarises the average observed two-way traffic flows across the study area. The traffic data sources and locations used in this analysis are described in **Chapter 6, Appendix 6A** of this **Transport Assessment** (Doc Ref. 8.5).

Table 2.2: Average observed two-way traffic flows (vehicles)

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
05:00–06:00	214	190	187	186	179	106	65
06:00–07:00	558	545	551	534	500	228	149
07:00–08:00	1,276	1,268	1,260	1,243	1,163	396	223
08:00–09:00	1,552	1,553	1,543	1,557	1,423	627	345
09:00–10:00	1,032	1,038	1,074	1,051	1,035	898	660
10:00–11:00	931	869	914	917	968	1,048	903
11:00–12:00	941	858	909	902	1,013	1,128	1,034
12:00–13:00	936	883	938	932	1,076	1,144	1,083
13:00–14:00	932	912	932	941	1,089	1,045	1,000
14:00–15:00	958	946	1,003	978	1,164	1,027	1,003
15:00–16:00	1,072	1,080	1,114	1,116	1,302	1,010	980

Hour	Mon	Tue	Wed	Thu	Fri	Sat	Sun
16:00–17:00	1,324	1,369	1,389	1,388	1,496	992	966
17:00–18:00	1,570	1,551	1,574	1,608	1,549	932	828
18:00–19:00	988	1,041	1,056	1,033	1,101	742	644
19:00–20:00	525	567	593	614	710	495	481

g) Average journey times

2.3.77 A baseline strategic VISUM model has been developed to model the existing performance of the highway network. The strategic model is described in **Chapters 6** and **8** of this **Transport Assessment** (Doc Ref. 8.5).

2.3.78 To understand the existing performance of the main routes to/from the proposed Sizewell C main development site, journey times for four key routes described below and shown in **Figure 2.4** have been extracted from the baseline strategic model. These routes were selected as key routes for emergency services.

- Route 1: Seven Hills Junction to A12 Martlesham: A12/A14 roundabout – A12 – A12/A1214 roundabout (distance: 5.46km).
- Route 2: A12 Martlesham to Central Lowestoft: A12/A1214 roundabout – A12 – A12/B1532 roundabout – B1532/London Road South – A12/Pier Terrace – A47/Battery Green Road – A47/Gordon Road roundabout (distance: 62.03km).
- Route 3: A12 Martlesham to Sizewell C Construction Site Entrance: A12/A1214 roundabout – A12 – A12/B1122 Middleton Road junction – B1122/Yoxford Road – B1122/ Eastbridge Road junction (distance: 37.90km).
- Route 4: Leiston to A12 Yoxford via B1122: A12/B1122 Middleton Road junction – B1122/Yoxford Road – B1122/Abbey Road – B1122/Main Street – B1122/High Street (distance: 10.17km).

2.3.79 The baseline modelled journey times by direction along the four routes for the AM and PM hours of 06:00 to 09:00 and 15:00 to 19:00 are shown in **Table 2.3**.

Table 2.3: 2015 modelled journey times

Time Period	Time (Minutes)							
	1 NB	1 SB	2 NB	2 SB	3 NB	3 SB	4 NB	4 SB
06:00–07:00	03:09	03:13	49:36	48:31	29:13	29:05	12:06	11:55
07:00–08:00	03:17	03:22	57:13	50:42	30:05	30:44	12:09	12:01
08:00–09:00	03:21	03:25	1:00:58	52:43	30:22	32:45	12:11	12:01
15:00–16:00	03:22	03:24	54:08	50:22	31:34	30:31	12:08	12:00
16:00–17:00	03:23	03:25	54:28	51:22	32:25	31:29	12:14	11:57
17:00–18:00	03:28	03:26	53:34	50:06	31:32	30:18	12:12	11:56
18:00–19:00	03:18	03:17	50:50	49:03	30:11	29:26	12:09	11:53

2.3.80 **Table 2.3** shows the largest variation in journey times to be northbound between Ipswich and Lowestoft (Route 2 NB). Journey times along this route are 10 minutes slower during the AM peak. Journey times along all other routes are relatively consistent across all time periods suggesting that there is limited peak hour traffic congestion along these routes.

2.4 Personal injury collision data

2.4.1 Personal injury collision (PIC) data has been obtained from SCC for the most recent five-year period (1 May 2014 to 1 May 2019). The data was provided in 22 polygon areas defined by SCC. The PIC study area is comprised of the following 22 areas which collectively cover the study area used in the assessment of highway impacts of the Sizewell C Project. Each area contained PICs that occurred along links and at junctions on the highway network. The areas comprise:

- A1120;
- A12 Wickham Market – B1069 Snape;
- A12 Woodbridge – A14;
- A12 Woodbridge - A1152;
- A14 Beacon Hill – A12 Martlesham;
- A14 Trimley St Martin – Levington – Kirton;

- A140 – B1078 Wickham Market;
- A140 - A14 Stowmarket;
- A144 Halesworth – A12 Blythburgh;
- B1078 Needham Market;
- B1119-B1116 Framlingham;
- B1123 Holton;
- B1125 Blythburgh – Middleton;
- A12 Yoxford – B1122 Theberton
- Beccles;
- Brampton – A12;
- Bungay;
- Lowestoft;
- North Cove-Wrentham;
- Saxmundham – Leiston;
- Southwold; and
- Westerfield – B1079.

2.4.2 The full PIC data for these sub-areas is provided in **Appendix 2A** of this chapter and **the** following text reports an analysis of it.

2.4.3 The **analysis** identified 1,410 PICs across the study area during the five-year period of which, 27 were of fatal severity, 195 were of serious severity and 1,188 were of slight severity. This equates to an average of 282 PICs per year across the study area.

2.4.4 The **severity** of PICs in each of the 22 sub-areas is summarised in **Table 2.4** below and shown in the plans attached in **Appendix 2A** to this chapter.

Table 2.4: PIC by severity and sub-area

Area	Fatal	Serious	Slight
A1120	2	10	37
A12 Wickham Market – B1069 Snape.	1	7	28

Area	Fatal	Serious	Slight
A12 Woodbridge - A14.	2	10	89
A12 Woodbridge - A1152.	1	9	80
A14 Beacon Hill – A12 Martlesham.	5	16	190
A14 Trimley St Martin – Levington – Kirton.	3	3	40
A140 – B1078 Wickham Market.	3	10	37
A140 - A14 Stowmarket.	1	15	81
A144 Haleswoth – A12 Blythburgh.	0	6	52
B1078 Needham Market.	2	5	21
B1119-B1116 Framlingham.	0	13	34
B1123 Holton.	0	4	14
B1125 Blythburgh – Middleton.	1	1	16
A12 Yoxford – B1122 Theberton	0	2	18
Beccles	0	6	45
Brampton – A12.	1	13	29
Bungay	0	8	26
Lowestoft	2	26	154
North Cove-Wrentham.	1	6	40
Saxmundham – Leiston.	2	18	128
Southwold	0	4	12
Westerfield-B1079.	0	3	17
Total	27	195	1,188

2.4.5 Slight PICs accounted for 84% of all PICs across all roads within the study area. According to COBALT 5 guidance provided in the Department for Transport (DfT) Transport Analysis Guidance data book (May 2019), slight PICs typically account for 82-88% of all PICs on non-motorway roads such as these.

2.4.6 The PICs identified within each of the 22 sub-areas have been further analysed by categorising each PIC according to the road length it occurred on. **Table 2.5** shows the average number of PICs per each km section of road. However, since traffic volumes vary significantly across these roads, the number of PICs per km cannot be readily compared. The table therefore includes a calculated PIC rate per weekday million vehicle kilometres (mvkm) value for each road and these can be compared in the table. Note, however, that these are based on weekday traffic volumes taken from the traffic modelling work, provided in **Chapter 8** of this **Transport Assessment** (Doc

Ref. 8.5), so are not directly comparable with rates based on annual average daily traffic flows.

Table 2.5: PICs by road lengths and comparative PIC statistics

Area	Total PICs by road	Total PICs per km road length	PIC rate / weekday mvkm
A1120			
A1120	49	1.5	0.33
A12 Wickham Market – B1069 Snape			
A12	25	3.2	0.14
B1078	5	0.8	0.56
B1069	6	1.0	0.26
A12 Woodbridge – A14			
A12	101	10.2	0.22
A12 Woodbridge – A1152			
A12 (A1152 to B1078)	20	2.3	0.08
B1438 (Melton to A12)	21	4.0	n/a
A1152 (A12 to Melton)	2	1.3	0.06
A1152 (A12 to B1078 Tunstall)	27	2.9	0.34
A14 Beacon Hill – A12 Martlesham			
A12	211	8.8	0.12
A14 Trimley St Martin – Levington – Kirton			
A14 Seven Hills to Trimley St Martin	27	4.7	0.09
Old Felixstowe Road (A1156 – A14)	19	3.6	n/a
A140 – B1078 Wickham Market			
B1078 (A140 – B1116)	47	2.1	0.65
B1438 (A12 – B1078)	3	1.3	0.39
A140 – A14 Stowmarket			
A1120	16	2.1	0.20
A140	22	4.3	0.14
A14	59	2.4	0.05
A144 Halesworth – A12 Blythburgh			
A144	35	3.8	0.79
A12	23	3.7	0.34
B1078 Needham Market			
B1078	28	1.9	n/a

Area	Total PICs by road	Total PICs per km road length	PIC rate / weekday mvkm
B1119 – B1116 Framlingham			
B1119	23	1.6	0.48
B1116	21	1.7	0.20
B1120	3	0.7	0.47
B1123 Holton			
B1123	18	2.6	0.68
B1125 Blythburgh – Middleton			
B1125	18	1.9	0.88
A12 Yoxford – B1122 Theberton			
A12	10	4.0	0.23
B1122	10	1.4	0.34
Beccles			
A145	51	5.3	0.28
Brampton – A12			
A12	28	4.5	0.38
A145	15	2.1	0.60
Bungay			
A144	34	2.6	0.28
Lowestoft			
A12 Tom Crisp Way	45	13.6	1.13
A1117 (A12 – A146)	11	6.1	0.53
A1145	4	2.0	0.12
A146	19	8.6	0.39
A1117 (A146 – B1375)	21	16.2	0.55
A1117 (B1375 – A1114)	14	17.5	1.15
A1144 (A1117 – A47)	15	8.8	0.58
A47 eastern	16	11.4	0.94
A47 western	23	16.4	1.34
North Cove – Wrentham			
A145	7	5.4	1.36
B1127	14	1.6	0.39
A12	25	6.3	0.52
Saxmundham – Leiston			
A1094	26	2.5	0.27
A12	35	3.8	0.28

Area	Total PICs by road	Total PICs per km road length	PIC rate / weekday mvkm
B1069	9	2.2	0.33
B1121	11	1.3	0.24
B1119	22	2.9	0.64
Southwold A1095			
A1095	16	2.5	0.52
Westerfield – B1079			
B1079	1	1.2	0.07
A12	3	1.7	0.03

2.4.7 The severity of PICs by mode is summarised in **Table 2.6**.

Table 2.6: % PIC by severity and user class

	% of Total Fatal PICs	% of Total Serious PICs	% of Total Slight PICs	% of Total PICs
Pedestrian	18.5%	8.2%	6.0%	6.5%
Cyclist	3.7%	13.9%	7.7%	8.5%
Horse rider	0.0%	0.0%	0.1%	0.1%
Motor Vehicle	77.8%	78.0%	86.2%	84.9%

2.4.8 **Table 2.6** shows that the majority of PICs (c.85%) involved motor vehicle users alone, followed by cyclists (c.9%), pedestrians (c.7%), and horse riders (c.0.1%). The majority of fatal PICs involved motor vehicles (c.78%), whilst fewer fatal PICs involved pedestrians (c.19%) and cyclists (c.4%). No fatal PICs involved horse riders. Similarly, the majority of serious PICs involved motor vehicles (c.78%), however more serious PICs involved cyclists (c.14%) than pedestrians (c.8%). No serious PICs involved horse riders. The majority of slight PICs also involved motor vehicles (c.86%), whilst fewer slight PICs involved cyclists (c.8%) and pedestrians (c.6%). Approximately 0.1% of slight PICs involved horse riders.

2.4.9 Further analysis contained within **Appendix 2A** of this chapter did not identify any areas where a concentrated number of PICs involving non-motorised users occurred. However, the analysis did identify that non-motorised users are more frequently involved in PICs that involve careless or reckless driving.

2.4.10 PICs within the study area by user class, area and severity are shown numerically in **Table 2.7**.

Table 2.7: PIC by location, severity and user class

Area	Fatal	Serious	Slight	Total	% of Total
A1120					
Pedestrian	0	1	3	4	8.2%
Cyclist	0	1	2	3	6.1%
Vehicle only	2	8	32	42	85.7%
A12 Wickham Market – B1069 Snape					
Cyclist	0	0	1	1	2.8%
Horse rider	0	0	1	1	2.8%
Vehicle only	1	7	26	34	94.4%
A12 Woodbridge – A14					
Cyclist	0	0	3	3	3.0%
Vehicle only	2	10	86	98	97.0%
A12 Woodbridge - A1152					
Pedestrian	1	0	8	9	10.0%
Cyclist	0	1	11	12	13.3%
Vehicle only	0	8	61	69	76.7%
A14 Beacon Hill – A12 Martlesham					
Pedestrian	3	0	1	4	1.9%
Cyclist	0	0	2	2	1.0%
Vehicle only	2	16	187	205	97.2%
A14 Trimley St Martin – Levington – Kirton					
Cyclist	0	0	6	6	13.0%
Vehicle only	3	3	34	40	87.0%
A140 – B1078 Wickham Market					
Pedestrian	0	0	1	1	2.0%
Cyclist		1	1	2	4.0%
Vehicle only	3	9	35	47	94.0%
A140 - A14 Stowmarket					
Pedestrian	0	0	1	**1**	**1.0%**
Cyclist	0	2	4	**6**	**6.2%**
Vehicle only	1	13	76	**90**	**92.8%**

Area	Fatal	Serious	Slight	Total	% of Total
A144 Haleswoth – A12 Blythburgh					
Pedestrian	0	1	2	3	5.2%
Cyclist	0	0	4	4	6.9%
Vehicle only	0	5	46	51	87.9%
B1078 Needham Market					
Pedestrian	0	1	0	1	3.6%
Cyclist	1	0	2	3	10.7%
Vehicle only	1	4	19	24	85.7%
B1119 – B1116 Framlingham					
Pedestrian	0	4	5	9	19.2%
Cyclist	0	3	3	6	12.8%
Vehicle only	0	6	26	32	68.1%
B1123 Holton					
Pedestrian	0	0	1	1	5.6%
Vehicle only	0	4	13	17	94.4%
B1125 Blythburgh – Middleton					
Vehicle only	1	1	16	18	100.0%
A12 Yoxford – B1122 Theberton					
Pedestrian	0	0	1	1	5.0%
Cyclist	0	1	0	1	5.0%
Vehicle only	0	1	17	18	90.0%
Beccles					
Pedestrian	0	0	6	6	11.8%
Cyclist	0	1	5	6	11.8%
Vehicle only	0	5	34	39	76.5%
Brampton – A12					
Pedestrian	0	0	1	1	2.3%
Cyclist	0	0	2	2	4.7%
Vehicle only	1	13	26	40	93.0%
Bungay					
Pedestrian	0	2	4	6	17.7%
Cyclist	0	3	2	5	14.7%
Vehicle only	0	3	20	23	67.7%

Area	Fatal	Serious	Slight	Total	% of Total
Lowestoft					
Pedestrian	1	5	18	24	13.2%
Cyclist	0	12	30	42	23.1%
Vehicle only	1	9	106	116	63.7%
North Cove – Wrentham					
Pedestrian	0	1	2	3	6.4%
Cyclist	0	1	2	3	6.4%
Vehicle only	1	4	36	41	87.2%
Saxmundham – Leiston					
Pedestrian	0	1	16	17	11.5%
Cyclist	0	1	8	9	6.1%
Vehicle only	2	16	104	122	82.4%
Southwold					
Pedestrian	0	0	2	2	12.5%
Cyclist	0	0	2	2	12.5%
Vehicle only	0	4	8	12	75.0%
Westerfield – B1079					
Cyclist	0	0	2	2	10.0%
Vehicle only	0	3	15	18	90.0%
Total	27	195	1,188	1,410	

2.4.11 **Table 2.7** shows that the highest number of incidents involving non-motorised users was in the Lowestoft area (c.36%). This is likely to be associated with its urban nature and the higher prevalence of non-motorised users.

2.4.12 **Table 2.8** summarises the location of all PICs according to the collision descriptions provided by SCC. PICs classified in the table as occurring at ‘junctions’ are those which occurred within a 50m radius of a junction which was not a roundabout. PICs classified as occurring at ‘roundabouts’ are those which occurred within a 50m radius of a roundabout. PICs classified as occurring on ‘links’ are those which occurred on any other stretch of road within the highway network. The data shows that the majority of PICs (53%) occurred on links. The majority of PICs at junctions are of slight severity (86%).

Table 2.8: PICs by severity and generic location

Location	Fatal	Serious	Slight	Total
Roundabout	3	24	213	240
Junction (excluding roundabout)	3	60	360	423
Link	21	111	615	747
Total	27	195	1,188	1,410

2.5 Pedestrian and cycle network

2.5.1 This section considers the existing walking and cycling connectivity of the Sizewell C main development site and associated development sites. Based on the 'Cycling and Walking Investment Strategy' published by the DfT (Ref 2.2), it is generally accepted that walking and cycling have the potential to replace shorter car trips of under 2km in distance for walking and trips of under 8km in distance for cycling. Given this, there is potential for some journeys to the Sizewell C main development site and associated development sites to be undertaken on foot or by bicycle.

a) Sizewell C main development site

i. General context

Walking and cycling accessibility

2.5.2 The walking and cycling accessibility of the Sizewell C main development site is shown in **Figure 2.5** and **Figure 2.6.**

2.5.3 **Figure 2.5** shows a 2km/25-minute walking catchment (based on a moderate walking speed) from the proposed roundabout at the entrance to the Sizewell C main development site. This shows that the most northern section of Leiston town is accessible within a 21–25 minute walk of the main site entrance roundabout. Eastbridge village is also accessible within a 11–15 minute walk of the main site entrance roundabout. No other settlements are located within a reasonable 25 minute walk of the main site entrance roundabout.

2.5.4 **Figure 2.6** shows an 8km/25-minute cycling catchment from the proposed roundabout at the entrance to the Sizewell C main development site. The isochrone shows the town of Leiston to be located within a 5 minute cycle ride of the main site entrance roundabout. A number of villages are also accessible within a 15 minute cycle ride of the main site entrance roundabout, this includes: Eastbridge, Theberton, Knodishall, and Aldringham. Saxmundham rail station and Yoxford are also accessible within a 25-minute cycle ride of the main site entrance roundabout.

Walking and cycling infrastructure

2.5.5 The existing pedestrian network in the vicinity of the Sizewell C main development site is limited and generally restricted to the main urban settlements in the area. Except within the village of Eastbridge, there is no footway provision along local roads within the 2km/25 minute walking catchment. The local highway network within the vicinity of the proposed roundabout at the entrance to the Sizewell C main development site is unlit and generally unsuitable for pedestrians.

2.5.6 Leiston is the only settlement with a footway connection to the existing Sizewell power station complex. A shared foot and cycleway is provided along the south side of the Sizewell Gap carriageway and has a width of about 2m. No formal crossing facilities are provided along this road. A footway is also provided along the southern section of Lover's Lane between the junction with Sizewell Gap/King George's Avenue and Valley Road where there is a small number of residential dwellings. The footway has no street lighting and is approximately 1.2m in width.

2.5.7 Other than the shared foot and cycleway along Sizewell Gap, there is no other cycling infrastructure on the local roads within the vicinity of the Sizewell C main development site. Outside of the urban settlements in the area, the local road network is generally unlit and is subject to the national speed limit. Based on the existing conditions, on-road walking or cycling is unlikely to be attractive for workers travelling to/from the Sizewell C main development site.

Public Rights of Way

2.5.8 An extensive network of public rights of way (PRoW) exists within the vicinity of the Sizewell C main development site. A number of PRoW provide connectivity between towns and villages surrounding the Sizewell C main development site. These are generally across agricultural land, unpaved and unlit. As such the use of these routes is unlikely to be attractive for workers travelling to and from the Sizewell C main development site. The existing PRoW within the vicinity of the Sizewell C main development site are shown in **Figure 2.7**.

2.5.9 The PRoW situated in the vicinity of the Sizewell C main development site are described below.

Suffolk Coast Path and Sandlings Walk

2.5.10 This PRoW extends along the coast to the east of Sizewell A and B stations and the Sizewell C main development site, along definitive PRoW E-363/021/0. These routes, referred to as the coast path, extend through a wider area of coastline with rights of public access provided under section

2(1) of the Countryside and Rights of Way Act 2000 (Ref 2.3), including the beach and foreshore.

England Coast Path

2.5.11 This PRoW is being established by Natural England under the Marine and Coastal Access Act 2009 (Ref 2.4) and is likely to follow the route of the Suffolk Coast Path (E-363/021/0) and Sandlings Walk (E-363/021/0 and E-550/022/0) along the coast to the east of Sizewell A and B stations and the main development site and will potentially be launched either before or during construction of Sizewell C. It would include a wider area of 'coastal margin' confirming the publicly accessible coastline with rights of public access.

Bridleway 19 and Sandlings Walk recreational walking route

2.5.12 These PRoW (E-363/019/0, E-363/021/0 and E-550/022/0) run through the Sizewell C main development site along Sizewell Gap and Lover's Lane. Approximately 1.4km north of the junction of King George's Avenue and Sizewell Gap the route continues north along an unbound track, connecting with Eastbridge Road to the south of Eastbridge.

Cycling network

2.5.13 There are a number of cycle routes within an 8km catchment of the Sizewell C main development site. The majority of these routes are on-carriageway along unlit, quiet rural roads.

2.5.14 These routes are described below and shown in **Figure 2.8**.

- Sustrans Regional Cycle Route: This runs between Bramfield in the north and Iken in the south;
- Suffolk coastal cycle route: This runs between Bramfield in the north and Martlesham in the south; and
- additional smaller scale on-road and off-road cycle routes which connect the Sustrans Regional Cycle Route with the Suffolk coastal cycle route.

2.5.15 An audit of existing cycle routes and infrastructure was undertaken in 2015 and has been verified recently to ensure the audit is still valid. The audit included the cycle routes identified above, as well as roads and paths which are not dedicated cycle tracks or bridleways, but which are used by cyclists, are also included. The results of this audit are discussed below.

Suffolk Coastal Cycle Route / Sustrans Regional Cycle Route

2.5.16 The main long-distance cycle route serving the area is the Suffolk coastal cycle route, which is a Sustrans Regional Cycle Route. The full itinerary follows a loop, comprising mainly quiet roads and off-road cycle tracks, running from Felixstowe to Southwold via the coast on one side and the countryside on the other.

2.5.17 A full loop around the Suffolk coastal cycle route is 88 miles long and is estimated to take between two and four days' cycling to complete; however, the route is also popular with cyclists selecting part of the itinerary to follow. The Suffolk coastal cycle route is well signed with turning indications at junctions; however, these do not currently cover the section between Snape and Dunwich via Leiston.

2.5.18 The closest section of the Suffolk coastal cycle route to Sizewell passes through Knodishall, along Abbey Lane, past Leiston Abbey and northwards to Eastbridge. It therefore crosses the main haul route into Sizewell C and thus reinforces the need for safe facilities between the B1122 and Eastbridge.

2.5.19 The route comprises a mixture of on and off-road sections and is not designed specifically to cater for journeys to work; consequently, there may be more direct alternative routes between local towns and Sizewell. Nevertheless, the Suffolk coastal cycle route is already a well-established cycle route and so any enhancements to it would benefit existing leisure users as well as those making new work trips.

Suffolk Sandlings Cycle Routes

2.5.20 The Sandlings Safer Cycling Campaign (Ref 2.5) promotes a series of cycle routes along the Suffolk coastline and its hinterland. Comprising a mixture of on and off-road links, the routes are described in detail within the 2012 publication 'Cycling the Suffolk Sandlings'.

Route 3 – Leiston via Eastbridge to Westleton

2.5.21 Route 3 runs from Leiston via Eastbridge to Westleton. Leaving Leiston via Valley Road, the route continues north along Lover's Lane before proceeding off-road along Bridleway 19 and into the village of Eastbridge. The route is shown in **Plate 2.3** and shows the view near Eastbridge.

Plate 2.3: Photograph looking north along Eastbridge Lane at the point where Suffolk coastal cycle route 3 branches off along the bridleway (visible on the right).

2.5.22 The majority of Route 3 uses secondary roads; only the stretch along Lover's Lane is likely to encounter more vehicles and a higher traffic speed. The section between Lover's Lane and Eastbridge runs along Bridleway 19 with a gravel surface, seen in **Plate 2.3**, while north of Minsmere Nature Reserve the route goes off-road, seen in **Plate 2.4**, on tracks.

Plate 2.4: Photograph looking north along an off-road section of Route 3, shared with the Suffolk coastal cycle route unsigned section through Westleton Walks.

Route 4 – Thorpeness to Leiston

2.5.23 Route 4 links Thorpeness to Leiston, running just inland from the coastline to Sizewell. From Thorpeness village (which can in turn be reached from Aldeburgh along the coastal road), Route 4 crosses Thorpeness Common along an off-road track before turning right to reach Sandlings Walk. This in turn leads to Sizewell Gap (opposite the entrance to Sizewell power station complex), from where the route heads west along a shared foot/cycle path alongside the road and enters Leiston along King George's Avenue. Cyclists can opt to turn right along Lover's Lane and connect to Route 3 heading towards Eastbridge.

2.5.24 The central stretch across Thorpeness Common is off-road, with some sand as well as hard ground. Route 4 passes close to the coast and through agricultural land, with only the final stretch along King George's Avenue being shared with motor vehicles. **Plate 2.5** shows the view looking north along the off-road section of Route 4.

Plate 2.5: Photograph looking north along the off-road section of Route 4.

Other off-road cycle routes

2.5.25 Other off-road cycle routes within the vicinity of the Sizewell C main development site are described below.

Lover's Lane to Sizewell via Broom Covert

2.5.26 This short but useful connection links in to SSCC Route 3 on Lover's Lane and allows cyclists to bypass the junction with Sizewell Gap.

2.5.27 The western and eastern sections run along hard ground, with the central stretch through Broom Covert being off-road: while the profile undulates slightly, surface quality is generally good throughout. There are two gates which must be manually opened to allow passage, as seen in **Plate 2.6**.

Plate 2.6: Photograph looking east across Broom Covert

Former railway tracked from Sizewell to Aldeburgh

2.5.28 The former Aldeburgh branch line remains operational as far as Leiston for freight use. South of this point, the trackbed has been removed and it is now a footpath. The route is not a PRoW and cycling is not permitted along all of it, although as shown in **Plate 2.7** and **Plate 2.8** the northern and southern ends respectively are open for use.

Plate 2.7: Photograph looking north along former railway trackbed at northern fringe of Aldeburgh

Plate 2.8: Photograph looking south along former railway trackbed, adjacent to Thorpeness Golf Club

2.5.29 As shown in the images above, the trackbed is unsurfaced but nevertheless made up of compacted gravel or soil; consequently, it is possible to ride it comfortably using an off-road bicycle. The route is predominantly used by walkers and thus the footprint of the hardened ground is relatively narrow with the exception of the stretch used by Thorpeness Golf Club maintenance vehicles. Note how the latter shows evidence of potholes having been recently been filled to a good standard.

Secondary roads suitable for cycling

2.5.30 Secondary roads suitable for cycling are described below.

Darsham Station to Westleton

2.5.31 Cyclists approaching the area from the north, or arriving by train at Darsham, can make use of a route via Westleton in order to access Sizewell without using the B1122.

2.5.32 After travelling approximately 670m south along the A12, cyclists can head east for 4.2km onto Westleton Road (subsequently Yoxford Road) to the village of Westleton. Cyclists can then proceed along Mill Road to join the Suffolk coastal cycle route passing through Minsmere.

2.5.33 The roads are generally wide and flat, although it is noted that on the reverse journey visibility for traffic turning out of Westleton Road onto the A12 could be improved.

2.5.34 Alternatively, cyclists can make use of a lightly-trafficked route with lower speeds via Wash Lane and Darsham Road through Darsham village. However, this route is narrower and has more bends than the above route.

Saxmundham to Leiston via Clayhills Road or Lowes Hill

2.5.35 The principal vehicular route between Saxmundham and Leiston is along Saxmundham Road, a relatively straight route running to the south of the railway line. Cyclists may prefer to use an alternative route running north of the railway as far as the Saxmundham Road level crossing and along Lowes Hill and Harrow Lane. **Plate 2.9** and **Plate 2.10** show views along this route.

2.5.36 Cyclists can then proceed along Buckleswood Road into the centre of Leiston or else take Abbey Lane to join the Suffolk coastal cycle route passing Leiston Abbey.

Plate 2.9: Routes from Saxmundham to Leiston: Looking east near Westhouse Farm

Plate 2.10: Routes from Saxmundham to Leiston: View towards Buckle's Wood near Saxmundham Road crossing

Snape to Leiston via Friston and Coldfair Green

2.5.37 Cyclists approaching Leiston from the south-west can make use of secondary roads from Snape via Friston and Coldfair Green, again avoiding the need to travel along Saxmundham Road. The most direct alignment makes use of the track from Snape to Blackheath Corner and from there along the B1069, with an alternative to the north via Grove Road and Knodishall, the latter following the Suffolk coastal cycle route.

Aldeburgh to Thorpeness and onwards to Leiston

2.5.38 The coastal road from Aldeburgh to Thorpeness runs for 2.3km alongside the sand dunes, offering a direct and pleasant route for cyclists heading further north, off-road via SSCC Route 4. **Plate 2.11** below shows the scenic coastal road.

Plate 2.11: Looking northwards along the coastal road from Aldeburgh to Thorpeness

ii. Accommodation campus

2.5.39 The walking and cycling accessibility of the proposed accommodation campus location is also shown in **Figure 2.5** and **Figure 2.6** as the accommodation campus is situated adjacent to the main site entrance roundabout.

2.5.40 The proposed pedestrian and cycle access to the accommodation campus is via a new roundabout on the B1122.

2.5.41 Eastbridge Road runs along the western boundary of the proposed accommodation campus site. This is a single-track road of approximately 4m in width with passing points. This road is derestricted and has no footway provision or cycling infrastructure.

2.5.42 Eastbridge Road connects with the B1122 Abbey Road at a priority junction. A short section of footway is provided on the west side of the B1122 between Leiston Old Abbey and Abbey Lane. No cycling infrastructure is provided along the B1122 Abbey Road.

2.5.43 Suffolk coastal cycle route 42 routes via Eastbridge Road, B1122, and Leiston Abbey. This forms part of the Suffolk coastal cycle route and is a circular signed route from Felixstowe to Dunwich on quiet roads along the coast before looping inland via the market towns of Framlingham and Woodbridge. It connects the villages of Dunwich, Westleton, Eastbridge, and Snape.

2.5.44 Bridleway 19 (E-363/019/0) and Sandlings Walk recreational walking route (E-363/021/0 and E-550/022/0) run in a north-south direction along the western boundary of the site. They connect Lover's Lane to the south with Eastbridge Road.

2.5.45 There are currently no controlled pedestrian or cycle crossings within the vicinity of the proposed accommodation campus.

iii. Land east of Eastland Industrial Estate

Caravan accommodation

2.5.46 The proposed caravan accommodation site is bounded to the east by Lover's Lane. A narrow footway of approximately 1.2m in width runs along the western side of the first 50m of Lover's Lane north of the junction of Sizewell Gap/King George's Avenue. After this point, the narrow footway continues on the eastern side of Lover's Lane until the junction with Valley Road at the most northern point of the caravan site. The footway has no street lighting. There are currently no controlled pedestrian or cycle crossings within the vicinity of the proposed caravan accommodation site.

Offsite sports facilities at Leiston

2.5.47 Grimsey's Lane runs along the southern boundary of the proposed off-site sports facilities area. This is a narrow unlit single-track lane. This connects with Red House Lane and provides wider pedestrian and cycling connectivity to the town of Leiston, although the provision of on street parking restricts the width of the lane and can prevent vehicles passing one another. Red House Lane is a residential street, with footways of approximately 1.2m in width along the north side of the carriageway.

2.5.48 Footpath E-363/016/B tracks along the western side of the proposed off-site sports facilities area Leiston Leisure Centre towards the centre of Leiston. Footpath E-363/016/0 also tracks parallel to footpath E-363/016/B 100m east. There are currently no controlled pedestrian or cycle crossings within the vicinity of the proposed sports facilities.

2.5.49 The location of the sports facilities on the south-eastern edge of Leiston means that it is accessible within a 15 minute walk of the main urban area of Leiston.

b) Associated Development Sites

i. Northern park and ride at Darsham

2.5.50 The A12 bounds the south-eastern boundary of the proposed northern park and ride facility. A narrow footway runs along the west side of the A12 between the level crossing near Darsham station and Willow Marsh Lane which bounds the proposed northern park and ride facility to the north-east.

Willow Marsh Lane is a single-track lane with no footway provision. No PRoW cross the site of the proposed northern park and ride facility. There are currently no controlled pedestrian or cycle crossings within the vicinity of the northern park and ride facility. The walking and cycling accessibility of the northern park and ride facility is shown in **Figure 2.9** and **Figure 2.10** respectively.

ii. Southern park and ride at Wickham Market

2.5.51 The proposed southern park and ride facility at Wickham Market is bound by the A12 to the south. A narrow footway and grass verge run along the northbound carriageway of the A12 to the junction with Marlesford Road.

2.5.52 The site is crossed by a number of PRoW. Footpath E-288/007/0 runs in a north/south direction between the A12 at the south-east corner of the site and Marlesford Road at the junction with Ford Road. Footpath E-228/008/0 tracks from the B1116 at Wonder Grove along field boundaries to the north-west corner of the site. The footpath then runs along the western boundary of the site, terminating on the north side of the A12. Footpath E-288/016/0 continues south of the A12 towards Bottle and Glass Cottages. There are currently no controlled pedestrian or cycle crossing facilities within the vicinity of the southern park and ride facility. The walking and cycling accessibility of the southern park and ride is shown in **Figure 2.11** and **Figure 2.12** respectively.

iii. Two village bypass

2.5.53 The proposed route of the two village bypass crosses four PRoW between Nuttery Belt and Mollett's Farm (E-137/029/0, E243/004/0, E243/003/0 and E-243/001/0) and bypasses the villages of Stratford St Andrew and Farnham on the A12.

2.5.54 There is limited footway provision along the existing route of the A12. South of Farnham the A12 has a narrow footway on the northern side of the carriageway. Through the centre of Farnham narrow footways run along both sides of the carriageway but stop in advance of Farnham bend where properties directly front the A12. North of Farnham bend, a wider footway is provided on the eastern side of the A12. This continues to the point at which the bypass would re-join the A12. There are currently no controlled pedestrian or cycle crossings along the section of A12 which would be bypassed by the new two village bypass.

2.5.55 A narrow pedestrian footway runs along the northern side of the A12 on approach to the A12/A1094 junction at Friday Street. There is no footway provision along the A1094 Friday Street or any crossing facilities for pedestrians and cyclists. No cycle routes go through or are within close proximity of this junction.

iv. Sizewell link road

2.5.56 The proposed route of the Sizewell link road crosses three PRoW between Theberton and Yoxford, these are: Footpath E-515/013/0, E-515/003/0 and E-5151/004/0. The route would also cross Littlemoor Road, Fordley Road, Pretty Road, and Moat Road. These are all single-track roads subject to the national speed limit with no footway or cycle provision.

v. Yoxford and other highway improvements

2.5.57 The pedestrian and cycle network context of the sites where highway improvements are proposed is described below:

A12 and B1122 east of Yoxford

2.5.58 There are no PRoW within the vicinity of the proposed Yoxford roundabout. On the north-west approach to the new roundabout, a narrow footway is provided along the southern side of Middleton Road. On the north-east approach, narrow footways run along both sides of Brook Street to the junction with the B1122. On the southern approach, a narrow footway and grass verge run along the western side of the A12. There are no controlled pedestrian or cycle crossing facilities within the vicinity of the proposed Yoxford roundabout.

B1078/B1079 junction east of Easton and Otley College

2.5.59 There is no footway provision along the B1078 or B1079 on the approach to the junction. No cycle routes go through or are within close proximity of this junction.

A1094/B1069 junction south of Knodishall

2.5.60 There is no footway provision along the A1094 or B1069 on the approach to the junction. A restricted byway E-260/003/A is situated directly opposite the minor arm of the junction. Bus stops are also situated at this junction on the A1094, opposite and adjacent to the B1069. No cycle routes go through or are within close proximity of this junction.

A140/B1078 junction west of Coddenham

2.5.61 An informal pedestrian and cycle crossing is provided at the existing junction of the A140/B1078. This connects the on-carriageway cycle route along Coddenham Road with a shared-pedestrian and cycle path along the east side of the A140. The shared pedestrian and cycle path connects with

Coddenham Road, 40m to the south of the B1078 Needham Road. No cycle routes pass through this junction, however National Route 51 runs in close proximity to the junction. This runs along Norwich Road, parallel to the southbound carriageway of the A14.

A12/A144 junction south of Bramfield

2.5.62 A narrow pedestrian footway runs along the east side of the A12 between the A144 and Lymballs Lane. An uncontrolled pedestrian crossing is provided at the junction of the A12/A144 providing access to the west side of the A12 and A144. There is no footway provision along the A144. No cycle routes go through or are within close proximity of this junction.

A12/B1119 junction at Saxmundham

2.5.63 A pedestrian footway runs along the northern side of the B1119 on approach to the junction. The footway diverts away from the B1119 approximately 20m from the junction and heads northwards along a footpath parallel to the A12. There are no footways along the A12 at this location and no crossing facilities for pedestrians or cyclists. No cycle routes go through or are within close proximity of this junction.

vi. Freight management facility

2.5.64 There are no existing PRoW within the vicinity of the proposed freight management facility at the A12/A14 Seven Hills site. The site will be accessed via Felixstowe Road north of Levington Heath which is a single carriageway road. A footway runs along the south side of the A1156 between Ipswich and the junction with Old Felixstowe Road.

vii. Green rail route and rail improvements

Green rail route

2.5.65 The green rail route would include a 4.5km rail extension from the existing Saxmundham to Leiston branch line. The route would cross the following PRoW:

- Footpath E-363/003/0 near Buckleswood Road, close to the connection with the Saxmundham to Leiston branch line;
- Footpath E-363/006/0 and Footpath E-363/010/0 on approach to Abbey Road;
- Bridleway 13 (E-363/013/0) along Lover’s Lane. The green rail route then continues parallel along the northern side of the bridleway for approximately 400m, and

- Bridleway 19 (E-363/019/0) between Eastbridge Road and Sandy Lane.

2.5.66 The green rail route would leave the Saxmundham to Leiston branch line 490m to the east of the existing level crossing at Saxmundham Road. It would then pass northeast, crossing two local roads; Buckleswood Road and Abbey Road; via new level crossings. Buckleswood Road is a single-track road subject to a national speed limit with no footway provision. A narrow footway runs along the west side of Abbey Road between Leiston and Old Abbey Farm. There are no controlled pedestrian or cycle crossings on the local roads in the vicinity of the green rail route.

Saxmundham to Leiston branch line

2.5.67 The proposed track replacement on the Saxmundham to Leiston branch line comprises the renewal of the entire length of track. The Saxmundham to Leiston branch line runs from a junction just north of Saxmundham rail station to Sizewell Halt. The branch line currently crosses the following PRoW:

- Footpath E-363/003/0 between Saxmundham Road and Buckleswood road, directly east of Highbury Cottages, and
- Footpath E-363/005/0 between Waterloo Avenue and Westward Ho.

2.5.68 The Saxmundham to Leiston branch line also crosses several local roads between Saxmundham and Leiston. As a result, nine level crossings are present along the branch line. From west to east, these are:

- Bratts Black House level crossing;
- Knodishall level crossing;
- West House level crossing;
- Snowdens level crossing;
- Saxmundham Road level crossing;
- Buckles Wood level crossing;
- Summerhill level crossing;
- Leiston level crossing, and
- Sizewell level crossing.

2.5.69 The proposed improvement works would comprise works to eight of these level crossings. Sizewell level crossing at the eastern end of the

Saxmundham to Leiston branch line would not be upgraded as part of the Sizewell C Project.

2.6 Bus network

2.6.1 This section summarises the existing bus network in the study area.

2.6.2 It should be noted that during the construction period direct bus services will be provided for construction workers to use that coincide with the shift pattern and location of workers. The direct bus services will utilise existing bus stops as much as possible. In addition to this, dedicated bus services will operate between the two temporary park and ride sites in Darsham and Wickham Market and the main development site. As such, construction workers will use these buses to travel to and from work, rather than public bus services. Public bus services would only be used for non-work related trips.

2.6.3 Further details on the direct bus and park and ride services being proposed are provided in the **Construction Workforce Travel Plan** (Doc Ref. 8.8). The implementation of the **Construction Workforce Travel Plan** will be secured through an obligation in the Section 106 Agreement, as set out in the **draft Section 106 Heads of Terms** provided at **Appendix J** to the **Planning Statement** (Doc Ref. 8.4).

a) Local bus services

2.6.4 The existing bus routes that serve the area surrounding the main development site and associated development sites are shown in **Figure 2.13** and summarised in **Appendix 2B** of this chapter.

2.6.5 **Figure 2.13** and **Table 2.8** show that no existing bus services serve the Sizewell power station complex. The closest bus stops to the main development site are in Leiston, with services 64, 65 and 521 stopping in the town. Route 64 operates the most frequent service, with buses running between Aldeburgh, Leiston, Saxmundham, Wickham Market, Woodbridge, and Ipswich approximately every hour.

2.6.6 Further afield, the bus network between Lowestoft, Stowmarket, and Felixstowe generally comprises of low frequency services operating less than one bus per hour.

b) Existing bus stop infrastructure

2.6.7 The proposed direct bus services, which are envisaged to be from Ipswich, Lowestoft, Saxmundham, and Leiston will utilise existing bus stop infrastructure where possible.

2.6.8 To understand the standard of existing bus stop infrastructure along the routes of the direct bus services an audit was undertaken in June 2019. The audit focused on sections of the direct bus service routes within the main urban area of Ipswich, Lowestoft, Saxmundham, and Leiston.

2.6.9 The sections of each route audited are shown in **Figures 2.14, 2.15,** and **2.16**.

2.6.10 Each bus stop was assessed on the condition of the passenger waiting environment as well as the ease of access for vehicles, in order to determine whether the existing infrastructure provision is adequate. The following criteria were assessed at each stop:

- convenience (whether the stop is well located for an origin or destination);
- connectivity (whether the stop is connected to the surrounding footway network);
- approach and exit paths for buses (whether passenger service vehicles can enter and exit easily to/from the bus stop area);
- lighting;
- number of bays;
- adequacy of platform (how easy it is to get from roadside to bus and the quality of the surface);
- type and height of kerb;
- drainage;
- information provision at stop;
- street furniture near stop;
- services served from stop;
- shelter;
- seats;
- surface markings;
- bus stop post; and
- flag.

2.6.11 The results of the bus stop audit are attached in **Appendix 2B** of this chapter and summarised below.

ii. Ipswich

2.6.12 The majority of bus stops within Ipswich town centre, especially at Cobden Place bus station are of high quality with lit waiting areas, shelters, and timetable provision. Two bus stops have raised platforms in order to facilitate level boarding for less mobile passengers, whilst the remaining bus stops provide standard kerb access. All bus stops apart from the Gordon Road bus stop are marked by a flag and pole.

iii. Lowestoft

2.6.13 All bus stops along London Road South in Lowestoft have lit waiting areas, however only half of stops have a shelter. Several bus stops also lack sufficient information with regards to the provision of a current bus timetable. Approximately half of all stops are marked with both a flag and pole, whilst others tend to be marked by only a flag.

i. Saxmundham to Leiston

2.6.14 All bus stops along the B1119 route from Saxmundham to Leiston lack any seating provision and only two bus stops have a bus shelter. Most bus stops in Saxmundham are well connected to local footways. The exception is Clay Hills bus stop, north of Knodishall, approximately half way between Saxmundham and the main development site. The Clay Hills bus stop is located on a grass platform at a sharp bend on the B1119. There is no infrastructure indicating that there is a bus stop at this location.

c) Local bus connectivity

2.6.15 The local bus connectivity of the Sizewell C main development site and associated development sites are described below.

i. Main development site

2.6.16 At present no bus services serve the main development site and there are no bus stops within the recommended 2km maximum walking distance. The closest bus stop to the main development site are High Street and Valley Road bus stops located within the town of Leiston. Based on an average walking speed of 3mph (4.8kph) it would take approximately 40 minutes to walk from Leiston to the existing access of the Sizewell power station complex.

2.6.17 The location of existing bus stops within the town of Leiston is shown in **Figure 2.17**.

2.6.18 The existing bus services that route nearest to the main development site are routes 64 and 65, both of which are operated by First Norfolk and Suffolk, and route 521 which is operated by Borderbus.

2.6.19 Route 64 operates an hourly service in each direction on weekday between Ipswich and Aldeburgh via Woodbridge and Saxmundham. The route also operates an hourly service on Saturday, and a 90 minute service on Sunday.

2.6.20 Route 65 operates one service in each direction on weekdays between Aldeburgh and Ipswich via Rendlesham and Woodbridge. The route does not operate on a Saturday or Sunday.

2.6.21 Route 521 operates a three-hourly service in each direction on weekdays and Saturdays between Halesworth and Aldeburgh via Saxmundham and Leiston. The route does not operate on Sunday.

ii. Accommodation campus

2.6.22 The bus stops closest to the proposed accommodation campus are located along Valley Road in Leiston, approximately 20m west of the junction with the High Street/B1122 and 2.2km south of the main entrance to the campus. These bus stops are also the closest bus stops to the main development site, served by routes 64, 65, and 521.

iii. Sports facilities

2.6.23 The bus stops closest to the proposed sports facilities are located along Aldeburgh Road/B1122 in Leiston, approximately 40m north of the junction with Red House Lane and 500m south of the entrance to the sports facilities. The northbound bus stop is a lay-by at the junction with Minden Drive and the southbound bus stop is provided 60m to the south. The bus stops are served by routes 64, 65, and 521.

iv. Caravan accommodation

2.6.24 The bus stops closest to the proposed caravan accommodation site are located along Valley Road in Leiston, approximately 20m west of the junction with the High Street/B1122 and 2.2km south-east of the main entrance to the site. These bus stops are also the closest bus stops to the main development site and accommodation campus and are served by routes 64, 65, and 521.

v. Northern park and ride facility

2.6.25 The bus stops closest to the proposed park and ride facility at Darsham are located opposite and adjacent to the proposed facility on the A12, approximately 10m north of the junction with The Street and 400m southwest of the main entrance to the site. Both the northbound and southbound bus stops are on the main carriageway. The bus stops are served by route 521.

vi. Southern park and ride facility

2.6.26 The bus stops closest to the proposed park and ride facility at Wickham Market are on the B1078 on approach to the roundabout at the junction with the B1116, approximately 150m south-west of the main entrance to the proposed facility. Both north-bound and south-bound bus stops are provided along the main carriageway. A bus shelter is also provided at the north-bound bus stop. The bus stops are served by Routes 62, 63, and 64.

2.6.27 Route 62 operates a four-hourly service on weekdays between Blaxhall and Woodbridge via Wickham Market. The route does not operate on a Saturday or Sunday.

2.7 Rail network

a) Rail network

2.7.1 This section summarises the existing rail network in the study areas as shown in **Figure 2.18**.

i. East Suffolk Line

2.7.2 The closest passenger rail line to the Sizewell C main development site is the East Suffolk line. This is a 79km rural branch line that runs in a south-west to north-east direction between Ipswich and Lowestoft. The East Suffolk line connects with the Great Eastern main line at Ipswich, the Felixstowe branch line at Westerfield, the Wherry line at Lowestoft and Saxmundham to Leiston branch line at Saxmundham.

2.7.3 There is a total of 12 stations along the lines, of which Saxmundham is the closest to the main development site and approximately equidistant between Ipswich and Lowestoft. Other stations along the line are: Ipswich, Westerfield, Woodbridge, Melton, Wickham Market, Darsham, Halesworth, Brampton, Beccles, Oulton Broad South, and Lowestoft. Apart from Ipswich and Lowestoft, all the stations on the East Suffolk line are unstaffed, recognising the rural character of the line, serving scattered communities.

2.7.4 The line is double track between Ipswich and Woodbridge and then single track to Saxmundham; from there it is double track as far as Halesworth, and then single-track to Lowestoft. There is a passing loop at Beccles, however the single track continues as far as Oulton Broad North Junction, where it joins the Wherry line from Norwich on entry to Lowestoft.

2.7.5 The line is unelectrified and currently has a maximum permissible line speed of 55mph, a loading gauge of W10 between Ipswich and Westerfield and W6 for all other sections.

2.7.6 There are 45 level crossings between Ipswich and Saxmundham. At the 12 level crossings which cross public roads on the East Suffolk line, most are fitted with automatic half barriers. On average, these close for 35 seconds each time a train passes, and there are approximately 33 trains which pass per day, giving an average closure time of approximately 20 minutes in every 24 hours at each crossing.

2.7.7 The remaining level crossings either form part of public footpaths, or are user worked crossings which provide access to specified landowners and other specified “authorised users”. Some of these crossings are fitted with telephones which enable users to contact the signaller to check it is safe to cross the railway. The remainder rely on the user correctly operating the crossing and checking it is safe to cross the line.

2.7.8 The route predominantly carries passenger services operated by Greater Anglia, although it also carries nuclear flask trains for Sizewell A and B power stations (one freight path available per day) operated by rail freight company Direct Rail Services.

2.7.9 Typically, 15 trains per day run from Ipswich to Lowestoft and 17 trains per day run from Lowestoft to Ipswich, with services stopping at all stations. The exceptions are Brampton where the train stops on request only and Westerfield which has a limited service at peak hours only. The typical off-peak service frequency is one train per hour in each direction.

ii. Saxmundham to Leiston Branch Line

2.7.10 The Saxmundham to Leiston branch line runs for approximately 7.5km east from Saxmundham Junction, just north of Saxmundham rail station to Sizewell Halt. It does not currently host a regular train service; however, one freight path is available to be used to and from Sizewell Halt daily. This was most recently used in connection with the decommissioning of Sizewell A power station but is not used currently. Maintenance trains also run on the branch line when required. The line is unelectrified, with a maximum speed of 25mph.

2.7.11 There are nine level crossings on the branch line, with the railway crossing the public highway at five of these. Taking into account the low usage of the line, each road level crossing has manually operated gates. Although rarely used, the gates are closed across the highway for around five minutes each time a train passes.

iii. Felixstowe Branch Line

2.7.12 The Felixstowe branch line is a 19km branch line off the East Suffolk line that runs in a south-east direction between Westerfield and Felixstowe. Passenger services on the branch line are operated by Greater Anglia; however, it also carries freight trains operated by DB Schenker, Freightliner and GB Railfreight that travel to the Port of Felixstowe.

2.7.13 Passenger services originate at Ipswich, but the branch line starts one station further at Westerfield. Other stations on the line include Derby Road, Trimley and Felixstowe.

2.7.14 The Felixstowe branch line is single tracked and unelectrified with a maximum line speed of 75mph, although lower limits are in place at some locations. The line has a W10 loading gauge, however W9 rolling stock is excluded. One passing loop is located at Derby Road. In 2019 works were completed on extending the dual section of the line near Trimley. The additional track allows the line to operate more effectively, giving the flexibility required to run more freight trains as well as improve the reliability of existing passenger services. Further capacity improvements which would enable more trains to operate to and from the Port of Felixstowe are contingent on works to release capacity elsewhere on the network, including at Ely.

2.7.15 The Felixstowe branch line typically operates around 18 passenger trains and 33 freight trains per day in each direction.

iv. Great Eastern Main Line

2.7.16 The Great Eastern main line is a 184km major railway line which connects Liverpool Street station in central London with destinations in East Anglia, including Chelmsford, Colchester, Ipswich and Norwich.

2.7.17 Passenger services along the Great Eastern main line are operated by Greater Anglia. Typically, 45 trains per day run from Ipswich to Norwich and 42 trains per day run from Norwich to Ipswich.

2.7.18 The Great Eastern main line is one of the main routes for traffic travelling to and from Felixstowe. The maximum speed limit on the line is 100mph.

2.7.19 The Great Eastern main line between Ipswich and Norwich is approximately 74km in length and double tracked. It passes through the stations of Ipswich, Needham Market, Stowmarket, Diss, and Norwich.

v. Ipswich to Ely Line

2.7.20 The Ipswich to Ely line connects East Anglia and the Midlands via Ely. The line also has a branch line to Cambridge.

2.7.21 The Ipswich to Ely line shares the route between Ipswich and Haughley junction near Stowmarket with the Great Eastern main line.

2.7.22 The line from Ipswich to Soham is double track with the section between Soham and Ely and Cambridge branch single track. There is a passing loop at Dullingham, however the line is constrained by limited capacity at the Ely and Haughley junctions. The section of the route not shared with the Great Eastern main line is not electrified. It has a maximum line speed of 75mph and loading gauge of W10 between Ipswich and Ely, with the Cambridge branch being W8.

2.7.23 Passenger services operated along the route are operated by Greater Anglia and run between Ipswich and Cambridge and Ipswich and Peterborough. The Ipswich to Ely line is also one of the main routes for freight trains travelling between the Port of Felixstowe and the Midlands.

2.7.24 The Ipswich to Ely line typically operates around eight trains per day in each direction.

vi. Ipswich to Cambridge Line

2.7.25 The Ipswich to Cambridge line is a 71km route connecting East Anglia and the Midlands via Cambridge. It follows the same route as the Ipswich to Ely Line until it reaches Kennet, at which point the line continues on to Newmarket, Dullingham and Cambridge.

2.7.26 The Ipswich to Cambridge line also shares the route between Ipswich and Haughley junction near Stowmarket with the Great Eastern main line.

2.7.27 The line from Ipswich to Kennet is double track. At the Chippenham junction the line continues as a single track to Newmarket, before returning to a double track through Dullingham, and returning to a single track on approach to Cambridge.

2.7.28 Passenger services operated along the route are operated by Greater Anglia. The Ipswich to Cambridge line is Greater Anglia’s busiest regional route.

2.7.29 The Ipswich to Cambridge line typically operates around 23 trains per day in each direction.

b) Rail stations

i. Saxmundham station

2.7.30 The nearest rail station to the main development site is Saxmundham, approximately 13km to the west of the site.

2.7.31 Saxmundham rail station is located on the East Suffolk line between Ipswich and Lowestoft. The route serves local passenger and nuclear flask freight trains to Leiston.

2.7.32 **Table 2.9** summarises the existing frequency of rail services to/from Saxmundham rail station.

Table 2.9: Saxmundham rail services

Origin	Destination	Weekday			Saturday Trains/ day	Sunday Trains/ day
		Trains/ day	First Train	Last Train		
Ipswich	Lowestoft	16	07:44	22.54	16	9
Lowestoft	Ipswich	17	06:13	21:57	16	9

2.7.33 Saxmundham station has two platforms. The south-bound platform is accessed from Station Approach and north-bound platform is accessed from Albion Street. A level crossing to the south of the station connects Station Approach and Albion Street.

2.7.34 A small station car park is provided adjacent to the south-bound platform and is accessed from Station Approach. Bus stops are also located in both directions on Station Approach.

2.7.35 The station is unstaffed however tickets can be collected or purchased using the self-service ticket machine provided. Both platforms are covered and have seating available. Toilet facilities are not provided.

ii. Darsham station

2.7.36 Darsham station is situated directly adjacent to the proposed park and ride facility at Darsham. Darsham station is located on East Suffolk line between Ipswich and Lowestoft and is one stop after Saxmundham station if travelling towards Lowestoft.

2.7.37 The frequency of rail services stopping at Darsham station is the same as Saxmundham. The approximate journey time between Darsham and Saxmundham is seven minutes.

2.7.38 **Table 2.10** summarises the existing frequency of rail services stopping at Darsham rail station.

Table 2.10: Darsham rail services

Origin	Destination	Weekday			Saturday Trains/ day	Sunday Trains/ day
		Trains/ Day	First Train	Last Train		
Ipswich	Lowestoft	16	07:51	23:00	16	9
Lowestoft	Ipswich	17	06:05	21:49	16	9

iii. Wickham Market station

2.7.39 The nearest rail station to the proposed park and ride facility at Wickham Market is Wickham Market station. The station is located in Campsea Ashe to the east of Wickham Market village, approximately 3km from the proposed southern park and ride facility. Wickham Market station is located on the East Suffolk line between Ipswich and Lowestoft and is located one stop before Saxmundham station if travelling towards Lowestoft. There is poor pedestrian and cycle connectivity between the rail station and Wickham Market village.

2.7.40 The frequency of rail services stopping at Wickham Market station is the same as Saxmundham. The approximate journey time between Wickham Market and Saxmundham is 11 minutes.

2.7.41 **Table 2.11** summarises the existing frequency of rail services stopping at Wickham Market rail station.

Table 2.11: Wickham Market rail services

Origin	Destination	Weekday			Saturday Trains/ day	Sunday Trains/ day
		Trains/ Day	First Train	Last Train		
Ipswich	Lowestoft	16	08:04	22:43	16	9
Lowestoft	Ipswich	17	06:23	22:07	16	9

iv. Lowestoft station

2.7.42 Lowestoft station is located approximately 40km north of the main development site and is the eastern terminus of the East Suffolk line between Ipswich and Lowestoft. Additional rail services also operated from Lowestoft towards Norwich via the Wherry line. All passenger services are operated by Greater Anglia.

2.7.43 **Table 2.12** summarises the existing frequency of rail services stopping at Lowestoft rail station.

Table 2.12: Lowestoft rail services

Origin	Destination	Weekday			Saturday Trains/ day	Sunday Trains/ day
		Trains/ Day	First Train	Last Train		
Ipswich	Lowestoft	16	05:04	22:17	16	9
Lowestoft	Ipswich	17	05:52	21:07	16	9
Norwich	Lowestoft	45	05:06	23:00	47	31
Lowestoft	Norwich	20	05:42	23:30	18	15

2.7.44 Lowestoft station has three platforms, all of which are accessed via the main station entrance on Denmark Road.

2.7.45 The station has a staffed ticket office which is open Monday to Saturday 06:40–17:05 and Sunday 08:00–16:15. Outside of these times, tickets can be purchased and collected through the self-service ticket machine. Toilet facilities are available within the ticket office.

2.7.46 All platforms have covered areas and seating available. A vending machine is also available to purchase refreshments in the ticket hall, and a small shop is also located in the station courtyard.

v. Ipswich station

2.7.47 Ipswich station is located approximately 37km south of the main development site and is the western terminus of the East Suffolk line between Ipswich and Lowestoft. The station is situated on the Great Eastern main line and is the terminus of the Felixstowe branch line and Ipswich to Ely line. All passenger services are operated by Greater Anglia.

2.7.48 The station enables passengers travelling on the East Suffolk line to interchange with services to/from London Liverpool Street, Norwich, Felixstowe, Peterborough, and Cambridge.

2.7.49 Ipswich station has four platforms which are all accessed on foot via the main station entrance on Burrell Road/Station Yard.

2.7.50 The station has a staffed ticket office which is open Monday to Saturday 05:00–21.20 and Sunday 07:20–22:00. Outside of these times, tickets can be purchased and collected through self-service ticket machines. Toilet facilities are also available.

2.7.51 All platforms have covered areas and seating available. A coffee shop and vending machine are also available to purchase refreshments within the station.

2.7.52 **Table 2.13** summarises the existing frequency of rail services stopping at Ipswich rail station.

Table 2.13: Ipswich rail services

Origin	Destination	Weekday Trains/ Day	Weekday First Train	Weekday Last Train	Saturday Trains/ day	Sunday Trains/ day
Ipswich	Lowestoft	16	05:04	22:17	16	9
Lowestoft	Ipswich	17	05:25	21:07	16	9
Ipswich	Felixstowe	18	05:04	22:28	17	11
Felixstowe	Ipswich	18	05:34	23:01	17	11
Ipswich	Norwich	39	06:39	00:45	34	21
Norwich	Ipswich	44	04:55	23:05	35	20
Ipswich	Ely	8	06:00	20:01	8	6

c) Future rail investment plans

2.7.53 The Anglia Route Strategic Plan (2019) (Ref 2.6) sets out Network Rail's vision, objectives and investment programme for the Anglia Route in Control Period 6, 2019 to 2024.

2.7.54 Network Rail acknowledges that the Anglia region (Greater London, Essex, Cambridgeshire, Norfolk and Suffolk) runs some of the most important rail infrastructure in the UK, with services connecting millions of people to a fast-growing region which is vital to the City of London, and a gateway to major UK ports and airports in London and the South East.

2.7.55 The Anglia Route Strategic Plan highlights that investment in rail infrastructure between 2019 and 2024 will be critical in powering economic growth and making Anglia a region where people want to live, work and invest. Approximately £2.7 billion will be invested in running, maintaining and improving Anglia's railway for passengers and freight users within this period, permitting increases in capacity and improvements in passenger experience.

2.7.56 Key Network Rail projects which could be of relevance to the Sizewell C include:

- Felixstowe New Track Programme to facilitate additional freight services from the port and along the strategic freight corridor.
- Ely Area Capacity Enhancement Scheme to enable additional freight and passenger train paths through the Ely area. This project is at an

early stage of development and is likely to be delivered towards the end of Control Period 6 or the start of Control Period 7.

- Interventions at specific East Suffolk line level crossings, including potential upgrades and closures, which would address high risk, priority sites and improve safety.

2.7.57 These projects are at different level of development with varied levels of funding secured, and SZC Co. and Network Rail continue to work closely to understand the interfaces between proposals for Sizewell C and those being promoted by other developers, the DfT and Network Rail.

2.8 Summary

2.8.1 This section has provided a summary of the existing context of the main development site and associated development sites in terms of their location, current land uses, and surrounding transport networks.

3. Policy

3.1 Introduction

3.1.1 This chapter provides a high-level summary of the relevant policy context at a national, regional, and local level.

3.1.2 The Sizewell C Project meets the criteria of a nationally significant infrastructure project (NSIP) under section 15 of the Planning Act 2008 (Ref. 3.1), as it would bring forward a new onshore generating station in England with a capacity of over 50 megawatts (MW). Therefore, the Planning Act 2008 is the primary legislation which establishes the legal framework for applying, examining and determining the application for the proposed development. The application for development consent is submitted to the Planning Inspectorate. Consent for the Sizewell C Project would take the form of a Development Consent Order (DCO) and would be granted by the Secretary of State for Business, Energy and Industrial Strategy (BEIS).

3.1.3 The regime established by the Act for NSIPs is clear that the primary policy considerations are set out in a series of national policy statements (NPS). In particular, NPSs are intended to assist the process of determining applications for nationally significant infrastructure by settling certain important issues as a matter of policy so that those issues do not need to be debated in the consideration of the application..

3.1.4 NPS EN-1 (Ref. 3.2) and NPS EN-6 (Ref. 3.3) were considered by Parliament and formally designated in July 2011. Together, NPS EN-1 and NPS EN-6 provide the framework for development consent decisions on applications for new nuclear power stations which are capable of deployment by the end of 2025. Sizewell was one of the sites listed in NPS EN-6 as potentially suitable for the deployment of new nuclear power stations in England and Wales by the end of 2025. Whilst SZC Co. remains confident that Sizewell is suitable for the deployment of a new nuclear power station, it is no longer possible for deployment to take place by the end of 2025.

3.1.5 On 7 December 2017, the Government published a Written Statement on Energy Infrastructure (2017 Ministerial Statement) (Ref 3.4) which reiterated the continuing need for new nuclear. states that for projects yet to apply for development consent and due to deploy beyond 2025, the government continues to give its strong in principle support to proposals at those sites currently listed in EN-6.

3.1.6 In accordance with the terms of the 2017 Ministerial Statement, significant weight should still be given to the policy in NPS EN-1 and EN-6 "*where there is no relevant change of circumstances*.". For the reasons set out in **Section 3** of the **Planning Statement** (Doc Ref. 8.4), no change of circumstances has been identified for the Sizewell C Project and significant weight should continue to apply to the terms of both NPS.

3.1.7 In summary, whilst NPS EN-1 and EN-6 do not formally have effect to the Sizewell C DCO application, it is appropriate to treat them as providing the primary policies relevant to the determination of the application. It needs to be recognised in doing so that, whilst the policies do not technically have effect for the application, they do carry significant weight. Therefore, the detailed policies of the NPSs continue to provide the relevant policy tests for the DCO application. The NPSs set out how to assess the effects of new nuclear power station development and how to approach the need for mitigation.

3.1.8 Between December 2017 and March 2018, the government consulted on the siting criteria and process for a new NPS for nuclear power with single reactor capacity over 1 gigawatt (GW) beyond 2025. The Government Response (July 2018) confirmed that the proposed process for assessing and designating potential sites included carrying the list of potentially suitable sites from EN-6 through to the new NPS subject to them meeting the updated siting criteria and updates of their environmental statements.

3.1.9 SZC Co. nominated Sizewell in November 2018 as a site that is suitable for the deployment of a new nuclear power station by 2035. The new NPS for nuclear power between 2026–2035 (new NPS) has not been published at the date of submission.

3.2 National Policy Statements

a) NPS EN-1

3.2.1 Section 5.13 of EN-1 sets out the Government's policy on traffic and transport for energy NSIPs. Paragraph 5.13.1 notes that:

> *"The transport of materials, goods and personnel to and from a development during all project phases can have a variety of impacts on the surrounding transport infrastructure and potentially on connecting transport networks, for example through increased congestion. Impacts may include economic, social and environmental effects. Environmental impacts may result particularly from increases in noise and emissions from road transport…".*

3.2.2 Paragraph 5.13.3 states that if a project is likely to have significant transport implications, the applicant's Environmental Statement (ES) should include a transport assessment using the New Approach to Appraisal (NATA)/Web-based Transport Analysis Guidance (WebTAG) methodology stipulated in the Department for Transport's (DfT) guidance (Ref. 3.5), or any successor to such methodology. However, if a proposal involves the implementation of major new transport infrastructure and requires government approval, current assessment methodology should employ the WebTAG approach (Ref. 3.6). In addition, paragraph 5.13.3 also stipulates that Highways England and relevant highways authorities should be consulted, as appropriate, on the assessment and mitigation measures proposed for a project. Highways England is a statutory consultee in the planning system for development proposals as they are responsible for the maintenance of motorways and trunk roads.

3.2.3 Paragraph 5.13.4 states that, where appropriate, the applicant should prepare a travel plan which includes demand management measures to mitigate transport impacts. In addition, it also stipulates that the applicant should provide details of proposed measures to improve access by public transport, walking and cycling, to reduce the need for parking associated with the proposal, and to mitigate transport impacts.

3.2.4 Paragraph 5.13.5 also introduces the possibility of co-funding by the applicant and government for any third-party benefits, for example where the improvements provided exceed the impact of the proposal.

3.2.5 Paragraph 5.13.6 recognises that a new energy NSIP can give rise to substantial impacts on the surrounding infrastructure, and that the decision maker should ensure that the applicant has sought to mitigate these impacts. Where proposed mitigation measures are insufficient to reduce the impact on transport infrastructure to acceptable levels the decision maker should consider requirements to mitigate adverse impacts on transport networks arising from the development. The paragraph also states that applicants may also be willing to enter into planning obligations for funding infrastructure and otherwise mitigating adverse impacts.

3.2.6 Paragraph 5.13.8 provides clear direction regarding the type of mitigation measures applicable:

> *"Where mitigation is needed, possible demand management measures must be considered and if feasible and operationally reasonable, required before considering requirements for the provision of new inland transport infrastructure to deal with remaining transport impacts."*

3.2.7 Paragraph 5.13.10 follows by stating that:

> *"Water-borne or rail transport is preferred over road transport at all stages of the project, where cost-effective."*

3.2.8 Managing travel demand in this context can therefore be broadly defined as prioritising the use of alternatives to private car use and road-borne freight movements. This may also involve the management of heavy goods vehicle (HGV) movements and ensuring that arrangements are in place for any abnormal disruption which may occur.

3.2.9 Paragraph 5.13.7 establishes the important principle that if the applicant *"…is willing to enter into planning obligations or requirements can be imposed to mitigate transport impacts … then development consent should not be withheld, and appropriately limited weight should be applied to residual effects on the surrounding transport infrastructure.*".

3.2.10 The overarching objective of the policy highlights that the applicant should take reasonable steps to provide mitigation in order to reduce impacts to an acceptable level. In such circumstances, limited weight should be applied to any additional residual impacts on the transport network.

b) NPS EN-6

3.2.11 Traffic and transport is not included within NPS EN-6 as an assessment principle or nuclear impact, though impact on significant infrastructure and resources is included as a flag for local consideration. Significant infrastructure incudes motorways and major highways (including A roads) and strategic rail network.

3.2.12 Paragraph 3.15.2 advises that applicants should demonstrate that the proposed development would not have an unacceptable adverse impact on significant infrastructure.

3.2.13 The site assessment for Sizewell at Volume 2 of EN-6 addressed transport at C.8.122 – C.8.124. Paragraph C.8.123 acknowledges that the development at Sizewell was assessed in the Appraisal of Sustainability as "*having the potential for some adverse impacts locally from additional traffic generated during construction and wider negative effects on regional road infrastructure".*

3.2.14 Paragraph C.8.124 then notes that the strategic level assessment undertaken by the government did not include detailed traffic assessments and an assessment of the traffic and transport impact policy at section 5.13 of EN-1 would need to be undertaken should an application for development consent come forward.

3.3 Other National Planning Policy and guidance

3.3.1 NPS EN-1 and NPS EN-6 are important and relevant to the decision on the application for the Sizewell C Project and should be afforded significant weight.

3.3.2 Paragraph 4.1.5 of NPS EN-1 states that other matters which the decision maker may consider both "important and relevant" to its decision-making include development plan documents or other documents in the local development framework. Paragraph 4.1.5 of NPS EN-1 then explains that, in the event of a conflict between local policy and an NPS, the NPS prevails for the purposes of decision-making given the national significance of the infrastructure.

a) National Planning Policy Framework (2019)

3.3.3 The revised National Planning Policy Framework (NPPF) (Ref. 3.7), updated in February 2019, sets out the government's planning policy at the national level, though it does not contain specific policies for nationally significant infrastructure projects.

3.3.4 Within the Promoting Sustainable Transport chapter of the NPPF, paragraph 102 states that:

3.3.5 "*Transport issues should be considered from the earliest stages of plan-making and development proposals, so that*:

- *the potential impacts of the development on transport networks can be addressed;*
- *opportunities from existing or proposed transport infrastructure, and changing transport technology usage, are realised – for example in relation to the scale, location or density of development that can be accommodated;*
- *opportunities to promote walking, cycling and public transport use are identified and pursued;*
- *the environmental impacts of traffic and transport infrastructure can be identified, assessed and taken into account – including appropriate opportunities for avoiding and mitigating any adverse effects, and for net environmental gains; and*
- *patterns of movement, streets, parking and other transport considerations are integral to the design of schemes, and contribute to making high quality places."*

3.3.6 Paragraph 111 further advises that:

> *"All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport*

statement or transport assessment so that the likely impacts of the proposal can be assessed."

3.3.7 When referring to sites that may be allocated for development in plans, or specific applications for development, paragraph 108 of the NPPF states that planning policies and decisions should consider whether:

"appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and location;

- Safe and suitable access to the site can be achieved for all users; and
- Any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree."

3.3.8 Within this context, paragraph 109 therefore states that:

"Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe."

b) National Guidance

i. Planning practice guidance (Ref. 3.6)

3.3.9 To supersede the withdrawn DfT's 'Guidance on Transport Assessment' (2007) (Ref 3.5), the Ministry of Housing, Communities and Local Government published its guidance on 'Travel Plans, Transport Assessments and Statements' in March 2014 and 'Transport evidence bases in plan making and decision taking' in March 2015 (Ref 3.6) as part of its planning practice guidance. The guidance sets out the following principles which a transport evidence base, in conjunction with the WebTAG assessment methodology, should highlight:

- "Opportunities for encouraging a shift to more sustainable transport usage;
- Infrastructure requirements for inclusion in infrastructure spending plans linked to the Community Infrastructure Levy, section 106 provisions and other funding sources; and
- Possible transport mitigation measures."

3.4 Local policy and other relevant documents

a) Local policy

3.4.1 NPS EN-1 and NPS EN-6 are important and relevant to the decision on the application for the Sizewell C Project and should be afforded significant weight. Paragraph 4.1.5 of NPS EN-1 states that other matters which the decision maker may consider both "important and relevant" to its decision-making include development plan documents or other documents in the local development framework. Paragraph 4.1.5 of NPS EN-1 then explains that, in the event of a conflict between local policy and an NPS, the NPS prevails for the purposes of decision-making given the national significance of the infrastructure.

3.4.2 Under section 105 (2)(a) of the Planning Act 2008 the decision maker is also required to have regard to a local impact report produced by the relevant local authorities. Local authorities can determine the content of their own local impact reports, and this may include reference to development plan documents. This is likely to be particularly relevant to planning policy designations, which are not replicated in the NPSs.

3.4.3 The Sizewell C Project site lies within the administrative boundary of East Suffolk Council (ESC). This authority was formed through the merger of Suffolk Coastal District Council (SCDC) and Waveney District Council (WDC) on 1 April 2019.

3.4.4 Accordingly, there are two parts to ESC's local plan, the Suffolk Coastal Local Plan (Ref. 3.8) and the Waveney Local Plan (Ref. 3.9). The Sizewell C DCO application site lies entirely within the area covered by the Suffolk Coastal Local Plan. The development plan documents of the former SCDC comprise:

- the Suffolk Coastal Local Plan remaining Saved Policies, July 2018 (Ref 3.10);
- the Suffolk Coastal District Local Plan Core Strategy & Development Management Policies, July 2013 (Ref 3.11);
- the Site Allocations and Area Specific Policies Development Plan Document (January 2017);
- the Area Action Plan for the Felixstowe Peninsula (January 2017); and
- the Leiston Neighbourhood Plan 2015-2029.

3.4.5 The emerging local plan for the former Suffolk Coastal area is Suffolk Coastal Local Plan (January 2019) (Ref. 3.12). This was submitted to the Secretary of State for examination on 29 March 2019. An examination took place through the summer of 2019 and the plan is expected to be adopted in early 2020. Once adopted the new local plan will replace all elements of the adopted local plan listed above.

b) Suffolk Coastal Local Plan (2013)

3.4.6 The Suffolk Coastal Local Plan Core Strategy & Development Management Policies (2013) (Ref. 3.8) recognises that national policy has identified Sizewell as a potentially suitable site for the development of an additional nuclear power station (at paragraphs 1.14, 2.19 and 2.42). The Local Plan is clear that any decision on such an application will be taken ‘at a national level’ and that the role of the local planning authority is as a statutory consultee (Policy SP13). Consistent with that approach the Local Plan recognises, for example, that the transport effects of a new nuclear power station would be assessed “in line with policies set out in NPS EN-1 and NPS EN-6” (paragraph 3.116).

3.4.7 The key transport objectives of the adopted Suffolk Coastal Local Plan focus upon enhancing the transport network across the district. Objective 8 details the following transport outcomes:

- “*To work with partners and developers to provide an integrated and well managed transport system that meets the needs of residents and businesses. It should minimise the need for people to travel by private car, make the most of opportunities for freight to be moved by means other than road, and ensure that improvements are made to public transport and to the local foot and cycle networks, particularly when they provide access to local facilities;*
- *To secure (at an appropriate time) any identified necessary improvements to the transport network where it is required to support the scale and distribution of new housing and employment development as set out in the Settlement Hierarchy;*
- *To continue to recognise that the nature of the district is such that the use of private motor vehicles will remain important, particularly within the rural areas. This should be reflected in standards of provision for off-road parking. At the same time, to support innovative approaches to the provision of public transport across these more rural areas to help address problems of rural isolation; and*
- *To work with others, particularly the highways agencies and neighbouring local authorities, to identify longer term solutions which may be necessary to help ensure that both the A14 and A12 are able to continue to operate as strategic routes.*”

3.4.8 Strategic Policy SP10 (A14 & A12) states that:

- *"The A14 is an important route on the European map providing a link from the Port of Felixstowe to the remainder of the UK and its markets. Ensuring that it continues to function as a strategic route is of national and international significance. Off-site Port related activities should be located on or well related to this transport corridor; and*

- *Improvements to the A12 south from its junction with the A1214 at Martlesham to the Seven Hills interchange will be required in conjunction with strategic employment and housing development proposed east of the A12 with funding provided by means of developer contributions."*

3.4.9 Strategic Policy SP11 (Accessibility) states that:

- *"In order to make the best use of capacity within the local and strategic road and rail networks serving the district, to support the District's strategic economic role both within the subregion and nationally, to maintain quality of life and to contribute to reducing the impact of CO2 on climate change, the District Council will work with neighbouring authorities, the highway authority, public transport providers, developers and others to maximise opportunities for local journeys to be made by means other than the private motor car;*

- *In relation to public transport this will include improving both the quantity and quality of the service on offer. In relation to foot and cycle provision this will mean securing safe and easy access to local facilities where walking or cycling offers a realistic alternative for most people; and*

- *Where new services and facilities are to be provided by means of developer contributions in association with new developments, their timely provision will be secured by means of conditions, legal agreements and/or through the Community Infrastructure Levy (CIL) (once a charging schedule has been adopted). The transfer of freight from road to rail will also be encouraged."*

3.4.10 Development Management Policy DM19 (Parking Standards) states that:

- *"Proposals for all types of new development will be required to conform to the District Council's adopted parking standards as set out in a Supplementary Planning Document;*

- *However, in town centres and other locations with good access to public transport, the District Council may make exceptions as a transport management tool or where it is impracticable to make parking provision on-site; and*

- *In such cases the Council may also, in order to allow the development to proceed, invite applicants to contribute to the provision of cycling provision, walking measures, public transport, or additional public car parking spaces in lieu of any shortfall in on-site car parking provision."*

3.4.11 Development Management Policy DM20 (Travel Plans) states that:

"Proposals for new development that would have significant transport implications should be accompanied by a 'green travel plan'. It is not necessarily the size of the development that would trigger the need for such a plan but more the nature of the use and would include:

- *new employment sites employing over 10 people;*
- *a use which is aimed at the public (e.g. retail, leisure activities); or*
- *major residential development.*

The travel plans should seek to reduce the use of private cars by:

- *encouraging car sharing;*
- *provide links to enable the use of public transport;*
- *improve road safety for pedestrians and cyclists; and*
- *identify any mitigation works to be funded by the developer in conjunction with the proposal, such as improvements of facilities at the nearest transport interchanges. A condition or a legal agreement will be imposed to ensure implementation of the travel plan."*

c) Waveney Local Plan (2019)

3.4.12 The Waveney Local Plan (Ref. 3.9) was adopted by WDC in March 2019 and covers the former Waveney Local Planning Authority area for the period 2014–2036. The Waveney Local Plan sets out the level of growth which needs to be planned in the area and identifies where growth should be located and how it should be delivered. The Waveney Local Plan details the planning policies which the council will use to determine planning applications in the Waveney area.

3.4.13 The Sustainable Transport chapter of the Waveney Local Plan sets out a priority to help improve the use of sustainable transport options and reduce the risk of congestion.

3.4.14 Policy Waveney Local Plan 8.21 (Sustainable Transport) describes the basic principles for encouraging sustainable modes of transport. It comments that development proposals should be designed from the outset to incorporate measures that encourage people to travel using non-car modes to access home, school, employment, services and facilities. It also requires developers to have regard to the Waveney Cycle Strategy and subsequent updates. The policy states that development will be supported where:

- *"It is proportionate in scale to the existing transport network;*
- *It is located close to, and provides safe pedestrian and cycle access to services, facilities and public transport;*
- *It is well integrated into and enhances the existing cycle network including the safe design and layout of new routes and provision of covered, secure cycle parking;*
- *It is well integrated into, protects and enhances the existing pedestrian routes and the public rights of way network;*
- *It reduces conflict between users of the transport network including pedestrians, cyclists, users of mobility vehicles and drivers and does not reduce road safety;*
- *It will improve public transport in rural areas of the District;*
- *It includes facilities for charging plug-in and other ultra-low emission vehicles; and*
- *The cumulative impact of new development will not create severe impacts on the transport network."*

d) Suffolk Coastal Final Draft Local Plan (2019)

3.4.15 The yet to be adopted Suffolk Coastal Final Draft Local Plan (Ref. 3.12) for the new ESC, covering the period to 2036, contains planning policies and site allocations which will be used to determine planning applications within the new council area. It sets out the level of growth which needs to be planned for and identifies where this should be located.

3.4.16 The Suffolk Coastal Final Draft Local Plan identifies that the A12 through Saxmundham provides important connections to the numerous communities within the area and directs development towards it. It is considered that developments situated in the key transport corridor will enable opportunities to make more use of both road and rail connections, particularly those between Ipswich and Lowestoft. The Suffolk Coastal Final Draft Local Plan considers that increasing the level of development in these locations will help to sustain the existing communities and enhance the level of services and facilities found in this part of the district. The Suffolk Coastal Final Draft Local Plan also identifies that:

"The emergence of Sizewell C Nuclear Power Station will also further support the strategic growth of Saxmundham as a Market Town with a variety of services and facilities."

3.4.17 Policy SCLP7.1 of the Suffolk Coastal Final Draft Local Plan – Sustainable Transport:

3.4.18 *"encourages and facilitates the use of sustainable transport options where possible, and supports the efficient use of existing transport networks."*

3.4.19 The policy recognises and promotes the use of travel plans, as per the NPPF, to maximise the use of sustainable options and the efficient use of existing transport networks for substantial development sites.

3.4.20 Under the policy a development will be supported where:

- "*It is proportionate in scale to the existing transport network;*
- *It is located close to, and provides safe pedestrian and cycle access to services and facilities;*
- *It is well integrated into and enhances the existing cycle network including the safe design and layout of new cycle routes and provision of covered, secure cycle parking;*
- *It is well integrated into, protects and enhances the existing pedestrian routes and the public rights of way network;*
- *It reduces conflict between users of the transport network including pedestrians, cyclists, users of mobility vehicles and drivers and does not reduce road safety;*
- *It will improve public transport in the rural areas of the District; and*
- *The cumulative impact of new development will not create severe impacts on the existing transport network."*

3.4.21 The Suffolk Coastal Final Draft Local Plan promotes the use of electric vehicle charging points within developments and parking provision in general is covered under policy SCLP7.2 – Parking Proposals and Standards. The Suffolk Coastal Final Draft Local Plan policy refers to the 'Suffolk Guidance for Parking' (published 2015 and updated in 2019) (Ref 3.13) for guidance and generally supports development involving parking where they make efficient use of land and includes:

- *"The provision of safe, secure, and convenient off-street parking of an appropriate size and quantity including addressing the need for parking* *or secure storage for cars, cycles and motorcycles, and where relevant, coaches and lorries;*

- *Opportunities to reduce the recognised problem of anti-social parking or potential problems that may arise which impacts the quality of life or vitality of an area for residents and visitors;*
- *Appropriate provision for vehicle charging points and ancillary infrastructure associated with the increased use of low emission vehicles; and*
- *The incorporation of sustainable drainage systems, permeable surfacing materials and means of protecting water quality in drainage schemes should be ensured".*

3.4.22 Where proposals involve public transport improvements or re-developments, the ESC will encourage the provision of park and ride facilities, if appropriate. The Suffolk Coastal Final Draft Local Plan indicates that land to the north of the Darsham rail station between the A12 and the railway line is being promoted by SZC Co. in line with the Sizewell C development for a park and ride facility.

e) Other documents

i. Suffolk Local Transport Plan (2011)

3.4.23 The Suffolk Local Transport Plan 2011–2031 (Ref. 3.14) is a 20-year strategy that highlights Suffolk's long-term ambitions for the transport network. It is inherently linked to this DCO application as it sets out a priority to support the growth of businesses, reducing the demand for car travel, making efficient use of transport networks and improving infrastructure.

3.4.24 The Local Transport Plan describes how transport will play a key role in supporting and facilitating future sustainable economic growth. Within the urban areas, there are three strands to Suffolk's transport strategy approach:

- *"Reducing the demand for car travel;*
- *More efficient use and better management of the transport network; and*
- *Where affordable – infrastructure improvements, particularly for sustainable transport."*

3.4.25 In comparison, within rural areas the transport strategy is based around five themes which focus on the need to strengthen communities so that they are better placed to address local problems themselves:

- *"Better accessibility to employment, education and services;*
- *Encouraging planning policies to reduce the need to travel;*
- *Maintaining the transport network and improving its connectivity, resilience and reliability;*
- *Reducing the impact of transport on communities; and*
- *Support the county council's ambition of improving broadband access throughout Suffolk."*

3.4.26 This demonstrates that local transport policy supports the provision of sustainable travel measures above new road building and capacity improvements. However, the Local Transport Plan also highlights that an underpinning priority is to maintain the current highway network in a satisfactory condition and to prevent it from deteriorating and adversely affecting local transport, the economy and road safety.

3.4.27 Both approaches aim to support the priorities of 'Suffolk's Sustainable Community Strategy' (2008–2028) (Ref. 3.15) in helping residents achieve a high quality of life, create stronger and more self-reliant communities, and capitalise on future opportunities for sustainable economic development.

3.4.28 **Table 3.1** highlights the connection between headline themes of the community strategy and transport aims within Suffolk:

Table 3.1: The relationship between Suffolk's Priorities and the Local Plan Transport Aims

Suffolk's Priorities	Suffolk's Transport Aims
A prosperous and vibrant economy.	• Improve connectivity and accessibility. • Maintain core transport networks. Balance capacity and demand for travel, through increasing the use of sustainable transport and reducing the need for travel. • Improve access to jobs and commercial markets for residents and businesses based in the county.
Creating the greenest county.	• Reduced emissions from transport, including road maintenance. • Maintaining resilience of transport networks (e.g. coping with flooding, pot holes, winter damage). • Reduced air pollutant emissions.
Safe, healthy and inclusive communities.	• Facilitating an increase in walking and cycling. • Improving the physical accessibility of the transport system, improving information about travel options, improving access to services for those without access to cars. • Supporting wider regeneration.

Suffolk's Priorities	Suffolk's Transport Aims
	• Reducing the number of casualties on the transport network. • Reducing the impact of poor air quality on local communities.
Learning and skills for the future.	• Improving accessibility to schools, colleges, universities and other places of learning. • Access to broadband for online learning.

3.4.29 Furthermore, the Local Transport Plan clarifies the need to work with developers to produce travel plans that minimise car use and encourage alternative forms of transport. Taking a holistic approach to enhancing the transport network through the creation of pedestrian and cycle-friendly environments will support movement within and around Suffolk.

ii. Suffolk Rail Prospectus (2015)

3.4.30 The Suffolk Rail Prospectus (Ref. 3.16) sets out the county's rail priorities over the next 20 years and identifies how interventions can help support and grow the Suffolk economy. The rail prospectus was developed in partnership with local authorities, businesses, and rail stakeholders. Key aims and priorities highlighted in the prospectus relevant to Sizewell C include:

- improvements to the Great Eastern Mainline, Ipswich – Peterborough Line, East Suffolk Line, Lowestoft – Norwich Line, Ipswich – Cambridge Line and Cambridge – Norwich Line;
- ensuring that the construction of Sizewell C will not have a detrimental effect on rail capacity on the East Suffolk Line, and a potential new passenger station at Leiston. This could involve doubling all or part of the East Suffolk Line between Westerfield and Saxmundham;
- exploring the opportunity of achieving a passenger service and station for Leiston as a legacy benefit from the new development at Sizewell;
- movement of more freight to rail to reduce HGV impacts;
- capacity improvements at Ely to support freight and passenger rail growth and improve connections to the midlands and the north;
- improvements to railway stations and other infrastructure; and
- improvements to public transport links to railway stations.

iii. New Anglia Strategic Economic Plan (2014)

3.4.31 In March 2014, the New Anglia Local Enterprise Partnership (NALEP) submitted its Strategic Economic Plan (Ref. 3.17) to the government. The document makes the case for investment in a large number of transport, infrastructure, skills and housing projects which the NALEP believes are required to help the East Anglian economy provide 95,000 new jobs, 117,000 new homes and 10,000 new businesses by 2026.

3.4.32 Within Chapter 6 (Growth Locations) of the Strategic Economic Plan, the 'A12 and Sizewell' are identified as areas that host a high impact sector activity which require investment in order to unlock employment potential.

3.4.33 Paragraph 6.72 details NALEP's key transport priority with regards to the Sizewell C development:

> *"A bypass of Stratford St. Andrew, Farnham, Little Glemham and Marlesford is needed to keep HGV traffic off of the A12 through these villages."*

3.4.34 Furthermore, the Strategic Economic Plan also highlights that the A12 is an important route serving the growing and expanding low carbon energy corridor between Sizewell and Lowestoft. On this basis, the document recognises that Sizewell C will aid in establishing East Suffolk as the centre for the UK's clean energy sector, adding to a number of notable projects currently in operation along 'Suffolk's Energy Coast'. One such project is the 'A12 Suffolk Energy Gateway Scheme (SEGway)' which comprises an improvement to the 4.5-mile (7 kilometre) section between the B1078 at Wickham Market and the A1094 at Saxmundham in East Suffolk (Ref. 3.18).

iv. Integrated Transport Strategy for Norfolk and Suffolk (2018)

3.4.35 The Integrated Transport Strategy for Norfolk and Suffolk (Ref. 3.19) was adopted by the NALEP in May 2018 and sets out their ambition and collective goals for the delivery of transport infrastructure improvements up to 2040.

3.4.36 It highlights priority locations where significant opportunities and commitment to growth have been identified. One such location identified includes:

> *"The Norfolk and Suffolk Energy Coast, including Bacton, Great Yarmouth, Lowestoft and Sizewell, with assets on and offshore."*

3.4.37 The document further highlights that the Norfolk and Suffolk Energy Coast is a significant contributor to the economy of the East of England, and serves Sizewell B Nuclear Power Station, Bacton Gas Terminal, and the significant offshore energy sector as part of the wider East of England Energy Zone.

3.4.38 Sustainable transport and multi modal partnerships are emphasised by the NALEP in order to achieve their transport goals across the region.

v. Suffolk Roadsafe Strategy

3.4.39 The Suffolk Roadsafe Strategy 2012–2022 (Ref. 3.20) sets out how the Suffolk Roadsafe Partnership will continue to work to reduce the number of deaths and serious injuries occurring on Suffolk's road network. It is intended that the Strategy should complement the aim of Suffolk's Local Transport Plan 2011–2031 in supporting Suffolk's economy and future sustainable growth by making travel safer and healthier.

3.4.40 A key focus of the Suffolk Roadsafe Strategy linked to the DCO application is to:

> *"reduce the dominance of motorised vehicles and improve conditions for cycling and walking."*

3.4.41 As a result, the Suffolk Roadsafe Strategy aims to ensure that road safety activities inevitably make travel safer whilst at the same time encourage the use of sustainable transport.

vi. The Suffolk Walking Strategy (2015)

3.4.42 The Suffolk Walking Strategy 2015–2020 (Ref. 3.21) aims to make walking the default choice for journeys of 20 minutes or less in order to improve community health, happiness and the local environment.

3.4.43 The strategy highlights the benefits walking can bring to society from a transport and infrastructure perspective. These include:

- *"Reduced road traffic casualties, currently costing £3.4 billion per year (2011);*
- *Increased use of public transport as an element of active travel;*
- *Reduced traffic congestion;*
- *Reduced carbon emissions and air pollution, currently responsible for 100,000 deaths per year within the EU (2011);*
- *Reduced transport costs to Suffolk County Council for travel to educational and medical locations; and*
- *Increased use of rural public rights of way and natural green spaces or parks."*

vii. Suffolk Cycling Strategy (2014)

3.4.44 The Suffolk Cycling Strategy (Ref. 3.22) was adopted by Suffolk County Council (SCC) in 2014 with a vision to increase the number of people cycling in Suffolk, subsequently establishing it as a normal form of transport for everyone. The strategy aims to:

- *“Encourage cycling across all sectors of the community, supporting Suffolk’s ‘Most Active County’ ambitions;*
- *Promote a transfer to cycling (and walking) for short private car trips, supporting Suffolk’s ‘Creating the Greenest County’ ambitions;*
- *Promote the benefits of cycling for public health and long-term savings in the health budget;*
- *Foster enthusiasm for cycling in young people;*
- *Plan and design for the future with cycling in mind; and*
- *Create a safe and cycle friendly environment.”*

3.4.45 The strategy further highlights the benefits cycling can bring to Suffolk in terms of transport and infrastructure. These include:

- *“Alleviate the cost and impact of traffic congestion to local business and public health;*
- *Reduce traffic levels by the use of cycling, leading to improved journey time reliability, encouraging the use of public transport;*
- *Reduce greenhouse gas emissions from transport, helping to deal with climate change; and*
- *Improved travel choices for all, encouraging a modal switch to cycling as a sustainable option.”*

viii. Waveney Cycle Strategy (2016)

3.4.46 The Waveney Cycle Strategy (Ref. 3.23) sets out the council’s vision for cycling in Waveney. It identifies existing issues and suggests potential improvements to the cycle network with the aim of encouraging more people to cycle for commuting and recreation. The Strategy also provides supporting information regarding issues such as design that should be considered when proposals are being developed and determined.

3.4.47 Waveney Cycle Strategy highlights parallel transport and infrastructure benefits to those highlighted by the Suffolk Cycling Strategy yet expands upon previous guidance to discuss how potential improvements could encourage more people to consider cycling as both a utility and recreational form of transport and exercise. Such improvements could include the provision of:

- clear layouts and configuration of cycling infrastructure;
- distinct way-finding measures and consistent types of cycle lanes to follow along routes;
- sufficiently maintained cycle paths, routes and way-finding measures;
- on-road cycle lanes that are wide enough to foster a sense of safety;
- cycle lane surfaces in a suitable condition, providing a comfortable riding experience; and
- convenient and well-located cycle parking and storage.

3.5 Summary

3.5.1 This section has explained the various levels of planning policy that have informed this Transport Assessment and guided the development of the transport strategy to be implemented by SZC Co. at Sizewell C.

3.5.2 The need for Sizewell C has been established as a matter of national policy. The Government's National Policy Statement (NPS) EN-1 (Ref 1.2) establishes the need for new electricity generating capacity and for new nuclear power to be part of that. NPS EN-6 (Ref 1.3) confirms the suitability of Sizewell as a site for the deployment of a new nuclear power station before the end of 2025. As explained in further detail in the **Planning Statement** (Doc Ref. 8.4), NPS EN-1 and EN-6 do not formally have effect for the Sizewell C DCO application, as it is no longer possible for deployment to take place by the end of 2025. However, the Government has confirmed that both NPS EN-1 and NPS EN-6 incorporate information, assessments and statements, including statements concerning the need for nuclear power, which continue to be important and relevant for the Sizewell C Project. As there has been no relevant change of circumstances since the NPSs were designated, significant weight should be given to the policies in NPS EN-1 and NPS EN-6.

3.5.3 NPS EN-1 places emphasis on sustainable modes of transport and the introduction of mitigation to reduce impacts to an acceptable level. Provided this is achieved, as per NPS EN-1 paragraph 5.13.7, limited weight should be applied to any residual effects on the transport network.

3.5.4 Similarly, the NPPF also advises that development should not be prevented or refused on transport grounds unless the residual impacts of the development are severe. Therefore, the NPPF is consistent in approach with the NPS EN-1.

3.5.5 Policies of SCC, ESC, SCDC, and WDC do not set out detailed transport development control policies but do set out visions to enhance the fabric of their towns. Delivery of respective walking and cycling strategies by the local authorities in conjunction with these are critical in mitigating the impacts of congestion and encouraging a modal shift in the way people move between destinations.

4. Transport Strategy

4.1 Introduction

4.1.1 This chapter sets out SZC Co.'s transport strategy for the construction phase of the Sizewell C Project and the basis for the transport proposals. The proposals have evolved following consideration of responses from the Stage 1, 2, 3, and 4 consultations and experience gained to date at Hinkley Point C. In addition, this chapter provides an overview of the proposed transport strategy for the operational phase of Sizewell C.

4.1.2 In developing the strategy, alternative transport proposals to manage the daily movement of the construction workforce and meet the freight requirements of the construction phase were examined. The alternative strategies considered through consultation, which do not form part of the transport strategy, are set out in greater detail in **Appendix A** of the **Planning Statement** (Doc Ref. 8.4) for the Development Consent Order (DCO) application.

4.1.3 The transport strategy in this chapter is set out for three key phases of the Sizewell C Project:

- 2023 – early years phase of Sizewell C construction when both the main development site and associated development sites are under construction, without any highways mitigation in place;
- 2028 – peak construction phase when the main development site is under construction but the associated development sites, including the highways mitigation, are operational; and
- 2034 – operational phase when Sizewell C and the permanent associated development is operational, following the removal and reinstatement of the temporary associated development.

4.1.4 This chapter should be read alongside the **Implementation Plan**, presented in **Appendix I** of the **Planning Statement** (Doc Ref. 8.4), which provides the indicative phasing schedule for the early years and peak construction phases of the Sizewell C Project as well as the anticipated duration of works to construct and start bringing into use the various transport improvements as well as the other specified mitigation. SZC Co. will use reasonable endeavours to carry out and complete the associated development sites and transport mitigation works in accordance with the **Implementation Plan** (see the draft **Section 106 Heads of Terms** presented in **Appendix J** of the **Planning Statement** (Doc Ref. 8.4)). Notwithstanding this, in order to provide a robust assessment, all of the associated development sites and transport mitigation have been assumed to be being constructed concurrently during the early years phase of the Sizewell C Project.

4.2 Transport strategy overview

4.2.1 The main constituent parts of the transport strategy are:

- a strategy to get the construction workforce to the main development site and associated development sites, whilst minimising the impact on local roads and communities; and
- a freight management strategy for transporting freight and materials to the main development site whilst minimising the impact on local roads and communities.

4.2.2 **Table 4.1** illustrates the components of the strategies for the movement of people and the freight management strategy and how they meet the transport objectives.

Table 4.1: Transport Strategy

Objective	Movement of People	Freight Management Strategy
Minimise the volume of traffic associated with the construction of the Sizewell C Project as far as reasonably practical.	Accommodation campus. Caravan site at Land East of Eastlands Industrial Estate (LEEIE). Park and ride facilities. Direct buses. Constrained car parking / car sharing. Walk and cycle improvements.	Beach landing facility (BLF) Saxmundham to Leiston branch line upgrades. Rail siding at LEEIE. Green rail route. Postal consolidation facility.
Maximise the safe, efficient and sustainable movement of people and materials required for the construction of the Sizewell C Project as far as reasonably practicable.	As above as well as: Construction worker travel plan (CWTP).	As above as well as: Construction traffic management plan (CTMP). Delivery management system. Freight management facility.
Minimise the impacts both for the local community and visitors to the area using the road network as far as reasonably practicable.	Everything above as well as: Two village bypass. Sizewell link road. Yoxford roundabout. Other highway improvement works.	Everything above as well as: Two village bypass. Sizewell link road. Yoxford roundabout. Other highway improvement works.

Objective	Movement of People	Freight Management Strategy
Provide long-term, legacy benefits for the local community from new infrastructure, where appropriate.	Highway and public rights of way improvements.	Highway and public rights of way improvements.
Take reasonable steps to ensure the resilience of the transport network in the event of an incident.	Communication with workforce.	Traffic Incident Management Plan (TIMP) Freight management facility. Traffic incident management area at southern park and ride facility. Communication with hauliers.

4.3 Early years transport strategy

4.3.1 During the early years of construction, the workforce would be smaller than at peak construction but the associated developments and other mitigation measures would not yet be in place. The transport strategy for the construction workforce and freight management prior to the infrastructure improvements being in place is summarised in this section.

a) Early years workforce transport strategy

i. Land East of Eastlands Industrial Estate caravan site

4.3.2 During the early years of the construction phase the 400-pitch caravan site at the LEEIE would be available for 600 construction workers. The workers would be bussed to and from the main development site in order to minimise car trips.

ii. Land East of Eastlands Industrial Estate park and ride facility

4.3.3 A temporary park and ride facility is proposed at the LEEIE with 600 car parking spaces. This facility would be in place until the northern and southern park and ride facilities are operational. In the early years of the construction phase, construction workers would park at the LEEIE park and ride facility and be bussed to the main development site in order to minimise car trips.

iii. Direct bus service

4.3.4 During the early years of the construction phase, SZC Co. proposes to provide direct bus services to the main development site from key locations where there are concentrations of workers in order to minimise car trips.

iv. Restrained car park

4.3.5 During the early years of construction phase a 300-space car park will be provided for construction workers at the main development site and a permit system will be in place to actively manage parking.

v. Construction worker travel plan

4.3.6 A **Construction Worker Travel Plan (CWTP)** (Doc Ref. 8.8) has been developed for the construction phase of the Sizewell C Project in order to manage workforce travel during the construction phase and would be in place from commencement of construction. The implementation of the **CWTP** will be secured through an obligation in a Section 106 Agreement (see draft **Section 106 Heads of Terms** presented in **Appendix J** of the **Planning Statement** (Doc Ref. 8.4)).

4.3.7 Compliance with the **CWTP** (Doc Ref. 8.8) would be a requirement of all construction workers and contractors working on the Sizewell C Project. It would be reinforced through the Worker Code of Conduct, which is summarised in the **Community Safety Management Plan (CSMP)** (Doc Ref. 8.16). Workers would have to sign this as a condition of employment on the Sizewell C Project. Failure to comply with the code of conduct could lead to dismissal.

4.3.8 A full time Transport Co-ordinator would be appointed by SZC Co. and be in place throughout the construction phase of the Sizewell C Project. The Transport Co-ordinator would be responsible for the management, development and implementation of the **CWTP** (Doc Ref. 8.8). The appointment of the Transport Co-ordinator would be secured through an obligation in the Section 106 Agreement (see draft **Section 106 Heads of Terms** presented in **Appendix J** of the **Planning Statement** (Doc Ref. 8.4)).

4.3.9 The **CWTP** (Doc Ref. 8.8) will monitor compliance with the mode share targets for the construction workforce and a transport review group will review the performance of the **CWTP** on a regular basis.

b) Early years freight transport strategy

i. Delivery management system

4.3.10 As set out in the **Construction Traffic Management Plan (CTMP)** (Doc Ref. 8.7), deliveries to the main development site will be controlled by booking through a web-based delivery management system (DMS). The DMS will be used from commencement of construction to achieve the following objectives:

- regulate the flow of heavy goods vehicles (HGVs) to the main development site by providing a set number of delivery slots per day;
- ensure HGV arrivals do not exceed the number of HGVs assessed within the **Transport Assessment** (Doc Ref. 8.5); and
- ensure HGVs adhere to the HGV routes.

4.3.11 Such systems have proven effective in controlling the flow of traffic on construction projects by reducing the number of vehicles that arrive at any given time, especially at peak times. In addition, they have reduced the element of vehicle queuing at sites that is associated with the “arrive anytime” scenario.

ii. Saxmundham to Leiston branch line

4.3.12 During the early years of construction, the Saxmundham to Leiston branch line would be upgraded in order to handle the freight trains required for the Sizewell C Project.

iii. Rail siding at Land East of Eastlands Industrial Estate

4.3.13 Prior to the green rail route being operational, SZC Co. proposes to construct a temporary single railway track with railway sidings and a passing loop for the locomotive within the LEEIE. This would enable two trains per day to be brought in via the Saxmundham to Leiston branch line in the early stage of the construction phase. Freight would then be transferred by HGV between the LEEIE and the main development site.

iv. Construction traffic management plan

4.3.14 The **Construction Traffic Management Plan (CTMP)** (Doc Ref. 8.7) is a management plan that will manage freight traffic during the construction of the Sizewell C Project (i.e. HGVs, light goods vehicles and abnormal indivisible loads (AILs) to the main development site and the associated development sites). The proposed management measures for each element of the freight traffic are commensurate with the level and duration of traffic impact during the construction phase. The **CTMP** (Doc Ref. 8.7) will be reviewed on a regular basis by the transport review group.

4.3.15 The implementation of the **CTMP** will be secured through an obligation in a Section 106 Agreement (see draft **Section 106 Heads of Terms** presented in **Appendix J** of the **Planning Statement** (Doc Ref. 8.4)).

v. Traffic incident management plan

4.3.16 The **Traffic Incident Management Plan** (**TIMP**) (Doc Ref. 8.6) sets out for the management of Sizewell C construction HGVs and buses during an event or incident within the Traffic Incident Management Area, as defined in the **TIMP**. The **TIMP** would help minimise potential impacts of the Sizewell C construction phase on response times and delivery of emergency services in the event of an incident.

4.3.17 The implementation of the **TIMP** will be secured through an obligation in a Section 106 Agreement (see draft **Section 106 Heads of Terms** presented in **Appendix J** of the **Planning Statement** (Doc Ref. 8.4)).

4.4 Workforce transport strategy at peak construction

4.4.1 This section summarises the proposed transport strategy at peak construction. Details of the transport strategy during the early years of construction are summarised later in this chapter.

a) Estimated number of workers

4.4.2 The peak construction workforce for Sizewell C is estimated to be 7,900 workers at the main development site. There will be a further 600 associated development staff undertaking non-construction roles at the on-site and off-site associated development sites (e.g. security, maintenance, catering etc).

4.4.3 The workforce during the construction phase of the Sizewell C Project would comprise a mixture of:

- home-based (HB) workers who are already resident in the local area or region and who would commute to and from the main development site from their existing home daily; and
- non-home-based (NHB) workers who do not currently live in the local area or region and would find accommodation in the area during the construction phase. Many of these workers would be resident in the accommodation campus or in caravans on LEEIE. Others would find their own accommodation in the local area, for example in private rented, tourist or caravan accommodation.

b) Accommodation campus and caravan site

4.4.4 In response to the large number of NHB workers required for the Sizewell C Project as detailed in the Workforce Profile (which is presented in **Appendix 9A** of **Volume 2** of the **ES**), SZC Co. has developed an **Accommodation Strategy** (Doc Ref. 8.10) which makes use of existing local accommodation where possible, in addition to a proposed temporary single accommodation campus on the main development site and a proposed temporary caravan site at LEEIE in Leiston.

4.4.5 From a transport perspective, the benefit of the up to 2,400-bed accommodation campus on the main development site is that it would greatly reduce the number of journeys to work on the highway network as well as the time associated with travelling to/from the construction site. At peak construction it would result in nearly 30% of the workforce living and working in close proximity, rather than needing to travel to and from the main development site.

4.4.6 There is also proposed to be a 400-pitch caravan site at LEEIE in Leiston, which would provide temporary accommodation for 600 construction workers. From a transport perspective, this will act to minimise the impact on the local highway network as workers living at the caravan site will be bused the short distance to the main development site.

c) Park and ride facilities

4.4.7 It is proposed to provide two park and ride facilities to support the construction phase of the Sizewell C Project. The northern park and ride facility is to be located at Darsham and the southern park and ride facility is to be located at Wickham Market.

4.4.8 The locations were chosen with the aim of intercepting construction workforce traffic at strategic locations to reduce traffic through the towns and villages closer to the main development site.

4.4.9 A gravity model has been used to estimate the residential distribution of the peak construction workforce, as well as the assumed car share ratio and shift pattern and has informed the proposed sizing of the park and ride facilities. There are 1,250 proposed car parking spaces (of which up to 40 would be accessible spaces) and up to 12 pick up only spaces at both the northern and southern park and ride facilities.

d) Direct bus services

4.4.10 As set out in the **CWTP** (Doc Ref. 8.8), SZC Co. proposes to provide a range of direct bus services to the main development site from key locations where there are concentrations of workers.

4.4.11 All direct bus services will operate to timetables designed to meet the requirements of the shift patterns and the workforce, with additional services to meet demand at peak periods and, on some routes, regular but lower frequency services at off-peak periods.

4.4.12 The bus timetables and routes will be subject to ongoing refinement during the construction phase to adapt to the number and distribution of the workforce.

4.4.13 All direct bus services will be provided exclusively for the movement of the construction workforce, SZC Co. personnel, and business visitors to the main development site and will be free of charge. This will ensure that the services efficiently move workers to and from the main development site.

4.4.14 For the purposes of the assessment set out in this **Transport Assessment** (Doc Ref. 8.5), the gravity model has been used to derive direct bus services based on where construction workers are forecast to live at peak construction. The assessment of the peak construction year includes the following direct bus services:

- direct bus services from central Ipswich and Lowestoft during the peak years of construction. These services would be an alternative to the use of park and ride for workers living along the direct bus routes;
- a direct bus service providing a service between Saxmundham railway station and the main development site to pick up any construction workers travelling to work by rail or living in Saxmundham; and
- a direct bus service between Leiston and the main development site.

e) Management of car parking

4.4.15 As set out in the **CWTP** (Doc Ref. 8.8), it is proposed to provide a car park with approximately 1,000 spaces at the main development site with a permit system in place to manage parking. At peak construction, only 12% of the construction workforce would be able to park at the main development site, which will act to reduce the impact of construction workforce trips on the local highway network.

4.4.16 An actively managed parking permit system for the construction workforce is proposed. This would limit and control the allocation of permits for the car park on the main development site during construction.

4.4.17 It is proposed that only workers living inside the area bounded by the A12, River Blyth and River Deben (except those living in Leiston or those using the direct bus from Saxmundham) would be issued a parking permit. Workers without a parking permit (including those living in Leiston or those using the direct bus from Saxmundham) would need to use one of the park and ride sites, a rail pick-up, a direct bus services or walk or cycle to the main development site.

f) Walk and cycle improvements

4.4.18 Bridleway 19 currently runs through what would be the main construction area for Sizewell C. During the construction phase, it is proposed to divert the bridleway onto a single 3m-wide route, surfaced to bridleway standards and with waiting boxes at crossing points. The proposals include a footpath linking the caravan site at the LEEIE to the main construction site. Other walk and cycle improvements are proposed and are detailed in **Chapter 12** of this **Transport Assessment** (Doc Ref 8.5).

4.4.19 The **Transport Assessment** (Doc Ref 8.5) provides a robust assessment and assumes that no construction workers will walk or cycle to the main development site or park and ride facilities, except for those workers that live in the accommodation campus walking to the main development site. However, as part of the **CWTP** (Doc Ref. 8.8) a package of travel plan measures will be implemented to further encourage walking and cycling.

g) Construction worker travel plan

4.4.20 The **CWTP** (Doc Ref. 8.8) would manage workforce travel throughout the entire construction phase and would be reviewed on a regular basis by the transport review group.

4.5 Strategy for freight and materials at peak construction

a) Freight strategy principles

4.5.1 Construction of Sizewell C would require large volumes of freight to be transported to the main development site. The principles informing SZC Co.'s overall strategy for managing materials and freight movements is as follows:

- First, wherever practical and cost effective, SZC Co. has sought to reduce the volume of materials that requires movement off-site, either through the re-use of excavated material as fill, landscaping or via the deployment of the borrow pit to both source material on-site and deposit of other material.
- Secondly, where materials must be imported to, or exported from the site, to seek to move bulk materials and containerised goods by sea or by rail where this is practical or cost effective.
- Thirdly, where movement of materials by road remains necessary, to manage this in a way which reduces local impacts via the use of defined routes for HGVs and systems which can monitor and manage HGV movements to the main development site.

b) Measures to minimise the volume of freight by road

4.5.2 Based on the above principles, the freight management strategy seeks to minimise the volume of traffic associated with the construction of the Sizewell C Project as far as reasonably practical, through the delivery of the following infrastructure:

- Beach landing facility (BLF);
- green rail route and associated rail improvement works; and
- postal consolidation facility.

i. Beach landing facility

4.5.3 A BLF is proposed to be constructed at the main development site to allow for the delivery of AILs throughout the construction phase and during the operational phase, to remove heavy and oversized loads from the road network.

ii. Green rail route

4.5.4 The green rail route would involve the construction of a temporary rail extension which would branch off the upgraded Saxmundham to Leiston branch line into the main development site. The purpose of the green rail route would be to facilitate the delivery of up to three trains per day (six movements) to the main development site during peak construction, which would allow for almost 40% of construction materials (by weight) to be delivered to site by rail.

iii. Postal consolidation facility

4.5.5 In order to reduce vehicle movements to and from the Sizewell C main development site, a postal consolidation building is proposed at the southern park and ride facility to handle and process all mail and courier deliveries for the Sizewell C main development site. All mail and courier packages would be checked, sorted and consolidated before being delivered to the main development site. Outgoing mail would be collected from the Sizewell C main development site for postal or courier services to collect from the postal consolidation building.

c) Management of residual freight by road

4.5.6 The above package of measures would result in the following residual number of HGV movements to and from the main development site at peak construction:

- 650 two-way HGV movements on a typical day (i.e. 325 HGVs in each direction); and
- 1,000 two-way HGV movements on the busiest day (i.e. 500 HGVs in each direction).

4.5.7 The residual HGV movements are proposed to be managed on the local highway network through the implementation of following measures:

- delivery management system;
- freight management facility; and
- construction traffic management plan.

i. Delivery management system

4.5.8 As set out in the **CTMP**, the DMS will be in place from commencement of the development in order to manage HGV movements to the main development site.

ii. Freight management facility

4.5.9 It is proposed to provide a freight management facility at Seven Hills, to be accessed from Felixstowe Road. The freight management facility will allow a controlled pattern of deliveries to the main development site with reduced movements during peak or sensitive hours on the network. The facility would provide ancillary buildings and structures where paperwork and goods could be checked prior to delivery to the main development site. The facility would also provide a location where, in the event of an incident on the highway network, HGVs could be held.

iii. Construction traffic management plan

4.5.10 The **CTMP** (Doc Ref. 8.7) will be in place from commencement of the development in order to manage freight movements during the construction phase.

iv. Traffic incident management plan

4.5.11 The **TIMP** (Doc Ref. 8.6) will be in place from commencement of the development in order to manage freight movements in the event of an incident on the highway network during the construction phase

v. Highway improvement works

4.5.12 The transport strategy aims to minimise the impact of traffic associated with the construction of Sizewell C on the road network through a package of sustainable transport measures set out in this chapter. Notwithstanding this, the residual construction traffic on the network in some cases justifies specific highway mitigation to relieve potential problems at particular locations. The works proposed at points on the highway network are where they are considered necessary for highway safety and/or highway capacity reasons.

4.5.13 The package of highway improvement works include:

- two village bypass to mitigate the impacts of traffic travelling to and from the main development site on the A12, particularly on the bend through Farnham;
- Sizewell link road to relieve the B1122 from the anticipated construction traffic associated with the main development site;
- a roundabout at the junction of A12/B1122 to increase the highway capacity of the junction, reduce accident risk and accommodate AILs to/from the A12 north of the B1122; and
- highway safety improvements at:
  - A12 / A144 south of Bramfield;
  - A12 / B1119 at Saxmundham; and
  - A1094 / B1069 south of Knodishall.

4.5.14 In addition, SZC Co. will implement or provide a contribution to fund road safety improvements on the B1078 corridor at the A140/B1078 junction west of Coddenham and on the B1078 in the vicinity of Easton & Otley College to mitigate potential highway safety issues (see draft **Section 106 Heads of Terms**, provided as **Appendix J** to the **Planning Statement** (Doc Ref. 8.4)).

4.5.15 The **Implementation Plan**, presented in **Appendix I** of the **Planning Statement** (Doc Ref. 8.4), provides the indicative phasing schedule for the Sizewell C Project and the anticipated phasing and duration of the construction of the proposed highway works. SZC Co. will use reasonable endeavours to carry out and complete the associated development sites and transport mitigation works in accordance with the Implementation Plan (see the draft **Section 106 Heads of Terms** presented in **Appendix J** of the **Planning Statement** (Doc Ref. 8.4)).

4.6 Operational phase transport strategy

4.6.1 Once Sizewell C is operational, the park and ride facilities, freight management facility, accommodation campus, LEEIE, and the green rail route would all be removed and reinstated.

4.6.2 In the operational phase, there would be no significant remaining requirement for large scale freight movement. The green rail route would be removed and returned to its original land use. However, the BLF would be retained to enable some AIL deliveries by sea during the operational phase. Other freight deliveries would be brought to Sizewell C by road, making use of the two villages bypass, the Sizewell link road, A12/B1122 roundabout and other highway improvements which would remain in place permanently.

4.6.3 The main access to the operational Sizewell C would be via a new access road starting from the B1122 at the main site access roundabout used during the construction phase. The route would incorporate facilities that would enable operational staff to walk or cycle to work. A secondary, independent access via the Sizewell B site would be provided for security reasons.

4.6.4 The permanent car park at the Sizewell C would provide 735 spaces for the approximately 900 operational staff. On the basis that 810 of the 900 staff are predicted to be at work at any one time, the parking ratio would be one parking space per 1.1 operational staff. The parking provision allows for some workers to walk or cycle to the site and car sharing at a level consistent with the National Travel Survey data for journeys to work. It reflects the limited potential for bus services to Sizewell C.

4.6.5 An operational travel plan would be prepared and agreed with Suffolk County Council prior to the operational phase, which would encourage operational staff to walk, cycle or car share whenever possible. The preparation and implementation of the operational travel plan will be secured by an obligation in the Section 106 Agreement (see draft **Section 106 Heads of Terms**, provided as **Appendix J** to the **Planning Statement** (Doc Ref. 8.4)).

4.6.6 A further 600 car parking spaces are planned for use during an outage (which would take place approximately every 18 months per unit for up to two months), which is expected to require approximately 1,000 staff in addition to the operational staff. This car park would not be available for use by operational staff from Sizewell B and Sizewell C. An additional 35 spaces would be provided for training centre visitors.

5. Main Development Site and Associated Development Proposals

5.1 Introduction

5.1.1 This chapter sets out the proposals for constructing and operating Sizewell C power station. The proposed development will comprise:

- the main development site; and
- off-site associated development for the construction or operation of Sizewell C or to help address its impacts.

5.2 Main development site

5.2.1 The main development site would comprise the following five on-site components. Each component would be used for the following development:

- Main platform**:** the area that would become the power station itself.
- Sizewell B relocated facilities and National Grid land**:** the area that certain Sizewell B facilities would be moved to in order to release other land for the proposed development, and land required for the National Grid infrastructure.
- Offshore works area**:** the area where offshore cooling water infrastructure and other marine works would be located.
- Temporary construction area**:** the area located primarily to the north and west of the proposed site of special scientific interest (SSSI) crossing, which would be used to support construction activity on the main platform.
- Land to the East of Eastlands Industrial Estate (LEEIE)**:** the area including Sizewell Halt and the land directly north of King George's Avenue, which would be used to support construction on the main platform and temporary construction area.

a) Temporary construction area

5.2.2 This section sets out the transport proposals which are part of the temporary construction area within the main development site.

5.2.3 The remit of the **Transport Assessment** (Doc Ref. 8.5) extends as far as the secure boundary of the temporary construction area, namely the checkpoints for workers and heavy goods vehicles (HGVs), and does not deal with internal movements within the construction site itself.

5.2.4 The temporary construction area comprises the following:

- Common user facilities, including: approximately six concrete batching plants; access and storage areas; logistical facilities, including waste handling areas; water treatment plants and water pumping stations; fabrication areas; and pre-cast concrete production areas.
- Railway infrastructure, including: railway tracks; a terminal facility for offloading goods; railway sidings; and a passing loop for locomotives and associated works.
- Material management areas, including borrow pits and stockpiles.
- Accommodation campus, including: 3-storey and 4-storey residential buildings providing up to 2,400 bed spaces; non-residential welfare and recreation buildings; approximately 1,360 campus car parking spaces (of which 60 would be accessible spaces and 5% would have electric vehicle charging points and 5% would have passive electric vehicle provision); 120 motorbike spaces, 120 pedal cycle spaces and a drop-off and pick-up area; and, associated plant and infrastructure.
- Approximately 1,000 car parking spaces, of which 5% are proposed to have electric vehicle charging points and 5% with passive electric vehicle provision, and approximately 75 heavy goods vehicles (HGV) parking spaces.
- Water resource storage area for the storage of non-potable water.

5.2.5 The green rail route will also run directly into the temporary construction area, entering the site at the approximate location of the existing B1122 / Lover's Lane junction.

5.2.6 As part of the realignment of Eastbridge Road, a new shared footway and cycleway will be created alongside it to provide an off-road connection to Eastbridge. There will be a pegasus crossing on the northern B1122 arm of the main development site roundabout and another one on the Eastbridge Road arm a short distance north of the roundabout, to enable pedestrians, cyclists and equestrians to safely travel between the two sections of the diverted Bridleway 19.

b) Main development site access

5.2.7 The main development site access will be via a new five-arm roundabout to be located just north of the existing junction of Eastbridge Road and the B1122.

5.2.8 During the construction of Sizewell C, all construction workers will enter the temporary construction area via the roundabout. Direct buses will run from surrounding towns, together with park and ride buses from the northern and southern park and rides. The on-site car park will have approximately 1,000 spaces.

5.2.9 The majority of HGVs transporting construction materials will access the temporary construction area via the main development site access roundabout, using a separate arm to all other traffic, in order to provide direct access to an entrance plaza where inbound HGVs can be checked in to the temporary construction area. This plaza will comprise a number of parallel bays where HGVs can wait to be checked without blocking the public highway.

5.2.10 All other traffic accessing the temporary construction area via the roundabout will use the other arm which will lead to the on-site car and cycle parking for staff and visitors as well as bus stops. The vehicular access to the accommodation campus will also be via this arm of the roundabout. A footway will run alongside this arm to provide access to the temporary construction area for pedestrians.

5.2.11 The roundabout design includes an overrun strip in the centre. This is a section of hard standing material in the centre of the roundabout. Normally this will be blocked off by bollards, except for when abnormal indivisible loads (AILs) require access to the temporary construction area or to Sizewell B. On these occasions the bollards will be removed to allow AILs to drive across the centre of the roundabout and into the HGV entrance or through the roundabout to continue to Sizewell B.

5.2.12 A secondary vehicular access to the temporary construction area will be by means of a new priority junction on the northern side of Lover's Lane, a short distance west of the Kenton Hills car park. The vehicles using this entrance will be predominantly HGVs transferring materials from LEEIE.

5.2.13 Once Sizewell C is operational, the main development site roundabout will remain in place with four arms rather than five, since only one access to the power station will be required. Workers, visitors and deliveries will travel along an access road which will run from the roundabout to a car park close to the main power station platform. The car park will include up to 1,370 car parking spaces, of which 735 are permanent operational spaces, 600 outage spaces and 35 training spaces. SZC Co. will endeavour to comply with the parking standards for the operation/outage car park to provide 20% active electric vehicle charging points and 20% passive electric vehicle provision.

c) Land east of Eastlands Industrial Estate (LEEIE)

5.2.14 This section describes the transport infrastructure and operations proposed at LEEIE.

5.2.15 LEEIE comprises Sizewell Halt as well as a plot of land bounded by Valley Road to the north, Lover's Lane to the east, King George's Avenue to the south and the Saxmundham to Leiston branch line to the west.

5.2.16 The portion of LEEIE north of King George's Avenue will comprise several elements including:

- temporary material management areas, including stockpiles and a material transfer laydown area;
- provision of a temporary 400-pitch caravan park with associated facilities for 600 staff, welfare and amenity buildings and a new vehicle access onto Valley Road;
- construction of a temporary freight management facility comprising up to 80 HGV parking spaces and associated infrastructure, including a new vehicle access onto Lover's Lane;
- construction of a temporary park and ride facility comprising 600 car parking spaces, of which 5% are proposed to have electric vehicle charging points and 5% with passive electric vehicle provision, and an associated bus parking and terminal area, which will remain in use until the northern and southern park and ride facilities become operational;
- provision of a new vehicle access onto King George's Avenue; and
- construction of a temporary single railway track with railway sidings and a passing loop for the locomotive.

i. LEEIE site access

5.2.17 There will be vehicular accesses to LEEIE on Valley Road, Lover's Lane and King George's Avenue. In addition, a rail siding will be located within LEEIE alongside the existing Sizewell to Leiston branch line. Vehicular access to Sizewell Halt will be via the existing access.

5.2.18 During the construction of the power station, the vehicular accesses to LEEIE will be used by park and ride buses, cars using the park and ride facility and HGVs transferring construction materials between LEEIE and the temporary construction area. Workers accommodated in the caravans will also use the accesses to drive to and from the pitches for non-work trips but will be bussed to work.

5.2.19 During the early years of construction, trains will travel along the Saxmundham to Leiston branch line and unload construction materials into the transfer laydown area within LEEIE prior to HGV transfer to the temporary construction area.

5.2.20 HGVs will travel along Lover's Lane to access the secondary entrance to the temporary construction area, and not via Leiston town centre. Park and ride buses will travel along Lover's Lane and the B1122 to the main site access roundabout. Prior to the main site access roundabout being operational, park and ride buses from the LEEIE will route via the Sizewell B site access and the secondary site access.

5.2.21 Upon completion of the construction of Sizewell C, LEEIE will be restored to its original condition and consequently there will be no transport operations at this site once the power station is operating.

5.3 Off-site associated development

5.3.1 This section describes the infrastructure and operation of off-site associated development proposals:

- two temporary park and ride facilities; one to the north-west of Sizewell C at Darsham (the 'northern park and ride'), and one to the south-west at Wickham Market (the 'southern park and ride') to reduce the amount of traffic generated by the construction workforce on local roads and through local villages;
- permanent road improvements on the A12 to bypass Stratford St Andrew and Farnham (referred to as 'two village bypass') to accommodate Sizewell C generated traffic volumes;
- a permanent road linking the A12 to the Sizewell C main development site (referred to as 'Sizewell link road') to alleviate traffic from the B1122 through Theberton and Middleton Moor;
- permanent highway improvements at Yoxford (a new roundabout) and other road junctions to mitigate the effects of Sizewell C construction traffic;
- a temporary freight management facility at Seven Hills on land to the south-east of the A12/A14 junction to manage the flow of freight to the main development site; and
- a temporary extension of the existing Saxmundham to Leiston branch line into the main development site ('the green rail route') and other permanent rail improvements on the Saxmundham to Leiston branch line, to transport freight by rail in order to remove large numbers of HGVs from the regional and local road network.

a) Northern park and ride

5.3.2 This section describes the proposed northern park and ride site which would comprise:

- car parking areas for up to 1,250 car parking spaces (of which up to 40 would be accessible spaces as well as 5% active electric vehicle provision and 5% passive electric vehicle provision) and up to 12 pick up only spaces;
- up to 10 spaces for minibuses/vans/buses;
- up to 80 motorcycle parking spaces;
- secure cycle parking for up to 20 bicycles;
- bus terminus area, including shelters;
- perimeter security fencing and lighting;
- an amenity and welfare building comprising toilets and staff room;
- a security building including an administration office;
- a security booth adjacent to an exit loop for errant vehicles;
- other ancillary development, including signage, road markings, CCTV and utilities; and
- external areas including roadways, footways, landscaping (including bunds), and drainage infrastructure.

5.3.3 The northern park and ride site will be located to the west of the village of Darsham. It lies to the west of the A12, to east of the East Suffolk line and to the north of Darsham railway station.

5.3.4 The proposed access road would be the western arm of a new roundabout on the A12 and would cross the existing Willow Marsh Lane to enter the northern end of the site. A new priority junction would connect the access road to the existing Willow Marsh Lane alignment. A security booth and exit loop would be at the northern end of the site before the bunding to check vehicles entering the site and allow errant vehicles to exit. There would be a gap in the grass spoil bunds to allow the access road to direct traffic to the parking facilities available.

5.3.5 Pedestrian access would be via the existing public footway connection between Darsham railway station. This would encourage construction workers to travel to Darsham by rail to then get the bus to the main development site. This would reduce the number of vehicles on the local roads.

5.3.6 Once the construction of Sizewell C is complete, the park and ride will be removed and the land reinstated to agricultural use.

b) Southern park and ride

5.3.7 The southern park and ride facility would comprise:

- car parking areas for up to 1,250 car parking spaces (of which up to 40 would be accessible spaces as well as 5% active electric vehicle provision and 5% passive electric vehicle provision) and up to 12 pick up only spaces;
- up to 10 spaces for minibuses/vans/buses;
- up to 80 motorcycle parking spaces;
- secure cycle parking for up to 20 bicycles;
- bus terminus area, including shelters;
- perimeter security fencing and lighting;
- an amenity and welfare building comprising toilets and staff room;
- a security building including an administration office;
- a security booth adjacent to an exit loop for errant vehicles;
- other ancillary development, including signage, road markings, CCTV and utilities; and
- external areas including roadways, footways, landscaping (including bunds), and drainage infrastructure.

5.3.8 In addition, there will be a postal consolidation facility located at the southern park and ride facility. All postal deliveries will be made to the southern park and ride facility, where they will be consolidated and transferred to the temporary construction area.

5.3.9 A traffic incident management area (TIMA) for HGVs will be located at the southern park and ride facility. This will only be used in the event of disruption further north along the A12, in which case HGVs travelling towards Sizewell C will be diverted to wait in the holding area until such time as the disruption has cleared. The layout of the TIMA has not been determined at this stage, but it is estimated that in the event of an incident there would be sufficient hardstanding area to accommodate circa 90 HGVs, discounting areas required for access, egress and circulation. Further information of the proposed operation of the TIMA is included in the **Traffic Incident Management Plan** (Doc Ref. 8.6).

5.3.10 The southern park and ride site is located north-east of Wickham Market, to the east of the B1078/B1116, and to the north of the A12 and an associated slip road.

5.3.11 Safe highway access has been a key factor in determining the layout of the site. The site access includes a deceleration lane for traffic turning left into the site. An internal access road would then turn in a north-easterly direction, crossing a public right of way (PRoW) before entering the site.

5.3.12 The layout provides a turning circle close to the site access to enable errant vehicles to safely turn and exit the site on the access road before they reach the site entrance gates and main part of the park and ride facility.

5.3.13 Once the construction of Sizewell C is complete, the park and ride would be removed and the land reinstated to agricultural use.

c) Freight management facility

5.3.14 A freight management facility is proposed to be located close to the A12/A14 Seven Hills junction.

5.3.15 The freight management facility would assist in allowing a controlled pattern of deliveries to the Sizewell C main development site.

5.3.16 HGVs travelling towards the Sizewell C main development site would first be required to stop at the freight management facility. The facility would provide buildings and external areas where paperwork and goods can be checked prior to delivery to the Sizewell C main development site, and be a location where HGVs are held while they wait to enter the main development site or in the event of an incident on the local road network which prevented access to the main development site.

5.3.17 The freight management facility would comprise:

- parking for approximately 154 HGVs including up to six covered HGV spaces for screen and search activities;
- up to 12 car parking spaces for staff and visitors including up to one accessible space and 5% to be equipped with electric vehicle charging points and 5% passive electric vehicle provision;
- up to 10 spaces for minibuses/vans;
- up to 4 motorcycle parking spaces;

- covered cycle parking for up to 10 bicycles;
- security fencing and lighting;
- an amenity and welfare building comprising toilets and staff room;
- a security building including an administration office;
- a security booth adjacent to an exit loop for errant vehicles;
- a smoking shelter;
- site access, including a ghost island junction;
- other ancillary development, including signage, road markings, CCTV and utilities; and
- external areas including roadways, footways, landscaping (including bunds), and drainage infrastructure.

5.3.18 The freight management facility is located to the south-east of the A12/A14 Seven Hills junction. It would be accessed from Old Felixstowe Road, with inbound HGVs using the A1214 from the Seven Hills junction to reach Old Felixstowe Road. HGVs approaching from Felixstowe Docks to the east would use Old Felixstowe Road and would not travel via the Seven Hills junction. Vehicles would exit the freight management facility onto Old Felixstowe Road and then turn onto the A1214 to reach the Seven Hills junction.

5.3.19 Upon completion of the construction of Sizewell C, the freight management facility would be restored to agricultural use.

d) Green rail route and rail improvements

5.3.20 A temporary rail extension, referred to as the 'green rail route' is proposed which would provide a new rail route from the Saxmundham to Leiston branch line up to the main development site. In addition, infrastructure upgrades and changes to up to eight level crossings would be required to the Saxmundham to Leiston branch line to accommodate the additional freight trains once the green rail route is operational.

5.3.21 The green rail route would include a 4.5 kilometre (km) rail extension from the existing Saxmundham to Leiston branch line, running from west to east to the main development site.

5.3.22 The green rail route commencing from the existing Saxmundham to Leiston branch line, would run from west to east in three main parts as follows:

- Saxmundham Road to Buckleswood Road;
- Buckleswood Road to B1122 (Abbey Road); and
- B1122 (Abbey Road) to Sizewell C power station site.

5.3.23 The proposed green rail route also comprises:

- automated level crossing on Buckleswood Road;
- diversion of footpath E-363/003/0;
- automated level crossing where the rail extension crosses the B1122 (Abbey Road);
- diversion of Footpath E-363/006/0;
- diversion of Footpath E-363/010/0;
- permanent relocation of the B1122 (Abbey Road) and Lover's Lane junction;
- SuDS to include swales alongside the track with the potential for a larger infiltration pond at low points or adjacent to the cuttings, if required; and
- landscaping including the provision of landscape bunds, grassed areas and other areas of proposed planting.

5.3.24 The proposed track replacement on the Saxmundham to Leiston branch line comprises the renewal of the entire length of track using new ballast, flat bottom continuously welded rail on concrete sleepers. The proposed upgrades would ensure that the existing track would meet Network Rail standards for freight transport.

5.3.25 Upgrades would also be required on eight operational level crossings on the Saxmundham to Leiston branch line between the Saxmundham junction and Sizewell Halt. This is to enable safe use of the Saxmundham to Leiston branch line for freight deliveries as part of the construction of the Sizewell C main development site. These are located at Bratts Black House; Knodishall; West House; Snowdens; Saxmundham Road; Buckles Wood; Summerhill; and Leiston.

5.3.26 The green rail route will be used by freight trains delivering materials to the temporary construction area. Up to three trains per day (six movements per day) will use the green rail route. Each train will comprise up to 20 wagons hauled by a locomotive.

5.3.27 Each of the level crossings will be closed to vehicular traffic up to six times per day to allow trains to pass. Trains will enter the temporary construction area via a gate on the eastern side of the B1122.

5.3.28 Following the completion of the construction of the Sizewell C Project, the green rail route, including the track bed and level crossings, would be removed and the land reinstated to agricultural use and the temporary level crossings reinstated to highway.

e) Two village bypass

5.3.29 The two village bypass would comprise a new, permanent, 2.4 km single carriageway road, with a design speed of 50 miles per hour (mph), that would depart from the A12 to the south-west of Stratford St. Andrew before re-joining the A12 to the east of Farnham.

5.3.30 The two village bypass would effectively create a new route around the south of Stratford St. Andrew and Farnham, thus bypassing the two villages. The existing section of the A12 through the two villages would be retained and downgraded.

5.3.31 The two village bypass would include:

- a 2.4 km single carriageway road;
- provision of a four arm roundabout at the western end of the road, east of Parkgate Farm and Stratford Plantation to connect the road to the A12 and Tinker Brook;
- a single span overbridge for all traffic, 7.5 metres (m) in height above ground level to the road surface (+/- 1m) to allow a crossing over the River Alde;
- provision of flood compensation areas to the north side of the route of the proposed bypass on both sides of the River Alde, where required;
- provision of a staggered junction between Nuttery Belt and Pond Wood to maintain access on both sides of the route of the proposed two village bypass;
- A non-motorised user overbridge would be provided across the route of the proposed two village bypass approximately 150m east of Farnham Hall and two public rights of way (PRoW) diverted to maintain connectivity across the route; and
- provision of a four-arm roundabout at the eastern end of the road, to replace the existing junction of the A12, with the A1094 (Friday Street).

5.3.32 Where possible, PRoW would be retained on their existing alignments. However, several PRoW would require a diversion to ensure connectivity across the route of the bypass. These are described in **Volume 5, Chapter 2** of the **Environmental Statement** (**ES**) (Doc Ref. 6.6).

5.3.33 The two village bypass would take approximately two years to construct. As set out in the **Implementation Plan**, appended to the **Planning Statement** (Doc Ref. 8.4), the A1094 Friday Street would be constructed first, with the remainder of the road to follow. SZC Co. would be required to use reasonable endeavours to deliver the **Implementation Plan** via a Section 106 Agreement, see the draft **Section 106 Heads of Terms** provided in **Appendix J** of the **Planning Statement** (Doc Ref. 8.4). Construction of a new bypass would limit adverse traffic impact during construction as traffic flow along the existing A12 would be largely unaffected, except when work is taking place to tie-in the existing A12 with the roundabouts at both ends of the bypass.

5.3.34 The two village bypass would be used by general traffic as well as Sizewell C construction traffic.

5.3.35 A new bridge for vulnerable road users will connect sections of existing footpaths either side of the two village bypass, thereby avoiding the need for users of these footpaths to cross the new road at grade. It is proposed to convert footpaths E-243/003/0 and E-243/011/0 to bridleways to enable vulnerable road users to use the proposed bridge. There would be no physical works associated with the conversion of the footpaths to bridleways.

5.3.36 The bypassed section of the A12 would be declassified to a local road. Local traffic for Farnham and Stratford St Andrew would use the new roundabouts at either end of the two village bypass to access the former A12.

5.3.37 SZC Co.'s intention is that the two village bypass would be adopted as public highway by Suffolk County Council (SCC) to form the new A12 as a legacy of Sizewell C construction.

f) Sizewell link road

5.3.38 The Sizewell link road would comprise a new, permanent, 6.8km single carriageway road, with a design speed of 60mph, which begins at the A12 south of Yoxford, bypasses Middleton Moor and Theberton before joining the B1122.

5.3.39 Once Sizewell C is operational, the road would be open to generate traffic and would be used by SZC Co. during the construction phase of the Sizewell C main development site to transport construction workers travelling by car, buses from the northern park and ride facility (who would only use the Sizewell link road east of the Middleton Moor link) and southern park and ride facility, and goods vehicles (both light and heavy) delivering freight to the Sizewell C main development site.

5.3.40 Where possible, PRoW would be retained on their existing alignments. However, several PRoW would require a diversion to ensure connectivity across the route of the bypass, as described in **Volume 6, Chapter 2** of the **ES** (Doc Ref. 6.7).

5.3.41 The Sizewell link road would include:

- a 6.8km single carriageway road;
- a new three arm roundabout on the A12, located approximately 180m north of The Red House Farm;
- a single span bridge, approximately 50m in length, to enable the proposed road to cross over the East Suffolk line;
- a ghost island junction and a new link road (referred to as the 'Middleton Moor link'), from the proposed route of the Sizewell link road to the B1122;
- Fordley Road would be realigned on the south side of the proposed route of the Sizewell link road so northbound traffic could join the new road;
- provision of a staggered ghost island crossroads junction to give access to Trust Farm located to the south and to the existing B1122 to the north;
- provision of an access road from the south side of the route of the proposed Sizewell link road to Hawthorn Cottages, and realignment of Hawthorn Road for approximately 150m to meet the proposed route of the Sizewell link road. Hawthorn Road would be stopped up on the north side of the proposed route of the Sizewell link road;
- two crossings of an unnamed watercourse, which would be culverted beneath the route of the proposed Sizewell link road;
- a new ghost island junction would be formed with an extension of the B1125 and reconfiguration of the existing B1122 to form suitable new junction;
- a new ghost island junction on the west side of the Sizewell link road at Pretty Road;
- a new single span overbridge would carry non-motorised users only (pedestrians, cyclists, equestrians) over Pretty Road;

- a new ghost island junction to Moat Road would be provided to maintain access to the existing properties including Theberton Grange and Moat House; and
- a new ghost island junction to provide access to Theberton to the north, where approximately 500m of the B1122 would be realigned, with the route of the Sizewell link road joining the southern section of the B1122.

5.3.42 SZC Co. anticipates that the existing B1122 would be downgraded by SCC to an unclassified road once the Sizewell link road is operational. It would connect to the Sizewell link road via a new priority junction west of Middleton Moor. As the majority of traffic would reassign to use the Sizewell link road, the existing B1122 would experience much lower traffic volumes and could become more popular among cyclists.

g) Yoxford roundabout

5.3.43 Analysis in **Chapter 8** and **Chapter 9** of this **Transport Assessment** (Doc Ref. 8.5) has identified that improvements to the A12/B1122 priority junction would be required to increase capacity to accommodate increasing volumes of traffic using this junction.

5.3.44 The B1122 meets the A12 at the northern end of Yoxford village at a ghost island junction. The junction is located on the outside of a bend on the A12. A short section of the side road provides access to a number of properties on the existing B1122 approach to the junction.

5.3.45 The roundabout would be located approximately 100m north of the existing junction with an inscribed circle diameter of 60m. It would include a realignment of the A12 so that the roundabout could be built offline, minimising traffic disruption during construction.

5.3.46 The A12 approach roads leading into the roundabout would be 7.3m in width with the B1122 approach road 6m wide. All three of the approaches would flare to create additional width at the proposed roundabout give-way lines.

5.4 Road safety improvements

5.4.1 The proposed off-site road safety improvement works comprise the following:

- A1094/B1069 junction south of Knodishall – improvements of visibility splays and provision of signage and road markings. SZC Co. would also seek to reduce the speed limit from 60mph to 40mph.
- A12/A144 junction south of Bramfield – provision of a central reservation island and waiting area.

- A12/B1119 junction at Saxmundham – improvements of visibility splays and provision of signage and road markings.

5.4.2 In addition, SZC Co. will implement or provide a contribution to fund road safety improvements on the B1078 corridor at the A140/B1078 junction west of Coddenham and on the B1078 in the vicinity of Easton & Otley College to mitigate potential highway safety issues. Further details of the road safety improvements are provided in **Chapter 10** of this **Transport Assessment** (Doc Ref. 8.5).

6. Modelling Approach

6.1 Introduction

6.1.1 This chapter of the **Transport Assessment** (Doc Ref. 8.5) provides an overview of the approach that has been taken to traffic modelling in terms of the type of models used and an overview of the modelling process in terms of model inputs and outputs.

6.2 Form of modelling

6.2.1 To assess the impacts of Sizewell C traffic on the surrounding highway network, two forms of traffic modelling have been undertaken:

- strategic highway assignment modelling; and
- standalone modelling:
  - junction modelling; and
  - micro-simulation modelling.

6.2.2 These models are summarised in the following sections.

a) Strategic modelling overview

6.2.3 The strategic highway assignment modelling provides an assessment platform covering the highway network extent shown in **Plate 6.1**, which has been agreed with Suffolk County Council (SCC) and extends to Lowestoft to the north, Ipswich to the south and the A140 to the west, including the A12, A14 and key routes envisaged to be used by Sizewell C traffic.

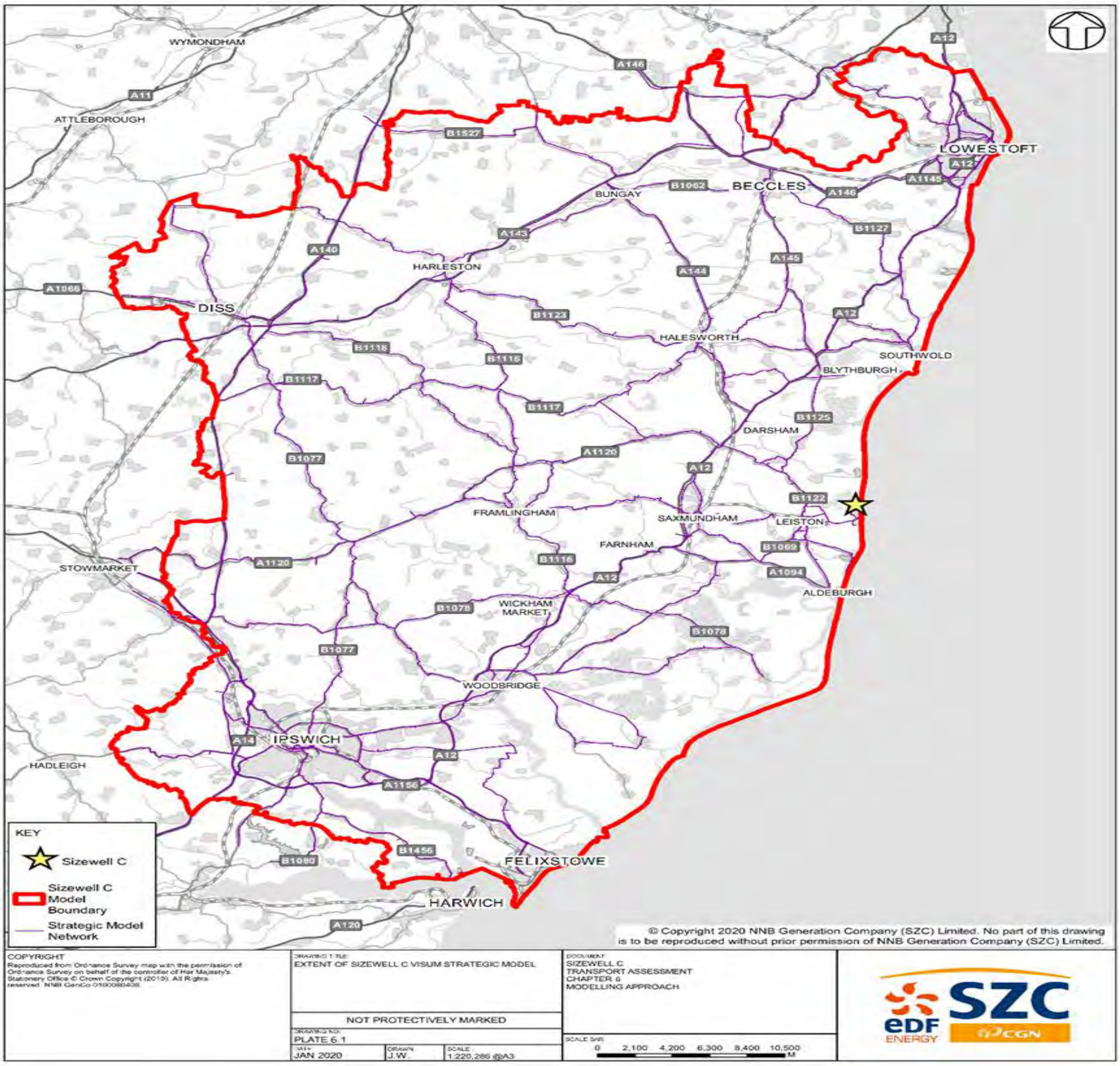
6.2.4 The software platform used for the strategic model is PTV-VISUM version 15.00-07. VISUM is an industry standard software package used for transport modelling. It is widely used in transport studies and is considered by SCC to provide a sound basis for modelling the effects of the Project. The model has been developed and refined over a number of years in consultation with SCC. The base year models have been calibrated and validated against observed traffic data collected across the study area in accordance with guidance set out in TAG Unit M3.1 Highway Assignment Modelling (Ref. 6.1).

6.2.5 Strategic modelling facilitates the assessment of traffic impacts generated by the proposed Sizewell C development across the modelled network, predicting traffic volumes and journey times in different scenarios. Strategic modelling enables the effects of congestion on vehicular route choice to be reflected in predicted traffic volumes, because vehicles that are assigned as origin-destination matrices have route choice (i.e. they can take any available route between their origin and destination). The routes that these vehicles take depend on the relative costs of alternative routes which are affected by a number of factors including distance, journey time, and levels of delay at junctions.

6.2.6 The strategic model represents highway assignment only, assigning a fixed traffic demand within a defined period. There is no allowance in the model for the vehicles to change the time of journey having regard to the level of congestion or inconvenience on the road network at that time. In reality people act to minimise their inconvenience and undertake one of a number of actions to avoid travelling on the roads at the busiest times of the day if possible (for example setting off earlier in the morning, changing their mode of travel, working from home, or even moving house).

6.2.7 The propensity for people to change their time of journey is more commonly referred to as ‘peak spreading.’ The VISUM model does not take account of peak spreading and assumes people will still travel during that hour regardless of how difficult their journey becomes. Another element that is not reflected in the highway assignment model is the propensity for people to change their mode of travel, for example switching to public transport, walking, or cycling, or even not travelling at all. This ‘mode shift’ behaviour is not accounted for in the traffic growth that is calculated for the highway assignment, which is described in detail in **Chapter 8** of this **Transport Assessment** (Doc Ref. 8.5).

Plate 6.1: Extent of Sizewell C VISUM strategic model



b) Standalone modelling overview

6.2.8 Junction modelling has been undertaken for a series of junctions across the study area, using the industry-standard software Junctions9 (ARCADY and PICADY) for roundabouts and priority junctions and LINSIG for signalised junctions.

6.2.9 The junction models enable detailed analysis of the operation of individual junctions. The junction modelling provides analysis of the impacts on capacity and queuing and has informed the development of mitigation measures where required.

6.2.10 Micro-simulation modelling using PTV-VISSIM version 9.12 has also been undertaken for the area around Yoxford, to reinforce the assessment where interaction between neighbouring junctions is likely to impact on results. Micro-simulation modelling provides more detailed simulation of the interactive operation of junctions, reflecting variation in traffic arrival profiles, demand turning proportions, lane usage, gap seeking and observed driver behaviour throughout the assignment hour, and can demonstrate the fluctuation in queues that can occur across a modelled period.

6.2.11 Further detail on the standalone modelling is provided is **Chapter 9** of this **Transport Assessment** (Doc Ref. 8.5).

c) Assessment years

6.2.12 Traffic modelling has been undertaken for the following forecast years, to enable analysis of the impacts of Sizewell C traffic on the highway network at three key phases of the Sizewell C Project as set out in **Chapter 4** of this **Transport Assessment** (Doc Ref. 8.5):

- 2023 – early years phase of Sizewell C construction;
- 2028 – peak construction phase; and
- 2034 – operational phase.

6.2.13 The early years of construction has been taken to be 2023 as this is when the peak workforce is envisaged prior to the associated development sites and highway mitigation being operational.

6.2.14 The peak construction year has been taken to be 2028, when the associated development sites and highway mitigation are expected to be operational. For robustness, it has been assumed that the maximum number of workers would coincide with the peak number of HGV movements during peak construction in 2028.

6.2.15 The operational year has been assessed to be 2034 as the removal and reinstatement of the temporary development is expected to be complete by this year and the Sizewell C power station would be operational.

6.2.16 The indicative phasing schedule for the construction of the Sizewell C Project is set out in the Implementation Plan, presented in **Appendix I** of the **Planning Statement** (Doc Ref. 8.4). However, in order to provide a robust assessment of the traffic impacts, all of the associated development sites and transport mitigation have been assumed to be being constructed concurrently during the early years phase of the Sizewell C Project.

6.3 Modelled time periods

6.3.1 The traffic modelling has been developed to represent seven weekday (Monday to Friday) hourly periods, to cover the existing network peaks (08:00–09:00 and 17:00–18:00 hours) as well as periods when there are expected to be higher volumes of Sizewell C development-related traffic. These are:

- 06:00–09:00 hours in the weekday morning period; and
- 15:00–19:00 hours in the weekday afternoon/evening period.

6.3.2 These hours were agreed with SCC and the analysis is presented in **Appendix 6A** of this chapter.

6.4 Summary of modelling approach

6.4.1 The process of traffic modelling and assessment is graphically presented in **Plate 6.2** for strategic modelling and **Plate 6.3** for standalone modelling.

Plate 6.2: Process of strategic traffic modelling assessment

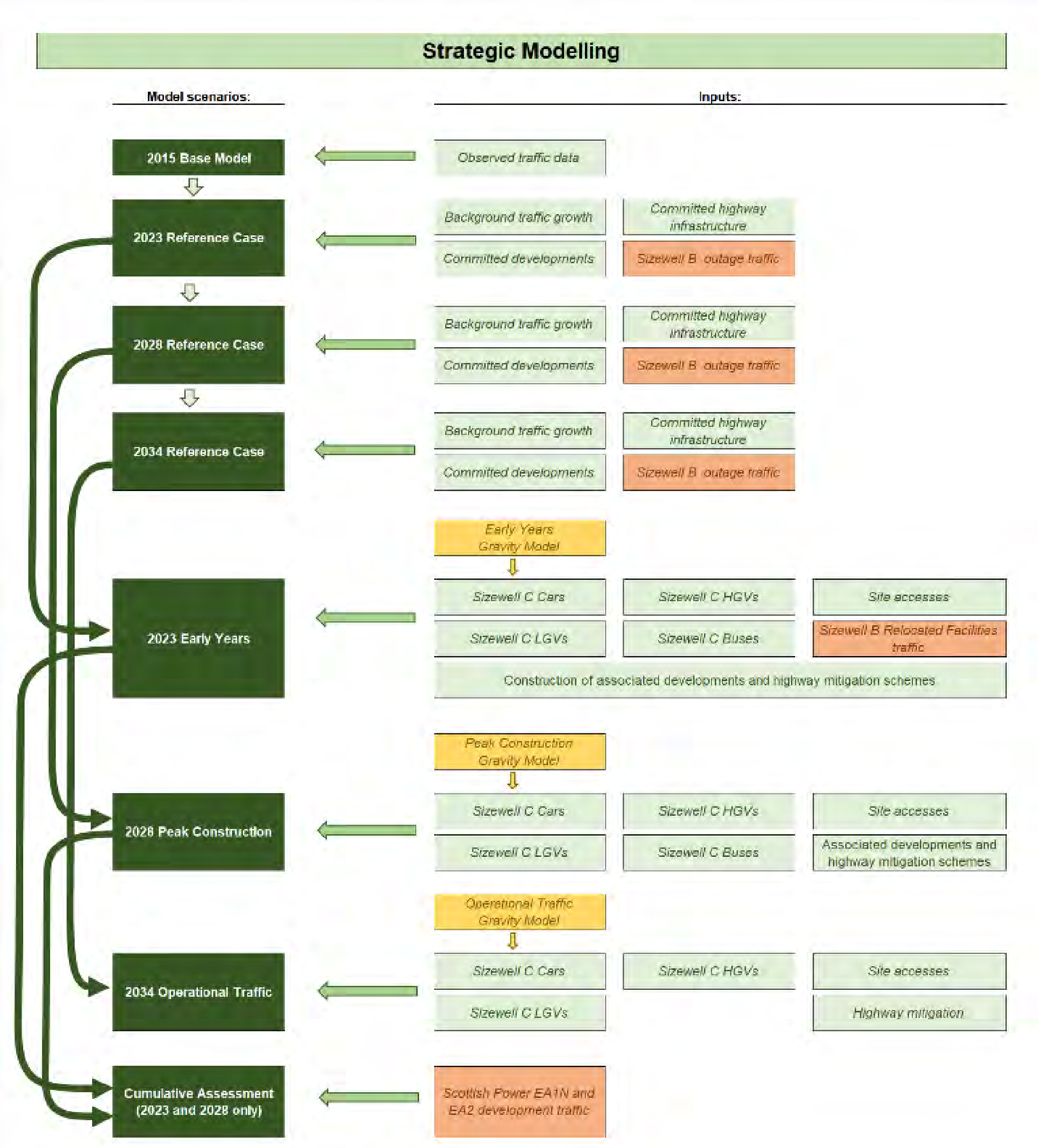
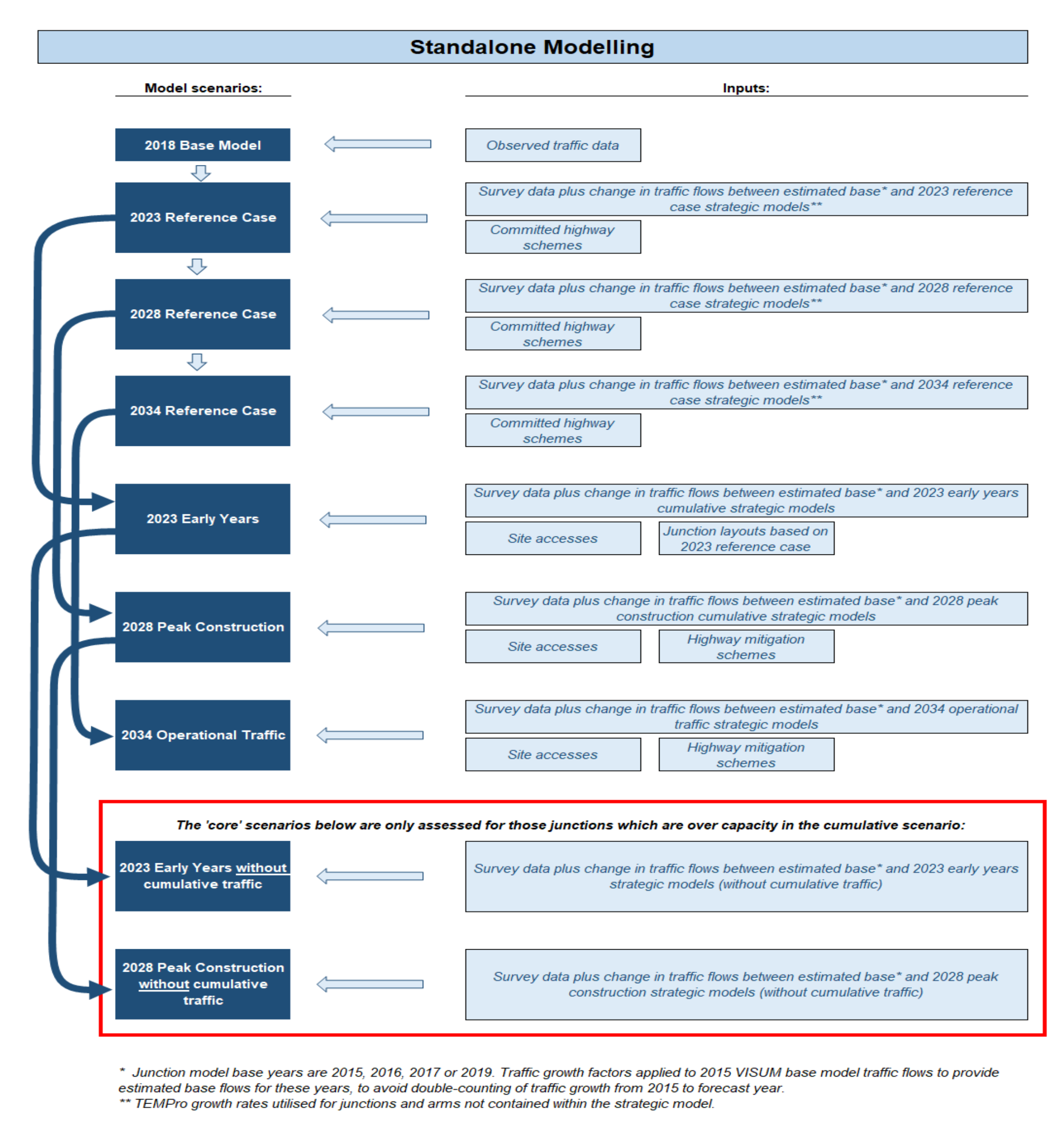


Plate 6.3: Process of standalone traffic modelling assessment



6.5 Traffic model flows

6.5.1 ‘Actual’ traffic flows denote the volume of traffic physically able to traverse a link (modelled stretch of road) during that assignment hour. For the strategic modelling assessment actual traffic flows are output, for each scenario, from the seven hourly models and are then converted to different combined traffic flow levels for the various analyses required, as follows:

- **Chapter 8** of this **Transport Assessment** (Doc Ref. 8.5): 24-hour annual average weekday traffic (AAWT), and peak hours;
- 'Transport' in **Chapter 10** of **Volume 2** of the **Environmental Statement (ES)** (Doc Ref. 6.3): 24-hour AAWT, 18-hour AAWT and hourly;
- 'Noise and Vibration' in **Chapter 11** of **Volume 2** of the **ES**: 18-hour AAWT, and hourly; and
- 'Air Quality' in **Chapter 12** of **Volume 2** of the **ES**: 24-hour annual average daily traffic.

7. Trip Generation, Distribution and Mode Share

7.1 Introduction

7.1.1 This chapter describes the derivation of Sizewell C traffic generation, distribution, and mode share that has informed the strategic traffic modelling and subsequent local junction modelling assessments.

7.1.2 The chapter summarises the early and peak construction phases as well as the operational phase. Since many of the calculations were initially undertaken on the peak construction inputs, the peak construction phase of 2028 is summarised first in this chapter. The traffic calculations for each assessment phase of the Sizewell C Project are therefore described in the following order:

- 2028 peak construction provided in **section 7.2** of this chapter;
- 2023 early years provided in **section 7.3** of this chapter; and
- 2034 operational traffic provided in **section 7.4** of this chapter.

7.1.3 With regards to outages, all future year scenarios have been modelled including traffic flows generated by an outage at Sizewell B, which is performed periodically (approximately every 18 months per unit and lasting up to two months), so that robust traffic flows are reflected in each scenario. A ‘planned’ outage is a period of scheduled maintenance during which time the station is not operational, but generates traffic associated with the outage. This is highly robust, given that a planned outage only occurs for 10% of the time.

7.1.4 A scenario of an outage at Sizewell B and C occurring concurrently during the operational phase has not been assessed as the outages would be planned to not coincide. Whilst there is a possibility for unplanned outages at Sizewell B or C to coincide with a planned outage at the other power station, this is highly unlikely to occur and, therefore, is not considered to be a typical or reasonable scenario to assess.

7.1.5 For each of these scenarios the trip generation approach is described separately for:

- workforce trips – Sizewell C construction and associated development workers travelling to and from work;
- non-work trips – Sizewell C construction and associated development workers undertaking travel outside of work hours for personal and social reasons;

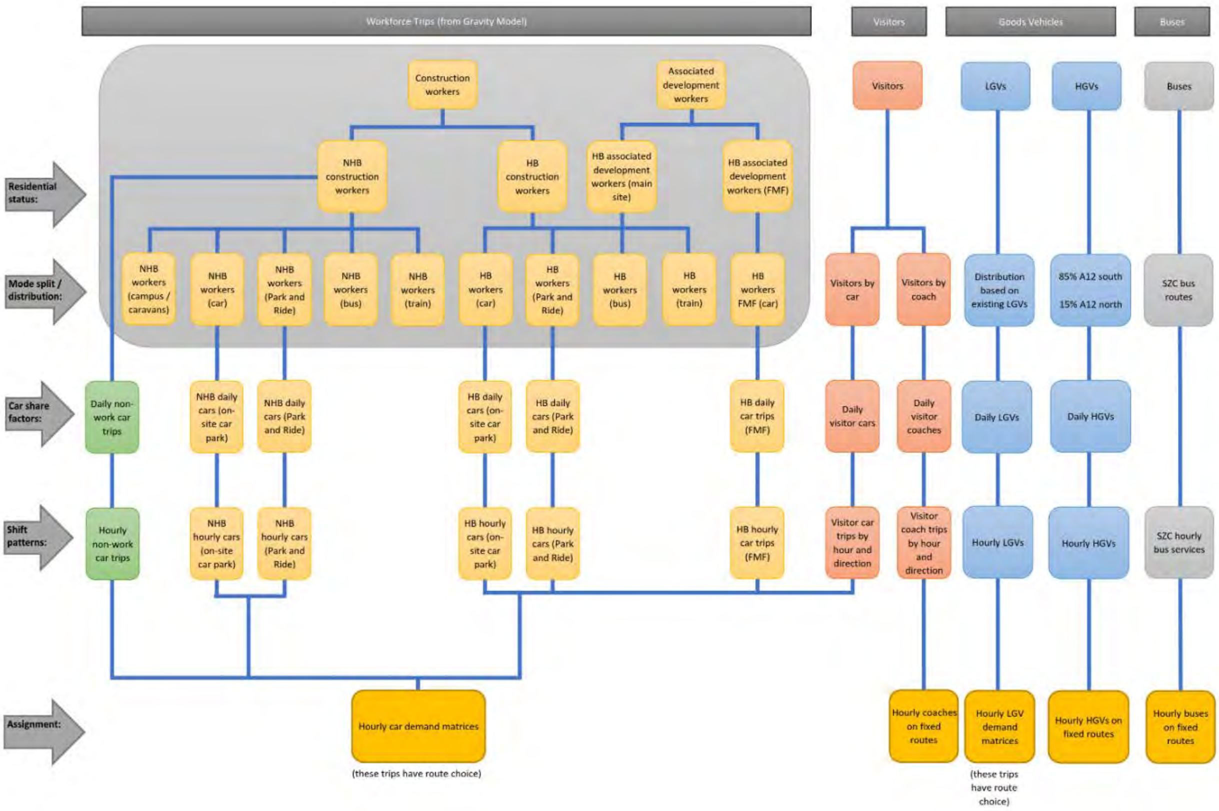
- visitor trips – visitor trips to the Sizewell C visitor centre and trips associated with people attending meetings on site;
- goods vehicles – all light good vehicle (LGV) and heavy good vehicle (HGV) deliveries (defined for this assessment to be 3.5 tonnes or above) associated with construction of the Sizewell C main development site and associated development sites; and
- bus services – description of proposed bus routes and frequencies to service the needs of Sizewell C construction.

7.2 Peak construction trip generation, distribution and mode share

a) Methodology for deriving trips

7.2.1 The process for developing the Sizewell C traffic inputs for 2028 peak construction is shown in **Plate 7.1**.

Plate 7.1: Sizewell C traffic inputs process – peak construction



b) Modelling assumptions

i. Overview

7.2.2 During peak construction, which is expected to be 2028, the workforce would be at its highest and this is combined with the maximum number of HGV deliveries for robustness in the modelling, though in reality the peaks in workforce and HGV deliveries may not coincide. By this stage all mitigation is assumed to be in place, as set out in the **Implementation Plan** provided as **Appendix I** of the **Planning Statement** (Doc Ref. 8.4) which provides the indicative phasing schedule for the Sizewell C Project.SZC Co. will use reasonable endeavours to carry out and complete the associated development sites and transport mitigation works in accordance with the Implementation Plan (see the draft **Section 106 Heads of Terms** presented in **Appendix J** of the **Planning Statement** (Doc Ref. 8.4)).

7.2.3 Furthermore, on some days during the peak construction year, the number of HGV deliveries would be higher than on a typical day, so two scenarios have been assessed for the peak construction phase, representing a 'typical day' and a 'busiest day' with the only difference being the number of Sizewell C HGVs.

7.2.4 The primary assumptions behind the 2028 peak construction VISUM models are summarised in **Table 7.1**.

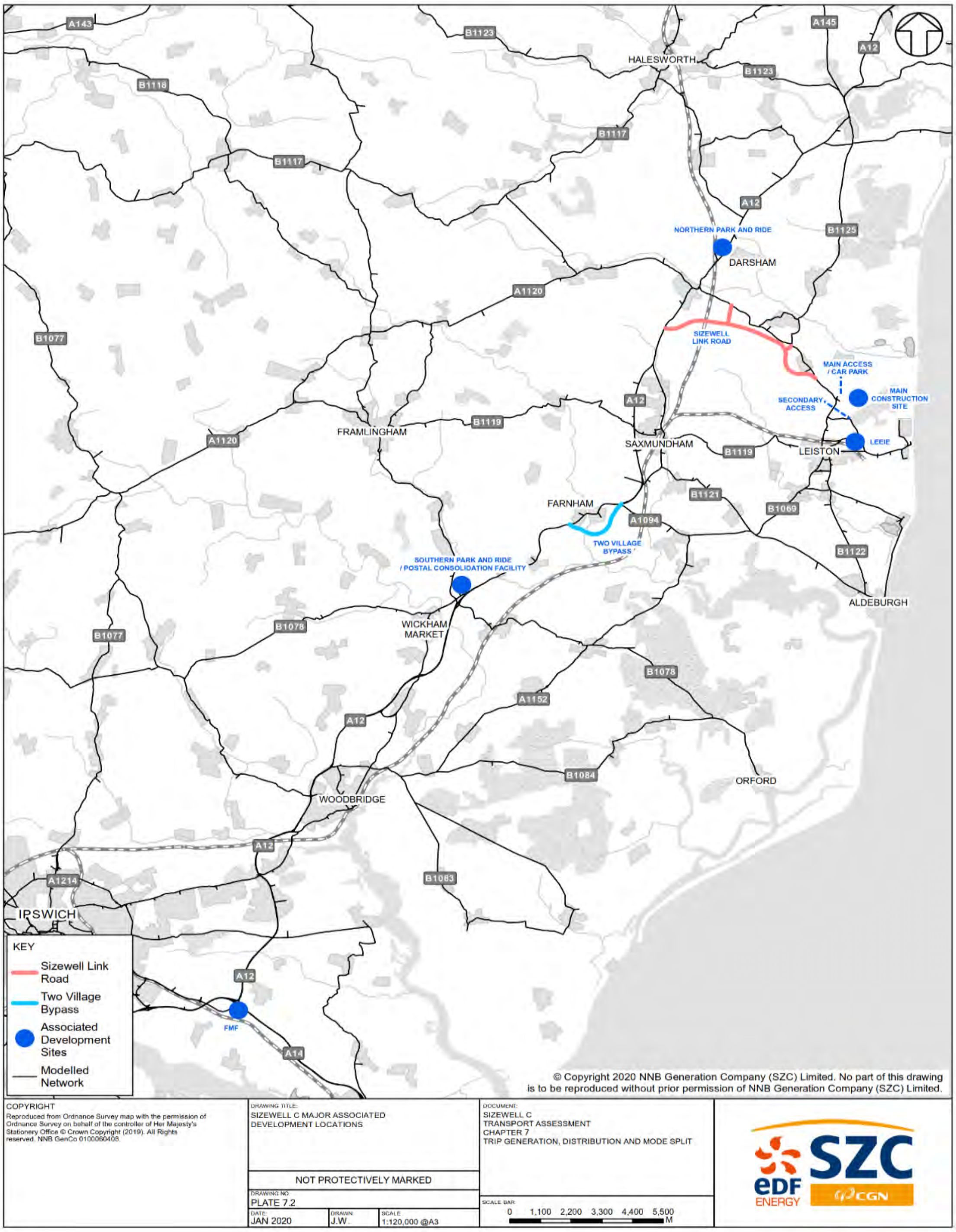
Table 7.1: Modelling assumptions for peak construction scenario

Element	Input Parameter
Peak construction workforce	7,900
Associated development operational workers	600
Residential location of workforce	Based on the Gravity Model, described in **Appendix 7A** of this chapter.
Working patterns of the construction workforce	See shift patterns in **Appendix 7B** of this chapter**, Tables 1, 2, and 3**.
Size of development site accommodation campus	Up to 2,400 spaces for workers on campus, plus 400 caravans on Land East of Eastlands Industrial Estate (LEEIE) (1.5 people per caravan so 600 workers).
Frequency of shuttle buses from LEEIE (caravan site) to main development site	12 buses from LEEIE to main development site at 07.30 and returning at 17:00.
Frequency of park and ride buses	3 to 9 buses from northern and southern park and ride sites per hour during staff changeover periods, hourly service outside staff changeover periods.
Frequency of direct buses from Leiston, Ipswich, Lowestoft and Saxmundham	Half hourly buses to and from Ipswich and Lowestoft during staff changeover periods; 4 to 8 buses per hour from Leiston; plus hourly shuttle

Element	Input Parameter
	bus from Saxmundham station during staff changeover periods.
Total number of direct and park and ride buses	644 movements per day.
Routing of direct and park and ride direct buses	A12, B1122 (from northern park and ride only) and Sizewell link road.
Number of workers assessed to be travelling by direct bus	200 from Ipswich and Lowestoft, plus all residents in Leiston and Knodishall (a further 950 construction and associated development workers).
Number of workers assessed to be travelling by rail	100 (to Darsham or Saxmundham).
Number of workers walking, cycling, or motorcycling to construction site or park and ride sites	No workers assumed to use these modes beyond campus workers to give a robust assessment but measures to encourage walking and cycling included in the **Construction Worker Travel Plan** (**CWTP**) (Doc Ref. 8.8).
Average level of car sharing	1.1 workers per car for home-based (HB) workers and 1.54 workers per car for non-home based (NHB) workers.
Non-work trips	Included for all NHB workers (campus or caravans and off-site).
LGVs	700 movements per day: • 525 at the main development site; • 175 at the postal consolidation facility at southern park and ride.
Typical day - Average number of HGVs per day at peak construction	650 movements (325 deliveries).
Busiest day - Maximum number of HGVs per day	1,000 movements (500 deliveries).

7.2.5 The Sizewell C associated development site locations are shown in **Plate 7.2**.

Plate 7.2: Sizewell C major associated development locations



ii. Workforce shift pattern assumptions

7.2.6 The modelled number of construction workers at peak construction (2028) is 7,900. For modelling purposes the construction personnel are assumed to work according to the following shifts:

- early shift (c. 52% of workforce);
- late shift (c. 26% of workforce);
- office shift (15% of workforce); and
- night shift (c. 7% of workforce).

7.2.7 The assumed shift patterns for the construction workers are shown in **Table 1** in **Appendix 7B** of this chapter. For each shift the arrival of workers at the start and end times are assumed to follow a trapezoidal spread, with the number of workers starting and finishing within each half-hour period spread as shown in **Table 2** in **Appendix 7B** of this chapter. Typical worker arrival at the start of the shift was spread over three half hour periods (one and a half hours), with workers ending their shift assumed to be spread over four half hour periods (two hours). Within each 30-minute period, the shift start and end times are assumed to be evenly spread throughout the 30-minute period.

7.2.8 In addition to the construction workers, there would be around 580 associated development workers on the main development site (and a further 20 at the freight management facility (FMF)). The shift pattern assumed for the associated development is based on:

- cleaners shifts;
- administration and management;
- catering;
- facilities and maintenance;
- security shifts;
- driver shifts; and
- miscellaneous day visitors.

7.2.9 SZC Co.'s assumed shift patterns for the associated development operational workers on the main development site are shown in **Table 3** in **Appendix 7B** of this chapter. The individual shift start and end times for associated development workers are assumed to be evenly spread throughout the hour periods shown.

7.2.10 There would be a further 20 workers at the FMF envisaged to operate in two shifts:

- 06:00-13:00 hours (15 workers); and
- 13:00-20:00 hours (5 workers).

c) Construction workforce

i. Trip generation

7.2.11 SZC Co. has undertaken socio-economic studies to develop assumptions about the nature of the construction workforce that would be required to build Sizewell C, provided in **Appendix 9A** of **Volume 2** of the **Environmental Statement** (**ES)** (Doc Ref. 6.3). The assumed workforce size at peak construction is:

- 7,900 construction workers; and
- 600 associated development workers (including 20 at the FMF).

7.2.12 Based on the workforce shift pattern assumptions described above, the assumed workforce is translated into a number of person trips arriving and departing their workplace. The number of workers allocated to each shift and the split of trip arrival and departure times within those shifts are shown in **Tables 1 and 2, Appendix 7B** of this chapter for the construction workers and **Table 3**, **Appendix 7B** of this chapter for the associated development operational workers at the main site.

ii. Trip distribution

7.2.13 Socio-economic studies undertaken by SZC Co. and reported in **Appendix 9A** of **Volume 2** of the **ES**, concluded that the construction workforce should be assumed to be composed of a mix of HB (living at home) and NHB workers (living temporarily either on campus or caravan site or in rented accommodation).

7.2.14 An on-site accommodation campus is intended to provide accommodation for up to 2,400 construction workers. A further 600 construction workers would live in 400 caravans (an average occupancy of 1.5 workers per caravan) located on LEEIE.

7.2.15 Based on the socio-economic studies and accommodation proposals the modelled construction workers are assumed to be made up of:

- HB (2,016 workers or 25.5% of workforce); and
- NHB (5,884 workers or 74.5% of workforce) comprising:
  - 2,400 workers on campus
  - 600 workers in caravans
  - 2,884 workers living off site.

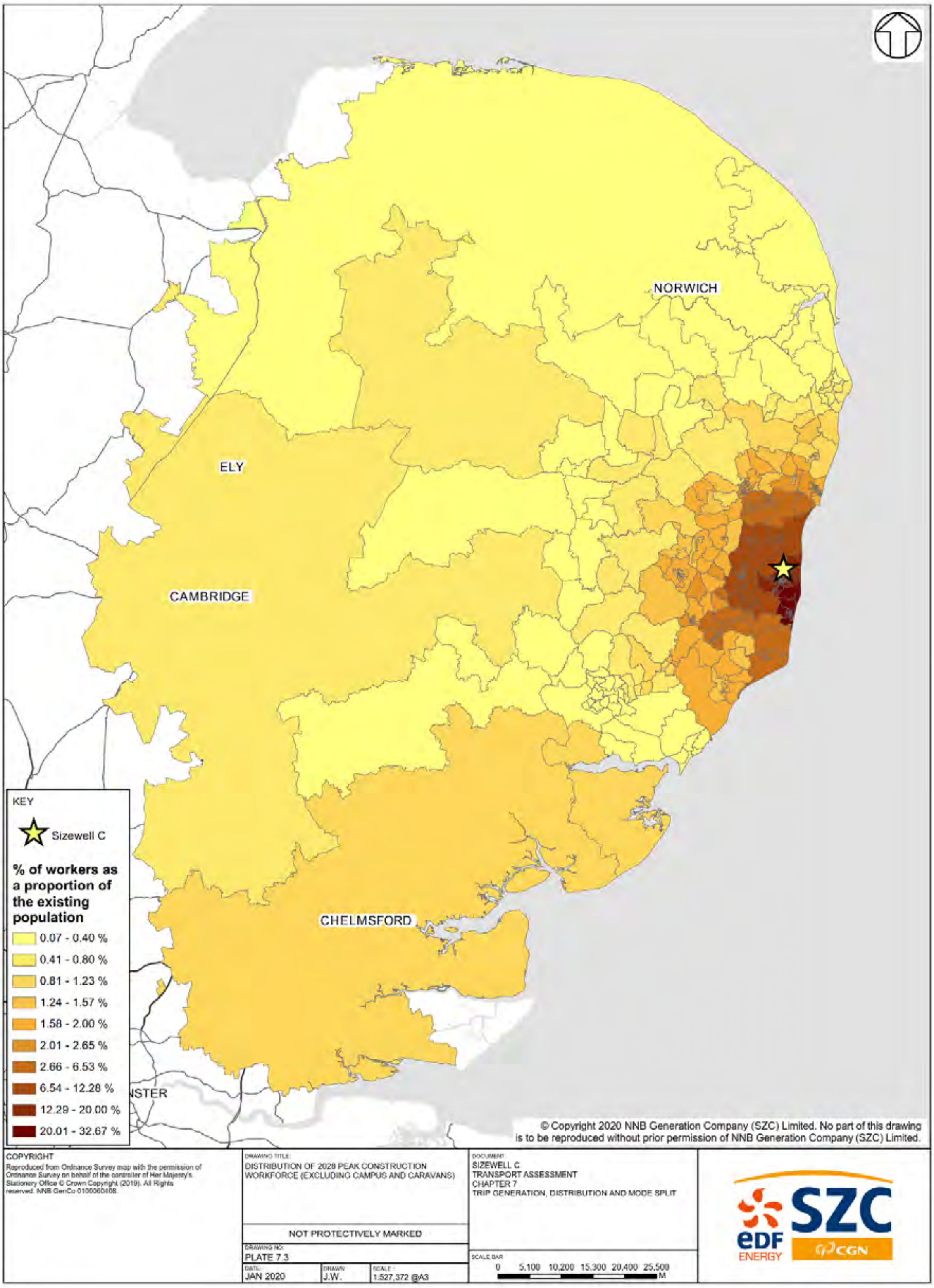
7.2.16 All associated development workers (600) are assumed to be HB.

7.2.17 The Gravity Model, which is described in **Appendix 7A** of this chapter, was run to produce 'home-to-work' trips by worker type, distributed across the VISUM model zones. A workforce distribution map showing the distribution of the main development site workforce (including construction and associated development operational workers, excluding those living on campus and in caravans) is shown in **Plate 7.3**.

7.2.18 Of the total 8,480 main development site construction and associated development operational workers at peak construction, 3,000 of the NHB construction workers have been assessed to live in campus or caravan accommodation and 1,250 have been assessed to use direct bus or rail, leaving the remaining 4,230 workers assessed as using either direct car (parking in the on-site car park) or the park and ride sites at Wickham Market (southern park and ride) and Darsham (northern park and ride).

7.2.19 The proposed capacity of the main development site car park is approximately 1,000 spaces which would be available on a permit-only basis. Permits would be available to workers living within a particular boundary, which is currently defined as the area bounded by the A12 and the Rivers Blyth and Deben, excluding Leiston and Knodishall (which would have bus services provided by SZC Co.). The area was defined through assessment of the Sizewell C Gravity Model. The estimated parking accumulation for the main development site car park is provided in **Appendix 7B**.

Plate 7.3: Distribution of workforce – peak construction



iii. Mode split

7.2.20 The construction workforce transport strategy is described in **Chapter 4** of this **Transport Assessment** (Doc Ref. 8.5). The strategy has been developed with the aim of minimising the volume of traffic associated with the construction of the Sizewell C Project as far as reasonably practical. The strategy incorporates the following transport modes for construction workers not living in campus or caravan accommodation:

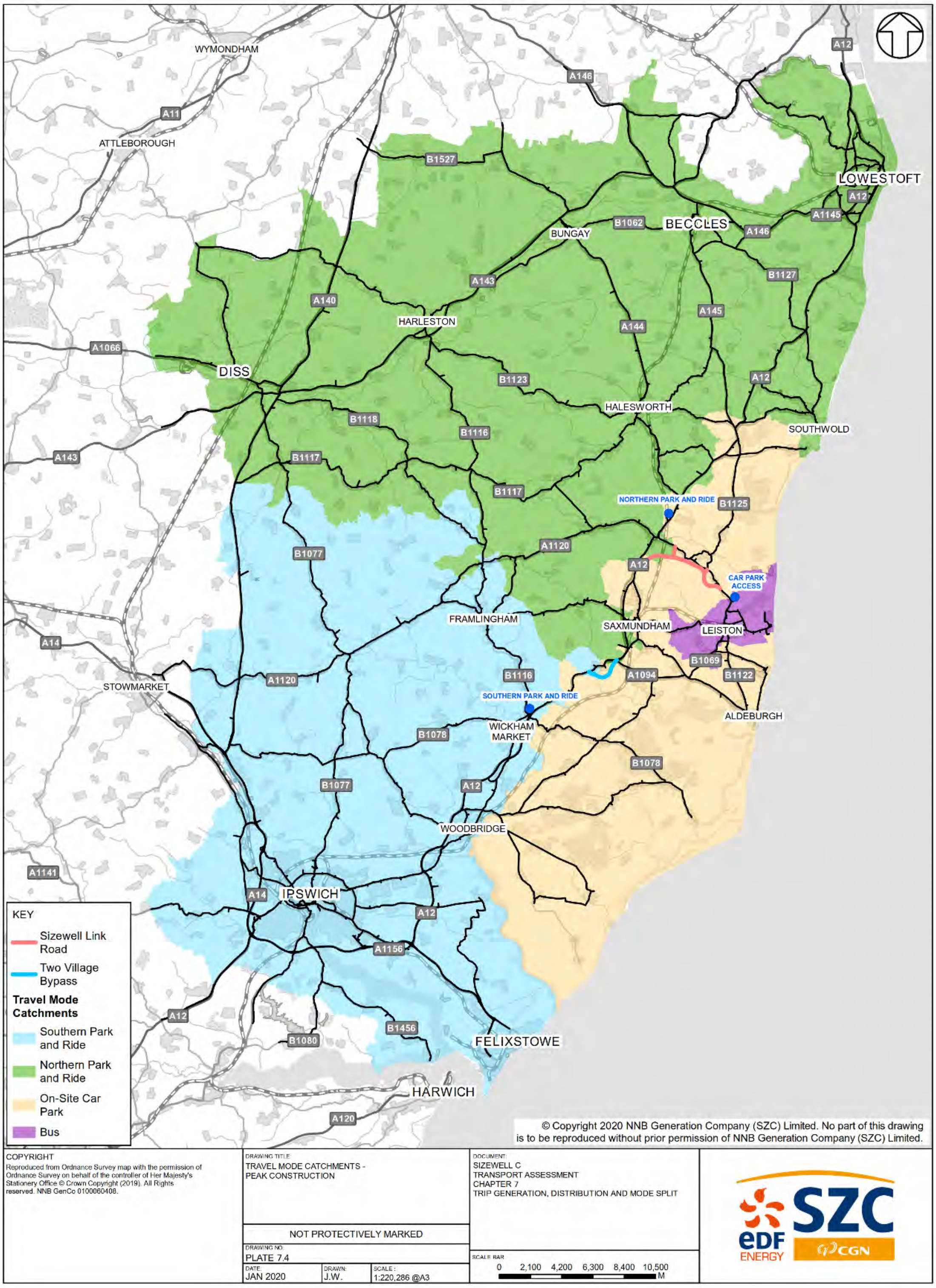
- direct bus for all workers living in Leiston and workers living close to a bus stop served by direct buses on the proposed Lowestoft and Ipswich direct bus routes;
- train to Darsham or Saxmundham, then bus to the main development site from the northern park and ride or the Saxmundham rail-pick up bus service;
- travel by car to a park and ride facility, then bus to the main development site; or
- travel by car, directly to the main development site for those workers living within the area bounded by the A12 and the Rivers Blyth and Deben, excluding Leiston.

7.2.21 The 20 workers at the FMF are assumed to drive to work.

7.2.22 The catchments of workers travelling by different modes are shown in **Plate 7.4**, which were defined through the Gravity Model.

7.2.23 A total of 200 construction and associated development workers are assumed to travel to work by direct bus service from Ipswich or Lowestoft, with some 100 construction and associated development workers travelling by rail who would then be shuttled to the site by minibus. In addition, direct bus services would be provided for the approximately 950 workers expected to live in Leiston and Knodishall. In addition no workers are assumed to travel to the main development site or park and ride sites by motorcycle, though in practice some would and parking spaces for motorcycles would be provided. For the purposes of the assessment, no workers (beyond those living in the accommodation campus) are assumed to travel to the main development site by non-motorised methods, though in practice some would, especially during warmer weather. This also adds robustness to the analysis.

Plate 7.4: Travel mode catchments – peak construction



iv. Derivation of car trips

7.2.24 Those workers using a car for a portion of their journey to work, whether using park and ride or the on-site car park, would be encouraged to share vehicles. The car share factors applied, which are based on those observed in the early phase of construction at Hinkley Point C, are as follows:

- HB workers – 1.1; and
- NHB workers – 1.54.

7.2.25 The derivation of these factors is described in **Appendix 7B** of this chapter.

7.2.26 Applying these car share factors to the number of workers travelling by each mode resulted in daily 'from home to work' trips for construction and associated development operational workers.

7.2.27 These were then split between shifts, shown in **Tables 1** and **2 in Appendix 7B** of this chapter, to derive hourly car trips to and from Sizewell C for construction and associated development operational workers.

7.2.28 A detailed description of these calculations is provided in **Appendix 7B** of this chapter**.**

d) Non-work trips

7.2.29 In addition to travelling to and from work, trips would be made by the workforce outside of working hours for personal and social reasons, such as:

- holiday;
- personal business;
- social or recreational;
- shopping; and
- visiting friends or relatives.

7.2.30 Such 'non-work' trips are already present on the highway network for HB workers and are therefore not included in the assessment. For NHB workers however, these non-work trips have been added to the Sizewell C development trips in the 2028 peak construction scenarios.

7.2.31 The accommodation campus would provide many facilities to suit the needs of workers for these non-work purposes. Therefore, those living in campus and caravan accommodation would undertake many of these non-work trips internally and these trips would generate no additional vehicular movements on the highway network.

7.2.32 The detailed derivation of these trips is provided in **Appendix 7B** of this chapter.

e) Visitor trips

7.2.33 Visitors to Sizewell C during the peak construction phase can be categorised as follows:

- visitors to the visitor centre; and
- visitors to site (e.g. for meetings).

i. Visitors to Visitor Centre

7.2.34 SZC Co. expects there to be around 100,000 visitors to the centre annually, which equates to around 385 visitors on an average weekday. On a particularly busy day there could be twice as many visitors, at approximately 800 visitors to the centre per day. It should be noted that in 2019 there were 6,285 visitors to the Sizewell B visitor centre (an average of just over 500 per month) with visitor numbers increasing year on year, so this is considered to be a robust assumption.

7.2.35 SZC Co. expects that 40% of visitors to the centre would be part of an organised group trip via coach (around 320 visitors on the busiest day at the visitor centre), with the remaining 60% travelling by car (480 visitors on the busiest day at the visitor centre). Applying a robust average load of 20 passengers per coach, around 16 coaches would travel to and from the visitor centre per day. Applying an average car-share factor of 2.5 (based on current visitors to Sizewell B) to the remaining visitors means that around 200 cars would also travel to and from the visitor centre on the busiest day at the centre. All vehicles associated with visitor trips would park in the on-site visitor car park. This is considered to be a highly robust assessment.

ii. Visitors to site

7.2.36 It is expected that there would be an average of 200 visitors by car to the main development site per day during the peak construction phase.

7.2.37 Applying an average car-share factor of 1.5 to these visitors means 133 cars would travel to and from the site per day during these periods. SZC Co. would seek to encourage visitors to the site to travel by modes other than car, such as the range of bus services to be provided to and from the main development site.

7.2.38 The detailed derivation of visitor trips is described in **Appendix 7B** of this chapter**.**

f) Goods vehicles

i. Light Goods Vehicles

7.2.39 LGVs would undertake small-scale deliveries to the main development site, as well as to the postal consolidation facility located at the southern park and ride site. These locations are shown in **Plate 7.2**.

7.2.40 The number of deliveries assumed per day during the construction peak are:

- Total: 700 movements (350 deliveries)
  - 75% to the main development site: 524 movements (262 deliveries);
  - 25% to the postal consolidation facility: 176 movements (88 deliveries).

7.2.41 LGV deliveries to the main development site are expected to be evenly spread between 06:00-19:00 hours, with length of stay varying between one and four hours (i.e. 25% would stay one hour, 25% would stay two hours, 25% would stay 3 hours, and 25% would stay four hours). Deliveries to the postal consolidation facility are expected to arrive between 07:00-16:00 hours, without a fixed schedule but predominantly in the morning, with length of stay being around ten minutes for each delivery. Two trips each way per day, modelled on a fixed route via the A12 and Sizewell link road, are expected to transfer the consolidated postal deliveries between the postal consolidation facility and the main development site.

7.2.42 The zonal distribution of Sizewell C LGV trips is based on the distribution of existing LGV trips in the 2028 reference case VISUM model. The assignment of Sizewell C LGVs in the VISUM model is impedance-based, i.e. they can take any permitted route to and from the main development site or postal consolidation facility, choosing routes based on their comparative 'cost' which is based on a combination of time and distance. It is only the postal trips between the postal consolidation facility and the main development site that have been assigned on a fixed route.

ii. Heavy Goods Vehicles

7.2.43 HGVs would undertake large-scale deliveries to the main development site as well as shuttle materials from the rail head at LEEIE to the main development site. HGVs include, for transport modelling purposes, all goods vehicles over 3.5 tonnes. HGVs are usually classified as goods vehicles over 7.5 tonnes, however the lower threshold has been applied to provide a robust basis for the **Transport Assessment** (Doc Ref. 8.5) as well as the **Environmental Statement**.

7.2.44 The freight management strategy is described in more detail in **Chapter 4** of this **Transport Assessment** (Doc Ref. 8.5). At peak construction, the residual HGVs are expected to be 650 movements (325 deliveries) to the main development site on a ‘typical day’, with an additional 140 movements (70 deliveries) from the LEEIE to the main development site. On some days during the peak construction year, the number of HGV deliveries (excluding LEEIE) would be higher than on a ‘typical day’. These occasions have been assessed as a ‘busiest day’ scenario and assume HGV movements (excluding the LEEIE) would be around 1.5 times more than on a typical day (i.e. 1,000 movements (500 deliveries)), based on monitoring data from Hinkley Point C. HGVs are expected to arrive between 07:00-21:00 hours and would depart between 08:00-23:00 hours.

7.2.45 SZC Co. will implement a **Construction Traffic Management Plan (CTMP)** (Doc Ref. 8.7) during the construction of Sizewell C. As set out in the **CTMP**, SZC Co. will limit the number of HGV movements from the wider highway network to the main development site to no more than 1,000 movements per day (500 deliveries) once the Sizewell link road and two village bypass are available for use.

7.2.46 Detailed description of the modelled LGVs and HGVs is provided in **Appendix 7B** of this chapter.

g) Bus services

7.2.47 Bus services would be introduced to provide direct services between the main development site and Ipswich and Lowestoft, half hourly during shift changeover periods. In addition, there would be between four and eight buses per hour between Leiston and Knodishall and the main development site. These are considered to be reasonable assumptions for the purposes of modelling. However, the direct bus services would adapt based on the workforce profile and workforce location and would be monitored throughout the construction phase by the **Construction Worker Travel Plan (CWTP)** (Doc Ref. 8.8). The implementation of the **CWTP** (Doc Ref. 8.8) will be secured through a Section 106 Agreement (see the draft **Section 106 Heads of Terms**).

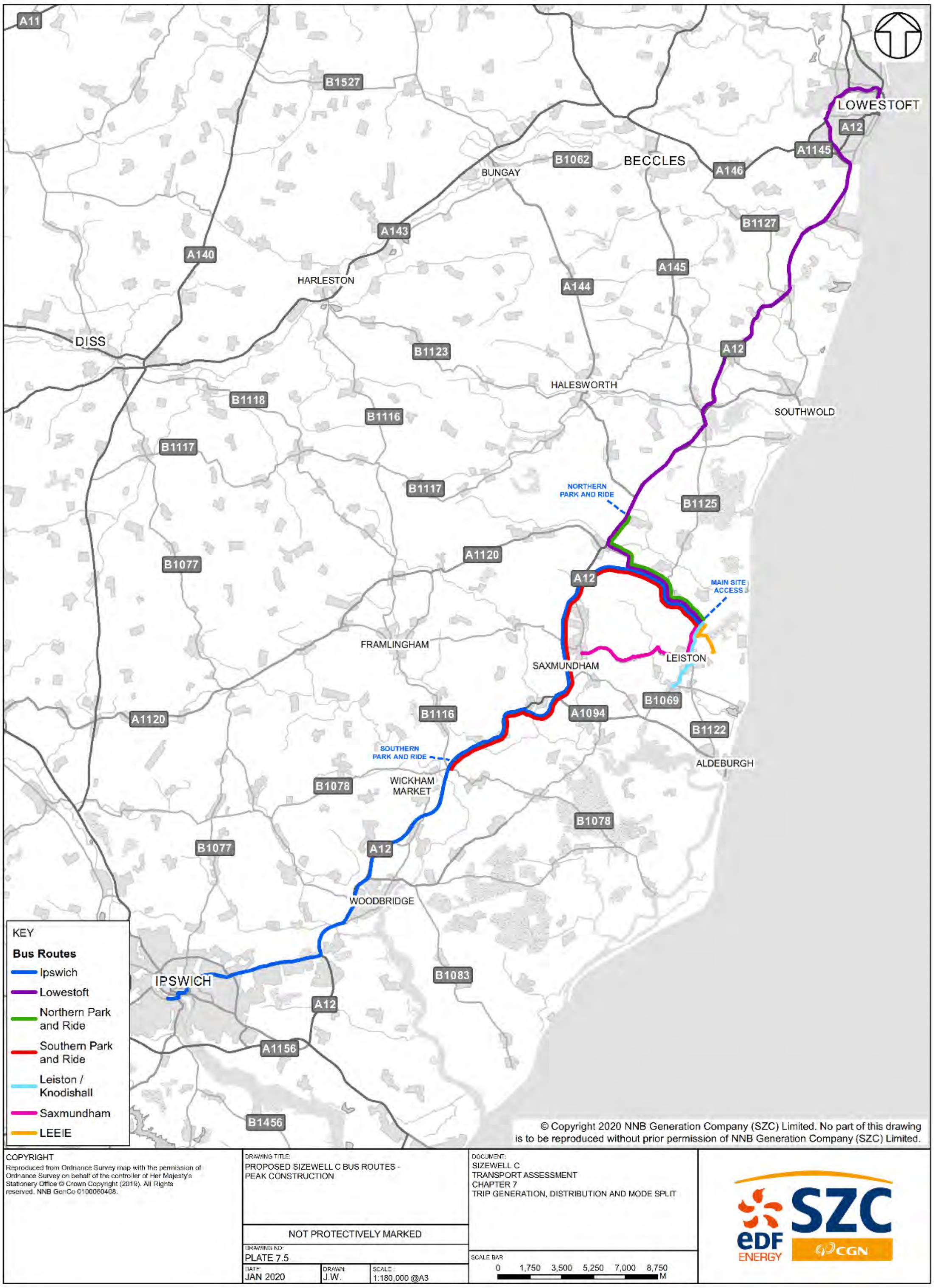
7.2.48 A shuttle bus would also be provided to and from Saxmundham rail station, hourly during shift changeover periods, to carry workers using direct rail services to this station.

7.2.49 Separate bus services would be provided between the two park and ride facilities and the main development site, between three and nine services per hour during shift changeover periods and hourly outside of these times.

7.2.50 Shuttle buses would also be provided to take the workers living in caravans on the LEEIE to and from the main development site. It is proposed to provide 12 buses between 07:00-08:00 hours from LEEIE to site, and 12 buses returning between 17:00-18:00 hours.

7.2.51 The proposed bus service frequencies at peak construction are shown in **Table 26, Appendix 7B** of this chapter. The proposed routes are shown in **Plate 7.5**.

Plate 7.5: Proposed Sizewell C bus routes – peak construction



h) Summary vehicle trips

7.2.52 The Sizewell C peak construction vehicle trips included in each of the seven modelled hours are summarised in **Table 7.2** for cars, **Table 7.3** for LGVs, **Table 7.4** for HGVs, **Table 7.5** for buses and **Table 7.6** for coaches (visitor centre only). Car trips do not include those workers living on campus or in caravans arriving at the start of the week or leaving at the end of the week. Numbers have been rounded.

7.2.53 Assessment of car park accumulation is provided in **Appendix 7B** of this chapter.

Table 7.2: Sizewell C peak construction summary trips – car

Modelled Hour	Car Park*		Southern Park and Ride		Northern Park and Ride		Caravan Site*		Freight Management Facility		Elsewhere*	
	In	Out	In	Out	In	Out	In	Out	In	Out	In	Out
06:00-07:00	254	32	329	6	310	10	2	2	0	0	15	15
07:00-08:00	291	51	198	39	228	39	4	4	0	0	28	28
08:00-09:00	83	24	8	28	21	20	5	5	0	0	37	37
15:00-16:00	40	196	6	141	9	148	5	5	0	0	38	38
16:00-17:00	35	111	7	97	11	78	6	6	0	0	57	57
17:00-18:00	39	253	1	100	2	127	9	9	0	0	78	78
18:00-19:00	47	238	0	278	0	277	12	12	0	0	106	106
Total (mod. hrs)	**790**	**904**	**549**	**689**	**580**	**698**	**42**	**42**	**0**	**0**	**358**	**358**
Total (24 hrs)	1,751	1,751	1,151	1,151	1,150	1,150	100	100	20	20	874	874

** Includes non-work trips*

Table 7.3: Sizwell C peak construction summary trips - LGV

Modelled Hour	Main Development Site		Postal Consolidation Facility	
	In	Out	In	Out
06:00-07:00	20	0	1	0
07:00-08:00	20	3	10	3
08:00-09:00	20	8	26	17
15:00-16:00	20	20	3	4
16:00-17:00	20	20	0	2
17:00-18:00	20	20	0	0
18:00-19:00	13	20	0	0
Total (modelled hours)	**134**	**93**	**41**	**26**
Total (24 hours)	**263**	**263**	**88**	**88**

Table 7.4: Sizewell C peak construction summary trips – HGV

Modelled Hour	Main Development Site			
	Typical Day		Busiest Day	
	In	Out	In	Out
06:00-07:00				
07:00-08:00	48	11	71	14
08:00-09:00	48	22	71	31
15:00-16:00	45	31	66	44
16:00-17:00	29	33	41	47
17:00-18:00	19	32	26	45
18:00-19:00	9	28	11	40
Total (modelled hours)	**199**	**156**	**286**	**221**
Total (24 hours)	**395**	**395**	**570**	**570**

Table 7.5: Sizewell C peak construction summary tips – bus

Modelled Hour	Main Development Site	
	In	Out
06:00-07:00	31	31
07:00-08:00	31	30
08:00-09:00	15	15
15:00-16:00	25	25
16:00-17:00	17	17

Modelled Hour	Main Development Site	
	In	Out
17:00-18:00	28	29
18:00-19:00	28	27
Total (modelled hours)	**175**	**175**
Total (24 hours)	**350**	**350**

Table 7.6: Sizewell C peak construction summary trips – coach (for visitor centre)

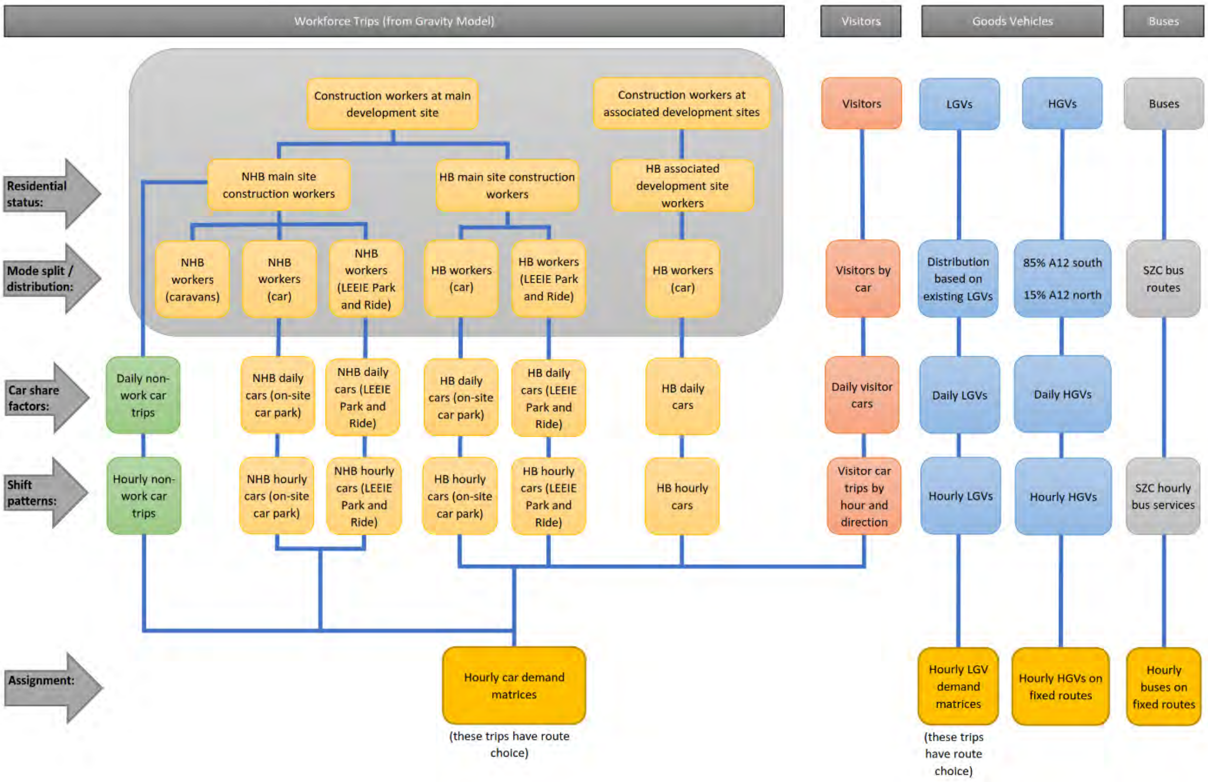
Modelled Hour	Main Development Site	
	In	Out
06:00-07:00		
07:00-08:00		
08:00-09:00		
15:00-16:00		3
16:00-17:00		
17:00-18:00		
18:00-19:00		
Total (modelled hours)	**0**	**3**
Total (24 hours)	**16**	**16**

7.3 Early years trip generation, distribution and mode share

a) Methodology for deriving trips

7.3.1 The process for developing the Sizewell C traffic inputs for the 2023 early years construction phase is shown in **Plate 7.6**.

Plate 7.6: Sizewell C traffic inputs process – early years



b) Modelling assumptions

i. Overview

7.3.2 During the 'early years' phase of construction, which is taken to be 2023, the total trips to the main development site would be lower than at peak construction but no mitigation would be in place, as per the indicative phasing schedule in the **Implementation Plan** provided in **Appendix I** of the **Planning Statement** (Doc Ref. 8.4). The workforce and HGV movements related to the construction of the associated development sites are also included in this scenario. In order to provide a robust assessment, all of the associated development sites and transport mitigation have been assumed to be being constructed concurrently during the Sizewell C early years scenario. In addition, traffic associated with the Sizewell B Relocated Facilities (SZB RF) works are included in the Sizewell C early years scenario as these works would likely overlap.

7.3.3 The primary assumptions behind the 2023 early years VISUM models are summarised in **Table 7.7**.

Table 7.7: Modelling assumptions for early years scenario

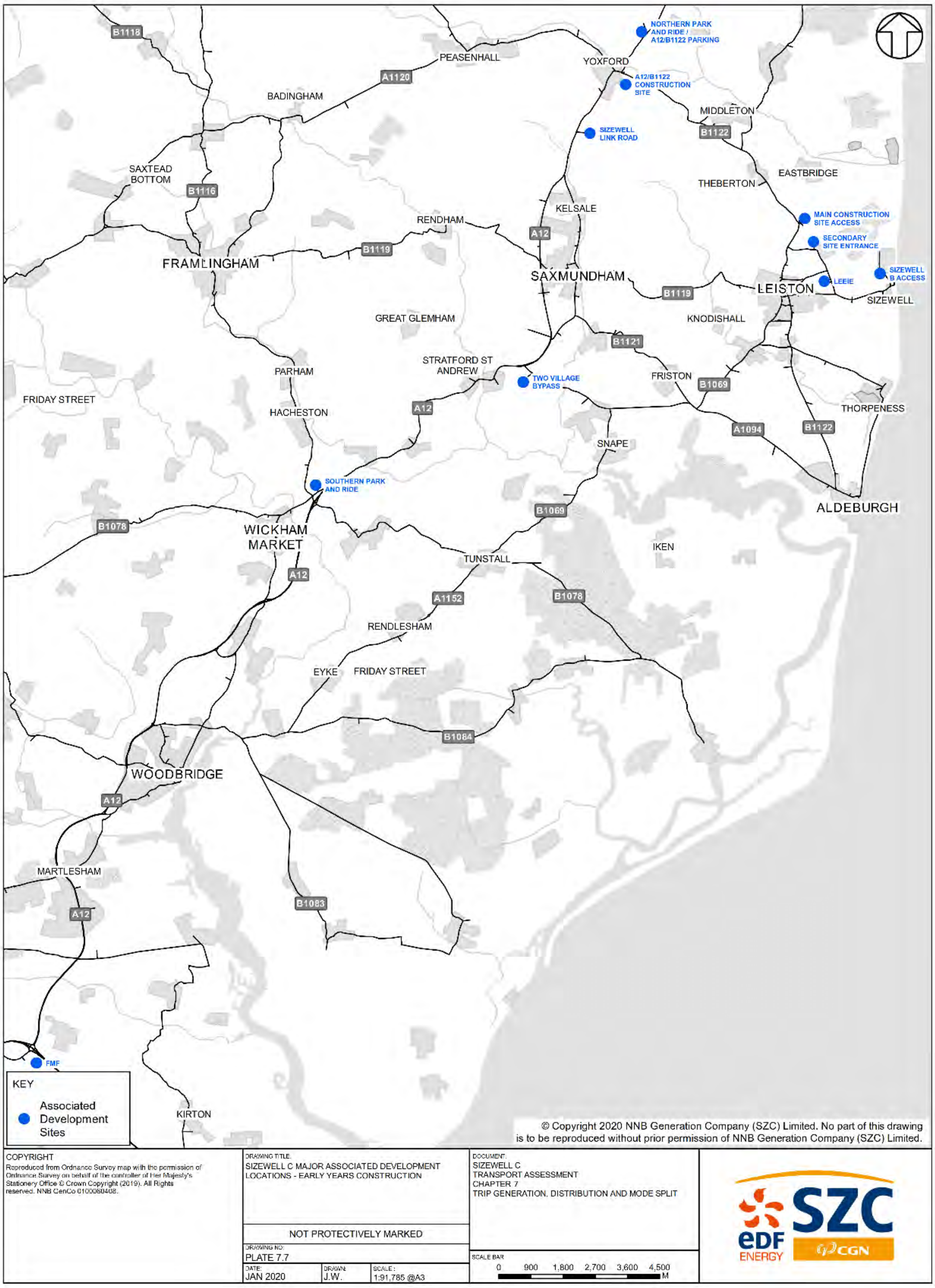
Element	Input Parameter
Early years construction workforce assumption	1,500
Associated development construction workers	730, as follows: • Northern park and ride – 100. • Southern park and ride – 100. • A12 / B1122 roundabout – 30. • Two village bypass – 100. • Sizewell link road – 300. • FMF – 100
Residential location of workforce	Based on Gravity Model, described in **Appendix 7A** of this chapter
Working patterns of the main development site construction workforce	• Single shift (1,100 workers). • Night shift (400 workers). See shift pattern in **Table 27**, **Appendix 7B** of this chapter
Working patterns of the associated development sites construction workforce	All single shift. See shift pattern in **Table 27**, **Appendix 7B** of this chapter
Size of development site accommodation campus	No campus, but 400 caravans on LEEIE (1.5 people per caravan so 600 workers)
Frequency of shuttle buses from LEEIE (caravan site and park and ride) to main development site	Buses running every 10 minutes during staff changeover periods, every 20 minutes outside staff changeover periods (to both secondary site entrance and Sizewell B access)
Frequency of park and ride buses	None – sites under construction
Frequency of direct buses	For assessment purposes assumed to be none but direct buses would be provided where concentrations of workers exist
Number of workers travelling by direct bus	For assessment purposes assumed to be none
Number of workers travelling by rail	For assessment purposes assumed to be none
Number of workers walking, cycling or motorcycling to construction site or park and ride sites	No workers assumed to use these modes to give a robust assessment
Average level of car sharing	1.1 workers per car for HB workers and 1.54 workers per car for NHB workers
Non-work trips	Included for all NHB workers (caravan and off-site)

Element	Input Parameter
LGVs	250 movements per day at main development site
Average number of HGVs per day during early years construction	Main development site: 600 movements (300 deliveries) • Sizewell B access – 75%; • secondary site entrance – 25%. Associated development sites (deliveries): • Northern park and ride – 21. • Southern park and ride – 21. • A12 / B1122 roundabout – 10. • Two village bypass – 60. • Sizewell link road – 100. • FMF – 21.
Routing of HGVs	A12 and B1122
Origin of HGVs	• 85% from A12 south; • 15% from A12 north.
HGVs from LEEIE to main development site	280 movements (140 deliveries), all to secondary site entrance.
FMF	None (under construction)

7.3.4 As mentioned previously, the 2023 early years VISUM models include traffic associated with SZB RF which would likely overlap with this forecast year. Traffic flows were derived from the **ES** (Doc Ref. Book 6) that was produced for the SZB RF application and are explained in **Appendix 7B** of this chapter. This development is now committed though it had not yet been approved at the time of the Sizewell C assessment, so it has been included with the proposed Sizewell C development trips.

7.3.5 The approximate siting of compound areas for the Sizewell C development site locations are shown in **Plate 7.7**.

Plate 7.7: Sizewell C associated development locations – early years construction



ii. Workforce shift pattern assumptions

7.3.6 The modelled number of construction workers during early years (2023) is 1,500 at the main development site and 730 at the associated development sites. The workforce at the main development site is expected to operate two shifts and the following allocation of workers to each shift has been assumed as follows:

- single shift (c. 73% of workers); and
- night shift (c. 27% of workers).

7.3.7 The associated development sites construction workforce is assumed to operate as a single day shift with no night shift. The assumed shift patterns for these construction workers are summarised in **Table 27**, **Appendix 7B** of this chapter. As at peak construction, the shift start and end times are assumed to follow a trapezoidal spread with the number of workers starting and finishing within each half-hour period shown in **Table 2**, **Appendix 7B** of this chapter.

c) Construction workforce

i. Trip generation

7.3.8 As shown in **Table 7.7**: Modelling assumptions for early years scenario, the planned workforce numbers during the early years of construction are:

- 1,500 construction workers at main development site; and
- 730 construction workers at the six associated development sites.

7.3.9 Based on the workforce shift pattern assumptions described above, the assumed workforce is translated into a number of person trips arriving and departing their workplace. The number of workers allocated to each shift and the split of trip arrival and departure times within those shifts are shown in **Tables 2 and 27**, **Appendix 7B** of this chapter for construction workers at the main development site and associated development sites.

ii. Trip distribution

7.3.10 The associated developments that are proposed to mitigate the transport effects of the Sizewell C Project will be being constructed during the early years and will therefore not be available.

7.3.11 The early years construction workforce of 1,500 workers are categorised as follows:

- HB (living at home) – 540 workers; and

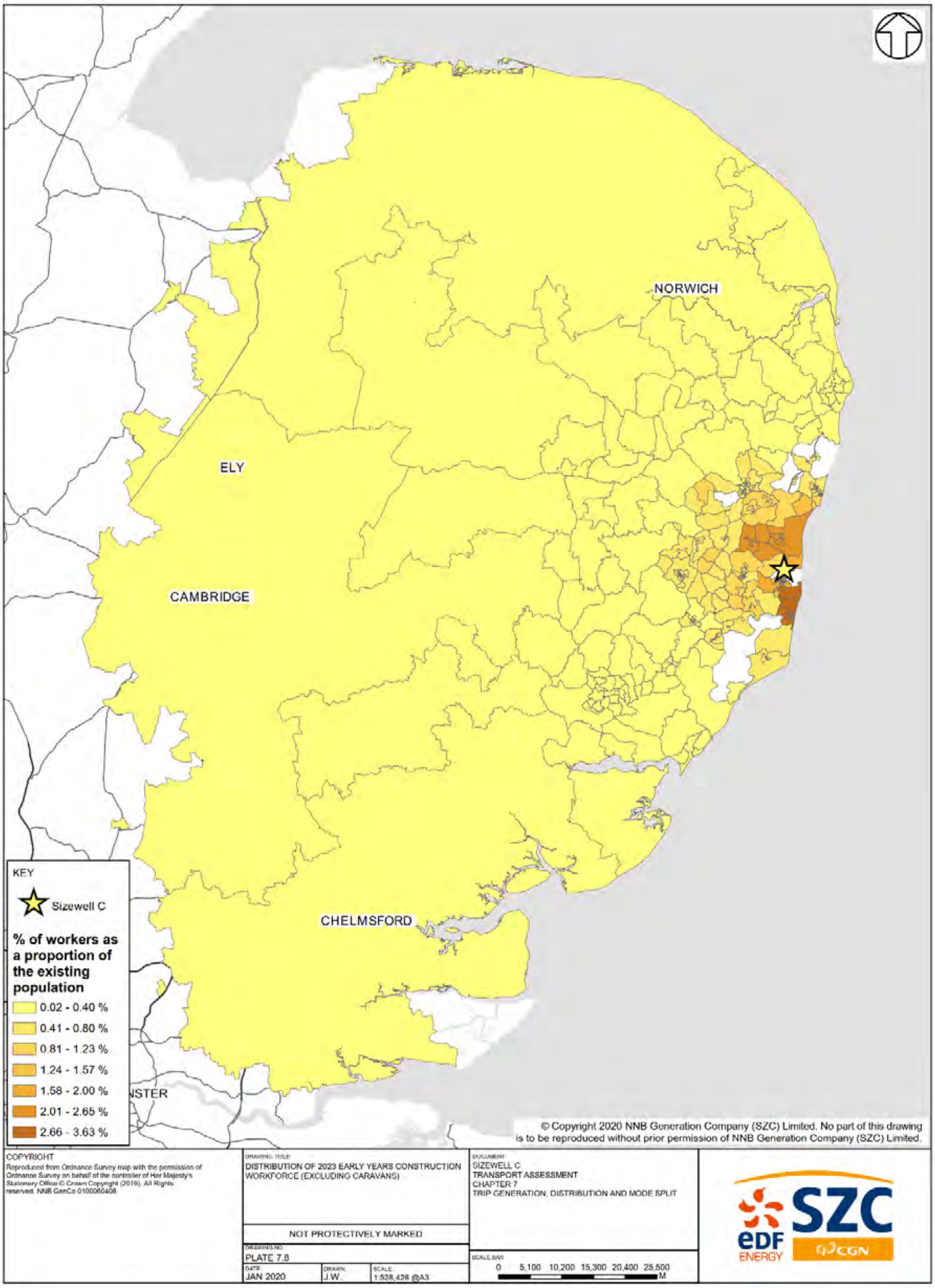
- NHB (living temporarily in caravans on LEEIE or in rented accommodation) – 960 workers, 600 of whom in caravans on LEEIE and 360 elsewhere.

7.3.12 These splits were derived based on socio-economic studies reported in **Appendix 9A** of **Volume 2** of the **ES**.

7.3.13 All associated development site construction workers are assumed to be HB.

7.3.14 The Gravity Model, described in **Appendix 7A** of this chapter, was run to produce 'home-to-work' trips, by worker type and by mode, distributed across the VISUM model zones. This was done for the main development site and the associated development sites separately. A heat map showing the distribution of the workforce (including construction workers at the main development site and associated development sites, excluding those living in caravans on LEEIE) is shown in **Plate 7.8**.

Plate 7.8: Distribution of workforce – early years



iii. Mode split

7.3.15 Since the northern and southern park and ride sites would be under construction during early years, the remaining 900 main development site construction workers not living in caravans on LEEIE have been assessed to be travelling by car for the journey to work. 300 workers have been assessed as driving direct to the main development site, whilst 600 workers have been assessed as driving to and parking at the park and ride facility on LEEIE from where they would be shuttled to the main development site by minibus via either the secondary site entrance on Lover's Lane or the Sizewell B access.

7.3.16 Workers at each of the associated development construction sites would drive and park in compound areas close to each site.

iv. Derivation of car trips

7.3.17 As at peak construction, those workers using a car for a portion of their journey to work would be encouraged to share vehicles. The same car share factors are applied as at peak construction.

7.3.18 Applying the car share factors to the number of workers travelling by each mode provides daily 'from home to work' trips for construction workers at the main development site and associated development sites. These are then split between shifts, shown in **Table 27, Appendix 7B** of this chapter to derive hourly workforce car trips to and from the Sizewell C sites.

7.3.19 A detailed description of these calculations is provided in **Appendix 7B** of this chapter.

d) Non-work trips

7.3.20 Non-work trips made by NHB workers are included in the early years traffic generation. The on-site campus would provide many facilities to suit the needs of workers for these purposes, but this would not be available during the early years phase. Therefore, non-work purpose trips would all be made externally and would generate additional vehicular movements on the highway network.

7.3.21 The derivation of these trips is provided in **Appendix 7B** of this chapter.

e) Visitor trips

7.3.22 The modelling assumes around 40 visitors to the Sizewell C construction site per day during the early years of construction, as advised by SZC Co. An assumed car share factor of 1.5 has been applied, as at peak construction, resulting in 27 cars to and from the main development site per day during these periods.

7.3.23 The detailed derivation of visitor trips in early years is described in **Appendix 7B** of this chapter.

f) Goods vehicles

i. Light Goods Vehicles

7.3.24 LGVs would undertake small-scale deliveries to the main development site during the early years of construction. The number of LGVs per day is assumed to be 250 movements (125 deliveries) and, as at peak construction, they are expected to be evenly spread between 06:00-19:00 hours, with length of stay varying between one and four hours. The zonal distribution of Sizewell C LGV trips is based on the distribution of existing LGV trips in the 2023 reference case VISUM model, and they can take any permitted route to and from the main development site.

ii. Heavy Goods Vehicles

7.3.25 HGVs would undertake large-scale deliveries to the Sizewell C main development site and associated development construction sites as well as shuttle materials from the rail head at LEEIE to the main development site. HGVs include all goods vehicles over 3.5 tonnes in order to provide a robust assessment. The FMF would be under construction during the early years phase so HGV deliveries would travel direct to the main development site rather than stopping at the FMF. The management of HGVs in the early years prior to the FMF being in operation would be through the delivery management system, as set out in the **Construction Traffic Management Plan** (**CTMP**) (Doc Ref. 8.7). The **CTMP** also sets out the maximum daily limit on HGV movements on the wider highway network to the main development site during the early years as 600 movements (300 deliveries) until the Sizewell link road and two village bypass are available for use.

7.3.26 HGVs have been assessed to arrive between 07:00-21:00 hours and would depart between 08:00-23:00 hours.

7.3.27 As indicated in **Table 7.7**, deliveries to the main development site (except from LEEIE) would be divided between two accesses as follows:

- Sizewell B access – 75% (including all SZB RF HGVs); and
- secondary site entrance (Lover's Lane) – 25%.

7.3.28 The HGV volumes quoted in **Table 7.7** include the SZB RF 120 two-way HGV movements (60 deliveries) therefore the Sizewell C HGV volumes are separated out as follows:

- Total daily HGVs: 600 movements (300 deliveries)

  - SZB RF HGVs: 120 movements (60 deliveries);
  - Sizewell C HGV: 480 movements (240 deliveries).
- Total HGVs to Sizewell B access: 75% x 600 = 450 movements (225 deliveries)
  - SZB RF HGVs to Sizewell B access: 120 movements (60 deliveries);
  - Sizewell C HGVs to Sizewell B access: 450 – 120 = 330 movements (165 deliveries).
- Sizewell C HGVs to secondary site entrance: 480 – 330 = 150 movements (75 deliveries).

7.3.29 All deliveries from LEEIE to the main development site would be via the secondary site entrance.

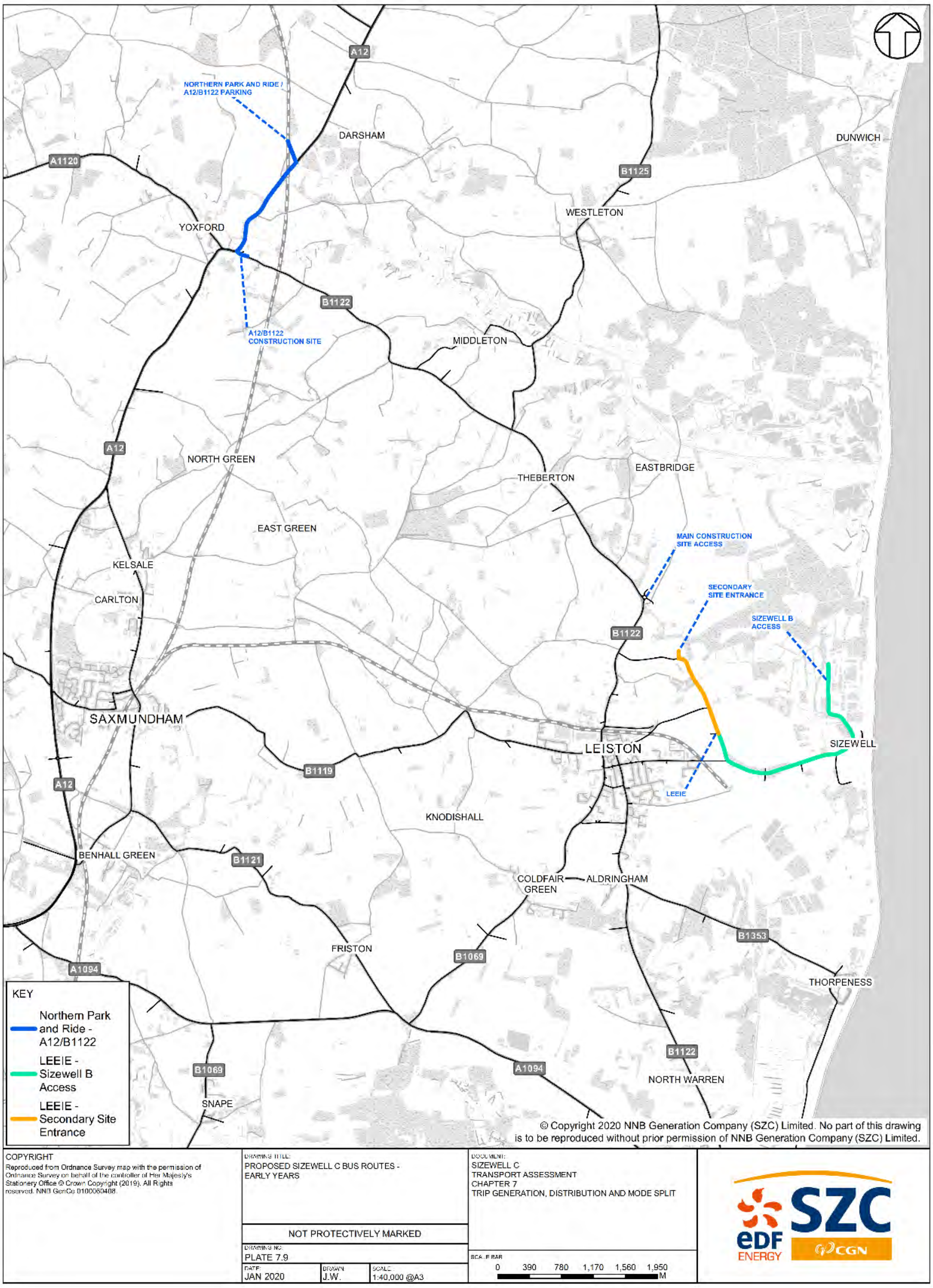
7.3.30 Detailed description of the modelled LGVs and HGVs is provided in **Appendix 7B** of this chapter.

g) Bus services

7.3.31 During the early years phase of construction, buses would be provided to shuttle workers between the LEEIE park and ride and caravan site and the Sizewell C secondary site entrance on Lover's Lane and the Sizewell B access (prior to the main development site roundabout being operational).

7.3.32 The proposed bus service frequencies in early years are shown in **Table 43**, **Appendix 7B** of this chapter. The proposed routes are shown in **Plate 7.9**.

Plate 7.9: Proposed Sizewell C bus routes – early years



h) Summary vehicle trips

7.3.33 The Sizewell C vehicle trips included in each of the seven modelled hours are summarised in **Table 7.8** for cars, **Table 7.9** for LGVs, **Table 7.10** for HGVs and **Table 7.11** for buses. Car trips do not include those workers living in caravans arriving at the start of the week or leaving at the end of the week. Numbers have been rounded to the nearest integer.

7.3.34 Assessment of car park accumulation is provided in **Appendix 7B** of this chapter.

Table 7.8: Sizewell C early years summary trips – car

Modelled Hour	Car Park		Caravan Site*		Southern Park and Ride		Northern Park and Ride & A12 / B1122		Two Village Bypass		Sizewell Link Road		Freight Management Facility		Elsewhere*	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
06:00-07:00	58	19	141	30	11	0	15	0	11	0	31	0	10	0	2	2
07:00-08:00	114	36	222	84	64	0	83	0	64	0	191	0	64	0	3	3
08:00-09:00	6	9	12	36	17	0	20	0	16	0	50	0	17	0	0	0
15:00-16:00	4	4	10	10	0	0	0	0	0	0	0	0	0	0	0	0
16:00-17:00	1	16	13	21	0	12	0	14	0	11	0	35	0	12	2	2
17:00-18:00	0	98	26	195	0	51	0	66	0	51	0	154	0	52	10	10
18:00-19:00	0	71	33	202	0	28	0	38	0	28	0	83	0	27	15	15
Total (modelled hours)	**182**	**253**	**457**	**578**	**91**	**91**	**118**	**118**	**91**	**91**	**273**	**273**	**91**	**91**	**31**	**31**
Total (24 hours)	268	268	704	704	91	91	118	118	91	91	273	273	91	91	59	59

** Includes non-work trips*

Table 7.9: Sizewell C early years summary trips – LGV

Modelled Hour	Main Development Site	
	In	Out
06:00-07:00	10	0
07:00-08:00	10	2
08:00-09:00	10	4
15:00-16:00	10	10
16:00-17:00	10	10
17:00-18:00	10	10
18:00-19:00	6	10
Total (modelled hours)	**64**	**44**
Total (24 hours)	**125**	**125**

Table 7.10: Sizewell C early years summary trips - HGV

Modelled Hour	Main Development Site				Associated Development Sites											
	SBA		SSE		Southern Park and Ride		Northern Park and Ride		A12 / B1122		Two Village Bypass		Sizewell Link Road		Freight Management Facility	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
06:00-07:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00-08:00	21	3	22	13	3	0	3	0	1	1	8	1	13	2	3	0
08:00-09:00	21	8	22	16	3	1	3	1	1	1	8	3	13	5	3	1
15:00-16:00	20	13	21	18	3	2	3	2	1	0	7	5	12	8	3	2
16:00-17:00	12	14	17	18	1	2	1	2	1	1	4	5	7	8	1	2
17:00-18:00	7	13	15	18	1	2	1	2	0	0	2	5	4	8	1	2
18:00-19:00	2	11	13	17	0	1	0	1	0	1	1	4	1	7	0	1
Total (modelled hours)	**83**	**61**	**110**	**100**	**11**	**8**	**11**	**8**	**5**	**3**	**30**	**22**	**50**	**37**	**11**	**8**
Total (24 hours)	**165**	**165**	**215**	**215**	**21**	**21**	**21**	**21**	**10**	**10**	**60**	**60**	**100**	**100**	**21**	**21**

Table 7.11: Sizewell C early years summary trips – bus

Hour	LEEIE To Main Development Site				Northern Park and Ride to A12 / B1122	
	SBA		SSE			
	To SBA	From SBA	To SSE	From SSE	To A12 / B1122	From A12 / B1122
06:00-07:00	3	3	3	3	0	0
07:00-08:00	6	6	6	6	2	0
08:00-09:00	3	3	3	3	0	0
15:00-16:00	3	3	3	3	0	0
16:00-17:00	3	3	3	3	0	0
17:00-18:00	6	6	6	6	0	2
18:00-19:00	3	3	3	3	0	0
Total (modelled hours)	**27**	**27**	**27**	**27**	**2**	**2**
Total (24 hours)	**45**	**45**	**45**	**45**	**2**	**2**

i) Sizewell B Relocated Facilities traffic

i. Background

7.3.35 Traffic inputs generated by the SZB RF were derived from the ES[2] that was produced for that development and are included in the Sizewell C 2023 early years modelling assessment.

7.3.36 A summary of the SZB RF vehicular trips are shown in **Table 7.12** and **Table 7.13**. Explanation of how these trips were derived is provided in **Appendix 7B** of this chapter**.**

[2] Sizewell B Relocated Facilities Environmental Statement Volume 1

Table 7.12: SZB RF hourly car trips

Hour	Origins							Destinations						
	Total	A12 (North of B1122)	A12 (South of A1094)	B1119 through Saxmundham	B1125 through Westleton	Leiston	Aldeburgh	Total	A12 (North of B1122)	A12 (South of B1122)	B1119 through Saxmundham	B1125 through Westleton	Leiston	Aldeburgh
06:00-07:00	17	5	4	2	1	1	5	0	0	0	0	0	0	0
07:00-08:00	44	14	9	5	4	2	12	0	0	0	0	0	0	0
08:00-09:00	2	1	0	0	0	0	1	0	0	0	0	0	0	0
15:00-16:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:00-17:00	0	0	0	0	0	0	0	8	3	2	1	1	0	2
17:00-18:00	0	0	0	0	0	0	0	36	11	7	4	3	2	10
18:00-19:00	0	0	0	0	0	0	0	20	6	4	2	2	1	5
Total (modelled hours)	**64**	**20**	**13**	**7**	**5**	**3**	**17**	**64**	**20**	**13**	**7**	**5**	**3**	**17**
Total (24 hours)	**64**	**20**	**13**	**7**	**5**	**3**	**17**	**64**	**20**	**13**	**7**	**5**	**3**	**17**

Table 7.13: SZB RF hourly HGV trips

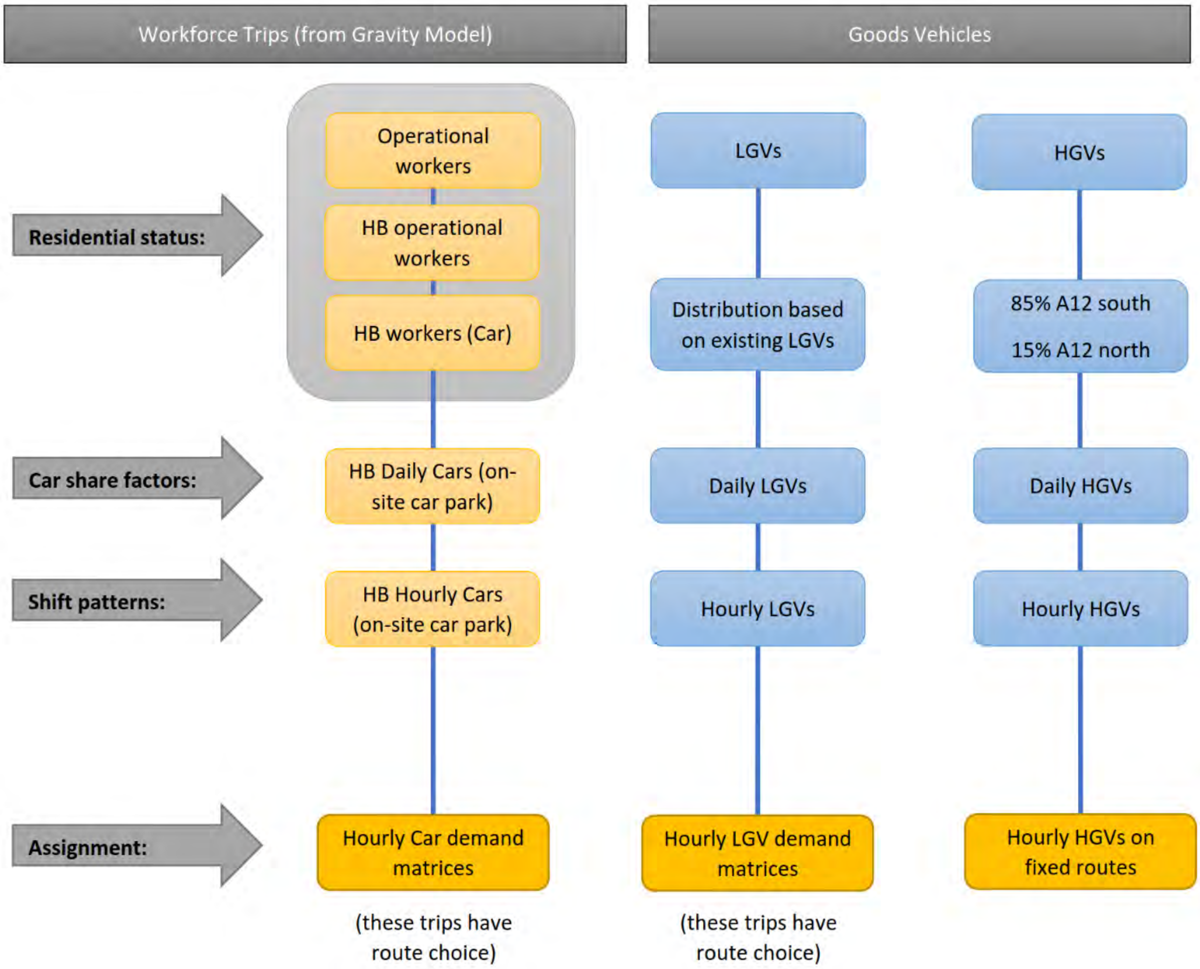
Hour	Origins						Destinations					
	Total	Norwich	Lowestoft	London/ South East	Felixstowe	Ipswich	Total	Norwich	Lowestoft	London/ South East	Felixstowe	Ipswich
06:00-07:00	0	0	0	0	0	0	0	0	0	0	0	0
07:00-08:00	12	1	1	7	2	1	0	0	0	0	0	0
08:00-09:00	14	0	2	9	2	1	0	0	0	0	0	0
15:00-16:00	0	0	0	0	0	0	5	0	1	3	1	0
16:00-17:00	0	0	0	0	0	0	5	1	0	3	0	1
17:00-18:00	0	0	0	0	0	0	5	0	1	3	1	0
18:00-19:00	0	0	0	0	0	0	3	0	0	2	1	0
Total (modelled hours)	**26**	**1**	**3**	**16**	**4**	**2**	**18**	**1**	**2**	**11**	**3**	**1**
Total (24 hours)	**60**	**3**	**6**	**36**	**9**	**6**	**60**	**3**	**6**	**36**	**9**	**6**

7.4 Operational traffic trip generation, distribution and mode share

a) Methodology for deriving trips

7.4.1 The process for developing the Sizewell C traffic inputs for the 2034 operational phase is shown in **Plate 7.10**.

Plate 7.10: Sizewell C traffic inputs process – operational



b) Modelling assumptions

i. Overview

7.4.2 During the operational phase of the Sizewell C Project, which is taken to be '2034', the workforce and HGV deliveries would be substantially lower than during the construction period and the traffic generation would be profiled differently across the day. The removal and reinstatement of the temporary on-site and off-site associated developments is expected to have been completed by this year.

7.4.3 The primary assumptions behind the 2034 operational traffic VISUM models are summarised in **Table 7.14**.

Table 7.14: Modelling assumptions for operational scenario

Element	Input Parameter
Operational workforce assumption	900
Residential location of workforce	All HB within 30 minute travel time, based on Gravity Model described in **Appendix 7A** of this chapter.
Working patterns of the operational workforce	See shift pattern **Table 48, Appendix 7B** of this chapter**.**
Average level of car sharing	1.1 workers per car.
LGVs	• Main development site: 40 movements (20 deliveries). • Master Lord Industrial Estate: 30 movements (15 deliveries).
HGVs	• Main development site: 20 movements (10 deliveries). • Master Lord Industrial Estate: 10 movements (5 deliveries).
Routing of HGVs	A12, B1122 (from north only) and Sizewell link road.
Origin of HGVs	• 85% from A12 south; • 15% from A12 north.

7.4.4 The Sizewell C main development site location is shown in **Plate 7.2**.

ii. Workforce shift patterns

7.4.5 The number of operational workers in 2034 is assumed to be approximately 900. At any given time, one shift of 45 workers (c. 5% of workforce) will be on leave so these are excluded from further analysis. The remaining operational workforce is assumed to operate five shifts:

- early shift (c. 5% of workforce);
- late shift (c. 5% of workforce);
- night shift (c. 5% of workforce);
- day shift (c. 10% of workforce); and
- weekday (c. 70% of workforce).

7.4.6 The assumed shift patterns for the operational workers are shown in **Table 48, Appendix 7B** of this chapter. Unlike the construction workforce, whose shift start and end times are given as a time range, the operational worker shifts are assumed to have fixed start and end times so all 'early shift' workers start at 08:00 and end at 14:00.

c) Operational workforce

i. Trip generation

7.4.7 As shown in **Table 7.14**, the planned workforce during Sizewell C operation is approximately 900 workers at the main development site. All workers will be HB.

7.4.8 Based on the workforce shift pattern assumptions described above, the assumed workforce is translated into a number of person trips arriving and departing their workplace. The number of workers allocated to each shift and the split of trip arrival and departure times within those shifts are shown in **Table 48**, **Appendix 7B** of this chapter.

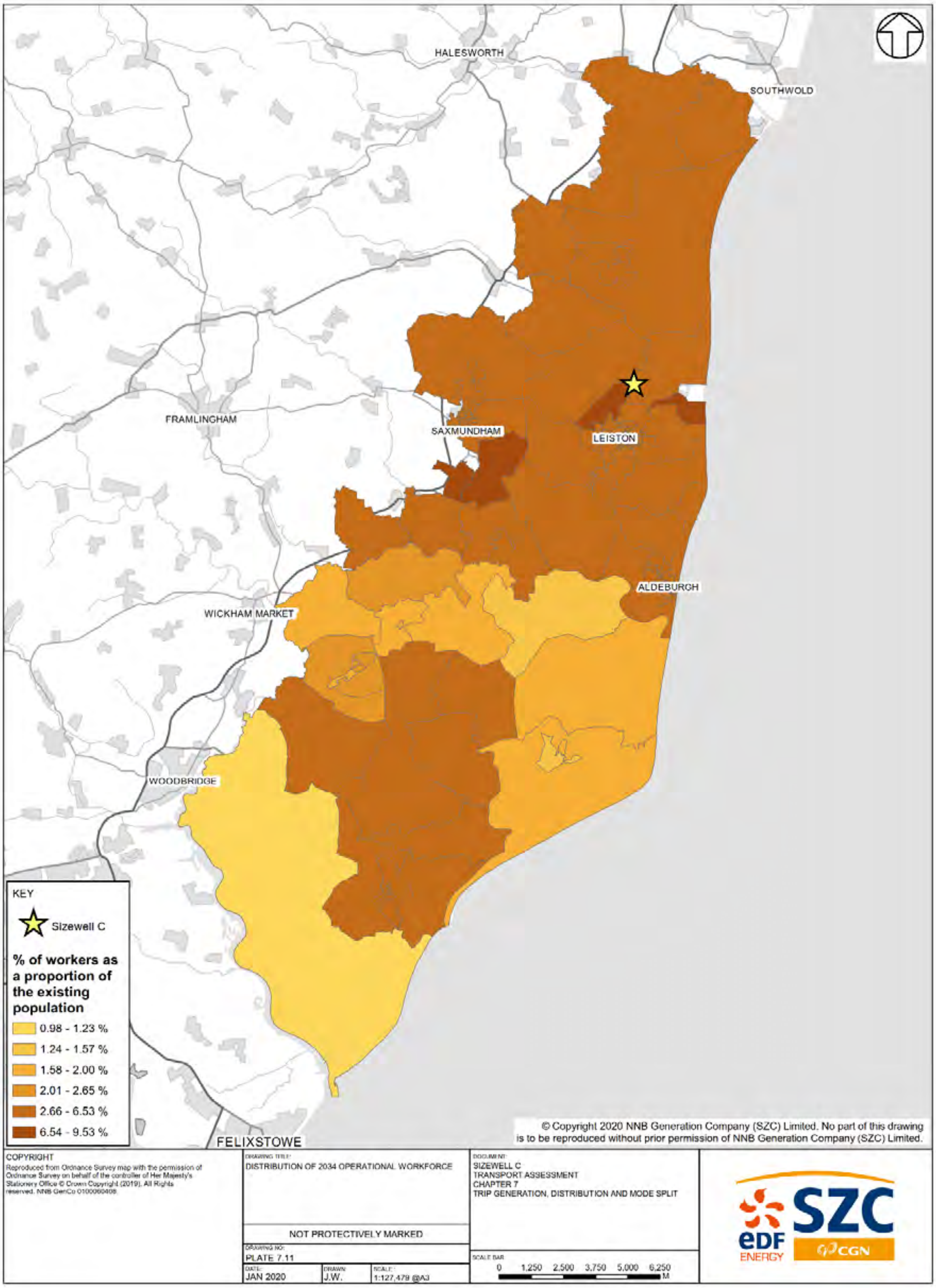
ii. Trip distribution

7.4.9 The Gravity Model, described in **Appendix 7A** of this chapter, was run to produce 'home-to-work' trips, distributed across the VISUM model zones.

7.4.10 It is SZC Co.'s existing nuclear policy that all operational permanent staff should live within 25 miles of the station. For the purposes of this assessment it has been assumed, in the Gravity Model, that all operational staff at Sizewell C would live within a 30 minute travel time of the site. Analysis of 2011 Census data supports this and demonstrates that the vast majority of existing operational staff at Sizewell live well within the 25 miles distance.

7.4.11 A heat map showing the distribution of the workforce, as output from the Gravity Model, is shown in **Plate 7.11**. All workers are assumed to be HB, and the Gravity Model predicts that they would all live well within the 25 mile catchment.

Plate 7.11: Distribution of workforce – operational workers

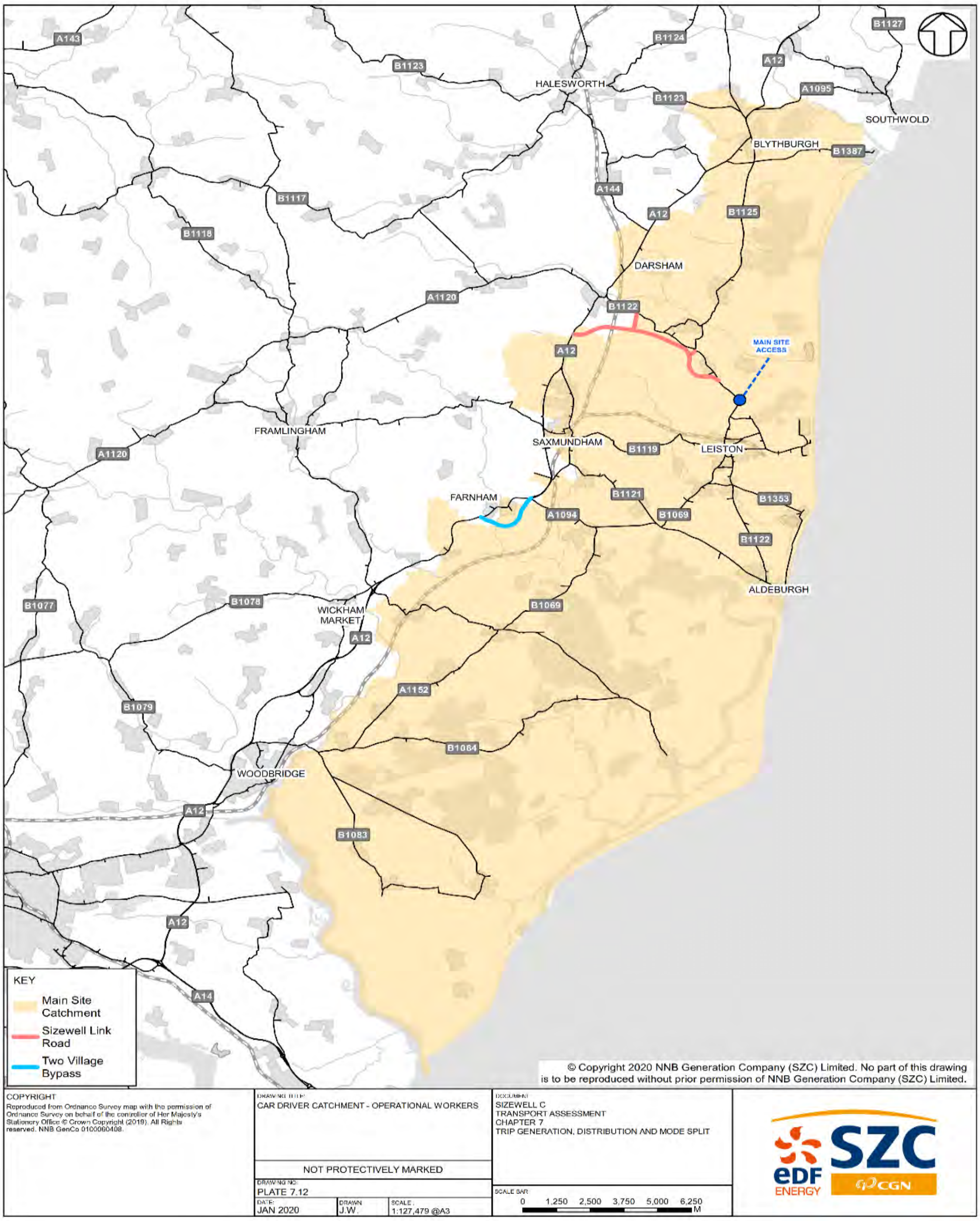


iii. Mode split

7.4.12 The assessment of the operational year in 2034 assumes that the park and ride facilities, accommodation campus, LEEIE, and FMF would be removed and reinstated by this stage. In order to provide a robust assessment of the potential traffic effects of the operational phase, it has been assumed that all workers would travel to work at Sizewell C by car. However, prior to commencement of the operational phase, SZC Co. will be required to submit an **Operational Travel Plan** to the Transport Review Group for approval (as secured via an obligation in a Section 106 Agreement), which will provide a package of measures to encourage sustainable travel to the site.

7.4.13 The modelled catchment of workers travelling by car to the main development site is shown in **Plate 7.12**.

Plate 7.12: Car driver catchment – operational workers



iv. Derivation of car trips

7.4.14 All operational workers are HB and, like the HB construction workers, are likely to share vehicles at a rate of 1.1 workers per vehicle.

7.4.15 Applying the car share factor to the number of workers resulted in daily 'from home to work' trips for operational workers at the main development site. These were then split between shifts, shown in **Table 48** in **Appendix 7B** of this chapter, to derive hourly workforce car trips to and from the Sizewell C site.

d) Non-work trips

7.4.16 Since all operational workers are HB any non-work trips are already included in the 2034 reference case model.

e) Visitor trips

7.4.17 No additional visitor trips are modelled in the Sizewell C operational phase since visitors to the Sizewell B visitor centre are already included in the 2034 reference case. There are likely to be some visitors to the site although these would be likely to arrive and depart outside of network peak hours and have minimal impact on the highway network.

f) Goods vehicles

i. Light Goods Vehicles

7.4.18 LGVs would undertake small-scale deliveries to the Sizewell C main development site.

7.4.19 In addition the modelling assumes a small number of deliveries would be made to an off-site storage facility, such as the Master Lord Industrial Estate which is currently used by EDF Energy for the receipt of some deliveries by LGV and HGV made in connection with the operation of Sizewell B. A number of such storage facilities in the vicinity of Sizewell C may be suitable for the off-site receipt of operational deliveries, however the modelling has been based on the usage of the Master Lord Industrial Estate to provide an appropriately robust assessment of operational vehicle trips.

7.4.20 The number of LGV movements assumed per day during the operational phase are:

- Main development site: 40 LGV movements (20 deliveries).
- Master Lord Industrial Estate: 30 LGV movements (15 deliveries).
- Total: 70 LGV movements (35 deliveries).

7.4.21 LGV deliveries to both sites are expected to be evenly spread between 06:00-19:00 hours and depart within the hour.

7.4.22 The zonal distribution of Sizewell C LGV trips is based on the distribution of existing LGV trips in the 2034 reference case VISUM model. The assignment of Sizewell C LGVs in the VISUM model is impedance-based, i.e. they can take any permitted route to and from the main development site or Master Lord Industrial Estate.

ii. Heavy Goods Vehicles

7.4.23 HGVs would undertake large-scale deliveries to the main development site as well as a suitable off-site location which, for the purposes of the transport modelling, is assumed to be the Master Lord Industrial Estate, which is currently used by EDF Energy for the receipt of some deliveries by LGV and HGV made in connection with the operation of Sizewell B.

7.4.24 The number of HGV movements assumed per day during the operational phase, are:

- Main development site: 20 HGV movements (10 deliveries).
- Master Lord Industrial Estate: 10 HGV movements (5 deliveries).
- Total: 30 HGV movements (15 deliveries).

7.4.25 The delivery profile and distribution of the operational HGVs is based on the construction HGVs.

7.4.26 Detailed description of the modelled LGVs and HGVs is provided in **Appendix 7B** of this chapter.

g) Buses

7.4.27 No direct bus services are included in the modelling for the Sizewell C operational phase to provide a robust assessment.

h) Summary vehicle trips

7.4.28 The Sizewell C vehicle trips included in each of the seven modelled hours are summarised in **Table 7.15**. Numbers are rounded.

7.4.29 Assessment of car park accumulation is provided in **Appendix 7B** of this chapter.

Table 7.15: Sizewell C operational traffic summary trips

Modelled Hour	Car		LGV				HGV			
	Main Development Site		Main Development Site		Master Lord Industrial Estate		Main Development Site		Master Lord Industrial Estate	
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT
06:00-07:00	0	0	2	2	1	1	0	0	0	0
07:00-08:00	128	0	2	2	1	1	2	0	1	0
08:00-09:00	568	41	2	2	1	1	2	1	1	1
15:00-16:00	0	0	2	2	1	1	0	1	0	0
16:00-17:00	0	655	2	2	1	1	0	0	0	0
17:00-18:00	0	0	2	2	1	1	0	0	0	0
18:00-19:00	0	0	2	2	1	1	0	0	0	0
Total (modelled hours)	**696**	**696**	**11**	**11**	**8**	**8**	**4**	**2**	**2**	**1**
Total (24 hours)	**777**	**777**	**20**	**20**	**15**	**15**	**10**	**10**	**5**	**5**

8. Strategic Modelling

8.1 Introduction

8.1.1 The overall approach for the Sizewell C traffic modelling is set out in **Chapter 6** of this **Transport Assessment** (Doc Ref. 8.5). This chapter describes the development and assessment of the strategic traffic modelling scenarios.

8.2 Overview of forecast years

8.2.1 A base year model was first produced to reflect existing conditions, in a 2015 base year, from which forecast scenarios could be developed and used to assess the potential impacts of Sizewell C. The development of the base year model is described in **Section 8.3** of this chapter.

8.2.2 The 2015 base model has subsequently been used to develop a forecast year highway network and demand, representative of the likely traffic conditions in three different forecast years, to enable analysis of the impacts of Sizewell C traffic on the highway network at three key phases of the Sizewell C Project:

- 2023 – early years phase of construction;
- 2028 – peak construction phase; and
- 2034 – operational phase.

8.2.3 'Reference case' models were first produced for each forecast year to represent traffic conditions without the Sizewell C Project. These include 'committed' developments, as agreed with Suffolk County Council (SSC), and background traffic growth. In addition, all future year scenarios have been modelled including traffic flows generated by an outage at Sizewell B, which is performed periodically (approximately every 18 months per unit and lasting up to 2 months), so that robust traffic flows are reflected in each scenario. This is highly robust, given that a planned outage only occurs for 8% of the time. A 'planned' outage is a period of scheduled maintenance during which time the station is not operational, but generates traffic associated with the outage. Development of the reference case models is described in **Section 8.4** of this chapter.

8.2.4 Building on the reference case models, scenarios were then produced for each forecast year that include the Sizewell C development traffic and associated infrastructure, to assess the traffic impacts of the Sizewell C Project in comparison with the reference case in each forecast year.

8.2.5 On some days during the peak construction year, the number of heavy goods vehicle (HGV) deliveries would be higher than on a typical day, so two scenarios have been assessed for the peak construction phase, representing a 'typical day' and a 'busiest day' with the only difference being the number of Sizewell C HGVs.

8.2.6 The development scenarios assessed are:

- 2023 early years;
- 2028 peak construction 'typical day';
- 2028 peak construction 'busiest day'; and
- 2034 operational traffic.

8.2.7 The Sizewell C development scenario modelling is described in **Section 8.5** of this chapter.

8.2.8 Assessment of the strategic modelling scenarios is provided in **Sections 8.7** and **8.8**, both of this chapter.

8.2.9 Outputs from the strategic models were used to provide input to the standalone modelling which is described in **Chapter 9** of this **Transport Assessment.**

8.3 Base year

8.3.1 The 2015 base model was produced to represent seven weekday hourly periods. These are:

- 06:00 to 09:00 hours in the weekday morning period; and
- 15:00 to 19:00 hours in the weekday afternoon/evening period.

8.3.2 These hours were agreed with SCC and the analysis is presented in **Appendix 6A** of this **Transport Assessment**.

8.3.3 The following vehicle classes are represented and assigned separately within the base model:

- car;
- light goods vehicle (LGV);
- HGV; and
- bus.

8.3.4 Car, LGV, and HGV vehicle classes within the base model are assigned in origin-destination (O-D) matrix form allowing route choice through the network. The route choice impedance is based on a miscroscopic multi-modal traffic flow simulation software package's (VISUM), in-built 'Assignment with ICA' assignment procedure with 'Equilibrium-LUCE' sub-assignment algorithm, as recommended by PTV, the VISUM software developer.

8.3.5 Existing bus services are modelled on fixed routes with timetabled service frequencies.

8.3.6 In the development of the base year transport model, the Department for Transport's (DfT) Web-based Transport Analysis Guidance (Web-TAG) (Ref 8.1) has informed the model development process, where relevant. The 2015 base year model has been calibrated and validated, using observed traffic data collected across the study area between March and June 2015, based on the criteria set out in transport analysis guidance Unit M3.1: Highway Assignment Modelling (Ref 8.1).

8.3.7 The development, calibration, and validation of the base model are detailed in the 2015 Local Model Validation Report, which is provided in **Appendix 8A** of this **Transport Assessment**. Analysis of traffic growth between 2015 and 2019 has been undertaken to demonstrate the validity of the 2015 base model for the purpose of forecasting, which is described in the technical notes provided in **Appendix 8B** of this **Transport Assessment**.

8.4 Reference case

a) Basis

8.4.1 The development of the reference case models is described in detail in the separate technical notes provided in **Appendix 8B** of this **Transport Assessment** and is summarised in this section.

8.4.2 Reference case traffic flows are assigned in the following vehicle classes, using the same assignment algorithms as the base model:

- car;
- LGV;
- HGV; and
- bus.

8.4.3 Forecast year traffic demand for the reference case scenarios is estimated using one of two methods:

- Specific trip generation and distribution, for committed developments.

- Background traffic growth (applied across the model), for other developments and socio-economic factors such as changes in car ownership. This is reduced to avoid double-counting of committed development traffic.

8.4.4 Although not all developments have been granted planning permission at this stage, the developments shown in **Table 8.1** are considered by SCC to be 'committed' for the purpose of including them explicitly within the reference case models.

8.4.5 Note that Suffolk Coastal and Waveney District Councils have now combined to form East Suffolk Council, however the traffic data and growth factor sources have not yet been updated to reflect this so the local authorities are referred to separately throughout this chapter.

Table 8.1: Committed developments

ID	Development	Local Authority.	Description	Proportion of Development Completed.		
				2023	2028	2034
1	Adastral Park.	Suffolk Coastal District Council.	60,200 squre metres (m^2) (B1). 2,000 homes (C3). 180 bed hotel (C1). Mixed use local centre (1.82 hectares (ha)) – health care provision (D1), retail (A1), Café (A3), Public House (A4), Takeaway (A5). Two form entry primary school (D1). Expansion of University (2.3ha) (D1).	Partial: approximately 225* homes and no retail.	Partial: approximately 725* homes and 315 jobs.	Partial: approximately 1,325* homes and 344 jobs.
2	Uniserve, Clickett Hill.	Suffolk Coastal District Council.	B8 distribution facility – 46,575m^2 (warehouse), 990m2 (office).	100%	100%	100%
3	Martlesham	Suffolk Coastal District Council.	180 homes (38 dwellings occupied at June 2015, 142 remaining).	100%	100%	100%
4	Ipswich Garden Suburb (North Ipswich).	Ipswich Borough Council.	3,500 dwellings, across four areas: Fonnereau Village. Henley Village. Red House Village. Ipswich School site. District Centre – up to 2,000m^2 convenience retail, up to 1,220m^2 comparison retail, up to 1,320m^2 services including A1 to A5, health centre, library, police office, community centre.	Partial: approximately 740 dwellings and no retail.	Partial: approximately 1,960 dwellings plus 2,000m^2 retail.	Partial: approximately 3,390 dwellings plus all retail.

ID	Development	Local Authority.	Description	Proportion of Development Completed.		
				2023	2028	2034
			Two Local Centres – up to 500m^2 convenience retail, up to 600m^2 comparison retail, up to 500m^2 services including A1 to A5. Secondary school. Three primary schools. Public open space and a country park.			
5	Trinity Park.	Ipswich Borough Council.	300 homes.	100%	100%	100%
6	Futura Park.	Ipswich Borough Council.	Phase 1 – 10,008m^2 (A1 – Food Retail), 6,186m^2 (A1 – Non-Food Retail). Phase 2 – 10,3502m^2 (B1), 4,050m^2 (B2), 31,680m^2 (B8).	100%	100%	100%
7	Brooke Peninsula, Lowestoft.	Waveney District Council.	850 homes.	100%	100%	100%
8	Felixstowe Port.	Suffolk Coastal District Council.	Further 1,650 HGV movements per day by 2023.	100%	100%	100%
9	Belstead House.	Babergh	155 homes.	100%	100%	100%
10	Wolsey Grange.	Babergh	475 homes. Primary school (210 pupils). Leisure park.	100%	100%	100%
11	Woods Meadow.	Suffolk Coastal District Council.	180 homes.	100%	100%	100%
12	Fairfield Road, Framlingham.	Suffolk Coastal District Council.	163 homes.	100%	100%	100%

ID	Development	Local Authority.	Description	Proportion of Development Completed.		
				2023	2028	2034
13	Mount Pleasant, Framlington.	Suffolk Coastal District Council.	95 homes.	100%	100%	100%
14	Saxmundham, HSA.	Suffolk Coastal District.	800 homes. 559 jobs.	Partial: approximately 318 homes and 332 jobs.	Partial: approximately 550 homes and 435 jobs.	100%

*25 homes by 2021, 100 annually thereafter.

8.4.6 For the developments shown in **Table 8.1**, the proposed trip generation has been derived from their respective Transport Assessments.

8.4.7 Background traffic growth factors have been obtained from various sources as follows:

- Cars:
  - National trip end model via the Trip End Model Presentation Program (TEMPro) software (Ref. 8.2), adjusted by the committed developments to avoid double-counting.
  - Fuel cost and income adjustment factors obtained from transport analysis guidance databook November 2018 (Ref. 8.3). Guidance from DfT is to use the latest databook for these factors which, at the time of modelling, was the November 2018 databook.
- Goods vehicles:
  - Road Traffic Forecasts 2018 (RTF18) (Ref. 8.4) published by DfT, which were the latest forecasts at the time of modelling.

8.4.8 For car traffic, the forecast traffic demand resulting from committed development trips and adjusted national trip end model background growth has then been constrained to overall (unadjusted) national trip end model growth forecasts, before the application of fuel cost and income adjustment factors, as set out in transport analysis guidance Unit M4: Forecasting and Uncertainty (Ref 8.1).

8.4.9 Finally, the highway assignment generalised costs have been calculated for each forecast year using values of time, GDP growth rates, purpose splits, and vehicle operating costs recommended by the DfT for use in economic appraisals of transport projects in England. These values are consistent with the latest guidance at the time of developing the base model (November 2014) contained within transport analysis guidance Unit A1.3 (Ref. 8.1) and in the transport analysis guidance Databook November 2014 release (Ref. 8.5), which is consistent with the validated 2015 base model.

b) Sizewell B outage

8.4.10 As summarised earlier, the operation of Sizewell B, and the trips it generates, could have an impact on traffic flows and operation of junctions across the modelled area. An ‘outage’ is performed periodically at Sizewell B, approximately every 18 months per unit and lasting up to 2 months, during which periods traffic flows generated by the site are higher than usual. The outage traffic flows are therefore only on the highway network for circa 10% of the time. Notwithstanding this, a Sizewell B outage (‘SZB outage’) has been included in any future year modelling so as to reflect the higher traffic flows that occur periodically.

8.4.11 The traffic demand generated by 'SZB outage', included in all future year scenarios, both reference case and with Sizewell C development, has been derived from traffic counts that were undertaken in Spring 2016 during a period of outage at Sizewell B, and a period of no outage, to provide comparative traffic flows at a range of locations. This survey data, combined with assessment of routing of existing traffic in the strategic models, has been used to derive traffic demand, geographical distribution, and time profile for inclusion in the reference case scenarios.

8.4.12 This information is included in reference case inputs provided in **Appendix 8B** of this **Transport Assessment.**

c) Summary

8.4.13 A detailed description of the development of the reference case models is given within the technical notes provided at **Appendix 8B** of this **Transport Assessment**. The summary trips produced for each forecast year reference case are presented in **Table 8.2** for 2023, **Table 8.3** for 2028, and **Table 8.4** for 2034.

Table 8.2: 2023 reference case trips

Vehicle Class.	Hour	2015 Base Year.	2023 Background Traffic.	2023 Committed Development.	2023 Reference Case Total.	SZB Outage.	Final 2023 Reference Case Total.
Car	06:00–07:00	16,789	18,311	200	**18,511**	598	**19,109**
	07:00–08:00	39,155	41,163	1,933	**43,096**	174	**43,270**
	08:00–09:00	53,300	55,787	2,833	**58,620**	37	**58,657**
	15:00–16:00	49,865	56,740	2,627	**59,367**	13	**59,380**
	16:00–17:00	48,564	50,913	2,621	**53,534**	4	**53,538**
	17:00–18:00	50,946	53,129	3,002	**56,131**	199	**56,330**
	18:00–19:00	38,943	40,396	2,511	**42,907**	534	**43,441**
LGV	06:00–07:00	1,741	1,964	-	**1,964**	60	**2,024**

Vehicle Class.	Hour	2015 Base Year.	2023 Background Traffic.	2023 Committed Development.	2023 Reference Case Total.	SZB Outage.	Final 2023 Reference Case Total.
	07:00–08:00	3,785	4,270	-	**4,270**	20	**4,290**
	08:00–09:00	3,727	4,204	-	**4,204**	1	**4,205**
	15:00–16:00	3,062	3,454	-	**3,454**	19	**3,473**
	16:00–17:00	3,712	4,188	-	**4,188**	11	**4,199**
	17:00–18:00	2,771	3,126	-	**3,126**	13	**3,139**
	18:00–19:00	1,930	2,177	-	**2,177**	43	**2,220**
HGV	06:00–07:00	1,808	1,854	68	**1,922**	1	**1,923**
	07:00–08:00	2,456	2,517	81	**2,598**	4	**2,602**
	08:00–09:00	2,747	2,816	73	**2,889**	1	**2,890**
	15:00–16:00	2,744	2,812	111	**2,923**	1	**2,924**
	16:00–17:00	2,232	2,288	107	**2,395**	1	**2,396**
	17:00–18:00	1,623	1,663	91	**1,754**	1	**1,755**
	18:00–19:00	1,173	1,202	70	**1,272**	2	**1,274**
Total	06:00–07:00	20,338	22,129	268	**22,397**	659	**23,056**
	07:00–08:00	45,395	47,950	2,015	**49,964**	198	**50,162**
	08:00–09:00	59,775	62,807	2,906	**65,713**	40	**65,752**
	15:00–16:00	55,670	63,006	2,738	**65,745**	33	**65,777**
	16:00–17:00	54,508	57,389	2,728	**60,116**	16	**60,133**
	17:00–18:00	55,339	57,918	3,093	**61,011**	212	**61,224**

Vehicle Class.	Hour	2015 Base Year.	2023 Background Traffic.	2023 Committed Development.	2023 Reference Case Total.	SZB Outage.	Final 2023 Reference Case Total.
	18:00–19:00	42,046	43,775	2,580	**46,356**	579	**46,935**

Table 8.3: 2028 reference case trips

Vehicle Class.	Hour	2015 Base Year.	2028 Background Traffic.	2028 Committed Development.	2028 Reference Case Total.	SZB Outage.	Final 2028 Reference Case Total.
Car	06:00–07:00	16,789	19,213	209	**19,422**	598	**20,020**
	07:00–08:00	39,155	42,719	2,456	**45,175**	174	**45,349**
	08:00–09:00	53,300	57,540	3,880	**61,420**	37	**61,457**
	15:00–16:00	49,865	56,774	3,577	**60,351**	13	**60,364**
	16:00–17:00	48,564	52,529	3,644	**56,173**	4	**56,177**
	17:00–18:00	50,946	54,748	4,141	**58,889**	199	**59,088**
	18:00–19:00	38,943	41,560	3,450	**45,010**	534	**45,544**
LGV	06:00–07:00	1,741	2,064	-	**2,064**	60	**2,124**
	07:00–08:00	3,785	4,487	-	**4,487**	20	**4,507**
	08:00–09:00	3,727	4,418	-	**4,418**	1	**4,419**
	15:00–16:00	3,062	3,630	-	**3,630**	19	**3,649**
	16:00–17:00	3,712	4,401	-	**4,401**	11	**4,412**
	17:00–18:00	2,771	3,285	-	**3,285**	13	**3,298**
	18:00–19:00	1,930	2,288	-	**2,288**	43	**2,331**
HGV	06:00–07:00	1,808	1,887	68	**1,955**	1	**1,956**

Vehicle Class.	Hour	2015 Base Year.	2028 Background Traffic.	2028 Committed Development.	2028 Reference Case Total.	SZB Outage.	Final 2028 Reference Case Total.
	07:00–08:00	2,456	2,563	81	**2,644**	4	**2,648**
	08:00–09:00	2,747	2,868	73	**2,940**	1	**2,941**
	15:00–16:00	2,744	2,864	111	**2,975**	1	**2,976**
	16:00–17:00	2,232	2,329	107	**2,436**	1	**2,437**
	17:00–18:00	1,623	1,694	91	**1,784**	1	**1,785**
	18:00–19:00	1,173	1,224	70	**1,294**	2	**1,296**
Total	06:00–07:00	20,338	23,164	278	**23,442**	659	**24,101**
	07:00–08:00	45,395	49,769	2,537	**52,306**	198	**52,504**
	08:00–09:00	59,775	64,826	3,953	**68,779**	40	**68,819**
	15:00–16:00	55,670	63,268	3,688	**66,956**	33	**66,989**
	16:00–17:00	54,508	59,260	3,751	**63,011**	16	**63,027**
	17:00–18:00	55,339	59,727	4,231	**63,958**	212	**64,170**
	18:00–19:00	42,046	45,072	3,520	**48,592**	579	**49,171**

Table 8.4: 2034 reference case trips

Vehicle Class.	Hour	2015 Base Year.	2034 Background Traffic.	2034 Committed Development.	2034 Reference Case Total.	SZB Outage.	Final 2034 Reference Case Total.
Car	06:00–07:00	16,789	20,383	209	**20,592**	598	**21,190**
	07:00–08:00	39,155	44,784	3,033	**47,817**	174	**47,991**
	08:00–09:00	53,300	62,938	4,955	**67,893**	37	**67,930**

Vehicle Class.	Hour	2015 Base Year.	2034 Background Traffic.	2034 Committed Development.	2034 Reference Case Total.	SZB Outage.	Final 2034 Reference Case Total.
	15:00–16:00	49,865	63,187	4,465	**67,652**	13	**67,665**
	16:00–17:00	48,564	54,914	4,576	**59,490**	4	**59,494**
	17:00–18:00	50,946	59,949	5,207	**65,156**	199	**65,355**
	18:00–19:00	38,943	43,314	4,333	**47,647**	534	**48,181**
LGV	06:00–07:00	1,741	2,223	-	**2,223**	60	**2,283**
	07:00–08:00	3,785	4,833	-	**4,833**	20	**4,853**
	08:00–09:00	3,727	4,759	-	**4,759**	1	**4,760**
	15:00–16:00	3,062	3,909	-	**3,909**	19	**3,928**
	16:00–17:00	3,712	4,740	-	**4,740**	11	**4,751**
	17:00–18:00	2,771	3,538	-	**3,538**	13	**3,551**
	18:00–19:00	1,930	2,464	-	**2,464**	43	**2,507**
HGV	06:00–07:00	1,808	1,947	68	**2,016**	1	**2,017**
	07:00–08:00	2,456	2,645	81	**2,726**	4	**2,730**
	08:00–09:00	2,747	2,959	73	**3,032**	1	**3,033**
	15:00–16:00	2,744	2,955	111	**3,067**	1	**3,068**
	16:00–17:00	2,232	2,404	107	**2,511**	1	**2,512**
	17:00–18:00	1,623	1,748	91	**1,839**	1	**1,840**
	18:00–19:00	1,173	1,264	70	**1,334**	2	**1,336**
Total	06:00–07:00	20,338	24,553	278	**24,831**	659	**25,490**

Vehicle Class.	Hour	2015 Base Year.	2034 Background Traffic.	2034 Committed Development.	2034 Reference Case Total.	SZB Outage.	Final 2034 Reference Case Total.
	07:00–08:00	45,395	52,262	3,114	**55,376**	198	**55,574**
	08:00–09:00	59,775	70,655	5,028	**75,683**	40	**75,723**
	15:00–16:00	55,670	70,051	4,576	**74,627**	33	**74,660**
	16:00–17:00	54,508	62,058	4,683	**66,741**	16	**66,757**
	17:00–18:00	55,339	65,234	5,298	**70,532**	212	**70,744**
	18:00–19:00	42,046	47,041	4,403	**51,444**	579	**52,023**

d) Highway infrastructure

8.4.14 A number of committed highway schemes were included in the forecast year reference case scenarios as follows:

- Beccles Relief Road; new road joining the A145 London Road south of Beccles with Ellough Road, to the north of Ellough Industrial Estate. This scheme is now built so is included in all forecast year models.
- Lake Lothing Third Crossing, Lowestoft; this would link from the A12 via Waveney Drive on the south side, to Denmark Road and Peto Way on the north side of Lake Lothing. Included in 2028 and 2034 reference cases but excluded from 2023.
- New roundabout on A12 as part of the Saxmundham Housing Site Allocations committed development. This is included in all forecast year models.
- New highway infrastructure on B1077 Westerfield Road and improvements to A1214 / Henley Road junction, as part of the Ipswich Garden Suburb committed development (2028 onwards).
- Improvements to A1189 roundabouts, south-east of Ipswich, as part of the Future Park committed development. These are included in all forecast year models.
- Junction improvements associated with Wolsey Grange committed development (included in all forecast year models):

  - A1214 / A1071.
  - A1071 / Hadleigh Road.
  - A1214 / Scrivener Road roundabout.
  - New site access on A1214.
- Junction improvements associated with Adastral Park committed development (2028 onwards):
  - A12 / A14 Seven Hills.
  - A12 / Foxhall Road.
  - A12 / Barrack Square.
  - New site access on A12.

8.4.15 A further proposed improvement at A12 / Anson Road was not included in any of the reference case models as this is assumed to not be in place until after 2034, corresponding to the assessed build out rate for the Adastral Park development.

8.4.16 The modelled reference case highway scheme drawings are included in **Appendix 8B** of this **Transport Assessment**.

8.5 Sizewell C development scenarios

a) Basis

8.5.1 Models have been produced for each forecast year that include the Sizewell C development traffic and associated infrastructure, to assess the traffic impacts of the Sizewell C Project in comparison with the reference case in each forecast year.

8.5.2 The development scenarios assessed are:

- 2023 early years;
- 2028 peak construction ‘typical day’;
- 2028 peak construction ‘busiest day’; and
- 2034 operational traffic.

8.5.3 The hourly traffic O-D matrices produced for the reference case models are retained in the Sizewell C development models. In addition, development-related traffic demand, which is described in **Chapter 7** of this **Transport Assessment**, is modelled as separate vehicle classes from the reference case traffic to enable interrogation of development traffic impacts. Sizewell C cars and LGVs are assigned as O-D matrices with route choice (i.e. they can route along any road within the modelled area) similarly to reference case traffic. The modelled vehicle classes with route choice are therefore as follows:

- Background traffic:
  - car;
  - LGV; and
  - HGV.
- Sizewell C traffic:
  - Sizewell C Car; and
  - Sizewell C LGV.

8.5.4 Sizewell C HGVs and buses, as well as existing buses, are modelled on fixed routes with no route choice.

8.5.5 The Sizewell C traffic that has been modelled reflects a typical weekday when the majority of construction workers are expected to be present. It is envisaged that construction workers will operate on a four or six-week shift rota meaning that only around 85% of construction workers would be working on any given Friday, and indeed there are likely to be a number of workers off sick or on leave on any given weekday, however the modelling is based on 100% of construction workers which adds a level of robustness to the analysis.

8.5.6 The peak construction scenarios are referred to as 'typical day' and 'busiest day' however this denotes the difference in Sizewell C HGV deliveries only. The two scenarios contain the same amount of other Sizewell C trips (cars, LGVs and buses) which reflect a typical weekday in terms of workforce.

b) Highway infrastructure

8.5.7 The following embedded highway mitigation has been included in the modelling of the Sizewell C peak construction and operational traffic scenarios:

- A12 / B1122 roundabout at Yoxford;
- single-carriageway two village bypass on the A12 to the south of Stratford St. Andrew and Farnham; and

- single-carriageway Sizewell link road joining the A12 south of Yoxford with the B1122 east of Theberton.

8.5.8 In addition, traffic signals at the B1119 / B1121 Saxmundham crossroads and B1119 / B1069 Leiston crossroads are proposed to operate under Microprocessor Optimised Vehicle Actuation (MOVA) control so modelled fixed signal timings have been optimised. MOVA is a traffic control system that continually adjusts the green time required for each approach to a signal controlled junction in order to maximise the operational efficiency.

8.5.9 These embedded highway schemes have not been included in the early years modelling scenarios since this assessment is based on the period of construction before any mitigation is in place.

8.5.10 There are a number of other proposed minor highway improvements, which have been described in **Chapter 10** of this **Transport Assessment**, that have not been included in the VISUM modelling as they are not expected to have any effect in the strategic modelling assessment. The primary purpose of those highway improvement works is to improve road safety rather than capacity.

8.6 Cumulative assessment

8.6.1 A separate application is being put forward by Scottish Power to develop the East Anglia project, for a new offshore wind farm and connection to the national electricity grid, which would begin construction sooner than the Sizewell C Project. However if both projects were to go ahead, the construction phases would likely overlap. Therefore it was agreed with SCC that the Scottish Power development traffic should be considered as part of the Sizewell C cumulative assessment since the traffic associated with each project would use some of the same roads.

8.6.2 Since the Scottish Power development is not committed it should not be included in the reference case or Sizewell C core assessment scenarios but it should be included as a ‘cumulative’ scenario for the transport, noise and vibration, and air quality assessments presented in **Volume 2, Chapters 10, 11** and **12** of the **Environmental Statement** (**ES**) respectively. In addition, the junction modelling carried out to assess capacity impacts, discussed in **Chapter 9** of this **Transport Assessment**, includes the Scottish Power traffic in the first instance to ensure the ‘worst case’ traffic flows are used to assess junction performance. Where a junction is found to be operating over-capacity in the cumulative scenario, it has also been assessed without Scottish Power traffic to ascertain the operation in the core scenario.

8.6.3 Following discussions with Scottish Power it was determined that the construction of two elements of the East Anglia project could overlap with the construction of Sizewell C:

- ‘East Anglia 1 North’ (EA1N); and
- ‘East Anglia 2’ (EA2).

8.6.4 These two projects would likely be under construction during the early years of Sizewell C construction and could potentially be constructed either consecutively or concurrently. For the purposes of assessing a worst case, the ‘concurrent build’ traffic flows have been used, derived from the preliminary environmental information for the ‘EA2’ development.

8.6.5 Although the proposed timeline for concurrent construction shows the EA1N and EA2 developments completed before the Sizewell C peak construction phase, if the construction programme were to be delayed the concurrent build could still be underway by Sizewell C peak construction phase therefore the EA1N and EA2 ‘concurrent build’ traffic flows have also been assessed in the Sizewell C 2028 peak construction ‘cumulative’ scenario. The Scottish Power development would be completed by the Sizewell C operational stage.

8.6.6 The derivation of Scottish Power traffic flows relating to the construction of EA1N and EA2, for the purposes of assessing a ‘cumulative’ scenario in 2023 (Sizewell C early years) and 2028 (Sizewell C peak construction), is set out in **Appendix 8C** of this **Transport Assessment**.

8.7 Strategic model assessment – link flows

a) Basis

8.7.1 This section includes estimates of the additional daily traffic that the Sizewell C Project is forecast to generate under the three phases of the Sizewell C Project that have been assessed.

8.7.2 Average annual weekday traffic (AAWT) flows are compared between the reference case and the ‘with Sizewell C’ scenario in each forecast year. Additionally, traffic flows are presented for the cumulative scenarios, in 2023 and 2028, which include the Scottish Power development traffic.

8.7.3 The VISUM traffic model that is being used to assess Sizewell C traffic effects is a dynamic highway assignment model. This means that existing and development related traffic within the model can reroute to choose the best available routes, taking account of distance and journey time (other than Sizewell C HGVs and existing and Sizewell C buses which are assigned to fixed routes).

8.7.4 This means that flow changes within the traffic model on any given route are not a simple direct addition of Sizewell C traffic onto a fixed and unchanging future year traffic flow. For this reason, a flow 'range' is presented that demonstrates the likely flow with or without any rerouting. The potential scale of changes in daily traffic flows, for the locations shown in **Plates 8.1**, **8.2** and **8.3**, is presented in this section for the three phases of development.

Plate 8.1: Link flow assessment locations (1)

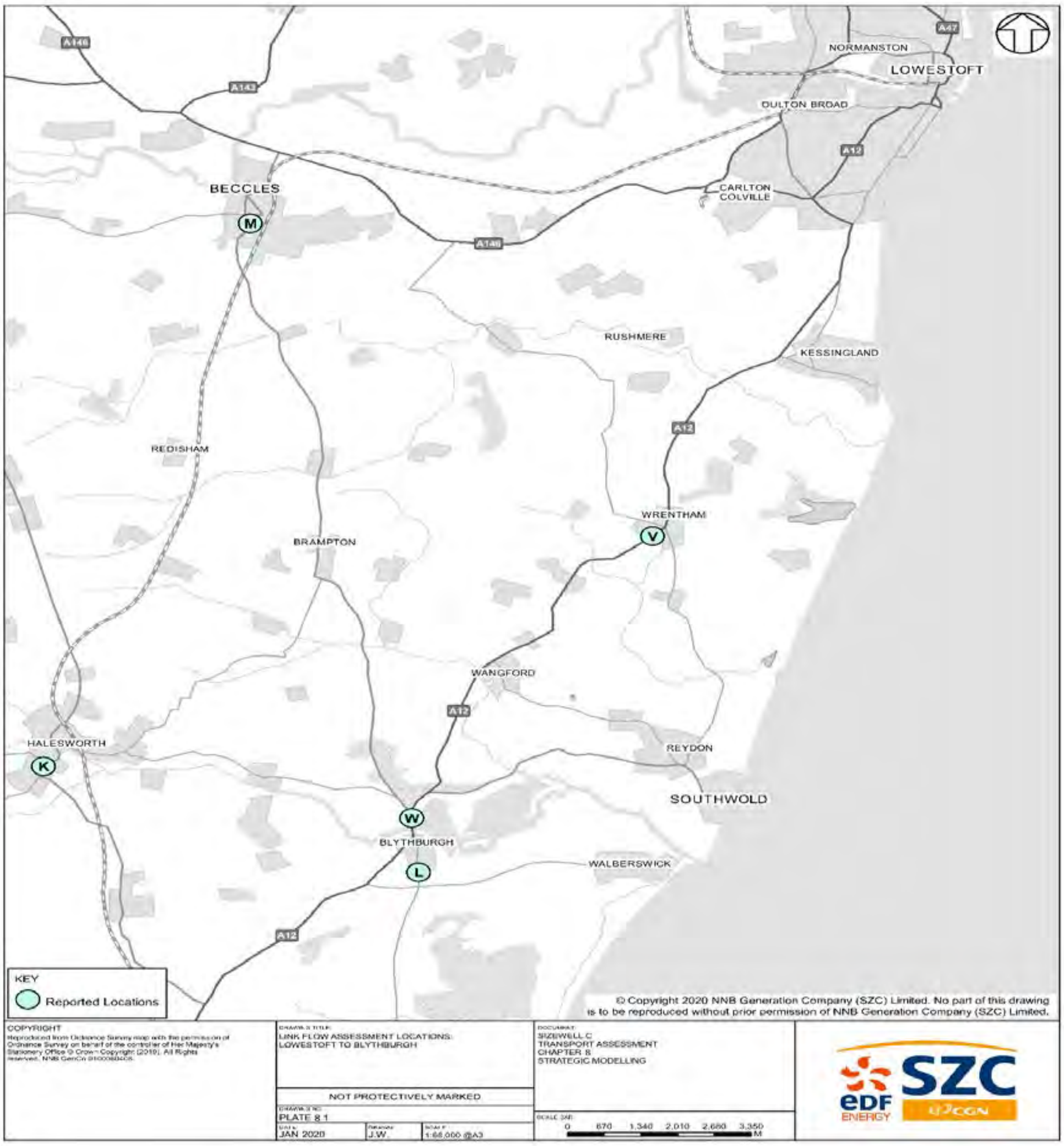


Plate 8.2: Link flow assessment locations (2)

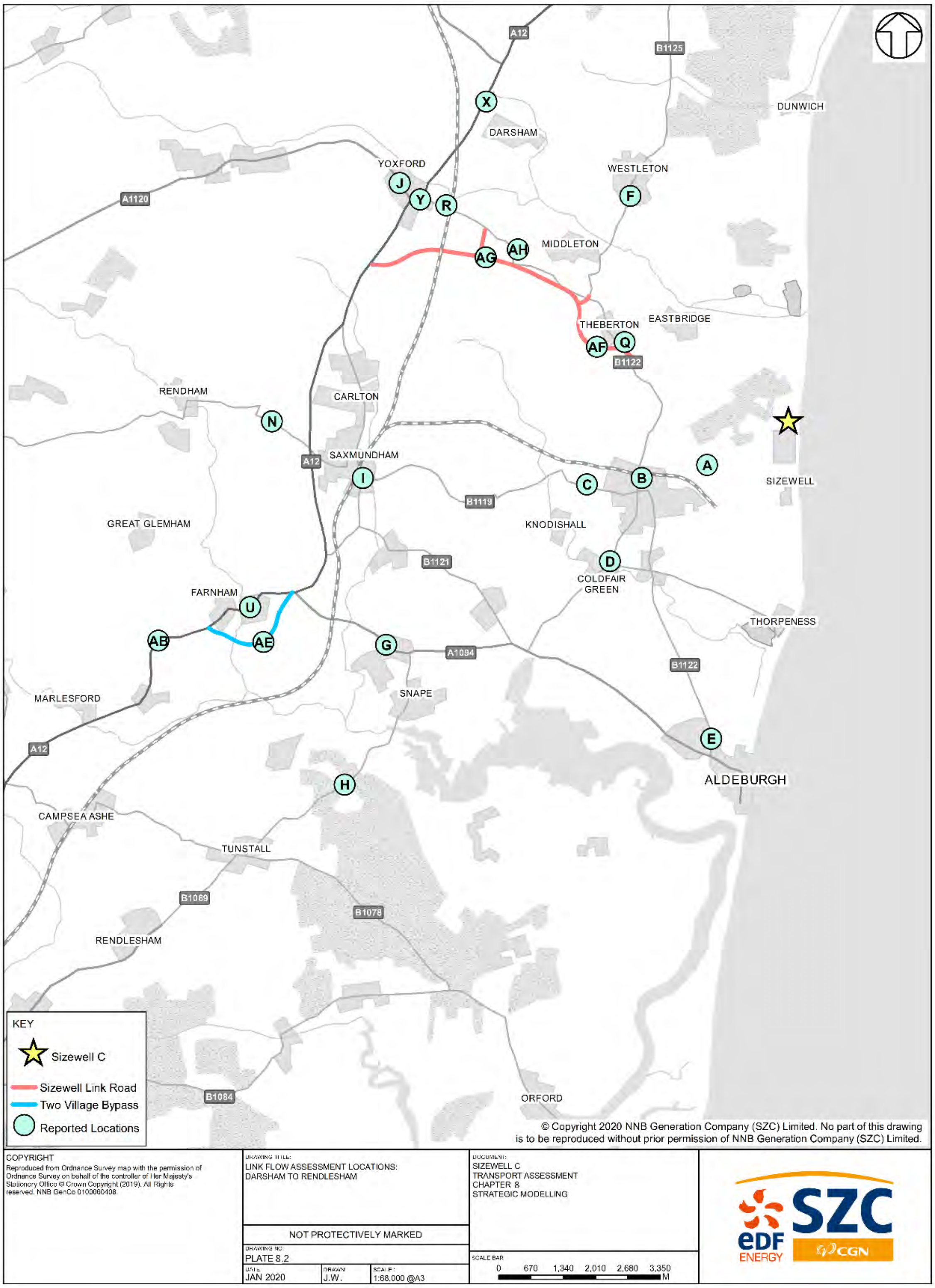
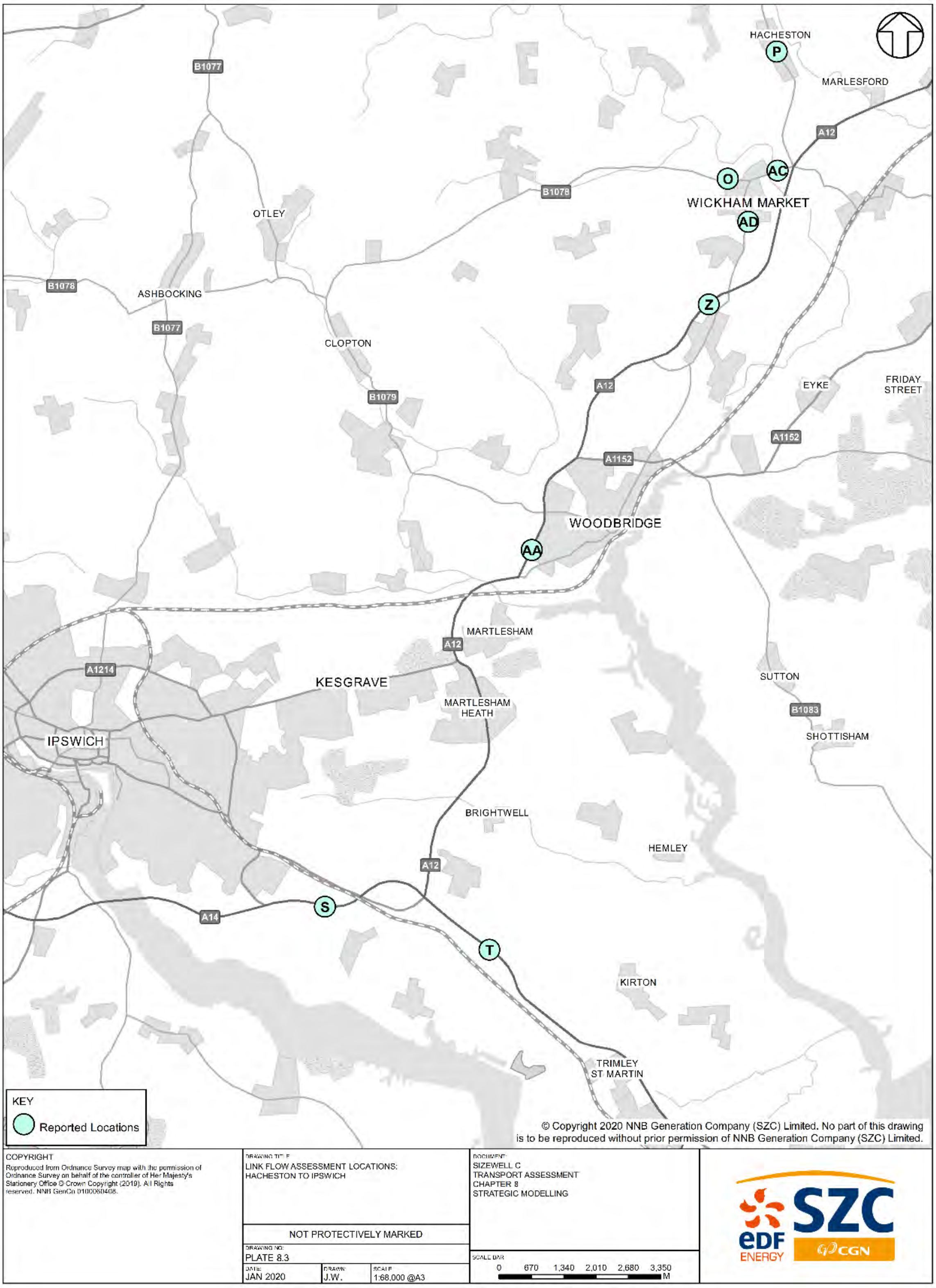


Plate 8.3: Link flow assessment locations (3)



b) 2023 early years

8.7.5 **Table 8.5** shows the forecast daily 24-hour AAWT traffic flows, rounded to 50 vehicles, at the range of locations shown in **Plates 8.1, 8.2,** and **8.3** during the early years of Sizewell C construction. The cumulative scenario traffic flows, including the Scottish Power development, are also presented.

Table 8.5: 2023 early years – forecast daily (24-hour) AAWT traffic flows

Location		2015 Base Year.	2023 Reference Case.	2023 Early Years.		2023 Early Years 'Cumulative'.	
				SZC Traffic.	Total Traffic.	Scottish Power Traffic.	Total Traffic.
Lover's Lane, Leiston.	A	2,500	3,250	1,550	4,800	200	4,950 - 5,000
B1122 Abbey Road, Leiston.	B	4,450	4,750	500	5,200 - 5,250	50	5,300
B1119 Saxmundham Rd, Leiston.	C	3,750	4,950	450	5,400	50	5,450
B1069 Coldfair Green.	D	5,400	6,600	500	7,000 - 7,100	150	7,150 - 7,250
B1122 Aldeburgh.	E	3,300	3,850	150	3,950 - 4,000	50	3,950 - 4,050
B1125 Westleton.	F	2,400	2,750	500	3,250	100	3,350 - 3,400
A1094 west of Snape Rd.	G	7,550	8,750	450	9,200	300	9,400 - 9,500
B1069 Tunstall.	H	3,050	3,800	150	3,950 - 4,050	0	3,950 - 4,150
B1121 Saxmundham.	I	4,500	5,500	200	5,700 - 5,900	50	5,750 - 5,950
A1120 Yoxford.	J	3,650	4,150	450	4,600 - 4,650	0	4,600 - 4,650
A144 Halesworth.	K	6,900	7,800	150	7,950	0	7,950

Location		2015 Base Year.	2023 Reference Case.	2023 Early Years.		2023 Early Years 'Cumulative'.	
				SZC Traffic.	Total Traffic.	Scottish Power Traffic.	Total Traffic.
B1125 Blythburgh.	L	1,650	1,850	450	2,300	100	2,400 - 2,450
A145 Beccles.	M	15,350	9,500	150	9,600 - 9,650	50	9,650 - 9,700
B1119 Framlingham and A12.	N	2,700	3,350	50	3,400	0	3,400
B1078 Wickham Market.	O	4,000	5,100	150	5,250	0	5,250 - 5,300
B1116 Hacheston.	P	6,900	7,800	50	7,800 - 7,850	0	7,750 - 7,850
B1122 Theberton.	Q	5,150	6,050	1,600	7,650	250	7,900
B1122 east of Yoxford.	R	3,450	4,150	1,100	5,250 - 5,300	100	5,350 - 5,400
A14 south of Ipswich (west of Seven Hills).	S	57,350	63,250	1,050	63,400 - 64,300	200	63,200 - 64,500
A14 east of Seven Hills.	T	44,500	49,450	250	49,600 - 49,700	50	49,600 - 49,750
A12 Farnham.	U	18,900	20,950	1,950	22,450	400	22,600 - 23,300
A12 Wrentham.	V	9,800	9,750	650	10,200 - 10,400	150	10,300 - 10,550
A12 Blythburgh.	W	10,350	11,000	950	11,800 - 11,950	150	11,950 - 12,100

Location		2015 Base Year.	2023 Reference Case.	2023 Early Years.		2023 Early Years 'Cumulative'.	
				SZC Traffic.	Total Traffic.	Scottish Power Traffic.	Total Traffic.
A12 north of northern park and ride.	X	14,000	15,200	700	15,700 - 15,900	50	15,700 - 15,950
A12 Yoxford.	Y	14,700	15,850	1,500	17,150 - 17,350	150	17,250 - 17,500
A12 south of southern park and ride.	Z	24,550	27,150	1,800	28,500 - 28,950	350	28,600 - 29,300
A12 Woodbridge.	AA	37,600	39,700	1,650	39,550 - 41,350	350	39,050 - 41,700
A12 Marlesford.	AB	18,800	20,950	1,950	22,400 - 22,900	400	22,600 - 23,300
B1078 Wickham Market (east of B1438).	AC	3,750	4,400	150	4,550	0	4,550
B1438 High Street, Wickham Market.	AD	2,550	3,150	50	3,200	0	3,200
Two village bypass.	AE	0	0	0	0	0	0
Sizewell link road south of Theberton.	AF	0	0	0	0	0	0
Sizewell link road east of A12.	AG	0	0	0	0	0	0

Location		2015 Base Year.	2023 Reference Case.	2023 Early Years.		2023 Early Years 'Cumulative'.	
				SZC Traffic.	Total Traffic.	Scottish Power Traffic.	Total Traffic.
B1122 Middleton Moor.	AH	3,450	4,150	1,100	5,250	100	5,350 - 5,400

8.7.6 As described earlier in this section, some locations may experience rerouting of traffic away from or onto alternative roads as a result of congestion and day-to-day variation in traffic flows. This is reflected by the flow 'range' that is presented to give an indication of the likely traffic flows with or without such rerouting.

8.7.7 For example, on the A1120 at Yoxford (location J) the reference case flow is 4,150 vehicles daily. During the early years of construction, there could be 450 Sizewell C vehicles using this route. Adding the 450 Sizewell C vehicles to the 4,150 reference case vehicles would result in 4,600 vehicles per day without any rerouting, however the actual modelled flow in this scenario is slightly higher at 4,650 vehicles, which indicates that some additional existing traffic would be attracted onto this route. So the range given represents the potential traffic flow with and without rerouting. In some locations the summation of reference case and Sizewell C flows is higher than the actual modelled flow (for example on the B1116 Hacheston, location P), indicating that some existing traffic would be diverted away from this route.

8.7.8 The location showing the largest percentage of rerouted traffic is on the A12 at Woodbridge (location AA), where road capacity is already exceeded in the reference case, without Sizewell C. During the network peak hours of 08:00–09:00 and 17:00–18:00 hours, there could be between 50 and 200 vehicles diverting away from this route. The majority of the rerouted vehicles would be existing traffic, though some Sizewell C-related traffic could also be affected. This effect is carried through to other locations on the A12 such as Marlesford (location AB), which shows a displacement of around 500 vehicles per day onto alternative routes, which are likely to include the B1078, A1120 and B0169.

8.7.9 It should be noted however that whilst the modelling shows traffic choosing alternative routes to avoid congested areas, it is possible that some traffic could instead choose to travel at a different time of day, an effect known as 'peak spreading' which is not represented in the modelling or choose an alternative mode of travel, which is also not represented. Insofar that the model does not have the ability to reflect these influences, the results need to be treated accordingly.

8.7.10 In all of the reported locations, the rerouted traffic volume is small (less than 5% of daily flows) and would not be noticeable when spread over a whole day.

8.7.11 In some locations, particularly those roads within the area bounded by the A12 and the Rivers Blyth and Deben, Sizewell B outage traffic forms up to 10% of the total traffic flow in the early years scenarios, and even higher at some locations particularly close to the site such as Lover's Lane. This Sizewell B outage traffic would not be present on a usual weekday.

8.7.12 There are no locations where the increase in daily traffic volume generated by the early years phase of Sizewell C construction causes the link capacity, according to the Design Manual for Roads and Bridges (DMRB) (Ref 8.6), to be exceeded. Impacts on journey times are discussed in **Section 8.8** of this chapter, whilst the assessment of junction operation is discussed in **Chapter 9** of this **Transport Assessment**. The cumulative impacts are discussed in the **Volume 2, Chapter 10** of the **ES**.

8.7.13 Traffic flow plots showing the actual traffic flow volumes of Sizewell C cars, LGVs, HGVs, and buses on the modelled highway are provided in **Appendix 8D** of this **Transport Assessment** to demonstrate the likely routing of Sizewell C early years construction traffic. These are presented for the network peak hours of 08:00–09:00 and 17:00–18:00 hours, as well as the peak hours of Sizewell C traffic which are, in the early years of construction, 07:00–08:00 and 17:00–18:00 hours (the latter consistent with network peak).

8.7.14 **Table 8.6** shows the hourly traffic flows, rounded to 10 vehicles, and percentage change from the reference case during the network peak hours 08:00–09:00 and 17:00–18:00 hours.

Table 8.6: 2023 early years – percentage change in network peak hours

Location		0800–09:00			1700–18:00		
		2023 Reference Case.	2023 Early Years.	% change	2023 Reference Case.	2023 Early Years.	% change
Lover's Lane, Leiston.	A	220	310	44%	170	360	113%
B1122 Abbey Road, Leiston.	B	400	420	6%	350	420	21%
B1119 Saxmundham Road, Leiston.	C	390	410	5%	440	500	16%
B1069 Coldfair Green.	D	460	470	3%	490	560	14%
B1122 Aldeburgh.	E	290	290	1%	320	340	7%

Location		0800–09:00			1700–18:00		
		2023 Reference Case.	2023 Early Years.	% change	2023 Reference Case.	2023 Early Years.	% change
B1125 Westleton.	F	190	200	8%	190	280	45%
A1094 west of Snape Road.	G	600	630	6%	680	740	10%
B1069 Tunstall.	H	210	240	12%	360	400	11%
B1121 Saxmundham.	I	460	470	2%	490	570	17%
A1120 Yoxford.	J	290	310	8%	350	430	24%
A144 Halesworth.	K	690	700	1%	570	590	5%
B1125 Blythburgh.	L	140	150	10%	130	210	61%
A145 Beccles.	M	820	820	Less than 1%	740	770	4%
B1119 between Framlingham and A12.	N	260	270	3%	340	360	5%
B1078 Wickham Market.	O	440	440	-1%	430	440	4%
B1116 Hacheston.	P	780	780	0%	560	560	1%
B1122 Theberton.	Q	450	530	20%	410	610	50%
B1122 east of Yoxford.	R	300	370	23%	300	420	40%
A14 south of Ipswich west of Seven Hills.	S	5,010	5,010	Less than 1%	5,130	5,100	-1%
A14 east of Seven Hills.	T	3,840	3,830	0%	3,940	3,950	Less than 1%
A12 Farnham.	U	1,520	1,610	6%	1,630	1,830	12%
A12 Wrentham.	V	720	750	3%	780	870	11%
A12 Blythburgh.	W	830	860	4%	860	1,000	17%
A12 north of northern park and ride.	X	1,080	1,110	3%	1,260	1,370	9%
A12 Yoxford.	Y	1,180	1,270	8%	1,320	1,510	15%
A12 south of southern park and ride.	Z	2,160	2,260	5%	2,070	2,240	9%
A12 Woodbridge.	AA	2,900	2,930	1%	2,980	2,920	-2%
A12 Marlesford.	AB	1,530	1,620	6%	1,630	1,830	12%
B1078 Wickham Market (east of B1438).	AC	350	350	Less than 1%	370	390	5%
B1438 High Street, Wickham Market.	AD	290	290	0%	260	270	3%

Location		0800–09:00			1700–18:00		
		2023 Reference Case.	2023 Early Years.	% change	2023 Reference Case.	2023 Early Years.	% change
Two village bypass.	AE	-	-	-	-	-	-
Sizewell link road south of Theberton.	AF	-	-	-	-	-	-
Sizewell link road east of A12.	AG	-	-	-	-	-	-
B1122 Middleton Moor.	AH	300	370	23%	300	420	39%

8.7.15 In general, the 17:00–18:00 early evening peak hour would experience greater proportionate increases in traffic volumes than the 08:00–09:00 morning peak hour on a typical weekday, during the early years of Sizewell C construction. The more notable increases are expected to arise on the B1122, prior to completion of the Sizewell link road, and on Lover's Lane. The A12 at Farnham and Stratford St. Andrew would also experience an increase of around 6% in the morning peak and 12% in the early evening peak, prior to completion of the two village bypass.

8.7.16 Other notable proportionate increases are expected to be experienced on the B1125 at Westleton / Blythburgh although these are from relatively low baseline traffic volumes.

c) 2028 peak construction

8.7.17 **Table 8.7** shows the forecast daily 24-hour AAWT traffic flows, rounded to 50 vehicles, at the range of locations shown in **Plates 8.1, 8.2,** and **8.3** during the peak period of Sizewell C construction. The cumulative scenario traffic flows, including the Scottish Power development, are also presented.

Table 8.7: 2028 peak construction – forecast daily (24-hour) AAWT traffic flows

Location		2015 Base Year.	2028 Reference Case.	2028 Peak Construction.				2028 Peak Construction 'Cumulative'.			
				Typical Day.		Busiest Day.		Typical Day.		Busiest Day.	
				SZC Traffic.	Total Traffic.	SZC Traffic.	Total Traffic.	Scottish Power Traffic.	Total Traffic.	Scottish Power Traffic.	Total Traffic.
Lover's Lane, Leiston.	A	2,500	3,350	400	3,750 - 3,950	400	3,750 - 3,950	200	3,950 - 4,150	200	3,950 - 4,150
B1122 Abbey Road, Leiston.	B	4,450	4,950	3,300	8,250	3,300	8,250	50	8,300 - 8,350	50	8,300 - 8,350
B1119 Saxmundham Road, Leiston.	C	3,750	5,200	900	5,850 - 6,100	900	5,850 - 6,100	0	5,900 - 6,100	0	5,900 - 6,100
B1069 Coldfair Green.	D	5,400	6,850	1,150	7,950 - 8,000	1,150	7,950 - 8,000	150	8,100 - 8,150	150	8,050 - 8,150
B1122 Aldeburgh.	E	3,300	3,950	800	4,700 - 4,750	800	4,700 - 4,750	50	4,750 - 4,800	50	4,750 - 4,800
B1125 Westleton.	F	2,400	2,800	350	3,100 - 3,150	350	3,100 - 3,150	100	3,200 - 3,250	100	3,200 - 3,250

Location		2015 Base Year.	2028 Reference Case.	2028 Peak Construction.				2028 Peak Construction 'Cumulative'.			
				Typical Day.		**Busiest Day.**		**Typical Day.**		**Busiest Day.**	
				SZC Traffic.	**Total Traffic.**	**SZC Traffic.**	**Total Traffic.**	**Scottish Power Traffic.**	**Total Traffic.**	**Scottish Power Traffic.**	**Total Traffic.**
A1094 west of Snape Road.	G	7,550	9,150	200	9,300 - 9,350	200	9,300 - 9,350	300	9,600 - 9,650	300	9,600 - 9,650
B1069 Tunstall.	H	3,050	4,050	650	4,600 - 4,700	650	4,650 - 4,700	0	4,600 - 4,700	0	4,650 - 4,700
B1121 Saxmundham.	I	4,500	5,550	250	5,650 - 5,800	250	5,700 - 5,800	50	5,750 - 5,850	50	5,800 - 5,850
A1120 Yoxford.	J	3,650	4,300	500	4,800 - 4,900	500	4,800 - 4,900	0	4,800 - 4,900	0	4,800 - 4,950
A144 Halesworth.	K	6,900	8,150	650	8,800	650	8,800	0	8,800	0	8,800
B1125 Blythburgh.	L	1,650	1,850	150	2,000	150	2,000	100	2,100 - 2,150	100	2,100 - 2,150
A145 Beccles.	M	15,350	9,300	300	9,600	300	9,600	0	9,600	0	9,600 - 9,650

Location		2015 Base Year.	2028 Reference Case.	2028 Peak Construction.				2028 Peak Construction 'Cumulative'.			
				Typical Day.		Busiest Day.		Typical Day.		Busiest Day.	
				SZC Traffic.	Total Traffic.	SZC Traffic.	Total Traffic.	Scottish Power Traffic.	Total Traffic.	Scottish Power Traffic.	Total Traffic.
B1119 between Framlingham and A12.	N	2,700	3,400	100	3,450 - 3,500	100	3,450 - 3,500	0	3,500	0	3,500
B1078 Wickham Market.	O	4,000	5,700	800	6,500 - 6,550	800	6,500 - 6,650	50	6,550 - 6,700	50	6,550 - 6,750
B1116 Hacheston.	P	6,900	7,700	250	7,900 - 7,950	250	7,850 - 7,950	0	7,850 - 7,950	0	7,850 - 7,950
B1122 Theberton.	Q	5,150	6,200	50	500	100	550	0	500	0	650
B1122 east of Yoxford.	R	3,450	4,300	700	4,550	750	4,600	50	4,600	50	4,650
A14 south of Ipswich west of Seven Hills.	S	57,350	65,900	1,350	66,650 - 67,250	1,600	66,700 - 67,500	200	66,400 - 67,450	200	66,500 - 67,700
A14 east of Seven Hills.	T	44,500	51,000	200	51,100 - 51,200	200	51,100 - 51,200	50	51,100 - 51,250	50	51,100 - 51,250
A12 Farnham.	U	18,900	21,800	0	250	0	250	0	250	0	250

Location		2015 Base Year.	2028 Reference Case.	2028 Peak Construction.				2028 Peak Construction 'Cumulative'.			
				Typical Day.		Busiest Day.		Typical Day.		Busiest Day.	
				SZC Traffic.	Total Traffic.	SZC Traffic.	Total Traffic.	Scottish Power Traffic.	Total Traffic.	Scottish Power Traffic.	Total Traffic.
A12 Wrentham.	V	9,800	10,200	1,200	11,300 - 11,400	1,200	11,300 - 11,400	150	11,350 - 11,550	150	11,400 - 11,550
A12 Blythburgh.	W	10,350	11,350	1,800	13,000 - 13,150	1,850	13,000 - 13,200	150	13,100 - 13,300	150	13,100 - 13,350
A12 north of northern park and ride.	X	14,000	15,600	2,500	18,050 - 18,100	2,550	18,000 - 18,150	100	18,000 - 18,200	100	18,000 - 18,250
A12 Yoxford.	Y	14,700	16,350	850	16,400 - 17,200	850	16,350 - 17,200	50	16,350 - 17,250	50	16,300 - 17,250
A12 south of southern park and ride.	Z	24,550	27,550	2,800	29,900 - 30,350	3,100	30,050 - 30,650	350	30,050 - 30,700	350	30,150 - 31,000
A12 Woodbridge.	AA	37,600	40,200	2,400	40,450 - 42,600	2,700	40,250 - 42,900	300	39,850 - 42,900	300	39,650 - 43,200
A12 Marlesford.	AB	18,800	21,800	1,550	23,100 - 23,350	1,850	23,300 - 23,650	400	23,350 - 23,750	400	23,500 - 24,050

Location		2015 Base Year.	2028 Reference Case.	2028 Peak Construction.				2028 Peak Construction 'Cumulative'.			
				Typical Day.		**Busiest Day.**		**Typical Day.**		**Busiest Day.**	
				SZC Traffic.	**Total Traffic.**	**SZC Traffic.**	**Total Traffic.**	**Scottish Power Traffic.**	**Total Traffic.**	**Scottish Power Traffic.**	**Total Traffic.**
B1078 Wickham Market (east of B1438).	AC	3,750	4,900	850	5,750 - 5,850	850	5,750 - 5,900	50	5,850 - 5,950	50	5,850 - 5,950
B1438 High Street, Wickham Market.	AD	2,550	3,300	50	3,350 - 3,400	50	3,350 - 3,400	0	3,350 - 3,400	0	3,350 - 3,400
Two village bypass.	AE	0	0	1,550	22,200	1,850	22,400	400	22,450	400	22,600
Sizewell link road south of Theberton.	AF	0	0	2,200	8,500	2,550	8,800	250	8,750	250	8,950
Sizewell link road east of A12.	AG	0	0	1,150	2,300	1,450	2,550	100	1,250 - 2,350	100	1,550 - 2,600
B1122 Middleton Moor.	AH	3,450	4,300	0	350	0	350	0	350	0	350

8.7.18 The most notable effects on traffic flows during peak construction are on the A12 at Farnham and Stratford St. Andrew (location U) and the B1122 at Theberton and Middleton Moor (locations Q and AH), where traffic flows show substantial reductions due to the bypasses being proposed around these villages as part of the mitigation. The proposed two village bypass and Sizewell link road, along with improvements to the A12 / B1122 junction provide a legacy benefit to the area, by taking traffic away from villages.

8.7.19 In some locations there is a large proportionate increase in traffic compared with the reference case, such as the B1122 Abbey Road in Leiston (location B), B1122 Aldeburgh (location E) and the B1078 at Wickham Market, east of B1438 (location AC), however these increases are from low existing levels and the road capacity would not be exceeded. Similarly, on the B1122 east of Yoxford the predicted increase is from a relatively low existing flow, and the Sizewell link road provides an alternative route for some of the additional traffic on this road.

8.7.20 There are no locations where the increase in daily traffic volume forecast to be generated by peak construction causes the road capacity to be exceeded according to the DMRB.

8.7.21 During the peak construction of Sizewell C, some locations would likely experience a degree of rerouting of non-Sizewell C traffic, when the Sizewell C traffic is added. This could be because of increasing congestion or the availability of new highway infrastructure. For these locations a flow ‘range’ is presented to give an indication of the likely traffic flows with or without such rerouting.

8.7.22 One example of this is on the A12 at Woodbridge (location AA), where road capacity is already exceeded in the reference case, without Sizewell C. During the network peak hours of 08:00–09:00 and 17:00–18:00 hours, the modelling shows around 150 vehicles diverting away from this route in the ‘typical day’ scenario, and around 200 in the ‘busiest day’. The model suggests that much of this rerouted traffic is likely to divert onto the B1078 through Wickham Market (location AC) which could experience around 100 additional rerouted vehicles in the ‘typical day’ scenario, and around 150 in the ‘busiest day’.

8.7.23 In the majority of locations the rerouted traffic volume is small (less than 5% of daily flows) and would not be noticeable when spread over a whole day.

8.7.24 As in the early years, some of the diverted traffic may instead choose to travel at a different time of day or different mode. This effect of ‘peak spreading’ or mode shift is not represented in the modelling and the results should be treated accordingly.

8.7.25 Similarly to the early years assessment, in some locations Sizewell B outage traffic forms up to 10% of the total traffic flow in the peak construction scenarios, and even higher at some locations particularly close to the site such as Lover's Lane, which would not be present on a usual weekday.

8.7.26 The cumulative impacts are discussed in the **Volume 2, Chapter 10** of the **ES**.

8.7.27 Traffic flow plots showing the actual traffic flow volumes of Sizewell C cars, LGVs, 'typical day' HGVs and buses on the modelled highway are provided in **Appendix 8D** of this **Transport Assessment**, to demonstrate the likely routing of Sizewell C peak construction traffic. These are presented for the network peak hours of 08:00–09:00 and 17:00–18:00 hours, as well as the peak hours of Sizewell C traffic which are, at peak construction, 06:00–07:00 and 18:00–19:00.

8.7.28 **Table 8.8** shows the hourly traffic flows, rounded to 10 vehicles, and percentage change from the reference case during the network peak hours 08:00–09:00 and 17:00–18:00 hours.

Table 8.8: 2028 peak construction – percentage change in network peak hours

Location		0800–09:00					1700–18:00				
		2028 Reference Case.	2028 Peak Construction.				2028 Reference Case.	2028 Peak Construction.			
			Typical Day.	% Change	Busiest Day.	% change		Typical Day.	% Change	Busiest Day.	% Change
Lover's Lane, Leiston.	A	220	260	16%	250	15%	180	240	32%	240	32%
B1122 Abbey Road, Leiston.	B	410	520	28%	530	28%	370	630	69%	630	69%
B1119 Saxmundham Road, Leiston.	C	440	460	5%	460	7%	460	510	11%	510	11%
B1069 Coldfair Green.	D	480	520	7%	520	7%	510	600	17%	600	17%
B1122 Aldeburgh.	E	300	320	8%	320	8%	330	390	21%	390	21%
B1125 Westleton.	F	190	200	2%	200	2%	200	230	14%	230	14%
A1094 west of Snape Road.	G	650	660	1%	660	1%	710	730	2%	730	2%
B1069 Tunstall.	H	250	260	3%	260	2%	380	430	12%	430	12%
B1121 Saxmundham.	I	490	480	-3%	480	-2%	480	500	5%	510	5%
A1120 Yoxford.	J	300	320	6%	320	6%	360	400	10%	400	10%
A144 Halesworth.	K	720	740	2%	740	2%	590	630	6%	630	6%
B1125 Blythburgh.	L	140	140	3%	140	3%	130	140	10%	140	10%
A145 Beccles.	M	840	850	1%	850	1%	700	730	4%	730	4%
B1119 between Framlingham and A12.	N	260	260	-1%	260	-1%	360	360	1%	360	1%

Location		0800–09:00					1700–18:00				
		2028 Reference Case.	2028 Peak Construction.				2028 Reference Case.	2028 Peak Construction.			
			Typical Day.	% Change	Busiest Day.	% change		Typical Day.	% Change	Busiest Day.	% Change
B1078 Wickham Market.	O	500	540	7%	550	10%	480	530	10%	530	11%
B1116 Hacheston.	P	770	780	1%	780	1%	550	560	2%	560	1%
B1122 Theberton.	Q	450	40	-90%	40	-90%	410	40	-91%	40	-91%
B1122 east of Yoxford.	R	310	320	2%	320	4%	310	320	3%	330	4%
A14 south of Ipswich west of Seven Hills.	S	5,350	5,380	1%	5,390	1%	5,350	5,300	-1%	5,280	-1%
A14 east of Seven Hills.	T	3,950	3,950	Less than 1%	3,950	0%	4,080	4,090	Less than 1%	4,090	Less than 1%
A12 Farnham.	U	1,580	30	-98%	30	-98%	1,700	20	-99%	20	-99%
A12 Wrentham.	V	750	780	3%	780	3%	820	850	4%	850	4%
A12 Blythburgh.	W	850	890	4%	890	4%	880	960	10%	960	9%
A12 north of northern park and ride.	X	1,110	1,170	6%	1,170	5%	1,300	1,420	9%	1,420	9%
A12 Yoxford.	Y	1,220	1,190	-3%	1,180	-4%	1,360	1,340	-1%	1,340	-2%
A12 south of southern park and ride.	Z	2,190	2,280	4%	2,280	4%	2,110	2,220	5%	2,220	5%
A12 Woodbridge.	AA	3,050	2,990	-2%	2,960	-3%	2,980	2,930	-2%	2,920	-2%
A12 Marlesford.	AB	1,600	1,680	5%	1,690	6%	1,710	1,810	6%	1,810	6%

Location		0800–09:00					1700–18:00				
		2028 Reference Case.	2028 Peak Construction.				2028 Reference Case.	2028 Peak Construction.			
			Typical Day.	% Change	Busiest Day.	% change		Typical Day.	% Change	Busiest Day.	% Change
B1078 Wickham Market (east of B1438).	AC	410	440	7%	450	9%	420	460	10%	470	11%
B1438 High Street, Wickham Market.	AD	300	310	2%	310	4%	280	290	3%	290	4%
Two village bypass.	AE	-	1,600	-	1,610	-	-	1,740	-	1,750	-
Sizewell link road south of Theberton.	AF	-	570	-	590	-	-	610	-	630	-
Sizewell link road east of A12.	AG	-	160	-	180	-	-	190	-	200	-
B1122 Middleton Moor.	AH	310	30	-91%	30	-91%	310	30	-89%	40	-89%

8.7.29 In general, the model shows that the 17:00–18:00 early evening peak hour is expected to experience greater proportionate increases in traffic volumes than the 08:00–09:00 morning peak hour, during the peak period of Sizewell C construction. In many locations the proportionate increase would be less than 5% but there are some locations where there will be higher proportionate increases on roads with a low base, particulary nearer to the main development site.

8.7.30 The introduction of the two village bypass and Sizewell link road would remove the majority of traffic from Farnham and Stratford St. Andrew and the B1122, particularly at Theberton and Middleton Moor but also near Yoxford. Traffic flows through Yoxford on the A12 would also reduce due to traffic using the Sizewell link road from the south rather than travelling through the village to reach the B1122.

d) 2034 operational traffic

8.7.31 **Table 8.9** shows the forecast daily 24-hour AAWT traffic flows, rounded to 50 vehicles, at the range of locations shown in **Plates 8.1, 8.2, and 8.3** during the operational phase of Sizewell C.

Table 8.9: 2034 operational traffic – forecast daily (24-hour) AAWT traffic flows

Location		2015 Base Year.	2034 Reference Case.	2034 Operational Traffic.	
				SZC Traffic.	Total Traffic.
Lover's Lane, Leiston.	A	2,500	3,550	50	3,600 - 3,800
B1122 Abbey Road, Leiston.	B	4,450	5,350	1,100	6,400 - 6,450
B1119 Saxmundham Road, Leiston.	C	3,750	5,850	400	5,950 - 6,250
B1069 Coldfair Green.	D	5,400	7,300	450	7,700 - 7,750
B1122 Aldeburgh.	E	3,300	4,150	100	4,200 - 4,250
B1125 Westleton.	F	2,400	3,000	200	3,100 - 3,200
A1094 west of Snape Road.	G	7,550	9,800	0	9,750 - 9,800
B1069 Tunstall.	H	3,050	4,550	350	4,750 - 4,900
B1121 Saxmundham.	I	4,500	6,000	50	5,650 - 6,050
A1120 Yoxford.	J	3,650	4,700	0	4,700 - 4,750
A144 Halesworth.	K	6,900	8,900	0	8,900
B1125 Blythburgh.	L	1,650	1,950	0	1,950
A145 Beccles.	M	15,350	9,700	0	9,700

Location		2015 Base Year.	2034 Reference Case.	2034 Operational Traffic.	
				SZC Traffic.	Total Traffic.
B1119 between Framlingham and A12.	N	2,700	3,750	0	3,700 - 3,750
B1078 Wickham Market.	O	4,000	6,800	0	6,800
B1116 Hacheston.	P	6,900	8,100	0	8,100
B1122 Theberton.	Q	5,150	6,500	0	400
B1122 east of Yoxford.	R	3,450	4,550	50	4,150
A14 south of Ipswich west of Seven Hills.	S	57,350	69,200	50	69,200 - 69,250
A14 east of Seven Hills.	T	44,500	53,950	0	53,950
A12 Farnham.	U	18,900	23,050	0	300
A12 Wrentham.	V	9,800	10,800	0	10,800
A12 Blythburgh.	W	10,350	11,900	0	11,850 - 11,900
A12 north of northern park and ride.	X	14,000	16,500	50	16,550 - 16,600
A12 Yoxford.	Y	14,700	17,350	0	16,550 - 17,350
A12 south of southern park and ride.	Z	24,550	28,900	50	28,950 - 29,050
A12 Woodbridge.	AA	37,600	40,600	50	40,600 - 40,650
A12 Marlesford.	AB	18,800	23,050	100	23,150 - 23,200
B1078 Wickham Market (east of B1438).	AC	3,750	5,550	0	5,550
B1438 High Street, Wickham Market.	AD	2,550	3,950	0	3,950
Two village bypass.	AE	0	0	200	22,450
Sizewell link road south of Theberton.	AF	0	0	400	7,200
Sizewell link road east of A12.	AG	0	0	150	1,400
B1122 Middleton Moor.	AH	3,450	4,550	0	400

8.7.32 Once Sizewell C is operational, the project-related traffic flows are considerably lower than during construction. Most notably, on the A12 at Woodbridge (location AA) the volume of traffic that would potentially reroute is lower at around 50 vehicles per day (10–15 vehicles in the network peak hours), which is well within daily variation.

8.7.33 As in the early years and peak construction scenarios, Sizewell B outage traffic typically forms up to 10% of the total traffic flow across the network, and even higher at some locations particularly close to the site such as Lover's Lane. These trips would not be present on a typical weekday.

8.7.34 Many of the locations which would carry construction traffic would experience little or no operational traffic, with Sizewell C traffic concentrated around the roads more local to the site, due to the smaller catchment of operational workers compared with construction workers.

8.7.35 Traffic flow plots showing the actual traffic flow volumes of Sizewell C cars, LGVs and HGVs on the modelled highway are provided in **Appendix 8D** of this **Transport Assessment**, to demonstrate the likely routing of Sizewell C operational traffic. These are presented for the 08:00–09:00 hours, which represents both the network morning peak hour and the peak of Sizewell C traffic during the operational phase, and 16:00–17:00 hours which represents the afternoon peak of Sizewell C traffic. This afternoon hour has been presented in the traffic flow plots inlcued in **Appendix 8B** of this **Transport Assessment** rather than the network peak hour 17:00–18:00, as there is virtually no Sizewell C traffic occurring in this network peak hour.

8.7.36 **Table 8.10** shows the hourly traffic flows, rounded to 10 vehicles, and percentage change from the reference case during the network peak hours 08:00–09:00 and 17:00–18:00 hours.

Table 8.10: 2034 operational traffic – percentage change in network peak hours

Location		0800–09:00			1700–18:00		
		2034 Reference Case.	2034 Operational Traffic.	% change	2034 Reference Case.	2034 Operational Traffic.	% change
Lover's Lane, Leiston.	A	230	280	21%	190	210	9%
B1122 Abbey Road, Leiston.	B	450	820	81%	400	410	4%
B1119 Saxmundham Road, Leiston.	C	520	650	25%	520	500	-4%
B1069 Coldfair Green.	D	520	630	19%	550	540	0%
B1122 Aldeburgh.	E	320	340	8%	350	360	2%
B1125 Westleton.	F	210	290	39%	220	210	-3%
A1094 west of Snape Road.	G	700	700	1%	770	770	Less than 1%
B1069 Tunstall.	H	290	330	14%	430	430	-1%

Location		0800–09:00			1700–18:00		
		2034 Reference Case.	2034 Operational Traffic.	% change	2034 Reference Case.	2034 Operational Traffic.	% change
B1121 Saxmundham.	I	550	550	Less than 1%	530	480	-9%
A1120 Yoxford.	J	350	360	3%	400	400	1%
A144 Halesworth.	K	800	800	Less than 1%	670	670	Less than 1%
B1125 Blythburgh.	L	150	150	-3%	140	130	-1%
A145 Beccles.	M	890	890	0%	730	730	0%
B1119 between Framlingham and A12.	N	300	290	-2%	410	410	-1%
B1078 Wickham Market.	O	640	630	-1%	570	580	1%
B1116 Hacheston.	P	820	820	1%	590	580	0%
B1122 Theberton.	Q	490	40	-91%	440	30	-93%
B1122 east of Yoxford.	R	340	300	-11%	340	300	-10%
A14 south of Ipswich west of Seven Hills.	S	5,530	5,530	0%	5,720	5,720	Less than 1%
A14 east of Seven Hills.	T	4,210	4,210	0%	4,370	4,370	0%
A12 Farnham.	U	1,670	30	-98%	1,810	20	-99%
A12 Wrentham.	V	820	820	Less than 1%	870	870	Less than 1%
A12 Blythburgh.	W	900	900	0%	920	910	0%
A12 north of northern park and ride.	X	1,190	1,210	1%	1,380	1,380	Less than 1%
A12 Yoxford.	Y	1,310	1,250	-5%	1,450	1,370	-6%
A12 south of southern park and ride.	Z	2,300	2,310	1%	2,240	2,240	0%
A12 Woodbridge.	AA	3,060	3,050	0%	2,970	2,970	0%
A12 Marlesford.	AB	1,690	1,700	Less than 1%	1,810	1,820	Less than 1%

Location		0800–09:00			1700–18:00		
		2034 Reference Case.	2034 Operational Traffic.	% change	2034 Reference Case.	2034 Operational Traffic.	% change
B1078 Wickham Market (east of B1438).	AC	490	490	-1%	450	460	1%
B1438 High Street, Wickham Market.	AD	380	380	-1%	350	350	Less than 1%
Two village bypass.	AE	-	1,670	-	-	1,750	-
Sizewell link road south of Theberton.	AF	-	660	-	-	480	-
Sizewell link road east of A12.	AG	-	150	-	-	120	-
B1122 Middleton Moor.	AH	340	30	-92%	340	40	-90%

8.7.37 During the operational phase the majority of locations would experience negligible changes in peak hour traffic flows. Where larger proportionate increases are shown, these are generally from relatively low baseline traffic volumes.

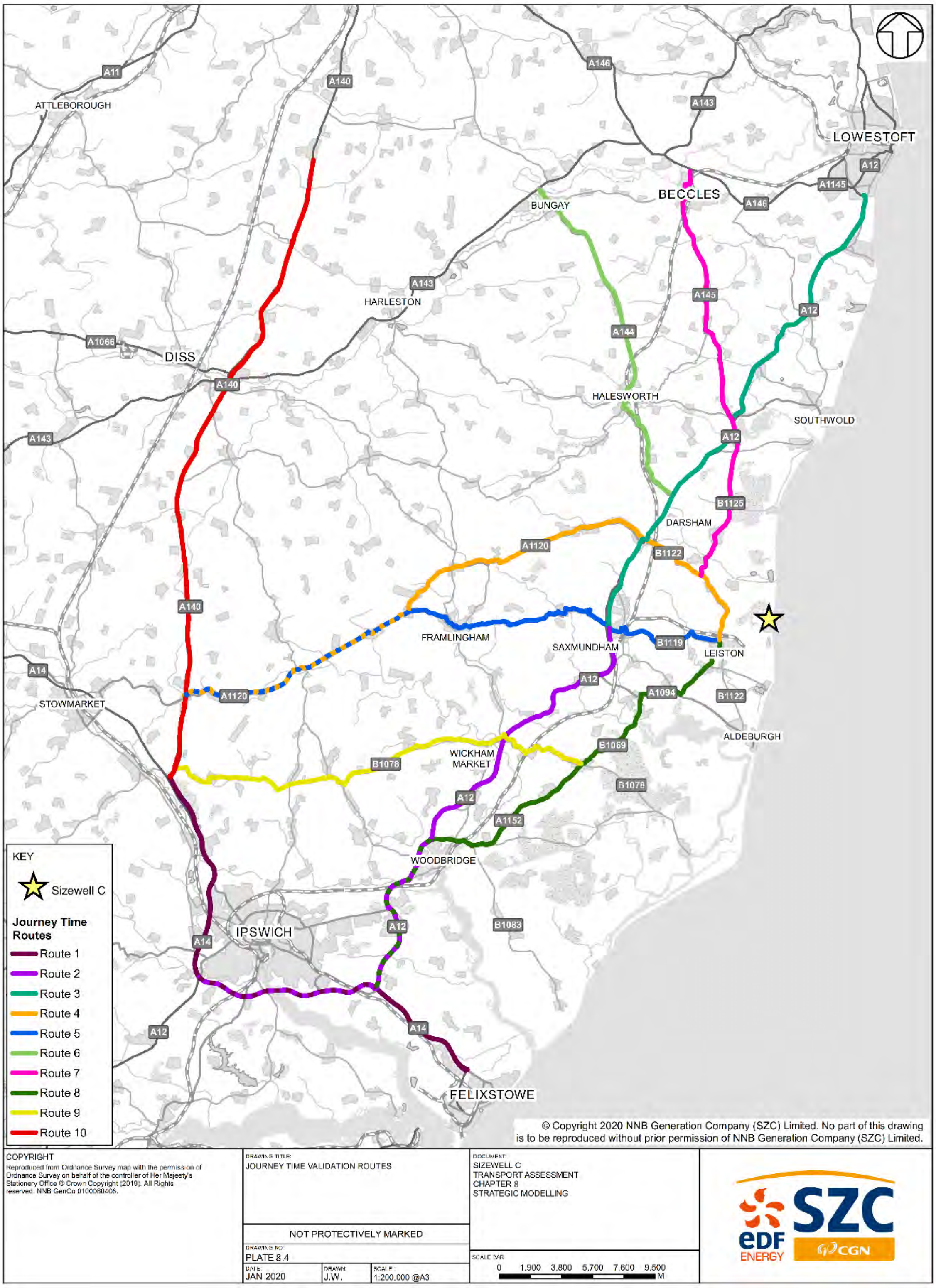
8.7.38 Although, as stated previously there is very little Sizewell C traffic occurring during 17:00–18:00 hours during the operational phase, the changes shown in **Table 8.10** reflect some rerouting of existing (non-Sizewell C) traffic for example on Lover's Lane (location A) as a result of the proposed Sizewell link road.

8.8 Strategic model assessment – journey times

a) Basis

8.8.1 As part of the validation of the 2015 base model, journey times along a series of routes were observed and compared with modelled journey times to demonstrate that the model reflects existing traffic conditions in each modelled hour. The validation of these journey time routes, shown in **Plate 8.4**, is presented in the Local Model Validation Report contained in **Appendix 8A** of this **Transport Assessment**. The routes were selected to provide a cross-section of paths across the network from which to demonstrate the validity of the base model.

Plate 8.4: Journey time validation routes

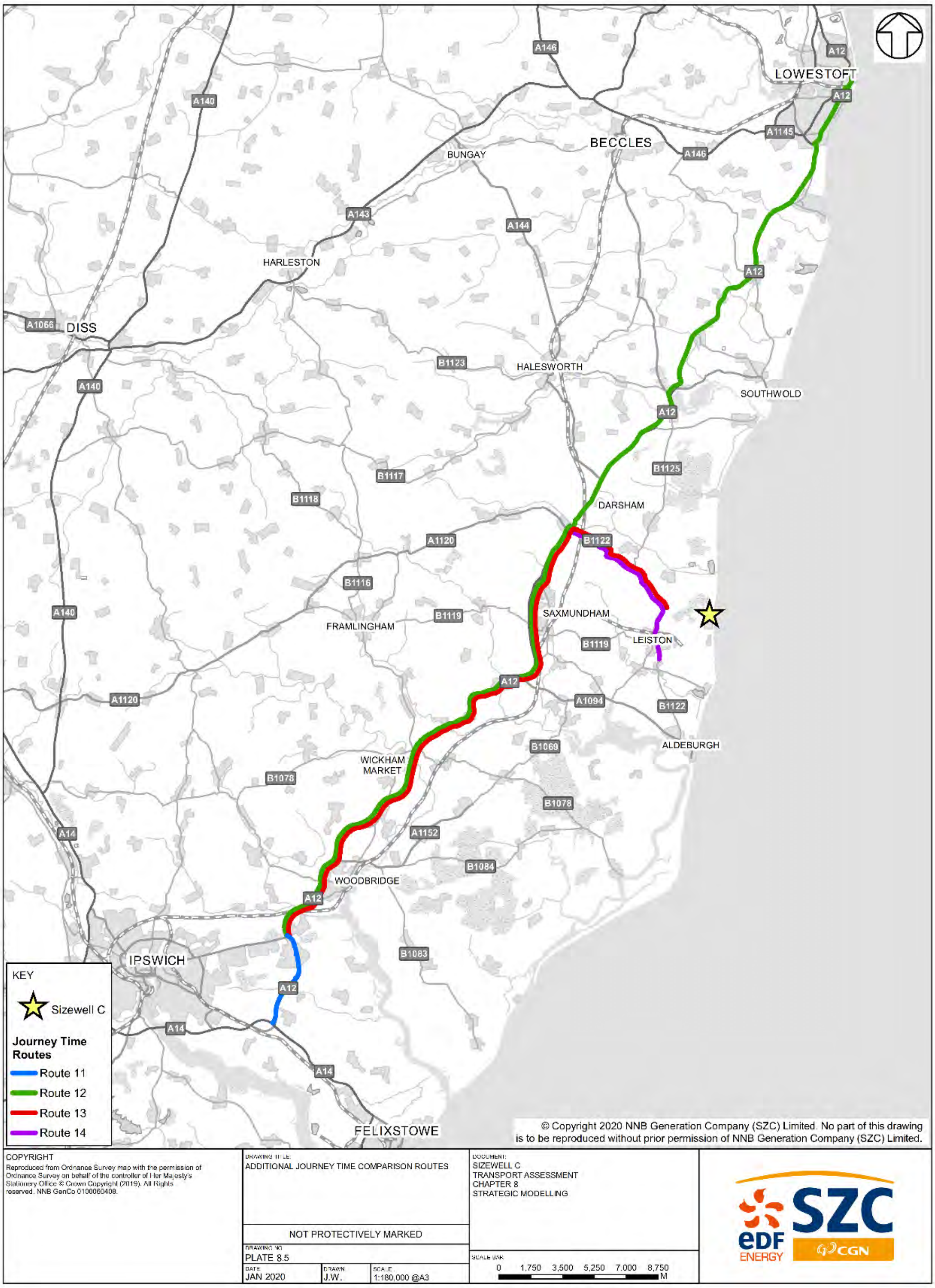


8.8.2 Journey times on four additional routes were analysed at the request of the emergency services, which are shown in **Plate 8.5**.

8.8.3 The modelled journey times for all routes have been compared in each scenario, to assess the impact on these journey times in the forecast scenarios compared with existing levels.

8.8.4 Note that in the 2028 peak construction and 2034 operational scenarios routes 2, 12 and 13 follow the two village bypass and routes 4, 13 and 14 follow the Sizewell link road.

Plate 8.5: Additional journey time comparison routes



b) 2023 early years

8.8.5 The comparative modelled journey times of each route, during the existing network peaks of 08:00–09:00 and 17:00–18:00 hours, are presented in **Table 8.11** and **Table 8.12** respectively for the early years construction phase. Full tables for all seven modelled hours, including the cumulative scenario, are presented in **Appendix 8E** of this **Transport Assessment**.

Table 8.11: 2023 early years – journey times 08:00-09:00 hours

Route	Direction	Average Journey Time (mm:ss).		Difference from Reference Case.	
		2015 Base Year.	2023 Reference Case.	Seconds	%
				2023 Early Years.	
1	EB	21:21	22:53	3	0%
	WB	21:07	22:04	2	0%
2	NB	30:34	32:38	26	1%
	SB	32:37	37:26	39	2%
3	NB	25:55	25:55	2	0%
	SB	26:08	26:14	4	0%
4	EB	42:08	42:14	-5	0%
	WB	42:05	42:23	-8	0%
5	EB	40:42	40:51	-3	0%
	WB	40:25	40:45	9	0%
6	NB	24:26	24:32	1	0%
	SB	22:20	22:27	0	0%
7	NB	27:30	27:20	0	0%
	SB	27:44	27:48	3	0%
8	NB	31:33	32:34	-2	0%
	SB	33:31	37:39	30	1%
9	EB	26:57	27:16	0	0%
	WB	27:20	31:46	16	1%
10	NB	33:55	34:12	2	0%
	SB	34:36	35:24	2	0%
11	NB	03:21	03:27	15	7%
	SB	03:25	05:29	17	5%
12	NB	01:00:58	01:01:39	18	0%
	SB	52:43	55:09	25	1%

Route	Direction	Average Journey Time (mm:ss).		Difference from Reference Case.	
		2015 Base Year.	2023 Reference Case.	Seconds	%
				2023 Early Years.	
13	NB	30:22	31:27	9	0%
	SB	32:45	35:07	16	1%
14	NB	12:11	12:11	-8	-1%
	SB	12:01	12:01	-5	-1%

Table 8.12: 2023 early years – journey times 17:00–18:00 hours

Route	Direction	Average Journey Time (mm:ss).		Difference from Reference Case.	
		2015 Base Year.	2023 Reference Case.	Seconds	%
				2023 Early Years.	
1	EB	21:15	22:06	2	0%
	WB	21:20	22:49	3	0%
2	NB	31:38	34:49	32	1.5%
	SB	30:26	33:42	103	5%
3	NB	26:22	26:24	24	1.5%
	SB	25:51	25:56	2	0%
4	EB	42:07	42:13	-6	0%
	WB	41:46	41:53	1	0%
5	EB	40:48	40:54	-7	0%
	WB	40:08	40:18	17	1%
6	NB	24:31	24:41	3	0%
	SB	22:14	22:16	0	0%
7	NB	27:07	27:08	11	1%
	SB	27:49	27:47	1	0%
8	NB	32:45	35:32	25	1%
	SB	31:19	33:15	66	3%
9	EB	27:03	27:15	2	0%
	WB	27:13	28:02	19	1%
10	NB	33:17	33:22	1	0%
	SB	33:45	34:09	1	0%
11	NB	03:28	05:52	7	2%
	SB	03:26	03:29	29	14%

Route	Direction	Average Journey Time (mm:ss).		Difference from Reference Case.	
		2015 Base Year.	2023 Reference Case.	Seconds	%
				2023 Early Years.	
12	NB	53:34	54:17	51	2%
	SB	50:06	52:24	73	2%
13	NB	31:32	32:02	24	1%
	SB	30:18	32:29	74	4%
14	NB	12:12	12:12	-1	0%
	SB	11:56	11:57	-6	-1%

8.8.6 During the early years of construction, the additional traffic generated by the proposed development would, prior to completion of any mitigation, result in increases in journey times on the majority of routes. However these increases are all less than one minute in the 08:00–09:00 peak hour and unlikely to be noticeable on a day to day basis, since these are mostly changes of 1% or less.

8.8.7 During the 07:00–08:00 modelled hour, as shown in **Appendix 8D** of this **Transport Assessment**, increases are slightly larger on routes 2, 12 and 13, which traverse the A12 through the already congested Woodbridge area and the four villages of Farnham, Stratford St. Andrew, Little Glemham and Marlesford. However these increases are all within 5% of the reference case travel time, except for route 2 northbound at 6%, which is less than daily variation in travel times so unlikely to be noticeable. Transport analysis guidance Unit M3.1: Highway Assignment Modelling (Ref. 8.1) indicates that typical daily variation in journey times is around 15%, so this range is applied as a validation criteria for traffic models as described in **Appendix 8A** of this **Transport Assessment**.

8.8.8 In the 17:00–18:00 peak hour, more substantial increases in journey time may be experienced on a number of routes, particularly routes 2, 8, 12 and 13 in the southbound direction but also northbound, due to increase in congestion on the A12 at Woodbridge. However, the changes are within 5% (except for route 11 which is a short distance), which is less than daily variation.

8.8.9 The modelling in **Appendix 8D** of this **Transport Assessment** shows that during the other three modelled afternoon hours, differences are likely to be similar to daily variation.

c) 2028 peak construction

8.8.10 Modelled journey times during the network peak hours of 08:00–09:00 and 17:00–18:00 hours are presented in **Table 8.13** and **Table 8.14**, respectively, for the peak construction phase. Full tables for all seven modelled hours, including the cumulative scenarios, are presented in **Appendix 8E** of this **Transport Assessment**.

Table 8.13: 2028 peak construction – journey times 08:00-09:00 hours

Route	Direction	Average Journey Time (mm:ss).		Difference from Reference Case.			
		2015 Base Year.	2028 Reference Case.	Seconds	%	Seconds	%
				2028 Peak Construction (Typical Day).		2028 Peak Construction (Busiest Day).	
1	EB	21:21	23:15	-6	0%	-5	0%
	WB	21:07	22:35	3	0%	4	0%
2	NB	30:34	34:01	13	1%	46	2%
	SB	32:37	38:29	10	0%	14	1%
3	NB	25:55	25:59	9	1%	10	1%
	SB	26:08	26:14	12	1%	16	1%
4	EB	42:08	42:15	-63	-2%	-59	-2%
	WB	42:05	42:22	-78	-3%	-77	-3%
5	EB	40:42	40:52	-5	0%	-5	0%
	WB	40:25	40:45	6	0%	7	0%
6	NB	24:26	24:38	1	0%	1	0%
	SB	22:20	22:28	0	0%	0	0%
7	NB	27:30	27:25	5	0%	5	0%
	SB	27:44	27:50	-1	0%	-1	0%
8	NB	31:33	33:48	15	1%	41	2%
	SB	33:31	38:01	16	1%	19	1%
9	EB	26:57	27:09	5	0%	7	0%
	WB	27:20	29:38	-1	0%	-7	0%
10	NB	33:55	34:29	0	0%	2	0%
	SB	34:36	35:26	1	0%	1	0%
11	NB	03:21	04:39	-15	-5%	3	1%
	SB	03:25	06:29	13	3%	15	4%

Route	Direction	Average Journey Time (mm:ss).		Difference from Reference Case.			
		2015 Base Year.	2028 Reference Case.	Seconds	%	Seconds	%
				2028 Peak Construction (Typical Day).		2028 Peak Construction (Busiest Day).	
12	NB	01:00:58	54:23	42	1%	57	2%
	SB	52:43	54:25	3	0%	10	0%
13	NB	30:22	31:19	-144	-8%	-125	-7%
	SB	32:45	34:22	-195	-9%	-192	-9%
14	NB	12:11	12:11	-77	-11%	-77	-11%
	SB	12:01	12:01	-64	-9%	-60	-8%

Table 8.14: 2028 peak construction – journey times 17:00-18:00 hours

Route	Direction	Average Journey Time (mm:ss).		Difference from Reference Case.			
		2015 Base Year.	2028 Reference Case.	Seconds	%	Seconds	%
				2028 Peak Construction (Typical Day).		2028 Peak Construction (Busiest Day).	
1	EB	21:15	22:43	-1	0%	0	0%
	WB	21:20	23:04	5	0%	6	0%
2	NB	31:38	35:19	17	1%	27	1%
	SB	30:26	36:01	49	2%	66	3%
3	NB	26:22	26:28	13	1%	14	1%
	SB	25:51	25:57	11	1%	12	1%
4	EB	42:07	42:18	-68	-3%	-68	-3%
	WB	41:46	41:58	-72	-3%	-71	-3%
5	EB	40:48	41:00	-8	0%	-8	0%
	WB	40:08	40:22	14	1%	14	1%
6	NB	24:31	24:50	4	0%	4	0%
	SB	22:14	22:16	1	0%	1	0%
7	NB	27:07	27:10	10	1%	10	1%
	SB	27:49	27:46	-3	0%	-2	0%
8	NB	32:45	35:35	24	1%	33	2%
	SB	31:19	35:09	56	3%	70	3%

Route	Direction	Average Journey Time (mm:ss).		Difference from Reference Case.			
		2015 Base Year.	2028 Reference Case.	Seconds	%	Seconds	%
				2028 Peak Construction (Typical Day).		2028 Peak Construction (Busiest Day).	
9	EB	27:03	27:21	7	0%	10	1%
	WB	27:13	27:53	24	1%	31	2%
10	NB	33:17	33:25	0	0%	0	0%
	SB	33:45	34:19	7	0%	7	0%
11	NB	03:28	04:08	30	12%	32	13%
	SB	03:26	05:32	37	11%	48	14%
12	NB	53:34	55:59	3	0%	11	0%
	SB	50:06	52:11	20	1%	27	1%
13	NB	31:32	33:51	-191	-9%	-183	-9%
	SB	30:18	32:19	-171	-9%	-164	-8%
14	NB	12:12	12:13	-70	-10%	-69	-9%
	SB	11:56	11:57	-68	-9%	-68	-9%

8.8.11 During the 08:00–09:00 and 17:00–18:00 peak hours, and indeed the other modelled hours, there are likely to be reductions in journey time on routes 4, 13, and 14 as a result of the proposed Sizewell link road during the peak construction phase.

8.8.12 On some routes small increases may occur but these are generally less than one minute, or within 5% of the reference case travel time, and unlikely to be distinguishable from daily variation in travel time. Where larger increases occur, for example on routes 2 and 8 southbound during 17:00–18:00 hours, traversing the A12 through Woodbridge, proportionately these are still within 5% of reference case travel time so unlikely to be noticeable day to day.

d) 2034 operational traffic

8.8.13 Modelled journey times during the network peak hours of 08:00–09:00 and 17:00–18:00 hours are presented in **Table 8.15** and **Table 8.16** respectively for the operational phase. Similar tables for the other modelled hours are presented in **Appendix 8E** of this **Transport Assessment**.

Table 8.15: 2034 operational traffic – journey times 08:00-09:00 hours

Route	Direction	Average Journey Time (mm:ss).		Difference from Reference Case.	
		2015 Base Year.	2034 Reference Case.	Seconds	%
				2034 Operational Traffic.	
1	EB	21:21	23:51	-1	0%
	WB	21:07	23:29	5	0%
2	NB	30:34	36:42	-15	-1%
	SB	32:37	41:38	8	0%
3	NB	25:55	26:05	6	0%
	SB	26:08	26:18	8	1%
4	EB	42:08	42:29	-64	-3%
	WB	42:05	42:34	-66	-3%
5	EB	40:42	41:07	-3	0%
	WB	40:25	41:02	9	0%
6	NB	24:26	24:59	0	0%
	SB	22:20	22:32	0	0%
7	NB	27:30	27:29	3	0%
	SB	27:44	27:56	-2	0%
8	NB	31:33	36:16	2	0%
	SB	33:31	40:37	21	1%
9	EB	26:57	28:04	-1	0%
	WB	27:20	32:27	20	1%
10	NB	33:55	34:57	0	0%
	SB	34:36	35:58	2	0%
11	NB	03:21	07:06	0	0%
	SB	03:25	07:35	42	9%
12	NB	01:00:58	56:34	-14	0%
	SB	52:43	56:08	-34	-1%
13	NB	30:22	31:26	-193	-10%
	SB	32:45	36:00	-229	-11%
14	NB	12:11	12:11	-68	-9%
	SB	12:01	12:02	-65	-9%

Table 8.16: 2034 operational traffic – journey times 17:00-18:00 hours

Route	Direction	Average Journey Time (mm:ss).		Difference from Reference Case.	
		2015 Base Year.	2034 Reference Case.	Seconds	%
				2034 Operational Traffic.	
1	EB	21:15	24:15	-1	0%
	WB	21:20	24:41	2	0%
2	NB	31:38	37:31	-15	-1%
	SB	30:26	39:21	-15	-1%
3	NB	26:22	26:33	2	0%
	SB	25:51	26:04	8	1%
4	EB	42:07	42:22	-77	-3%
	WB	41:46	42:11	-79	-3%
5	EB	40:48	41:03	0	0%
	WB	40:08	40:38	13	1%
6	NB	24:31	25:17	-1	0%
	SB	22:14	22:18	0	0%
7	NB	27:07	27:12	3	0%
	SB	27:49	27:50	-4	0%
8	NB	32:45	37:12	-4	0%
	SB	31:19	37:03	5	0%
9	EB	27:03	28:07	1	0%
	WB	27:13	30:02	5	0%
10	NB	33:17	33:33	0	0%
	SB	33:45	35:00	0	0%
11	NB	03:28	05:22	-4	-1%
	SB	03:26	06:45	3	1%
12	NB	53:34	56:28	-9	0%
	SB	50:06	53:14	-12	0%
13	NB	31:32	34:15	-196	-10%
	SB	30:18	33:14	-208	-10%
14	NB	12:12	12:15	-74	-10%
	SB	11:56	11:58	-77	-11%

8.8.14 As at peak construction, there are likely to be reductions in journey time on routes 4, 13, and 14 as a result of the proposed Sizewell link road during the operational phase. The two village bypass also yields a slight improvement in journey time on route 2, although this is comparatively a short stretch of road where vehicles travel a marginally longer distance but at a faster speed than they would on the existing A12 through Farnham and Stratford St. Andrew, so the impacts are smaller than those generated by the Sizewell link road. In general, there are shown to be negligible differences across the network with the majority of routes experiencing an improvement in journey time.

8.9 Summary

8.9.1 A VISUM highway assignment model has been developed for the purpose of assessing the potential impact of Sizewell C traffic on the surrounding highway network.

8.9.2 The 2015 base model was produced to represent seven weekday hourly periods, which have been agreed with SCC, to cover all of the existing network peaks as well as periods when there are expected to be higher volumes of Sizewell C development-related traffic. These are:

- 06:00–09:00 hours in the weekday morning period; and
- 15:00–19:00 hours in the weekday afternoon/evening period.

8.9.3 Reference case models were produced, covering these seven hours, for three forecast years to facilitate assessment of three key phases of the Sizewell C Project:

- 2023 – early years phase of construction;
- 2028 – peak construction phase; and
- 2034 – operational traffic.

8.9.4 The reference case models include traffic generated by committed developments, agreed with SCC, and background traffic growth, as well as committed or completed highway infrastructure schemes. In addition, traffic generated by periodical outage at Sizewell B has been included in all forecast year scenarios for robustness.

8.9.5 ‘With Sizewell C’ scenarios were produced for each forecast year to represent the likely traffic conditions with the development in place. On some days during the peak construction year, the number of HGV deliveries would be higher than on a typical day, so two scenarios have been assessed for the peak construction phase, representing a ‘typical day’ and a ‘busiest day’ with the only difference being the number of Sizewell C HGVs. The development scenarios assessed are:

- 2023 early years;
- 2028 peak construction ‘typical day’;
- 2028 peak construction ‘busiest day’; and
- 2034 operational traffic.

8.9.6 Further to these core assessment scenarios, a ‘cumulative’ scenario has been produced in the 2023 and 2028 forecast years which includes traffic generated by Scottish Power’s proposed EA1N&2 developments, whose construction would overlap with that of Sizewell C.

8.9.7 Analysis of the likely impacts on daily traffic flows and journey times has been undertaken and is presented in this chapter of the **Transport Assessment**.

8.9.8 During the early years of construction, none of the physical mitigation measures (i.e. highway infrastructure improvements, the park and ride facilities, and the freight management facility) would have been completed. Before the mitigation is in place however, there are no locations where the increase in daily traffic volume generated by the early years phase of Sizewell C construction causes the link capacity, according to the DMRB, to be exceeded.

8.9.9 The journey times on all routes except one would have a less than 2% increase in the 08:00–09:00 peak hour during the early years of construction. Journey times on the A12 between the A14 Seven Hills junction and the A1214 at Martlesham would increase by 15–17 seconds (7% of the journey time). This is mainly due to the level of existing congestion which is exacerbated by Adastral Park development proposals, which includes partial signalisation of the junctions, and the short distance of the journey time route.

8.9.10 In the 17:00–18:00 peak hour, the changes in journey time are all within 5%, which is less than daily variation. The exception to this is on route 11 southbound, on the A12 between the A1214 and A14 Seven Hills, for the same reasons as mentioned for the 08:00-09:00 peak hour.

8.9.11 At peak construction, with the proposed mitigation in place, there would be substantial reductions in traffic flow on the A12 at Farnham and Stratford St. Andrew and on the B1122 at Theberton and Middleton Moor, as a result of the proposed bypasses around these villages. Some locations would experience a large proportionate increase though these are generally from low existing flow levels.

8.9.12 Journey time analysis shows that at peak construction, on some routes small increases may occur but these are generally less than one minute, or within 5% of the reference case travel time, and unlikely to be distinguishable from daily variation in travel time. Where larger increases occur, for example on routes 2 and 8 southbound during 17:00–18:00 hours, traversing the A12 through Woodbridge, proportionately these are still within 5% of reference case travel time so unlikely to be noticeable day to day.

8.9.13 During the operational phase Sizewell C traffic volumes would be much lower than during construction and would have a negligible impact on the highway network.

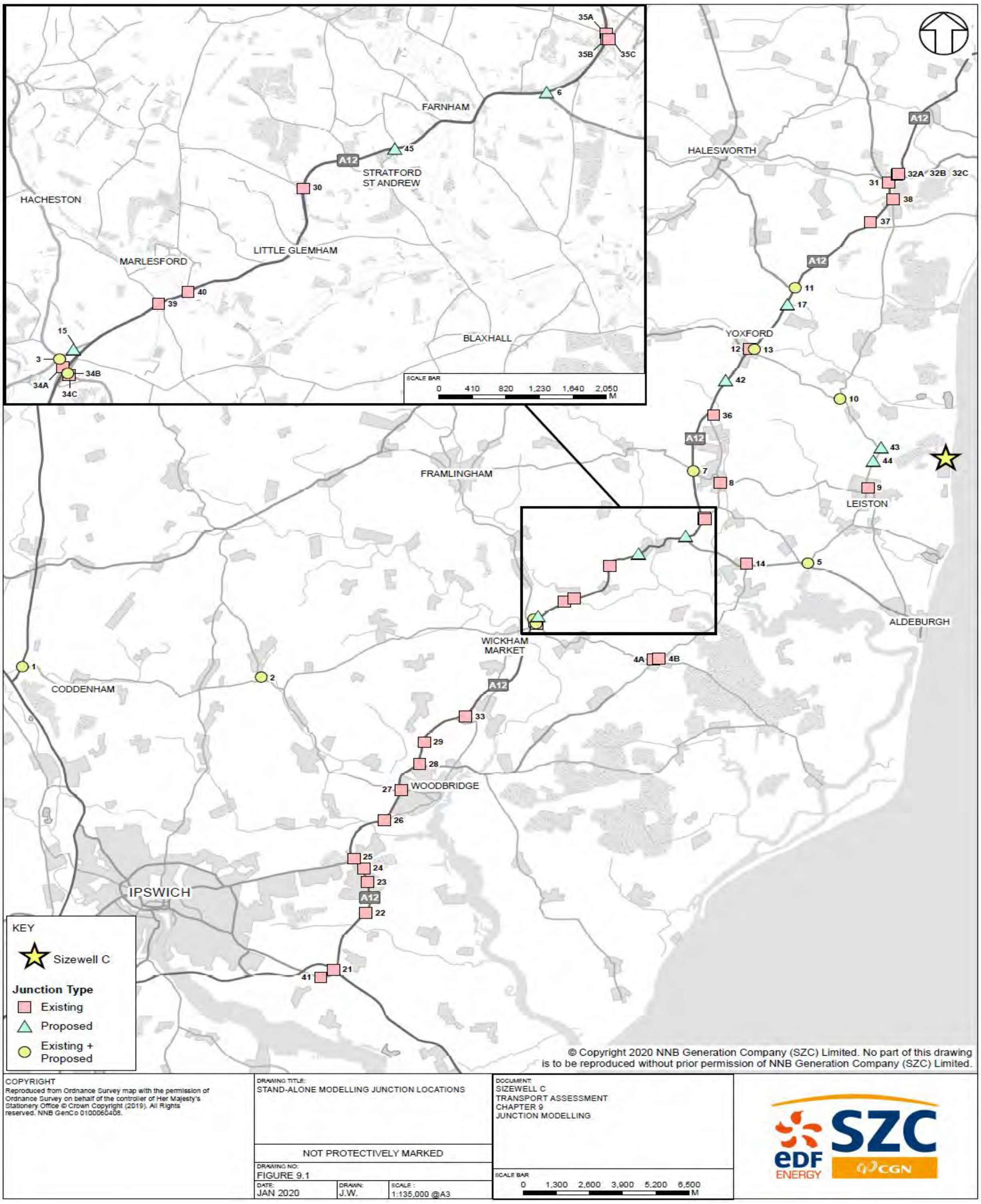
9. Junction Modelling

9.1 Introduction

9.1.1 The strategic modelling undertaken in VISUM, detailed in **Chapters 6** to **8** of the **Transport Assessment** (Doc Ref. 8.5), has provided an overarching view of the routes that vehicles are likely to take from their respective origin and destination under each growth scenario. Whilst the strategic model contains sufficient detail to allow an informed choice to be made in terms of routing, it does not allow a detailed assessment of operation to be performed for individual junctions. To assess the impact of the proposed development in operational terms, a series of individual junction models have been prepared which aim to identify locations where impact may be felt and whether mitigation is needed.

9.1.2 A number of junctions have been identified as being key junctions that therefore warrant more detailed operational modelling. Some of these junctions are located in close proximity to the Sizewell site, whilst others are located further away on key strategic routes likely to be used by vehicles accessing the site. This list has been developed in coordination with Suffolk County Council (SCC) and covers a total of 42 junctions ranging from the immediate site access junction to the A140 / B1078 and A12 / A14 Seven Hills junctions some 27 miles away from Sizewell. All of the junctions undergoing an operational assessment are shown in **Plate 9.1**.

Plate 9.1: Map of the stand-alone junction model location



9.1.3 **Plate 9.1** shows both the locations of the junctions being assessed and which of the following three categories they each fall into:

- Existing – the existing layout is being modelled for all scenarios.
- Existing and Proposed – the existing layout and a proposed layout is being modelled for all scenarios.
- Proposed – only the proposed layout is being modelled as there is either no existing junction to model (i.e. a brand new junction) or the proposed layout is significantly different to the existing layout to the extent that modelling the existing layout doesn't benefit the forecast year assessment.

9.2 Methodology

9.2.1 The production of the operational models is detailed in the following section which covers the entire modelling process from observed data collection, base model calibration, flow forecasting, and creation of the future year model scenarios.

a) Observed data collection

9.2.2 Production of the operational modelling has been developed using a large amount of observed data to help to demonstrate that the models are able to predict observed conditions. This gives confidence that they should be suitable for predicting future year conditions.

9.2.3 Data collection has been undertaken over the course of the last five years with initial data being collected during 2015 and continuing through 2016, 2017, and 2019 as the area of impact and assessment requirements from SCC were further established.

9.2.4 The junctions shown in **Plate 9.1** as 'Existing' or 'Existing and Proposed' junctions are those where a validated base model has been prepared. These junctions have been surveyed to collect manual classified turning counts and queue length observations for a Monday AM peak period (06:00-09:00) and a Friday PM peak period (15:00-19:00) which were determined to be the worst case periods in terms of traffic flows, as detailed in **Chapter 6** of this **Transport Assessment.**

b) Observed data processing

9.2.5 Raw data from the manual classified turning counts was processed into hourly matrix format as required by Junctions 9 (priority junction modelling software) and LinSig (signalised junction modelling software). The percentage of heavy vehicles (i.e. other goods vehicles 1 (OGV1), other goods vehicles 2 (OGV2), and public service vehicles (PSV)) was also calculated for each turning movement at each junction. The classification of heavy vehicles is defined in the Design Manual for Roads and Bridges (DMRB) Volume 7, Section 2 (Ref 9.1).

9.2.6 The observed queue length data was provided as maximum recorded queues for each five minute interval. The data was used to produce an average queue for each arm, for each full hour. This observed average was compared to the predicted modelled queue to give an indication of whether the model is able to replicate observed conditions.

9.2.7 Video footage has been provided by the survey companies to allow the current level of operation to be better understood at each junction. This information has also been cross checked against information in Google Traffic to provide an indication of whether the surveyed queue data is representative of typical conditions.

c) Base models

9.2.8 Base models have been developed in Junctions 9, LinSig and VISSIM (a microscopic multi-modal traffic flow simulation software package). The VISSIM model produced covers Yoxford (Junctions 11, 12, 13, and 17) and is documented within a separate technical note, seen in **Appendix 9B** of this Chapter, detailing its development. The Junctions 9 and LinSig model development is detailed throughout this Chapter.

9.2.9 All of the junction models are intended to cover the periods of peak demand from the traditional network peak times to the early morning and early afternoon Sizewell peaks. The Junctions 9 and LinSig models cover the following five individual hours:

- 06:00 - 07:00
- 07:00 - 08:00
- 08:00 – 09:00
- 15:00 – 16:00
- 17:00 – 18:00

9.2.10 The VISSIM model covers the morning period from 06:00-09:00 and the evening period from 15:00-19:00. Rather than modelling individual hours, the VISSIM model covers the full periods to ensure that the queues from each modelled hour propagate into the following hour and thus provide a better representation of reality.

i. Junctions 9

Geometries

9.2.11 Skeleton junction models were produced based on measuring geometries from OS Mastermap overlaid with aerial imagery. Geometries were measured in accordance with the guidance provided by TRL in Appendix B of the Junctions 9 User Guide (Ref. 9.2). In some instances, video footage of the junctions revealed that the full extent of available road space (particularly flares) was not being used which resulted in capacities being over-estimated by Junctions 9. In this situation, geometries were reduced to reflect the effective geometries being used by vehicles.

Flow inputs

9.2.12 The hourly flow (vehicles/hr) and proportion of heavy vehicle matrices have been input to Junctions 9 using the read data from excel facility available in advanced mode.

Flow Profiles

9.2.13 The ‘One Hour’ flow profile in Junctions 9 has been used to allow the impact of peaks in flow rate to be captured. In a number of hours at a number of locations, flows were observed to have a profile that did not reflect the ‘One Hour’ bell curve. In these instances, ‘Flat’ or ‘Levels’ profiles have been selected to better reflect the observed profile. A flat profile has been used for all of the signalised junctions due to limitations within Junctions 9. The non-signalised junctions listed in **Table 9.1** have been adjusted to use an alternative profile type.

Table 9.1: Non-signalised junctions where a flat flow profile is modelled

No.	Junction	Reason
J21	A12 / A14, Seven Hills.	Flat profile applied from 08:00-09:00 to better replicate observed profile.
J22	A12 / Foxhall Road / Newbourne Road.	Flat profile applied from 15:00-16:00 and 17:00-18:00 to better replicate the observed profile. A ‘Levels’ (custom) profile was applied from 08:00-09:00 as the observed profile was not flat or bell-shaped.
J27	A12 / A1152 Woods Lane.	Flat profile applied from 08:00-09:00 to better replicate observed profile.
J28	A12 / A1152 Woods Lane.	Flat profile applied from 08:00-09:00 to better replicate observed profile.

Calibration

9.2.14 Average queue lengths for each of the modelled hours have been extracted and compared to the observed queue lengths and video footage to provide an indication of whether the model is able to represent observed conditions. Due to the subjective nature of observed queue length data, emphasis has been placed on checking that the model is able to reflect the approximate magnitude of queues (i.e. none, small, medium, large) on each arm rather than trying to match queues to the nearest vehicle. Daily variation in queue lengths and difficulty recording observed queues in an objective way both mean that it is not appropriate to expect the model to replicate the exact magnitudes recorded during the survey.

9.2.15 The observed queue data is therefore used to provide a guide rather than an exact target for base model queue lengths. Where base model queue lengths differ significantly to the observed queue lengths, calibration measures have been applied to prevent the model from overestimating capacity.

9.2.16 The calibration measures used, in order of priority, are as follows:

- Check whether the ‘one hour’ profile is comparable to the observed profile and select a different profile if appropriate.
- Consider whether geometries should be adjusted to remove flares in the event that they are unused or frequently unused in the video footage
- Apply an intercept adjustment to reduce the capacity (only if the adjustment is found to result in a material improvement to the level of model calibration).

ii. LinSig

Geometries

9.2.17 The base network is built based on the RR67 saturation flows (Ref. 9.3). RR67 saturation flows are calculated by inputting lane geometries from the OS mapping, supplemented by aerial imagery (lane width, turning radius, nearside/offside).

9.2.18 The RR67 saturation flows will be cross referenced against observations using the video footage to give confidence that they are not being overestimated in the model.

Flow inputs

9.2.19 Hourly flow matrices have been converted to Passenger Car Units (PCUs) using the PCU factors in Unit A5.4, Table A7 of the Web-based Transport

Analysis Guidance (WebTag) (Ref. 9.4), shown in **Table 9.2**, and entered into LinSig manually by copy-pasting the data as no linking facility exists in LinSig (PCU is defined as a standardised unit of measurement that allows mixed vehicular flows to be defined in terms of the equivalent number of cars).

Table 9.2: PCU Factors by Vehicle Type

Vehicle Type	PCU Factor
Car	1.0
Light Goods Vehicle	1.0
Rigid Goods Vehicle	1.9
Artic Goods Vehicle	2.9
Public Service Vehicle	2.5

(TAG Unit A5.4, Table A7)

Signal settings

9.2.20 Signal controller specifications were supplied by SCC to enable phases, stages, minimum and maximum permitted green times, intergreens and any stage streams or phase delays to be set in the model.

9.2.21 Signal time observations have been collected from survey video footage. The green time, phasing and staging pattern, cycle time, and demand dependency data is confirmed and collected from these signal time observations.

Calibration

9.2.22 Average queue lengths for each of the modelled hours have been extracted and compared to the observed queue lengths and video footage to provide an indication of whether the model is able to represent observed conditions.

9.2.23 Where base model queue lengths differ significantly to the observed queue lengths, the following calibration measures have been applied to prevent the model from over-estimating capacity:

- green times adjusted;
- demand dependency; and
- coordination between streams for roundabouts.

d) Forecasting

9.2.24 The forecast growth for each turning movement has been estimated by subtracting the VISUM base model turning flows from each of the VISUM forecast model turning flows to provide growth as an absolute difference.

9.2.25 This growth will then be added to the observed turning flows to produce each forecast flow scenario for the purposes of the junction modelling. The observed turning flows were collected across a number of years and as a results, the base year junction models contain flows from 2015, 2016, 2017, and 2019 respectively. The growth element being added to the observed flows therefore needs to span from the respective observed data year to the desired forecast year. The VISUM base flows have therefore been factored up to the appropriate observed data year before then being subtracted from the forecast flow to avoid double counting any growth.

9.2.26 A proportion of the growth being forecast to 2023 was added to the 2015 VISUM flows to allow an estimate of 2016 / 2017 / 2019 flows to be made for each turning movement. The proportion of 2023 growth selected was based on the Department for Transport's 2018 Road Traffic Forecast (Ref 9.5) which provided growth estimates across all roads from 2015 to 2023, as shown in **Table 9.3**.

Table 9.3: RTF growth factor from 2015 to respective years

All roads.	Car	LGV	HGV	Total Vehicles.	Proportion of Growth from 2015 to 2023 Occurring by Each Year (total vehicles).
2016	1.0129	1.0187	1.0030	1.0131	12%
2017	1.0260	1.0377	1.0061	1.0263	24%
2018	1.0392	1.0571	1.0092	1.0397	36%
2019	1.0526	1.0769	1.0122	1.0533	49%
2023	1.1080	1.1596	1.0246	1.1094	100%

9.2.27 There are a small number of junctions where some arms are not included in the VISUM model due to the non-strategic nature of some minor roads. In this situation a growth factor for Suffolk derived by Trip End Model Presentation Program (TEMPro) (Ref. 9.6) has been applied to the observed turning flows to make an allowance for growth.

9.2.28 The forecast scenarios being modelled for the junction modelling are as follows:

- 2023 Reference Case (with Sizewell B outage, without Sizewell C, with Scottish Power).

- 2023 Early Years (with Sizewell B outage, with initial Sizewell C construction traffic, with Scottish Power).
- 2028 Reference Case (with Sizewell B outage, without Sizewell C, with Scottish Power).
- 2028 Peak Construction (with Sizewell B outage, with peak Sizewell C construction traffic, with Scottish Power).
- 2034 Reference Case (with Sizewell B outage, without Sizewell, C Scottish Power construction assumed to be complete).
- 2034 Operational Phase (with Sizewell B outage, with operational Sizewell C traffic, post construction, Scottish Power construction assumed to be complete).

9.2.29 Forecast hourly flows (and percentage of heavy vehicles for non-signalised junctions) have been imported into the models as additional demand sets, for each of the five modelled hours. For signalised junctions, the cycle time has been optimised and the green times and offset optimised for practical reserve capacity (PRC).

9.3 Base model calibration

9.3.1 Base model queue lengths have been compared to observed queue length data to provide an indication of whether the model is deemed able to predict observations.

9.3.2 The quality and reliability of observed queue length data is generally low due to the subjective nature of the collection method. It is therefore not appropriate to rely on the observed data for detailed calibration purposes, i.e. to aim to make a detailed match between the modelled and observed queue lengths. The queue length data has, however, been used to determine whether the model is operating within the right broad classification, e.g. no/low queue, medium queue, or large queue.

9.3.3 Video footage of the junctions has also been consulted to better understand whether the queues being reported in the data are slow moving or stationary queues and whether the maximums being reported are present for a few seconds/minutes or throughout the entire modelled period.

9.3.4 Once a better understanding of the magnitude, stability, and speed of each observed queue has been established, the modelled queues are compared and a judgement is made regarding whether model calibration is required.

9.3.5 A comparison of the modelled and observed queue lengths is provided in **Table 9.4** which demonstrates that most models are able to reasonably reflect the observed level of queueing. Some models have a larger discrepancy between the modelled and observed queue lengths and these are generally in locations where queues are unstable and rapidly build and disperse.

9.3.6 The modelled queue lengths reported by Junctions 9 represent an average across the entire modelled period (said to represent an infinite number of days) whilst the observed data is a maximum length reported every five minutes for a single day and therefore does not necessarily capture the subtleties of each queue. It is therefore not appropriate to directly compare the modelled and observed queues to the nearest vehicle but the observed data can be used to establish whether the base model predicts queues of a realistic magnitude (i.e. small, medium, or large).

Table 9.4: Queue length comparison (junction model vs observed)

#	Junction Name.	Approach / Turn.	Comparison of Observed and Modelled Queue Lengths (metres).														
			06:00-07:00			07:00-08:00			0800:0900			15:00-16:00			17:00-18:00		
			Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff
1	A140 / B1078	B1078 (East) to A140 (South)	1.3	0.2	-1.1	3.7	0.5	-3.2	8.7	1.7	-7.0	4.1	0.5	-3.6	4.2	0.5	-3.7
		A140 (South) to B1078 (East)	0.9	0.1	-0.8	3.5	0.5	-3.0	4.9	0.8	-4.1	3.8	0.7	-3.1	3.6	0.8	-2.8
2	B1078 / B1079	B1078 (West) to B1079 (North)	0.4	0.2	-0.2	2.8	0.9	-1.9	5.3	3.1	-2.2	3.4	1.4	-2.0	4.1	2.0	-2.1
		B1079 (North) to B1078 (West)	0.0	0.0	0.0	0.3	0.1	-0.2	0.6	0.4	-0.2	0.6	0.2	-0.4	0.3	0.1	-0.2
3	B1078 / B1116	B1116 North-West	0.1	0.2	0.1	2.4	0.8	-1.6	2.8	2.4	-0.4	2.0	0.6	-1.4	2.3	0.7	-1.6
		B1078 South-West	0.4	0.1	-0.3	2.3	0.2	-2.1	2.1	0.2	-1.9	2.0	0.2	-1.8	2.2	0.3	-1.9
		B1078 South-East	0.3	0.1	-0.2	0.2	0.5	0.3	0.7	0.7	0.0	0.6	0.6	0.0	0.8	0.6	-0.2
		A12 Slip-Road	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0
4a	B1069 / B1078 (Woodbridge Rd).	B1078 Ashe Road	0.3	0.0	-0.3	0.7	0.1	-0.6	1.3	0.1	-1.2	1.2	0.1	-1.1	1.3	0.1	-1.2
		B1078 Orford Road	0.1	0.0	-0.1	0.3	0.1	-0.2	0.3	0.2	-0.1	0.8	0.2	-0.6	0.6	0.1	-0.5

#	Junction Name.	Approach / Turn.	Comparison of Observed and Modelled Queue Lengths (metres).														
			06:00-07:00			07:00-08:00			0800:0900			15:00-16:00			17:00-18:00		
			Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff
4b	B1069 / B1078 (Snape Rd).	B1069 Snape Road (North).	1.1	0.1	-1.0	2.8	0.3	-2.5	1.9	0.3	-1.6	2.9	0.4	-2.5	2.8	0.4	-2.4
		B1078 East	0.1	0.0	-0.1	0.1	0.0	-0.1	0.0	0.0	0.0	0.1	0.0	-0.1	0.1	0.0	-0.1
5	A1094/B1069 (Snape Road, East).	B1069 (North) to A1094 (West)	1.4	0.4	-1.0	5.0	1.9	-3.1	5.4	1.4	-4.0	5.3	1.7	-3.6	4.0	0.9	-3.1
		A1094 (East) to B1069 (North)	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.0	-0.2	0.3	0.0	-0.3
6	A12 / A1094, Friday Street.	Not building base model.															
7N	A12 / B1119 (T-jct)	B1119 to A12 (North)				0.5	0.0	-0.5							1.4	0.0	-1.4
		B1119 to A12 (South)				2.2	0.1	-2.1							3.8	0.2	-3.6
		A12 (North) to B1119				0.4	0.0	-0.4							1.0	0.0	-1.0
7S	A12 / B1119 (T-jct)	B1119 to A12 (South)				3.3	0.2	-3.1							1.6	0.1	-1.5
		B1119 to A12 (North)				3.2	0.2	-3.0							4.5	0.3	-4.2
		A12 (South) to B1119				1.5	0.1	-1.4							2.6	0.2	-2.4

#	Junction Name.	Approach / Turn.	Comparison of Observed and Modelled Queue Lengths (metres).														
			06:00-07:00			07:00-08:00			0800:0900			15:00-16:00			17:00-18:00		
			Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff
8	B1121 / B1119	High Street.				3.4	2.0	-1.4							7.8	7.0	-0.8
		B1119				4.8	2.7	-2.1							13.6	9.4	-4.2
		B1121				1.5	0.9	-0.6							4.8	2.8	-2.0
		Chantry Road.				3.8	2.3	-1.5							7.0	5.0	-2.0
9	B1119 / B1122 / B1069	Station Road.	0.4	1.2	0.8	1.1	3.7	2.6	3.3	6.7	3.4	3.0	7.6	4.6	2.7	5.0	2.3
		Main Street.	0.5	1.0	0.5	0.9	3.4	2.5	2.3	8.3	6.0	2.8	4.2	1.4	2.5	5.1	2.6
		Park Hill.	0.3	1.3	1.0	1.1	3.5	2.4	4.1	6.1	2.0	4.4	6.6	2.2	2.9	4.7	1.8
		Waterloo Avenue.	0.9	0.4	-0.5	1.3	1.5	0.2	2.7	3.2	0.5	2.0	4.8	2.8	2.1	3.5	1.4
10	B1122 / B1125	B1125	0.3	0.1	-0.2	2.3	0.3	-2.0	1.4	0.2	-1.2	1.4	0.2	-1.2	0.8	0.1	-0.7
		B1122 East	0.0	0.0	0.0	0.7	0.1	-0.6	0.5	0.2	-0.3	0.8	0.3	-0.5	0.9	0.2	-0.7
11	A12 / A144	As seen in **Appendix 9B** of this Chapter.															
12	A12 / A1120	A1120 to A12 (East)	0.2	0.1	-0.1	1.5	0.4	-1.1	1.7	0.3	-1.4	2.2	0.4	-1.8	2.1	0.4	-1.7
		A12 (West) to A1120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A12 (East) to A1120	0.0	0.1	0.1	0.0	0.5	0.5	0.6	0.7	0.1	0.3	2.0	1.7	0.4	1.1	0.7

#	Junction Name.	Approach / Turn.	Comparison of Observed and Modelled Queue Lengths (metres).														
			06:00-07:00			07:00-08:00			0800:0900			15:00-16:00			17:00-18:00		
			Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff
		A1120 to A12 (West)	0.2	0.0	-0.2	0.3	0.1	-0.2	0.8	0.1	-0.7	0.4	0.0	-0.4	1.1	0.1	-1.0
13	A12 / B1120	As seen in **Appendix 9B** of this Chapter.															
14	A1094/B1069 (Church Rd)	B1069 South	1.3	0.2	-1.1	3.8	0.6	-3.2	5.2	1.0	-4.2	5.6	1.3	-4.3	4.9	1.1	-3.8
		A1094 East	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-0.3	0.0	0.0	0.0	0.0	0.0	0.0
		Unnamed Road North.	0.3	0.0	-0.3	1.2	0.1	-1.1	1.8	0.2	-1.6	1.8	0.2	-1.6	1.7	0.2	-1.5
		A1094 West	0.0	0.0	0.0	1.5	0.1	-1.4	0.8	0.2	-0.6	0.6	0.2	-0.4	0.4	0.1	-0.3
21	A12 / A14 / A1156 Seven Hills Interchange.	A12 North	2.0	0.7	-1.3	9.8	3.1	-6.7	15.6	5.5	-10.1	10.3	3.2	-7.1	12.8	4.2	-8.6
		A14 North-West	0.3	0.0	-0.3	1.3	0.1	-1.2	2.5	0.2	-2.3	1.4	0.1	-1.3	1.8	0.1	-1.7
		A1156 South-West	2.7	0.2	-2.5	6.6	3.5	-3.1	16.8	26.9	10.1	9.8	11.0	1.2	13.3	6.7	-6.6
		A14 South-East.	1.5	0.2	-1.3	16.5	6.2	-10.3	19.5	29.6	10.1	12.9	5.1	-7.8	13.8	14.2	0.4
		Unnamed Road North-East.	0.5	0.0	-0.5	1.5	0.1	-1.4	2.0	0.3	-1.7	1.1	0.1	-1.0	1.2	0.1	-1.1
22	A12 / Foxhall Road / Newbourne Road.	A12 North	3.1	0.8	-2.3	8.3	4.7	-3.6	8.8	6.1	-2.7	4.8	6.3	1.6	3.1	7.3	4.2
		Foxhall Rd West.	2.5	0.2	-2.3	9.7	5.9	-3.8	16.7	18.6	1.9	9.8	2.3	-7.5	7.2	1.4	-5.8
		A12 South	1.4	0.6	-0.8	7.0	4.8	-2.2	19.9	18.4	-1.5	10.1	6.0	-4.1	12.9	12.4	-0.5

#	Junction Name.	Approach / Turn.	Comparison of Observed and Modelled Queue Lengths (metres).														
			06:00-07:00			07:00-08:00			0800:0900			15:00-16:00			17:00-18:00		
			Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff
		Newbourne Rd East.	2.0	0.1	-1.9	5.3	2.2	-3.1	8.0	7.9	-0.1	6.8	4.5	-2.3	5.6	3.0	-2.6
23	A12 / Eagle Way / Barrack Square.	A12 North	2.5	0.9	-1.6	19.1	18.1	-1.0	33.4	36.0	2.6	10.0	7.7	-2.3	7.7	7.1	-0.6
		Eagle Way West.	0.9	0.1	-0.8	4.6	1.1	-3.5	6.8	7.2	0.5	4.1	1.1	-3.0	3.2	0.6	-2.6
		A12 South	0.7	0.5	-0.2	5.8	3.4	-2.4	9.2	10.4	1.2	9.1	4.3	-4.8	7.3	3.8	-3.5
		Barrack Square East.	1.2	0.1	-1.1	3.1	0.5	-2.6	5.5	1.1	-4.4	9.7	11.2	1.5	14.9	13.3	-1.6
24	A12 / Eagle Way / Anson Rd.	A12 North	1.2	0.6	-0.6	5.3	8.2	3.0	11.4	15.4	4.0	7.3	4.2	-3.1	4.8	2.7	-2.1
		Eagle Way West.	1.1	0.1	-1.0	3.4	1.0	-2.4	4.0	2.0	-2.0	7.8	4.4	-3.4	3.6	1.5	-2.1
		A12 South	1.5	0.4	-1.1	5.6	2.3	-3.3	11.6	7.4	-4.2	17.6	28.7	11.1	21.1	17.6	-3.5
		Anson Rd East.	2.1	0.2	-1.9	5.6	1.6	-4.0	5.9	1.8	-4.1	24.8	17.4	-7.4	24.4	27.0	2.6
25	A12 / A1214 Main Road / P&R.	A12 North	7.3	6.1	-1.2	15.0	11.9	-3.1	16.3	15.4	-0.9	23.3	21.6	-1.7	24.8	18.7	-6.1
		Park and Ride.	0.3	0.0	-0.3	0.7	0.1	-0.6	1.2	0.3	-0.9	1.0	0.3	-0.7	2.3	0.8	-1.5
		A1214 Main Road.	7.8	4.3	-3.5	17.6	12.4	-5.2	17.3	18.7	1.5	21.8	12.9	-8.9	16.1	9.4	-6.7
		A12 South	6.7	5.4	-1.3	15.1	15.6	0.5	18.3	21.8	3.5	27.0	27.0	0.0	24.7	26.6	1.9
		Main Road	0.9	0.0	-0.9	1.5	0.1	-1.4	3.7	0.2	-3.5	2.4	0.8	-1.6	3.3	1.0	-2.3

			Comparison of Observed and Modelled Queue Lengths (metres).														
#	Junction Name.	Approach / Turn.	06:00-07:00			07:00-08:00			0800:0900			15:00-16:00			17:00-18:00		
			Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff
		Circulatory 1	1.5	1.3	-0.2	2.8	2.5	-0.3	4.4	4.1	-0.3	3.7	3.8	0.1	4.2	4.0	-0.2
		Circulatory 2	0.6	0.6	0.0	2.0	2.0	0.0	3.3	3.4	0.2	2.6	2.6	0.0	2.3	2.2	-0.1
		Circulatory 3	4.7	1.9	-2.8	8.5	4.9	-3.6	9.2	6.2	-3.0	9.8	7.6	-2.2	10.7	8.2	-2.5
26	A12 / B1438	A12 North	1.2	0.7	-0.5	5.0	2.6	-2.4	9.1	11.8	2.7	5.3	4.4	-0.9	4.8	2.0	-2.8
		A12 West	0.3	0.6	0.3	3.5	7.4	3.9	8.4	13.3	4.9	10.9	14.3	3.4	15.7	8.2	-7.5
		B1438 East	1.5	0.1	-1.4	3.4	0.7	-2.7	4.6	1.9	-2.7	5.8	2.6	-3.2	6.9	2.1	-4.8
27	A12 / Foxhall Road / Newbourne Road.	A12 North	0.8	0.6	-0.2	8.8	5.0	-3.8	35.7	35.0	-0.7	14.5	5.1	-9.4	9.8	2.6	-7.2
		Grundisburgh Rd West.	1.0	0.1	-0.9	4.9	0.7	-4.2	11.2	14.4	3.2	11.2	7.8	-3.4	7.2	1.7	-5.5
		A12 South	1.3	0.4	-0.9	8.9	5.0	-3.9	10.7	9.5	-1.2	18.3	20.1	1.9	12.2	8.7	-3.5
		B1079 East	1.3	0.1	-1.2	4.1	0.8	-3.3	7.8	11.4	3.6	8.0	3.0	-5.0	4.3	1.0	-3.3
28	A12 / A1152 Woods Lane.	A12 North	0.7	0.5	-0.2	7.9	2.9	-5.0	22.6	21.5	-1.1	11.2	3.5	-7.7	10.1	1.9	-8.2
		A12 South-West.	0.6	0.5	-0.1	4.3	4.9	0.7	3.5	5.9	2.4	7.7	15.4	7.7	6.2	11.7	5.5
		B1152 East	3.1	0.3	-2.8	7.2	2.5	-4.7	8.5	6.0	-2.5	9.9	3.4	-6.5	9.7	2.1	-7.6
29	A12 / New Road / Woodbridge Road.	A12 South	0.0	0.0	0.0	0.2	0.0	-0.2	0.0	0.0	0.0	0.2	0.0	-0.2	0.3	0.0	-0.3
		Woodbridge Road West.	0.6	0.0	-0.6	1.6	0.2	-1.4	2.6	0.4	-2.2	3.2	0.4	-2.8	1.8	0.2	-1.6

#	Junction Name.	Approach / Turn.	Comparison of Observed and Modelled Queue Lengths (metres).														
			06:00-07:00			07:00-08:00			0800:0900			15:00-16:00			17:00-18:00		
			Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff
		A12 North	0.0	0.0	0.0	0.3	0.0	-0.3	3.7	0.0	-3.7	0.0	0.0	0.0	0.0	0.1	0.1
		New Road East.	0.3	0.0	-0.3	0.3	0.0	-0.3	1.3	0.2	-1.1	0.5	0.0	-0.5	0.1	0.0	-0.1
30	A12 / Button's Rd / Glemham Hall.	A12 Main Road (S)	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	-0.2
		Buttons Road West.	0.4	0.0	-0.4	0.6	0.1	-0.5	0.8	0.1	-0.7	0.7	0.0	-0.7	1.1	0.1	-1.0
		A12 Main road North.	0.0	0.0	0.0	1.6	0.3	-1.3	2.2	0.5	-1.7	2.8	0.2	-2.6	2.7	0.2	-2.5
		Glemham Hall East.	0.2	0.0	-0.2	0.1	0.0	-0.1	0.2	0.0	-0.2	0.2	0.0	-0.2	0.1	0.0	-0.1
31	A12 / A145	A145 West to A12 North.	0.3	0.0	-0.3	1.2	0.2	-1.0	2.4	0.5	-1.9	2.0	0.3	-1.7	2.7	0.3	-2.4
		A145 West to A12 South.	1.4	0.1	-1.3	3.8	0.5	-3.3	3.7	0.5	-3.2	1.8	0.2	-1.6	1.9	0.2	-1.7
		A12 North to A145 West.	0.4	0.1	-0.3	1.4	0.3	-1.1	2.1	0.3	-1.8	2.5	0.4	-2.1	1.8	0.3	-1.5
32a	A12 / A1095 East	Slip road NB to A12 North-East.	0.0	0.0	0.0	0.1	0.0	-0.1	0.1	0.0	-0.1	0.1	0.0	-0.1	0.2	0.0	-0.2
		A12 South-West.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

#	Junction Name.	Approach / Turn.	Comparison of Observed and Modelled Queue Lengths (metres).														
			06:00-07:00			07:00-08:00			0800:0900			15:00-16:00			17:00-18:00		
			Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff
32b	A12 / A1095 West	A1095 South-East	1.0	0.1	-0.9	1.6	0.3	-1.3	1.8	0.3	-1.5	2.9	0.6	-2.3	3.3	0.5	-2.8
		A12 South-West.	0.3	0.0	-0.3	1.4	0.3	-1.1	2.4	0.9	-1.5	1.6	0.6	-1.0	1.6	0.3	-1.3
32c	A1095 / Slip Road.	Slip road SB to A1095 South-West.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.1	0.0	-0.1
		A1095 SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	-0.4
34a	A12 Northbound off slip / B1078.	A12 Northbound Offslip.	1.2	0.1	-1.1	2.3	0.6	-1.7	3.8	1.0	-2.8	3.2	0.8	-2.4	1.9	0.7	-1.2
		B1078 North-West.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
34b	A12 Southbound off slip / B1078.	A12 Southbound Offslip.	1.3	0.1	-1.2	2.4	0.4	-2.0	3.7	0.8	-2.9	2.4	0.4	-2.0	2.8	0.4	-2.4
		B1078 South-East.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-0.3	0.0	0.0	0.0
34c	A12 Southbound on slip / B1078 / Station Road.	B1078 North-West.	0.1	0.2	0.1	2.1	1.0	-1.1	3.6	3.8	0.2	1.8	0.7	-1.1	2.4	0.8	-1.6
		Station Road North.	0.0	0.0	0.0	0.2	0.0	-0.2	0.1	0.0	-0.1	0.3	0.0	-0.3	0.0	0.0	0.0

#	Junction Name.	Approach / Turn.	Comparison of Observed and Modelled Queue Lengths (metres).														
			06:00-07:00			07:00-08:00			0800:0900			15:00-16:00			17:00-18:00		
			Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff
		B1078 South-East.	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
35a	A12 / Mitford Road.	Mitford Road.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.1	0.0	-0.1
		A12 North	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	-0.4
35b	A12 / B1121 Main Road.	B1121 East to A12 South.	1.2	0.1	-1.1	2.3	0.6	-1.7	3.8	1.0	-2.8	3.2	0.8	-2.4	1.9	0.7	-1.2
		B1121 East to A12 North.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		A12 North to A145 West.	1.3	0.1	-1.2	2.4	0.4	-2.0	3.7	0.8	-2.9	2.4	0.4	-2.0	2.8	0.4	-2.4
36a	A12 / Main Road.	B1121 South-East.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	-0.3	0.0	0.0	0.0
		A12 South	0.1	0.2	0.1	2.1	1.0	-1.1	3.6	3.8	0.2	1.8	0.7	-1.1	2.4	0.8	-1.6
37	A12 / B1387	B1387 South-East.	0.0	0.0	0.0	0.2	0.0	-0.2	0.1	0.0	-0.1	0.3	0.0	-0.3	0.0	0.0	0.0
		A12 South West.	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	0.0
38	A12 / B1125 Angel Lane.	Angel Lane South-East.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	-0.1	0.1	0.0	-0.1
		A12 South-West.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	-0.4

#	Junction Name.	Approach / Turn.	Comparison of Observed and Modelled Queue Lengths (metres).														
			06:00-07:00			07:00-08:00			0800:0900			15:00-16:00			17:00-18:00		
			Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff	Obs	Mod	Diff
39	A12 / Marlesford Road.	Marlesford Rd North-West.	0.0	0.0	0.0	0.8	0.0	-0.8	0.2	0.0	-0.2	0.5	0.0	-0.5	0.2	0.0	-0.2
		A12 North-East.	0.0	0.0	0.0	0.3	0.0	-0.3	0.3	0.0	-0.3	0.2	0.0	-0.2	0.4	0.0	-0.4
40	A12 / Bell Lane.	Bell Ln North.	0.8	0.1	-0.7	1.3	0.2	-1.1	2.3	0.4	-1.9	1.3	0.2	-1.1	1.4	0.1	-1.3
		A12 North-East.	0.0	0.0	0.0	1.5	0.0	-1.5	0.0	0.0	0.0	0.5	0.0	-0.5	1.2	0.0	-1.2
41	A1156 / Felixstowe Road.	Felixstove Road South.	0.9	0.1	-0.8	2.1	0.3	-1.8	1.9	0.5	-1.4	2.3	0.4	-1.9	3.0	0.8	-2.2
		A1156 West	0.0	0.0	0.0	0.5	0.2	-0.3	0.7	0.2	-0.5	0.4	0.1	-0.3	0.4	0.2	-0.2

9.4 Junction assessment criteria

9.4.1 For the non-signalised junctions, results from Junctions 9 have been extracted for all thirty scenarios (5 hours x 6 growth scenarios) for delay and queue and ratio of flow to capacity (RFC), which shows the ratio of vehicular flow to the capacity available. For signalised junctions, results from LinSig have been extracted for all thirty scenarios for delay and queue as well as degree of saturation (DoS), which is defined as the ratio of vehicular flow to the capacity available. The RFC and DoS outputs are presented in a graphical format in this **Transport Assessment** (Doc Ref. 8.5) to allow for easy comparison between scenarios.

9.4.2 For the purposes of this **Transport Assessment** (Doc Ref. 8.5), a non-signalised junction modelled in Junctions 9 will be deemed to be within 'desirable' capacity if its RFC is less than 85%. As an RFC increases above 85% it is more likely that capacity issues will occur. This threshold is based on the guidance contained in the Design Manual for Roads and Bridges (DMRB) in TA 23/81 (Ref 9.7), paragraph 6.2, which states that:

> *"due to site to site variation there is a standard error of prediction of the entry capacity by the formula of + or - 15% for any site. Thus if any entry RFC ratio of about 85% occurs queuing will theoretically be avoided in the chosen design year peak hour in 5 out of 6 cases (schemes). Similarly, if an entry RFC ratio of 70% occurs queuing will theoretically be avoided in 39 out of 40 cases (schemes). The general use of designs with a RFC ratio of about 85% is likely to result in a level of provision which will be economically justified"* (Ref 9.1).

9.4.3 A signalised junction is deemed to be within capacity if its DoS is less than 90%. This is the industry standard for the practical maximum capacity of an approach. Above 90% the flow breaks down and queues/delays start to increase exponentially. Unlike for non-signalised junctions there is no guidance for DoS at signalised junctions below which queuing is likely to theoretically be avoided.

9.4.4 Delays and queue lengths will also be taken into account when reporting the predicted operation of each junction to strengthen the evidence being provided in each case.

9.5 Overview

9.5.1 For the purposes of this **Transport Assessment** (Doc Ref. 8.5) and based on the criteria above, a non-signalised junction is considered to operate well within capacity or without significant congestion if it is predicted to have an RFC below 0.7 in all modelled scenarios. For signalised junctions they are considered to operate within capacity if the DoS is below 90% for all modelled scenarios.

9.5.2 A traffic modelling exercise was conducted in Autumn 2019 which assessed all 54 junctions against high traffic growth assumptions. This scenario made an allowance for the non-typical day 'weekend effect' (Sizewell C construction workers travelling to their permanent homes on a Friday afternoon) and did not constrain overall growth to Department for Transport TEMPro forecasts (Ref 9.6) which means it represented an overly robust case in terms of forecast flows. Despite being overly robust, 28 of the 54 junctions under assessment, which were all non-signalised junctions, were found to operate with an RFC below 0.7 (i.e. **significant** spare capacity). Subsequently, these 28 junctions were scoped-out of any further assessment. Results for the scoped out junctions based on the high growth assessment are presented in **Appendix 9A** of this Chapter and **Table 9.6** provides a summary of the maximum RFC predicted at each of the scoped-out junctions (across all arms and scenarios). It should be noted that none of the signalised junctions were scoped out of the assessment.

9.5.3 The remaining 26 junctions that were within scope were assessed further under a more realistic 'core growth' scenario, as detailed in **Chapters 7** and **8** in the **Transport Assessment** (Doc Ref. 8.5), which constrains overall growth to TEMPro forecasts and does not include the 'weekend effect'. This scenario does incorporate the 'busiest day' flows rather than the 'typical day' flows, as defined in **Chapter 7**, Trip Generation, Distribution and Mode Share, for the 2028 Peak Construction scenario, however the net effect of all of these changes is lower flows than those used in Autumn 2019. The results from this assessment are detailed in the following sections of this **Chapter 9** of the **Transport Assessment** and a summary of the maximum RFC/DoS predicted at each junction (across all arms and scenarios) is provided in **Table 9.7** for the scoped-in junctions to indicate whether the junctions show capacity issues in any scenarios. Detailed model outputs from Junctions 9 and LinSig are included in **Appendix 9C** for all scoped-in junctions.

9.5.4 **Tables 9.6** and **9.7** have been colour coded based on the criteria summarised in **Table 9.5**, although it should be noted that the performance of junctions is not as absolute as this.

Table 9.5: Junction modelling performance criteria

	Non-signalised junction	Signalised junction
	All arms operate with an RFC of 0.85 or less	All arms operate with a DoS with 90% or less
	At least one arm operates with an RFC greater than 0.85 but less than or equal to 1.0	At least one arm operates with a DoS of greater than 90% but less than or equal to 100%
	At least one arm operates with an RFC greater than 1.0	At least one arm operates with a DoS of greater than 100%

Table 9.6: Maximum RFC Results (Scoped-out junctions, detailed in Appendix 9A)

		Existing Layout.		Proposed Mitigation.			
No.	Junction Name.	Modelled?	Maximum RFC.	Is Mitigation Proposed?	Has Mitigation Been Modelled?	Maximum RFC.	Comments
4a	B1069 / B1078 (Ashe Rd).	Y	0.23	N	N		---
4b	B1069 / B1078 (Snape Rd).	Y	0.49	N	N		---
7(N)a	A12/B1119 T-Junction (North).	Y	0.33	-	Y	0.31	---
7(N)b	A12/B1119 - A12 Off Slip (North).	Y	0.33	N	N		---
7(S)b	A12/B1119 - A12 Off Slip (South).	Y	0.26	N	N		---
10	B1122 / B1125	Y	0.50	-	Y	0.09	---
12b	A12 / A1120 Slip	Y	0.12	N	N		---
12c	A1120 / A1120 Slip	Y	0.20	N	N		---
15	Southern park and ride site (Wickham Market).	N		Y	Y	0.31	Proposed new junction.

		Existing Layout.		Proposed Mitigation.			
No.	Junction Name.	Modelled?	Maximum RFC.	Is Mitigation Proposed?	Has Mitigation Been Modelled?	Maximum RFC.	Comments
29	A12 / New Road / Woodbridge Road.	Y	0.65	N	N		---
30	A12 / Button's Rd / Glemham Hall.	Y	0.34	N	N		---
31	A12 / A145	Y	0.41	N	N		---
32a	A12 / A1095 East	Y	0.00	N	N		---
32b	A12 / A1095 West	Y	0.53	N	N		---
32c	A1095 / Slip Road.	Y	0.01	N	N		---
33	A12 / B1438	Y	-	N	N		DMRB Assessment so RFC results not available.
34a	A12 Northbound off slip / B1078.	Y	0.66	N	N		---
34b	A12 Southbound off slip / B1078.	Y	0.61	Y	N		Signage changes proposed, cannot be modelled.
35a	A12 / Mitford Road	Y	0.06	N	N		---

		Existing Layout.		Proposed Mitigation.			
No.	**Junction Name.**	**Modelled?**	**Maximum RFC.**	**Is Mitigation Proposed?**	**Has Mitigation Been Modelled?**	**Maximum RFC.**	**Comments**
35b	A12 / B1121 Main Road.	Y	0.47	N	N		---
35c	B1121 Main Road / Slip Road.	Y	0.25	N	N		---
36a	A12 / Main Road.	Y	0.31	N	N		---
36b	Slip Road / Main Road.	Y	0.19	N	N		---
37	A12 / B1387	Y	0.10	N	N		---
39	A12 / Marlesford Road.	Y	0.07	N	N		---
42	A12 / Sizewell Link Road.	N		Y	Y	0.66	Proposed new junction.
43	B1122 / Site Access.	N		Y	Y	0.66	Proposed new junction.
44	B1122 / Lover's Lane.	N		Y	Y	0.58	Proposed new junction close to existing junction.

Table 9.7: Junction Assessment Summary (Scoped-in junctions)

		Existing Layout.		Proposed Mitigation.			
No.	Junction Name.	Modelled?	Maximum RFC or DoS.	Is Mitigation Proposed?	Has Mitigation Been Modelled?	Maximum RFC or DoS.	Comments
1	A140 / B1078	Y	0.97	Y	Y	0.94	---
2	B1078 / B1079	Y	1.38	Y	N		Vegetation trimming proposed – does not change modelled visibilities.
3	B1078 / B1116	Y	0.80	Y	N		No changes to modelled geometries.
5	B1069 / A1094 (Snape Road, East).	Y	1.09	Y	Y	1.06	---
6	A12 / A1094	N		Y	Y	0.84	Existing layout not modelled because a new roundabout layout is proposed as part of the two-village bypass.
7(S)a	A12/B1119 T-Junction (South).	Y	0.65	Y	Y	0.64	---
8	B1121 / B1119	Y	94%	N	N		LinSig
9	B1119 / B1122 / B1069	Y	104%	N	N		LinSig
11	A12 / A144	Y	-	Y	Y	-	Modelled in VISSIM so RFC results not available.
12a	A12 / A1120	Y	0.80	N	N		---

		Existing Layout.		Proposed Mitigation.			
No.	Junction Name.	Modelled?	Maximum RFC or DoS.	Is Mitigation Proposed?	Has Mitigation Been Modelled?	Maximum RFC or DoS.	Comments
13	A12 / B1122	N		Y	Y	0.86	Existing and proposed layouts modelled in VISSIM, proposed layout also modelled in Junctions 9.
14	A1094 / B1069 (Church Road).	Y	0.87	N	N		---
17	Northern park and ride site (Darsham).	N		Y	Y	0.75	Proposed new junction.
21	A12 / A14 / A1156 Seven Hills Interchange.	Y	1.61	Y	Y	178%	Junction signalisation scheme planned (Adastral Park).
22	A12 / Foxhall Road / Newbourne Road.	Y	1.50	Y	Y	110%	Junction signalisation scheme planned (Adastral Park).
23	A12 / Eagle Way / Barrack Square.	Y	4.28	Y	Y	251%	Junction signalisation scheme planned (Adastral Park).
24	A12 / Eagle Way / Anson Rd.	Y	1.59	Y	N		Junction signalisation scheme planned (Adastral Park) post 2034.
25	A12 / Main Road / P&R.	Y	152%	N	N		LinSig
26	A12 / B1438	Y	1.19	N	N		--
27	A12 / B1079 Grundisburgh Road.	Y	1.41	N	N		---

		Existing Layout.		Proposed Mitigation.			
No.	**Junction Name.**	**Modelled?**	**Maximum RFC or DoS.**	**Is Mitigation Proposed?**	**Has Mitigation Been Modelled?**	**Maximum RFC or DoS.**	**Comments**
28	A12 / A1152 Woods Lane.	Y	1.09	N	N		---
34c	A12 Southbound on slip / B1078 / Station Road.	Y	0.86	N	N		---
38	A12 / B1125 Angel Lane.	Y	0.61	N	N		---
40	A12 / Bell Lane.	Y	0.60	N	N		---
41	A1156 / Felixstowe Road.	Y	0.46	N	N		---
45	A12 / Tinker Brook.	N		Y	Y	0.88	Existing layout not modelled as a new roundabout layout is proposed as part of the two-village bypass.

9.6 Junction 1 – A140 / B1078

a) Context

9.6.1 Junction 1 is a T-junction situated on a dual carriageway, located approximately 25 miles south-west of the Sizewell C site. The right turn movement from the A140 South to the B1078 is facilitated by a right-turn deceleration lane between the two carriageways. The B1078 approach is restricted to left-turn movements only and an acceleration lane is provided for access to the A140 southbound. The layout of the junction is such that the A140 South right turn forms a crossroads with the B1078 and A140 southbound carriageway. Therefore, the junction has been modelled as a crossroads.

9.6.2 In this location, the A140 comprises of two lanes in each direction and has a speed limit of 50mph, which is enforced by a southbound speed camera, installed due to a known accident problem at this location. The B1078 has a single lane in each direction and the national speed limit applies. No street lighting is present. A satellite image of the existing junction layout is shown in **Plate 9.2**.

Plate 9.2: Existing A140 / B1078 Junction Layout

b) Calibration Summary

9.6.3 Observed queue data showed that there were small queues present at both give-way lines (the A140 south right turn to the B1078 and the left turn from the B1078 to the A140 south) during the modelled intervals.

9.6.4 Queues at the A140 south right turn give-way line were no longer than five vehicles in length, whilst queues on the B1078 approach were no longer than 9 vehicles in length during the modelled periods.

9.6.5 The junction model typically results in queues slightly lower than those observed but reflects the fact that small queues exist at both give way lines. Therefore, the model is considered to be representative of existing conditions.

c) Early Years (2023)

i. Demand impact

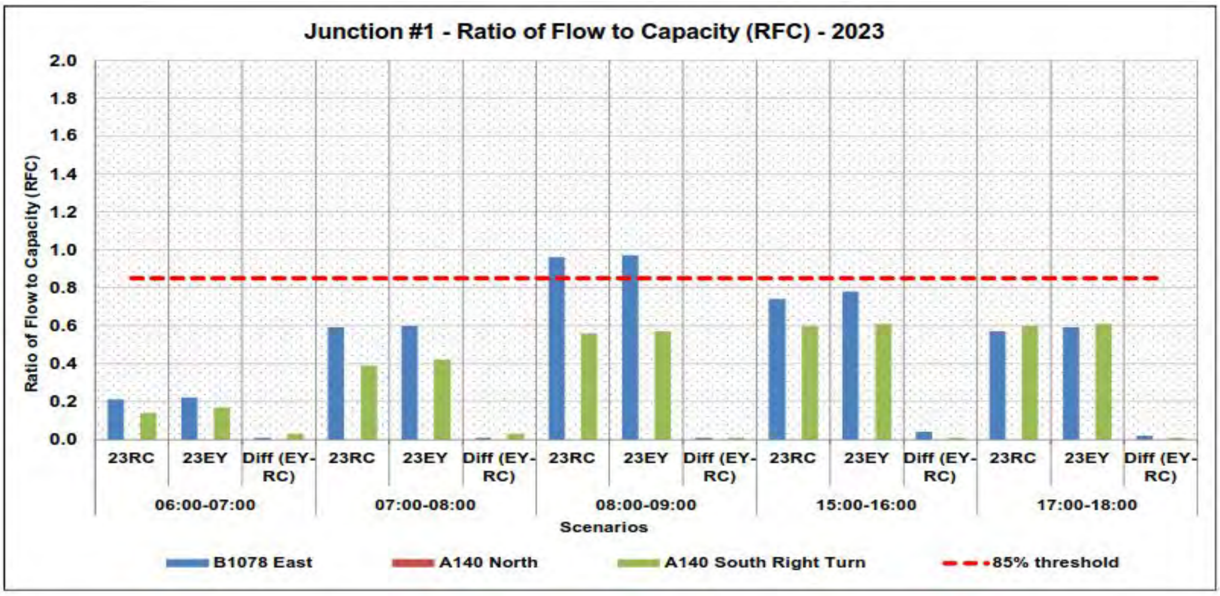
9.6.6 The 2023 Reference Case scenario traffic flows show small increases in entry demand on the A140 south right turn into the B1078 (+10-80 vehicles per hour) across all modelled hours, relative to the observed base year traffic flows. Flows on the A140 north and on the eastern B1078 approach at this location are predicted to see an increase from 06:00-07:00 and from 07:00-08:00 (+20-100 vehicles per hour) and a larger increase in traffic flows from 08:00-09:00, 15:00-16:00 and 17:00-18:00 (+100-170 vehicles per hour) relative to the observed base year traffic flows.

9.6.7 The Early Years scenario shows that traffic flows are predicted to be broadly similar to the 2023 Reference Case with small increases in traffic flows in all modelled hours (up to +30 vehicles) across all arms.

ii. Results analysis

9.6.8 The RFC modelling results for the 2023 Reference Case (RC within **Plate 9.3**) and Early Years (EY within **Plate 9.3**) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.3**. The A140 south approach has been removed because all RFC results are zero, since it is a one-way exit only. The difference in RFC between the 2023 Reference Case and Early Years is shown as EY-RC.

Plate 9.3: A140 / B1078 2023 Early Years RFC Results



9.6.9 **Plate 9.3** shows that the junction is predicted to operate within desirable capacity during all modelled hours in the 2023 Reference Case scenario, except 08:00-09:00, where the eastern B1078 approach operates above the 0.85 desirable threshold with an RFC of 0.96.

9.6.10 The Early Years scenario RFC results are very similar to the 2023 Reference Case, generally showing small increases in RFC on all movements in all peak hours. The largest increase in RFC due to the addition of the Sizewell C traffic (+0.04) occurs from 15:00-16:00 on the eastern B1078 approach which is consistent with the largest increase in flows on the A140 North, which makes it more difficult for traffic joining the A140 from the eastern B1078 approach. The Sizewell C traffic has little impact on the performance of this junction on the Early Years scenario.

d) Peak Construction (2028)

i. Demand impact

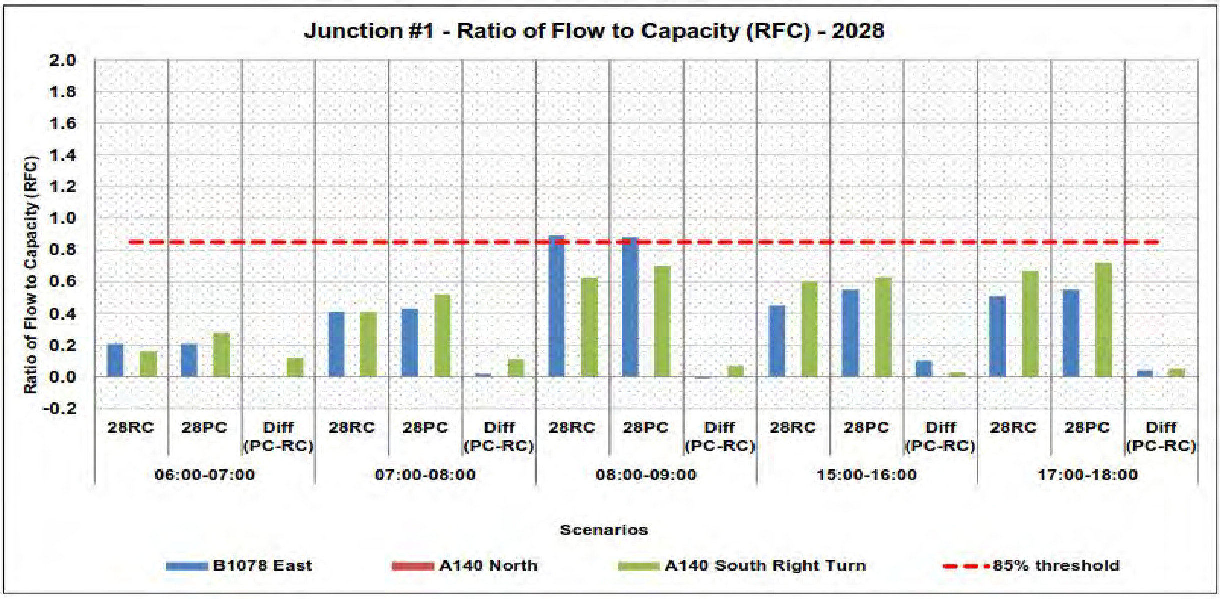
9.6.11 The 2028 Reference Case scenario shows a small increase in entry demand on all approaches (+10-90 vehicles per hour) relative to the observed base year traffic flows. The one exception is the A140 North approach from 15:00-16:00 and 17:00-18:00 when a larger increase in traffic is predicted (+140 vehicles per hour). Generally, traffic flows are predicted to increase more in the afternoon periods and from 08:00-09:00 than they are in the early morning hours.

9.6.12 The Peak Construction scenario shows that traffic flows are broadly similar to the 2028 Reference Case with small increases in traffic flows in all modelled hours (up to +70 vehicles) across all arms. The largest increases are generally in the morning and evening time periods which are related to vehicles heading towards Sizewell C in the morning and leaving in the evening.

ii. Results analysis

9.6.13 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.4**. The difference is shown as 'PC-RC'.

Plate 9.4: A140 / B1078 2028 Peak Construction RFC Results



9.6.14 **Plate 9.4** shows that the junction is predicted to operate within desirable capacity during all modelled hours in the 2028 Reference Case scenario, except from 08:00-09:00, where the eastern B1078 approach operates slightly above the 0.85 desirable threshold in the 2028 Reference Case scenario with an RFC of 0.89.

9.6.15 The Peak Construction scenario RFC results are very similar to the 2028 Reference Case, generally showing small increases in RFC on all movements in all peak hours. The largest increase in RFC (+0.10) occurs from 15:00-16:00 on the eastern B1078 approach due to the increase in flows on the A140 North, which makes it more difficult for traffic joining the A140 from the B1078. Queues and delays do not increase significantly and it is therefore considered that the Sizewell C traffic has minimal impact on performance of this junction in the Peak Construction scenario.

e) Operational Phase (2034)

i. Demand impact

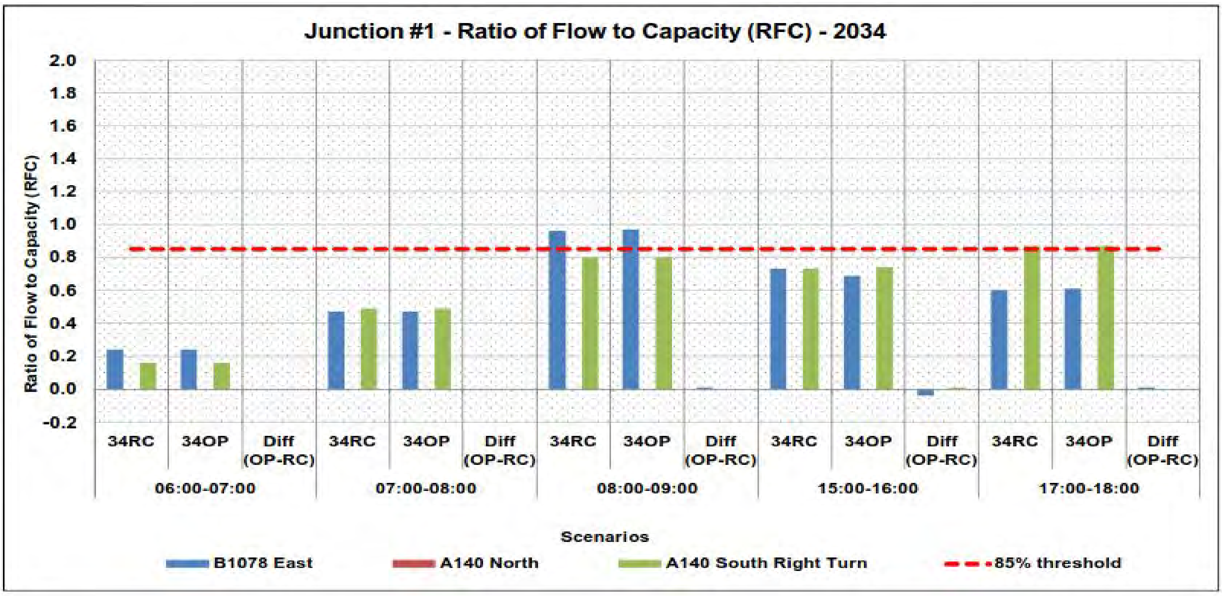
9.6.16 The 2034 Reference Case is predicted to experience a large increase in entry demand on the A140 North approach from 08:00-09:00, 15:00-16:00 and 17:00-18:00 (+160-200 vehicles per hour), and a smaller increase from 06:00-07:00 and 07:00-08:00 (+80-90 vehicles per hour) relative to the observed base year traffic flow. Flows on the eastern B1078 approach and the A140 South Right Turn into the B1078 are predicted to experience a small increase from 06:00-07:00 and 07:00-08:00 (+20-90 vehicles per hour), and a moderate increase from 08:00-09:00, 15:00-16:00 and from 17:00-18:00 (+100-170 vehicles per hour) relative to the observed base year traffic flows.

9.6.17 The Operational Phase scenario shows very similar flows to the 2034 Reference Case scenario, with negligible changes across all approaches and modelled hourly periods.

ii. Results analysis

9.6.18 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.5**. The difference is shown as ‘OP-RC’.

Plate 9.5: A140 / B1078 Operational Phase RFC Results



9.6.19 **Plate 9.5** shows that the junction is predicted to operate within desirable capacity during all modelled hours in the 2034 Reference Case scenario, except from 08:00-09:00, where the eastern B1078 approach operates above the 0.85 RFC desirable threshold with an RFC of 0.96. The A140 South Right Turn approach also operates slightly above the 0.85 RFC desirable threshold from 17:00-18:00 with an RFC of 0.87.

9.6.20 The Operational Phase scenario RFC results are very similar to the 2034 Reference Case scenario, with negligible changes across all approaches and modelled hours. Where the junction operates above the 0.85 RFC desirable threshold from 08:00-09:00, the minor approach delay is only predicted to increase very slightly from 100 seconds in the 2034 Reference Case to 105 seconds per vehicle in the Operational Phase scenario. The level of queuing is only predicted to increase from 11 vehicles to 12 vehicles. From 17:00-18:00, the change in queues and delays is negligible between the 2034 Reference Case and Operational Phase scenarios.

f) Mitigation Analysis

9.6.21 The junction is predicted to operate above the desirable capacity threshold of 0.85 RFC from 08:00-09:00 with or without the addition of Sizewell C traffic. Mitigation has been proposed at this location, (widening of the right-turn lane on the A140 northbound) but this is not expected to impact the operation of the junction and is being proposed for safety purposes.

g) Overview

9.6.22 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.8**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or near capacity) are coloured orange; and more than 1.00 (operating over capacity) are coloured red.

Table 9.8: A140 / B1078 Junction RFC Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.16	0.21	0.22	0.21	0.28	0.24	0.24
07:00-08:00	0.35	0.59	0.60	0.41	0.52	0.49	0.49
08:00-09:00	0.63	0.96	0.97	0.89	0.88	0.96	0.97
15:00-16:00	0.40	0.74	0.78	0.60	0.63	0.73	0.74
17:00-18:00	0.44	0.60	0.61	0.67	0.72	0.87	0.87

9.6.23 The modelling results show that the junction generally operates with spare capacity with the exception of 08:00-09:00 when the B1078 approach is expected to operate above the 0.85 RFC desirable threshold in all future year scenarios. From 17:00:18:00, the A140 South Right Turn approach is expected to operate slightly above the 0.85 RFC desirable threshold in the

2034 future year scenarios. Negligible change is seen in the results when the Sizewell C traffic is added. This pattern is evident across all three forecast years and is a result of background traffic growth rather than an impact that could be associated with Sizewell C.

9.7 Junction 2 – B1078 / B1079 T-junction

a) Context

9.7.1 Junction 2 is a simple priority T-junction, located approximately 19 miles south-west of the Sizewell C site. It is formed where the B1078 (minor arm) meets the B1079, near the village of Otley. The junction is typical of a rural T-junction, with single carriageways and a short flare on approach. The B1079 operates with the national speed limit of 60mph, while the B1078 is 40mph on approach before changing to national speed limit just before the give-way line. The junction does not have street lighting. A satellite image of the existing junction layout is shown in **Plate 9.6**.

Plate 9.6: Existing B1078 / B1079 T-junction Layout

b) Calibration Summary

9.7.2 Observed queue data showed that there were small or negligible queues on the B1079 North and the B1078 minor approach during the modelled hourly intervals. Traffic flows from the B1079 East approach are not conflicted, hence no queuing was observed.

9.7.3 The junction model typically results in queues slightly lower than those observed, with negligible queues on all arms. Therefore, the model is considered to be representative of existing conditions.

c) Early Years (2023)

i. Demand impact

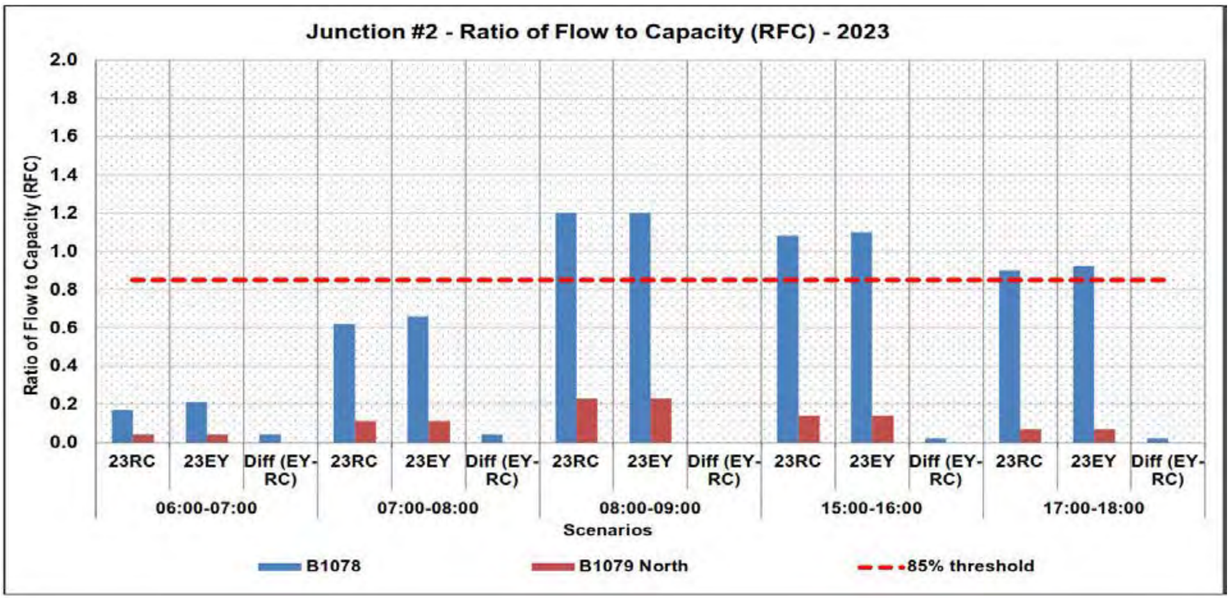
9.7.4 The 2023 Reference Case scenario traffic flows show small or negligible increases in entry demand on the B1079 North and B1079 East approaches (up to +40 vehicles per hour), relative to observed base year traffic flows. A small increase in entry demand from the B1078 minor approach is forecast from 06:00-07:00 (+11 vehicles per hour), while modest increases are forecast from 07:00-08:00 and 17:00-18:00 (+60-90 vehicles per hour), relative to the base year. A larger increase is forecast from 08:00-09:00 and 15:00-16:00 (+170-190 vehicles per hour). The main component of these traffic flow increases is the opening of the Ipswich Garden Suburb development nearby.

9.7.5 The Early Years scenario shows that traffic flows are broadly similar to the 2023 Reference Case during all modelled hours, with negligible changes in entry demand (up to 14 vehicles per hour).

ii. Results analysis

9.7.6 The RFC modelling results for the 2023 Reference Case (RC) and Early Years (EY) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.7**. The difference is shown as EY-RC.

Plate 9.7: B1078 / B1079 T-junction 2023 Early Years RFC Results



9.7.7 **Plate 9.7** shows that the junction is predicted to operate within capacity from 06:00-07:00, approaching capacity from 07:00-08:00, and approaching or over capacity for all other time periods. The B1078 approach experiences higher RFCs as it represents the minor arm at this T-junction.

9.7.8 Forecast traffic flows in the 2023 Reference Case scenario result in long delays and queues, particularly from 08:00-09:00 when the RFC is 1.2 and from 15:00-16:00 when the RFC is 1.08.

9.7.9 The Early Years scenario RFC results are similar to the 2023 Reference Case, with only small increases in RFC on the B1078 approach. The presence of Sizewell C traffic flows increase the RFC by no more than four percentage points. RFC results on the B1079 North are almost identical to the 2023 Reference Case, which is intuitive given the negligible changes in traffic flows.

d) Peak Construction (2028)

i. Demand impact

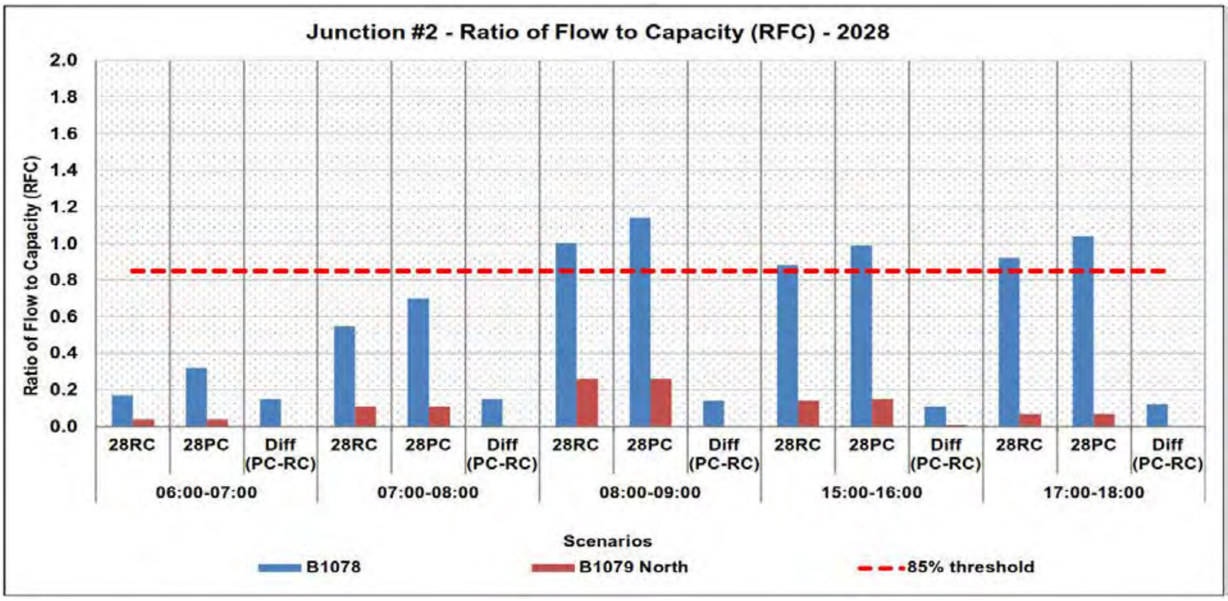
9.7.10 The 2028 Reference Case scenario traffic flows show negligible changes in entry demand on the B1079 North during all modelled hours, relative to observed base year traffic flows. On the other approaches from 06:00-07:00 increases are negligible. From 07:00-08:00, there is a small increase in entry demand on the B1078 and B1079 East (+30-70 vehicles per hour), while for all other time periods these increases are larger (+80-140 vehicles per hour), relative to observed base year traffic flows.

9.7.11 The Peak Construction scenario shows that traffic flows are broadly similar to the 2028 Reference Case during all modelled hours. Most changes are negligible, but small increases are forecast during all modelled hours on the B1078 (+30-70 vehicles per hour) and from 15:00-16:00 and 17:00-18:00 on the B1079 East (+50-70 vehicles per hour).

ii. Results analysis

9.7.12 The RFC modelling results for the 2028 Reference Case and Peak Construction scenarios, split by each modelled hourly period, are illustrated in **Plate 9.8**. The difference is shown as PC-RC.

Plate 9.8: B1078 / B1079 T-junction Peak Construction RFC Results



9.7.13 **Plate 9.8** shows that the junction is predicted to operate within capacity from 06:00-07:00 and 07:00-08:00 but is expected to operate above the 0.85 RFC desirable threshold in all other time periods.

9.7.14 From 08:00-09:00, 15:00-16:00 and 16:00-17:00, all scenarios report RFCs in excess of the 0.85 threshold, and queues and delays are prevalent during these times. Although the additional traffic resulting from Sizewell C during these time periods is small, the junction model is particularly sensitive when operating above capacity; therefore a disproportionately large increase in queuing and delays is predicted by the model.

e) Operational Phase (2034)

i. Demand impact

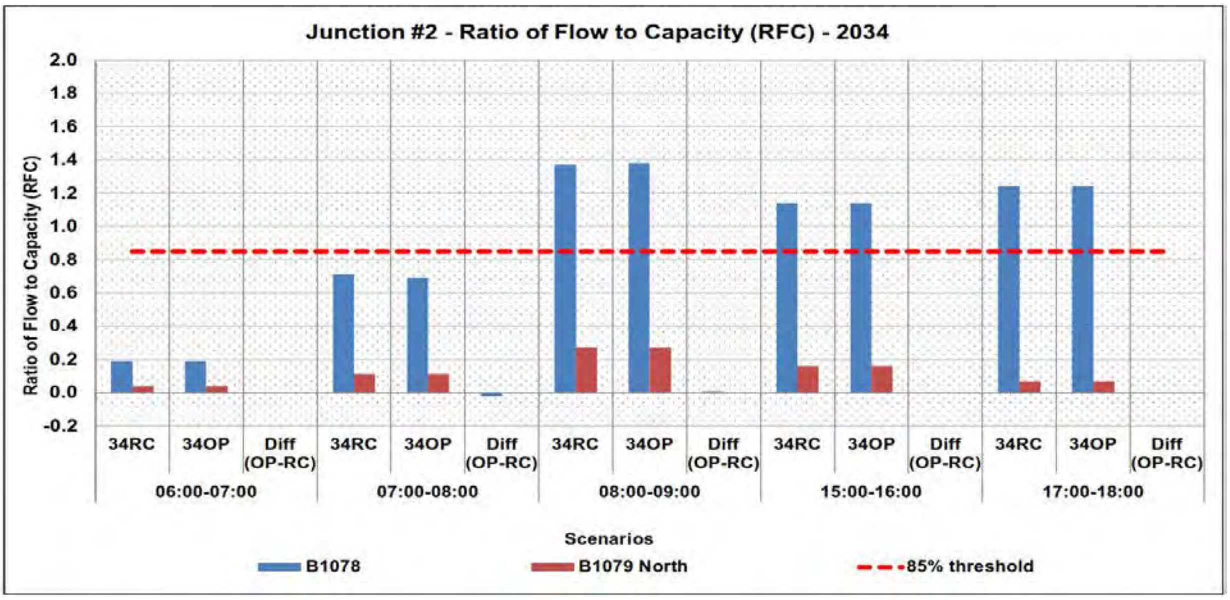
9.7.15 The 2034 Reference Case scenario traffic flows show negligible changes in in entry demand on the B1079 North during all modelled hours, relative to observed base year traffic flows. From 06:00-07:00, there are small increases in entry demand on the B1078 and B1079 East (+20-40 vehicles per hour). From 07:00-08:00, these increases are modest (+80-90 vehicles per hour), while for all other time periods these increases are larger (+180-260 vehicles per hour), relative to observed base year traffic flows.

9.7.16 The Operational Phase scenario shows that there are negligible differences in traffic flows when compared with the 2034 Reference Case, during all modelled hours.

ii. Results analysis

9.7.17 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.9**. The differences are shown as OP-RC.

Plate 9.9: B1078 / B1079 T-junction Operational Phase RFC Results



9.7.18 **Plate 9.9** shows that the junction is predicted to operate within capacity from 06:00-07:00 and 07:00-08:00 in both scenarios.

9.7.19 The junction is predicted to operate over capacity for all scenarios from 08:00-09:00, 15:00-16:00 and 17:00-18:00. All of these scenarios report RFCs in excess of 1.00, hence queuing and delays are prevalent. The negligible change in traffic flows resulting from Sizewell C traffic are such that the RFC, queues and delays do not change, relative to the 2034 Reference Case.

f) Mitigation Analysis

9.7.20 The junction is currently surrounded by heavy vegetation, which limits visibility, especially for vehicles approaching the give way line on the B1078. It is proposed to trim back vegetation around the junction to increase the visibility for vehicles on the B1078 approach. It is also proposed to make some minor changes to signage and road markings on the approach to the junction, however these cannot be effectively modelled using Junctions 9.

9.7.21 Whilst the proposed vegetation trimming will improve visibility at the give way line, it is unlikely to improve visibility 10m behind the give way line which is the metric required as an input to the model. It is therefore not possible to assess the impact of the proposed mitigation within the model but it is likely to improve safety and may also result in a small improvement to the B1078 capacity.

g) Overview

9.7.22 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.9**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.9: B1078 / B1079 Junction RFC Results Overview

Time period	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.15	0.17	0.20	0.17	0.32	0.19	0.19
07:00-08:00	0.48	0.62	0.66	0.55	0.70	0.71	0.69
08:00-09:00	0.77	1.20	1.20	1.00	1.14	1.37	1.38
15:00-16:00	0.60	1.07	1.10	0.88	0.99	1.14	1.14
17:00-18:00	0.67	0.90	0.92	0.92	1.04	1.24	1.24

9.7.23 The modelling results show that the junction operates with reserve capacity from 06:00-07:00 and 07:00-08:00, in all scenarios.

9.7.24 Future year RFC results are notably higher than those recorded in the observed base year in most modelled hours. This is largely a consequence of additional traffic from the Ipswich Garden Suburb development, located nearby on the northern fringe of Ipswich.

9.7.25 From 08:00-09:00, 15:00-16:00 and 17:00-18:00, the junction operates above the 0.85 desirable capacity threshold in all 2023, 2028 and 2034 scenarios.

9.7.26 Sizewell C causes little impact in 2023 and 2034 relative to the reference case scenarios. A small Sizewell C impact is predicted in the 2028 scenario from 08:00-09:00 (+0.14 RFC), from 15:00-16:00 (+0.11 RFC) and from 17:00-18:00 (+0.12 RFC) which results in an increase in queues and delays, particularly from 08:00-09:00. This impact is only predicted during the Peak Construction period and impact at this location is not predicted during the Sizewell C Operational Phase. The proposed vegetation trimming is likely to provide some benefit at this location.

9.8 Junction 3 - B1078 / B1116 Roundabout

a) Context

9.8.1 Junction 3 is a four-arm roundabout, located approximately 12 miles south-west of the Sizewell C site. It forms the northern part of a dumbbell-style grade-separated junction where the B1078 and B1116 meets the A12 Slip Road, north of Wickham Market. The A12 Slip Road exit forms the A12 northbound on-slip, however this arm is two-way at the junction to allow access to a farm track, located approximately 350m north-east of Junction 3. All approaches comprise of a single lane and are subject to the national speed limit of 60mph. Street lighting is in place on all approaches. A satellite image of the existing junction layout is shown in **Plate 9.10**.

Plate 9.10: Existing B1078 / B1116 Roundabout Layout

b) Calibration Summary

9.8.2 Observed queue data showed that there were small or negligible queues on all approaches during the modelled hourly intervals.

9.8.3 The junction model typically results in negligible queues on all approaches. Therefore, the model is considered to be representative of existing conditions.

c) Early Years (2023)

i. Demand impact

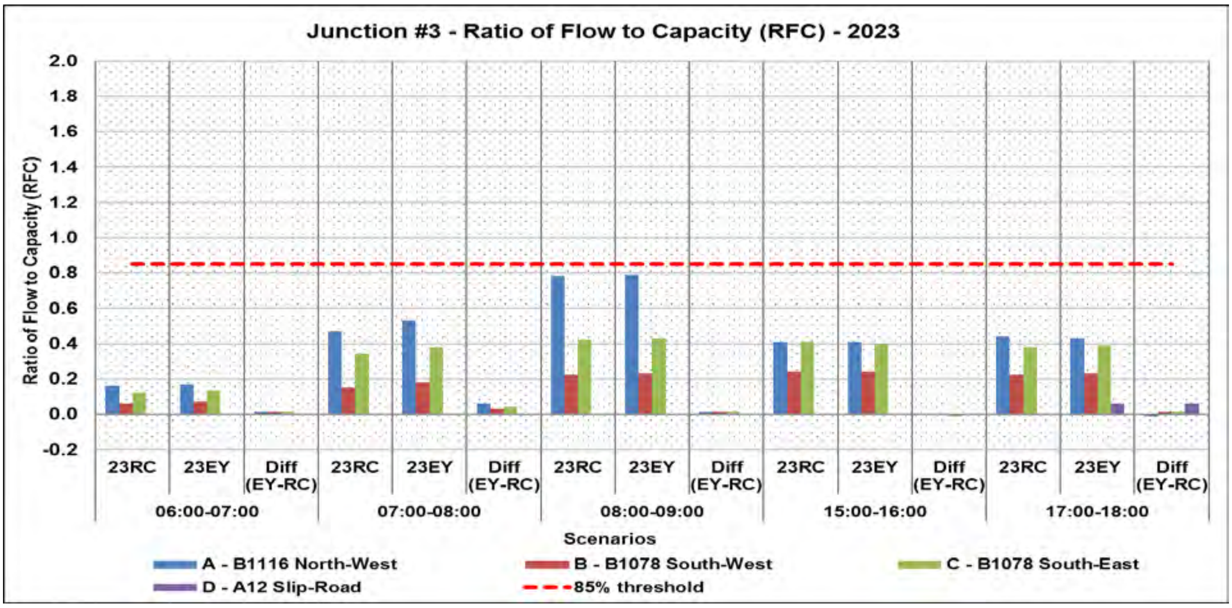
9.8.4 The 2023 Reference Case scenario traffic flows show small increases in entry demand on the B1116 North-West, B1078 South-West and the B1078 South-East arms (up to +50 vehicles per hour), relative to observed base year traffic flows. No increase in traffic entering the junction from the A12 Slip Road approach is forecast as it serves as an exit from a private property only.

9.8.5 The Early Years scenario shows that traffic flows are broadly similar to the 2023 Reference Case with small increases in traffic flows in all modelled hours (up to +50 vehicles per hour) across all arms. This includes a small number of park and ride site construction workers leaving the site and accessing Junction 3 from the A12 Slip Road approach from 17:00-18:00 (+30 vehicles per hour).

ii. Results analysis

9.8.6 The RFC modelling results for the 2023 Reference Case and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.11**. The difference is shown as EY-RC.

Plate 9.11: B1078 / B1116 Roundabout 2023 Early Years RFC Results



9.8.7 **Plate 9.11** shows that the junction is predicted to have spare capacity during all modelled hours in the 2023 Reference Case scenario across all arms, with the highest RFC of 0.78 being reported from 08:00-09:00 on the B1116 North-West arm.

9.8.8 The Early Years scenario RFC results are very similar to the 2023 Reference Case, generally showing small increases in RFC on all movements in all peak hours. The highest RFC of 0.79 is reported from 08:00-09:00 on the B1116 North-West arm. The junction is predicted to continue to operate with spare capacity with the Sizewell C traffic. It is therefore considered that the Sizewell C traffic has no material impact on the operation of this junction in the Early Years scenario.

d) Peak Construction (2028)

i. Demand impact

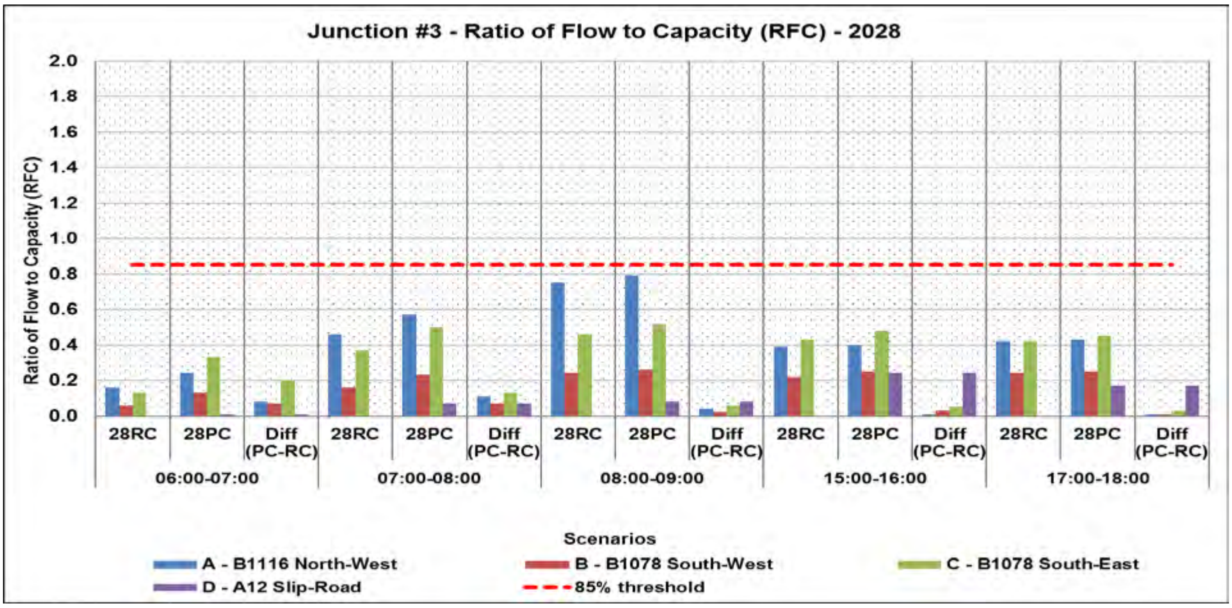
9.8.9 The 2028 Reference Case scenario traffic flows show increases in entry demand on the B1116 North-West, B1078 West and the B1078 South-East arms (up to +80 vehicles per hour), relative to observed base year traffic flows. No increase in traffic entering the junction from the A12 Slip Road approach is forecast as it serves as an exit from a private property only.

9.8.10 The Peak Construction scenario shows a small increase in entry demand on the B1116 North-West and the B1078 West approaches (up to +70 vehicles per hour), relative to the 2028 Reference Case. There is also a moderate increase on the A12 Slip Road approach (up to +150 vehicles per hour), and a large increase on the B1078 South-East arm (up to +240 vehicles per hour) relative to the 2028 Reference Case. These increases are a consequence of the opening of the southern park and ride site, to which access is gained from the A12 Slip Road.

ii. Results analysis

9.8.11 The RFC modelling results for the 2028 Reference Case and Peak Construction scenarios, split by each modelled hourly period, are illustrated in **Plate 9.12**. The difference is shown as PC-RC.

Plate 9.12: B1078 / B1116 Roundabout Peak Construction RFC Results



9.8.12 **Plate 9.12** shows that the junction is predicted to operate with spare capacity during all modelled hours in the 2028 Reference Case scenario, with the highest RFC of 0.75 being reported from 08:00-09:00 on the B1116 North-West approach.

9.8.13 The Peak Construction scenario RFC results are very similar to the 2028 Reference Case, generally showing very small increases in RFC on all movements in all peak hours. The highest RFC of 0.79 is reported from 08:00-09:00 on the B1116 North-West approach. The junction is predicted to continue to operate with ample spare capacity with the Sizewell C traffic. It is therefore considered that the Sizewell C traffic has no material impact on the operation of this junction in the Peak Construction scenario.

e) Operational Phase (2034)

i. Demand impact

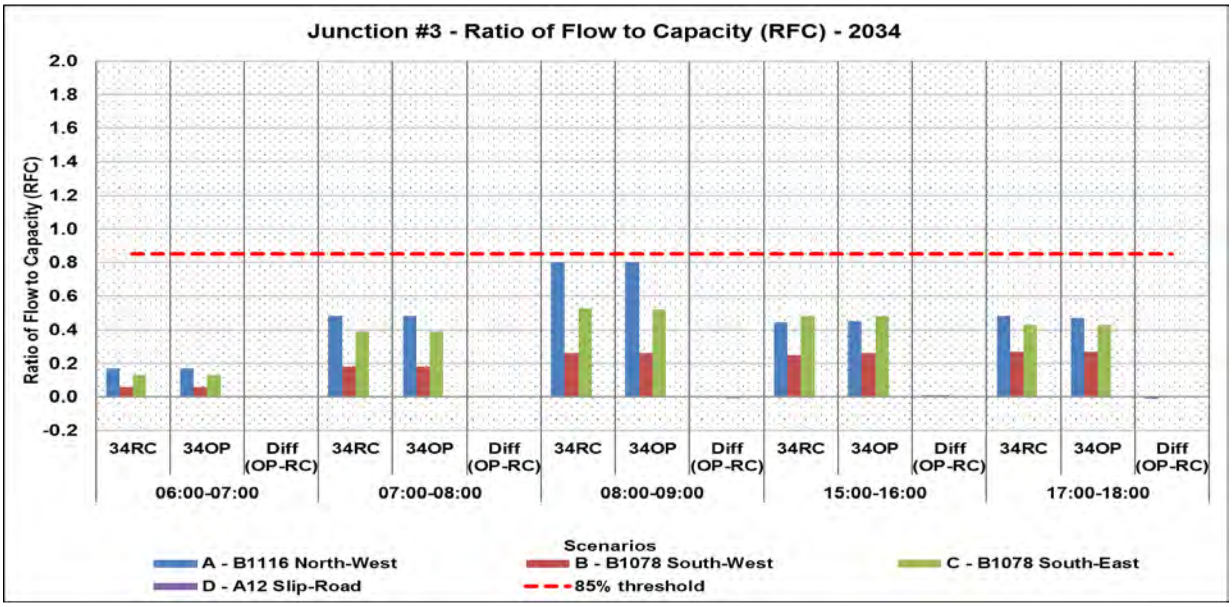
9.8.14 The 2034 Reference Case scenario traffic flows show a small increase in entry demand on the B1116 North-West and B1078 West arms (up to +80 vehicles per hour), and a moderate increase on the B1078 South-East arm (up to 130 vehicles per hour) relative to the observed base year traffic flows. No increase in traffic entering the junction from the A12 Slip Road approach is forecast as it serves as an exit from a private property only.

9.8.15 The Operational Phase scenario traffic flows are very similar to the 2034 Reference Case, with negligible changes across all approaches and modelled periods. No increase in traffic entering from the A12 Slip Road is forecast, as the southern park and ride site is anticipated to have closed by 2034, hence it would only serve as a private access as per the 2023 scenario.

ii. Results analysis

9.8.16 The RFC modelling results for the 2034 Reference Case and Operational Phase scenarios, split by each modelled hourly period, are illustrated in **Plate 9.13**. The difference is shown as OP-RC.

Plate 9.13: B1078 / B1116 Roundabout Operational Phase RFC Results



9.8.17 **Plate 9.13** shows that the junction is predicted to operate with spare capacity during all modelled hours in the 2034 Reference Case scenario, with the highest RFC of 0.80 being reported from 08:00-09:00 on the B1116 North-West arm.

9.8.18 The Operation Phase scenario RFC results are very similar to the 2034 Reference Case scenario, generally showing very small increases in RFC on all movements in all peak hours. The junction is predicted to continue to operate with a maximum RFC of 0.80. It is therefore considered that the Sizewell C traffic has no material impact on the operation of this junction in the Operation Phase scenario.

f) Mitigation Analysis

9.8.19 The modelling of the existing junction shows that the Sizewell C traffic would have a minimal impact on the operation of the existing junction. No mitigation is proposed to improve the capacity at this junction.

9.8.20 It is however proposed to make some minor changes to signage at the junction, in conjunction with the nearby Junctions 34a, 34b and 34c as Illustrated in the **Southern Park and Ride Plans** (Doc Ref. 2.7).

g) Overview

9.8.21 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.10**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.10: B1078 / B1116 Roundabout RFC Results Overview

Time period	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.15	0.16	0.17	0.16	0.33	0.17	0.17
07:00-08:00	0.44	0.47	0.53	0.46	0.57	0.48	0.48
08:00-09:00	0.72	0.78	0.79	0.75	0.79	0.80	0.80
15:00-16:00	0.37	0.41	0.41	0.43	0.48	0.48	0.48
17:00-18:00	0.41	0.44	0.43	0.42	0.45	0.48	0.47

9.8.22 The modelling results show that the junction operates with reserve capacity in all time periods and in all scenarios, with the highest RFC being 0.80 from 08:00-09:00 in the 2034 Operation Phase scenario which would be the case regardless of the construction of Sizewell C.

9.8.23 The impact of Sizewell C traffic on overall junction performance is minimal. The RFC outputs for each Reference Case scenario are very similar to their respective with-Sizewell C scenarios. The increasing RFCs through the years can be largely attributed to background traffic growth, unrelated to Sizewell C.

9.9 Junction 5 – A1094/ B1069 Snape Road

a) Context

9.9.1 Junction 5 is a three-arm T-Junction located approximately four miles south-west of the Sizewell C site. The major arm (A1094) passes through a shallow bend at the junction, with the minor arm (B1069 Snape Road) located on the inside of this bend, restricting visibility to the left and right which is further impeded by overgrown vegetation in the verge.

9.9.2 Both A1094 approaches comprise a single lane, while the B1069 Snape Road is a single lane that widens to a very short flare (approximately one vehicle) at the give-way line. All approach arms are national speed limit (60mph) roads. There is no street lighting at the junction. A satellite image of the existing junction layout is shown in **Plate 9.14**.

Plate 9.14: Existing A1094/ B1069 Snape Road Layout

b) Calibration Summary

9.9.3 Observed queue data showed that there were small queues of four to five vehicles on the B1069 Snape Road during the modelled hourly intervals. The observed queues on the A1094 East were negligible. There are no conflicting movements for traffic from the A1094 West, hence observed queues were zero.

9.9.4 The junction model typically shows shorter queues than observed, however as the observed and modelled queues are of a similar order of magnitude the model is considered to be representative of existing conditions.

c) Early Years (2023)

i. Demand impact

9.9.5 The 2023 Reference Case scenario traffic flows show a large increase in traffic flows from the A1094 West from 06:00-07:00 and 08:00-09:00 (+120-130 vehicles per hour) and a small increase (40-50 vehicles per hour) during all other modelled periods. On the B1069 Snape Road, a large flow increase is predicted from 17:00-18:00 (+140 vehicles per hour) whilst smaller increases (+20-60 vehicles per hour) are predicted during the other modelled hours. Small flow increases are also predicted on the A1094 East (up to +20 vehicles per hour) relative to the 2023 Reference Case scenario.

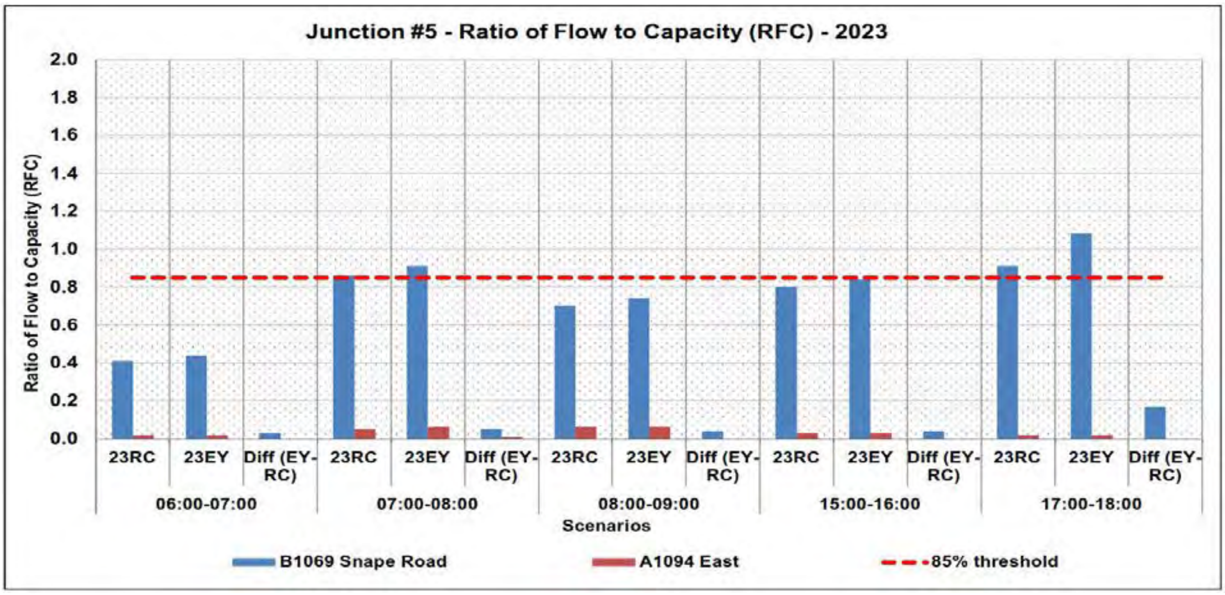
9.9.6 The Early Years scenario shows that traffic flows on the A1094 West are predicted to increase beyond the 2023 Reference Case flows during the early morning hours (up to +70-80 vehicles per hour) and remain at a similar level during the other modelled periods. Smaller flow increases are predicted on the other two arms at this junction (+10-15 vehicles per hour) during all time periods with the exception of the B1069 North approach from 17:00-18:00 when a larger increase (+60 vehicles per hour) is predicted relative to the 2023 Reference Case scenario.

9.9.7 Most of this flow increase is on the movements between the A1094 and B1069, which is the turning movement towards Sizewell C.

ii. Results analysis

9.9.8 The RFC modelling results for the 2023 Reference Case and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.15**. The difference is shown as EY-RC.

Plate 9.15: A1094/ B1069 Junction - 2023 Early Years RFC Results



9.9.9 **Plate 9.15** shows that in the 2023 Reference Case scenario RFCs are low on the A1094 East approach in all modelled hours. On the B1069 Snape Road approach, the junction is predicted to operate under the 0.85 RFC threshold from 06:00-07:00, 08:00-09:00 and 15:00-16:00; however, the 0.85 threshold is slightly exceeded from 07:00-08:00 (RFC of 0.86) and 17:00-

18:00 (RFC of 0.91), indicating that the junction would be operating at or above desirable capacity during these periods, regardless of the Sizewell C construction traffic.

9.9.10 The Early Years scenario results show a negligible impact on the A1094 East in all modelled hours. The model also shows that there would be a negligible impact on the B1069 Snape Road during the morning hours and from 15:00-16:00. From 17:00-18:00, the B1069 Snape Road RFC increases from 0.91 in the 2023 Reference Case to 1.08 in the Early Years scenario. The B1069 approach is predicted to operate above the 0.85 RFC threshold in both the with and without Sizewell C scenarios. Queues are predicted to increase from 7 to 25 vehicles and delays are predicted to increase from 1.3 to 3.5 minutes per vehicle on the B1069 approach from 17:00-18:00 due to the Sizewell C traffic.

9.9.11 It should be noted, that with an RFC above 0.85 the model can predict exponential increases in queues and delays that may not happen in reality and therefore the predicted delays in these scenarios should be treated with caution. Nonetheless, while the predicted increase in delay is likely to be an over-prediction of the impact of the Sizewell C traffic as traffic would be likely to either reroute or travel earlier, the predicted level of delay would merit some mitigation in this scenario. Details and assessment of the mitigation scheme are provided in the mitigation analysis section later in this section.

d) Peak Construction (2028)

i. Demand impact

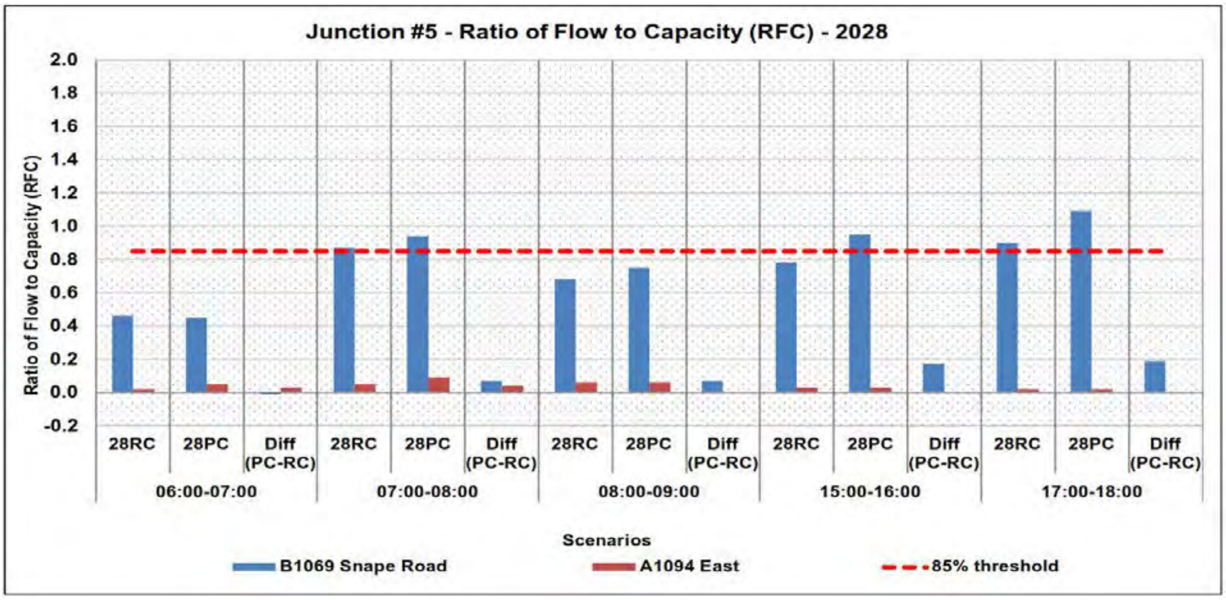
9.9.12 The 2028 Reference Case scenario traffic flows show a relatively large increase in flows compared to the base year. The majority of the increase is seen on the A1094 West approach (+60-150 vehicles per hour), particularly from 06:00-07:00 and 08:00-09:00. A large increase is also seen on the B1069 North approach (+140 vehicles per hour) from 17:00-18:00. It is noted, however, that the 2028 Reference Case flows are only marginally higher than those in the 2023 Reference Case.

9.9.13 The Peak Construction scenario shows increases in demand in most time periods compared to the 2028 Reference Case. Little change in flows is seen on the A1094 East approach. A moderate increase is seen on the A1094 West approach from 06:00-08:00 (+ 60-70 vehicles per hour) and on the B1069 North approach from 15:00-16:00 and 17:00-18:00 (+ 50-60 vehicles per hour).

ii. Results analysis

9.9.14 The RFC modelling results for the 2028 Reference Case and Peak Construction scenarios, split by each modelled hourly period, are illustrated in **Plate 9.16**. The difference is shown as PC-RC.

Plate 9.16: A1094/ B1069 Junction - 2028 Peak Construction RFC Results



9.9.15 **Plate 9.16** shows that in the 2028 Reference Case scenario RFCs are low on the A1094 East approach in all modelled hours. On the B1069 Snape Road approach, the junction is predicted to operate under the 0.85 RFC threshold from 06:00-07:00, 08:00-09:00 and 15:00-16:00; however, the 0.85 threshold is exceeded from 07:00-08:00 (RFC of 0.87) and 17:00-18:00 (RFC of 0.90), indicating that the junction would be operating at or above desirable capacity during these periods, regardless of the Sizewell C construction traffic.

9.9.16 The Peak Construction scenario results show a negligible impact on the A1094 East in all modelled hours. The model also shows that there would be a negligible impact on the B1069 Snape Road during the morning hours. From 15:00-16:00, the RFC is predicted to increase from 0.78 to 0.95 with queues increasing from 3 to 9 vehicles due to the Sizewell C construction traffic. From 17:00-18:00, the B1069 Snape Road RFC is predicted to increase from 0.90 to 1.09 with queues increasing from 7 to 27 vehicles.

9.9.17 It should be noted, that with an RFC above 0.85 the model can predict exponential increases in queues and delays that may not happen in reality and therefore the predicted delays in these scenarios should be treated with caution. Nonetheless, while the predicted increase in delay is likely to be an over prediction of the impact of the Sizewell C traffic as traffic would be likely to either reroute or travel earlier, the predicted level of delay would merit some mitigation in this scenario. Details and assessment of the mitigation scheme are provided in the mitigation analysis section later in this section.

e) Operational Phase (2034)

i. Demand impact

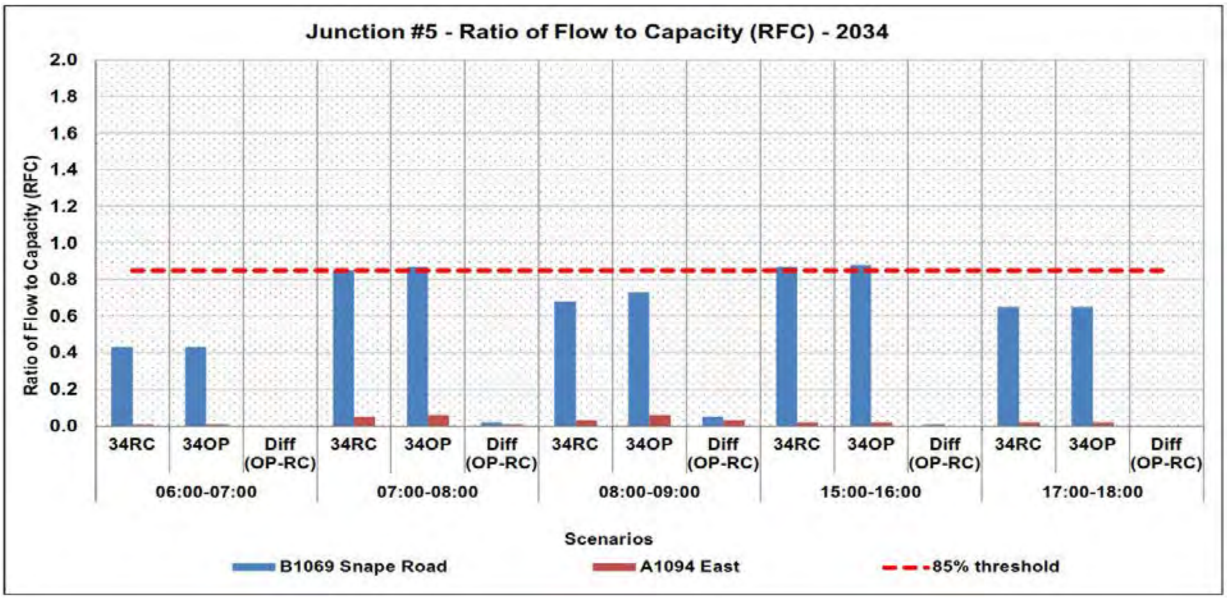
9.9.18 The 2034 Reference Case scenario shows large increases in entry demand on the A1094 West approach (+90-150 vehicles per hour) in all modelled hours, relative to the base scenario. Small increases in entry demand from the A1094 East and B1069 Snape Road are predicted across all modelled hours (+10-65 vehicles per hour).

9.9.19 The Operational Phase demand is predicted to be similar to the 2034 Reference Case, with negligible differences. The only periods where small increases are predicted to occur are from 07:00-08:00 and 08:00-09:00 on the A1094 West (+60-90 vehicles per hour).

ii. Results analysis

9.9.20 The RFC modelling results for the 2034 Reference Case and Operational Phase scenarios, split by each modelled hourly period, are illustrated in **Plate 9.17**. The differences are shown as OP-RC.

Plate 9.17: A1094/ B1069 Junction 2034 Operational Phase RFC Results



9.9.21 **Plate 9.17** shows that the junction is predicted to operate within the desirable capacity during all modelled hours in the 2034 Reference Case scenario, with the exception of 15:00-16:00, where RFCs on the B1069 Snape Road are slightly over the 0.85 RFC threshold (0.87 RFC).

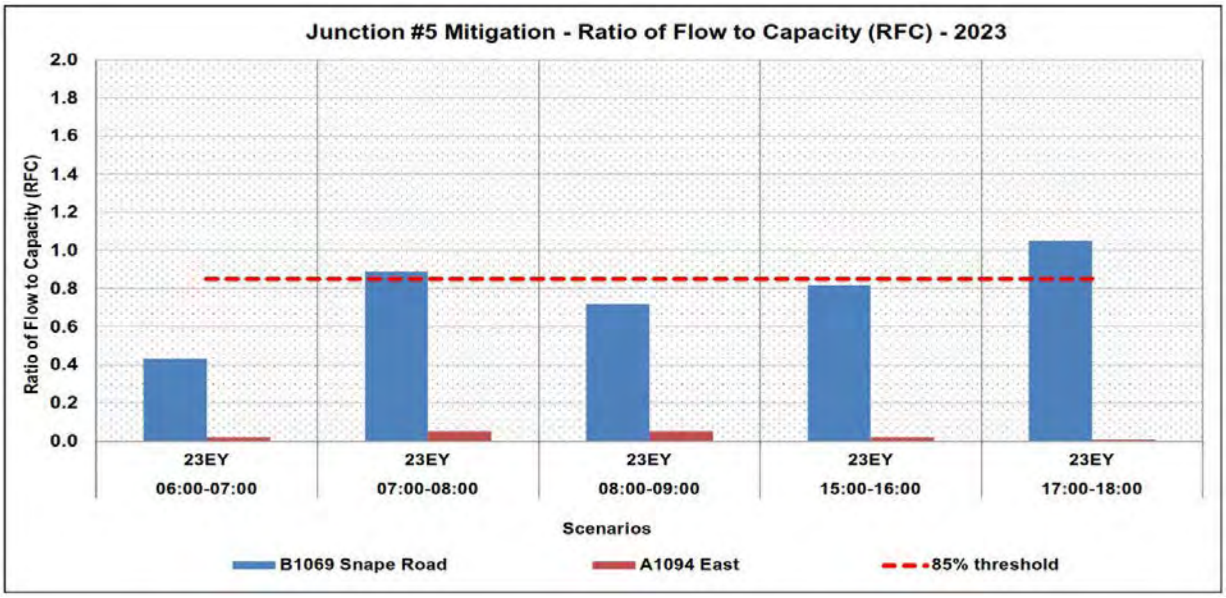
9.9.22 The Operational Phase flows are similar to the 2034 Reference Case flows, and it is predicted that the changes in traffic flows during this phase would have a negligible impact on RFC. Little impact from Sizewell C is expected to be experienced once the site enters the operational phase with queues and delays predicted to be similar to those in the 2034 Reference Case.

f) Mitigation Analysis

9.9.23 A mitigation scheme has been proposed for the A1094 / B1069 junction, which primarily focusses on improving visibility from the B1069 minor arm by cutting back vegetation, and refreshing line marking at the junction.

9.9.24 The proposed mitigation offers an improvement to visibility on the minor arm which has been tested in the junction model, as shown in see **Plate 9.18**. Whilst the proposed vegetation trimming will improve visibility at the give way line, it is unlikely to offer much improvement from 10m behind the give way line which is the metric required as an input to the model. The level of improvement predicted by the model is therefore modest.

Plate 9.18: A1094/ B1069 Junction Mitigation 2023 Early Years RFC Results



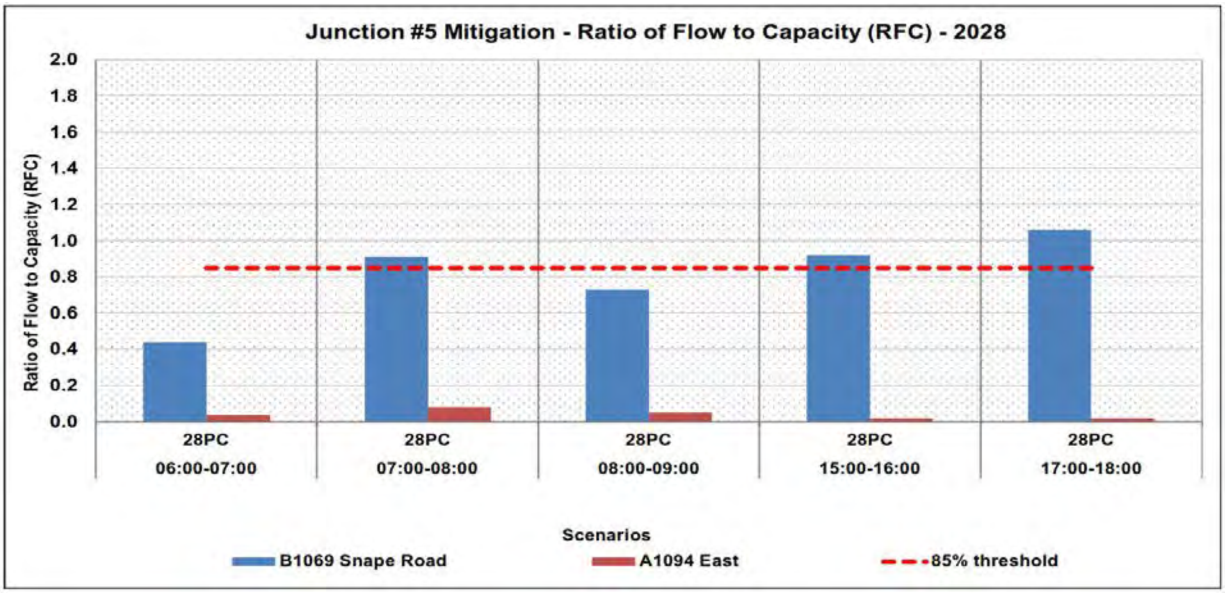
9.9.25 The adjustments to the visibility from the B1069 Snape Road are predicted to reduce RFCs by up to 0.03 on this arm. The proposed mitigation reduces the RFC on the B1069 from 07:00-08:00 from 0.91 to 0.89 which is only 0.03

higher than the 2023 Reference Case (0.86). From 17:00-18:00, the proposed mitigation reduces the B1069 approach RFC from 1.08 to 1.05 which is 0.14 higher than the 2023 Reference Case (0.91).

9.9.26 Whilst a small amount of impact remains, the mitigation scheme helps to mitigate against some of the Sizewell C impact in the Early Years scenario.

9.9.27 **Plate 9.19** summarises the RFC results with mitigation for the 2028 Peak Construction phase.

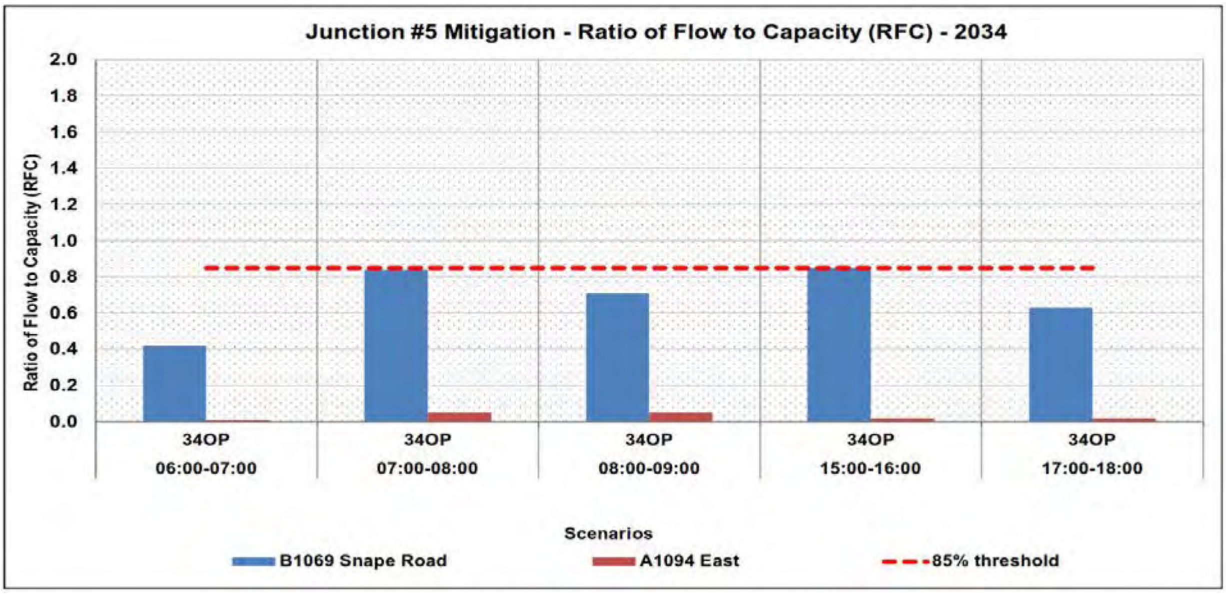
Plate 9.19: A1094/ B1069 Junction Mitigation 2028 Peak Construction RFC Results



9.9.28 The results for the 2028 Peak Construction scenario show that the mitigation scheme has a similar level of impact, helping to reduce the RFCs to below unmitigated levels but not back to 2028 Reference Case levels.

9.9.29 **Plate 9.20** summarises the RFC results with mitigation for the 2034 Peak Construction phase.

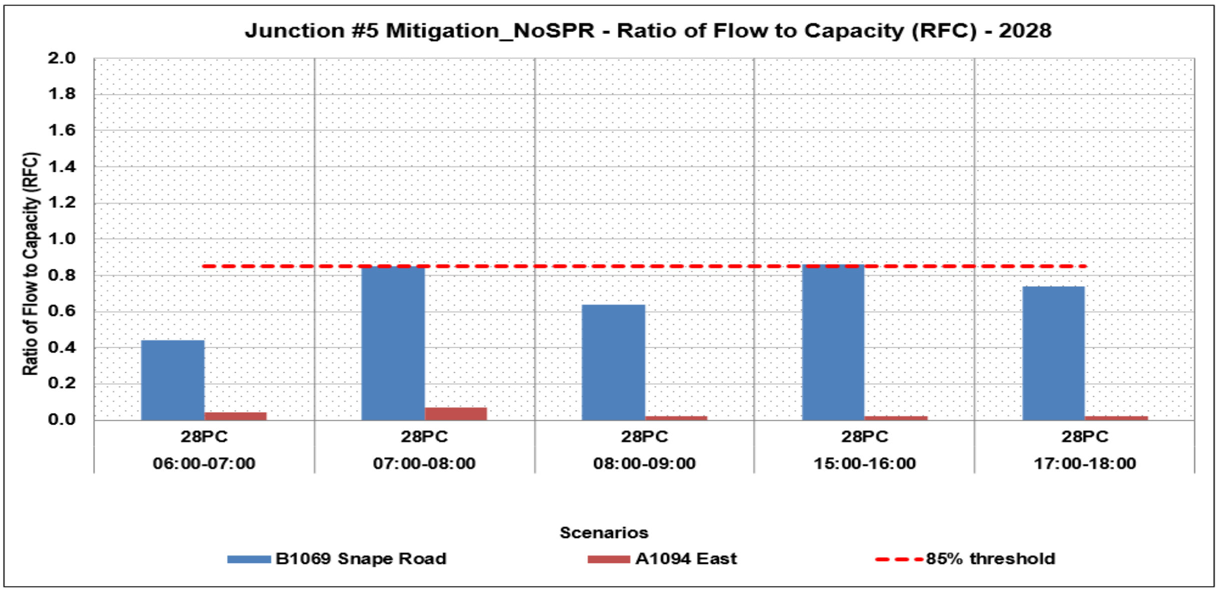
Plate 9.20: A1094/ B1069 with Mitigation 2034 Operational Phase RFC Results



9.9.30 Mitigation, if applied during the 2034 Operational Phase, would reduce RFCs on the B1069 Snape Road back to 2034 Reference Case levels or less. This would be particularly beneficial from 07:00-08:00 and 15:00-16:00, where the junction operates close to the 0.85 RFC threshold without mitigation. Although the RFC reductions are relatively small, they would help mitigate the impact of the Sizewell C traffic in the Operational Phase.

9.9.31 A sensitivity test has been conducted for 2028 to investigate whether the Scottish Power construction traffic flows have an impact on operation of this junction. The flows associated with the Scottish Power development have been removed from the model. This removes roughly 100 vehicles per hour from the A1094 West approach from 08:00-09:00 and from the B1069 North approach from 17:00-18:00 but does not impact the other time periods. Results from this sensitivity test can be seen in **Plate 9.21**.

Plate 9.21: A1094 / B1069 with Mitigation, without Scottish Power 2028 Peak Construction RFC Results



9.9.32 Removal of the Scottish Power flows results in an improvement to junction operation particularly from 08:00-09:00 and 17:00-18:00 which brings all RFCs down to below 0.85, with the exception of 15:00-16:00 when the maximum RFC is 0.86. The removal of Scottish Power flows combined with the improvements caused by the mitigation result in RFCs below those in the 2028 Reference Case with the exception of 15:00-16:00 when the 2028 Reference Case RFC of 0.78 is predicted to increase to 0.86 in the Peak Construction scenario (with mitigation and without Scottish Power).

g) Overview

9.9.33 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.11**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.11: A1094/ B1069, with Scottish Power RFC Summary

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.31	0.41	0.44	0.46	0.45	0.43	0.43
07:00-08:00	0.66	0.86	0.91	0.87	0.94	0.85	0.87
08:00-09:00	0.59	0.70	0.74	0.68	0.75	0.68	0.73

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
15:00-16:00	0.63	0.80	0.84	0.78	0.95	0.87	0.88
17:00-18:00	0.49	0.91	1.08	0.90	1.09	0.65	0.65

9.9.34 The modelling results, summarised in **Table 9.11**, show that the junction would operate within capacity from 06:00-07:00 and 08:00-09:00 in all scenarios. All Reference Case scenarios across each modelled hour have an RFC below 1.00. The addition of Sizewell C traffic in the Early Years and Peak Construction scenarios increases the RFC to above 1.00 from 17:00-18:00. By 2034, in both the Reference Case and Operational Phase scenarios, RFCs have reduced to below 1.00 across all time periods.

9.9.35 A mitigation scheme has been developed for this junction. The modelling shows that the mitigation scheme helps to reduce the impact of Sizewell C traffic on junction operation. The results are shown in **Table 9.12** with Scottish Power traffic included and in **Table 9.13** without Scottish Power traffic included.

Table 9.12: A1094/ B1069 with Mitigation, with Scottish Power RFC Summary

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	----------	----------	0.43	----------	0.44	----------	0.42
07:00-08:00	----------	----------	0.89	----------	0.91	----------	0.84
08:00-09:00	----------	----------	0.72	----------	0.73	----------	0.71
15:00-16:00	----------	----------	0.82	----------	0.92	----------	0.85
17:00-18:00	----------	----------	1.05	----------	1.06	----------	0.63

9.9.36 **Table 9.12** demonstrates that the vegetation trimming proposed at this junction, to aid visibility from the B1069 Snape Road, reduces the RFC in the with Sizewell scenarios by up to 0.03, reducing its impact upon the junction.

Table 9.13: A1094/ B1069 with Mitigation, without Scottish Power RFC Summary

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	----------	----------	0.43	----------	0.44	----------	0.42
07:00-08:00	----------	----------	0.87	----------	0.85	----------	0.84
08:00-09:00	----------	----------	0.63	----------	0.64	----------	0.71
15:00-16:00	----------	----------	0.75	----------	0.86	----------	0.85

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
17:00-18:00	----------	----------	0.71	----------	0.74	----------	0.63

9.9.37 **Table 9.13** demonstrates that removal of the Scottish Power traffic reduces the junction RFCs to below 0.87 and below the 2028 Reference Case levels in all but one time period (15:00-16:00) which dramatically improves performance in 2023 and 2028. Scottish Power flows are not present during 2034 so this test does not impact performance in 2034.

9.10 Junction 6 – A12 / A1094 (proposed roundabout)

a) Context

9.10.1 Junction 6 is a proposed four-arm roundabout intended to replace the A12 / A1094 T-junction near the village of Friday Street. The existing junction is situated on a dual carriageway section of the A12 approximately 8-miles west of the Sizewell C site.

9.10.2 As part of the mitigation that is embedded with the Sizewell C proposals, a new bypass (two village bypass) is proposed to be constructed to the south of the A12. The **bypass** is proposed to begin at Junction 6 and terminate just west of Stratford St Andrew at Junction 45 (A12 / Tinker Brook). The proposed roundabout design is illustrated in the **Two Village Bypass Plans** (Doc Ref. 2.8)**.**

9.10.3 Following the opening of the new bypass, the A12 would be diverted via the two village bypass. The existing A12 West approach would become a local access road serving Farnham. Since the remainder of this chapter is focussed on the proposed junction layout, this approach is referred to as Old A12 (Farnham).

b) Calibration Summary

9.10.4 Base model calibration is intended to give confidence that a model is able to replicate observed conditions and is therefore likely to reasonably predict future conditions. As the existing T-junction layout is planned to be replaced with a roundabout, validating a base model of the existing T-junction would not help to give confidence that the proposed roundabout model is realistic under future conditions. The T-junction model and roundabout model would be fundamentally different so calibration to give confidence in the roundabout model is not possible.

9.10.5 The assessment contained in this chapter will therefore focus on determining the likely operation of the four-arm roundabout and will not assess the current or forecast operation of the T-junction.

9.10.6 As the proposed roundabout has two lanes at each of the four entries and single lane exits on three of the four arms, there is potential for unequal lane usage to be present on the entry arms. Junctions 9 is not able to take account of unequal lane usage so where this is present a manual adjustment to the model is needed to prevent the modelled capacity being overestimated.

9.10.7 An assumption has been made regarding the likely allocation of lanes for each movement based on the magnitude of turning flows and number of available exit lanes. This has resulted in the following proportions of vehicles per lane and determination of unequal lane usage, as illustrated in **Table 9.14**.

Table 9.14: A12 / A1094 predicted lane utilisation

2023 EARLY YEARS.	Average Lane Usage (%).		Unequal lane usage.	Proposed manual adjustment.
	Lane 1	Lane 2		
A - A12 North	12%	88%	YES	Model 1-lane entry (4.0m) as lane 1 is used infrequently.
B - A1094	0%	100%	YES	Model 1-lane entry (4.0m) as lane 1 is used infrequently.
C - A12 South Bypass.	Bypass not open in 2023, due to open by 2028.			None
D - Old A12 (Farnham).	61%	39%	YES	Model ~1.5 - lane entry width (75% CAD entry width – 5.4m) as lane 2 is not used as much as lane 1.
2028 PEAK CONSTRUCTION.	Average Lane Usage (%).		Unequal lane usage.	Proposed manual adjustment
	Lane 1	Lane 2		
A - A12 North	50%	50%	NO	None
B - A1094	79%	21%	YES	Model 1-lane entry (4.0m) as lane 2 is used infrequently.
C - A12 South Bypass.	50%	50%	NO	None
D - Old A12 (Farnham).	60%	40%	NO	None

2034 OPERATIONAL PHASE.	Average Lane Usage (%). Lane 1	Lane 2	Unequal lane usage.	Proposed manual adjustment.
A - A12 North	50%	50%	NO	None
B - A1094	77%	23%	YES	Model 1-lane entry (4.0m) as lane 2 is used infrequently.
C - A12 South Bypass.	49%	51%	NO	None
D - Old A12 (Farnham)	59%	41%	NO	None

9.10.8 On arms where one of the two entry lanes is used infrequently, the arm has been modelled as a single lane (4m entry width and a 10m flare length) to reflect the fact approximately half of the road space will be unutilised. Where lane utilisation is split approximately one third to two thirds, the arm has been modelled as roughly one and a half lanes (75% of the measured entry width and 10m flare) to reflect the fact half of the road space will be only partially utilised.

9.10.9 These adjustments have been made to avoid over-estimating capacities on arms where unequal lane usage is present. The results presented below incorporate these adjustments.

c) Early Years (2023)

i. Demand Impact

9.10.10 The 2023 Reference Case scenario traffic flows have not been modelled with the proposed roundabout, since this layout would only come forward in the with Sizewell scenarios. In the Early Years scenario, the proposed roundabout is expected to be fully constructed, however the two village bypass would not be completed. Therefore, the A12 South arm would be stopped up and the assignment of traffic would be similar to the observed base year, effectively operating as a three-arm roundabout.

9.10.11 2023 Reference Case traffic flows have been prepared (i.e. background traffic growth only). These show that modest to large increases in traffic flows are forecast from the Old A12 (Farnham) (+70-150 vehicles per hour) while small increases are forecast on the A12 North (+20-110 vehicles per hour), relative to the observed base year traffic flows. Small increases are generally forecast on the A1094 (+40-90 vehicles per hour), except from 17:00-18:00 when a larger increase is predicted (+160 vehicles per hour).

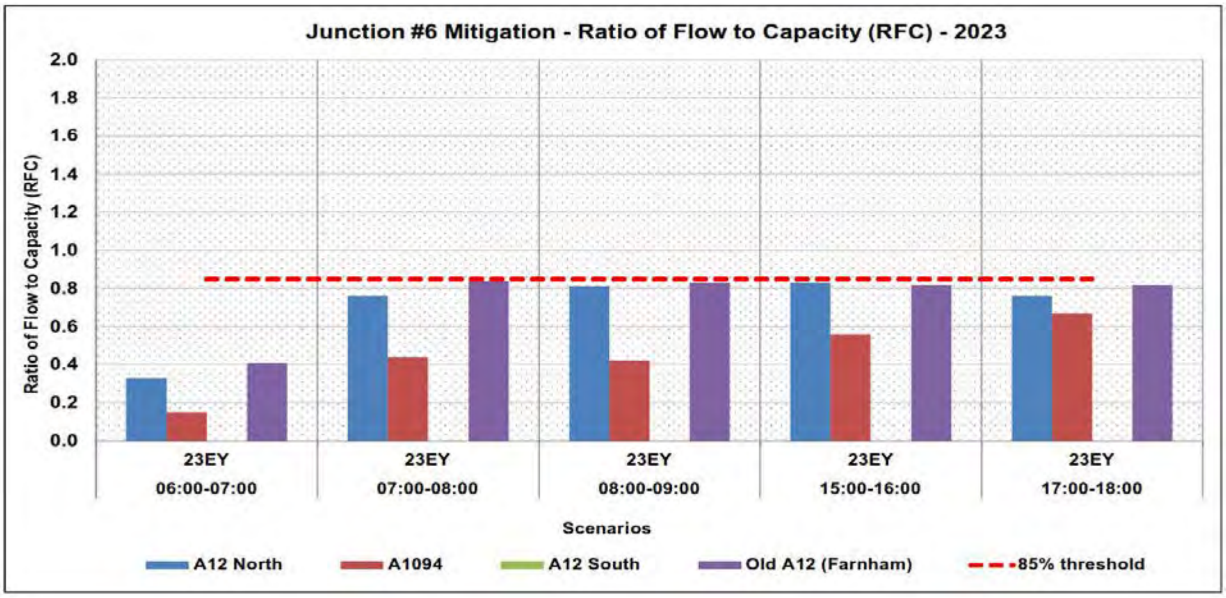
9.10.12 In the Early Years scenario, small to modest increases in traffic flows are forecast on the Old A12 (Farnham) from 06:00-07:00, 08:00-09:00 and

17:00-18:00 (+30-130 vehicles per hour), when compared with the 2023 Reference Case. From 15:00-16:00, negligible changes in flows are forecast, while a large increase is predicted from 07:00-08:00 (+230 vehicles per hour). On the A12 North approach, entry demand is expected increase by a small to modest amount (+20-120 vehicles per hour) in all modelled hours, compared to the 2023 Reference Case. On the A1094, increases are generally negligible, other than a small increase from 17:00-18:00 (+70 vehicles per hour).

ii. Results Analysis

9.10.13 The RFC modelling results for the Early Years scenario, split by each modelled hourly period, are illustrated in **Plate 9.22**.

Plate 9.22: A12 / A1094 (proposed roundabout) 2023 Early Years RFC Results



9.10.14 **Plate 9.22** shows that the junction is predicted to operate within capacity during all modelled hours in the Early Years scenario. In all modelled hours except 06:00-07:00, the junction operates close to, but just below, the 0.85 RFC threshold on the A12 north and Old A12 (Farnham) arm. The maximum recorded RFC is 0.84, from 07:00-08:00. The A1094 arm operates with significant reserve capacity in all modelled hours. The A12 south arm is stopped up in 2023, so traffic flows, and hence RFCs, on this arm are zero.

9.10.15 Since the junction is operating within capacity, including all background traffic growth and Sizewell C associated traffic, the proposed roundabout is considered to be satisfactory to accommodate demand flows in the Early Years scenario.

d) Peak Construction (2028)

i. Demand Impact

9.10.16 The 2028 Reference Case scenario traffic flows have not been modelled with the proposed roundabout, since this layout would only come forward in the with Sizewell scenarios. In the Peak Construction scenario, the proposed roundabout and two village bypass are expected to be fully constructed and operational. Therefore, the A12 South would be open and the majority of traffic using the A12 is forecast to reassign via the new bypass route.

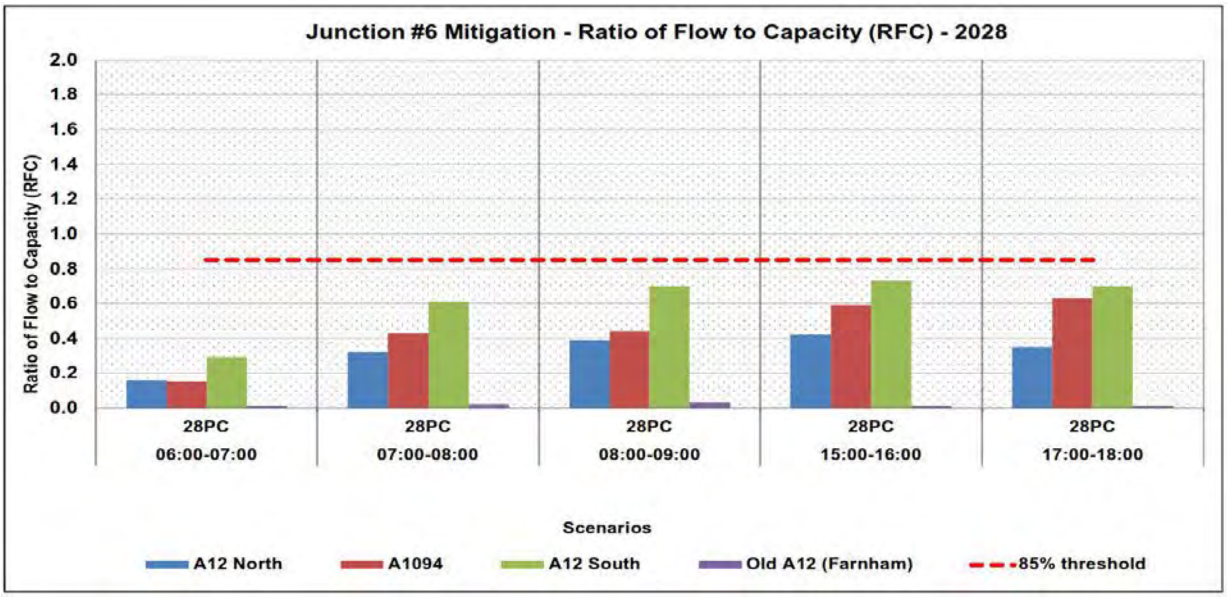
9.10.17 2028 Reference Case traffic flows have been prepared (i.e. background traffic growth only), for a scenario where the A12 South does not exist. These forecasts show modest to large increases in entry demand from the Old A12 (Farnham) in all modelled hours (+110-210 vehicles per hour), when compared with base year observed data. Entry demand on the A12 North and the A1094 is expected to increase modestly (up to +110 vehicles per hour) in all modelled hours, except a large increase on the A1094 from 17:00-18:00 (+190 vehicles per hour).

9.10.18 The Peak Construction scenario includes the new A12 South arm. The forecast traffic flows show that the majority of traffic routing on the Old A12 (Farnham) would reassign to the A12 South, to use the Two Village Bypass. The resultant traffic flows on the Old A12 (Farnham) are very low (10-20 vehicles per hour). Small increases in traffic flows are forecast across all junction approaches and modelled hours, when compared with the 2028 Reference Case (up to +90 vehicles per hour).

ii. Results Analysis

9.10.19 The RFC modelling results for the Peak Construction (PC) scenario, split by each modelled hourly period, are illustrated in **Plate 9.23**.

Plate 9.23: A12 / A1094 (proposed roundabout) 2028 Peak Construction RFC Results



9.10.20 **Plate 9.23** shows that the junction is predicted to operate with reserve capacity during all modelled hours in the Peak Construction scenario. The maximum recorded RFC is 0.73, from 15:00-16:00 on the A12 south. The A12 north and A1094 arms operate with significant reserve capacity in all modelled hours. Traffic flows on the Old A12 (Farnham) are greatly reduced following the opening of the bypass; this is evidenced by the modelling results, which show a very small RFC on this arm, no larger than 0.03.

9.10.21 Since the junction is operating within capacity, including all background traffic growth and Sizewell C construction traffic, the proposed roundabout is considered to be satisfactory to accommodate demand flows.

e) Operational Phase (2034)

i. Demand Impact

9.10.22 The 2034 Reference Case scenario traffic flows have not been modelled with the proposed roundabout, since this layout would only come forward in the with Sizewell scenarios. In the Operational Phase scenario, the proposed roundabout and two village bypass are expected to be fully constructed and operational. Therefore, the A12 south would be open and the majority of traffic using the A12 is forecast to reassign via the new bypass route.

9.10.23 2034 Reference Case traffic flows have been prepared (i.e. background traffic growth only), for a scenario where the A12 south does not exist. These forecasts show modest to large increases in entry demand from the Old A12

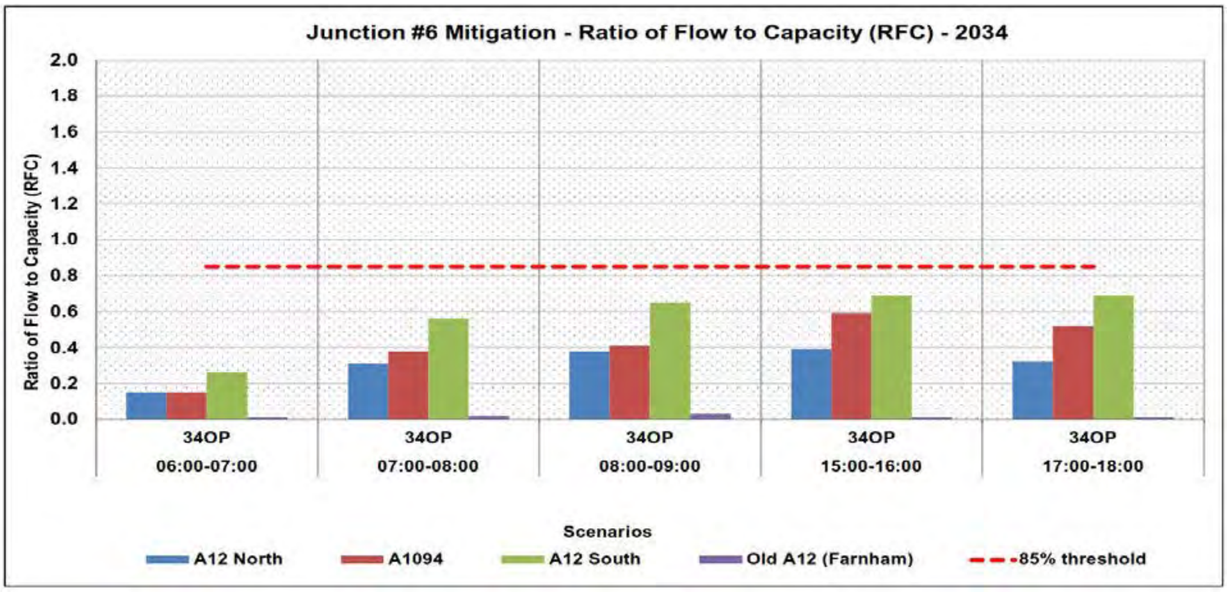
(Farnham) in all modelled hours (+150-220 vehicles per hour), when compared with base year observed data. Entry demand on the A1094 is expected to increase modestly (up to +150 vehicles per hour) in all modelled hours. Modest to large increases are forecast on the A12 north (+130-180 vehicles per hour), except 06:00-08:00 when small increases are forecast (+50-70 vehicles per hour).

9.10.24 The Peak Construction scenario includes the new A12 south arm. The forecast traffic flows show that the majority of traffic routing on the Old A12 (Farnham) would reassign to the A12 South, to use the two village bypass. The resultant traffic flows on the Old A12 (Farnham) are very low (10-30 vehicles per hour). Small increases and decreases in traffic flows are forecast across all junction approaches and modelled hours, when compared with the 2028 Reference Case (up to ±30 vehicles per hour).

ii. Results Analysis

9.10.25 The RFC modelling results for the Operational Phase scenario, split by each modelled hourly period, are illustrated in **Plate 9.24**.

Plate 9.24: A12 / A1094 (proposed roundabout) 2034 Operational Phase RFC Results



9.10.26 **Plate 9.24** shows that the junction is predicted to operate with reserve capacity during all modelled hours in the Operational Phase scenario. The maximum recorded RFC is 0.69, from 15:00-16:00 and 17:00-18:00 on the A12 South. The A12 north and A1094 operate with significant reserve capacity in all modelled hours. Traffic flows on the Old A12 (Farnham) are greatly reduced following the opening of the bypass; this is evidenced by the modelling results, which show a very small RFC on this arm, no larger than 0.03.

9.10.27 Since the junction is operating within capacity, including all background traffic growth and Sizewell C associated traffic, the proposed roundabout is considered to be satisfactory to accommodate demand flows in the Operational Phase scenario.

f) Mitigation Analysis

9.10.28 This section in its entirety refers to a proposed roundabout, which in itself is a mitigation measure to enable the Sizewell C development, delivered as part of the two village bypass. The proposed eastern roundabout is illustrated in the **Two Village Bypass Plans** (Doc Ref. 2.8)**.**

g) Overview

9.10.29 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.15**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.15: A12 / A1094 (proposed roundabout) - Results Overview

Time period	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00			0.41		0.29		0.26
07:00-08:00			0.84		0.61		0.56
08:00-09:00			0.83		0.70		0.65
15:00-16:00			0.83		0.73		0.69
17:00-18:00			0.82		0.70		0.69

9.10.30 The modelling results show that the junction operates with reserve capacity in all scenarios and time periods. RFCs are greatest in the Early Years scenario, where the new bypass arm is stopped up. However, following the full opening of the two village bypass, RFCs are shown to reduce into the Peak Construction scenario. A further reduction in RFCs is recorded in the Operational Phase scenario.

9.11 Junction 7(S)a – A12/ B1119 T-Junction (South), Saxmundham

a) Context

9.11.1 Junction 7 comprises the staggered crossroads between the A12 and the B1119 Rendham Road. However, given the complexity of the junction, with more than one give-way line between the A12 and B1119 Rendham Road in both the north and south, it could not be modelled as a staggered crossroads.

9.11.2 The additional give way lines present on the A12 off-slips mean that the northern and southern T-junctions cannot be modelled in a single Junctions 9 model. Each give-way line has therefore been modelled as a separate T-junction, which collectively make up the staggered crossroads. This assessment splits the junction into four parts, known as 7(N)a,7(N)b, 7(S)a and 7(S)b as indicated on **Plate 9.25**.

9.11.3 Of the four models representing Junction 7, all sub-parts were found to operate with low RFCs, except for 7(S)a. The following analysis therefore focusses on 7(S)a only but results for the other sub-parts can be found in **Appendix 9A** of this Chapter.

9.11.4 Junction 7S(a) is a three arm T-Junction between the A12 and the B1119 Rendham Road to the east, located approximately six miles west of the Sizewell C site. Both the A12 and B1119 Rendham Road are national speed limit roads (60mph), although the speed limit reduces to 30mph about 60m to the east of the junction. There is no street lighting at the junction.

Plate 9.25: Existing A12/ B1119 Junction Layout

b) Calibration Summary

9.11.5 Observed queue data showed that there were small queues on the B1119 minor arm in all modelled hours. The calibrated junction model shows queue lengths that typically are shorter than observed, with the model showing negligible queues on all arms in the modelled hours. It is considered that the differences in queue length are **not significant** and that the model is representative of existing conditions.

c) Early Years (2023)

i. Demand impact

9.11.6 The 2023 Reference Case scenario traffic flows show small increases from 06:00-07:00 (+10-20 vehicles per hour). Small increases are also forecast on the A12 North and B1119 Rendham Road East approaches from 07:00-08:00 (+10-40 vehicles per hour) whilst the A12 south approach experiences a larger increase (+90 vehicles per hour). From 08:00-09:00, 15:00-16:00 and

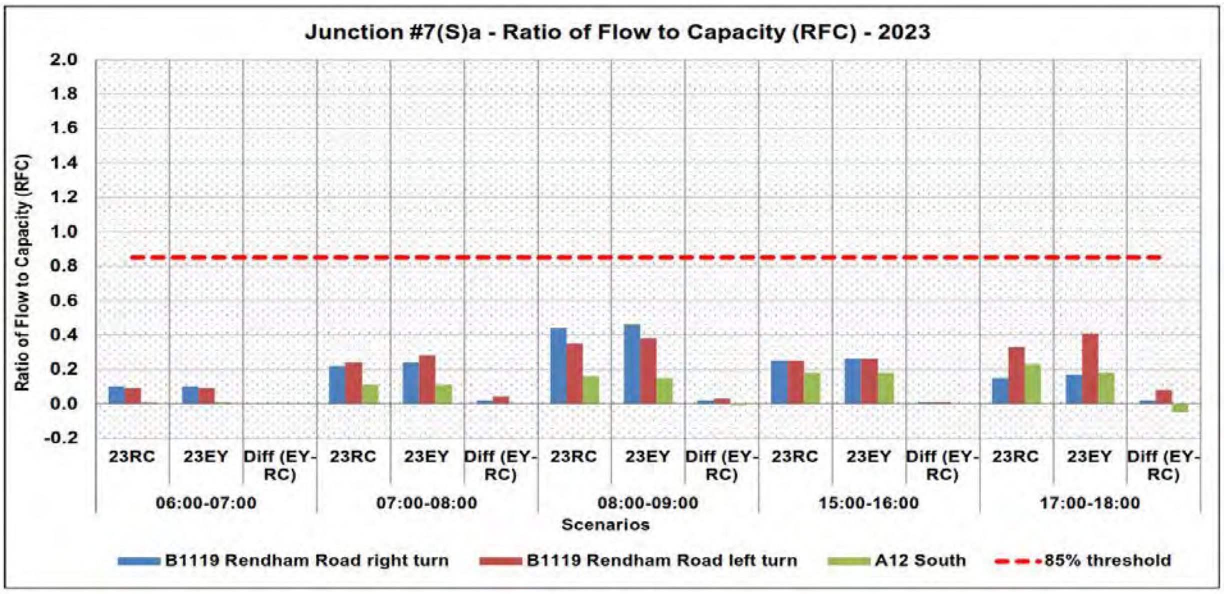
17:00-18:00, all approaches are predicted to experience an increase of +60-100 vehicles per hour relative to the base scenario.

9.11.7 In the Early Years scenario, negligible changes in entry demand are forecast on the B1119 Rendham Road, relative to the 2023 Reference Case. Small increases are forecast on the A12 north and A12 south (up to +70 vehicles per hour), with the exception of 07:00-08:00 on the A12 South approach (+140 vehicles per hour) and 17:00-18:00 on the A12 North approach (+100 vehicles per hour).

ii. Results analysis

9.11.8 The RFC modelling results for the 2023 Reference Case (RC) and Early Years (EY) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.26**. The difference is shown as EY-RC.

Plate 9.26: A12/ B1119 Junction (South) 2023 Early Years RFC Results



9.11.9 **Plate 9.26** shows that the junction is predicted to have ample spare capacity during all modelled hours in the 2023 Reference Case scenario, with the highest RFC of 0.52 being reported from 08:00-09:00 on the B1119 Rendham Road left turn.

9.11.10 The Early Years scenario RFC results are very similar to the 2023 Reference Case, generally showing very small increases in RFC on all movements in all peak hours. The junction is predicted to continue to operate with ample spare capacity with the Sizewell C traffic. It is therefore considered that the Sizewell C traffic has no material impact on the operation of this junction in the Early Years scenario.

d) Peak Construction (2028)

i. Demand impact

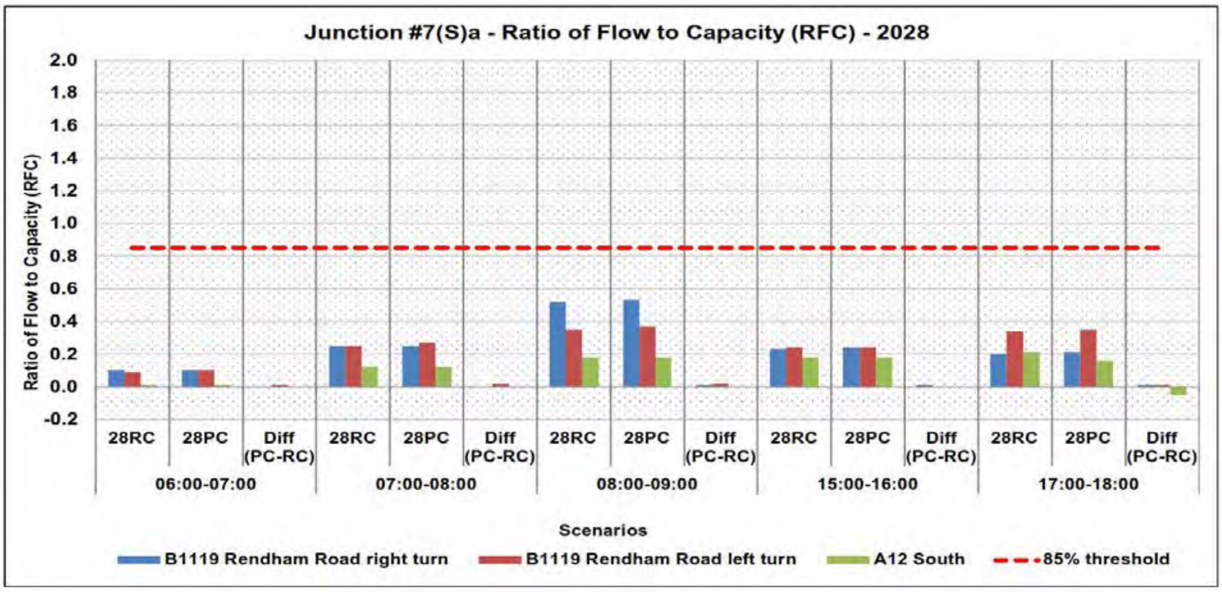
9.11.11 The 2028 Reference Case scenario traffic flows show modest to large increases in entry demand across all approaches (+60-160 vehicles per hour), except from 06:00-07:00 when much lower growth is forecast (+10-30 vehicles per hour).

9.11.12 The Peak Construction scenario shows a similar level of demand to the 2028 Reference Case with small increases predicted on the A12 (up to 50 vehicles per hour). Little change is forecast on the B1119 Rendham Road East approach.

ii. Results analysis

9.11.13 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.27**. The difference is shown as PC-RC.

Plate 9.27: A12 / B1119 (South) Peak Construction RFC Results



9.11.14 **Plate 9.27** shows that the junction is predicted to operate with spare capacity during all modelled hours in the 2028 Reference Case scenario, with the highest RFC of 0.52 being reported from 08:00-09:00 on the B1119 Rendham Road left turn.

9.11.15 The Peak Construction scenario RFC results are very similar to the 2028 Reference Case, generally showing very small increases in RFC (no more than +0.01) on all movements in all peak hours. The junction is predicted to continue to operate with ample spare capacity with the Sizewell C traffic. It is therefore considered that the Sizewell C traffic has no material impact on the operation of this junction in the Peak Construction scenario.

e) Operational Phase (2034)

i. Demand impact

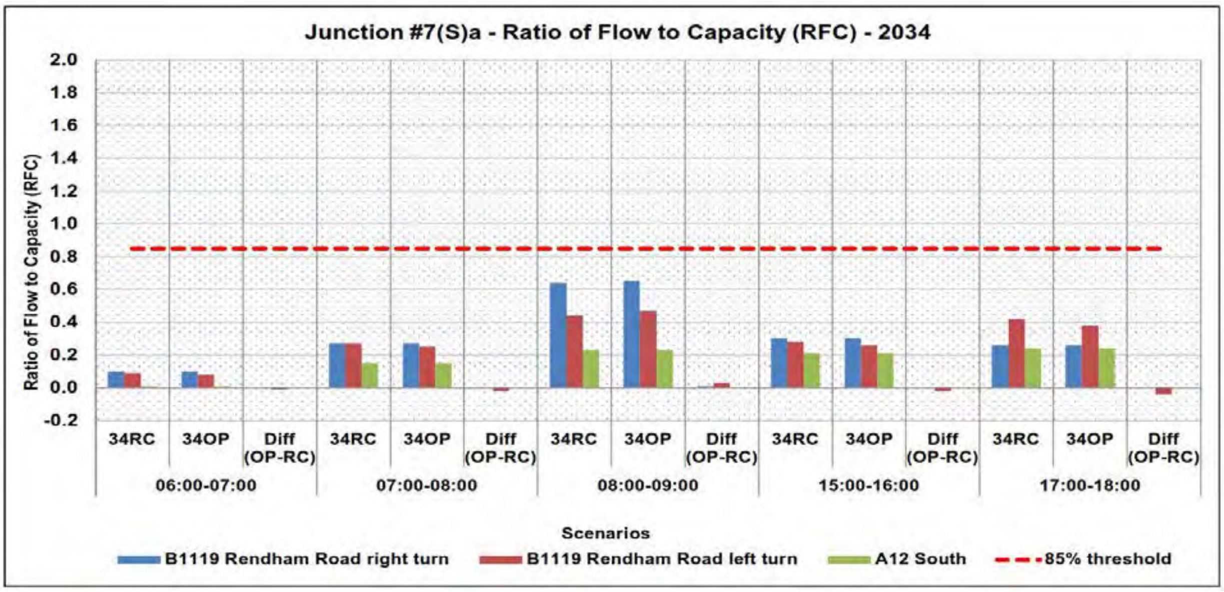
9.11.16 The 2034 Reference Case scenario traffic flows show large increases in entry demand across all junction approaches from 08:00-09:00, 15:00-16:00 and 17:00-18:00 (+100-250 vehicles per hour). From 06:00-07:00, growth is smaller (+20-40 vehicles per hour) relative to the base scenario. From 07:00-08:00 the A12 north approach and B1119 Rendham Road East approach see a moderate level of growth (+20-70 vehicles per hour) whilst the A12 south approach is predicted to experience an increase of 170 vehicles per hour.

9.11.17 The Operational Phase scenario is predicted to experience flows as a similar magnitude to those in the 2034 Reference Case.

ii. Results analysis

9.11.18 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.28**. The difference is shown as OP-RC.

Plate 9.28: A12/ B1119 (South) Operational Phase RFC Results



9.11.19 **Plate 9.28** shows that the junction is predicted to operate with spare capacity during all modelled hours in the 2034 Reference Case scenario, with the highest RFC of 0.64 being reported from 08:00-09:00 on the B1119 Rendham Road left turn.

9.11.20 The Operational Phase scenario RFC results are very similar to the 2034 Reference Case, with a maximum increase in RFC of 0.01. The junction is predicted to continue to operate with good reserve capacity with the Sizewell C traffic. It is therefore considered that the Sizewell C traffic has no material impact on the operation of this junction in the Operational Phase scenario.

f) Mitigation Analysis

9.11.21 The modelling of the existing junction shows that the Sizewell C traffic would have a minimal impact on the operation of the existing junction. Therefore, mitigation is not required at this junction to resolve capacity problems.

9.11.22 It is, however, proposed to make some minor changes to the junction layout to address safety concerns, which include improving road markings in the turning area in the central reservation. The proposed mitigation is illustrated in the **Yoxford Roundabout and other Highway Improvements Plans** (Doc Ref. 2.9).

9.11.23 The modelling results for the mitigated layout are presented in **Plates 9.29, 9.30** and **9.31** for the Early Years, Peak Construction and Operational Phase scenarios respectively.

Plate 9.29: A12/ B1119 Junction (South) 2023 Early Years with Mitigation RFC Results

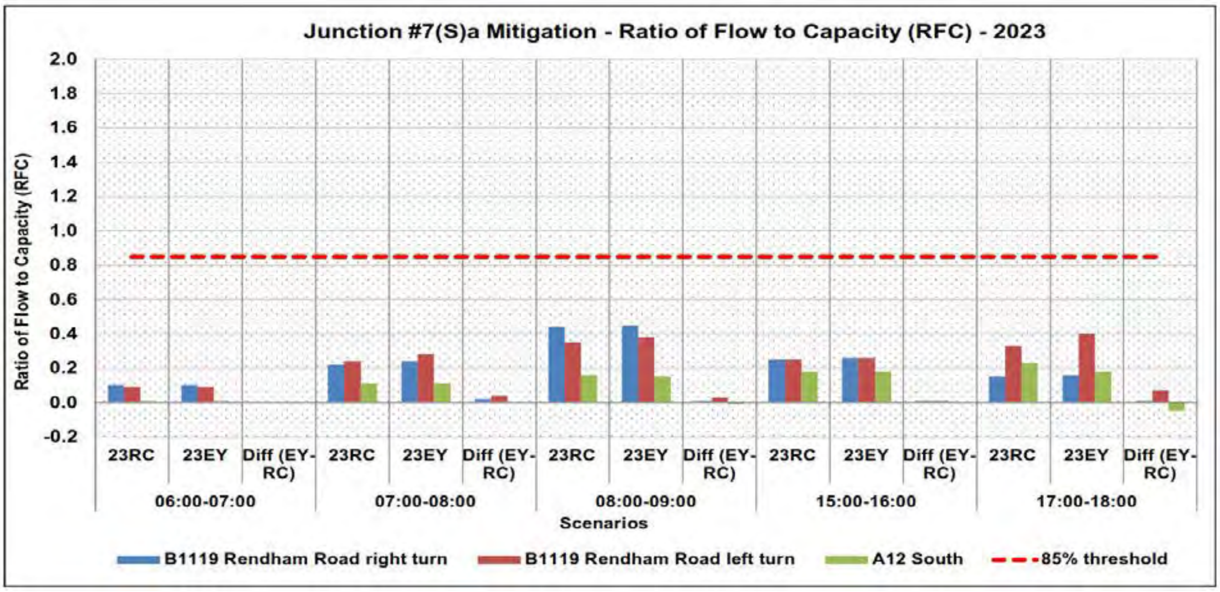


Plate 9.30: A12/ B1119 Junction (South) 2028 Peak Construction with Mitigation Results

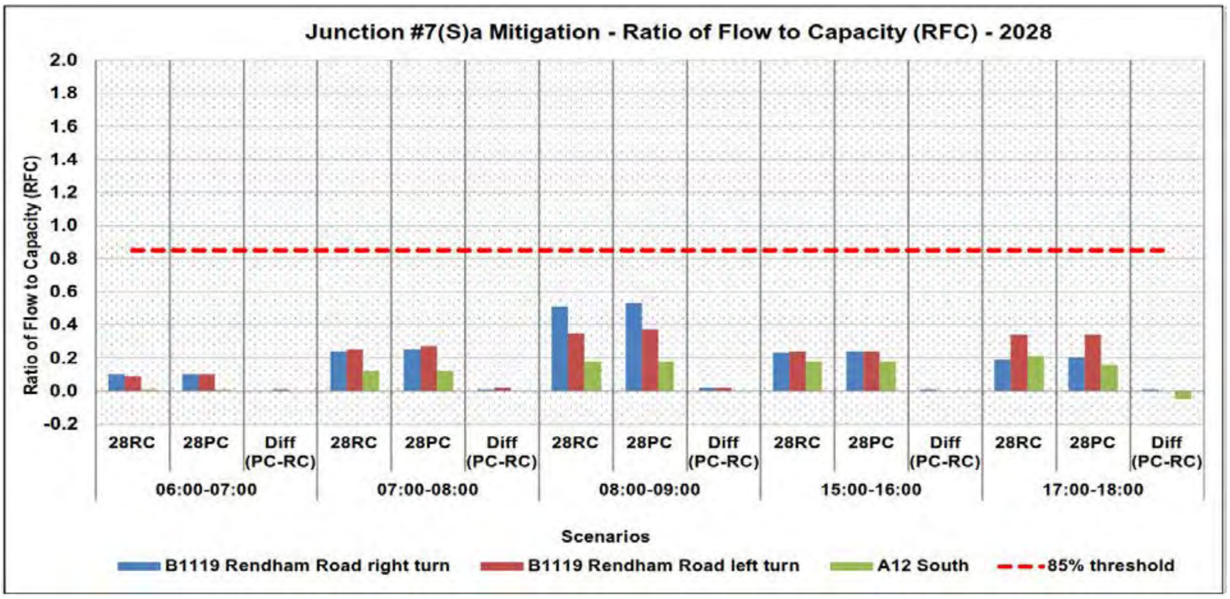
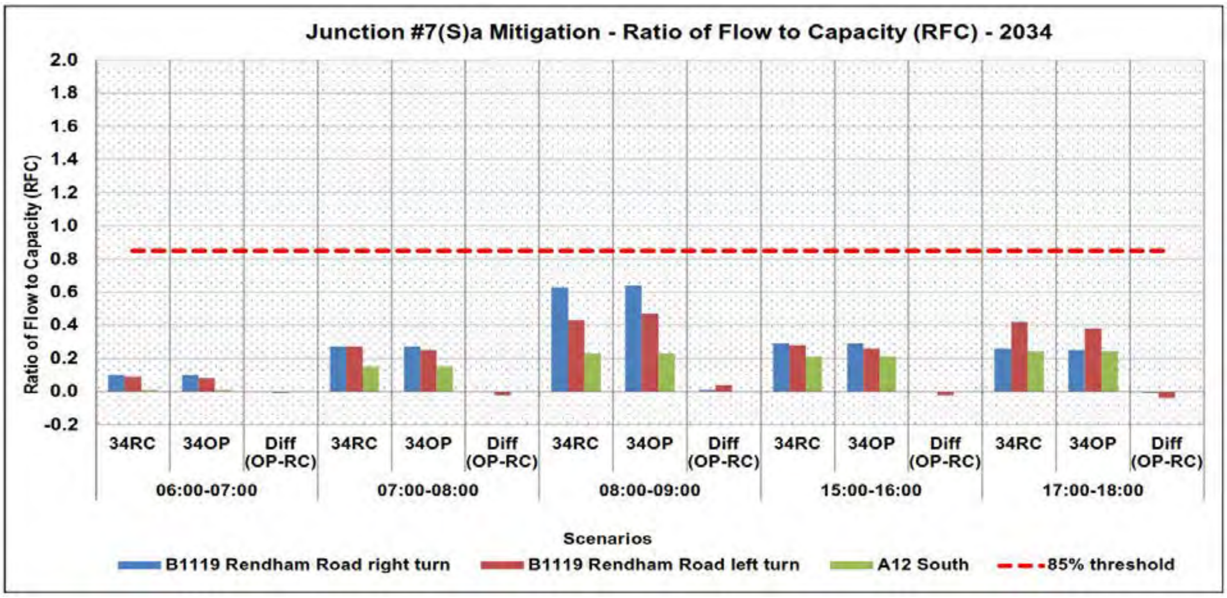


Plate 9.31: A12/ B1119 Junction (South) Operational Phase with Mitigation RFC Results



9.11.24 **Plates 9.29, 9.30, and 9.31** show that the mitigation scheme operates very similarly to the existing junction layout with all scenarios and peak hours predicted to operate with spare capacity, with negligible decreases in RFC being predicted.

g) Overview

9.11.25 The modelling results show that the junction operates with ample reserve capacity in all hours and scenarios tested. It is considered that the impact of Sizewell C traffic on the overall junction performance would be minimal. **Table 9.16** summarises the RFC results for the existing junction layout.

Table 9.16: A12 / B1119 Junction (South) RFC Results

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.09	0.10	0.10	0.10	0.10	0.10	0.10
07:00-08:00	0.20	0.24	0.28	0.25	0.27	0.27	0.27
08:00-09:00	0.28	0.44	0.46	0.52	0.53	0.64	0.65
15:00-16:00	0.19	0.25	0.26	0.24	0.24	0.30	0.30
17:00-18:00	0.24	0.33	0.41	0.34	0.35	0.42	0.38

9.11.26 An improvement scheme is proposed at this junction to address safety concerns at the junction. The mitigated layout offers a small reduction in RFC in all modelled time periods and scenarios. **Table 9.17** summarises the RFC results with this improvement scheme.

Table 9.17: A12 / B1119 Junction (South) with Mitigation RFC Results

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.09	0.10	0.10	0.10	0.10	0.10	0.10
07:00-08:00	0.20	0.24	0.28	0.25	0.27	0.27	0.27
08:00-09:00	0.28	0.44	0.45	0.51	0.53	0.63	0.64
15:00-16:00	0.19	0.25	0.26	0.24	0.24	0.29	0.29
17:00-18:00	0.24	0.33	0.40	0.34	0.34	0.42	0.38

9.12 Junction 8 – B1121 / B1119 Saxmundham Crossroads

a) Context

9.12.1 Junction 8 is a four-arm signalised crossroads located in Saxmundham, approximately seven miles south-west of the Sizewell C site. The junction comprises of single lane approaches on all arms with the exception of the southern arm where a right turn flare was recently installed to accommodate two to three right turning vehicles behind the stop-line and approximately four right turning vehicles in front of the stop-line.

9.12.2 The junction is situated within the town centre in a 30mph speed limit zone and street lighting is in place on all approaches. All four-arms have pedestrian crossings incorporated. The western arm has a narrow approach to the junction and the stop-line is therefore set back by approximately 30m. A satellite image of the existing junction layout is shown in **Plate 9.32**.

Plate 9.32: B1121 / B1119 Saxmundham Crossroads Layout

b) Calibration Summary

9.12.3 Observed maximum queue data showed that small to moderate queues (0-8 vehicles) are present on all arms from 07:00-08:00 whilst larger queues (2-18 vehicles) are present from 17:00-18:00. Queues are generally longer on the B1119 (eastern) approach and the High Street (northern) approach whilst the B1121 approach typically experiences shorter queues. Chantry Road (western approach) experiences occasional peaks in queue length but generally has small queues.

9.12.4 The junction model shows a similar pattern of queuing with longer queues on the B1119 and High Street in the PM hour (7-10 vehicles). The modelled queues are slightly shorter in length but are felt to be comparable to the observed conditions in that they reflect small and moderate queues on the appropriate arms and in the appropriate time periods. The largest mean-max queue modelled is 9.4 vehicles on the B1119 approach from 17:00-18:00 which is comparable with the observed mean-max queue of 13.6 vehicles.

c) Early Years (2023)

i. Demand Impact

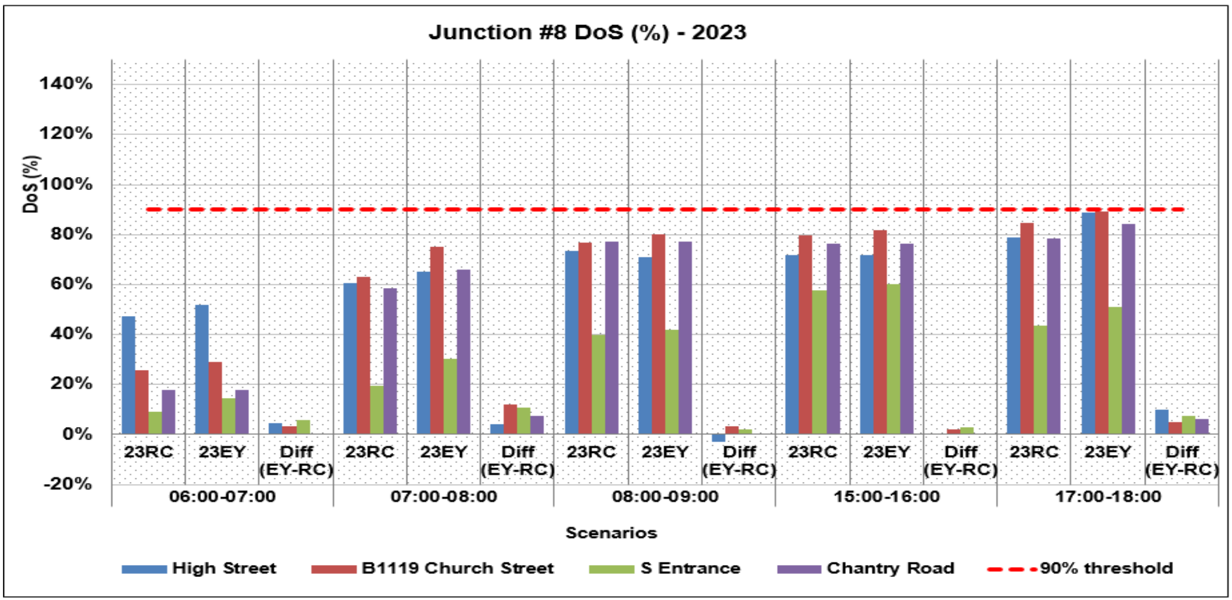
9.12.5 The 2023 Reference Case traffic flows generally show little increase in flows (+5-80 PCUs per hour) relative to the base scenario. The B1119 (eastern arm) is predicted to experience an increase of 78 PCUs per hour from 08:00-09:00 and from 15:00-16:00 the B1119 (eastern arm) and B1121 (southern arm) flows are expected to increase by 70 vehicles per hour.

9.12.6 The Early Years scenario shows that traffic flows are broadly similar to the 2023 Reference Case with moderate increases (+50 PCUs per hour) relative to the 2023 Reference Case expected on the southern and eastern arms in the early AM hours (accessing the Sizewell C site) and from 17:00-18:00 (leaving the Sizewell C site).

ii. Results Analysis

9.12.7 The DoS modelling results for the 2023 Reference Case and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.33**. To allow for a fair comparison, in each time period the 2023 Reference Case and Early Years scenarios were tested with identical junction cycle times. The difference is shown as EY-RC.

Plate 9.33: B1121 / B1119 Saxmundham Crossroads 2023 Early Years Degree of Saturation Results



9.12.8 During the 2023 Reference Case, the junction is predicted to operate between 9% and 85% saturation. Spare capacity is predicted in all modelled time periods with all arms operating below the 90% DoS threshold. The highest predicted DoS value is seen on the B1119 arm with a value of 85% in the 17:00-18:00 time period.

9.12.9 The Early Years Scenario DoS results are similar to the 2023 Reference Case with the junction predicted to operate between 15% and 89% saturation meaning all arms continue to operate below the 90% DoS threshold. Generally, increases in DoS from the 2023 Reference Case scenario are negligible with the highest recorded increase in DoS shown as +12% from 07:00-08:00 on the B1119 Church Street arm. Increases in DoS caused by Sizewell C are generally during the time periods when the junction has more spare capacity (06:00-07:00 and 07:00-08:00).

d) Peak Construction (2028)

i. Demand Impact

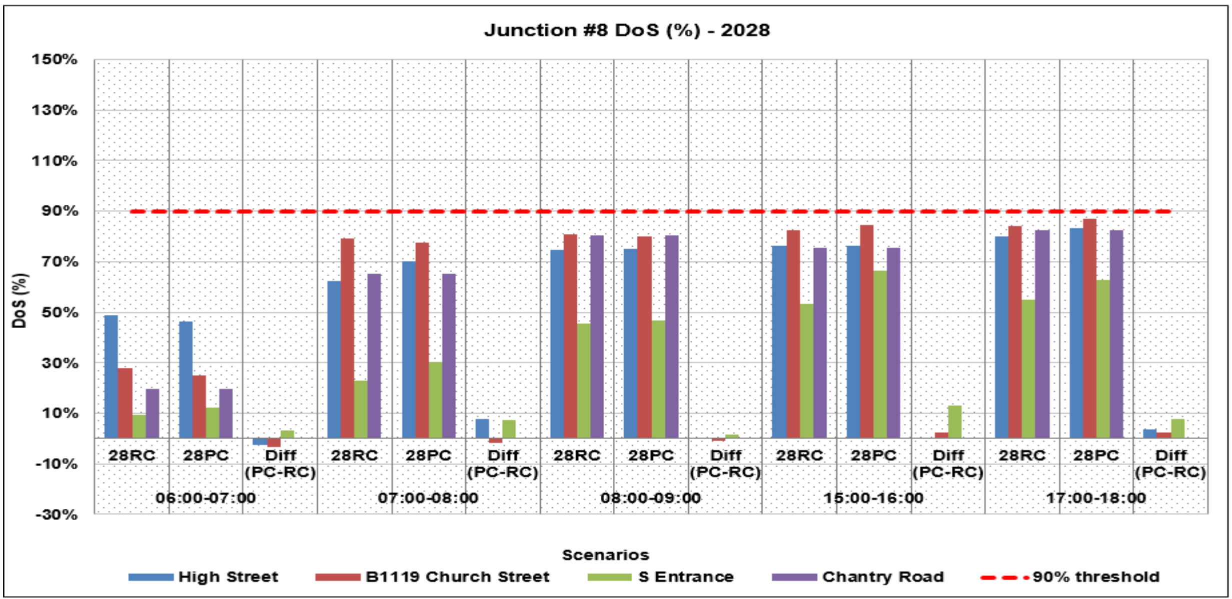
9.12.10 The 2028 Reference Case traffic flows generally show moderate increase in flows (+6-109 vehicles per hour) relative to the base scenario. The B1119 (eastern arm) is predicted to experience an increase of 109 PCUs per hour from 08:00-09:00 and from 15:00-16:00 and 17:00-18:00 the B1119 (eastern arm) and B1121 (southern arm) flows are expected to increase by 60-90 PCUs per hour.

9.12.11 The Peak Construction scenario shows that traffic flows are broadly similar to the 2028 Reference Case with moderate increases (+30-50 PCUs per hour) relative to the 2028 Reference Case expected on the southern arm in the early AM hours (accessing the Sizewell C site) and on the eastern arm (+40 PCUs per hour) from 15:00-16:00 (leaving the Sizewell C site).

ii. Results Analysis

9.12.12 The DoS modelling results for the 2028 Reference Case and Peak Construction scenarios, split by each modelled hourly period, are illustrated in **Plate 9.34**. To allow for a fair comparison, in each time period the 2028 Reference Case and Peak Construction scenarios were tested with identical junction cycle times. The difference is shown as PC-RC.

Plate 9.34: B1121 / B1119 Saxmundham Crossroads 2028 Peak Construction Degree of Saturation Results



9.12.13 During the 2028 Reference Case, the junction is predicted to operate between 9% and 84% saturation. Spare capacity is predicted for all time periods with all arms operating below the 90% DoS threshold. The 08:00-09:00 time period displays the highest DoS values with a maximum of 84% displayed on the B1119 Church Street arm.

9.12.14 The Peak Construction scenario DoS results are similar to the 2028 Reference Case with the junction predicted to operate from 12% and 87% saturation. The highest modelled increase in DoS is seen as +13% from 15:00-16:00 on the B1121 arm, with impact from Sizewell C generally low in 2028 as the majority of Sizewell C construction workers use the park and ride sites rather than driving to the Sizewell site and therefore do not enter Saxmundham.

e) Operational Phase (2034)

i. Demand Impact

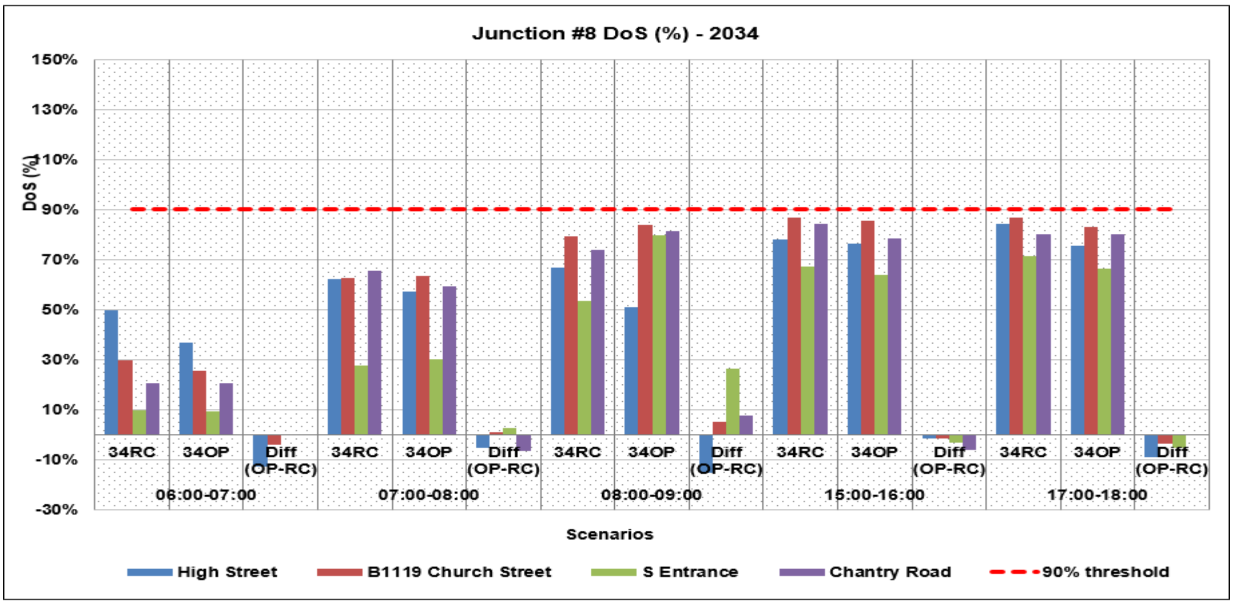
9.12.15 The 2034 Reference Case traffic flows generally show little increase (+10-70 vehicles per hour) relative to the base scenario. Larger increases are seen however on The B1119 (eastern arm) which is predicted to experience an increase of 120-165 PCUs per hour from 08:00-09:00, 15:00-16:00 and 17:00-18:00 and the B1121 (southern arm) flows are expected to increase by 90-100 PCUs per hour during these time periods.

9.12.16 The Operational Phase scenario shows that traffic flows are similar to the 2034 Reference Case with the exception of the B1121 (southern arm) from 08:00-09:00 when an increase of 100 PCUs per hour is expected relative to the 2034 Reference Case when operational staff access the Sizewell C site.

ii. Results Analysis

9.12.17 The DoS modelling results for the 2034 Reference Case and Operational Phase scenarios, split by each modelled hourly period, are illustrated in **Plate 9.35**. To allow for a fair comparison, in each time period the 2028 Reference Case and Operational Phase scenarios were tested with identical junction cycle times. The difference is shown as OP-RC).

Plate 9.35: B1121 / B1119 Saxmundham Crossroads 2034 Operational Phase Degree of Saturation Results



9.12.18 During the 2034 Reference Case, the junction is predicted to operate from 10% and 87% saturation. Spare capacity is predicted for all time periods with all arms operating below the 90% DoS threshold. The highest DoS is recorded on the B1119 Church Street approach from 15:00-16:00 and 17:00-18:00 with a value of 87% in both cases.

9.12.19 The Operational Phase scenario DoS results are very similar to the 2034 Reference Case with the junction predicted to operate from 9% and 86% saturation. Generally, DoS decreases between the 2034 Reference Case and Operation Phase scenarios, with the greatest being -16% on the High Street arm from 08:00-09:00. During the same period, the DoS on the South Entrance arm increases by +26%. However, the junction would still be operating within capacity, and overall Sizewell C is considered to have a positive effect on the junction's operation, relative to the 2034 Reference Case scenario.

f) Mitigation Analysis

9.12.20 With optimised signal timings in place the junction is predicted to operate with spare capacity for all time periods both in the Reference Case and 'With Sizewell' forecast scenarios. While DoS values indicate that the junction will operate close to capacity from 17:00-18:00 in the 2023 Early Years scenario the junction is deemed to be operating with a good level of service overall and therefore mitigation measures are not deemed to be necessary.

9.12.21 The addition of the Sizewell C traffic at this location has a small impact on DoS values with increases shown to be minor.

g) Overview

9.12.22 An overview of the maximum DoS results recorded in each scenario, for each time period, are shown in **Table 9.18**. DoS results 90% (operating with reserve capacity) are coloured green; 90%-100% (operating at or very near capacity) are coloured orange; and 100% (operating over capacity) are coloured red.

Table 9.18: B1121 / B1119 Degree of Saturation Results Overview

Time period	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	17.4%	47.5%	51.9%	48.7%	46.3%	49.6%	36.7%
07:00-08:00	55.5%	63.0%	74.9%	79.3%	77.5%	65.6%	63.6%
08:00-09:00	94.3%	77.1%	79.9%	80.9%	80.4%	79.2%	84.1%
15:00-16:00	75.8%	79.8%	81.9%	82.3%	84.7%	87.0%	85.5%
17:00-18:00	74.1%	84.5%	89.3%	84.3%	86.8%	87.0%	83.2%

9.12.23 The modelling results show that the junction is currently operating over-capacity from 08:00-09:00 but with optimised signal timings in place is predicted to operate below capacity in all Reference Case and 'with Sizewell C' scenarios.

9.12.24 The impact of Sizewell C traffic on overall junction performance is minimal with the biggest impact seen from 07:00-08:00 in the Early Years scenario.

9.12.25 A microprocessor optimised vehicle actuation controller is currently in operation at this junction, which enables demand responsive optimisation of signal timings. It has the potential to increase capacity, as the signals adapt to entry demand from each approach. LinSig is not able to reflect the cycle by cycle green time optimisation that a microprocessor optimised vehicle actuation controller would provide; therefore, in practice the junction may operate slightly better than reported in **Table 9.18**.

9.13 Junction 9 – B1119 / B1122 / B1069 Leiston Crossroads

a) Context

9.13.1 Junction 9 is a four-arm signalised crossroads located in Leiston, approximately 2-miles west of the Sizewell C site. The junction comprises of single lane approaches on all arms with the exception of the B1119 Waterloo Avenue, where the arm widens to two lanes at the stop-line. The western arm flare is approximately 30m in length and is able to accommodate 5-6 right turning vehicles behind the stop-line.

9.13.2 The junction is situated within the town centre in a 30mph speed limit zone and street lighting is in place on most approaches. Three of the four-arms have pedestrian crossings incorporated whilst the B1119 Waterloo Avenue approach does not. A satellite image of the existing junction layout is shown in **Plate 9.36**.

Plate 9.36: B1119 / B1122 / B1069 Leiston Crossroads Layout

b) Calibration Summary

9.13.3 Observed average queue length data for each cycle showed that small to moderate queues are generally present at the junction throughout the modelled periods which is expected given that the junction is signalised. The raw data shows that queue lengths fluctuate greatly over the course of the modelled periods with queues of up to 14 vehicles (at 15:20 on the southern arm) being recorded but the average queue length is generally a lot shorter than this. Average queue lengths have been calculated for each period which suggested that the early morning hours have typically shorter queue lengths (up to 1 vehicle) as demand is lower whilst the other time periods (particularly 08:00-09:00, 15:00-16:00 and 17:00-18:00) show longer average queue lengths of up to four vehicles.

9.13.4 The junction model shows a similar pattern of queuing and generally slightly overestimates queue length. The model is considered to be realistic as the queue lengths generally match the observed scale of queue (i.e. small to moderate).

c) Early Years (2023)

i. Demand Impact

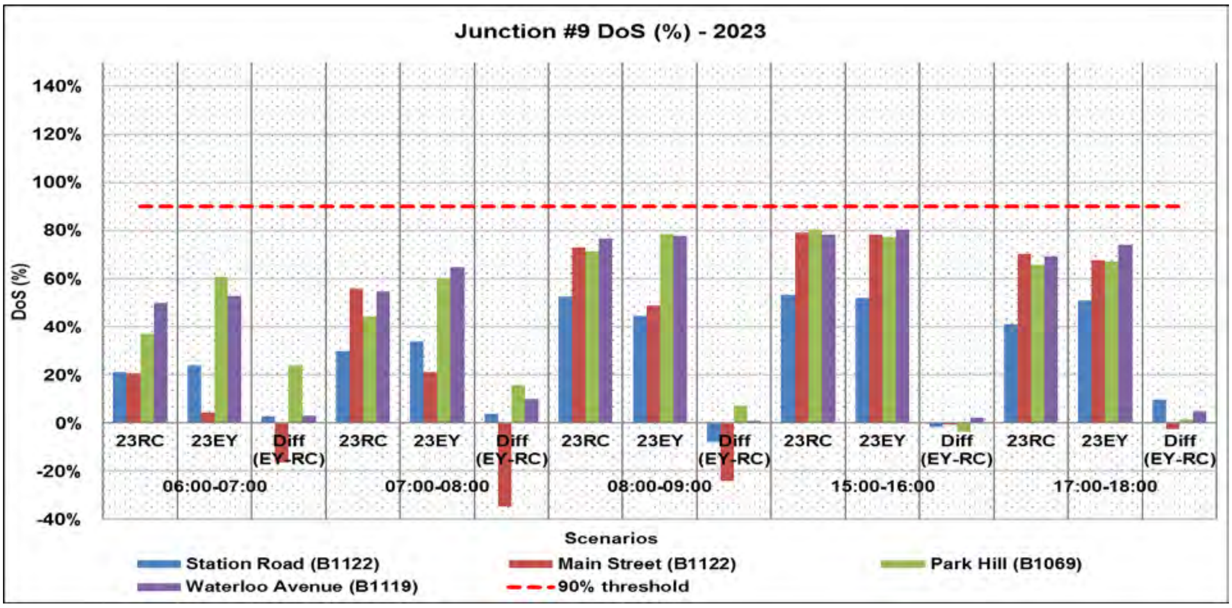
9.13.5 The 2023 Reference Case traffic flows generally show little increase in flows (+10-70 vehicles per hour) relative to the base scenario.

9.13.6 The Early Years scenario shows that traffic flows are broadly similar to the 2023 Reference Case with moderate increases (+10-70 PCUs per hour) on the B1122 Station Road (north) and B1119 Waterloo Avenue (west) approaches relative to the 2023 Reference Case. The B1122 Park Hill approach (south) experiences increases of between +50-130 PCUs per hour. The B1122 Main Street (east) approach is expected to experience a decrease in flows during all modelled time periods with a maximum decrease of -125 PCUs per hour from 08:00-09:00. This is due to localised route choice allowing vehicles from the east to approach the junction either from the south using Cross Street and Park Hill or from the east using the High Street and Main Street. There is little difference in travel time or distance so flows on the southern and eastern arms of this junction are interchangeable.

ii. Results Analysis

9.13.7 The DoS modelling results for the 2023 Reference Case and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.37**. To allow for a fair comparison, in each time period the 2023 Reference Case and Early Years scenarios were tested with identical junction cycle times. The difference is shown as EY-RC.

Plate 9.37: B1119 / B1122 / B1069 Leiston Crossroads 2023 Early Years Degree of Saturation Results



9.13.8 2023 Reference Case results indicate that the junction will operate within capacity for all modelled hours. The 15:00-16:00 modelled hour sees the highest recorded DoS values. During this time period the Park Hill approach (southern arm) operates with a DoS of 81%.

9.13.9 The Early Years RFC results are similar to the 2023 Reference Case in that all modelled time periods operate below the 90% DoS threshold. DoS levels are slightly increased compared to the 2023 Reference Case with the Waterloo Avenue approach operating with a maximum DoS of 81% from 15:00-16:00. A decrease in DoS is seen in three of the five 2023 Early Years' time periods on Main Street (east). This is due to localised re-routing with vehicles instead opting to enter the junction via Park Hill (the southern arm) rather than Main Street (the eastern arm).

d) Peak Construction (2028)

i. Demand Impact

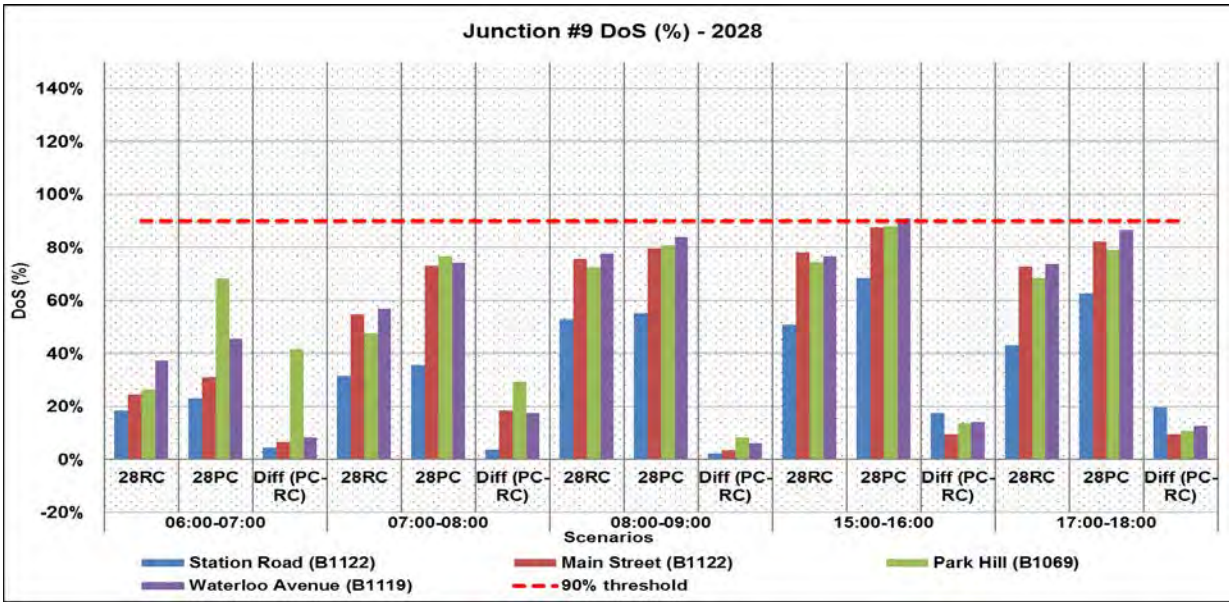
9.13.10 The 2028 Reference Case traffic flows generally show little increase in flows (+10-70 vehicles per hour) relative to the base scenario for all time periods.

9.13.11 The Peak Construction scenario predicts that traffic flows are broadly similar to the 2028 Reference Case with increases (up to +100 PCUs per hour) relative to the 2028 Reference Case. Exceptions to this are the Park Hill approach (south) from 06:00-07:00 and 07:00-08:00 which is predicted to experience an increase of 190-210 PCUs per hour (Sizewell C workers arriving at site) and the Station Road approach (north) from 15:00-16:00 and 17:00-18:00 which is predicted to see an increase of +160-230 PCUs per hour (Sizewell C workers leaving the site).

ii. Results Analysis

9.13.12 The RFC modelling results for the 2028 Reference Case and Peak Construction scenarios, split by each modelled hourly period, are illustrated in **Plate 9.38**. To allow for a fair comparison, in each time period the 2028 Reference Case and Peak Construction scenarios were tested with identical junction cycle times. The difference is shown as PC-RC.

Plate 9.38: B1119 / B1122 / B1069 Leiston Crossroads 2028 Peak Construction Degree of Saturation Results



9.13.13 2028 Reference Case results suggest that the junction will operate below capacity for all modelled hours with DoS values ranging between 50-80% from 15:00-16:00 which are the highest of the 2028 Reference Case scenario.

9.13.14 The Peak Construction scenario DoS results are very similar to the 2028 Reference Case with the junction operating within the desirable capacity (i.e. 90% DoS) for all time periods with the exception of the 15:00-16:00 modelled hour which sees the Waterloo Avenue approach (west) operating with a DoS value of 91%.

e) Operational Phase (2034)

i. Demand Impact

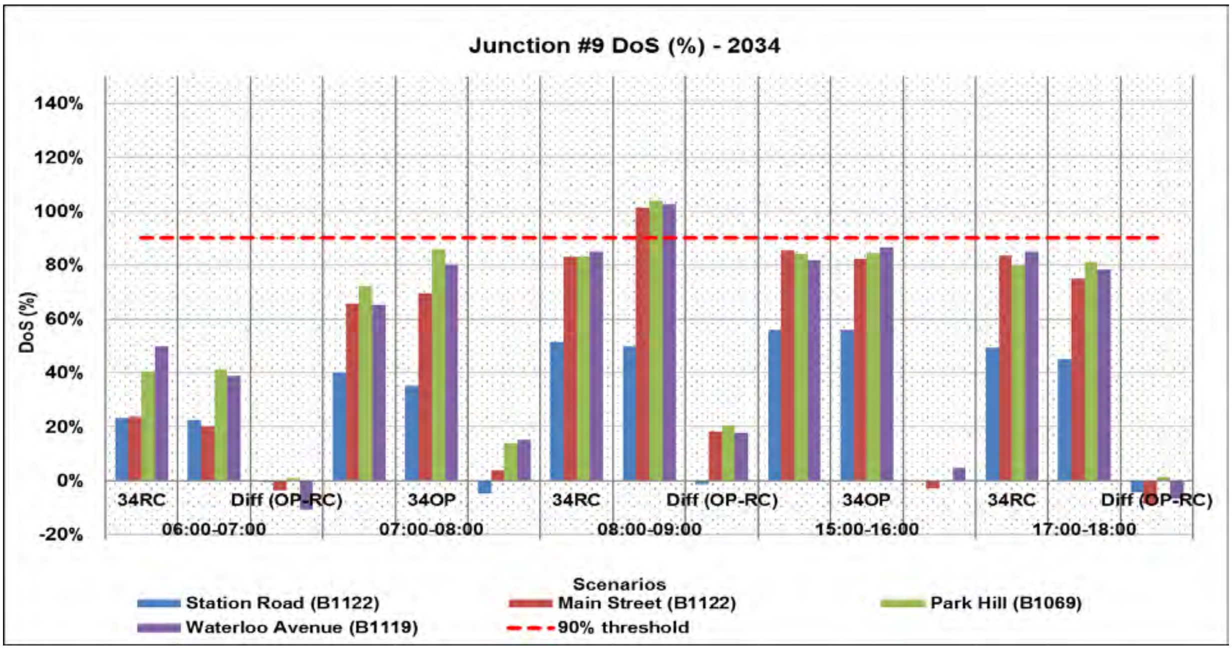
9.13.15 The 2034 Reference Case traffic flows generally show moderate increases (+10-70 vehicles per hour) relative to the base scenario.

9.13.16 The Operational Phase scenario shows similar traffic flows to the 2034 Reference Case scenario with the exception of the Park Hill approach (south) from 07:00-08:00, 08:00-09:00 and 17:00-18:00 when an increase of 90-190 PCUs per hour is expected relative to the 2034 Reference Case. The Waterloo Avenue approach (west) is predicted to see an increase of 130 PCUs per hour from 08:00-09:00. From 17:00-18:00, the eastern arm is predicted to see a reduction of 90 PCUs per hour and the southern arm an increase of 90 PCUs per hour due to localised re-routing of traffic because similar length routes exist to reach the junction.

ii. Results Analysis

9.13.17 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.39**. To allow for a fair comparison, in each time period the 2034 Reference Case and Operational Phase scenarios were tested with identical junction cycle times. The difference is shown as OP-RC.

Plate 9.39: B1119 / B1122 / B1069 Leiston Crossroads 2034 Operational Phase Degree of Saturation Results



9.13.18 During the 2034 Reference Case the model results suggest that the junction will operate below or close to the 90% DoS threshold during all modelled hours. From 08:00-09:00, 15:00-16:00 and 17:00-18:00, the approaches operate just below the 90% capacity threshold with DoS levels ranging from 80-85%. For the 06:00-07:00 and 07:00-08:00 time periods the model indicates that the junction will operate with spare capacity.

9.13.19 In the Operational Phase the junction is predicted to operate below the capacity threshold for most of the modelled hours. The junction is predicted to operate above capacity from 08:00-09:00 with the highest DoS value of 104% seen on the Park Hill approach (south) compared to a DoS value of 83% in the 2034 Reference Case. This is in line with an increase in traffic demand from 08:00-09:00 relative to the 2034 Reference Case.

f) Mitigation Analysis

9.13.20 The junction currently operates at/near capacity from 08:00-09:00 and is nearing capacity from 15:00-16:00 under the current signal controller settings. By 2023 (under an optimised cycle time and timings) the junction is predicted to be operating below capacity, which suggest that a review of signal timings here to optimise each arm in line with demand will provide sufficient additional capacity to cope with background traffic growth.

9.13.21 The 'with Sizewell C' forecast scenarios continue to see the junction operating with spare capacity for all modelled hours in the 2023 forecast year and in four out of the five modelled hours in the 2028 and 2034 forecast years.

9.13.22 SCC has informed SZC Co. that a Microprocessor Optimised Vehicle Actuation (MOVA) controller is to be installed at this junction, which would lead to demand responsive optimisation of signal timings. This would help to mitigate against the additional traffic predicted in all future year scenarios.

g) Overview

9.13.23 An overview of the maximum DoS results recorded in each scenario, for each time period, are shown in **Table 9.19**. DoS results 90% (operating with reserve capacity) are coloured green; 90%-100% (operating at or near capacity) are coloured orange; and 100% (operating over capacity) are coloured red.

Table 9.19: B1119 / B1122 / B1069 Leiston Crossroads Degree of Saturation Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	23.7%	49.7%	61.0%	37.4%	68.3%	49.8%	41.3%
07:00-08:00	65.1%	55.8%	64.8%	56.9%	76.8%	72.0%	86.0%
08:00-09:00	89.7%	76.8%	78.7%	77.6%	83.8%	85.0%	103.8%
15:00-16:00	76.5%	80.6%	80.7%	78.1%	90.9%	85.4%	86.6%
17:00-18:00	75.7%	70.3%	74.1%	73.7%	86.5%	85.0%	81.0%

9.13.24 Base results show that the junction is currently operating close to maximum capacity from 08:00-09:00 under the existing junction control. With an increased cycle time and optimised signal timings the results from 08:00-09:00 improve in the 2023 Reference Case scenario and then return to base levels in the 2023 Early Years scenario with the addition of Sizewell C traffic.

9.13.25 A Microprocessor Optimised Vehicle Actuation (MOVA) controller is being considered by SCC at this junction, which would enable demand responsive optimisation of signal timings. It has the potential to increase capacity, as the signals adapt to entry demand from each approach. LinSig is not able to reflect the cycle by cycle green time optimisation that a MOVA controller would provide; therefore, in practice the junction may operate slightly better than reported in **Table 9.19**, once MOVA is implemented.

9.14 Junction 11 – A12 / A144 Priority Junction

a) Context

9.14.1 Junction 11 is a priority T-junction, located approximately 6-miles north-west of the Sizewell C site. It forms the junction of the A12 and A144 (minor arm), just north of Yoxford. The A12 southern approach is comprised of a single lane, the A12 northern approach is a single lane with a ghost island right turn lane approximately 50m long and the A144 is a single lane approach which flares at the junction. The national speed limit of 60mph applies on all arms. Street lighting is limited to a single lamp located on the central island on the southern arm of the junction. A satellite image of the existing junction layout is shown in **Plate 9.40**.

Plate 9.40: Existing A12 / A144 Junction Layout

9.14.2 This junction has been assessed using the Yoxford VISSIM model and the following sections therefore describe the results from VISSIM. Proposals to upgrade the junction from a ghost island T-junction to a single lane dualled T-junction are planned for 2028, as illustrated in **Yoxford Roundabout and other Highway Improvements Plans** (Doc Ref. 2.9), and this upgrade is reflected in the VISSIM model. A Junctions 9 assessment has not been conducted at this location due to the complexity of the minor arm give-way behaviour in the proposed layout.

b) Validation Summary

9.14.3 Base year validation was conducted for 08:00–09:00, 15:00–16:00 and 17:00–18:00 to cover a variety of flow conditions during the modelled periods. Observed queue data showed that there were small but consistent queues on the A144 approach during all periods. The observed queue on the A12 southbound right turn is negligible.

9.14.4 The VISSIM model typically results in queues similar to those observed on the A12 southbound right turn and the A144. Therefore, the model is considered to be representative of existing conditions. Full details are available in the Yoxford VISSIM model technical note contained in **Appendix 9B** of this Chapter.

c) Early Years (2023)

i. Demand Impact

9.14.5 The 2023 Reference Case scenario traffic flows show modest increases in entry demand on the A12 southern arm (+30-100 vehicles per hour), a smaller increase on the A12 northern arm (+10-50 vehicles per hour) and a negligible change on the A144 (-10-+50 vehicles per hour) across all modelled hours, relative to observed base year traffic flows.

9.14.6 The Early Years scenario shows that traffic flows remain fairly similar to the 2023 Reference Case from 06:00-07:00, 08:00-09:00 and 15:00-16:00.

9.14.7 There is a small increase on the A144 (+40 vehicles per hour) and A12 northern arm (+100 vehicles per hour) approaches from 07:00-08:00. From 17:00-18:00 the flows increase in the opposite direction, on the A12 southern arm (+100 vehicles per hour). These increases reflect construction workers accessing the northern park and ride site (south of Junction 11) and the other Sizewell construction sites in the morning and leaving in the evening.

ii. Results Analysis – VISSIM

9.14.8 The 2023 Reference Case scenario (existing junction layout) shows that the queue on the A144 minor arm will be slightly longer than in the 2015 base scenario during both peak periods. The increase is greatest from 06:30-08:00 when the maximum queue is approximately 3-4 vehicles longer but overall queues remain small. The level of queuing for the A12 right turn onto the A144 is negligible for both scenarios and all modelled hours.

9.14.9 The Early Years Scenario (existing junction layout) results show that the queue on the A144 minor arm will be slightly longer than in the 2023 Reference Case scenario from 07:00-08:00 in line with the increase in flows. During the rest of the morning period and all of the afternoon period, the results are broadly similar to the 2023 Reference Case scenario. Overall, the level of queueing on the minor arm is moderate in the 2023 Early Years scenario, with a maximum queue of 12 vehicles during the most congested period (07:00–08:00) compared to a maximum queue of 10 vehicles in the 2023 Reference Case. The level of queuing for the A12 right turn onto the A144 is negligible for both scenarios and all modelled hours (no more than 1 vehicle).

9.14.10 During the most congested hour (07:00-08:00), delay at the junction is only predicted to increase on the minor arm (A144) from 16 seconds per vehicle in the 2023 Reference Case to 23 seconds per vehicle in the 2023 Early Years scenario. During the other time periods assessed, the increase in delay is no larger than 4 seconds per vehicle, demonstrating that Sizewell C traffic is predicted to have little to no impact on the junction in 2023.

d) Peak Construction (2028)

i. Demand Impact

9.14.11 The 2028 Reference Case is predicted to see an increase in flows on the A12 southern arm (+30-120 vehicles per hour), a small increase on the A144 (+20-60 vehicles per hour) and a negligible change on the A12 northern arm (-10-+30 vehicles per hour), relative to observed base year traffic flows.

9.14.12 The Peak Construction scenario shows a small increase in entry demand on the A144 from 06:00-08:00 (+60-80 vehicles per hour) relative to the 2028 Reference Case. During the AM hours, the A12 northern arm is expected to experience a significant increase of +190 vehicles per hour from 06:00-07:00 and +130 vehicles per hour from 07:00-08:00. During the afternoon period, flows on the A12 South approach are expected to increase by 100-130 vehicles per hour. This increase represents Sizewell C construction workers using the northern park and ride site in the morning and leaving in the evening.

ii. Results Analysis - VISSIM

9.14.13 In the 2028 Reference Case, the A12 / A144 junction is assumed to remain as per the existing ghost island layout. The junction is assumed to be upgraded to a single lane dualled arrangement in the Peak Construction scenario. This upgrade would widen the central reserve, allowing light vehicles from the A144 to perform the right turning movement in two steps instead of one.

9.14.14 The following VISSIM results therefore compare a ghost island T-junction under the 2028 Reference Case flows to a single lane dualled T-junction under the 2028 Peak Construction flows.

9.14.15 The VISSIM results show that the maximum queue on the minor arm (A144) is expected to occur from 06:30 - 08:30 and is likely to reach approximately 11 vehicles in length in the 2028 Reference Case and up to 16 vehicles in length in the Peak Construction scenario. During the other morning periods and throughout the afternoon periods the queues in the Peak Construction scenario are broadly similar to the 2028 Reference Case scenario.

9.14.16 The level of queueing for the A12 southbound movement onto the A144 is negligible for both scenarios in all modelled hours (no more than one vehicle).

9.14.17 The average delay per vehicle on the A144 approach increases during the morning periods in the 2028 Peak Construction scenario compared to the 2028 Reference Case due to the increase in flows. The largest increase in delay is found from 07:00-08:00, resulting in an average delay of 33s (Level of Service D[3]) in the 2028 Peak Construction scenario compared to 16s (Level of Service C) in the 2028 Reference Case scenario. This is an increase of 17 seconds per vehicle on average which is likely to be within daily variation.

9.14.18 Whilst VISSIM suggests that the proposed mitigation scheme does not mitigate all of the impact caused by the additional Sizewell C traffic it is likely to improve throughput and safety at this location. Due to the additional complexity of the give-way behaviour between those waiting to use the central reservation and those already using it, the single lane dualled layout is more difficult to represent in VISSIM. The VISSIM model setup for the single lane dualled layout is considered to be more conservative in the way that the give-way behaviour rules are applied compared to the ghost island layout. The Peak Construction results are therefore felt to be a worst case and the A144 minor arm is likely to perform better than predicted.

[3] Level of service is a metric taken from the Transportation Research Board's Highway Capacity Manual (Ref 9.8). It is a measure used to describe the quality of vehicular travel based on how much delay is predicted to be experienced. Level of service for a non-signalised junction is defined by a grade from A to F where level A describes a traffic movement with less than 10 seconds of delay, level B is 10-15 seconds, level C is 15-25 seconds, level D is 25-35 seconds, level E is 35-50 seconds and level F is above 50 seconds of delay.

e) Operational Phase (2034)

i. Demand Impact

9.14.19 The 2034 Reference Case scenario traffic flows show a modest increase on the A12 southern arm (+40-160 vehicles per hour) with increases greater from 07:00-09:00. A smaller increase on the A144 arm (+10-70 vehicles per hour) and a negligible change on the A12 northern arm (-20-+60 vehicles per hour) is predicted relative to observed base year traffic flows.

9.14.20 The Operational Phase scenario traffic flows are very similar to the 2034 Reference Case, with negligible changes across all arms and modelled hourly periods.

ii. Results Analysis

9.14.21 The Operational Phase results show that queues on all arms are similar to the 2034 Reference Case during all modelled hours. This is due to the small variation in flows between both scenarios.

f) Mitigation Analysis

9.14.22 The A12 / A144 junction is predicted to operate with spare capacity in all scenarios, therefore no additional mitigation is proposed at this location.

g) Overview

9.14.23 Delays for the junction as a whole are shown in **Table 9.20**. The Reference Case scenarios and Early Years scenario all assume the junction layout remains as per the existing layout (ghost island T-junction) whilst the Peak Construction and Operational Phase results all include the impact of the proposed single lane dual led layout.

9.14.24 The junction-wide results show that the junction operates with minimal delay during the afternoon period in all modelled scenarios. During the morning period the level of queuing and delay is greater due to the higher flows on the A144 approach, but overall the junction still operates with modest levels of delay across all scenarios.

9.14.25 Delays for the A144 approach are presented in **Table 9.20** and **Table 9.21**. In 2023, delays on the A144 approach are expected to increase by up to 7 seconds from 07:00-08:00 but by no more than 5 seconds during the other time periods. In 2028, delays on the A144 approach are expected to increase by up to 17 seconds from 07:00-08:00 but by no more than 8 seconds during the other time periods. In 2034, delays on the A144 approach are expected to increase by no more than 2 seconds across all time periods.

Table 9.20: A12 / A144 Junction Delay Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	1.5	2.2	2.4	2.4	4.3	2.9	2.8
07:00-08:00	4.0	4.8	6.4	4.7	8.7	5.1	5.4
08:00-09:00	4.3	5.0	5.4	5.4	6.3	5.7	5.4
15:00-16:00	3.2	3.9	3.8	3.7	3.9	4.3	3.7
16:00-17:00	3.5	3.8	3.9	3.7	3.6	4.0	3.6
17:00-18:00	3.1	3.3	3.8	3.8	3.4	4.0	3.6
18:00-19:00	2.2	2.8	2.9	2.8	3.0	3.0	2.7

Table 9.21: A144 Delay Results Overview

	Average delay on the A144 approach per vehicle (seconds).						
Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	5.2	6.7	7.3	7.4	14.6	9.4	9.0
07:00-08:00	13.6	16.3	22.8	15.7	33.0	17.4	18.8
08:00-09:00	16.0	18.4	19.7	20.0	25.2	22.4	20.5
15:00-16:00	16.0	20.5	18.6	18.1	21.8	21.7	18.3
16:00-17:00	14.9	16.7	18.0	15.8	15.9	18.1	15.7
17:00-18:00	13.5	14.9	19.0	18.5	15.6	18.5	15.9
18:00-19:00	7.5	10.2	10.6	10.2	11.8	11.0	9.7

9.14.26 The impact of Sizewell C traffic on overall junction performance is moderate and confined to the early morning period (06:30 - 08:00). Even though this is the most congested time period, the level of queuing and delay is still only moderate and the junction is able to operate within capacity (i.e. queues do not continue to grow over this period). The provision of the proposed upgrade at this junction is expected to help to prevent the impact at this junction from becoming severe and impacts are only likely to be temporary with normal operation resumed by 2034.

9.15 Junction 12a – A12 / A1120 Junction

a) Context

9.15.1 Junction 12 is a three-arm priority junction between the A12 and A1120 located in the village of Yoxford, approximately 6 miles to the north-west of Sizewell C as pictured in **Plate 9.41** below. At this location, the A12 and A1120 are both single carriageway roads that are both subject to 30mph speed limits. Street lighting is present at the junction, along with footpaths for pedestrian access to Yoxford High Street.

9.15.2 The junction has a triangular island in the middle to avoid tight right turn movements to/ from the minor arm. The island accommodates a tree and bus shelter with bench, around which the junction is formed. As this junction has multiple give-way lines it cannot be assessed within a single model so it has been separated out into three distinct T-junctions (a, b and c) as indicated in **Plate 9.41**.

Plate 9.41: Existing B1078 / B1116 Roundabout Layout

9.15.3 The majority of turning flows at junction 12 use the eastern most T-junction (12a) due to the fact that most turning flows enter/exit Yoxford High Street (A1120) from the A12 east. Low opposing flows are present at 12b and 12c so the subsequent analysis presented in this chapter focusses on 12a.

9.15.4 The junction is located immediately opposite the King's Head pub which limits visibility for those turning right from the A12 westbound into the A1120, as seen in **Plate 9.42**. A site visit and video observations have confirmed that gap acceptance for vehicles turning right here is unusually low because opposing vehicles on the A12 eastbound cannot be seen until they are within close proximity of the junction. Vehicles turning right therefore unknowingly accept small gaps as they are not aware of vehicles approaching on the eastbound A12.

Plate 9.42: Visibility for A12 westbound right turning movement (Source: Google Street View)

9.15.5 Assessment of this junction has been conducted in Junctions 9 and VISSIM to provide a thorough assessment. It is likely that Junction 9 may overestimate the RFC, queues and delays for the right turn into the A1120 as the algorithms used by the software assume there is a correlation between capacity and visibility. Whilst this is true for the majority of cases, the opposite has been shown to be true for the right turning movement in this location as visibility is restricted to the point that vehicles unknowingly utilise small gaps in the A12 eastbound flow believing the A12 is clear, thus improving the throughput of the right turn movement. In this instance, it is anticipated that VISSIM will provide a more accurate representation of junction operation as gap acceptance can be adjusted to reflect observations.

b) Validation Summary

i. Junctions 9

9.15.6 The observed queue data shows short queues at this junction in all modelled time periods, with a mean max queue of around 2-vehicles being observed on the left turning movement from the A1120 to the A12 East during all modelled time periods except for 06:00-07:00 when little to no queues are experienced. The maximum queue observed during each of the 5-minute survey intervals was 4-vehicles in the AM period (08:00-08:05 on the minor arm) and 5-vehicles in the PM period (17:05-17:10 and 17:10-17:15 on the minor arm).

9.15.7 The junction model typically results in queues slightly lower than those observed on the minor arm. Conversely, queues on the major arm right turn into the A1120 are overestimated by junctions 9.

9.15.8 The magnitude of queues is broadly similar to those observed, reflecting the fact that small queues exist. The model is considered to be representative of existing conditions but it is noted that there is a risk that the A12 westbound right turn capacity may be underestimated due to the reasons stated in paragraph 9.15.5.

ii. VISSIM

9.15.9 The VISSIM model typically results in similar queues to those observed on the minor arm. Conversely, on the major arm right turn into the A1120 the queues are typically overestimated slightly in the morning period and more so in the afternoon period, with a typical queue of around four vehicles in the PM period, where no queue has been observed for most of the period. It is therefore likely that major arm queues may be overestimated slightly in the VISSIM model but are felt to be more representative than those being predicted by Junctions 9.

9.15.10 The VISSIM model covers the A12 between its junction with the A1120 in the south and its junction the A144 in the north. The model has been well validated to observed queue length and travel time data covering this area and meets the WebTAG criteria for validation in all time periods. The gap acceptance parameters for the right turn from the A12 southbound into the A1120 have been adjusted to reflect the relatively low gap acceptance observed, where, as described above, opposing vehicles on the A12 eastbound cannot be seen until they are within close proximity of the junction.

c) Early Years (2023)

i. Demand Impact

9.15.11 The 2023 Reference Case scenario traffic flows show a small increase in traffic flows on the A12 (+20-80 vehicles per hour) in each direction, and a very small increase in flows from the A1120 (+10-40 vehicles per hour), when compared to existing flows.

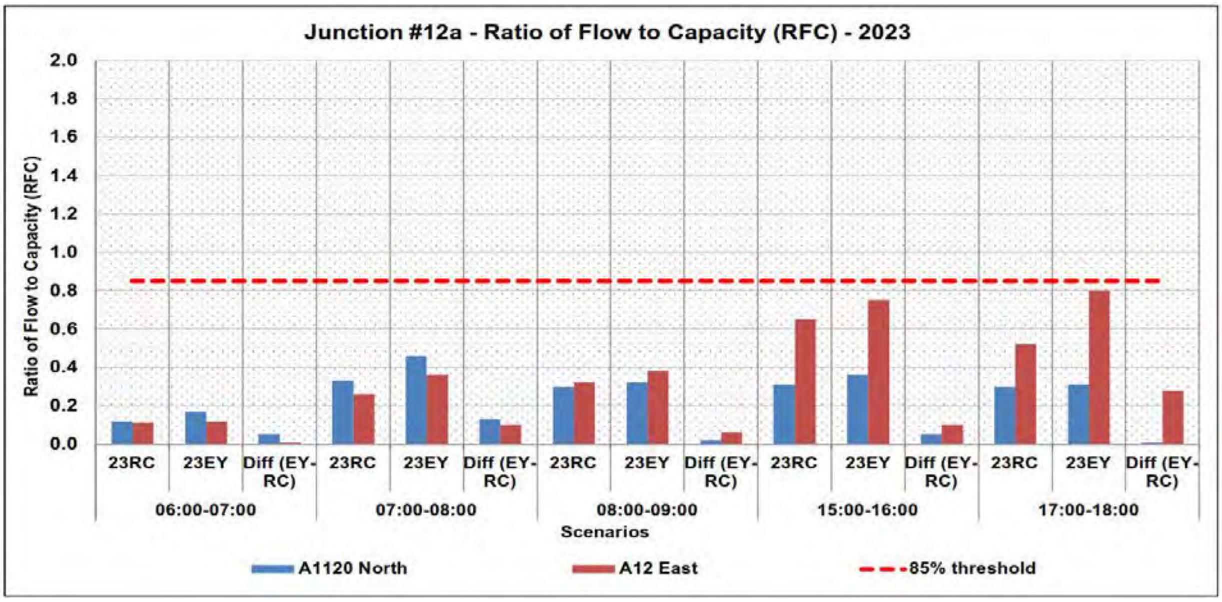
9.15.12 The Early Years scenario shows a modest increase in traffic flows on the A12 relative to the 2023 Reference Case scenario. The A12 western arm is predicted to experience an increase of 20-80 vehicles per hour, with the largest increases from 07:00-08:00 and 17:00-18:00. The A12 eastern arm is predicted to experience an increase of 30-120 vehicles per hour with the largest increases from 07:00-08:00 and 17:00-18:00. The flow on the A1120 approach is predicted to increase by up to 60 vehicles per hour with the largest increase from 07:00-08:00.

ii. Results Analysis

Junctions 9

9.15.13 The RFC modelling results for the 2023 Reference Case (RC) and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.43**. The difference is shown as EY-RC.

Plate 9.43: A12 / A1120 2023 Early Years RFC Results



9.15.14 **Plate 9.43** shows that in the 2023 Reference Case the junction is predicted to operate with ample capacity in all modelled periods, with the highest RFC of 0.65 seen on the right turn from the A12 to the A1120 from 15:00-16:00.

9.15.15 The Early Years scenario RFC results generally show small increases in RFC on the A1120 and A12, and that the junction will continue to operate within capacity in all time periods. The major difference is found from 17:00-18:00, when the RFC for the right turn from the A12 to A1120 is predicted to increase from 0.52 to 0.80.

9.15.16 As mentioned previously, the junction is located immediately opposite the King's Head pub which limits visibility for those turning right from the A12 East into the A1120. It is expected that the Junctions 9 model will underestimate capacity for this movement and therefore overestimate RFCs, particularly in the evening hours based on the validation results. More emphasis is therefore put on the VISSIM model to draw a conclusion regarding the predicted performance of the major arm right turn.

9.15.17 The delay results show that most time periods have a predicted increase in delay between the 2023 Reference Case and 2023 Early Years scenario of less than six seconds, which is unlikely to be perceived by most drivers. The one exception is from 17:00-18:00 when the average delay for vehicles turning right from the A12 to A1120 is predicted to increase from 10 seconds per vehicle to 80 seconds per vehicle. Whilst the number of vehicles right turning is predicted to increase by 100 vehicles per hour from 17:00-18:00 in the 2023 Early Years scenario (relative to the 2023 Reference Case) and the opposing A12 eastbound flow is predicted to increase by 75 vehicles per hour, it is unlikely that this would result in a large increase in delay due to the low gap acceptance of this movement as demonstrated by the VISSIM model.

VISSIM

9.15.18 The VISSIM results show that the performance of the junction remains similar between the 2023 Reference Case and Early Years scenarios, with negligible queues on the minor arm (A1120) during all modelled hours and modest queues on the A12 right turning movement, most notably during the afternoon period. Due to the growth in Sizewell traffic from 07:00 – 08:00 and 17:00–18:00, queues during these time periods are expected to increase slightly. From 17:00 - 18:00, the maximum queue on the right turn to A1120 increases from 9 vehicles in the 2023 Reference Case to 11 vehicles in the 2023 Early Years scenario. However, the overall maximum queues are expected to form from 15:00–16:00 due to vehicle platooning caused by the nearby Darsham level crossing and not by Sizewell C traffic which is low during this time period (no more than an additional 30 vehicles per hour) in 2023.

9.15.19 The delay results show that all turning movements operate with modest delays of 1 – 15 seconds per vehicle in the 2023 Reference Case and 1 - 18 seconds in the 2023 Early Years scenarios.

9.15.20 There are instances in both scenarios where the queue reaches the neighbouring B1122 junction, as detailed in the Yoxford VISSIM model technical note in **Appendix 9B** of this Chapter. The VISSIM model shows that this queue forms quickly and dissipates quickly because it is caused by occasional right turning vehicles blocking the ahead movement. As soon as the right turning vehicle is able to enter the A1120, the queue quickly begins to dissipate. Due to an increase in traffic, the likelihood of the queue reaching back to the A12/B1122 junction is higher in the 2023 Early Years scenario. However, the effect of this event is minimal on the delays at the junction, as shown in the paragraph above.

9.15.21 As described above, the VISSIM model is likely to be more representative than the Junctions 9 model because it is able to realistically capture the unusually low gap acceptances observed at this location due to limited visibility. Whilst it is acknowledged that Sizewell C flows are likely to have an impact on delays and queues at this location, the impact is not considered to be severe in 2023 and delays per vehicle are anticipated to remain at a similar level to the 2023 Reference Case.

d) Peak Construction (2028)

i. Demand Impact

9.15.22 The 2028 Reference Case scenario is predicted to experience a modest increase in traffic flows on the A12 (+20-100 vehicles per hour) in each direction, and a small increase in flows from the A1120 (+10-40 vehicles per hour), when compared to existing flows.

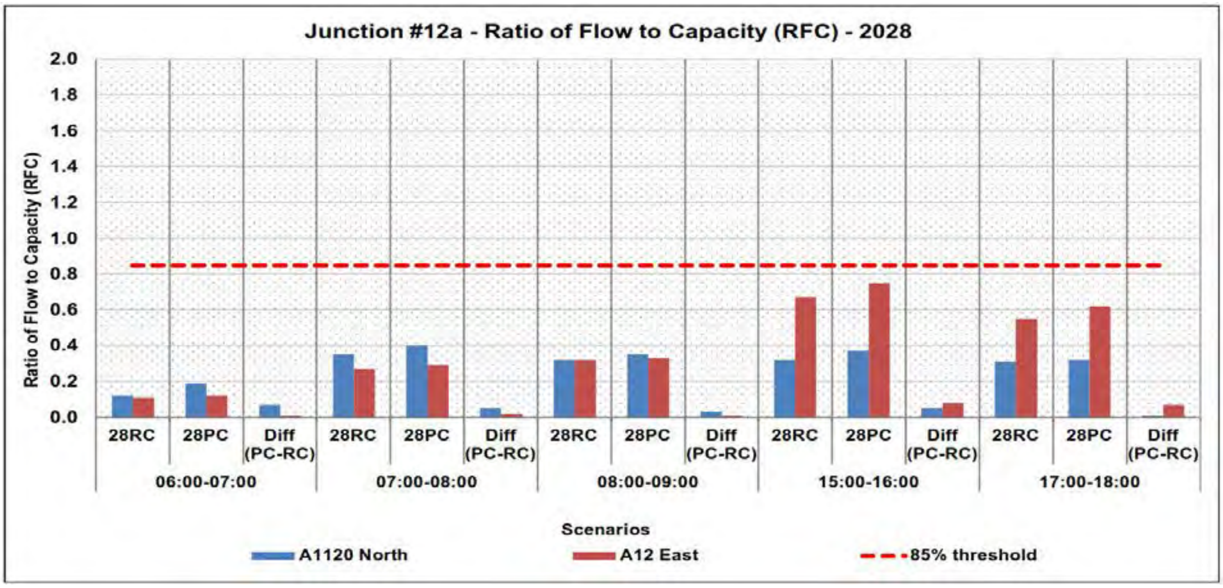
9.15.23 The Peak Construction scenario shows negligible changes in traffic flows from 06:00-08:00 on the A12 West approach and during all modelled hours on the A12 eastern arm, relative to the 2028 Reference Case scenario. From the A12 western arm, a small decrease is forecast during other modelled hours (-40-60 vehicles per hour). Negligible to small increases are predicted on the A1120 in all modelled hours (+10-40 vehicles per hour).

ii. Results Analysis

Junctions 9

9.15.24 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.44**. The difference is shown as PC-RC.

Plate 9.44: A12 / A1120 Peak Construction RFC Results



9.15.25 **Plate 9.44** shows that the junction is predicted to operate with reserve capacity in all modelled hours of the 2028 Reference Case scenario, with the highest RFC predicted to be 0.67 on the major arm right turning movement into the A1120 from 15:00-16:00.

9.15.26 The Peak Construction scenario models show negligible RFC increases for both turning movements during the morning hours with the junction continuing to operate with plenty of reserve capacity during this period. During the afternoon period, the results show small RFC increases for both turning movements. The maximum RFC is predicted to be 0.75, demonstrating that despite the addition of the Sizewell C construction traffic there is spare capacity in the junction.

9.15.27 From 17:00-18:00, the RFC on the right turn from the A12 east into the A1120 is predicted to increase from 0.59 in the 2028 Reference Case to 0.86 in the Peak Construction scenario. Queues and delays are predicted to increase slightly but not significantly. From 15:00-16:00, the RFC on the right turn from the A12 east is predicted to increase from 0.7 in the 2028 Reference Case scenario to 1.25 in the Peak Construction scenario, suggesting that the junction would be operating in excess of its capacity during this period. Queues and delays are also predicted to increase significantly from 17:00-18:00 in Junctions 9. As noted previously, it is likely that Junctions 9 will underestimate capacity and overestimate RFC for the A12 westbound right turn, particularly in the PM hours. The VISSIM results are therefore felt to provide the best source of analysis.

VISSIM

9.15.28 The 2028 Peak Construction scenario VISSIM results show that queues on all arms are similar to the 2028 Reference Case scenario across all modelled hours. This is due to small variations in flows between both scenarios.

9.15.29 There are instances in 2028 Reference Case scenario where the queue reaches the neighbouring B1122 junction, as detailed in the Yoxford VISSIM model technical note in **Appendix 9B** of this Chapter. The VISSIM model shows that this queue forms quickly and dissipates quickly because it is caused by occasional right turning vehicles blocking the ahead movement. As soon as the right turning vehicle is able to enter the A1120, the queue quickly begins to dissipate. Even though the proportion of right turning vehicles from the A12 is higher in the 2028 Peak Construction scenario, the queue is not expected to reach the upstream junction. This is due to the increased stacking distance between both junctions as a result of the A12 / B1122 junction upgrade.

e) Operational Phase (2034)

i. Demand Impact

9.15.30 The 2034 Reference Case scenario is predicted to experience a moderate increase in traffic flows on the A12 (+20-160 vehicles per hour) in each direction, and a small increase in flows from the A1120 (+30-60 vehicles per hour) compared to the base scenario.

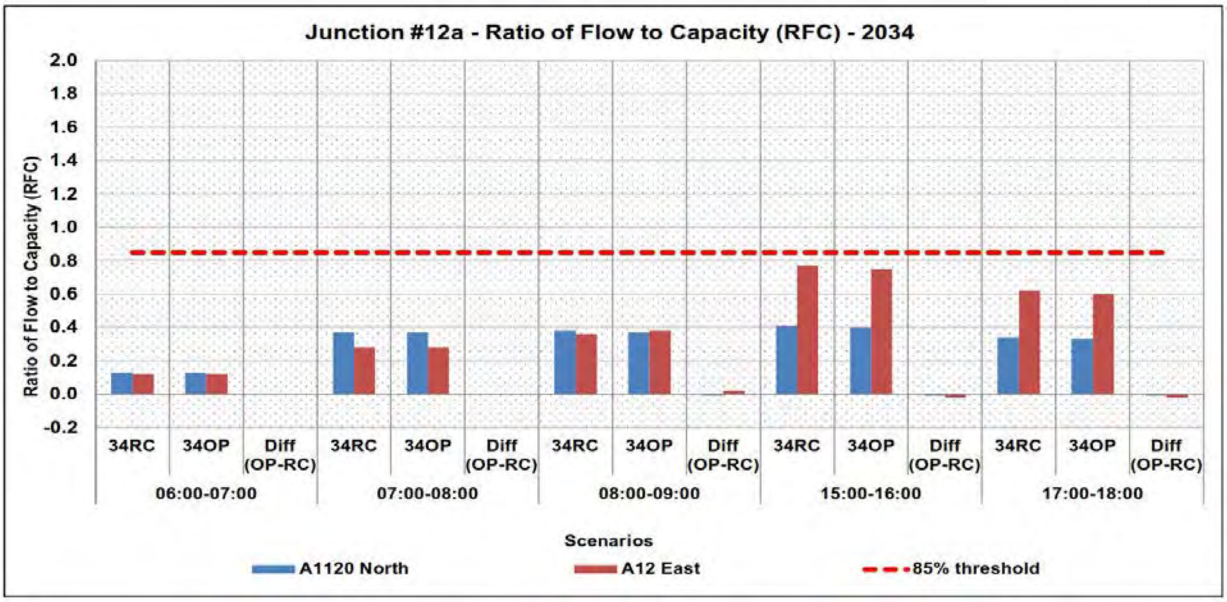
9.15.31 The 2034 Operational Phase scenario flows show small reduction in flows in both directions on the A12 (-10 - -40 vehicles per hour) and negligible change on the A1120.

ii. Results Analysis

Junctions 9

9.15.32 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.45**. The difference is shown as OP-RC.

Plate 9.45: A12 / A1120 Operational Phase RFC Results



9.15.33 **Plate 9.45** shows that the junction is predicted to operate within capacity during all modelled hours in the 2034 Reference Case scenario, with the highest RFC of 0.77 being seen from 15:00-16:00.

9.15.34 The Operational Phase scenario RFC results are very similar to those for the 2034 Reference Case scenario, with small reductions in RFC being predicted, as would be expected with the lower flows in this scenario.

VISSIM

9.15.35 The results show that the 2034 Reference Case scenario and the Operational Phase scenario are very similar, with no significant difference in queues or delay at the junction. This is due to small variations in flows between both scenarios.

f) Mitigation Analysis

9.15.36 The junction analysis indicates that the additional traffic flows right turning from the A12 westbound into the A1120 due to Sizewell C are likely to increase delays at this location in both 2023 and 2028. The impact in 2023 is minor whilst the impact in 2028 is moderate. The impact at this location would not be severe and would be temporary (only during the construction phase) and operation would return to Reference Case levels once construction is complete, by 2034.

9.15.37 As the impact is not severe and would be temporary, mitigation is not proposed at this junction.

g) Overview

9.15.38 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.22**. The modelling results show that the junction operates with reserve capacity across all modelled hours and all scenarios.

Table 9.22: A12 / A1120 RFC Results Overview

Time period	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.08	0.12	0.17	0.12	0.19	0.13	0.13
07:00-08:00	0.29	0.33	0.46	0.35	0.40	0.37	0.37
08:00-09:00	0.28	0.32	0.38	0.32	0.35	0.38	0.38
15:00-16:00	0.54	0.65	0.75	0.67	0.75	0.77	0.75
17:00-18:00	0.40	0.52	0.80	0.55	0.62	0.62	0.60

9.15.39 The Junctions 9 results show that the junction operates with plenty of reserve capacity across all scenarios during the morning period. During the afternoon period, the RFC results are generally higher, but the junction remains within capacity. The addition of Sizewell C construction traffic generally results in either small or no impact.

9.15.40 The junction has also been modelled in VISSIM which is able to capture the complex gap acceptance behaviour present at this junction. The VISSIM average delay results for the junction as a whole are shown in **Table 9.23**.

9.15.41 Delays for the A12 - A1120 movement are presented in **Table 9.24**. In 2028, delays for the right turning movement from 15:00-16:00 are expected to increase by 3 seconds to a maximum of 11s, demonstrating that the queues at this location are intermittent and the impact of the additional Sizewell C traffic is not severe.

Table 9.23: A12 / A1120 Delay Results Overview

	Average delay at the junction per vehicle (seconds).						
Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.6	0.6	0.8	0.7	0.8	0.7	0.7
07:00-08:00	1.2	1.4	2.2	1.5	1.7	1.7	1.7
08:00-09:00	1.7	2.0	2.3	2.2	2.0	2.5	2.4
15:00-16:00	2.3	3.1	3.4	3.2	3.2	3.8	3.6
16:00-17:00	2.5	2.9	3.3	3.2	3.5	3.7	3.7

	Average delay at the junction per vehicle (seconds).						
Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
17:00-18:00	2.2	2.7	3.8	3.2	3.0	3.4	3.1
18:00-19:00	1.3	1.7	2.1	1.7	1.9	1.9	1.8

Table 9.24: A12 – A1120 Delay Results Overview

	Average delay per vehicle on the A12 – A1120 movement (seconds).						
Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	1.0	1.0	1.0	1.1	1.2	1.1	1.1
07:00-08:00	2.0	2.6	3.0	3.0	2.8	3.1	3.1
08:00-09:00	3.2	3.7	4.1	4.2	3.5	4.8	4.4
15:00-16:00	5.6	6.9	6.9	6.6	6.3	7.6	6.9
16:00-17:00	5.4	5.9	6.7	6.8	7.0	7.2	7.2
17:00-18:00	5.0	6.1	8.8	7.1	6.4	7.2	6.4
18:00-19:00	3.3	3.6	4.6	3.7	3.6	4.4	3.7

9.16 Junction 13 – A12 / B1122

a) Context

9.16.1 Junction 13 is a priority T-junction located in the village of Yoxford, approximately 6-miles north-west of the Sizewell C site. It is formed where the minor arm (B1122) meets the A12. The A12 northern approach is comprised of a single lane, the A12 southern approach is a single lane approach with a ghost island right turn lane approximately 30m long and the B1122 is a single lane approach which flares at the junction. The speed limit is 30mph on all approach arms. A satellite image of the existing junction layout is shown in **Plate 9.46**.

Plate 9.46: Existing A12 / B1122 Layout

9.16.2 The Yoxford area has been modelled in detail using microsimulation techniques to test the existing T-junction layout in all of the Reference Case scenarios and the 2023 Early Years. A new 3-arm roundabout is proposed to be provided in the 2028 Peak Construction and 2034 Operational Phase scenarios.

9.16.3 A Junctions 9 model of the proposed roundabout layout has also been prepared to give extra confidence that the proposed layout will cater for the predicted demand in the 2028 Peak Construction and 2034 Operational Phase scenarios.

b) Validation Summary

9.16.4 Observed queue data shows that small queues are present on the B1122 approach (0-5 vehicles) and the A12 southern arm (0 - 4 vehicles) during the modelled hourly intervals.

i. VISSIM

9.16.5 The VISSIM model typically replicates the observed queues well, with small but consistent queues on the B1122 and A12 south approaches. Therefore, the model is considered to be representative of existing conditions. The VISSIM model development has been described in detail within the Yoxford VISSIM model technical note, as seen in **Appendix 9B** of this Chapter.

ii. Junctions 9

9.16.6 The Junctions 9 model has not been subject to calibration to replicate observations as this model has been produced for the proposed roundabout layout only to reinforce the results being presented from the VISSIM model.

9.16.7 The Junctions 9 assessment contained in this chapter will therefore focus on determining the likely operation of the three-arm roundabout and will not assess the current or forecast operation of the existing T-junction layout.

9.16.8 As the proposed roundabout has two lanes at each of the three entries and single lanes exits on all arms, there is potential for unequal lane usage to be present on the entry arms. Junctions 9 is not able to take account of unequal lane usage so where this is present a manual adjustment to the model is needed to prevent the modelled capacity being overestimated.

9.16.9 An assumption has been made regarding the likely allocation of lanes for each movement based on the magnitude of turning flows and number of available exit lanes. This has resulted in the following proportions of vehicles per lane and determination of unequal lane usage, as illustrated in **Table 9.25**.

Table 9.25: A12 / B1122 (proposed roundabout) – lane usage

2028 PEAK CONSTRUCTION.	Average Lane Usage (%).		Unequal lane usage.	Proposed manual adjustment.
	Lane 1	Lane 2		
A - A12 North	24%	76%	yes	Model 1-lane entry as lane 1 is used infrequently.
B - B1122 Middleton Road.	36%	64%	no	None
C - A12 South	87%	13%	yes	Model 1-lane entry as lane 2 is used infrequently.

2034 OPERATIONAL PHASE.	Average Lane Usage (%).		Unequal lane usage.	Proposed manual adjustment.
	Lane 1	Lane 2		
A - A12 North	21%	79%	yes	Model 1-lane entry as lane 1 is used infrequently.
B - B1122 Middleton Road.	40%	60%	no	None
C - A12 South	87%	13%	yes	Model 1-lane entry as lane 2 is used infrequently.

9.16.10 On arms where one of the two entry lanes is used infrequently, the arm has been modelled as a single lane (measured approach width, 4m entry width and a 10m flare length) to reflect the fact approximately half of the road space will be unutilised. Where lane utilisation is split approximately one thirds to two thirds, the arm has been modelled as roughly one and a half lanes (measured approach width, 75% of the measured entry width and 10m flare) to reflect the fact half of the road space will be only partially utilised. These adjustments have been made to avoid over-estimating capacities on arms where unequal lane usage is present. The mitigation results presented below for Junctions 9 incorporate these adjustments.

c) Early Years (2023)

9.16.11 In 2023, the A12/B1122 junction is assumed to be a T-junction as per the existing layout. Only VISSIM has been used to model the existing T-junction layout so no Junctions 9 results are presented for 2023.

i. Demand Impact

9.16.12 The 2023 Reference Case scenario traffic flows show small increases in entry demand on the A12 northern arm (0-+80 vehicles per hour), the A12 southern arm (+50-90 vehicles per hour) and the B1122 arm (+10-60 vehicles per hour), relative to observed base year traffic flows.

9.16.13 The Early Years scenario shows a small increase in traffic flows on the A12 in both directions (0-+80 vehicles per hour), with the exception of 07:00-08:00 when a modest increase is forecast in both directions (+120 vehicles per hour). During the afternoon period, the main increase in traffic is on the B1122 approach (+100 vehicles per hour) from 17:00-18:00.

ii. Results Analysis – VISSIM (T-Junction layout)

9.16.14 The VISSIM results show that maximum queues on the A12 South approach are expected to increase from approximately 2-vehicles in the 2023

Reference Case to approximately 6-vehicles in the 2023 Early Years scenario with most of the impact confined to 07:00-08:00.

9.16.15 On the B1122 approach, the largest queues are predicted to materialise at 07:45 and 17:10. From 07:15-08:00 the maximum queue on the B1122 is predicted to increase from 4-vehicles in the 2023 Reference Case to 7-vehicles in the 2023 Early Years scenario. From 17:00-17:30, the maximum queue on the B1122 approach is predicted to increase from 5-vehicles in the 2023 Reference Case to 13-vehicles in the 2023 Early Years scenario.

9.16.16 The delay on the B1122 approach is predicted to increase from 07:00 – 08:00, from 13s (Level of Service B[4]) in the 2023 Reference Case scenario to 23s (Level of Service C) in the 2023 Early Year scenario. During the PM period, the delay is expected to increase moderately from 15:00-18:00, from an average delay of 20s (Level of Service C) in the 2023 Reference Case scenario to 32s (Level of Service D) in the 2023 Early Years scenario. Despite the increase in delay on the minor arm, the junction continues to operate within capacity.

9.16.17 This indicates that the B1122 approach is likely to experience a slight increase in queues and delays but the existing T-junction is not expected to become over-capacity in 2023.

d) Peak Construction (2028)

i. Demand Impact

9.16.18 Similar to the 2023 Reference Case, the 2028 Reference Case scenario traffic flows show modest increases in entry demand on the A12 northern arm (+50-100 vehicles per hour), the A12 southern arm (+60-120 vehicles per hour) and a small increase on the B1122 arm (+10-60 vehicles per hour), relative to observed base year traffic flows.

9.16.19 The Peak Construction scenario shows a small increase on the A12 northern arm (+30 – 50 vehicles per hour) and a negligible change on the B1122 (up to +20 vehicles per hour) in all modelled hours. A small increase is forecast on the A12 southern arm from 06:00-08:00 (+20-50 vehicles per hour), while a decrease of 20-40 vehicles per hour is expected for the rest of the modelled hours.

[4] Level of service is a metric taken from the Transportation Research Board's Highway Capacity Manual (Ref 9.8). It is a measure used to describe the quality of vehicular travel based on how much delay is predicted to be experienced. Level of service for a non-signalised junction is defined by a grade from A to F where level A describes a traffic movement with less than 10 seconds of delay, level B is 10-15 seconds, level C is 15-25 seconds, level D is 25-35 seconds, level E is 35-50 seconds and level F is above 50 seconds of delay.

ii. Results Analysis

9.16.20 In the 2028 Reference Case scenario, the A12 / B1122 is assumed to remain as a T-junction and has only been assessed within VISSIM.

9.16.21 In the 2028 Peak Construction scenario, the A12 / B1122 junction is assumed to become a 3-arm roundabout as per the proposed mitigation scheme. Both VISSIM and Junctions 9 have been used to model the proposed roundabout layout so results from both software packages are presented in this section.

VISSIM

9.16.22 In the 2028 Reference Case scenario the A12 flows have right of way as they use the major arm of a T-junction but in the Peak Construction scenario the junction is upgraded to a roundabout and the A12 traffic must give-way to vehicles entering/exiting the B1122. Despite this change of priority, the level of queues on the A12 generally remains low except for a small number of short periods when the nearby Darsham level crossing creates platoons of traffic that arrive at the roundabout and immediately form longer queues which quickly disperse.

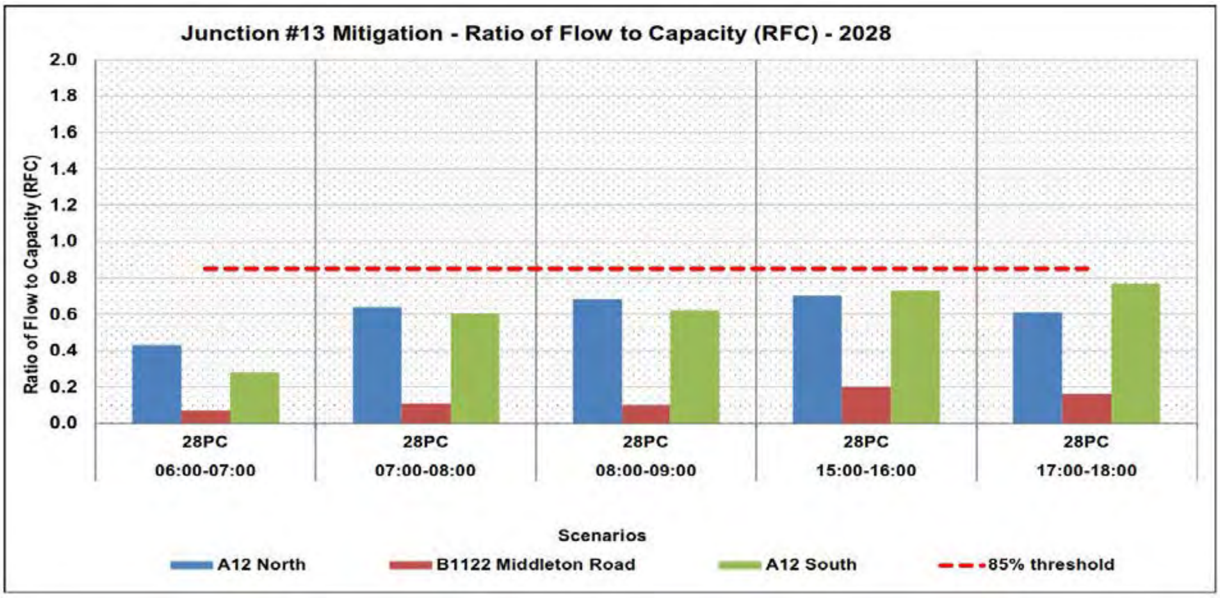
9.16.23 On the B1122 approach, the introduction of the roundabout layout is beneficial to queues as the B1122 does not have to give-way to the A12 northbound flow under the roundabout layout. In the afternoon period, the maximum queues predicted on the B1122 are considerably reduced from 10 vehicles in the 2028 Reference Case scenario to 4 in the 2028 Peak Construction scenario. During the busiest hour (16:00-17:00) the Peak Construction queues are lower than those predicted in the 2015 Base Year scenario.

9.16.24 In the Peak Construction scenario, the A12 North and South approaches experience a slight increase in average delay compared to the 2028 Reference Case, which remains below 10s in all modelled periods. The B1122 experiences a moderate delay in the 2028 Reference Case from 15:00-18:00, with average delays ranging from 20-30 seconds. In the Peak Construction scenario, the B1122 delays are reduced to below 10s despite the addition of the Sizewell C traffic. This suggests that the proposed roundabout is likely to improve operation of the A12 / B1122 junction.

Junctions 9

9.16.25 The RFC results for the 2028 Peak Construction (PC) scenario, split by each modelled hourly period, are illustrated in **Plate 9.47**.

Plate 9.47: A12 / B1122 Roundabout Peak Construction RFC Results



9.16.26 **Plate 9.47** shows that the proposed roundabout is predicted to operate within capacity during all modelled hours in the Peak Construction scenario.

9.16.27 The maximum RFC of 0.77 is predicted to occur on the A12 South from 17:00-18:00 when flows on the A12 are highest.

9.16.28 The model reports low levels of delay on all arms and during all modelled hours, with average delays below 15s per vehicle.

e) Operational Phase (2034)

i. Demand Impact

9.16.29 The 2034 Reference Case scenario traffic flows show a moderate increase in entry demand on the A12 northern and southern arms (+60-180 vehicles per hour) across all modelled hours, and small increases on the B1122 arm (+20-60 vehicles per hour), relative to observed base year traffic flows.

9.16.30 The Operational Phase scenario shows a similar level of flow on the A12 northern approach and a slight decrease in flows on the B1122 and A12 southern approach and B1122. This is due to traffic rerouting to the Sizewell Link Road.

ii. Results Analysis

9.16.31 In the 2034 Reference Case scenario, the A12 / B1122 is assumed to remain as a T-junction and has only been assessed using VISSIM.

9.16.32 In the 2034 Operational Phase, the A12 / B1122 junction is assumed to be a 3-arm roundabout as per the proposed mitigation scheme. Both VISSIM and Junctions 9 have been used to model the proposed roundabout layout so results from both software packages are presented in this section.

VISSIM

9.16.33 The VISSIM results show that the roundabout layout provided in the Operational Phase scenario introduces queues on the A12 approaches which were not present under the T-junction layout. In the 2034 Reference Case scenario the A12 flows have right of way as they use the major arm of a T-junction but in the Peak Construction scenario the junction is upgraded to a roundabout and the A12 traffic must give-way to vehicles entering/exiting the B1122. Despite this change of priority, the level of queueing on the A12 generally remains low except for a small number of short periods when the nearby Darsham level crossing creates platoons of traffic that arrive at the roundabout and immediately form longer queues which quickly disperse.

9.16.34 On the B1122 approach, the introduction of the roundabout layout is beneficial to queues as the B1122 does not have to give-way to the A12 northbound flow under the roundabout layout. In the Operational Phase scenario, the maximum queues predicted on the B1122 decrease dramatically compared to the 2034 Reference Case and are predicted to be lower than the queues in the 2015 base year model.

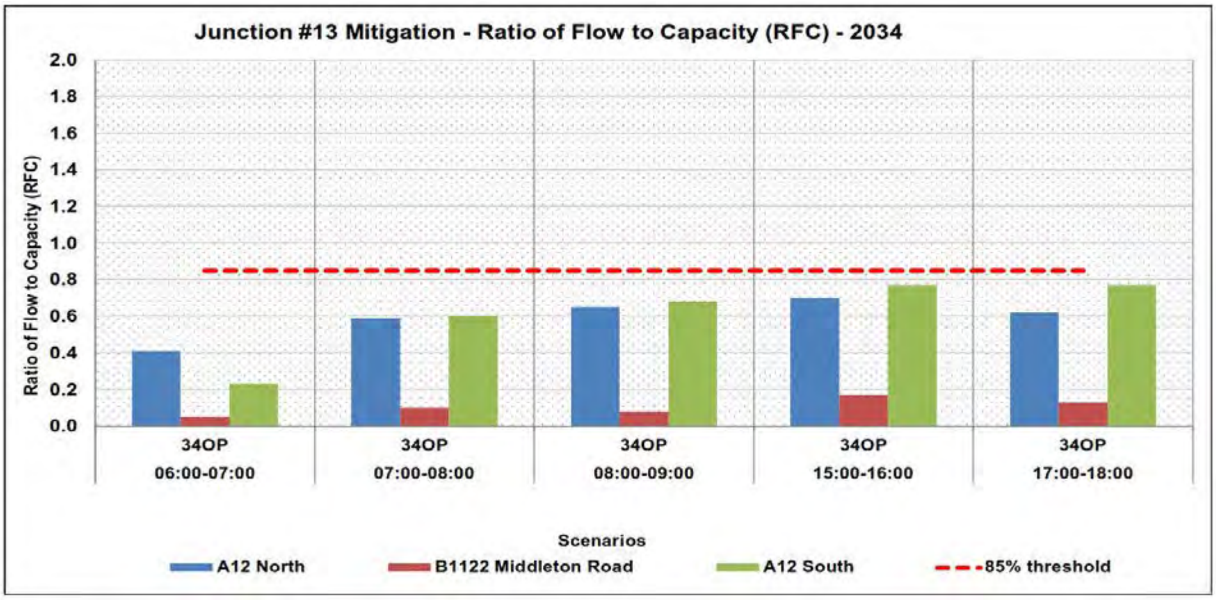
9.16.35 In the Operational Phase scenario, the A12 northern and southern approaches experience a slight increase in average delay compared to the 2034 Reference Case, which remains below 10s in all modelled periods. The B1122 is predicted to operate over capacity in the 2034 Reference Case from 15:00-16:00, with average delays of 50 seconds. In the Operational Phase scenario, the B1122 delays are reduced to below 10s.

9.16.36 Overall, the results show that the proposed mitigation scheme will be necessary by 2034 irrespective of the construction of Sizewell C. With the mitigation in place, the junction is predicted to operate with minimal delays and queues in 2034.

Junctions 9

9.16.37 The RFC results for the 2034 Operational Phase (OP) scenario, split by each modelled hourly period, are illustrated in **Plate 9.48**.

Plate 9.48: A12 / B1122 Roundabout Operational Phase RFC Results



9.16.38 **Plate 9.48** shows that the junction is predicted to operate within capacity during all modelled hours in the Operational Phase scenario.

9.16.39 The model reports low levels of delay on all arms and during all modelled hours, with average delays below 10s per vehicle with the exception of the A12 South approach during the PM hours when delays of up to 14 seconds per vehicle are predicted.

f) Mitigation Analysis

9.16.40 The A12 / B1122 roundabout is predicted to operate with spare capacity in all scenarios, therefore no additional mitigation is proposed at this location.

g) Overview

9.16.41 An overview of the average junction delay results from VISSIM for each scenario and time period is presented below in **Table 9.26**.

Table 9.26: A12 / B1122 Roundabout Delay Results Overview

	Average delay at the junction per vehicle (seconds).						
Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.8	1.4	1.7	1.4	2.5	1.5	2.6
07:00-08:00	1.6	2.2	3.9	2.3	3.2	2.6	3.1
08:00-09:00	1.5	1.9	2.4	2.0	3.4	2.3	3.5

	Average delay at the junction per vehicle (seconds).						
Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
15:00-16:00	2.4	3.1	5.1	3.6	3.9	7.1	4.1
16:00-17:00	3.2	3.9	5.8	4.6	3.9	6.5	4.1
17:00-18:00	1.8	2.8	5.9	3.2	3.5	3.9	3.3
18:00-19:00	1.0	1.9	2.9	2.1	3.0	2.1	2.8

9.16.42 During the afternoon period, the level of delay is greater across all modelled scenarios due to an increase in flows on the B1122. In the Early Years, the level of queueing and delay is predicted to increase moderately from 15:00-18:00 on the minor arm (B1122), but the junction remains within capacity.

9.16.43 By 2034 the junction is predicted to operate with significant levels of queuing and delay in the afternoon period on the B1122 approach irrespective of the implementation of Sizewell C. The proposed roundabout layout is able to greatly reduce the level of queuing and delay, even with the addition of the Sizewell C traffic, allowing the junction to perform efficiently.

9.17 Junction 14 – A1094 / B1069 Church Road Staggered Crossroads

a) Context

9.17.1 Junction 14 is a right-left staggered crossroads, located on a 30mph stretch of the A1094, north of Snape and located approximately 5-miles south-west of the Sizewell C site. The A1094 runs east to west; the southern minor arm (B1069 Church Road) meets the A1094 approximately 30m west of the northern minor arm (Unnamed Road). It has a diverge lane for left-turners from the A1094 eastern approach into the B1069 Church Road southern minor arm. There are short right turn lanes in the centre of the A1094 carriageway for vehicles turning into the minor arms, with space for 1-2 vehicles without blocking back. A satellite image of the existing junction layout is shown in **Plate 9.49**.

Plate 9.49: Existing A1094 / B1069 Church Road Staggered Crossroads Layout

b) Calibration Summary

9.17.2 Observed queue data showed that there was negligible queueing on the A1094 in both directions. Short queues were observed on the B1069 Church Road in most modelled hours.

9.17.3 The junction model typically results in queues slightly lower than those observed, with negligible queues on all arms. Therefore, the model is considered to be representative of existing conditions.

c) Early Years (2023)

i. Demand impact

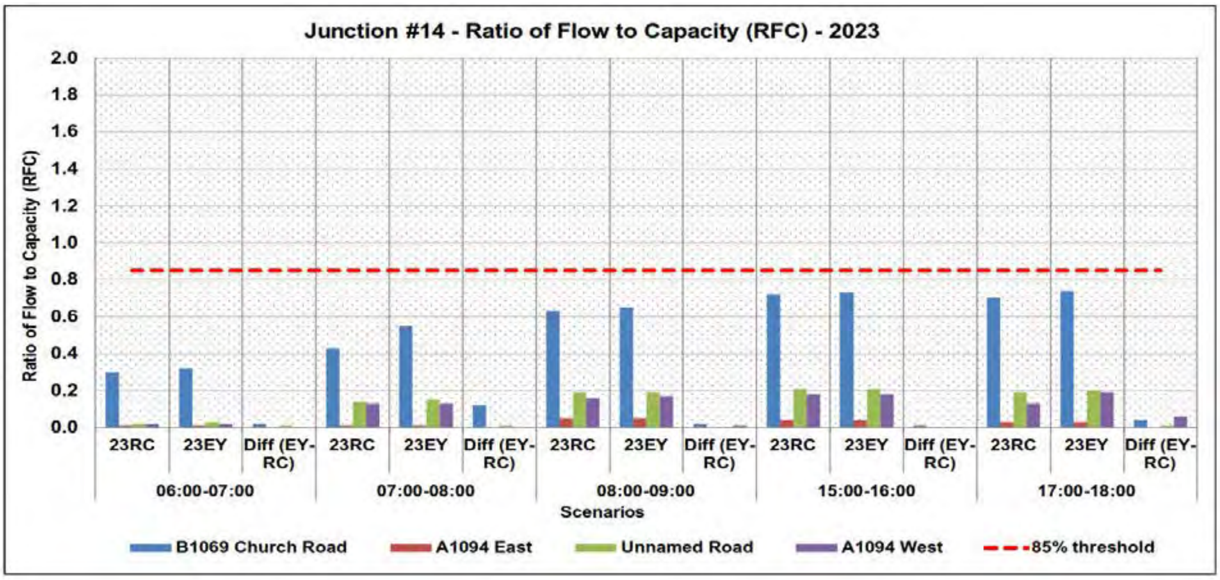
9.17.4 The 2023 Reference Case scenario traffic flows, relative to the observed base year, generally show small increases in entry demand on all junction arms, except for isolated periods where modest increases are forecast - the A1094 east approach from 17:00-18:00 (+160 vehicles per hour) and A1094 west approach from 06:00-07:00 and 08:00-09:00 (+110-120 vehicles per hour).

9.17.5 The Early Years scenario shows that small or negligible traffic flow increases are predicted on all approaches, relative to the 2023 Reference Case.

ii. Results analysis

9.17.6 The RFC modelling results for the 2023 Reference Case (RC) and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.50**. The difference is shown as EY-RC.

Plate 9.50: A1094 / B1069 Church Road Staggered Crossroads 2023 Early Years RFC Results



9.17.7 **Plate 9.50** shows that the junction is predicted to operate within capacity during all modelled hours in the 2023 Reference Case scenario. The RFC increases through the modelled hours, beginning at 0.30 from 06:00-07:00 and flattening out with approximately 25% reserve capacity from 15:00-16:00 and 17:00-18:00.

9.17.8 The Early Years scenario RFC results are very similar to the 2023 Reference Case, with generally a negligible increase in RFC, except from 07:00-08:00, where a modest increase is recorded on B1069 Church Road.

9.17.9 Across all modelled hours in both scenarios, the B1069 Church Road minor arm recorded the highest RFC. The results for both scenarios show that the junction would be operating within capacity with and without Sizewell C traffic. Overall the impact of additional traffic demand from Sizewell C in the Early Years scenario is negligible.

d) Peak Construction (2028)

i. Demand impact

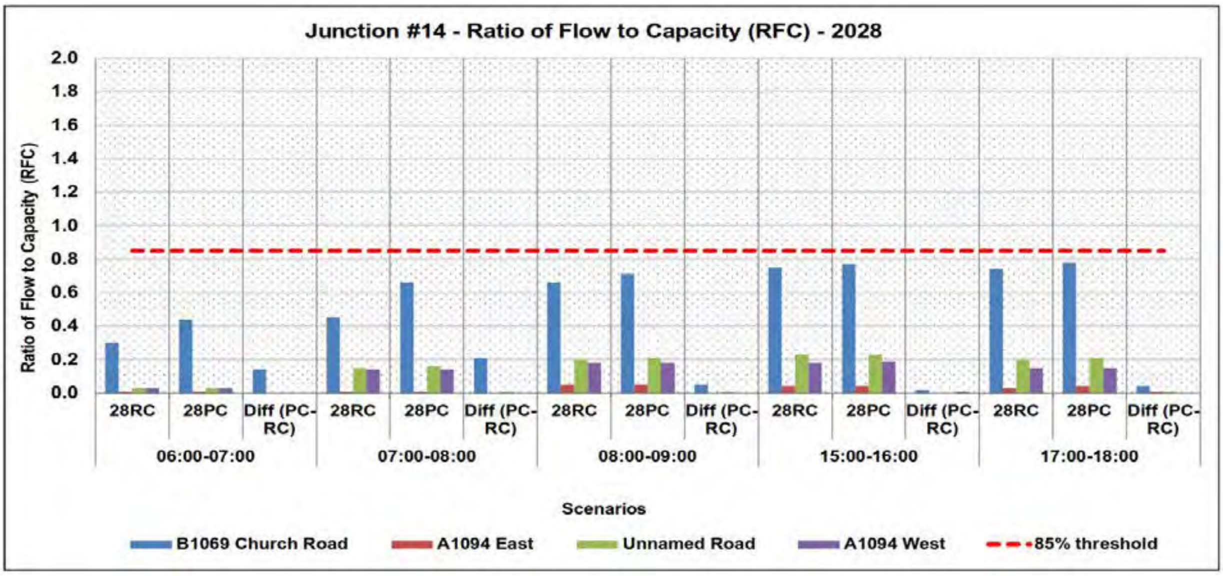
9.17.10 The 2028 Reference Case scenario traffic flows, relative to the observed base flows, generally show small or negligible increases in entry demand on all junction approaches. There are a few exceptions to this where modest increases are forecast – on the A1094 east approach from 07:00-08:00 and 17:00-18:00 (+80 and 170 vehicles per hour respectively) and on the A1094 west from 06:00-07:00 and 08:00-09:00 (+120 and 140 vehicles per hour respectively).

9.17.11 The Peak Construction scenario shows that small or negligible changes in traffic flows are forecast compared with the 2028 Reference Case scenario.

ii. Results analysis

9.17.12 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.51**. The difference is shown as PC-RC.

Plate 9.51: A1094 / B1069 Church Road Staggered Crossroads 2028 Peak Construction RFC Results



9.17.13 **Plate 9.51** shows that the junction is predicted to operate within capacity during all modelled hours in the 2028 Reference Case scenario. The RFC increases through the modelled hours, beginning at 0.30 from 06:00-07:00 and flattening out with approximately 25% reserve capacity from 15:00-16:00 and 17:00-18:00.

9.17.14 The Peak Construction scenario RFC results are very similar to the 2028 Reference Case, with generally very small increases in RFC, except from 06:00-08:00, where modest increases are recorded on the B1069 Church Road. The small flow increase from 17:00-18:00 causes the RFC to approach the 0.85 threshold slightly, however the queuing and delays reported are low and capacity problems are not anticipated.

9.17.15 Across all modelled hours in both scenarios, the B1069 Church Road minor arm recorded the highest RFC.

9.17.16 The results for both scenarios show that the junction would be operating within capacity with and without Sizewell C traffic. Overall the impact of any additional traffic demand from Sizewell C in the Peak Construction scenario is negligible.

e) Operational Phase (2034)

i. Demand impact

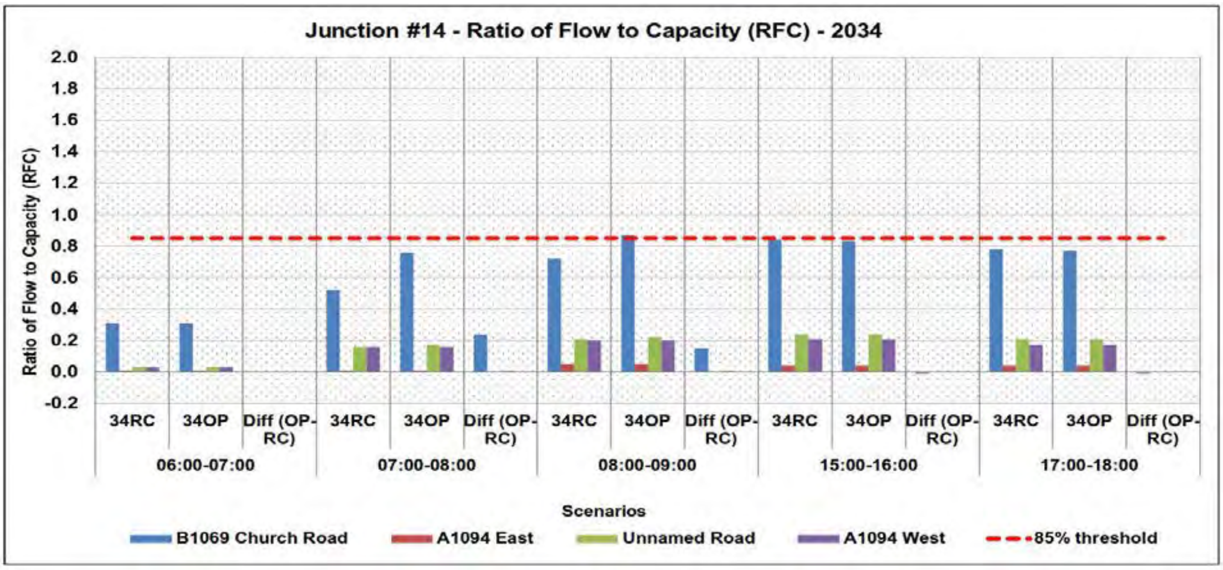
9.17.17 The 2034 Reference Case scenario traffic flows generally show small to moderate increases (up to 130 vehicles per hour) in entry demand on all junction approaches, except the northern minor arm where negligible changes to traffic flows are forecast.

9.17.18 The Operational Phase scenario shows that negligible changes in traffic flows are forecast from the 2034 Reference Case scenario. The one exception, where a modest increase of 80 vehicles per hour is forecast, is 07:00-08:00 on the B1069 Church Road approach. This increase represents Sizewell C operational workers accessing the Sizewell site in the morning.

ii. Results analysis

9.17.19 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.52**. The difference is shown as OP-RC.

Plate 9.52: A1094 / B1069 Church Road Staggered Crossroads 2034 Operational Phase RFC Results



9.17.20 **Plate 9.52** shows that across all modelled hours in both scenarios, the B1069 Church Road minor arm recorded the highest RFC.

9.17.21 The junction is predicted to operate within THE 0.85 RFC threshold during most modelled hours in the 2034 Reference Case scenario. The only exception is 15:00-16:00, where the RFC is just above the 0.85 threshold. The other modelling results show that queuing and delays are within reasonable limits of junction performance indicators.

9.17.22 The Operational Phase scenario RFC results are very similar to the 2034 Reference Case from 06:00-07:00, 15:00-16:00 and 17:00-18:00, negligible changes in RFC. From 07:00-08:00 the largest increase in RFC compared to the 2034 Reference Case scenario is recorded; however, the junction would still operate with 20% reserve capacity. A small increase is recorded from 08:00-09:00, such that RFC is just above the 0.85 threshold. From 15:00-16:00, where the junction is most sensitive to any increases in traffic flows, the 'with Sizewell C' flows result in a small decrease in RFC; hence providing a small improvement to junction performance.

f) Mitigation Analysis

9.17.23 Since junction performance in all scenarios is such that capacity problems are not anticipated, no mitigation measures have been proposed at this junction.

g) Overview

9.17.24 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.27**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or very near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.27: A1094 / B1069 Church Road Staggered Crossroads RFC Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.13	0.30	0.32	0.30	0.44	0.31	0.31
07:00-08:00	0.37	0.43	0.55	0.45	0.66	0.52	0.76
08:00-09:00	0.51	0.63	0.65	0.66	0.71	0.72	0.87
15:00-16:00	0.56	0.72	0.73	0.75	0.77	0.84	0.83
17:00-18:00	0.53	0.70	0.74	0.74	0.78	0.78	0.77

9.17.25 The modelling results show that the junction operates with reserve capacity overall from 06:00-08:00 and 15:00-18:00, in all 2023, 2028 and 2034 scenarios. From 08:00-09:00, the B1069 approach operates slightly above the 0.85 RFC threshold in the 2034 Operational Phase scenario. For this time window, minor increases in terms of queues are shown, leading to modest delays in that approach.

9.17.26 The impact of Sizewell C traffic on overall junction performance is minimal. The RFC outputs for each Reference Case scenario is very similar its respective with-Sizewell C scenario. The increasing RFCs through the years can be largely attributed to background traffic growth, unrelated to Sizewell C.

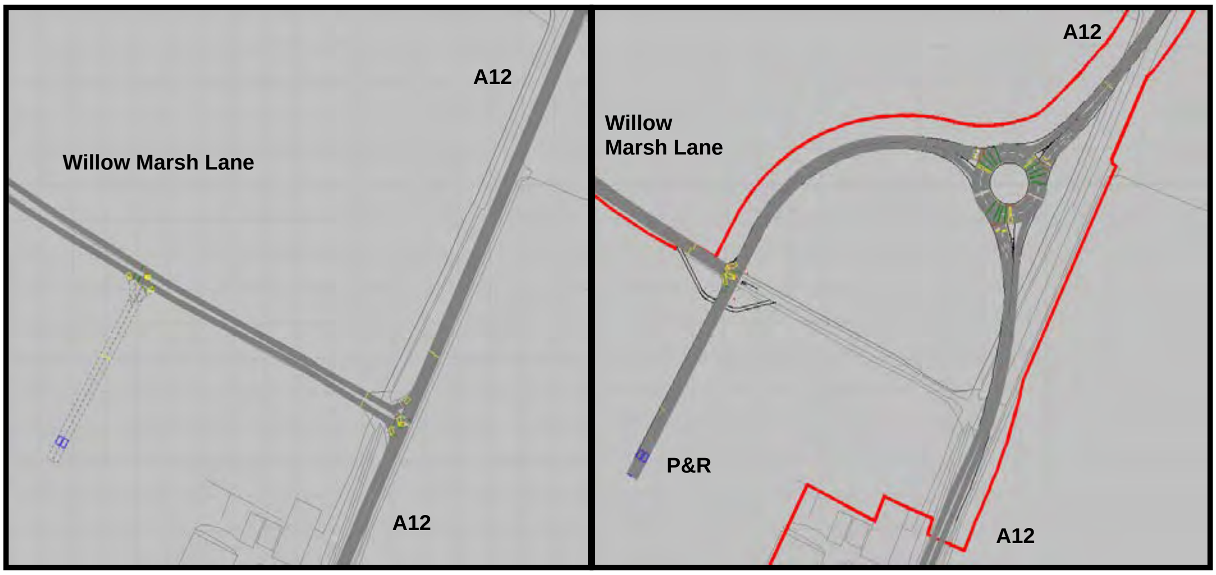
9.18 Junction 17 – A12 / Northern Park and Ride Site Roundabout

a) Context

9.18.1 Junction 17 is currently a T-junction which connects the A12 and Willow Marsh Lane. It is proposed to be temporarily upgraded to a new three-arm roundabout, to facilitate access to the northern park and ride site whilst Sizewell C construction is underway. The junction is located approximately 6-miles north-west of the Sizewell C site.

9.18.2 In 2023 the northern park and ride site is assumed to be under construction and access is assumed to be via the existing A12 / Willow Marsh Lane T-junction (the left hand image below). By the 2028 assessment scenario the northern park and ride facility would be operational and the proposed roundabout would provide access to both the site and Willow Marsh Lane (the right hand image below). By 2034, Sizewell C construction is assumed to be complete and the northern park and ride facility would therefore be reinstated, as would the proposed roundabout. By 2034 the junction is assumed to revert back to the existing T-junction layout, as seen in the left hand image in **Plate 9.53**.

Plate 9.53: A12 / Northern park and ride site access



9.18.3 The proposed temporary roundabout layout is illustrated in the **Northern Park and Ride Plans** (Doc Ref. 2.6).

9.18.4 A VISSIM assessment has been conducted for all three forecast years as detailed in **Appendix 9B** of this Chapter. This assessment assumes that the Willow Marsh Lane T-junction is present in all scenarios except the 2028 Peak Construction scenario when the northern park and ride site is operational and accessed via the proposed three-arm roundabout.

9.18.5 A Junctions 9 assessment has also been conducted to complement the VISSIM assessment. The Junctions 9 model only assesses the proposed roundabout layout and therefore only covers the 2028 Peak Construction scenario.

i. Validation Summary

VISSIM

9.18.6 The existing Willow Marsh Lane T-junction is included in the base VISSIM model which has been calibrated to observed queue data. The observed data suggests that queues on the minor arm (Willow Marsh Lane) are not typically present with the exception of one 5-minute period when a queue of 1 vehicle was observed (17:25) and another 5-minute period when a queue of 3-vehicles was observed (08:50).

9.18.7 The VISSIM model generally reflects the low level of queues at this junction and is therefore considered to be representative.

Junctions 9

9.18.8 The proposed roundabout being assessed in Junctions 9 does not exist currently and as such the roundabout model cannot be validated against observations.

9.18.9 As the proposed roundabout has two lanes at each of the three entries and single lanes exits on all arms, there is potential for unequal lane usage to be present on the entry arms. Junctions 9 is not able to take account of unequal lane usage so where this is present a manual adjustment to the model is needed to prevent the modelled capacity being overestimated.

9.18.10 An assumption has been made regarding the likely allocation of lanes for each movement based on the magnitude of turning flows and number of available exit lanes. This has resulted in the following proportions of vehicles per lane and determination of unequal lane usage, as illustrated in **Table 9.28**.

Table 9.28: A12 / Northern park and ride site access junction lane utilisation

2028 PEAK CONSTRUCTION.	Average Lane Usage (%).		Unequal lane usage.	Proposed manual adjustment.
	Lane 1	Lane 2		
A - A12 North	87%	13%	yes	Model 1-lane entry as lane 2 is used infrequently.
B - A12 South	8%	92%	yes	Model 1-lane entry as lane 1 is used infrequently.
C - Park and ride site access.	64%	36%	yes	Model ~1.5 -lane entry width (75% CAD entry width) as lane 2 isn't used as much as lane 1.

9.18.11 On arms where one of the two entry lanes is used infrequently, the arm has been modelled as a single lane (4m entry width and a 10m flare length) to reflect the fact approximately half of the road space will be unutilised. Where lane utilisation is split approximately one thirds to two thirds, the arm has been modelled as roughly one and a half lanes (75% of the measured entry width and 10m flare) to reflect the fact half of the road space will be only partially utilised. These adjustments have been made to avoid over-estimating capacities on arms where unequal lane usage is present. The results presented below incorporate these adjustments.

b) Early Years (2023)

i. Demand Impact

9.18.12 The 2023 Reference Case scenario traffic flows show a moderate increase in flows on the A12 in both directions (+30-100 vehicles per hour) compared to the base scenario. Flows on Willow Marsh Lane are not anticipated to increase.

9.18.13 The Early Years scenario traffic flows show a small increase on the A12 North approach (up to +40 vehicles per hour) during all times periods relative to the 2023 Reference Case. The one exception is from 07:00-08:00 when an increase of 140 vehicles per hour is expected as Sizewell C construction workers head south to access the northern park and ride site and the other A12 and Sizewell C construction sites. From 17:00-18:00 an additional 90 vehicles per hour are also predicted on the A12 South approach and an additional 70 vehicles per hour on the northern park and ride site arm as Sizewell C construction workers return to the north.

ii. Results Analysis

VISSIM

9.18.14 During the 2023 Reference Case, the VISSIM model predicts small maximum queues at the junction (no more than two vehicles), mainly associated with the A12 northern arm right turn into Willow Marsh Lane in the morning hours.

9.18.15 During the 2023 Early Years scenario the maximum queues are expected to increase slightly to no more than 3 vehicles with the exception of 07:55 when the maximum recorded queue is 4 vehicles due to the vehicle platooning caused by the nearby Darsham level crossing.

9.18.16 During the PM period, small queues (0 – 4 vehicles) are predicted on Willow Marsh Lane. This is a result of Sizewell C construction workers exiting the northern park and ride construction site.

c) Peak Construction (2028)

i. Demand Impact

9.18.17 The 2028 Reference Case scenario traffic flows show a moderate increase in flows on the A12 in both directions (+40-130 vehicles per hour) compared to the base scenario. Flows on Willow Marsh Lane are not anticipated to increase.

9.18.18 The Early Years scenario traffic flows show a large increase on the A12 North approach relative to the 2028 Reference Case scenario (+200-270 vehicles per hour) from 06:00-07:00 and 07:00-08:00 with growth being lower (less than 40 vehicles per hour) during the other modelled periods. The western arm (northern park and ride site) is expected to see a large increase in flows (+130-160 vehicles per hour) during the evening hours. These large increases are associated with vehicles accessing the northern park and ride site from the north in the morning and leaving to head north in the evening. The A12 southern arm is expected to experience growth of 20-70 vehicles per hour.

ii. Results Analysis

VISSIM

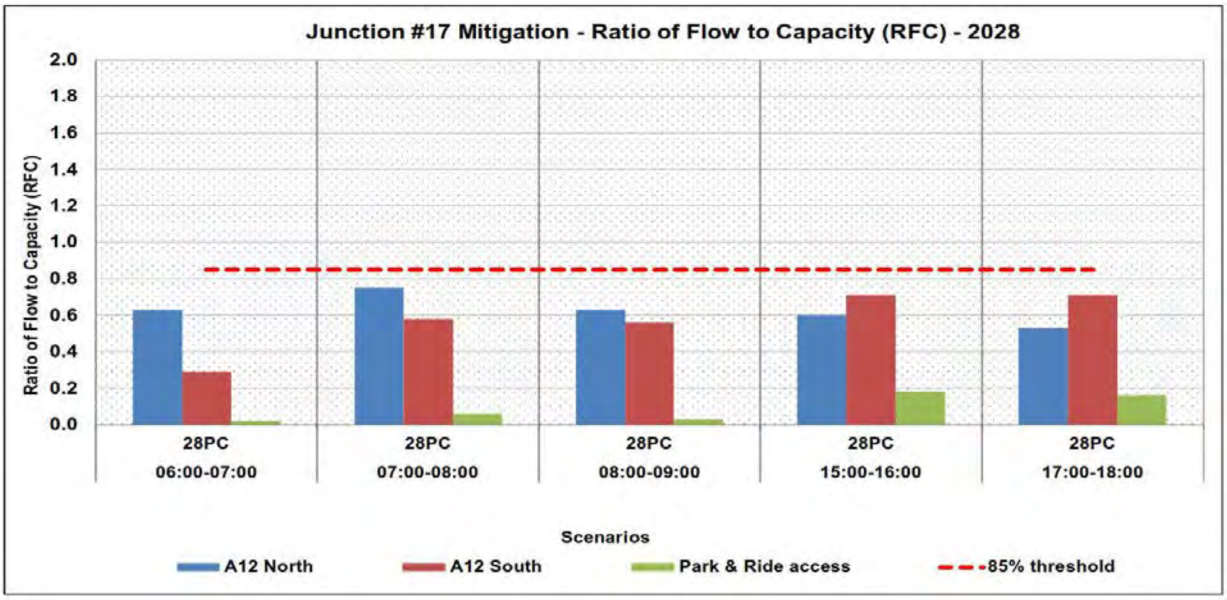
9.18.19 During the 2028 Reference Case, the VISSIM model predicts small maximum queues at the junction (no more than 2 vehicles), mainly associated with the A12 northern arm right turn into Willow Marsh Lane.

9.18.20 During the Peak Construction scenario the junction is proposed to be upgraded to a roundabout. The maximum queue on the A12 northern arm is expected to be approximately 1-4 vehicles, the A12 southern arm is expected to be approximately 2-7 vehicles and the western arm (northern park and ride access) is expected to be approximately 0-3 vehicles. This demonstrates that the proposed layout is able to cater for the level of demand anticipated in 2028 with the northern park and ride site in operation.

Junctions 9

9.18.21 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.54**. The difference is shown as PC-RC.

Plate 9.54: A12 / Northern Park and Ride Access 2028 Peak Construction RFC Results



9.18.22 **Plate 9.54** confirms that the proposed roundabout layout is predicted to operate under the 0.85 threshold on all approaches and during all time periods in the 2028 Peak Construction scenario. It should therefore be able to cater for the predicted level of park and ride traffic flow in 2028.

d) Operational Phase (2034)

i. Demand Impact

9.18.23 The 2034 Reference Case scenario traffic flows show a large increase in flows on the A12 in both directions (+50-180 vehicles per hour) compared to the base scenario. Flows on Willow Marsh Lane are not anticipated to increase.

9.18.24 The Operational Phase scenario traffic flows are similar to the 2034 Reference Case flows as the northern park and ride site is not operational in 2034.

ii. Results Analysis

VISSIM

9.18.25 During the 2034 Reference Case, the VISSIM model predicts small maximum queues at the junction (no more than four vehicles), mainly associated with the A12 northern arm right turn into Willow Marsh Lane.

9.18.26 During the Operational Phase the maximum queues are predicted to be similar to those in the 2034 Reference Case as flows are similar.

e) Mitigation Analysis

9.18.27 Temporary mitigation through the provision of a roundabout to accommodate the northern park and ride site is proposed during Sizewell C construction. The roundabout would then be removed and the existing T-junction layout restored at Willow Marsh Lane once the northern park and ride site is removed and reinstated by 2034. Analysis of the proposed roundabout operation is provided above.

f) Overview

9.18.28 The VISSIM model shows that delays on the western arm (Willow Marsh Lane/northern park and ride access) are moderate at 5-25 seconds per vehicle. Provision of the roundabout layout in the 2028 Peak Construction scenario helps to lower delays on the western arm despite an increase in flows using the northern park and ride site during this scenario, as illustrated in **Table 9.29**.

Table 9.29: A12 / Northern Park and Ride Access – Western Arm Average Delay per Vehicle Results Overview

	Average delay on the Western Arm per vehicle (seconds).						
Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.0	0.0	0.0	0.0	3.0	0.0	0.0
07:00-08:00	6.4	8.3	15.1	10.1	4.3	10.3	12.0
08:00-09:00	9.9	13.4	14.0	12.3	4.7	14.5	14.5
15:00-16:00	15.0	15.9	11.9	16.0	4.8	14.0	24.8
16:00-17:00	17.5	9.3	16.4	8.7	4.9	15.1	14.2
17:00-18:00	8.5	13.2	17.1	19.9	5.3	10.7	20.3
18:00-19:00	5.2	9.3	11.9	10.9	3.6	10.1	9.8

*All results are for the existing T-junction layout with the exception of 2028 Peak Construction when the proposed roundabout is provided.

9.18.29 Delays on the northern arm (A12 north) are low (less than three seconds per vehicle) in all scenarios with the exception of the 2028 Peak Construction scenario when delays increase slightly to 3-4 seconds per vehicle due to provision of the roundabout layout. Delay results for the A12 northern arm are illustrated in **Table 9.30** below.

Table 9.30: A12 / Northern Park and Ride Access – A12 Northern Arm Average Delay per Vehicle Results Overview

	Average delay on the A12 Northern Arm per vehicle (seconds).						
Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	1.0	1.3	1.4	1.3	3.2	1.4	1.3
07:00-08:00	1.6	1.7	2.5	1.7	3.9	1.7	1.8
08:00-09:00	1.7	1.8	2.2	1.8	3.8	1.8	1.9
15:00-16:00	1.6	1.7	1.8	1.9	4.0	1.9	1.9
16:00-17:00	1.6	1.7	1.7	1.8	3.7	2.1	2.0
17:00-18:00	1.3	1.5	1.5	1.5	3.3	1.6	1.6
18:00-19:00	1.1	1.2	1.3	1.3	3.3	1.4	1.4

*All results are for the existing T-junction layout with the exception of 2028 Peak Construction when the proposed roundabout is provided.

9.18.30 The VISSIM model predicts that the proposed roundabout is likely to reduce delays on the western arm (northern park and ride site access) whilst only slightly increasing delays on the A12 which helps to cater for the temporary increase in flows on the western arm due to the northern park and ride site.

9.19 Junction 21 – A12 / A14 Roundabout

a) Context

9.19.1 Junction 21 is a five-arm grade separated roundabout, located to the southeast of Ipswich and approximately 20-miles south west of the Sizewell C site. It is a major junction where the A14 meets the A12 and A1156, between Felixstowe and Ipswich, referred to as the Seven hills junction. Along with the major roads there is an unnamed single carriageway access road to the village of Bucklesham to the north east of the junction. Apart from this single lane approach all remaining approaches comprise of two lanes with the national speed limit of 60mph. Street lighting is in place on all approaches. A satellite image of the existing junction layout is shown in **Plate 9.55**.

Plate 9.55: Existing A12 / A14 Roundabout Layout (Seven hills)

b) Calibration Summary

9.19.2 Observed queue data showed that there were moderate queues on all major arms expect the north-east off slip approach from the A12 approach during the modelled hourly intervals. Moderate to long queues were observed on the south east off slip approach from the A12.

9.19.3 The junction model typically results in queues slightly lower than those observed, with moderate queues on the aforementioned arms. Due to the majority of arms showing only marginal differences between observed and modelled data, the model is considered to be representative of existing conditions.

c) Early Years Scenario (2023)

i. Demand impact

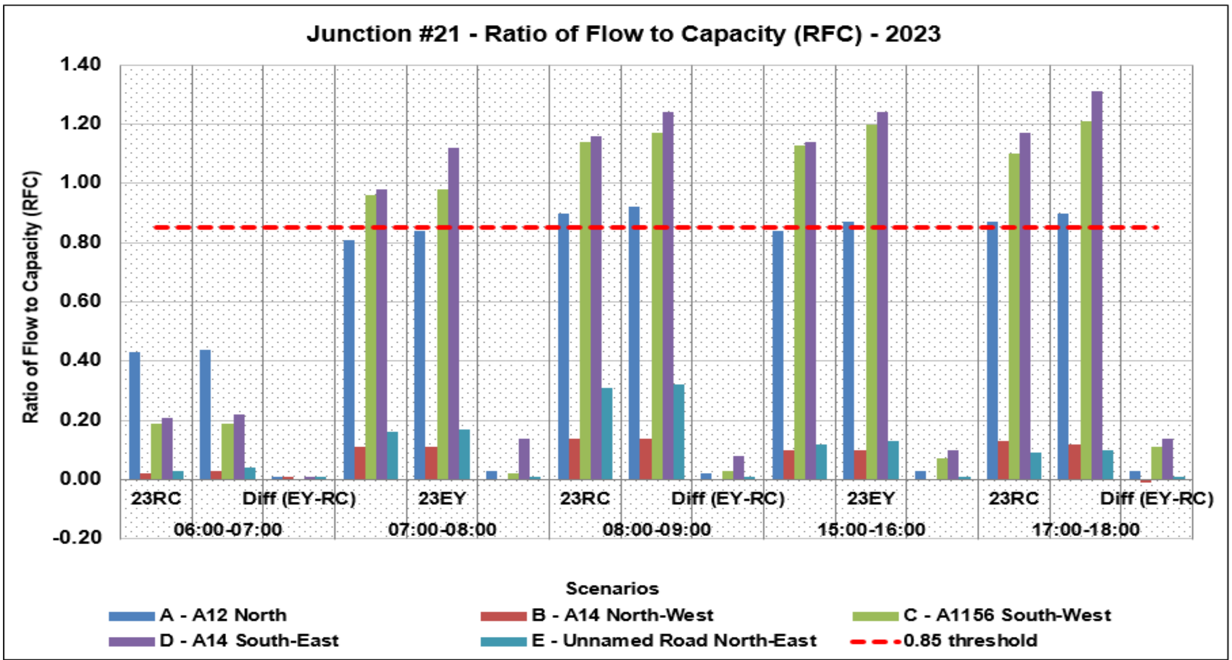
9.19.4 The 2023 Reference Case scenario traffic flows, relative to the observed base year, show large increases in entry demand on the A12 north arm (up to 170 vehicles per hour) and a moderate increase from both arms of the A14 (up to 90 vehicles per hour). The A1156 arm shows a maximum increase of 60 vehicles per hour while the unnamed approach from Bucklesham is relatively unchanged.

9.19.5 The Early Years scenario shows that traffic flows are forecast to be broadly similar to the 2023 Reference Case. The exception is on the A14 north-west approach where there is a moderate increase of 70 vehicles per hour from 06:00-07:00 and 07:00-08:00.

ii. Results analysis

9.19.6 The RFC modelling results for the 2023 Reference Case and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.56**. The difference is shown as EY-RC.

Plate 9.56: A12 / A14 Roundabout 2023 Early Years RFC Results



9.19.7 **Plate 9.56** shows that the junction is predicted to operate over the 0.85 RFC threshold on the A1156 South-West and A14 South-East approaches during all modelled hours in the Reference Case scenario, except 06:00-07:00, where all approaches will operate within capacity. The A12 North approach is predicted to operate close to or above the 9.85 RFC threshold from 08:00-09:00 and both PM modelled hours.

9.19.8 The Early Years scenario RFC results are very similar to the Reference Case, generally showing small increases in RFC. The largest increases are seen on the A14 south-east approach with a 0.14 increase in modelled RFC from 07:00-08:00 and 17:00-18:00.

9.19.9 With the exception of the 06:00-07:00 modelled hour, the A14 south-east approach reports the highest RFC across all modelled hours in both scenarios. The increase in background demand from 07:00-18:00 results in this arm operating over the 0.85 RFC threshold in all future scenarios. Although the Early Years RFC is slightly above the Reference Case, the modelling results demonstrate that Sizewell C has a negligible adverse effect overall, with the 2023 Reference Case also operating over capacity.

d) Peak Construction (2028)

i. Demand impact

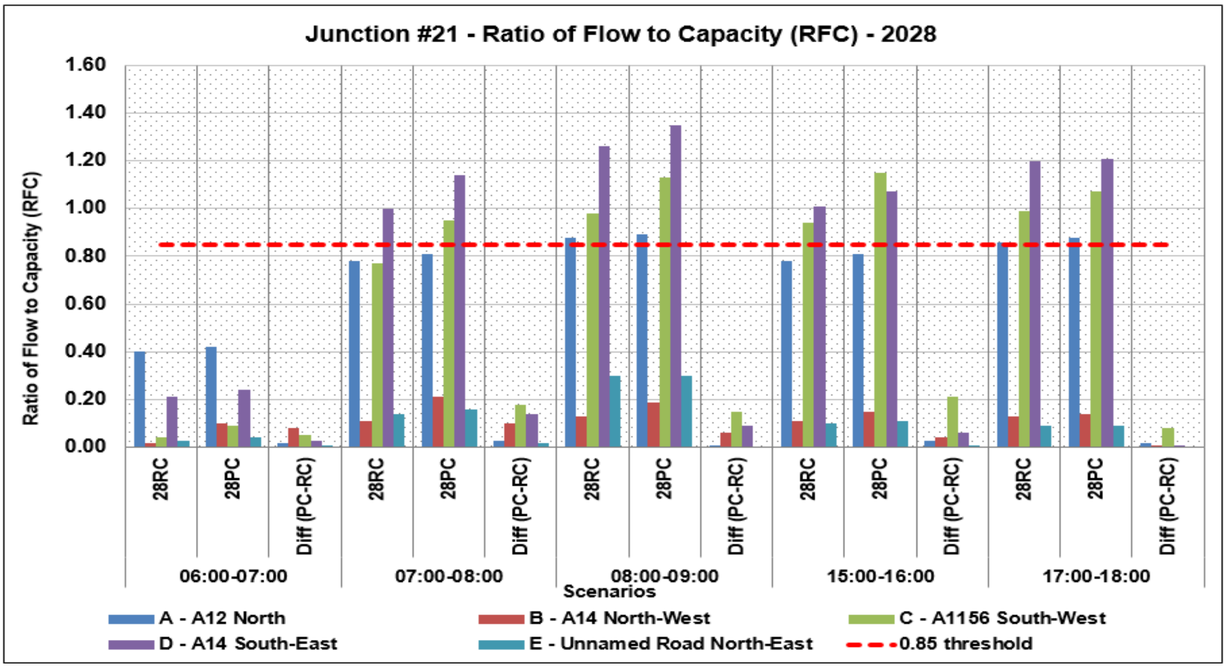
9.19.10 The 2028 Reference Case scenario traffic flows, relative to the observed base year, show a large increase in entry demand on the A12 north approach in the 08:00-09:00 time period (+170 vehicles per hour). The traffic flow on the A14 north also sees a large increase by up to 230 vehicles per hour. A moderate reduction from the A1156 approach of up to 130 fewer vehicles. The unnamed approach from Bucklesham is relatively unchanged.

9.19.11 The Peak Construction scenario compared to the 2028 Reference Case shows an increase on the A14 north-west approach of 150 vehicles per hour and 80 vehicles per hour from 06:00-07:00 and 07:00-08:00 respectively. All other time periods and approaches are relatively unchanged.

ii. Results analysis

9.19.12 The RFC modelling results for the 2028 Reference Case and Peak Construction scenarios, split by each modelled hourly period, are illustrated in **Plate 9.57**. The difference is shown as PC-RC.

Plate 9.57: A12 / A14 Roundabout 2028 Peak Construction RFC Results



9.19.13 **Plate 9.57** shows that the junction is predicted to operate below or close to the 0.85 RFC threshold on the A12 north for all modelled hours. The A14 south-east and A1156 south-west are both predicted to operate above the 0.85 RFC threshold during all modelled hours, except 06:00-07:00.

9.19.14 As the Early Years scenario RFC results suggested the junction would be over capacity, it is expected that the junction would be over capacity during Peak Construction.

9.19.15 Across all modelled hours apart from 06:00-07:00 in both scenarios, the A14 south-east approach reports the highest RFC. The increase in demand in 2028, from the addition of the committed development traffic and background traffic growth, results in this junction operating over the 0.85 RFC threshold and over 1.0 in several time periods for Arms C and D.

e) Operational Phase (2034)

i. Demand impact

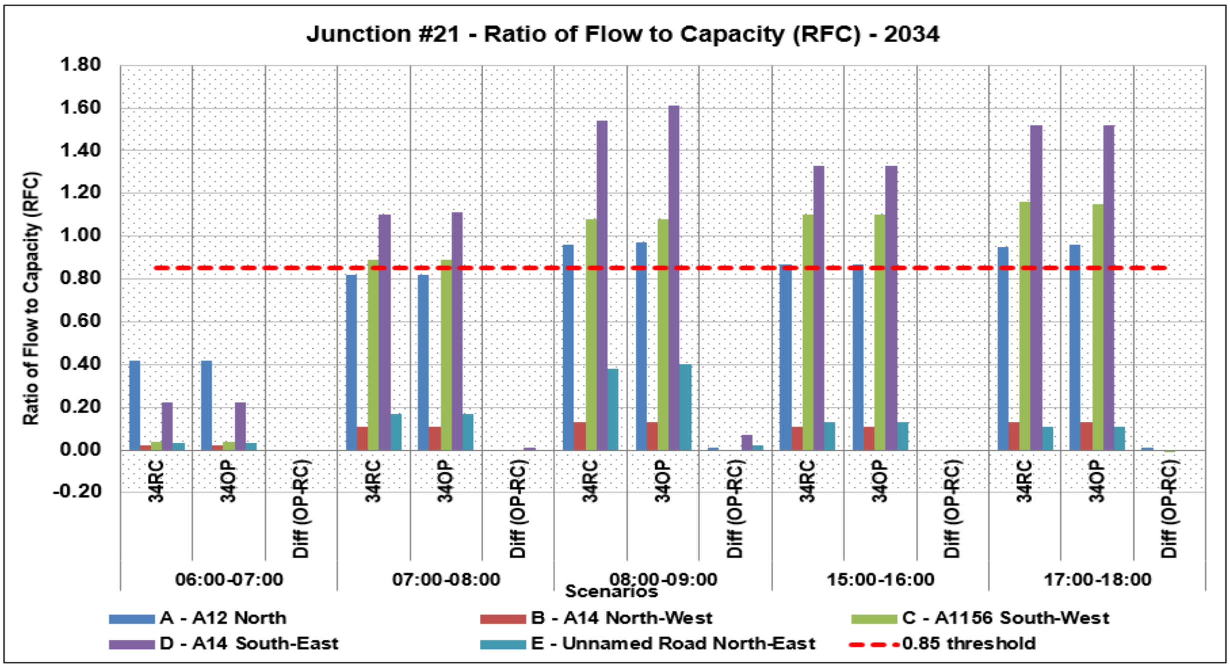
9.19.16 The 2034 Reference Case scenario traffic flows, relative to the observed base year, show a large increase in entry demand on the A12 north arm, particularly in the 08:00-09:00 time period (+340 vehicles per hour) and afternoon time periods (+220-300 vehicles per hour). Large increases are also seen on both A14 arms (up to 380 vehicles per hour). There is a moderate reduction from the A1156 arm in the morning period (up to 130 vehicles per hour fewer) but a small increase in the afternoon peaks (up to 100 vehicles per hour). The unnamed approach from Bucklesham is relatively unchanged.

9.19.17 The Operational Phase scenario shows a negligible change in entry demand on all approaches compared with the 2034 Reference Case.

ii. Results analysis

9.19.18 The RFC modelling results for the 2034 Reference Case and Operational Phase scenarios, split by each modelled hourly period, are illustrated in **Plate 9.58**. The difference is shown as OP-RC.

Plate 9.58: A12 / A14 Roundabout 2034 Operational Phase RFC Results



9.19.19 **Plate 9.58** shows that the junction is predicted to operate at or above capacity on Arms A, C and D (A12 north, A1156 south-west and A14 south-east) during all modelled hours in the Reference Case scenario, except 06:00-07:00, where all Arms will operate within capacity.

9.19.20 The Operational Phase scenario RFC results are very similar to those for the 2034 Reference Case scenario, which is intuitive given the negligible change in entry demand between the two scenarios.

9.19.21 The A14 south-east approach reports the highest RFC in the morning periods in both scenarios for all but the 06:00-07:00 modelled hour. In the afternoon periods, the A12 north and A1156 south-west approaches report broadly similar RFCs, in both scenarios.

9.19.22 Although the 2034 Reference Case and Operational Phase RFCs are both above the threshold, the modelling results demonstrate that Sizewell C has a negligible impact when compared with the Reference Case.

f) Mitigation Analysis

9.19.23 Mitigation measures are proposed at Junction 21 to enhance junction capacity as part of the Adastral Park development. The proposals will see the existing priority roundabout at the junction of the A12 / A14 / A1156 Seven Hills Interchange converted into a partially signalised roundabout with additional traffic lanes to increase available capacity.

9.19.24 The partially signalised roundabout is due to be implemented prior to 2023, therefore this arrangement has been analysed in all forecast year scenarios.

9.19.25 A LinSig 3 model was created to test the signalised layout arrangement with traffic flows converted to PCU values for entry into the model.

9.19.26 2023, 2028 and 2034 mitigation modelling Degree of Saturation results for the signalised roundabout arrangement are presented below in **Plates 9.59, 9.60,** and **9.61**:

Plate 9.59: A12 / A14 Roundabout Mitigated 2023 Early Years Degree of Saturation (DoS) Results

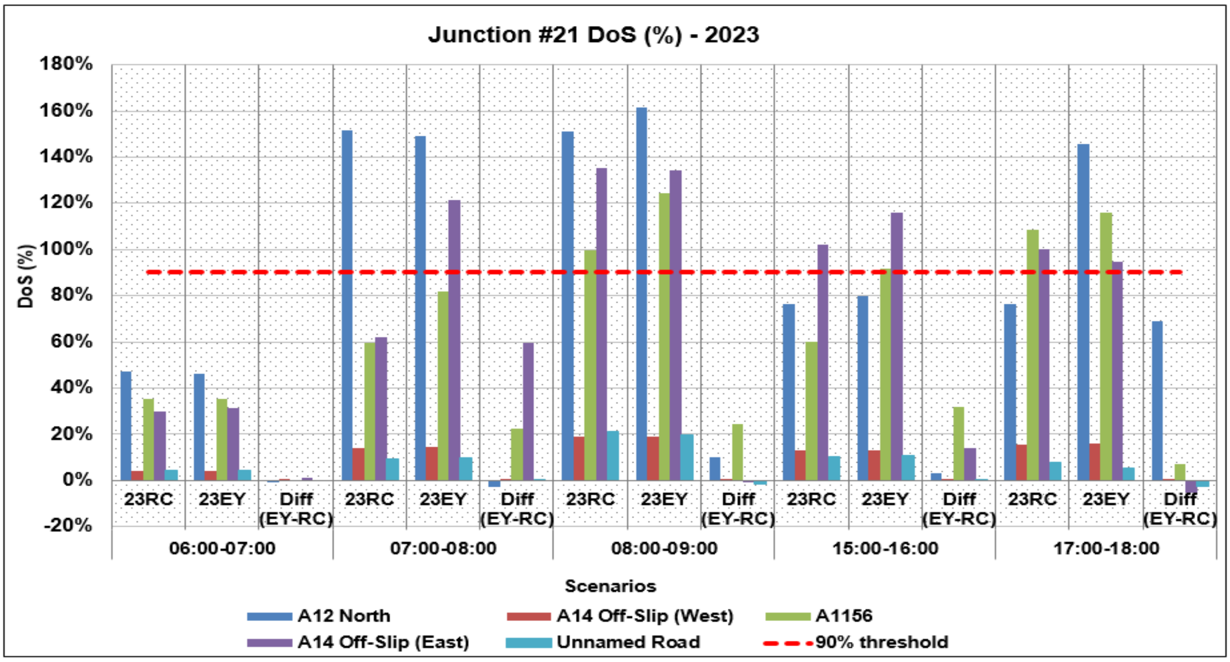


Plate 9.60: A12 / A14 Roundabout Mitigated 2028 Peak Construction Degree of Saturation (DoS) Results

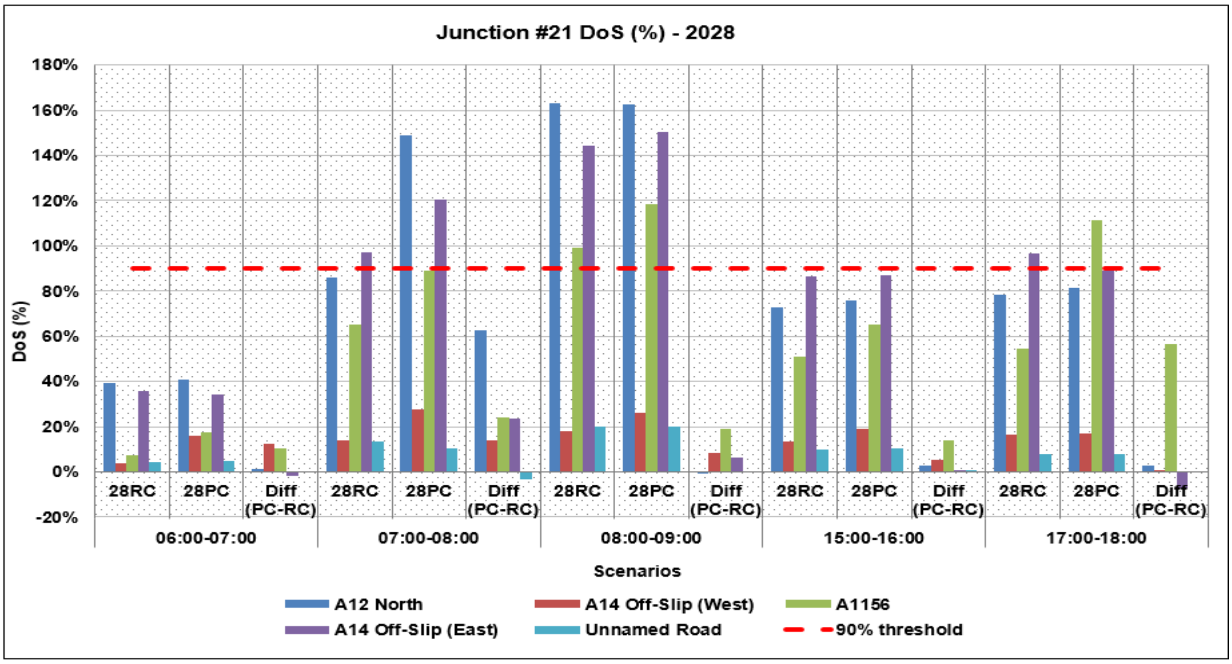
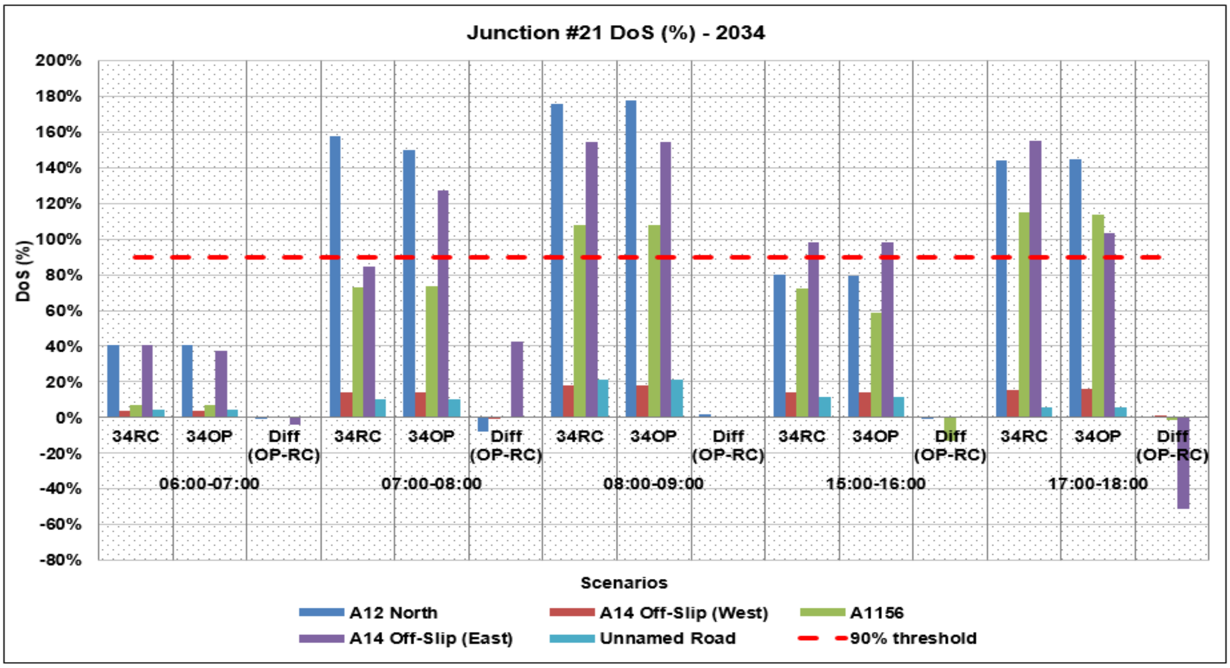


Plate 9.61: A12 / A14 Roundabout Mitigated 2034 Operational Phase Degree of Saturation (DoS) Results



9.19.27 The results from the mitigation modelling suggest that the proposed mitigation measures to convert the existing A12 / Foxhall Road / Newbourne

Road priority roundabout into a signalised roundabout will have a small positive impact on the performance of the junction with results in the 15:00-16:00 and 17:00-18:00 time periods displaying an improvement over the existing junction layout results.

9.19.28 In all forecast years tested the junction continues to operate with one or more arms overcapacity in both Reference Case and 'with Sizewell' scenarios. This is with the exception of the 06:00-07:00 time period continues to operate below capacity for all scenarios.

9.19.29 While the mitigation modelling indicates that the junction will continue to operate overcapacity during each scenario, the overall DoS is reduced in the 15:00-16:00 and 17:00-18:00 time periods, suggesting that a partially signalised roundabout configuration will be beneficial in the afternoon and evening peaks.

9.19.30 High DoS values recorded on the roundabout entry arms in the mitigation modelling is largely due to the need to keep green times low on these arms so as not to flood the internal roundabout arms with traffic. The available road space between stop lines is relatively short, in particular on the south-east corner of the roundabout with a distance between the internal and entry stop lines measured as 85 metres. This allows queuing space for 14 PCUs, therefore to avoid blocking back, and to keep the internal circulatory movements moving freely, green times on the entry arms were lowered so as the internal queue lengths did not exceed available road space.

9.19.31 In most cases the 'with Sizewell' scenario results match closely to the Reference Case results, indicating that any traffic impact resultant from Sizewell C on the roundabout mitigation measures in minimal.

g) Sensitivity Test

9.19.32 Junction 21 has been subject to a sensitivity test in which lower reference case flows have been fed into the model for testing. The purpose of the sensitivity test is to better align the reference case flows with those used for the Adastral Park consented development. For the consented Adastral Park scheme, the modelled reference case had no fuel and income adjustments applied. Likewise, the approved Paramics model for the consented Adastral Park scheme was based on actual traffic flows rather than demand flows.

9.19.33 Therefore, in order to bring the modelling into line with the modelling exercise undertaken for the consented Adastral Park development, this sensitivity test removes fuel and income adjustments from the reference case flows and models the actual rather than demand traffic flows through the junction.

9.19.34 With the adjustments to the traffic forecasts and the extraction of actual flows rather than demand flows, traffic flows reduce on all arms in all modelled scenarios up to a maximum of 230 fewer vehicles per hour as seen on the A12 north arm in the 2034 Operational Peak scenario from 17:00-18:00.

9.19.35 The RFC modelling results for the 2023, 2028 and 2034 Reference Case and 'with Sizewell' scenarios, split by each modelled hourly period, are illustrated in **Plates 9.62** to **9.64**.

Plate 9.62: A12 / A14 Roundabout 2023 Sensitivity Test RFC Results

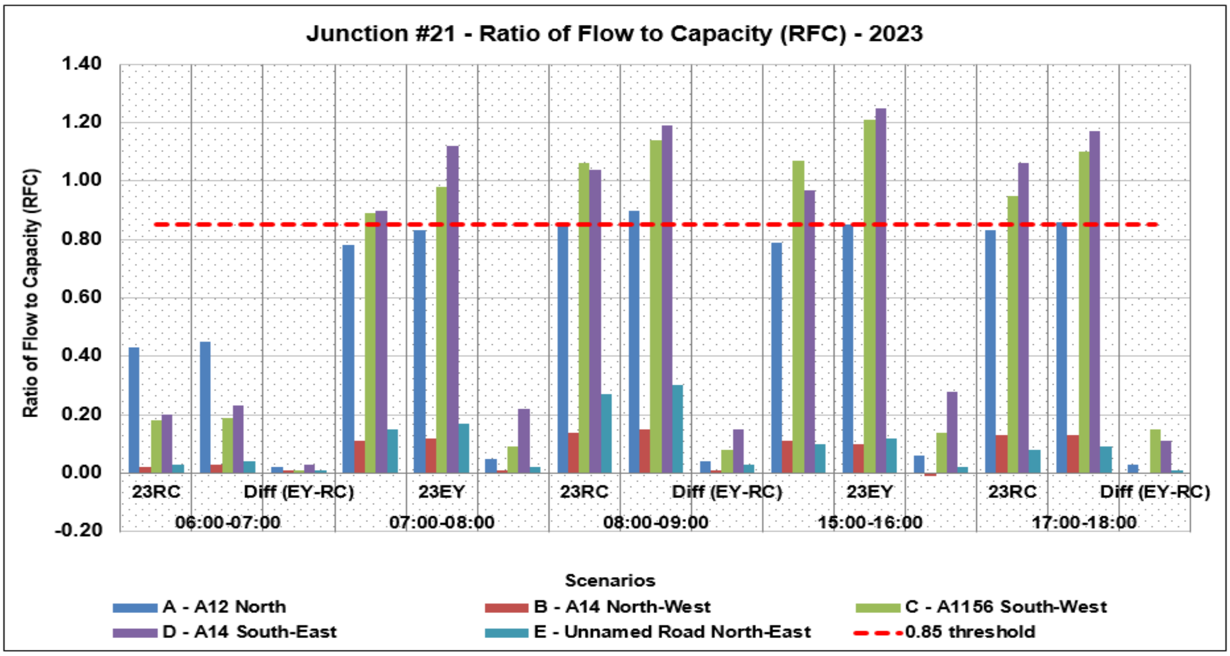


Plate 9.63: A12 / A14 Roundabout 2028 Sensitivity Test RFC Results

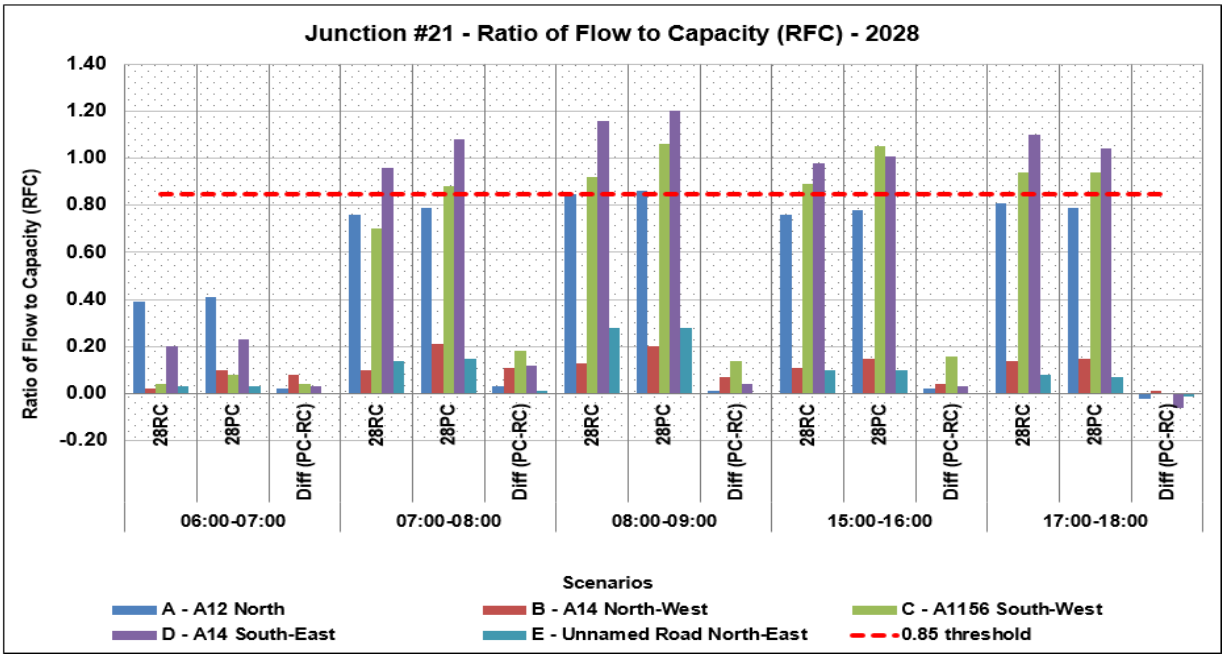
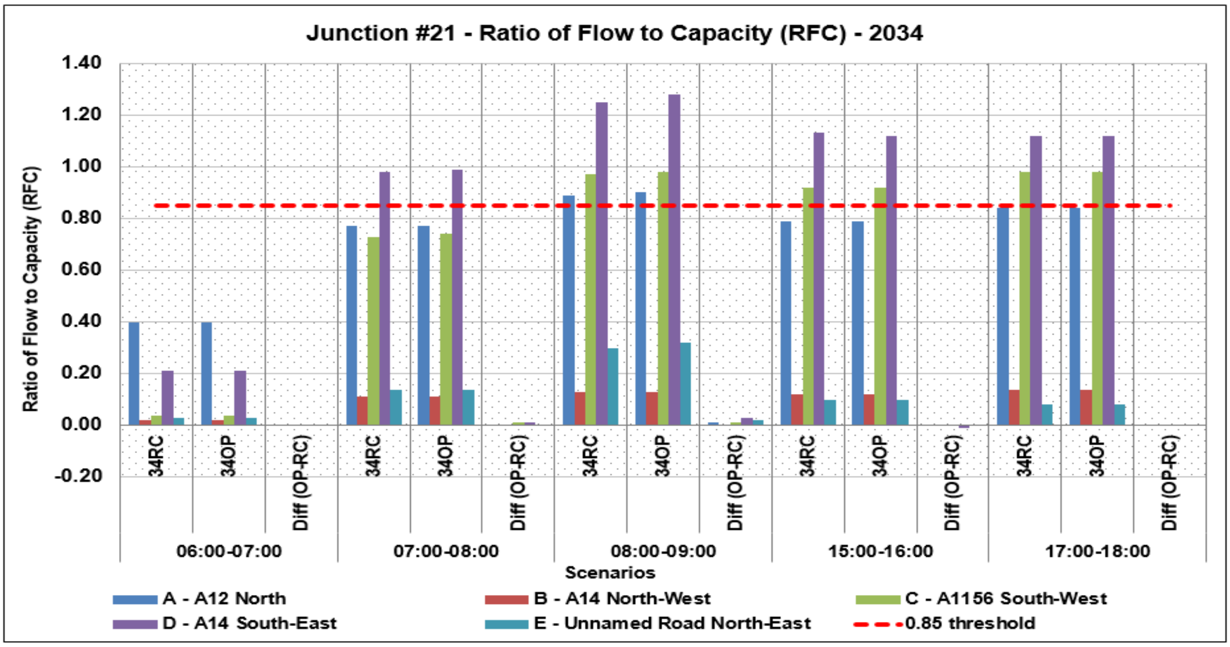


Plate 9.64: A12 / A14 Roundabout 2034 Sensitivity Test RFC Results



9.19.36 In each forecast year tested the sensitivity test results are an improvement in comparison to the core results with a reduction in RFC values recorded in all three forecast years with a maximum reduction of -0.17 in the 2023 and

2028 scenarios and a maximum reduction of -0.40 recorded in the 2034 forecast year.

9.19.37 While the sensitivity test flows lead to a reduction in modelled RFC values at Junction 21, the roundabout continues to operate over capacity in each of the forecast years tested. In all three forecast years at least one arm operates above the 0.85 RFC threshold from 07:00-08:00, 08:00-09:00, 15:00-16:00 and 17:00-18:00, however this is the case in both Reference Case and 'with Sizewell' scenarios which indicates that Sizewell traffic has minimal impact on junction performance.

9.19.38 Sensitivity test flows were also assigned to the Junction 21 mitigation modelling with the junction operating as a signalised roundabout, as per the Adastral Park mitigation scheme. The DoS modelling results for the 2023, 2028 and 2034 Reference Case and 'with Sizewell' mitigation scenarios, split by each modelled hourly period, are illustrated in **Plates 9.65** to **9.67**.

Plate 9.65: A12 / A14 Roundabout 2023 Sensitivity Test DOS Results

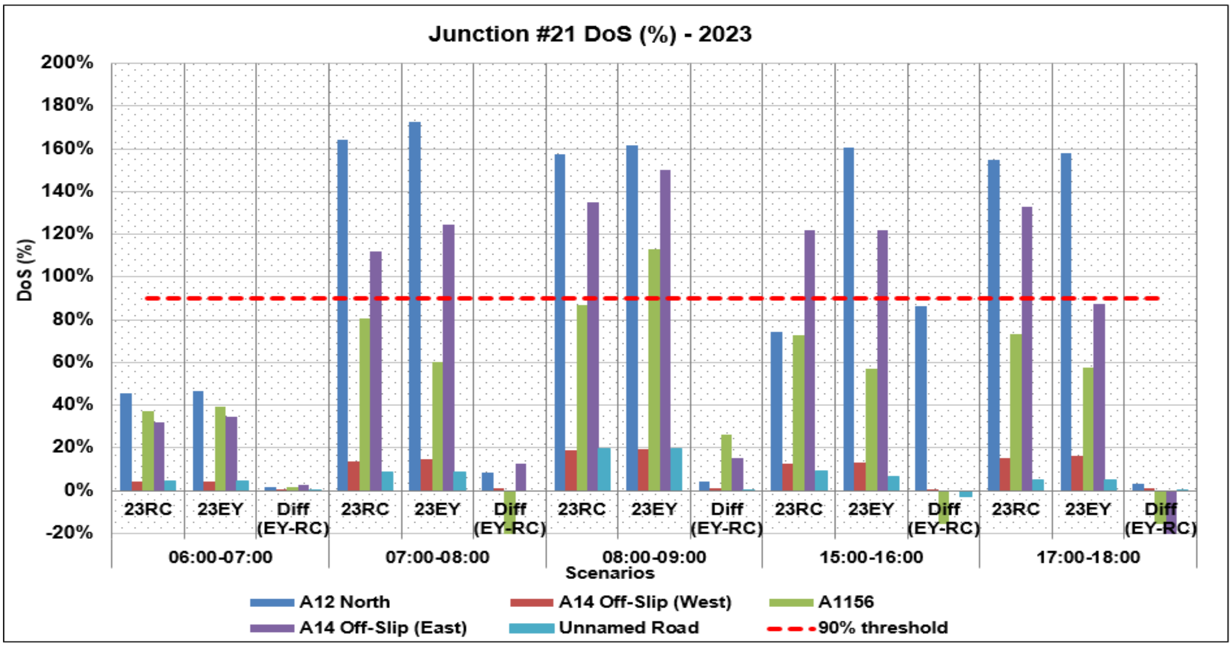


Plate 9.66: A12 / A14 Roundabout 2028 Sensitivity Test DOS Results

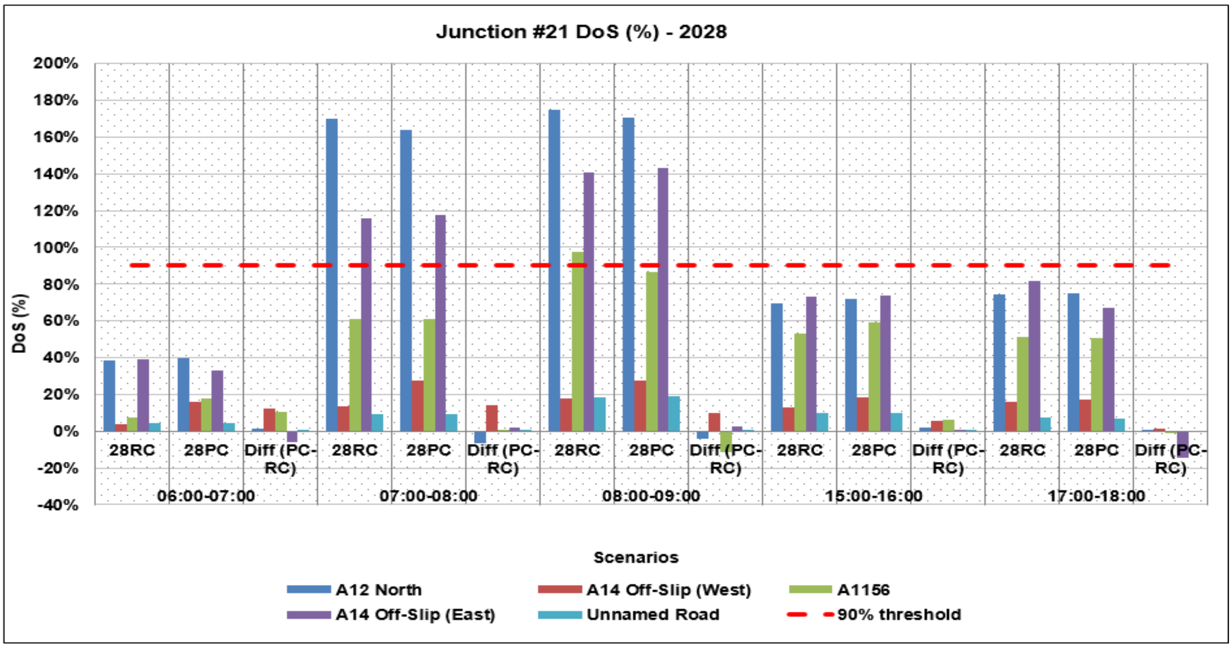
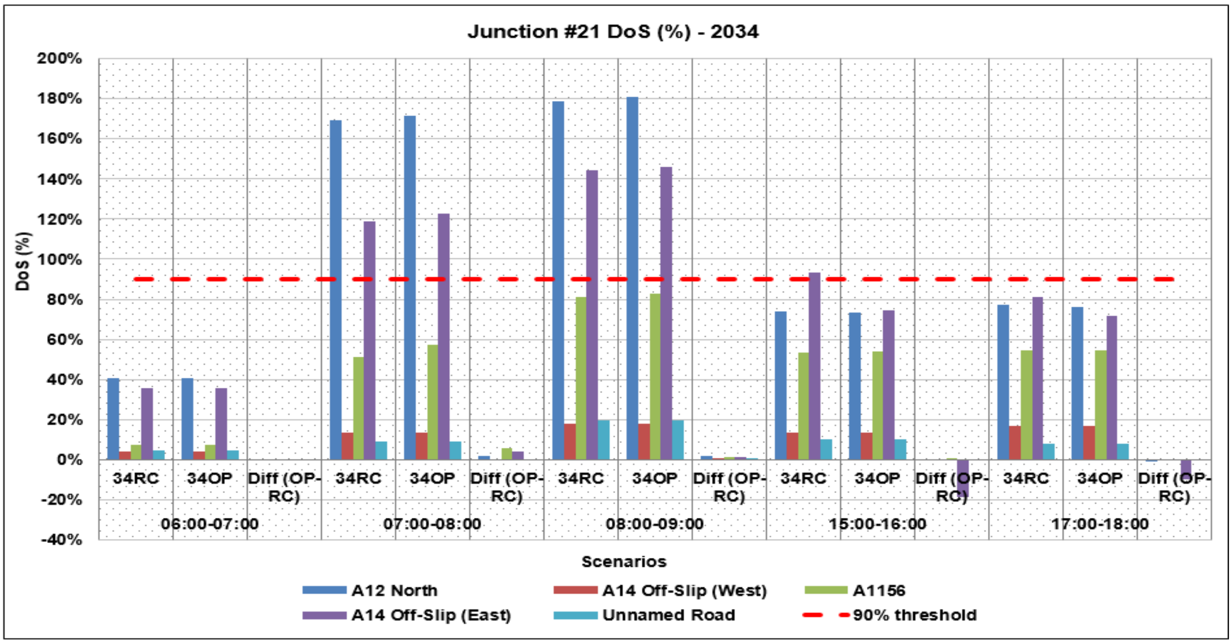


Plate 9.67: A12 / A14 Roundabout 2034 Sensitivity Test DOS Results



9.19.39 With the sensitivity test flows assigned to the model the results display an improvement over the core results with a reduction in DoS values recorded in all three forecast years tested. A maximum reduction in DoS of 59%, 61% and 74% was modelled in the AM peak, inter peak and PM peak models respectively when comparing the core and sensitivity test results.

9.19.40 With sensitivity test flows assigned the junction does still operate above capacity in some of the scenarios tested. This is largely due to the need to reduce green time on the roundabout entry arms so as not to exceed available stacking space at stop lines on the roundabout itself.

9.19.41 Sizewell C traffic does not adversely affect roundabout performance with most scenarios recording only minor increases in DoS values in the with Sizewell traffic scenarios. The exception to this is the A12 North approach which sees an 86% increase in DoS from 15:00-16:00 in the 2023 Early Years scenario. This correlates with an increase in flow of +140 vehicles per hour in comparison to the Reference Case.

h) Overview

9.19.42 An overview of the maximum RFC results recorded in each scenario, for each time period, taken from the sensitivity test model, are shown in **Table 9.31**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or very near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.31: A12 / A14 Roundabout Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.41	0.43	0.45	0.39	0.41	0.40	0.40
07:00-08:00	0.88	0.90	1.12	0.96	1.08	0.98	0.99
08:00-09:00	1.00	1.06	1.19	1.16	1.20	1.25	1.28
15:00-16:00	0.96	1.07	1.25	0.98	1.05	1.13	1.12
17:00-18:00	0.98	1.06	1.17	1.10	1.04	1.12	1.12

9.19.43 The modelling results show that the junction will be over capacity in all 2023, 2028 and 2034 scenarios.

9.19.44 The impact of Sizewell C traffic on overall junction performance is minimal. The Reference Case scenarios' RFC outputs are very similar to those for the 'with Sizewell' scenarios. The increasing RFCs through the years can be largely attributed to background traffic growth, unrelated to Sizewell C.

9.19.45 Mitigation through partial signalisation of the roundabout and the introduction of additional lanes would see only minor improvements to junction performance. With sensitivity test flows applied the junction continues to operate with one or more arms overcapacity in the 2023, 2028 and 2034 forecast years tested although an improvement in results is seen in the afternoon 15:00-16:00 and 17:00-18:00 time periods with the 2028 and 2034 scenarios operating below capacity, as illustrated in **Table 9.32** below.

Table 9.32: A12 / A14 Roundabout Signalisation Mitigation Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00		45%	47%	39%	40%	40%	40%
07:00-08:00		164%	173%	170%	164%	170%	172%
08:00-09:00		157%	162%	175%	171%	179%	181%
15:00-16:00		122%	160%	73%	74%	94%	75%
17:00-18:00		155%	158%	82%	75%	81%	76%

9.20 Junction 22 – A12 / Foxhall Road / Newbourne Road Roundabout

a) Context

9.20.1 Junction 22 is a four-arm roundabout, located to the south east of Ipswich and approximately 18-miles south west of the Sizewell C site. It is the junction where the A12 meets Foxhall Road and Newbourne Road between Brightwell and Ipswich. All approach arms comprise of two lanes with the national speed limit of 60mph. Street lighting is in place on all approaches. A satellite image of the existing junction layout is shown in **Plate 9.68**.

Plate 9.68: Existing A12 / Foxhall Road / Newbourne Road Roundabout Layout

b) Calibration Summary

9.20.2 Observed queue data showed that there were minor queues on all arms with larger queues experienced on Foxhall Road and the A12 South, particularly from 08:00-09:00.

9.20.3 The junction model typically results in queues slightly lower than observed but within reasonable limits of variation. Therefore, the model is considered to be representative of existing conditions.

c) Early Years (2023)

i. Demand impact

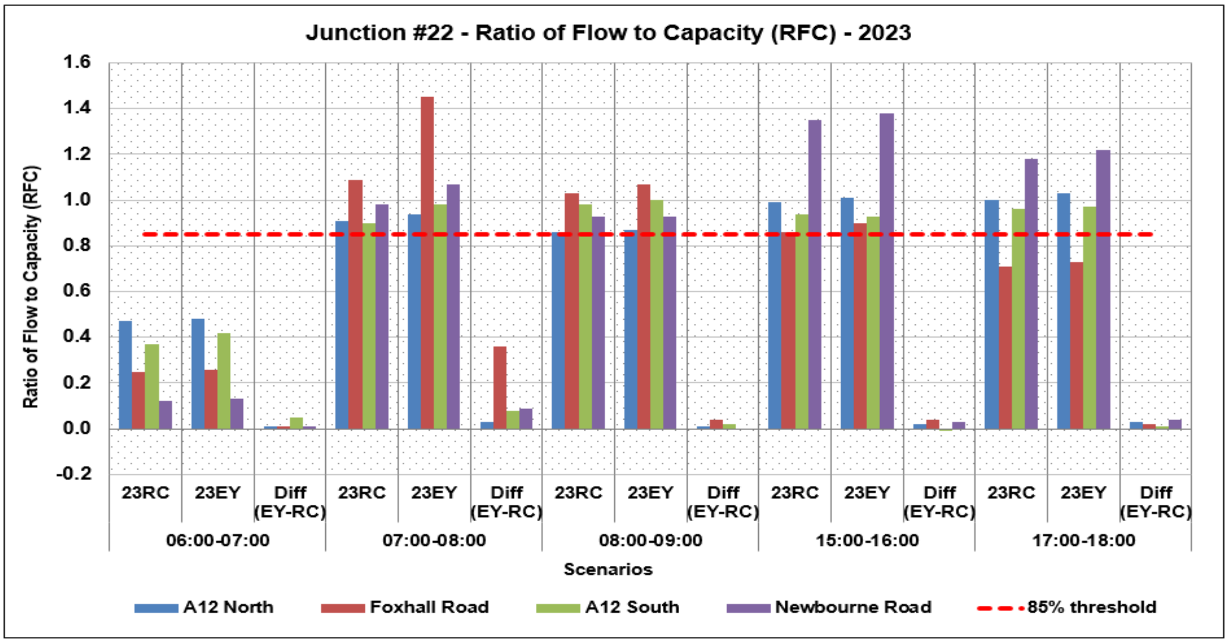
9.20.4 The 2023 Reference Case scenario traffic flows compared to the base show large increases in entry demand on the A12 north arm with a maximum increase of +239 and +225 respectively in the 15:00-16:00 and 17:00-18:00 time periods. A small to moderate increase is seen from both side arms of the roundabout with a maximum increase of +75 on Foxhall Road and +72 on Newbourne Road.

9.20.5 The Early Years scenario shows that traffic flows are broadly similar to the 2023 Reference Case except for the A12 south arm in the 06:00-07:00 and 07:00-08:00 which will see flow increases of +74 and +93 respectively in comparison to the Reference Case.

ii. Results analysis

9.20.6 The RFC modelling results for the 2023 Reference Case (RC) and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.69**. The difference is shown as EY-RC.

Plate 9.69: A12 / Foxhall Road / Newbourne Road Roundabout 2023 Early Years RFC Results



9.20.7 **Plate 9.69** shows that the junction is predicted to operate over the 0.85 RFC threshold on one or more approaches during all modelled hours in the Reference Case scenario, except 06:00-07:00, where all approaches will operate within capacity.

9.20.8 The Early Years scenario RFC results are very similar to the Reference Case with only minimal differences between the recorded Early Years and Reference Case RFC values. The largest increase is seen on Foxhall Road from 07:00-08:00 with a 0.24 difference in RFC when comparing the 2023 Reference Case and Early Years scenarios. This is in line with predicted flow increases which indicates that the largest increases in flow will occur from 07:00-08:00.

d) Peak Construction (2028)

i. Demand impact

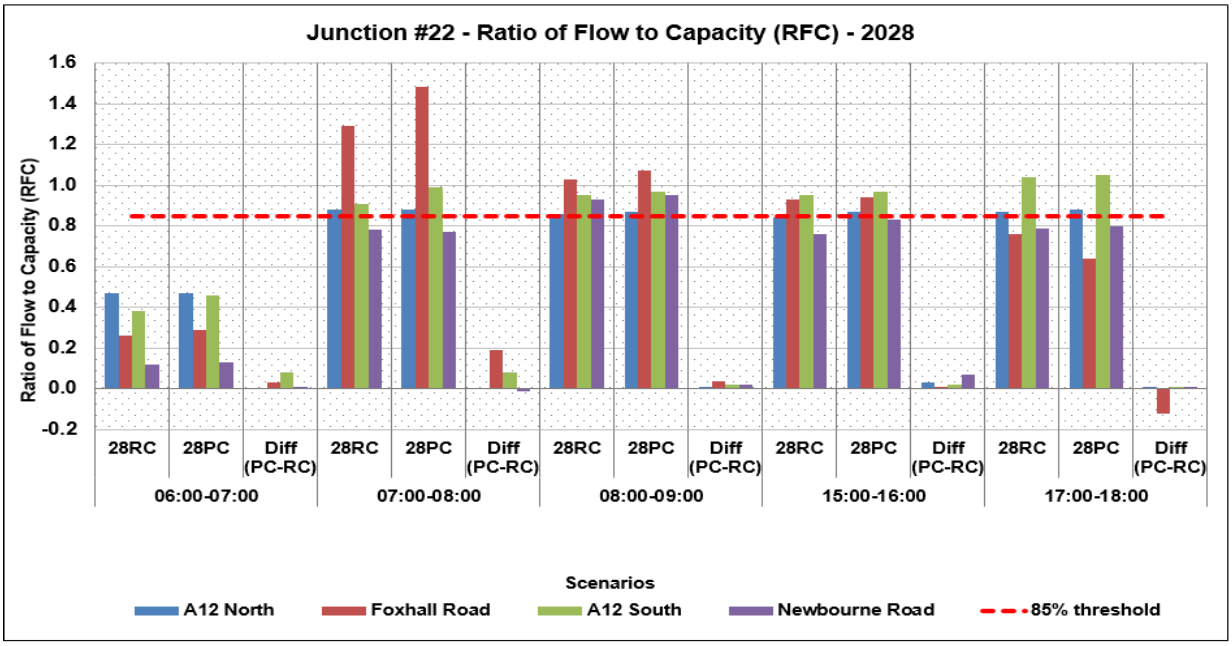
9.20.9 The 2028 Reference Case scenario traffic flows compared to the base show increases in entry demand on the A12 approaches with a maximum of +100 vehicles per hour recorded on the A12 north arm from 07:00-08:00 and a maximum of +300 vehicles per hour from 17:00-18:00 on the A12 south approach. Increases are also seen on the Foxhall Road approach, particularly in the morning peaks with increases of +100-110 vehicles per hour from 07:00-08:00 and 08:00-09:00.

9.20.10 The Peak Construction scenario shows an increase in entry demand on the A12 South approach from 06:00-07:00 (+140 vehicles per hour) and 07:00-08:00 (+90 vehicles per hour) however flows remain relatively unchanged otherwise.

ii. Results analysis

9.20.11 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.70**. The difference is shown as PC-RC.

Plate 9.70: A12 / Foxhall Road / Newbourne Road Roundabout 2028 Peak Construction RFC Results



9.20.12 **Plate 9.70** shows that the junction is predicted to operate close to or at capacity on most arms during all modelled hours, except 06:00-07:00, where all Arms would operate within capacity.

9.20.13 As the Early Years scenario RFC results predict the junction would be over capacity, it is expected that the junction is over capacity during Peak Construction.

9.20.14 From 07:00-08:00 and 08:00-09:00 in both scenarios, the Foxhall Road approach reports the highest RFC. In the afternoon modelled hours, Newbourne Road reports the highest RFC. As the RFC is over 1.0 in both these cases it is difficult to assess the accuracy of the results, due to the sensitivity of the models beyond this threshold, however the results do suggest the Foxhall Road side arm will not have sufficient available capacity to meet demand cope as traffic volume increases in future years.

e) Operational Phase (2034)

i. Demand impact

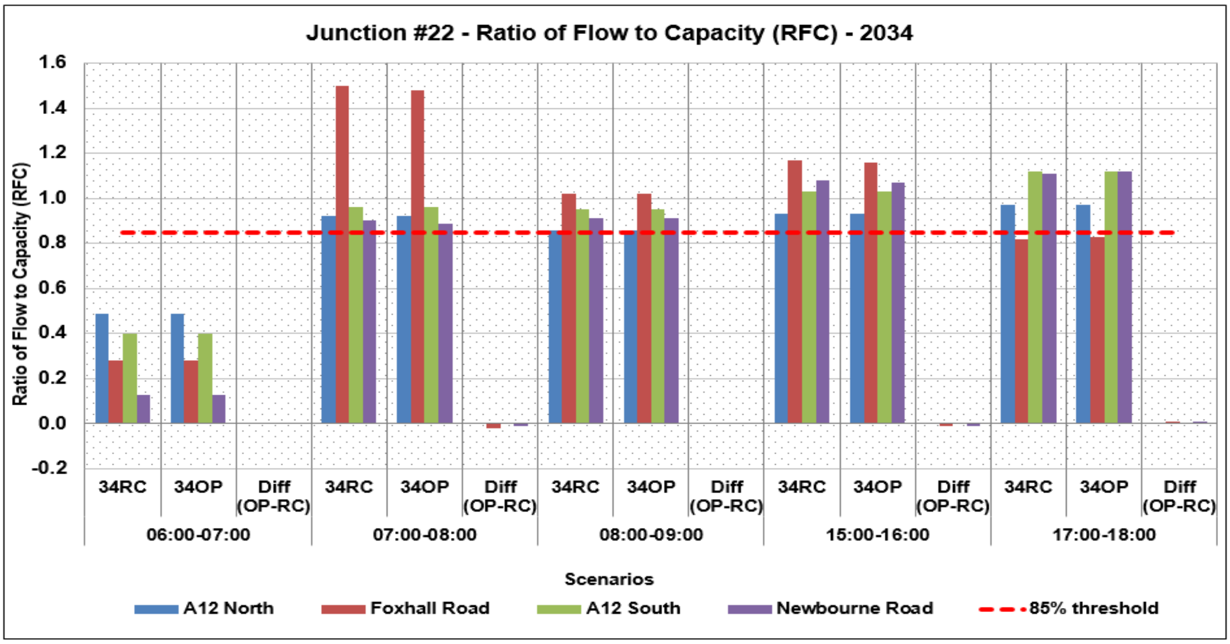
9.20.15 The 2034 Reference Case scenario traffic flows compared to the base show a large increase in entry demand on the A12 arms with a maximum increase of +280 vehicles per hour recorded on the A12 north approach from 08:00-09:00 and a maximum increase of +480 vehicles per hour on the A12 south approach from 17:00-18:00. Increases are also seen on the Foxhall Road approach from 07:00-08:00 (+160 vehicles per hour), 08:00-09:00 (+140 vehicles per hour) and 15:00-16:00 (+130 vehicles per hour). Flows on the Newbourne Road approach are largely unchanged apart from an increase of +50 vehicles per hour from 17:00-18:00.

9.20.16 The Operational Phase scenario shows a negligible change in entry demand on all approaches compared to the Reference Case with minor decreases in flow recorded in some cases.

ii. Results analysis

9.20.17 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.71**. The difference is shown as OP-RC.

Plate 9.71: A12 / Foxhall Road / Newbourne Road Roundabout 2034 Operational Phase RFC Results



9.20.18 **Plate 9.71** shows that the junction is predicted to operate over the 0.85 RFC threshold on most arms during all modelled hours except 06:00-07:00.

9.20.19 The Operational Phase scenario RFC results are very similar to those for the 2034 Reference Case scenario, which is intuitive given the negligible change in entry demand between the two scenarios.

9.20.20 The Foxhall Road approach reports the highest RFC from 07:00-08:00 in both scenarios and A12 South approach reports the highest RFC in the evening peak period (17:00-18:00). As the RFC is over 1.0 in these cases it is difficult to assess the accuracy of the results, due to the sensitivity of queues and delays beyond this threshold.

9.20.21 Although the 2034 Reference Case and Operational Phase RFCs are both above the threshold, the modelling results demonstrate that Sizewell C has a negligible impact over the Reference Case. As the model exceeds capacity, the queue length and delay results demonstrate excessive numbers due to the instability of models over an RFC of 1.0, however the results do suggest the side arms will not have sufficient available capacity to meet demand cope as traffic volume increases in future years.

f) Mitigation Analysis

9.20.22 Mitigation measures are proposed at Junction 22 as part of the consented Adastral Park development. The proposals will see the existing priority roundabout at the junction of the A12 / Foxhall Road / Newbourne Road converted into a signalised roundabout with additional traffic lanes to enhance capacity.

9.20.23 The signalised roundabout is not due to be implemented until after 2023, therefore this arrangement has only been analysed with 2028 and 2034 forecast flows applied.

9.20.24 A LinSig 3 model was created to test the signalised layout arrangement with traffic flows converted to PCU values for entry into the model.

9.20.25 2028 and 2034 mitigation modelling Degree of Saturation results for the signalised roundabout arrangement are presented below in **Plates 9.72** and **9.73**:

Plate 9.72: A12 / Foxhall Road / Newbourne Road Roundabout Mitigated 2028 Peak Construction Degree of Saturation (DoS) Results

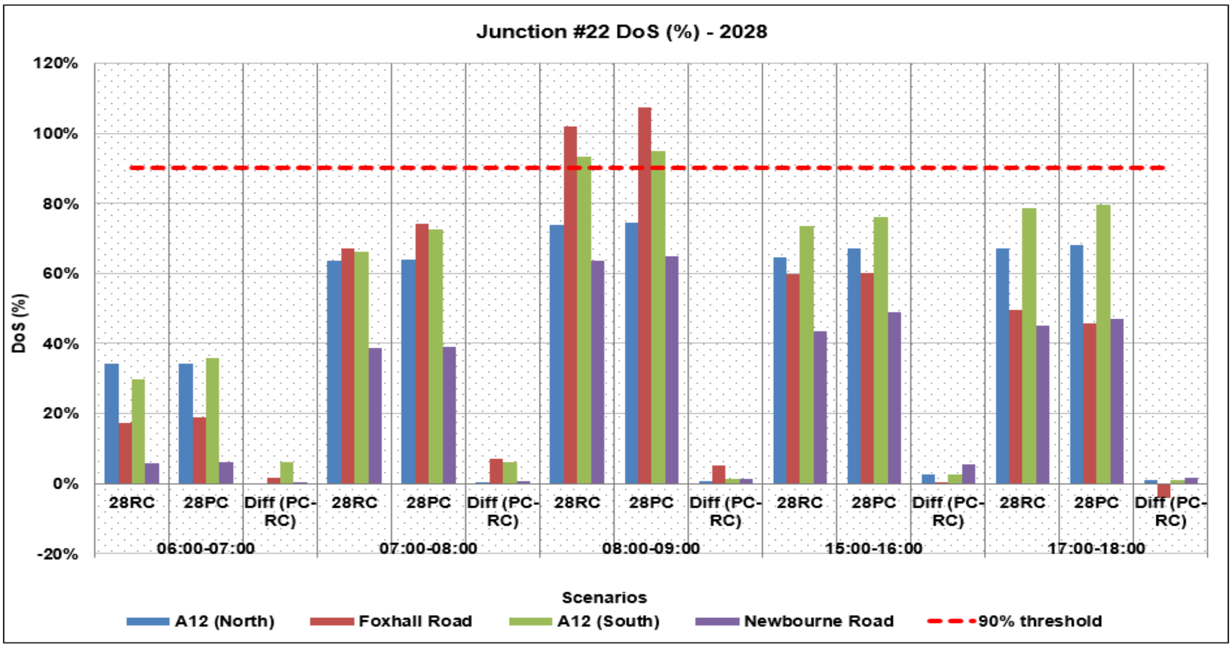
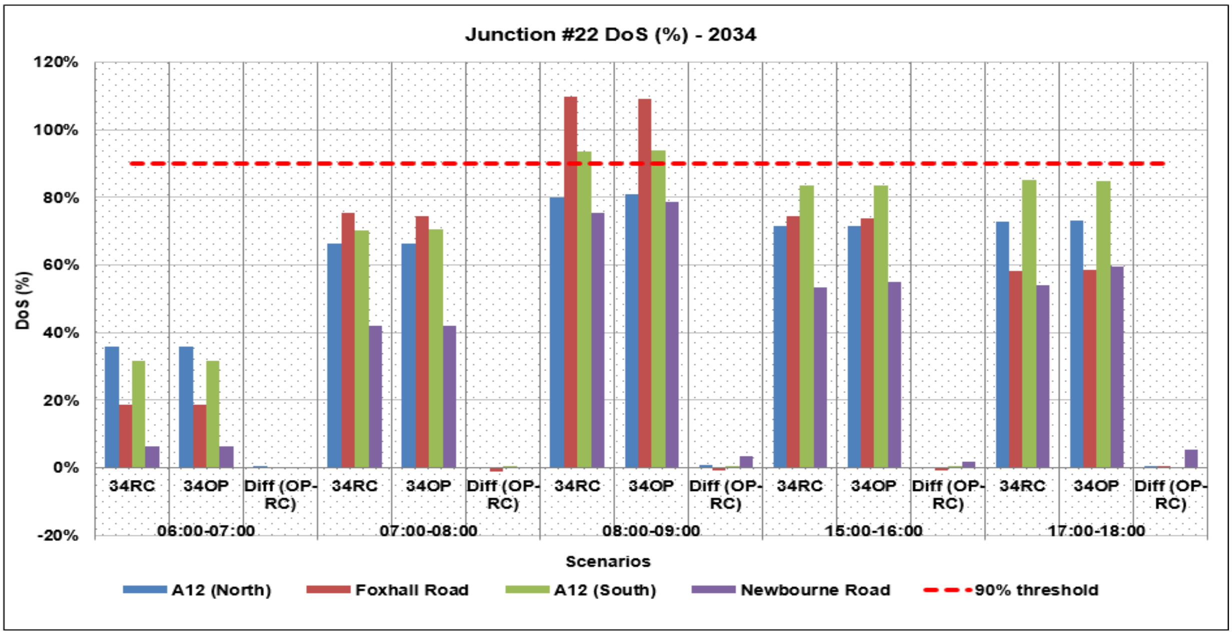


Plate 9.73: A12 / Foxhall Road / Newbourne Road Roundabout Mitigated 2034 Operational Phase Degree of Saturation (DoS) Results



9.20.26 The results from the mitigation modelling suggest that the proposed mitigation measures to convert the existing A12 / Foxhall Road / Newbourne Road priority roundabout into a signalised roundabout will have a positive effect on junction performance. For both forecast years tested, 2028 and 2034, the junction operates below the 90% DoS threshold on all arms and for all modelled time periods. This is with the exception of the 08:00-09:00 period which sees the Foxhall Road arm operating above the 90% DoS threshold in both Reference Case and 'With Sizewell' scenarios.

9.20.27 The mitigation modelling results are a **significant** improvement over the existing junction layout which is predicted to operate above capacity on at least one arm for all but the 06:00-07:00 modelled hour in both the 2028 and 2034 Reference Case and 'With Sizewell' scenarios.

9.20.28 Sizewell traffic has a negligible effect in the 2028 Peak Construction scenario with the signalised roundabout implemented with a maximum increase in DoS of 7% recorded in this scenario in comparison to the 2028 Reference Case scenario. The 2034 Reference Case and Operational Phase results are also almost identical to each other suggesting that Sizewell traffic will have minimal impact at the junction in 2034.

g) Sensitivity Test

9.20.29 A similar sensitivity test has been undertaken to that set out for Junction 21, in order to better align the reference case flows with the consented Adastral

Park reference case flows and the modelling assumptions applied (i.e. use of actual flows rather than demand flows).

9.20.30 The sensitivity test brings the modelling into line with a separate modelling exercise undertaken for the Adastral Park development in which fuel and income adjustments were excluded from the traffic forecasting, leading to lower overall traffic demand. For the sensitivity test scenarios 'actual flows' rather than 'demand flows' were extracted from the strategic modelling for assignment to the junction models.

9.20.31 With the adjustments to the traffic forecasts, flows reduce on all arms in all modelled scenarios up to a maximum of -230 vehicles per hour as seen on the A12 North approach in the 2034 Operational Peak scenario from 17:00-18:00.

9.20.32 The RFC modelling results for the 2023, 2038 and 2034 Reference Case and 'with Sizewell' scenarios, split by each modelled hourly period, are illustrated in **Plates 9.74** to **9.76**.

Plate 9.74: A12 / Foxhall Road / Newbourne Road Roundabout 2023 Early Years Sensitivity Test RFC Results

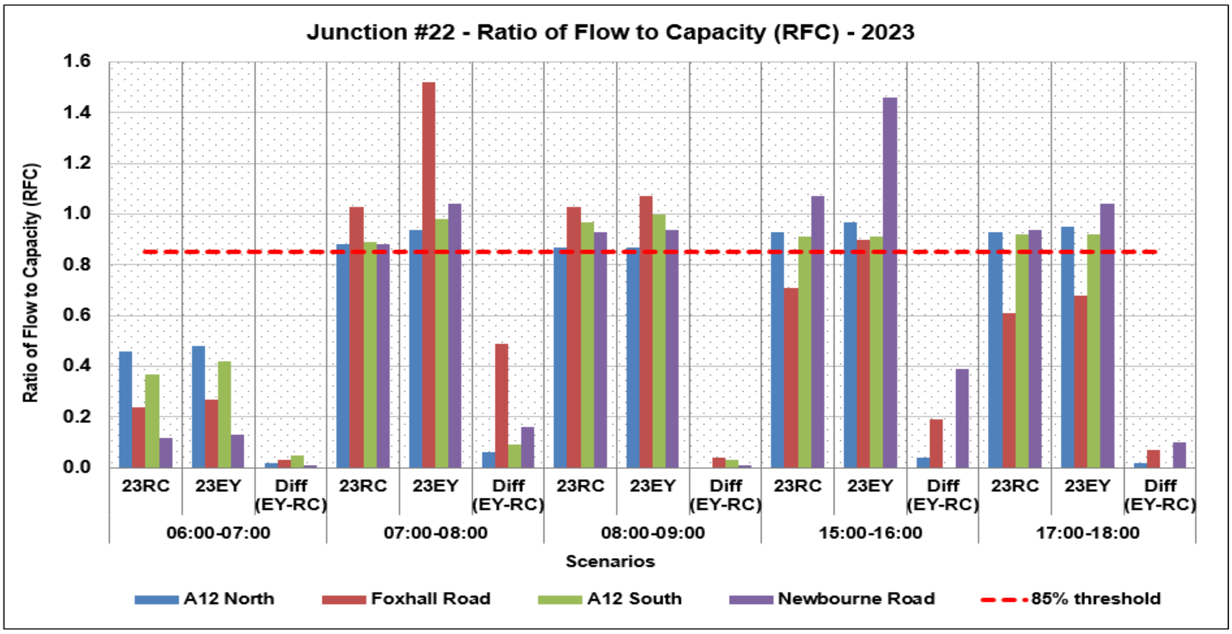


Plate 9.75: A12 / Foxhall Road / Newbourne Road Roundabout 2028 Peak Construction Sensitivity Test RFC Results

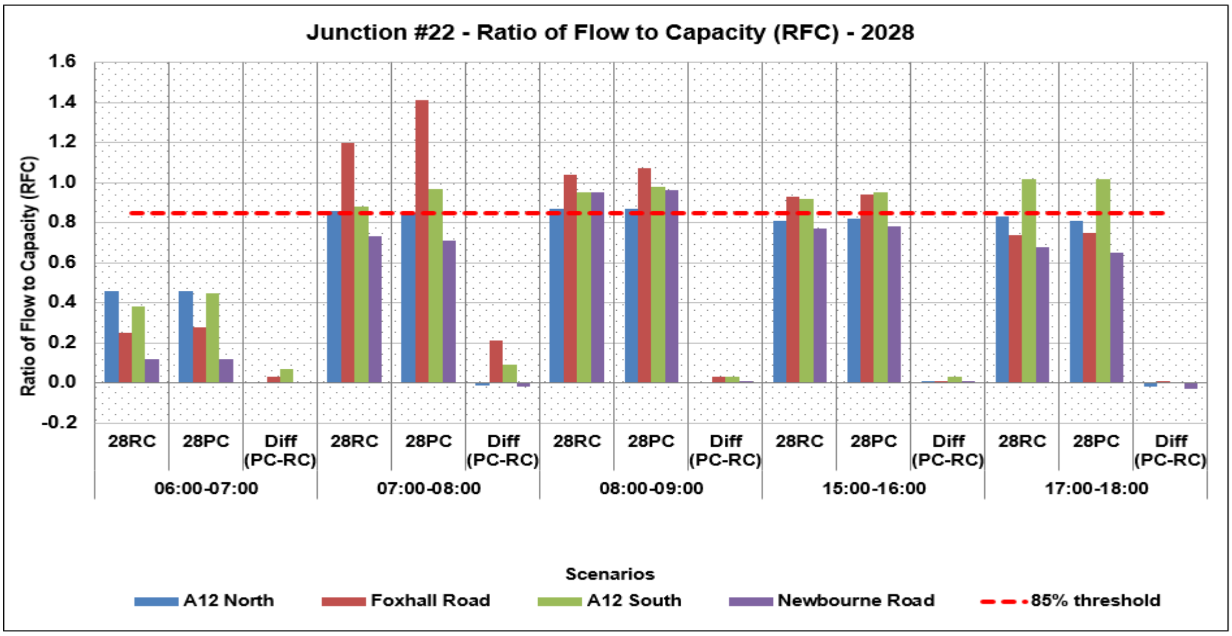
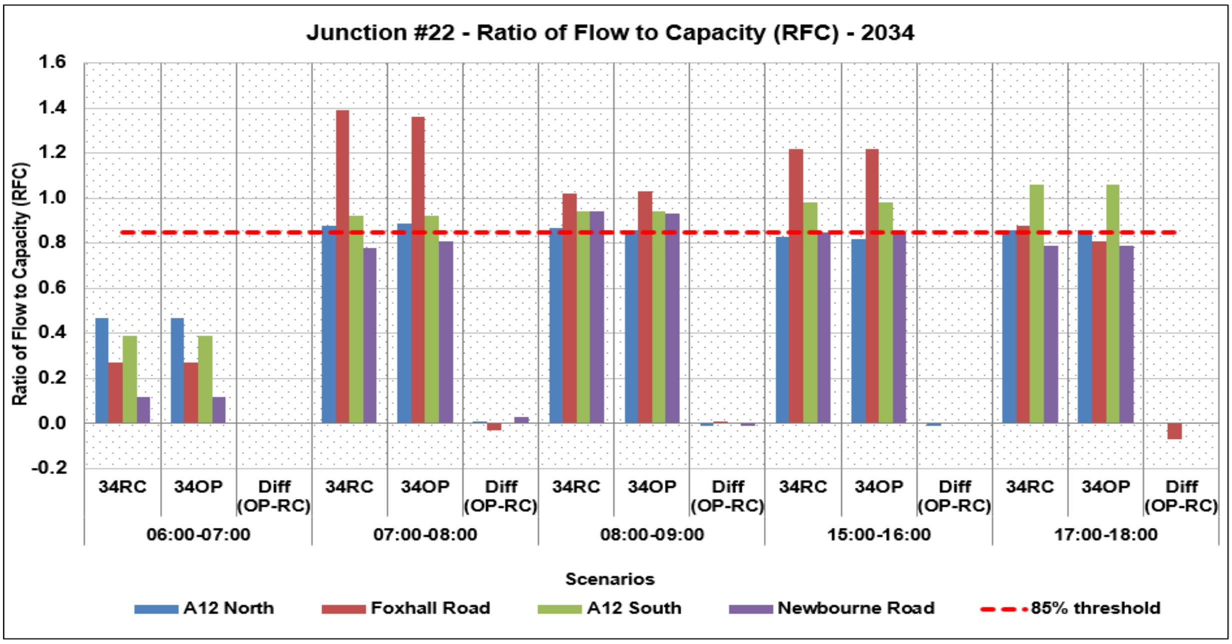


Plate 9.76: A12 / Foxhall Road / Newbourne Road Roundabout 2034 Operational Phase Sensitivity Test RFC Results



9.20.33 In each forecast year tested the sensitivity test results are an improvement in comparison to the core results with a reduction in RFC values recorded in all three forecast years with a maximum reduction of -0.28 in the 2023 forecast year, -0.15 in the 2028 scenarios and a maximum reduction of -0.33 recorded in the 2034 forecast year.

9.20.34 While the sensitivity test flows lead to a reduction in modelled RFC values at Junction 22, the roundabout continues to operate over desirable capacity in each of the forecast years tested. In all three forecast years at least one arm operates above the 0.85 RFC threshold in all modelled hours except the 06:00-07:00 modelled hour in which all arms operate below capacity. As this is the case in both Reference Case and 'with Sizewell' scenarios the results indicate that Sizewell traffic has minimal impact on junction performance, with the 2034 Operational Phase results in particular near identical to the Reference Case.

9.20.35 Sensitivity test flows were also assigned to the Junction 22 mitigation modelling with the junction operating as a signalised roundabout. The DoS modelling results for the 2028 and 2034 Reference Case and 'with Sizewell' mitigation scenarios, split by each modelled hourly period, are illustrated in **Plates 9.77** and **9.78**.

Plate 9.77: A12 / Foxhall Road / Newbourne Road Roundabout 2028 Peak Construction Sensitivity Test DoS Results

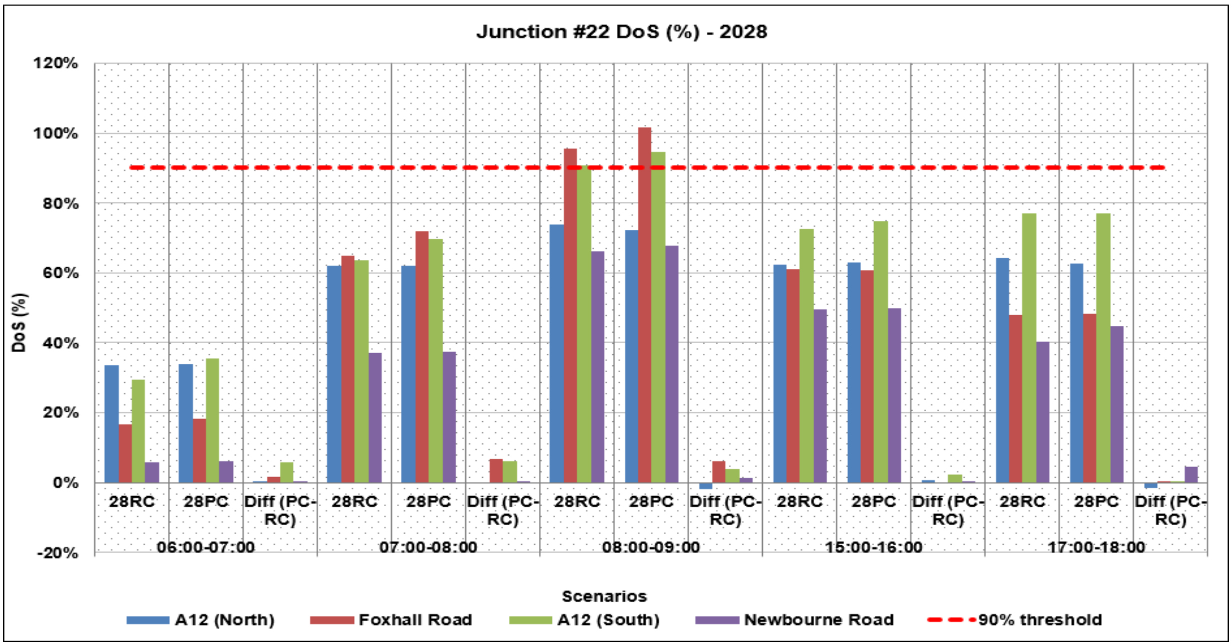
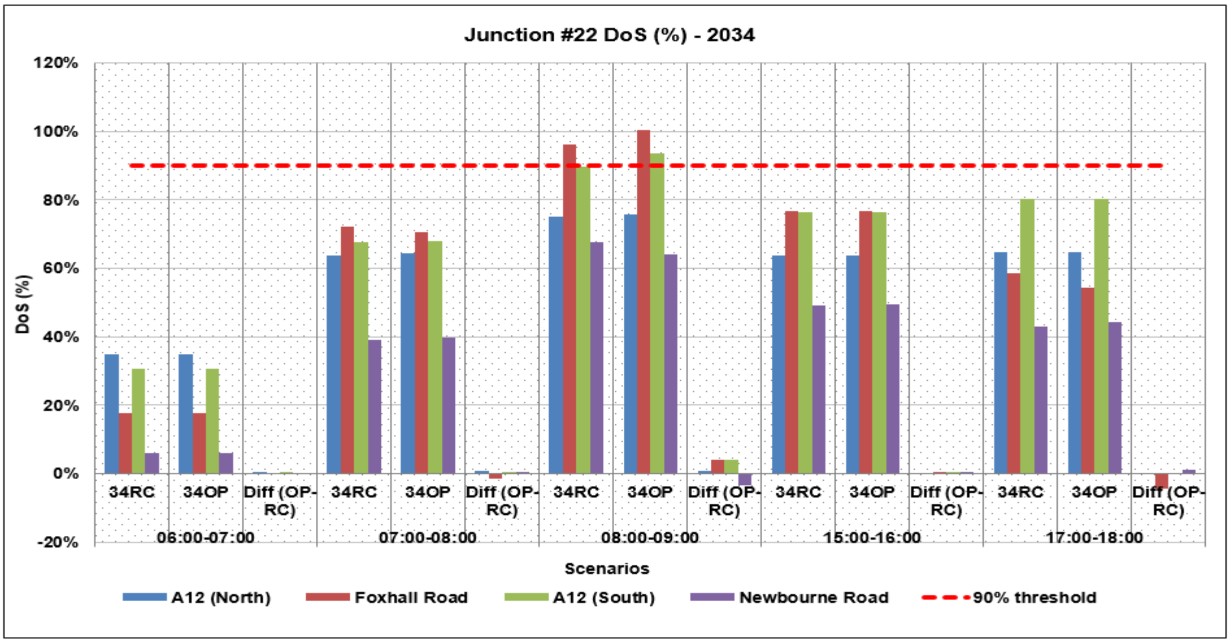


Plate 9.78: A12 / Foxhall Road / Newbourne Road Roundabout 2034 Operational Phase Sensitivity Test DoS Results



9.20.36 With the sensitivity flows assigned to the Junction 22 mitigation modelling the signalised roundabout operates below the 90% DoS threshold in all time periods in the 2028 and 2034 forecast years except the 08:00-09:00 modelled hour which operates slightly above the 90% DoS threshold in both the Reference Case and 'with Sizewell' models.

9.20.37 Sizewell C traffic has only a minimal impact on junction operation with a maximum difference of +7% in terms of DoS results in the 2028 Peak Construction scenario and an increase of +4% in the 2034 Operational Phase scenario.

h) Overview

9.20.38 Initial modelling for Junction 22, using demand flows extracted from the strategic modelling, showed the junction to be operating above capacity in both Reference Case and 'with Sizewell' scenarios in all time periods except the 06:00-07:00 modelled hour. A sensitivity test in which actual flows representing an average work day were fed into the junction model for assessment in order to better align the modelling with the agreed modelling assumptions for the consented Adastral Park development.

9.20.39 Using the results for the sensitivity test the modelled outputs show that the junction will be over capacity in all 2023, 2028 and 2034 scenarios, indicating that the junction would require mitigation measures to be able to continue working within capacity.

Table 9.33: A12 / Foxhall Road / Newbourne Road RFC Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.44	0.46	0.48	0.46	0.46	0.47	0.47
07:00-08:00	0.88	1.03	1.52	1.20	1.41	1.39	1.36
08:00-09:00	1.03	1.03	1.07	1.04	1.07	1.02	1.03
15:00-16:00	0.87	1.07	1.46	0.93	0.95	1.22	1.22
17:00-18:00	0.93	0.94	1.04	1.02	1.02	1.06	1.06

9.20.40 The impact of Sizewell C traffic on overall junction performance is minimal. The Reference Case scenarios' RFC outputs are very similar to those for the 'with Sizewell' scenarios with the only notable difference recorded from 07:00-08:00 in the 2023 Early Years scenario. The increasing RFCs through the years can be largely attributed to background traffic growth, unrelated to Sizewell C.

9.20.41 Mitigation through signalisation of the roundabout and the introduction of additional lanes is consented as part of the Adastral Park development and would see an overall improvement to junction performance. The results in **Table 9.34** show that with sensitivity test flows applied the 2028 and 2034 Reference Case and 'with Sizewell' scenarios operate below capacity in all but the 08:00-09:00 modelled hour.

Table 9.34: A12 / Foxhall Road / Newbourne Road DoS Mitigated Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00				34%	35%	35%	35%
07:00-08:00				65%	72%	72%	71%
08:00-09:00				96%	102%	96%	100%
15:00-16:00				73%	75%	77%	77%
17:00-18:00				77%	77%	80%	80%

9.21 Junction 23 – A12 / Eagle Way / Barrack Square Roundabout

a) Context

9.21.1 Junction 23 is a four-arm roundabout, located to the east of Ipswich and approximately 18-miles south west of the Sizewell C site. It is the junction where the A12 meets Eagle Way and Barrack Square near Martlesham Heath. All approach arms comprise of two lanes with the national speed limit of 60mph. Street lighting is in place on all approaches. A satellite image of the existing junction layout is shown in **Plate 9.79**.

Plate 9.79: Existing A12 / Eagle Way / Barrack Square Roundabout Layout

b) Calibration Summary

9.21.2 Observed queue data showed that there were minor queues on all approaches with moderate queues experienced on the A12 north in all periods not including the 06:00-07:00 period and the A12 south and Barrack Square approaches from 08:00-09:00, 15:00-16:00 and 17:00-18:00.

9.21.3 The junction model typically results in queues slightly lower than those observed in all periods expect the 08:00-09:00 where the modelled queues are slighter higher. Therefore, the model is considered to be representative of existing conditions.

c) Early Years (2023)

i. Demand impact

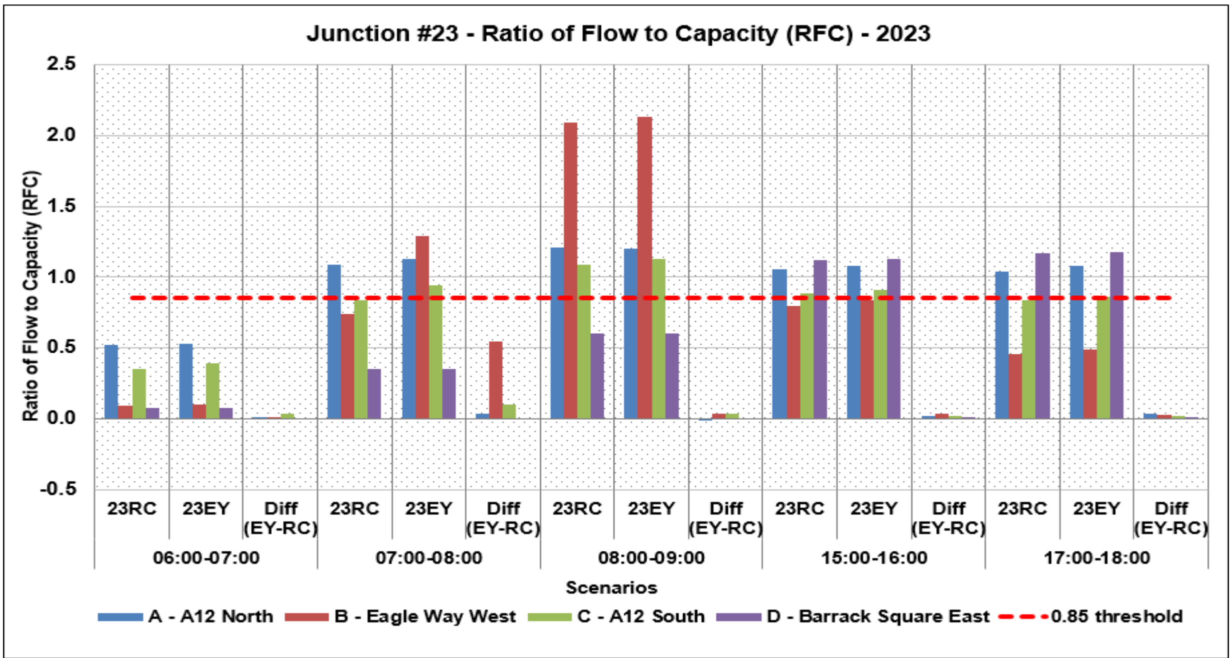
9.21.4 The 2023 Reference Case scenario traffic flows show large increases in entry demand on the A12 north and south arms with a maximum increase of +244 and +191 respectively. Small increases are also seen on Eagle Way (+20 vehicles per hour) with Barrack Square unchanged from the base.

9.21.5 The Early Years scenario shows that traffic flows are broadly similar to the 2023 Reference Case with the most significant increase recorded on the A12 south arm from 07:00-08:00 with an increase of +160 vehicles per hour.

ii. Results analysis

9.21.6 The RFC modelling results for the 2023 Reference Case and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.80**. The difference is shown as EY-RC.

Plate 9.80: A12 / Eagle Way / Barrack Square Roundabout 2023 Early Years RFC Results



9.21.7 **Plate 9.80** shows that the junction is predicted to operate at or above threshold capacity on the A12 North approach during all modelled hours in the Reference Case scenario, except 06:00-07:00, where all arms will operate within capacity. The worst performing time period is seen as 08:00-

09:00 in which three arms (A12 north, Eagle Way and A12 south) all operate with an RFC greater than 1.0 in the 2023 Reference Case scenario.

9.21.8 The Early Years scenario RFC results are very similar to the Reference Case with the only noticeable increases in RFC values recorded from 07:00-08:00 with a maximum RFC increase of +0.55 seen on the Eagle Way side arm.

d) Peak Construction (2028)

i. Demand impact

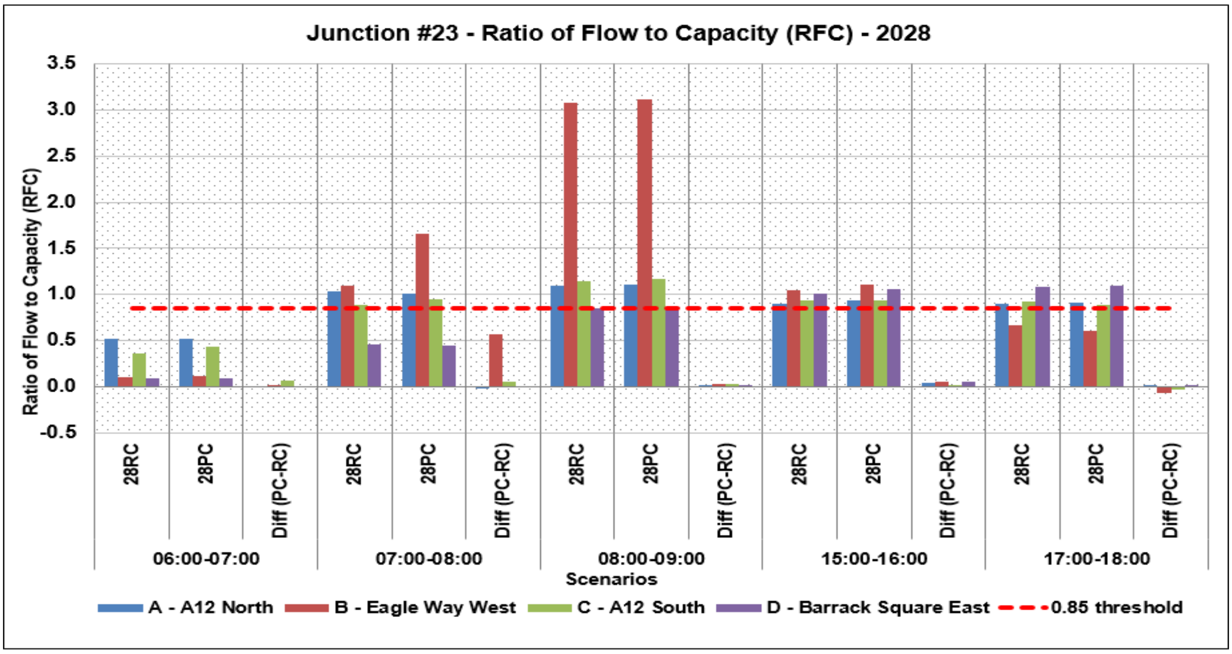
9.21.9 The 2028 Reference Case scenario traffic flows show large increase in entry demand on the A12 south approach with a maximum increase of +220 vehicles per hour seen from 07:00-08:00. There are also modelled increases in traffic flows from Barrack Square in all periods, with a maximum of +170 vehicles per hour and Eagle Way is shown to remain relatively unchanged from the base with increases no higher than +30 vehicles per hour.

9.21.10 The Peak Construction scenario is mostly similar to the Reference Case, with more demand expected from the A12 south arm from 06:00-07:00 (+150 vehicles per hour) and 07:00-08:00 (+90 vehicles per hour) and a moderate increase demand expected on the A12 north arm from 15:00-16:00 (+30 vehicles per hour).

ii. Results analysis

9.21.11 The RFC modelling results for the 2028 Reference Case and Peak Construction scenarios, split by each modelled hourly period, are illustrated in **Plate 9.81**. The difference is shown as PC-RC.

Plate 9.81: A12 / Eagle Way / Barrack Square Roundabout 2028 Peak Construction RFC Results



9.21.12 **Plate 9.81** shows that the junction is predicted to operate at or above threshold capacity on both A12 arms during all modelled hours, except 06:00-07:00, where all approaches will operate within capacity. Eagle Way is predicted to be over capacity from 07:00-08:00, 08:00-09:00 and 15:00-16:00 and the Barrack Square approach is predicted to be at or over capacity from 08:00-09:00, 15:00-16:00 and 17:00-18:00.

9.21.13 As the Early Years scenario RFC results suggested the junction would be over capacity, it is expected that the junction would also be over capacity during Peak Construction. Most results between the Reference Case and Peak Construction are comparable, however an increase in RFC on the Eagle Way approach of +0.57 indicates that increased traffic demand in the Peak Construction scenario may have an effect on this arm from 07:00-08:00.

9.21.14 Due to limitations within the junction modelling software, arms which display an RFC of 1.0 or above are unable to accurately calculate results. Once an arm is 'full', delay and queuing results increase exponentially with output results therefore likely to be an overestimation. This explains RFC values higher than 2.0 or 3.0 in some forecast scenarios. While the performance of the junction is unlikely to reach these levels in reality, the modelling does highlight that there would be capacity issues on these approach arms.

9.21.15 From 07:00-08:00 and 08:00-09:00 in both scenarios, Eagle Way reports the highest RFC. In the afternoon modelled hours, Eagle Way and Barrack Square report the highest RFCs. As the RFC is over 1.0 in both cases it is difficult to assess the accuracy of the results, due to the sensitivity of the models beyond this threshold.

e) Operational Phase (2034)

i. Demand impact

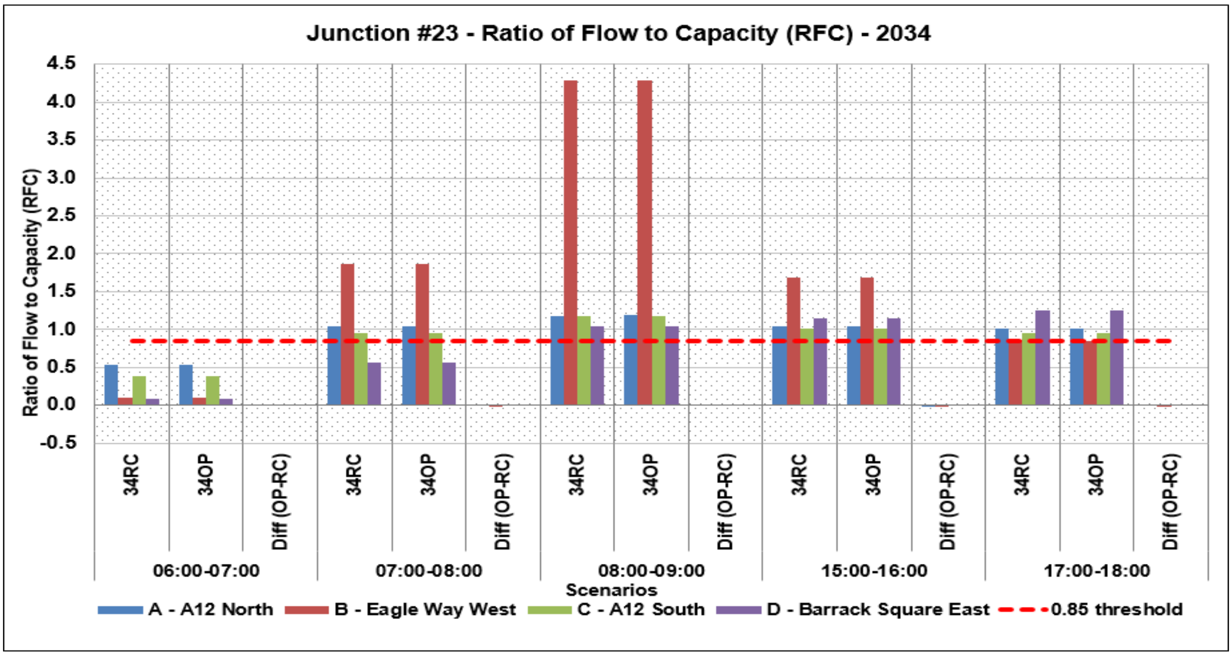
9.21.16 The 2034 Reference Case scenario traffic flows show a large increase in entry demand on the A12 approaches for all periods compared with the base. A maximum increase of +270 vehicles per hour is seen on the A12 North approach from 15:00-16:00 and a maximum of +380 vehicles per hour seen on the A12 South approach. There is a maximum increase in traffic flows from Barrack Square of +290 vehicles per hour from 08:00-09:00 and a small increase on the Eagle Way approach (+40 vehicles per hour).

9.21.17 The Operational Phase in 2034 scenario is relatively unchanged from the Reference Case Scenario in 2034 with minimal differences in flow between the two scenarios.

ii. Results analysis

9.21.18 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.82**. The difference is shown as OP-RC.

Plate 9.82: A12 / Eagle Way / Barrack Square Roundabout 2034 Operational Phase RFC Results



9.21.19 **Plate 9.82** shows that the junction is predicted to operate over threshold capacity on all approaches during all modelled hours except the 06:00-07:00 period and on the Barrack Square approach from 07:00-08:00.

9.21.20 The Operational Phase scenario RFC results are very similar to those for the 2034 Reference Case scenario, which is intuitive given the negligible change in entry demand between the two scenarios.

9.21.21 The Eagle Way approach generally reports the highest RFC however as the RFC is over 1.0 in several cases and it is difficult to assess the accuracy of the results, due to the sensitivity of the models beyond this threshold.

9.21.22 Although the 2034 Reference Case and Operational Phase RFCs are both above the threshold, the modelling results demonstrate that Sizewell C has a negligible additional impact. The model exceeds capacity in the Reference Case.

f) Mitigation Analysis

9.21.23 Mitigation measures are proposed at Junction 23 as part of the consented Adastral Park development. The proposals will see the existing priority roundabout at the junction of the A12 / Eagle Way / Barrack Square converted into a signalised roundabout with additional traffic lanes to enhance capacity.

9.21.24 The signalised roundabout is not due to be implemented until after 2023, therefore this arrangement has only been analysed with 2028 and 2034 forecast flows applied.

9.21.25 A LinSig 3 model was created to test the signalised layout arrangement with traffic flows converted to PCU values for entry into the model.

9.21.26 2028 and 2034 mitigation modelling DoS results for the signalised roundabout arrangement are presented below in **Plates 9.83** and **9.84**:

Plate 9.83: A12 / Eagle Way / Barrack Square Roundabout Mitigated 2028 Peak Construction RFC Results

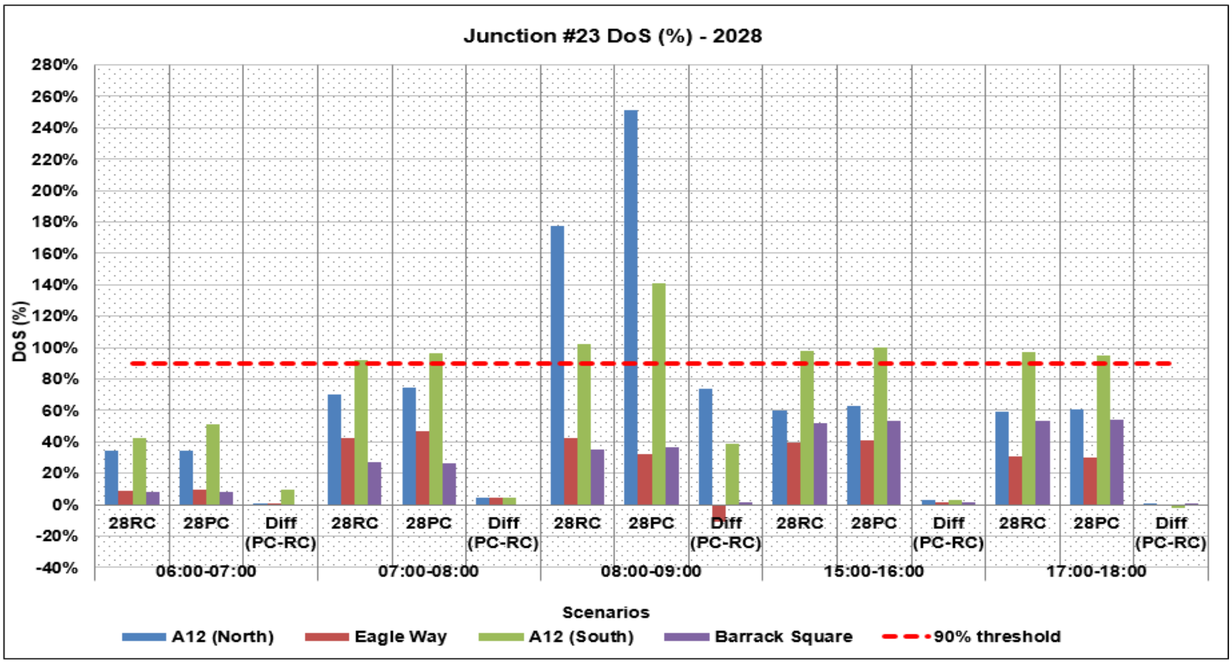
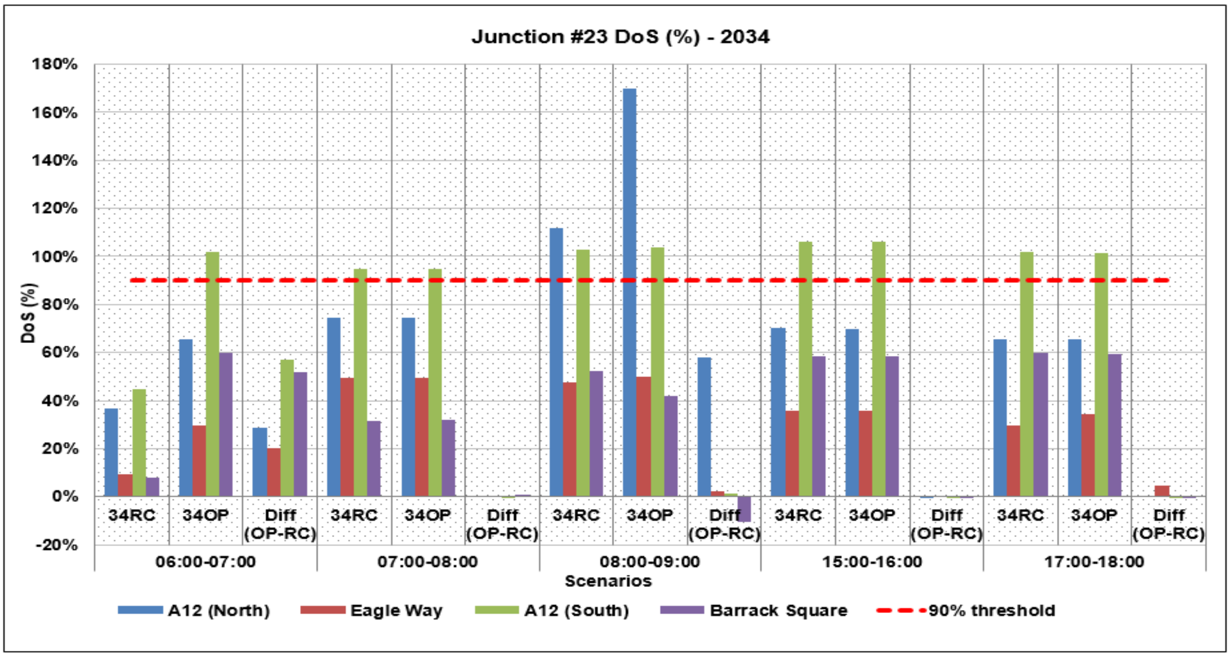


Plate 9.84: A12 / Eagle Way / Barrack Square Roundabout Mitigated 2034 Operational Phase RFC Results



9.21.27 The results from the mitigation modelling suggest that the proposed mitigation measures to convert the existing A12 / Eagle Way / Barrack Square priority roundabout into a signalised roundabout will lead to an improvement in junction performance with both Reference Case and 'with Sizewell' demand applied.

9.21.28 While arms of the junction are still predicted to operate above the capacity threshold, these are fewer in number and there is an overall reduction in congestion with DoS values lowering from those seen in the modelling with the existing layout in place.

9.21.29 The 07:00-08:00 time period most benefits from the capacity enhancement measures with all arms operating with a DoS lower than 100% in both 2028 and 2034 scenarios for both Reference Case and 'with Sizewell' scenarios.

9.21.30 Signal timings were entered in such a way so as to not exceed the available road space for traffic queuing at internal stop lines on the roundabout. In some cases this meant restricting the amount of green time on the entry arms to a low value which contributed to the higher DoS values recorded on the A12 north and south arms.

9.21.31 Impact from Sizewell C traffic on the proposed mitigation layout in place is mostly negligible. From 06:00-07:00 and 08:00-09:00 however there are instances of DoS levels increasing in the 'with Sizewell' scenarios in comparison to the Reference Case scenarios. The highest DoS increases is seen on the A12 north arm from 08:00-09:00 in the 2028 Peak Construction scenario with an increase of +74%.

g) Sensitivity Test

9.21.32 A similar sensitivity test to that undertaken for Junctions 21 and 22 has been undertaken. The sensitivity test brings the modelling into line with a separate modelling exercise undertaken for the consented Adastral Park development in which fuel and income adjustments were excluded from the traffic forecasting, leading to lower overall traffic demand. For the sensitivity test scenarios ‘actual flows’ rather than ‘demand flows’ were extracted from the strategic modelling for assignment to the junction models, which is a similar approach used for Adastral Park.

9.21.33 With the adjustments to the traffic forecasts, flows reduce on all arms in all modelled scenarios up to a maximum of -170 vehicles per hour as seen on the A12 North approach in the 2023 Early Years scenario from 17:00-18:00.

9.21.34 The RFC modelling results for the 2023, 2038 and 2034 Reference Case and ‘with Sizewell’ scenarios, split by each modelled hourly period, are illustrated in **Plates 9.85** to **9.87**.

Plate 9.85: A12 / Eagle Way / Barrack Square Roundabout 2023 Early Years Sensitivity Test RFC Results

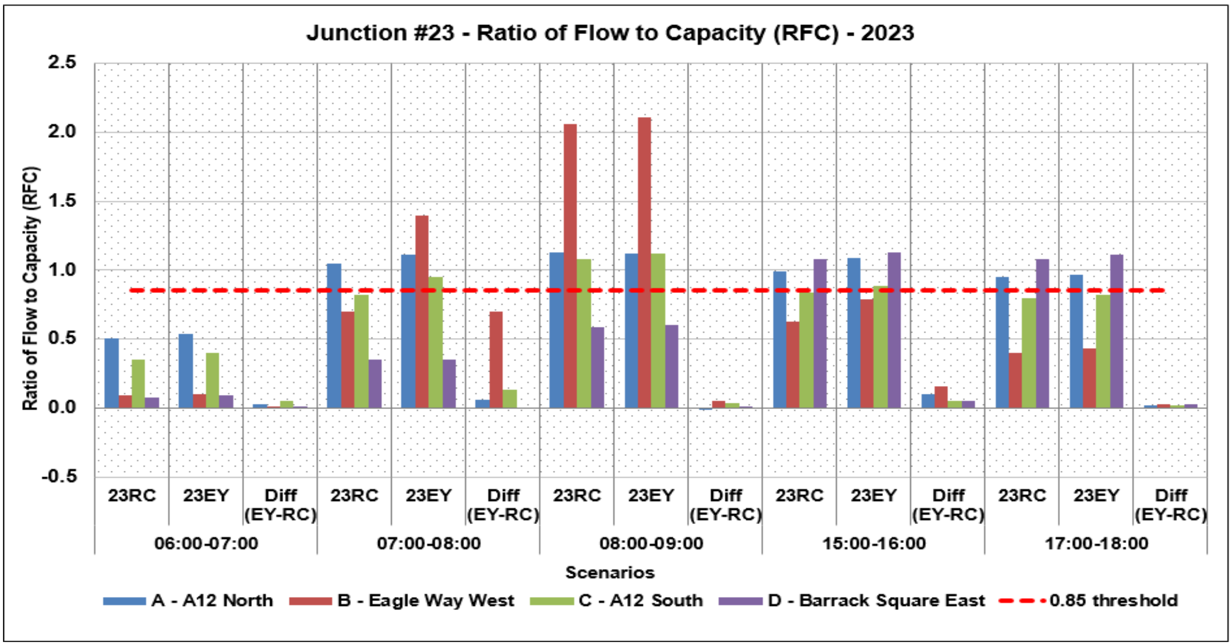


Plate 9.86: A12 / Eagle Way / Barrack Square Roundabout 2028 Peak Construction Sensitivity Test RFC Results

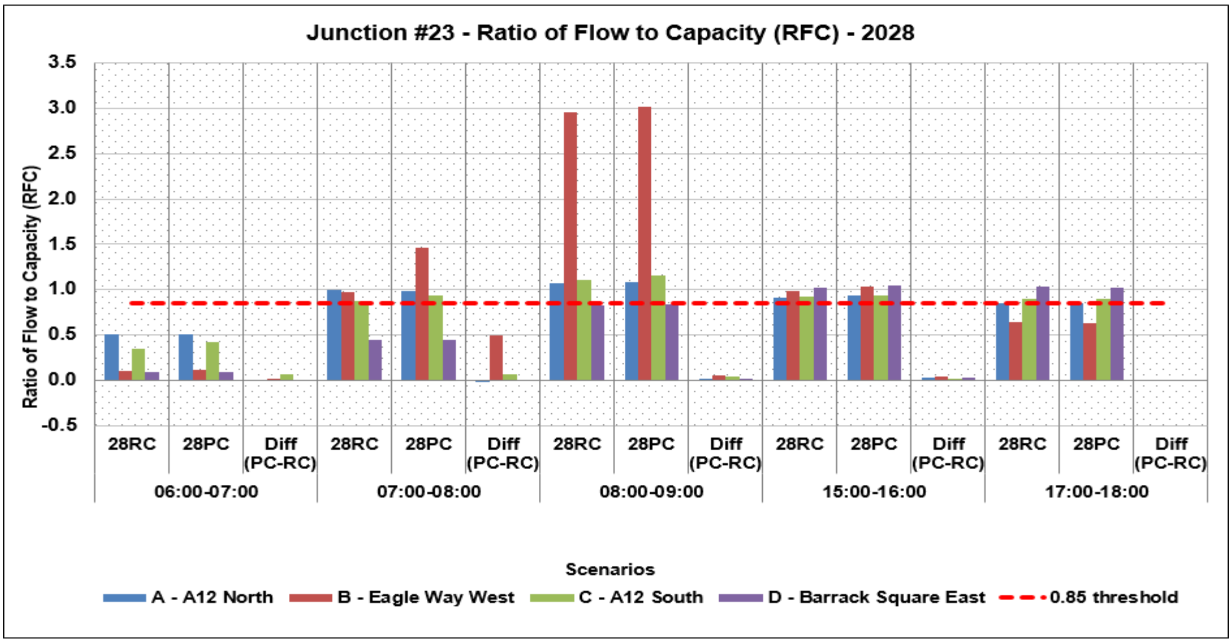
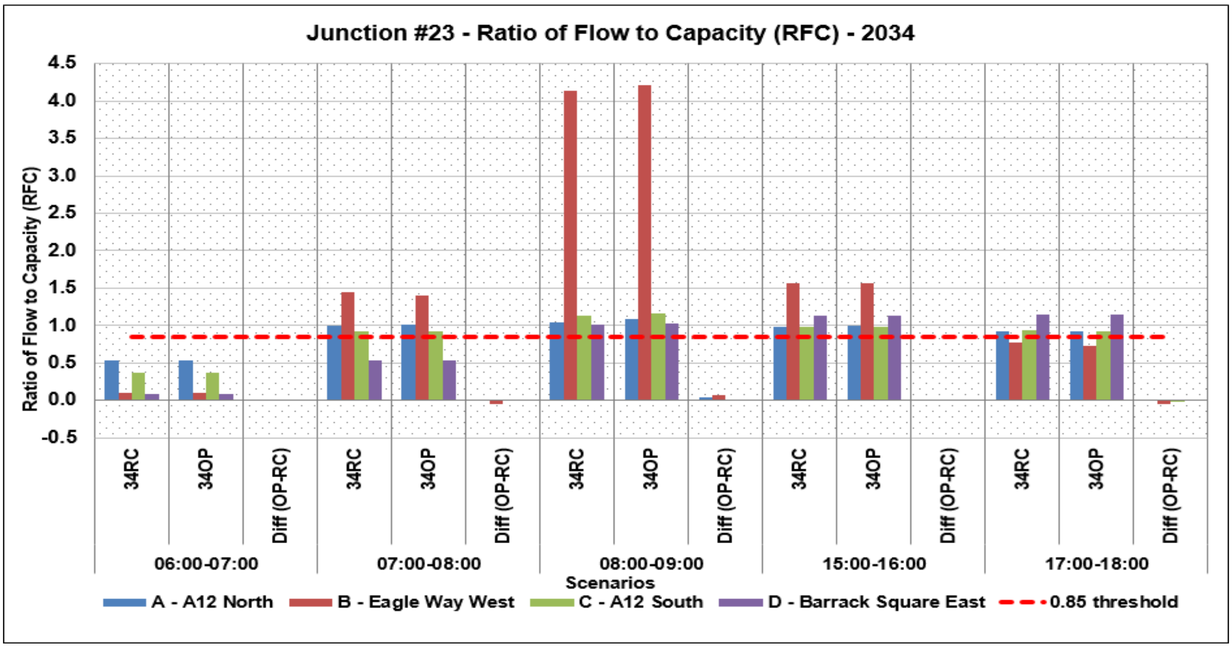


Plate 9.87: A12 / Eagle Way / Barrack Square Roundabout 2034 Operational Phase Sensitivity Test RFC Results



9.21.35 In each forecast year tested the sensitivity test results are an improvement in comparison to the core results with a reduction in RFC values recorded in all three forecast years with a maximum reduction of -0.17 in the 2023 forecast year, -0.20 in the 2028 scenarios and a maximum reduction of -0.46 recorded in the 2034 forecast year.

9.21.36 With sensitivity test flows assigned and overall reduction in modelled RFC values at Junction 23 is seen. The roundabout does however continue to operate overcapacity in each of the forecast years tested with one or more of the approach arms operating above the capacity threshold in all but the 06:00-07:00. As this is the case in both Reference Case and 'with Sizewell' scenarios the results indicate that Sizewell traffic has minimal impact on junction performance.

9.21.37 Sensitivity test flows were also assigned to the Junction 23 mitigation modelling with the junction operating as a signalised roundabout. The DoS modelling results for the 2028 and 2034 Reference Case and 'with Sizewell' mitigation scenarios, split by each modelled hourly period, are illustrated in **Plates 9.88** and **9.89**.

Plate 9.88: A12 / Eagle Way / Barrack Square Roundabout 2028 Peak Construction Sensitivity Test DoS Results

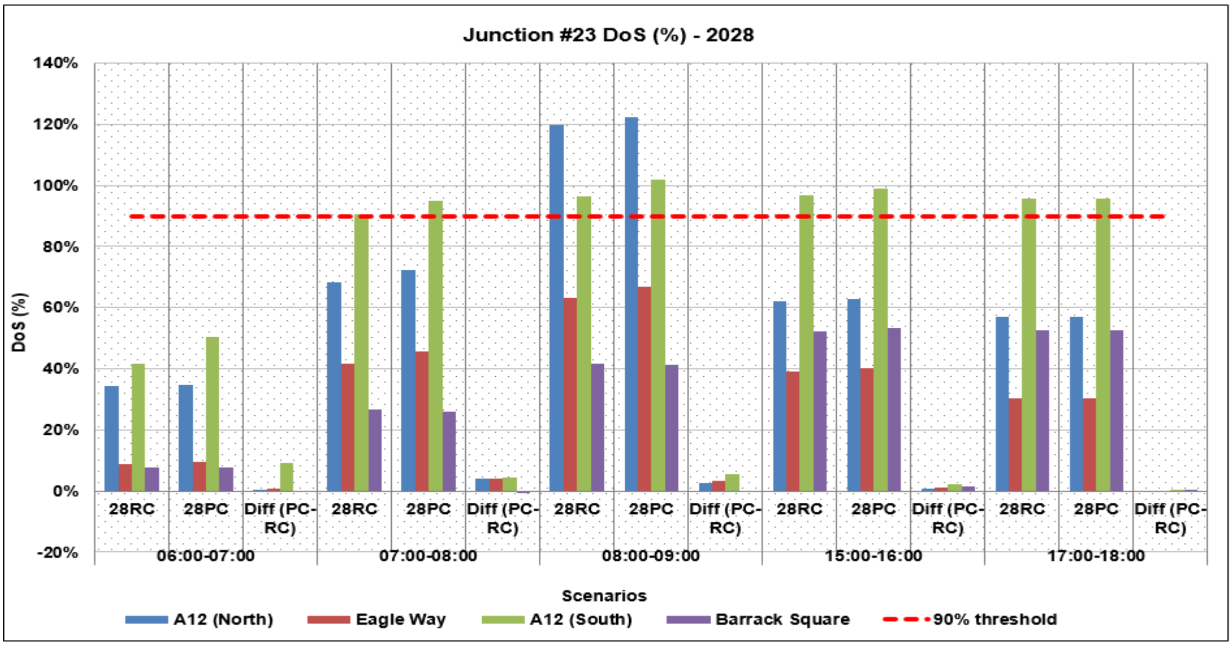
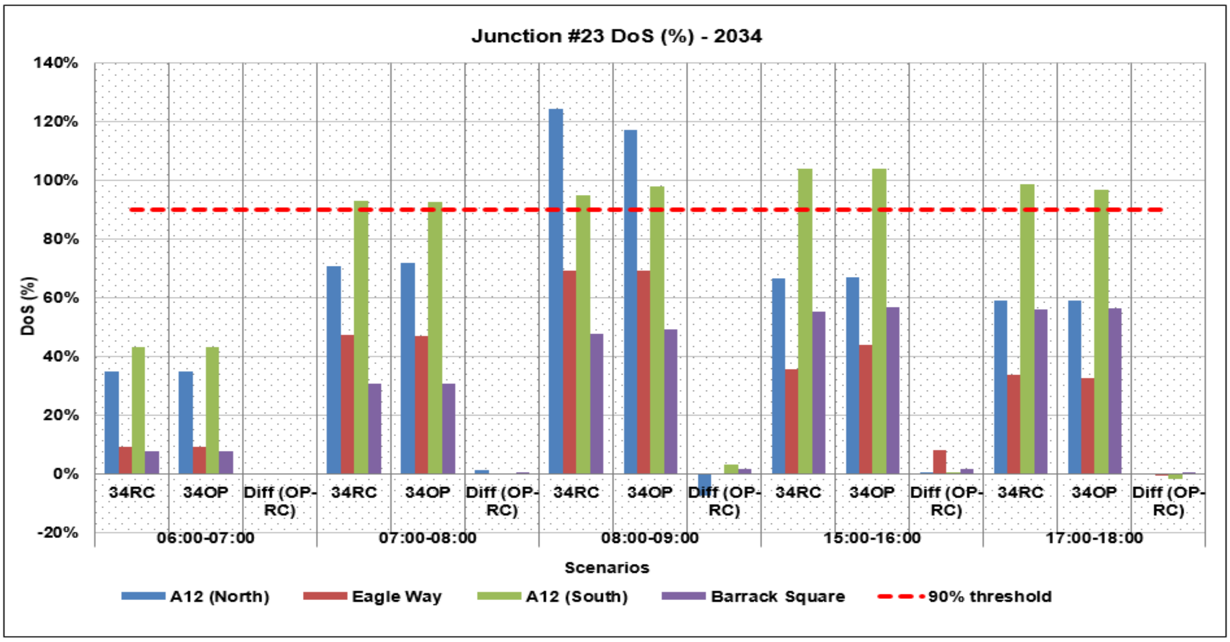


Plate 9.89: A12 / Eagle Way / Barrack Square Roundabout 2034 Operational Phase Sensitivity Test DoS Results



9.21.38 With the sensitivity flows assigned the performance of the signalised roundabout improves with the number of arms operating above the capacity threshold reduced in comparison to the existing roundabout layout. The worst performing modelled hour is 08:00-09:00 in both the 2028 and 2034 forecast years in the Reference Case and 'with Sizewell' scenarios. In this modelled hour the A12 operates above capacity in both directions whereas the A12 north appears under capacity for all other modelled hours.

9.21.39 Sizewell C traffic has only a minimal impact on junction operation with minor increases in DoS recorded in the 'with Sizewell' scenarios in comparison to the Reference Case.

h) Overview

9.21.40 Initial modelling for Junction 23, using demand flows extracted from the strategic modelling, showed the junction to be operating above capacity in both Reference Case and 'with Sizewell' scenarios in all time periods except the 06:00-07:00 modelled hour. As a result a sensitivity test in which actual flows representing an average work day were fed into the junction model for assessment.

9.21.41 An overview of the maximum RFC results recorded in each scenario, for each time period, taken from the sensitivity test model, are shown in **Table 9.35**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or very near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.35: A12 / Eagle Way / Barrack Square RFC Results Overview

Time period	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.48	0.51	0.54	0.51	0.51	0.53	0.53
07:00-08:00	0.97	1.05	1.40	1.00	1.46	1.44	1.40
08:00-09:00	0.99	2.06	2.11	2.96	3.02	4.14	4.21
15:00-16:00	0.96	1.08	1.13	1.02	1.05	1.56	1.56
17:00-18:00	0.98	1.08	1.11	1.03	1.02	1.15	1.15

9.21.42 The sensitivity test results are an improvement over the core results however continue to show the junction operating over capacity in all time periods except the 06:00-07:00 modelled hour. This suggests that the existing roundabout will be unable to cope with forecast traffic demand and a mitigation scheme is necessary to improve junction performance.

9.21.43 The impact of Sizewell C traffic on overall junction performance is minimal in the 2023 Early Years and 2034 Operational Phase scenarios with results similar to the Reference Case scenarios. The 2028 Peak Construction scenario shows larger differences compared to the Reference Case with the 07:00-08:00 modelled hour in particular showing an increase in RFC of 0.46.

9.21.44 Mitigation through signalisation of the roundabout and the introduction of additional lanes is consented as part of the Adastral Park development and would see an overall improvement to junction performance in the 2028 and 2034 Reference Case and 'with Sizewell' scenarios.

9.21.45 While the junction is predicted to continue to operate overcapacity on at least one arm in most of the modelled scenarios, the overall level of congestion is lower with a signalised roundabout in place as detailed in **Table 9.36** below:

Table 9.36: A12 / Eagle Way / Barrack Square RFC Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00				42%	51%	43%	43%
07:00-08:00				91%	95%	93%	93%
08:00-09:00				120%	122%	125%	117%
15:00-16:00				97%	99%	104%	104%
17:00-18:00				96%	96%	99%	97%

9.22 Junction 24 – A12 / Eagle Way / Anson Road Roundabout

a) Context

9.22.1 Junction 24 is a four-arm roundabout, located to the east of Ipswich and approximately 17-miles south west of the Sizewell C site. It is the junction where the A12 meets Eagle Way into Martlesham Heath and Anson Road leads into the Adastral Business Park. Eagle Way is a two-lane approach with all other approach arms comprising of three lanes with the national speed limit of 60mph. Street lighting is in place on all approaches. A satellite image of the existing junction layout is shown in **Plate 9.90**.

Plate 9.90: Existing A12 / Eagle Way / Anson Road Roundabout Layout

b) Calibration Summary

9.22.2 Observed queue data showed there were minor queues on all approaches, with moderate queues on the A12 north and south approaches from 08:00-09:00 and the A12 south and Anson Road arms in the afternoon periods.

9.22.3 The junction model typically results in queues slightly lower than those observed, with queues present on the aforementioned arms. The A12 south arm was modelled with longer queues from 15:00-16:00. The model is considered to be representative of existing conditions.

c) Early Years (2023)

i. Demand impact

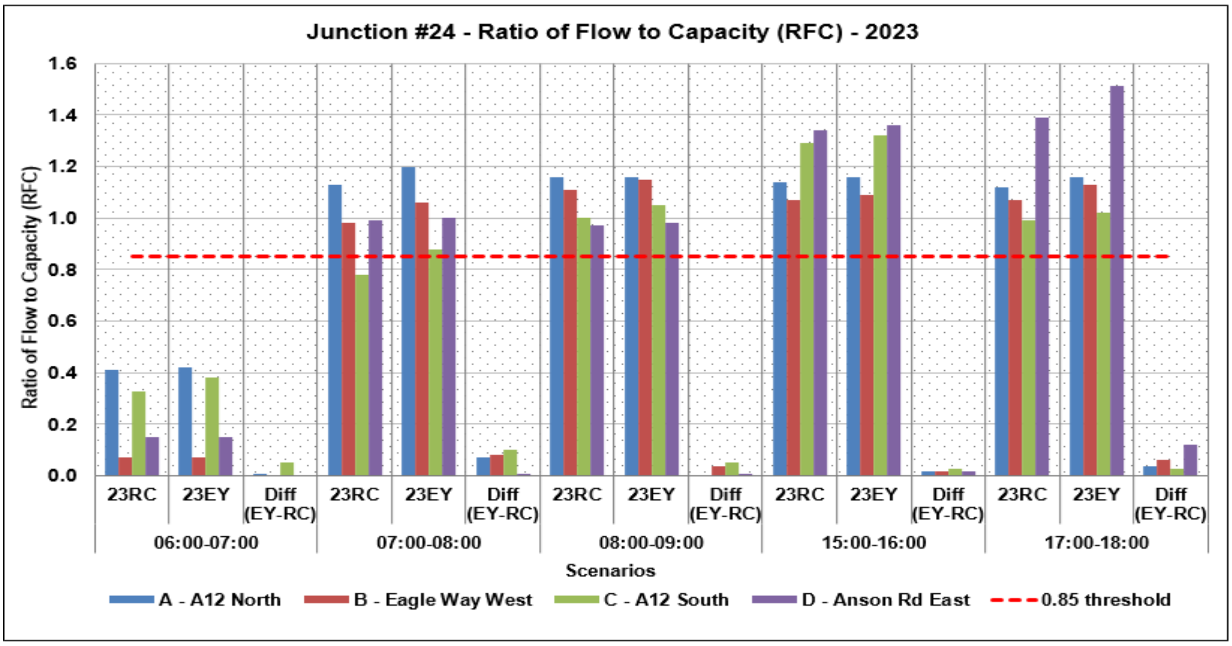
9.22.4 The 2023 Reference Case scenario traffic flows compared to the base model show increases in entry demand on the A12 north and south arms. A maximum increase of +230 vehicles per hour is seen on the A12 north arm from 15:00-16:00 with the A12 south displaying a maximum increase of +190 vehicles per hour from 08:00-09:00. Minor increases in flows are also recorded on the Eagle Way approach to the roundabout with a maximum of +20 vehicles per hour. The Anson Road approach displays an increase in demand from 08:00-09:00 (+60 vehicles per hour) and from 17:00-18:00 (+60 vehicles per hour).

9.22.5 The Early Years scenario shows that traffic flows are broadly similar to the 2023 Reference Case in all periods with the exception of the 07:00-08:00 period where the A12 south sees an increase in demand (+160 vehicles per hour).

ii. Results analysis

9.22.6 The RFC modelling results for the 2023 Reference Case and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.91**. The differences are shown as EY-RC.

Plate 9.91: A12 / Eagle Way / Anson Road Roundabout 2023 Early Years RFC Results



9.22.7 **Plate 9.91** shows that the junction is predicted to operate over the capacity threshold on all approaches during all modelled hours in the Reference Case scenario except 06:00-07:00 where all approaches would operate within capacity. The A12 south approach is predicted to operate within capacity from 07:00-08:00.

9.22.8 The Early Years scenario RFC results are very similar to the Reference Case, generally showing small increases in RFC. The A12 south approach is predicted to be over capacity in the Early Years scenario from 07:00-08:00.

d) Peak Construction (2028)

i. Demand impact

9.22.9 The 2028 Reference Case scenario traffic flows show a large increase in entry demand in comparison to the base year on the A12 arms with a maximum increase of +400 vehicles per hour on the A12 north arm from 07:00-08:00 and a maximum increase of +330 vehicles per hour on the A12 south approach from 08:00-09:00. A minor increase in demand is seen on the Eagle Way arm with a maximum of +40 vehicles per hour from 15:00-16:00. Anson Road is predicted to experience a maximum flow increase of +200 vehicles per hour from 17:00-18:00.

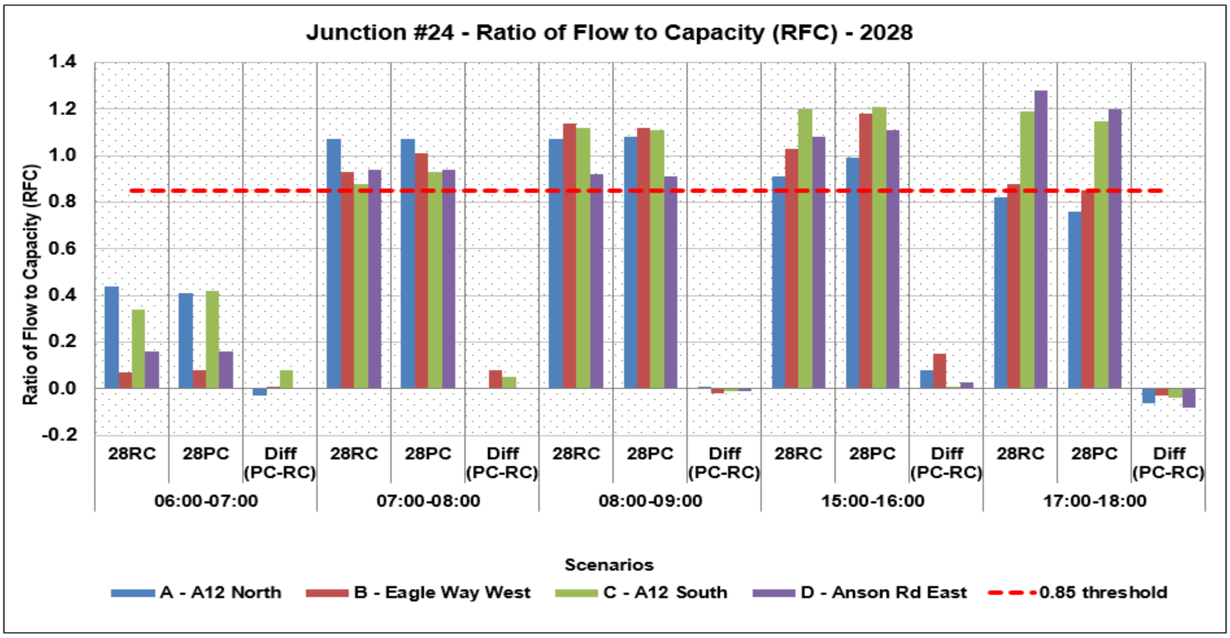
9.22.10 The Peak Construction scenario displays increases in entry demand on the A12 south arm for the 06:00-07:00 (+150 vehicles per hour) and 07:00-08:00

(+80 vehicles per hour) periods. The remaining arms are display decreases in flow with the 07:00-08:00 and 15:00-16:00 time periods seeing a reduction of -317 and -150 on the A12 north arm respectively.

ii. Results analysis

9.22.11 The RFC modelling results for the 2028 Reference Case and Peak Construction scenarios, split by each modelled hourly period, are illustrated in **Plate 9.92**. The difference is shown as PC-RC.

Plate 9.92: A12 / Eagle Way / Anson Road Roundabout 2028 Peak Construction RFC Results



9.22.12 **Plate 9.92** shows that the junction is predicted to operate over threshold capacity on all approaches during most modelled hours, with the exception being 06:00-07:00.

9.22.13 As the Early Years scenario RFC results suggested the junction would be over capacity, it is also predicted that the junction is over capacity during Peak Construction.

9.22.14 The increase in demand in 2028, resulting from committed development and background traffic growth, results in this junction operating over the 0.85 RFC threshold and over 1.0 in several periods. The impact of the additional Early Years traffic flows has negligible impact over the Reference Case.

e) Operational Phase (2034)

i. Demand impact

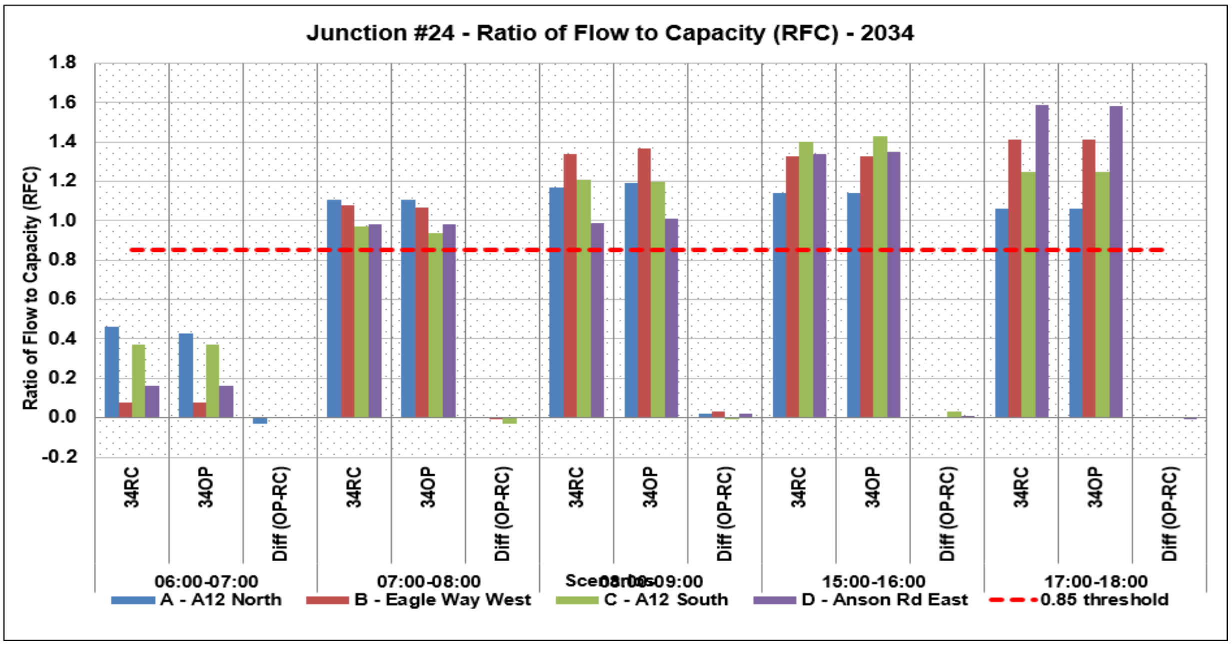
9.22.15 The 2034 Reference Case scenario traffic flows compared to the base show a large increase in entry demand on the A12 arms across all time periods with a maximum of +400 vehicles per hour on the A12 North approach and +480 vehicles per hour on the A12 South approach from 15:00-16:00. A minor increase is seen on the Eagle Way approach (+40 vehicles per hour) with a larger increase seen on Anson Road where the demand increases by +340 vehicles per hour from 17:00-18:00.

9.22.16 The Operational Phase scenario experiences decreases in flow across all modelled hours with the largest differences seen from 07:00-08:00 with the A12 North approach seeing a decrease of -230 vehicles per hour and the Eagle Way approach decreasing by -90 vehicles per hour.

ii. Results analysis

9.22.17 The RFC modelling results for the 2034 Reference Case and Operational Phase scenarios, split by each modelled hourly period, are illustrated in **Plate 9.93**. The difference is shown as OP-RC.

Plate 9.93: A12 / Eagle Way / Anson Road Roundabout 2034 Operational Phase RFC Results



9.22.18 **Plate 9.93** shows that the junction is predicted to operate over capacity on all approaches during most modelled hours except 06:00-07:00, where all approaches would operate within capacity.

9.22.19 The Operational Phase scenario RFC results are very similar to those for the 2034 Reference Case scenario.

9.22.20 Although the 2034 Reference Case and Operational Phase RFCs are both above the capacity threshold, the modelling results demonstrate that Sizewell C has a negligible additional impact over the Reference Case.

f) Mitigation Analysis

9.22.21 A mitigation scheme, which will see the existing priority roundabout converted to a signalised roundabout, has been consented as part of the transport measures for the Adastral Park development. As the scheme is not due to be delivered until after 2034, and therefore out of scope for the Sizewell C forecasting exercise, the mitigation layout is not included in the results.

g) Sensitivity Test

9.22.22 A similar sensitivity test has been undertaken to the other junctions along this stretch of the A12. The sensitivity test brings the modelling into line with a separate modelling exercise undertaken for the consented Adastral Park development in which fuel and income adjustments were excluded from the traffic forecasting, leading to lower overall traffic demand. For the sensitivity test scenarios ‘actual flows’ rather than ‘demand flows’ were extracted from the strategic modelling for assignment to the junction models.

9.22.23 With the adjustments to the traffic forecasts, flows reduce on all arms in all modelled scenarios up to a maximum of -360 vehicles per hour as seen on the Anson Road approach in the 2034 Reference Case scenario from 17:00-18:00.

9.22.24 The RFC modelling results for the 2023, 2038 and 2034 Reference Case and ‘with Sizewell’ scenarios, split by each modelled hourly period, are illustrated in **Plates 9.94** to **9.96**.

Plate 9.94: A12 / Eagle Way / Anson Road Roundabout 2023 Early Years Sensitivity Test RFC Results

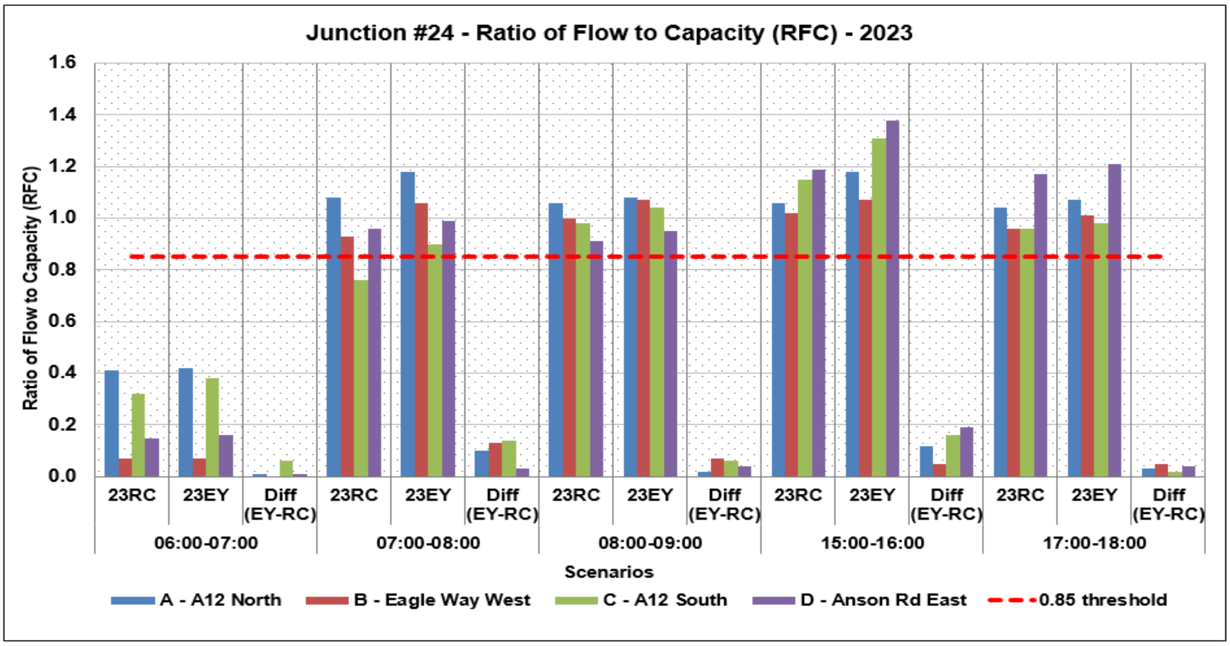


Plate 9.95: A12 / Eagle Way / Anson Road Roundabout 2028 Peak Construction Sensitivity Test RFC Results

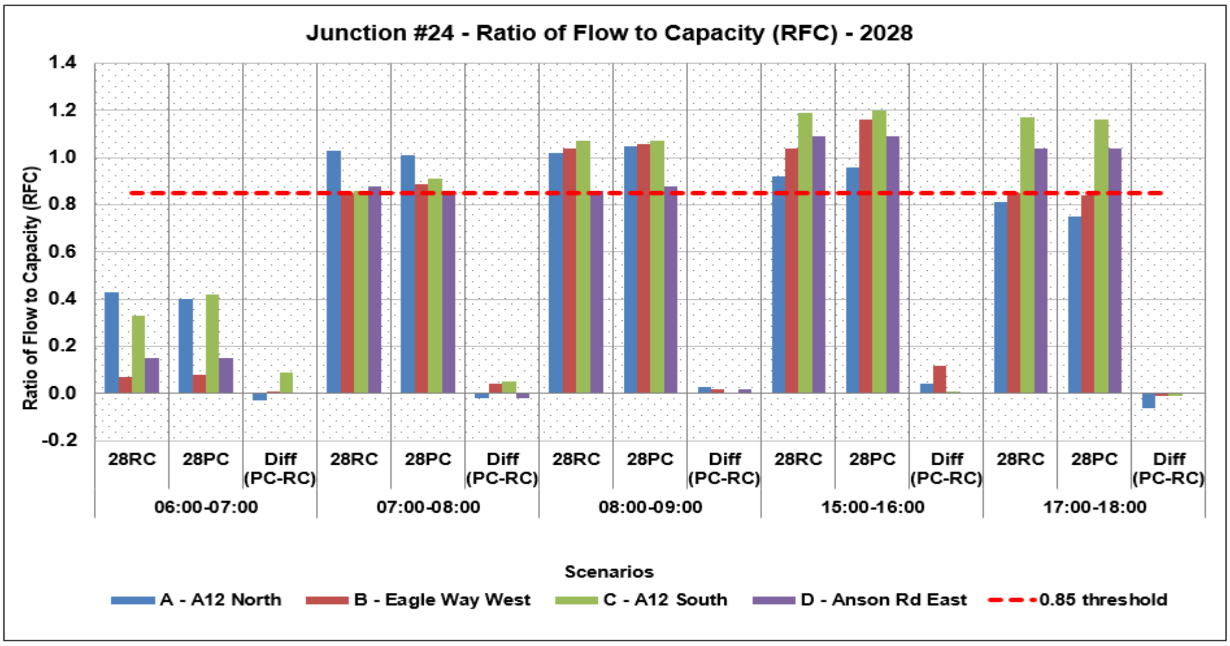
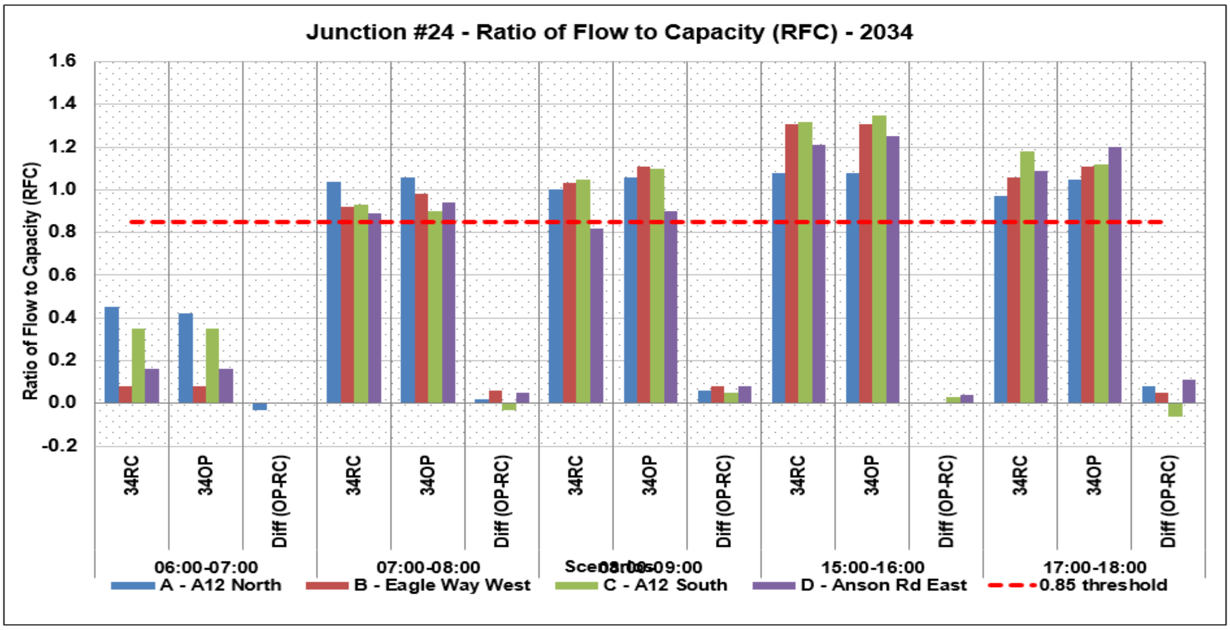


Plate 9.96: A12 / Eagle Way / Anson Road Roundabout 2034 Operational Phase Sensitivity Test RFC Results



9.22.25 In each forecast year tested the sensitivity test results are an improvement in comparison to the core results with a reduction in RFC values recorded in all three forecast years with a maximum reduction of -0.30 in the 2023 forecast year, -0.24 in the 2028 scenarios and a maximum reduction of -0.50 recorded in the 2034 forecast year.

9.22.26 With sensitivity test flows assigned and overall reduction in modelled RFC values at Junction 24 is seen. The roundabout does however continue to operate overcapacity in each of the forecast years tested with one or more of the approach arms operating above the capacity threshold in all but the 06:00-07:00. As this is the case in both Reference Case and 'with Sizewell' scenarios the results indicate that Sizewell traffic has minimal impact on junction performance.

9.22.27 As the proposed mitigation measures are not due for construction until after 2034, the proposed junction layout has not been subject to a sensitivity test.

h) Overview

9.22.28 Initial modelling for Junction 24, using demand flows extracted from the strategic modelling, showed the junction to be operating above capacity in both Reference Case and 'with Sizewell' scenarios in all time periods except the 06:00-07:00 modelled hour.

9.22.29 An overview of the maximum RFC results recorded in each scenario, for each time period, taken from the sensitivity test model, are shown in **Table 9.37**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.37: A12 / Eagle Way / Barrack Square RFC Results Overview

Time period	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.38	0.41	0.42	0.43	0.42	0.45	0.42
07:00-08:00	0.91	1.08	1.18	1.03	1.01	1.04	1.06
08:00-09:00	0.96	1.06	1.08	1.07	1.07	1.05	1.11
15:00-16:00	1.00	1.19	1.38	1.19	1.20	1.32	1.35
17:00-18:00	1.02	1.17	1.21	1.17	1.16	1.18	1.20

9.22.30 The modelling results are an improvement over the core results, however continue to show that the junction will be over capacity in all 2023, 2028 and 2034 scenarios. Despite the junction operating over capacity, this is the case in both the Reference Case and 'with Sizewell C' scenarios.

9.23 Junction 25 – A12 / A1214 / Main Road / Martlesham Park and Ride Roundabout

a) Context

9.23.1 Junction 25 is a five-arm signalised roundabout, located to the east of Ipswich and approximately 18-miles south-west of the Sizewell C site. It is the junction where the A12 meets Main Road (A1214) near Martlesham. It is also the site of the Martlesham park and ride. The junction comprises of three lane approaches from the A12 and A1214 approaches, and two lanes from the park and ride exit and Main Road approaches with a speed limit of 50mph on entering the junction. Street lighting is in place on all approaches. A satellite image of the existing junction layout is shown in **Plate 9.97**.

Plate 9.97: Existing A12 / A1214 / Main Road / Martlesham Park and Ride Roundabout Layout

b) Calibration Summary

9.23.2 Observed queue data showed there were minor queues on all approach arms in the morning periods, with moderate queues on all approach arms in the afternoon periods.

9.23.3 The junction model results in queues that are in line with those observed. Therefore, the model is considered to represent existing conditions.

c) Early Years (2023)

i. Demand impact

9.23.4 The 2023 Reference Case scenario traffic flows show increases in entry demand on the A12 north and A12 south arms (+50-260 vehicles per hour), relative to the observed base year traffic flows. There are more minor increases on the A1214 west and Main Road (up to +50 vehicles per hour).

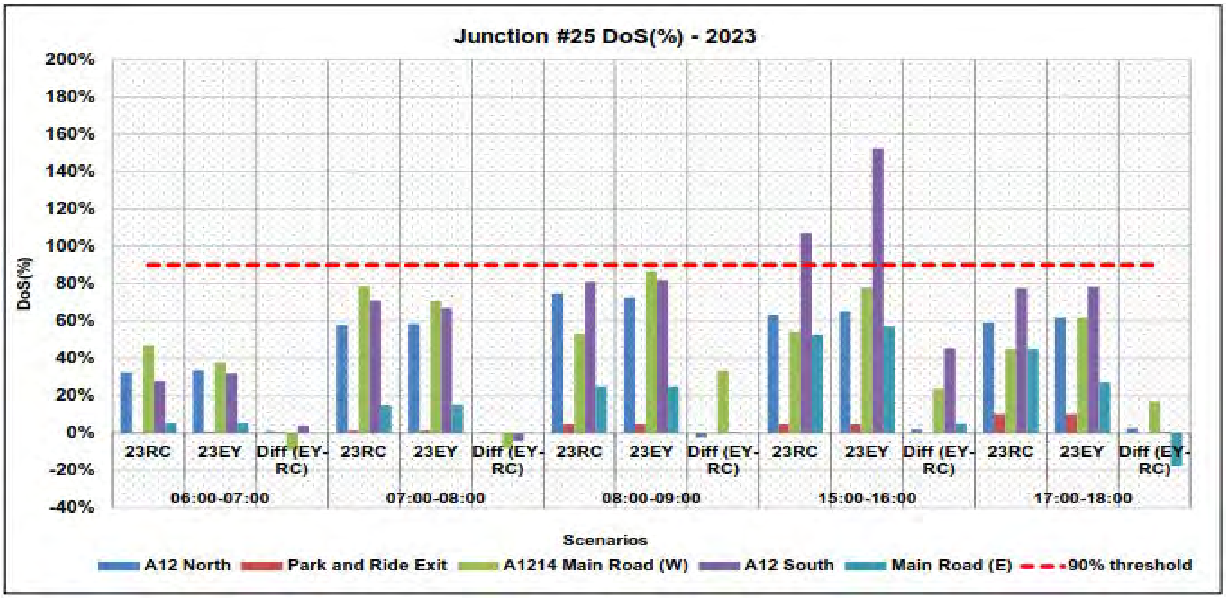
The flow from the park and ride is unchanged compared with the existing base traffic flows.

9.23.5 The Early Years scenario forecasts that traffic flows increase, relative to the 2023 Reference Case, by a small amount on the A12 north, A12 south and A1214 west in the morning hours, except for from 07:00-08:00 when the increase is 174 vehicles per hour on the A12 south. In the afternoon there are small or negligible increases except for a moderate increase of 106, 98 and 86 vehicles per hour on the A12 south arm from 06:00-07:00, 08:00-07:00 and 17:00-18:00 respectively and a moderate increase of 131 vehicles per hour on the A12 north arm from 17-00:18:00. This is due to rerouting in the strategic model.

ii. Results analysis

9.23.6 The RFC modelling results for the 2023 Reference Case (RC) and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.98**. The difference is shown as EY-RC.

Plate 9.98: A12 / A1214 / Main Road / Martlesham Park and Ride Roundabout 2023 Early Years Degree of Saturation (DoS) Results



9.23.7 **Plate 9.98** shows that the junction is predicted to operate within capacity from 06:00-07:00, 07:00-08:00, 08:00-09:00 and 17:00-18:00. The A12 south approach is predicted to operate above the capacity threshold from 15:00-16:00 in both 2023 scenarios.

9.23.8 The Early Years Scenario DoS results are very similar to the 2023 Reference Case, generally showing small increases in RFC. Although there is an apparent increase in DoS between the Reference Case and Early Years Scenario on the A12 south arm from 15:00-16:00, this could be due to the sensitivity of the model when the DoS goes above one.

d) Peak Construction (2028)

i. Demand impact

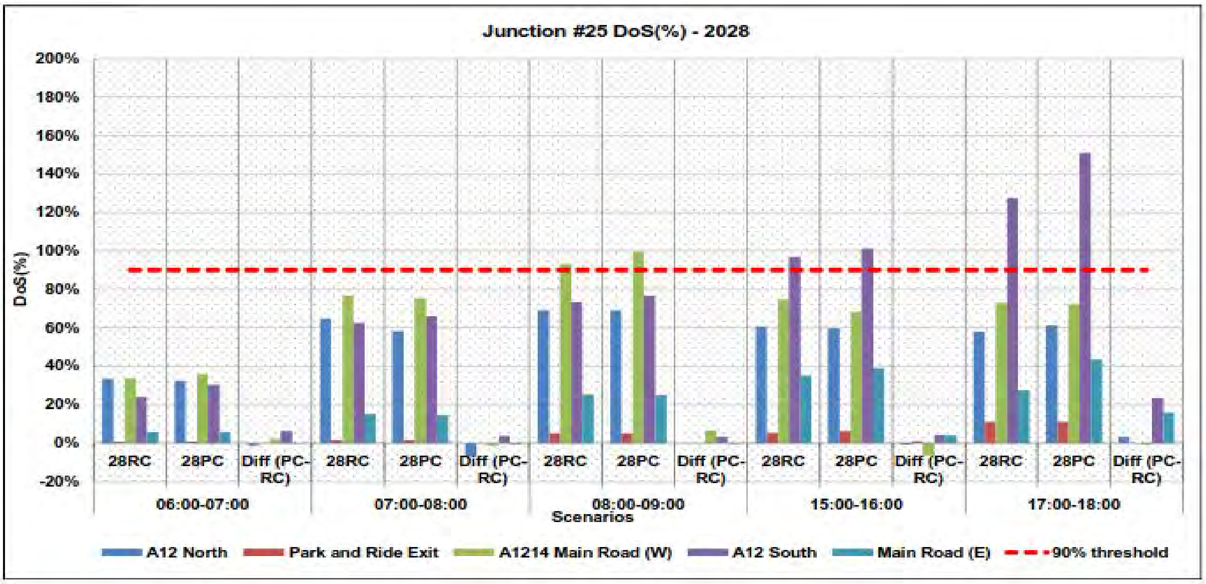
9.23.9 The 2028 Reference Case scenario traffic flows show large increases in entry demand on the A12 north (+30-210 vehicles per hour) and A12 south (+80-480 vehicles per hour) relative to the observed base year traffic flows. The A1214 approach has small increases except from 08:00-09:00 when a large increase of +180 vehicles per hour is forecast. The park and ride approach is unchanged.

9.23.10 The Peak Construction scenario shows a moderate increase in entry demand, relative to the 2028 Reference Case, on the A12 south arm for the morning periods (+70-180 vehicles per hour) and the A12 north arm in the afternoon periods (+50-190 vehicles per hour). The remaining approaches have small or negligible increases in all periods.

ii. Results analysis

9.23.11 The Degree of Saturation modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.99**. The difference is shown as PC-RC.

Plate 9.99: A12 / A1214 / Main Road / Martlesham Park and Ride Roundabout 2028 Peak Construction Degree of Saturation (DoS) Results



9.23.12 **Plate 9.99** shows that the junction is predicted to operate within capacity on all approaches from 06:00-07:00 and 07:00-08:00. The A1214 Main Road west approach is predicted to be over the 90% capacity threshold from 08:00-09:00. The A12 South approach is predicted to be over the capacity threshold from 15:00-16:00 and 17:00-18:00.

9.23.13 The Peak Construction Scenario DoS results are very similar to the 2028 Reference Case, generally showing small increases in DoS. The A12 North approach exceeds the 90% capacity threshold due to the Peak Construction traffic from 15:00-16:00.

e) Operational Phase (2034)

i. Demand impact

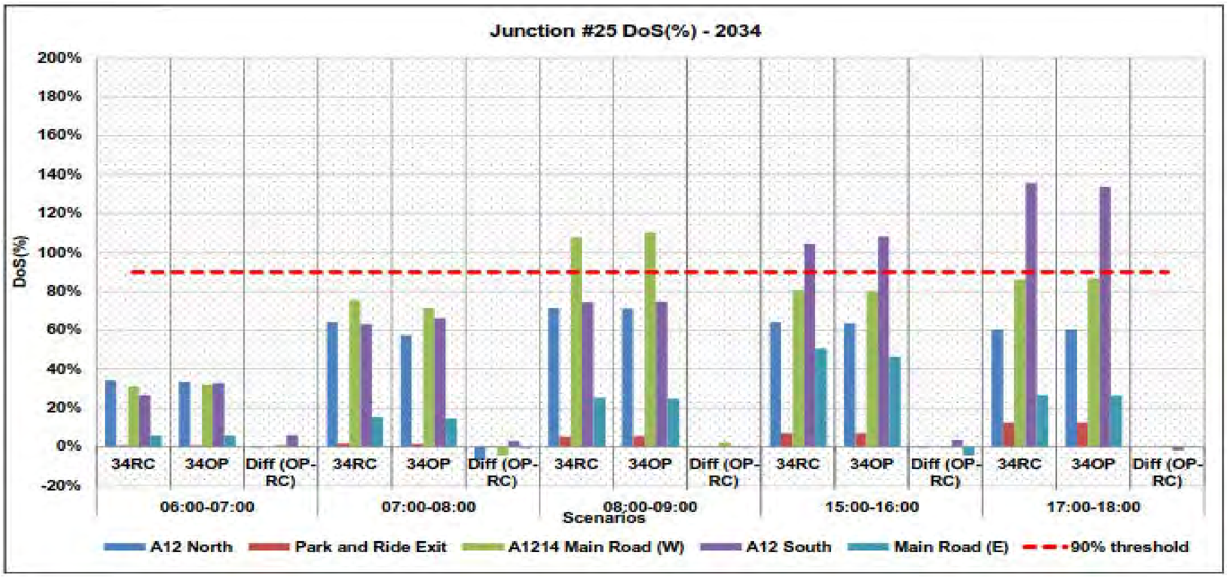
9.23.14 The 2034 Reference Case scenario traffic flows show a large increase at the junction, relative to the observed base traffic flow. The A12 arms have the largest increases of +200-690 vehicles per hour in all time periods except 06:00-07:00 when the increase is modest. On the Main Road east approach there are small increases in the morning period and a moderate increase of +80 vehicles per hour from 15:00-16:00 and a moderate decrease of -110 vehicles per hour from 17:00-18:00. On the A1214 Main Road west there are large increases (+100-320 vehicles per hour) in all time periods. The traffic flow on the park and ride approach is unchanged.

9.23.15 The Operational Phase scenario shows a negligible change in entry demand on all approaches compared to the 2034 Reference Case.

ii. Results analysis

9.23.16 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.100**. The difference is shown as OP-RC.

Plate 9.100: A12 / A1214 / Main Road / Martlesham Park and Ride Roundabout 2034 Operational Phase Degree of Saturation (DoS) Results



9.23.17 **Plate 9.100** shows that the junction is predicted to operate within capacity on all approaches from 06:00-07:00 and 07:00-08:00. The A1214 Main Road approach is predicted to be over capacity from 15:00-16:00. The A12 South approach is expected to operate over capacity from 15:00-16:00 and 17:00-18:00.

9.23.18 The Operational Phase scenario DoS results are very similar to those for the 2034 Reference Case scenario, which is intuitive given the negligible change in entry demand between the two scenarios.

f) Sensitivity Test

9.23.19 Due to the strategic location of the A12 / A1214 / Main Road / Martlesham park and ride roundabout close to the Adastral Park development and its importance to the A12 corridor, Junction 25 has been subject to a sensitivity test in which lower flows were fed into the model for testing based on the same sensitivity test assumptions applied to Junctions 21 - 24.

9.23.20 The sensitivity test brings the modelling into line with a separate modelling exercise undertaken for the Adastral Park development in which fuel and income adjustments were excluded from the traffic forecasting as well as using actual rather than demand flows, leading to lower overall traffic demand.

9.23.21 With the adjustments to the traffic forecasts, flows reduce on all arms in all modelled scenarios up to a maximum of -390 vehicles per hour as seen on the A12 South approach in the 2034 Reference Case scenario from 17:00-18:00.

9.23.22 The DoS modelling results for the 2023, 2028 and 2034 Reference Case and 'with Sizewell' scenarios, split by each modelled hourly period, are illustrated in **Plates 9.101** to **9.103**.

Plate 9.101: A12 / A1214 / Main Road / Martlesham Park and Ride Roundabout 2023 Sensitivity Test DOS Results

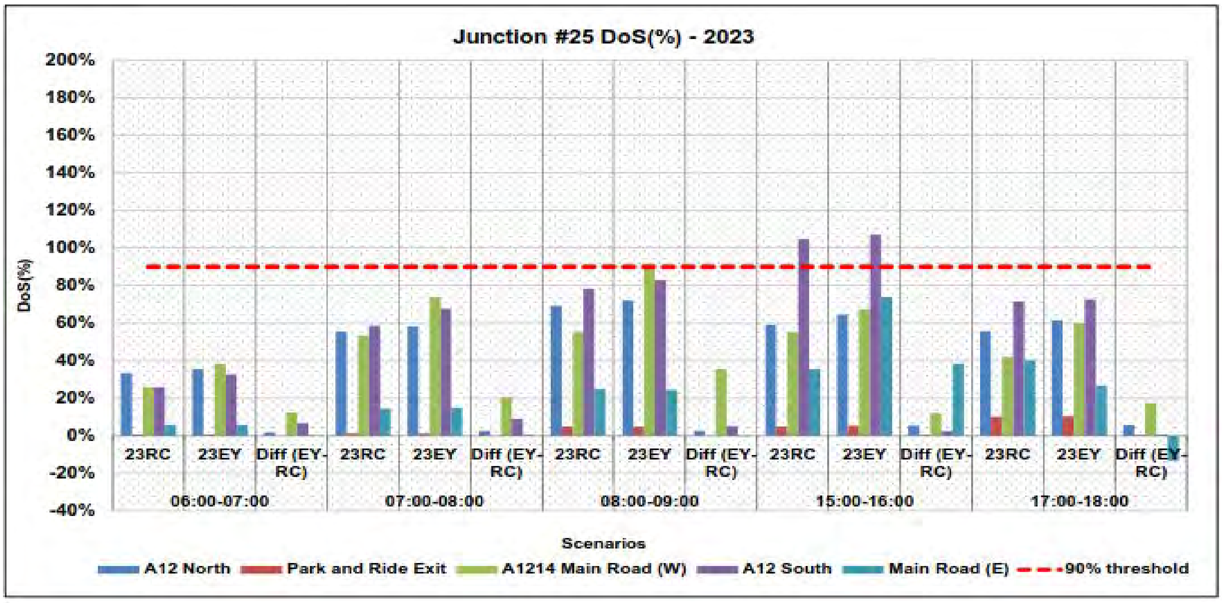


Plate 9.102: A12 / A1214 / Main Road / Martlesham Park and Ride Roundabout 2028 Sensitivity Test DOS Results

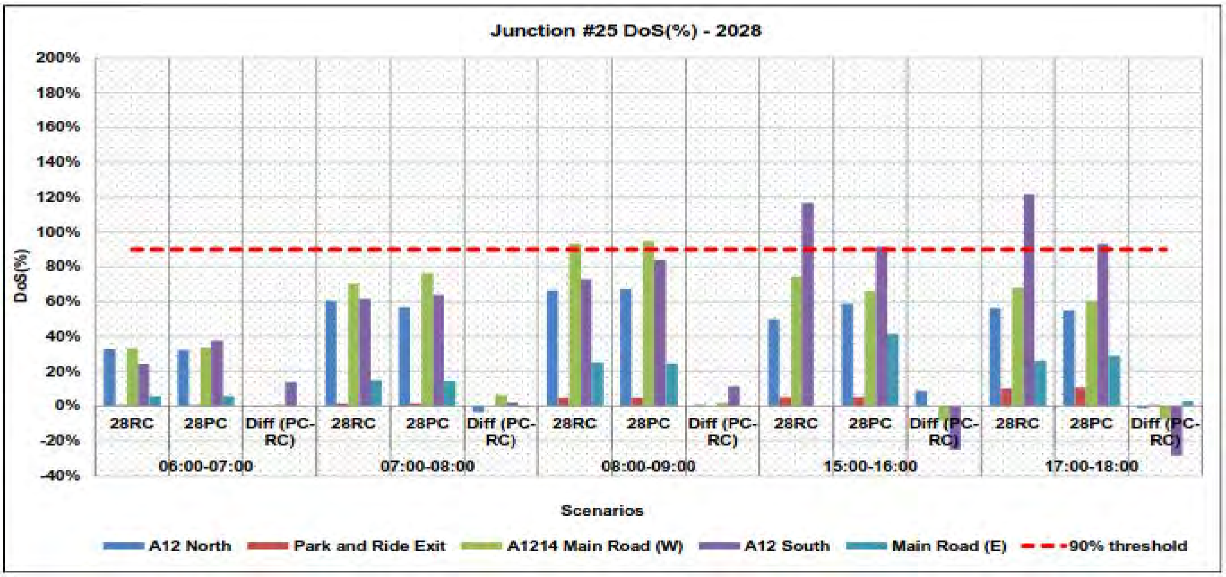
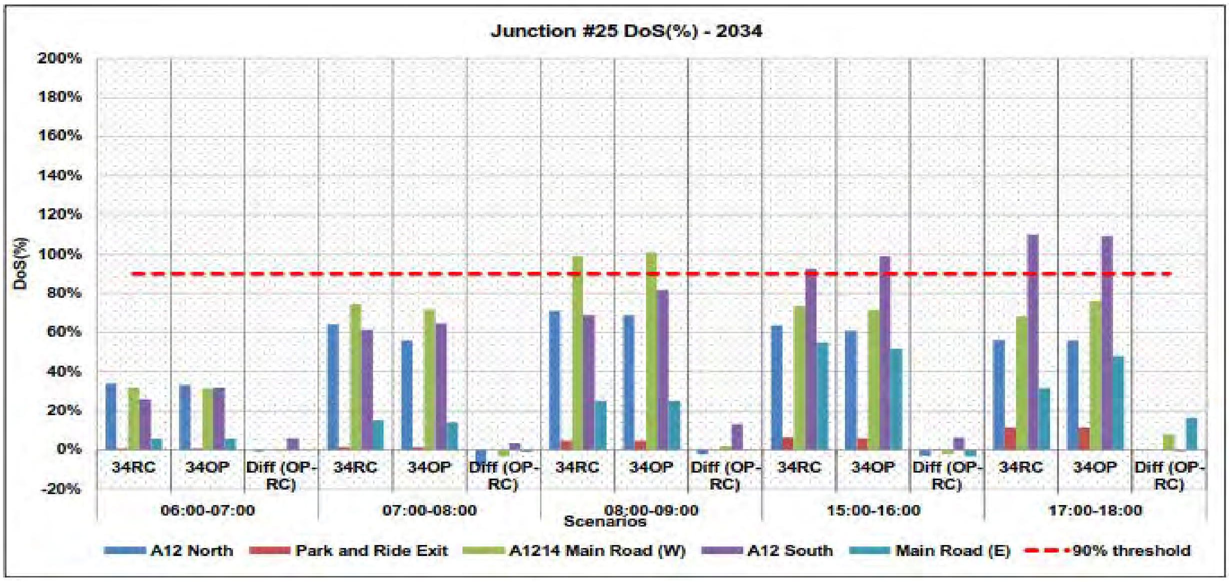


Plate 9.103: A12 / A1214 / Main Road / Martlesham Park and Ride Roundabout 2034 Sensitivity Test DOS Results



9.23.23 With sensitivity test flows assigned to the model the results display an improvement over the core scenarios with a reduction in DoS values recorded in all three forecast years tested.

9.23.24 With sensitivity test flows assigned the junction does still operate above capacity in some of the scenarios tested. This is largely due to the need to reduce green time on the roundabout entry arms so as not to exceed available stacking space at stop lines on the roundabout itself.

9.23.25 Sizewell traffic does not adversely affect roundabout performance with most scenarios recording only minor increases in DoS values in the 'with Sizewell' traffic scenarios.

g) Overview

9.23.26 Initial modelling for Junction 25, using demand flows extracted from the strategic modelling, showed the junction to be operating above capacity in a number of time periods in both Reference Case and 'with Sizewell' scenarios. As a result, a sensitivity test in which actual flows representing an average work day were fed into the junction model for assessment.

9.23.27 An overview of the maximum RFC results recorded in each scenario, for each time period, taken from the sensitivity test model, are shown in **Table 9.38**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or very near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.38: A12 / A1214 / Main Road / Martlesham Park and Ride Roundabout DoS Results Overview

Time period	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	45%	34%	38%	33%	38%	34%	33%
07:00-08:00	78%	59%	74%	70%	77%	75%	72%
08:00-09:00	60%	78%	91%	93%	95%	99%	101%
15:00-16:00	78%	105%	107%	117%	92%	93%	99%
17:00-18:00	75%	72%	73%	122%	93%	110%	109%

9.23.28 With sensitivity test flows applied to the model, the DoS results indicate that the junction will operate below capacity from 06:00-07:00 and 07:00-08:00 in all forecast scenarios. The junction is seen to operate above capacity from 08:00-09:00, 15:00-16:00 and 17:00-18:00 in both Reference Case and 'with Sizewell' scenarios.

9.23.29 Sizewell C traffic would result in an increase in congestion in the Early Years scenario in comparison to the 2023 Reference Case with an increase in DoS of 13% modelled from 08:00-09:00 in the Early Years scenario.

9.23.30 The DoS in the Peak Construction and Operational Phase scenarios are comparable to their respective Reference Case scenarios with reductions in DoS seen in the 2028 Peak Construction scenario results.

9.24 Junction 26 – A12 / B1438 Roundabout

a) Context

9.24.1 Junction 26 is a three-arm roundabout, located to the north east of Ipswich and approximately 16-miles south west of the Sizewell C site. It is the junction where the A12 meets the B1438. All approach arms comprise of two lanes with the national speed limit of 60mph. Street lighting is in place on all approaches. A satellite image of the existing junction layout is shown in **Plate 9.104**.

Plate 9.104: Existing A12 / B1438 Roundabout Layout

b) Calibration Summary

9.24.2 Observed queue data showed there were minor queues on all approaches, with moderate queues on the A12 north approach from 08:00-09:00 and on the A12 west approach from 08:00-09:00 and in the afternoon periods.

9.24.3 The junction model typically results in longer queues from 08:00-09:00 and slightly shorter than those observed in the remaining periods. Due to the relatively minor differences between observed and modelled queuing the model is considered to represent existing conditions.

c) Early Years (2023)

i. Demand impact

9.24.4 The 2023 Reference Case scenario traffic flows show an increase in entry demand on all arms, relative to the observed base year traffic flows. The largest increase is +183 vehicles per hour on the B1438 approach from

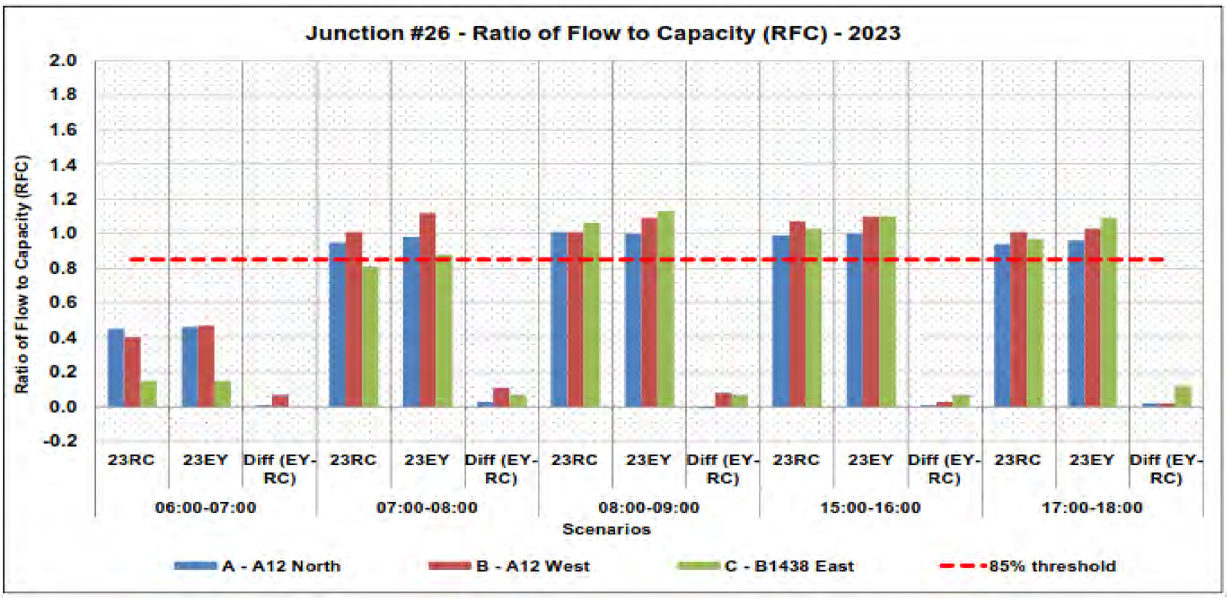
08:00-09:00. Moderate increases (+60-120 vehicles per hour) are also forecast on all other approaches and time periods.

9.24.5 The Early Years scenario shows that the changes in traffic flows relative to the 2023 Reference Case are small or negligible in all periods, except for the A12 west arm from 06:00-07:00, 07:00-08:00 and 08:00-09:00 periods where there is a moderate increase in demand of +75-177 vehicles per hour and the B1438 from 17:00-18:00 where there is a moderate increase of +85 vehicles per hour.

ii. Results analysis

9.24.6 The RFC modelling results for the 2023 Reference Case (RC) and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.105**. The difference is shown as EY-RC.

Plate 9.105: A12 / B1438 Roundabout 2023 Early Years RFC Results



9.24.7 **Plate 9.105** shows that the junction is predicted to operate over the 0.85 capacity threshold on all approaches during the majority of modelled hours in the 2023 Reference Case scenario except 06:00-07:00 where all approaches would operate within capacity.

9.24.8 The Early Years scenario RFC results are very similar to the 2023 Reference Case, generally showing small increases in RFC. The largest changes in RFC (+0.1 RFC) can be seem on the B1438 east approach from 08:00-09:00, 15:00-16:00 and 17:00-18:00 and on the A12 west approach from 07:00-08:00.

d) Peak Construction (2028)

i. Demand impact

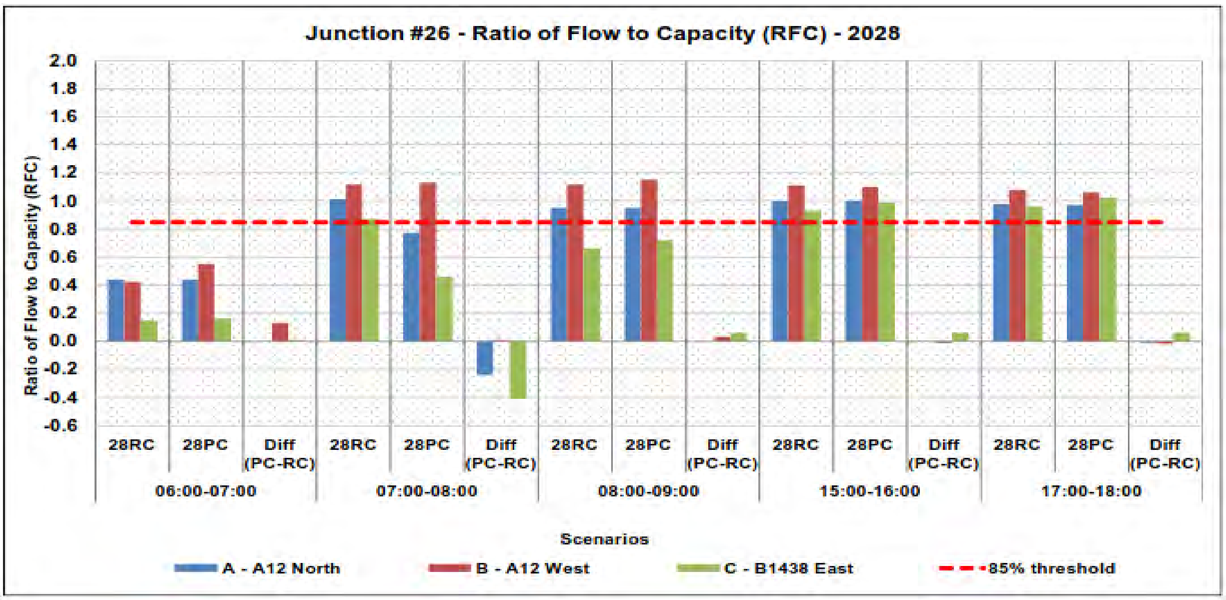
9.24.9 The 2028 Reference Case scenario traffic flows show a large increase in entry demand on the A12 west approach (+100-290 vehicles per hour) in all periods and a small reduction on the B1438 arm from 07:00-08:00, 08:00-09:00 and 15:00-16:00 (-10-60 vehicles per hour). There is also a moderate increase on the A12 north approach in all periods (+50-100 vehicles per hour) relative to the base year scenario.

9.24.10 The Peak Construction scenario shows a large increase in entry demand on the A12 west approach from 06:00-07:00 and 07:00-08:00 (+130-220 vehicles per hour), relative to the 2028 Reference Case. The B1438 approach experiences a moderate increase in demand in the afternoon periods (+110-130 vehicles per hour). The remaining time periods and the A12 north approach are relatively unchanged relative to the 2028 Reference Case.

ii. Results analysis

9.24.11 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.106.** The difference is shown as PC-RC.

Plate 9.106: A12 / B1438 Roundabout 2028 Peak Construction RFC Results



9.24.12 **Plate 9.106** shows that the junction is predicted to operate over threshold capacity on arms during the majority of modelled hours except for the 06:00-07:00 period where all approaches operate within capacity.

9.24.13 As the Early Years scenario RFC results suggested the junction would be over capacity, it is expected that the junction would also be over capacity during Peak Construction.

9.24.14 The increase in demand in 2028, resulting from committed development and background traffic growth in the 2028 Reference Case, results in this junction operating over the 0.85 RFC threshold and over 1.0 in several time periods.

9.24.15 The highest increase in RFC is seen on the B1438 approach from 17:00-18:00 with a difference of +0.18.

e) Operational Phase (2034)

i. Demand impact

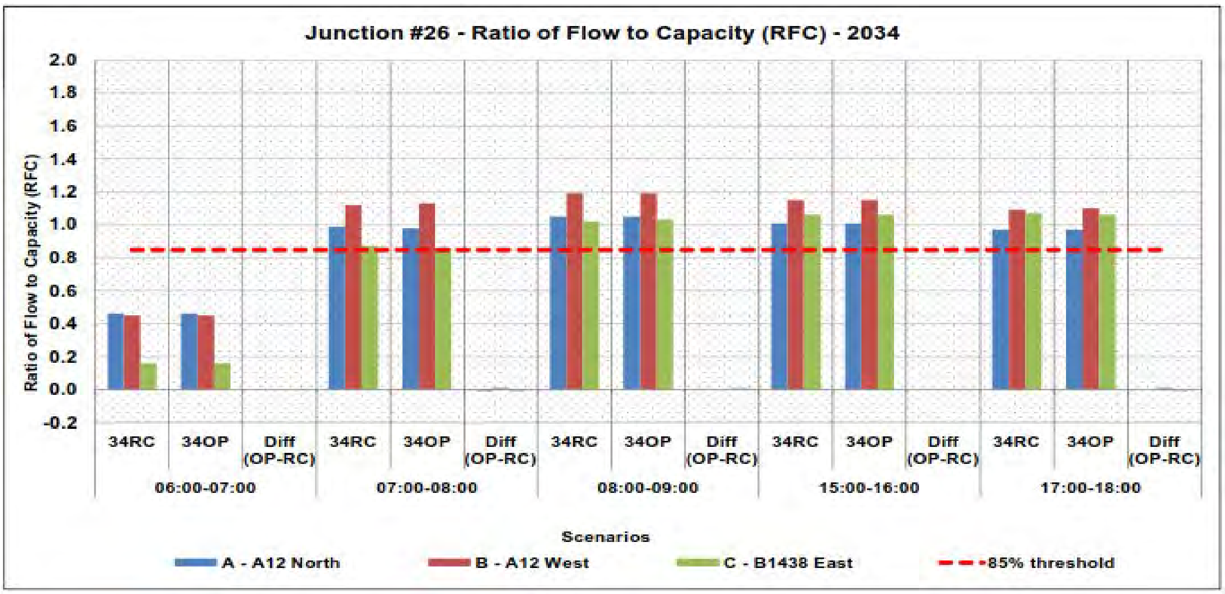
9.24.16 The 2034 Reference Case scenario traffic flows shows a large increase (+125-350 vehicles per hour) in entry demand on the A12 west and B1438 arms, particularly from 08:00-09:00 and during the afternoon period, relative to the observed base year traffic flows. The A12 north approach is forecast to have moderate increases (+50-110 vehicles per hour) in all time periods.

9.24.17 The Operational Phase scenario shows a negligible change in entry demand on all approaches compared with the 2034 Reference Case.

ii. Results analysis

9.24.18 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.107**. The difference is shown as OP-RC.

Plate 9.107: A12 / B1438 Roundabout 2034 Operational Phase RFC Results



9.24.19 **Plate 9.107** shows that the junction is predicted to operate over the 85% capacity threshold on all approaches during the majority of modelled hours except 06:00-07:00, where all approaches would operate within capacity.

9.24.20 The Operational Phase scenario RFC results are very similar to those for the 2034 Reference Case scenario, which is intuitive given the negligible change in entry demand between the two scenarios.

9.24.21 Although the 2034 Reference Case and Operational Phase RFCs are both above the capacity threshold at this junction, the modelling results demonstrate that Sizewell C has a negligible impact. Whilst the model shows the junction exceeds capacity, the queue length and delay predict excessive numbers due to the instability of models which have an RFC of greater than 1.0.

f) Sensitivity Test

9.24.22 Due to the strategic location of the A12 / B1438 roundabout close to the Adastral Park development, Junction 26 has been subject to a sensitivity test in which lower flows were fed into the model for testing. The sensitivity test applies the same assumptions as those applied to Junctions 21 – 25 in order to bring the modelling into line with the consented Adastral Park modelling assumptions.

9.24.23 With the adjustments to the traffic forecasts, flows reduce on all arms in all modelled scenarios up to a maximum of -260 vehicles per hour as seen on the A12 south approach in the 2034 Reference scenario from 17:00-18:00.

9.24.24 The RFC modelling results for the 2023, 2028 and 2034 Reference Case and 'with Sizewell' scenarios, split by each modelled hourly period, are illustrated in **Plates 9.108** to **9.110**.

Plate 9.108: A12 / B1438 Roundabout 2023 Sensitivity Test RFC Results

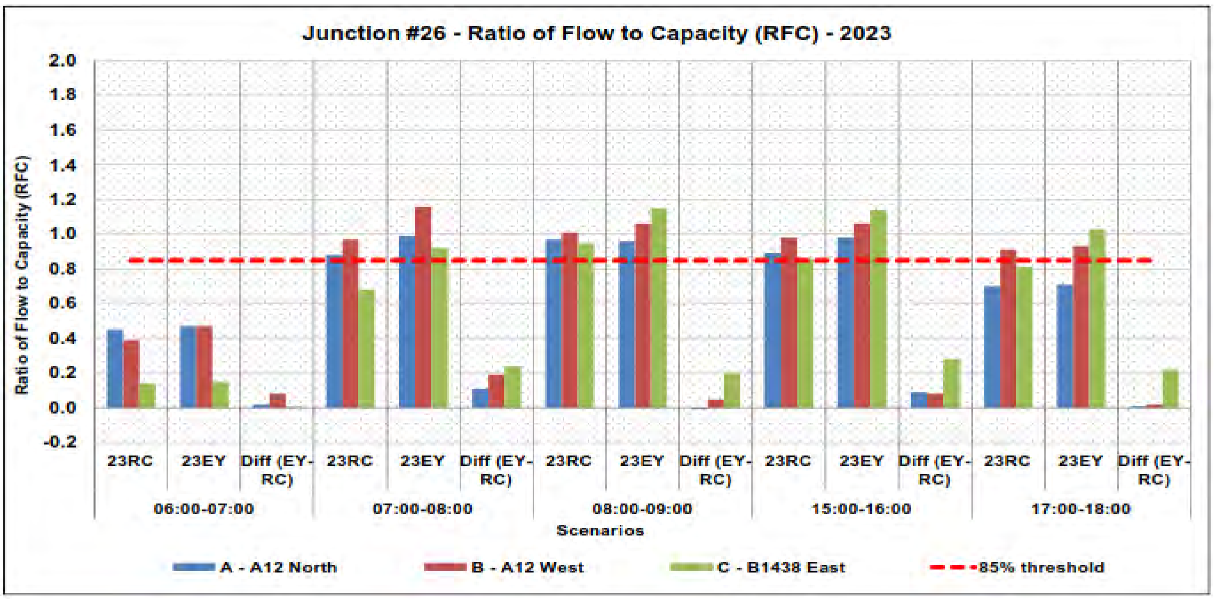


Plate 9.109: A12 / B1438 Roundabout 2028 Sensitivity Test RFC Results

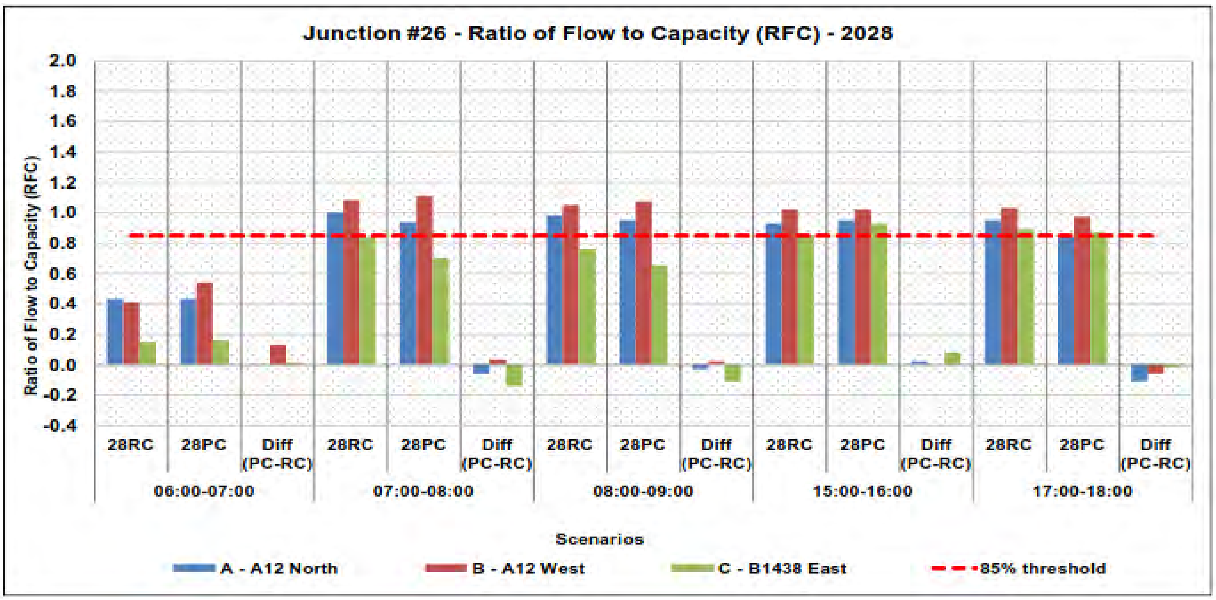
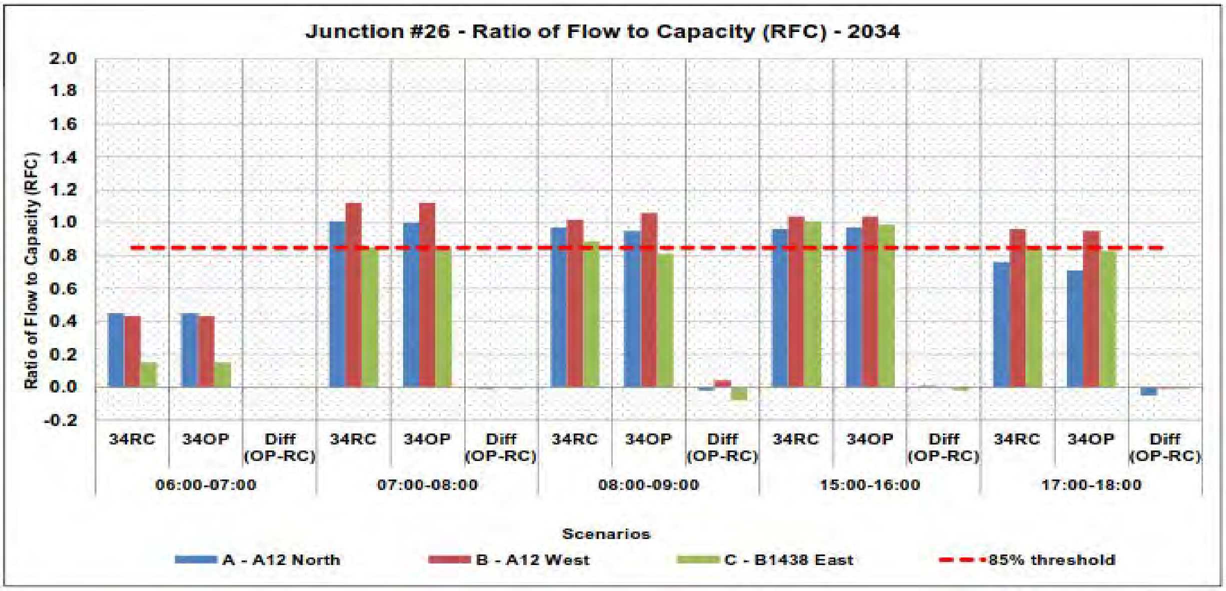


Plate 9.110: A12 / B1438 Roundabout 2034 Sensitivity Test RFC Results



9.24.25 In each forecast year tested the sensitivity test results are an improvement in comparison to the core results with a reduction in RFC values recorded in all three forecast years with a maximum reduction of -0.14 in the 2023 and 2028 scenarios and a maximum reduction of -0.35 recorded in the 2034 forecast year.

9.24.26 While the sensitivity test flows lead to a reduction in modelled RFC values at Junction 26, the roundabout continues to operate overcapacity in each of the forecast years tested. In all three forecast years at least one arm operates above the 0.85 RFC threshold from 07:00-08:00, 08:00-09:00, 15:00-16:00 and 17:00-18:00, however this is the case in both the Reference Case and 'with Sizewell' scenarios which indicates that Sizewell traffic has minimal impact on junction performance.

g) Overview

9.24.27 Initial modelling for Junction 26, using demand flows extracted from the strategic modelling, showed the junction to be operating above capacity in both Reference Case and 'with Sizewell' scenarios in all time periods except the 06:00-07:00 modelled hour. As a result a sensitivity test in which actual flows representing an average work day were fed into the junction model for assessment.

9.24.28 An overview of the maximum RFC results recorded in each scenario, for each time period, taken from the sensitivity test model, are shown in **Table 9.39**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or very near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.39: A12 / B1438 Roundabout Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.41	0.45	0.47	0.43	0.54	0.45	0.45
07:00-08:00	0.89	0.97	1.16	1.08	1.11	1.12	1.12
08:00-09:00	0.95	1.01	1.15	1.05	1.07	1.02	1.06
15:00-16:00	0.95	0.98	1.14	1.02	1.02	1.04	1.04
17:00-18:00	0.90	0.91	1.03	1.03	0.97	0.96	0.95

9.24.29 With sensitivity test flows assigned to the modelling, the results show that the junction will be over capacity in all 2023, 2028 and 2034 scenarios. The results are an improvement over the core results however with the 2028 Peak Construction and 2034 Operational Phase scenarios operating below an RFC value of 1.0 from 17:00-18:00.

9.24.30 The impact of Sizewell C traffic on overall junction performance is minimal. The RFC outputs for each Reference Case scenario is very similar its respective with-Sizewell C scenario. The increasing RFCs through the years can be largely attributed to background traffic growth, unrelated to Sizewell C.

9.25 Junction 27 – A12 / B1079 / Grundisburgh Road Roundabout

a) Context

9.25.1 Junction 27 is a four-arm roundabout, located in the west of Woodbridge and approximately 15-miles south-west of the Sizewell C site. It is the junction where the A12 meets the B1079 into Woodbridge. All approach arms comprise of two lanes with a speed limit of 40mph. Street lighting is in place on all approaches. A satellite image of the existing junction layout is shown in **Plate 9.111**.

Plate 9.111: Existing A12 / B1079 / Grundisburgh Road Roundabout Layout

b) Calibration Summary

9.25.2 Observed queue data showed there were moderate queues on the Grundisburgh Road west and A12 south arms from 08:00-09:00 and during the afternoon periods (7-18 vehicles in length), with large queues on the A12 north approach from 08:00-09:00 (36 vehicles) and moderate queues during the afternoon periods (10-15 vehicles in length).

9.25.3 The junction model typically results in queues lower than those observed. Due to relatively minor differences between observed and modelled queue lengths, the model is considered to represent existing conditions

c) Early Years (2023)

i. Demand impact

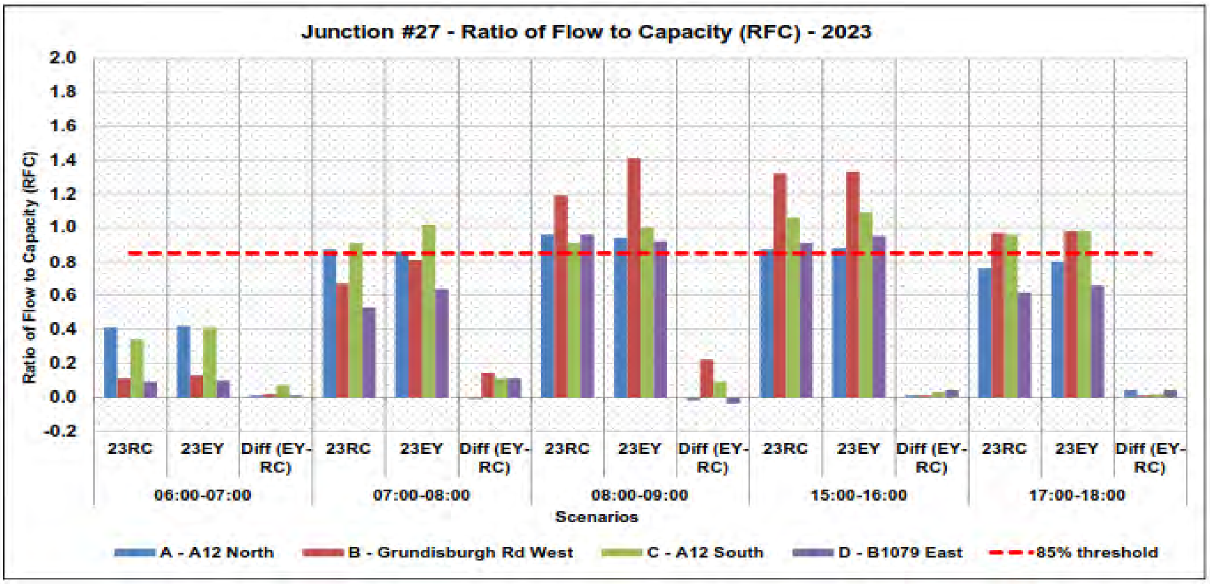
9.25.4 The 2023 Reference Case scenario traffic flows show moderate increases in traffic flow (+60-120 vehicles per hour), relative to the observed base year traffic flows, on Grundisburgh Road and A12 south arms, with the exception of from 06:00-07:00 on Grundisburgh Road and 08:00-09:00 on the A12 south arm. On the A12 north arm there is a small reduction in demand in 07:00-08:00 and 08:00-09:00 periods (20-50 fewer vehicles per hour), but a small increase (+10-50 vehicles per hour) during the other time periods, relative to the base year flows. On the B1079 east there are small increases (up to +35 vehicles per hour) except for the 08:00-09:00 period where there is a minor reduction (-12 vehicles per hour), relative to the base year flows.

9.25.5 The Early Years scenario shows that traffic flows are broadly similar to the 2023 Reference Case in all periods with the exception of the A12 south arm in the morning periods where a moderate increase is experienced (+80-105 vehicles per hour) and from 17:00-18:00 on the A12 north arm where there is a moderate increase of 42 vehicles per hour.

ii. Results analysis

9.25.6 The RFC modelling results for the 2023 Reference Case (RC) and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.112**. The difference is shown as EY-RC.

Plate 9.112: A12 / B1079 / Grundisburgh Road Roundabout 2023 Early Years RFC Results



9.25.7 **Plate 9.112** shows that the junction is predicted to operate within capacity from 06:00-07:00 on all arms. The A12 north and A12 south approaches will be over the capacity threshold from 07:00-08:00. All arms will be over the capacity threshold from 08:00-09:00 and 15:00-16:00 in both scenarios and the Grundisburgh Road and A12 south approaches will be over the capacity threshold from 17:00-18:00 in both scenarios.

9.25.8 Due to limitations within the junction modelling software, approaches which display an RFC of 1.0 or above are unable to accurately calculate results. Once an approach is 'full', delay and queuing results increase exponentially with output results therefore likely to be an overestimation. This provides explanation for the recorded change in RFC on Grundisburgh Road west between the 2023 Reference Case and Early Years scenarios. While the model is drawing attention to a potential issue here, the level of delay is unlikely to be as high as this.

9.25.9 The Early Years scenario RFC results are similar to the 2023 Reference Case, generally showing moderate differences in RFC with the biggest difference seen from 08:00-09:00 on Grundisburgh Road.

d) Peak Construction (2028)

i. Demand impact

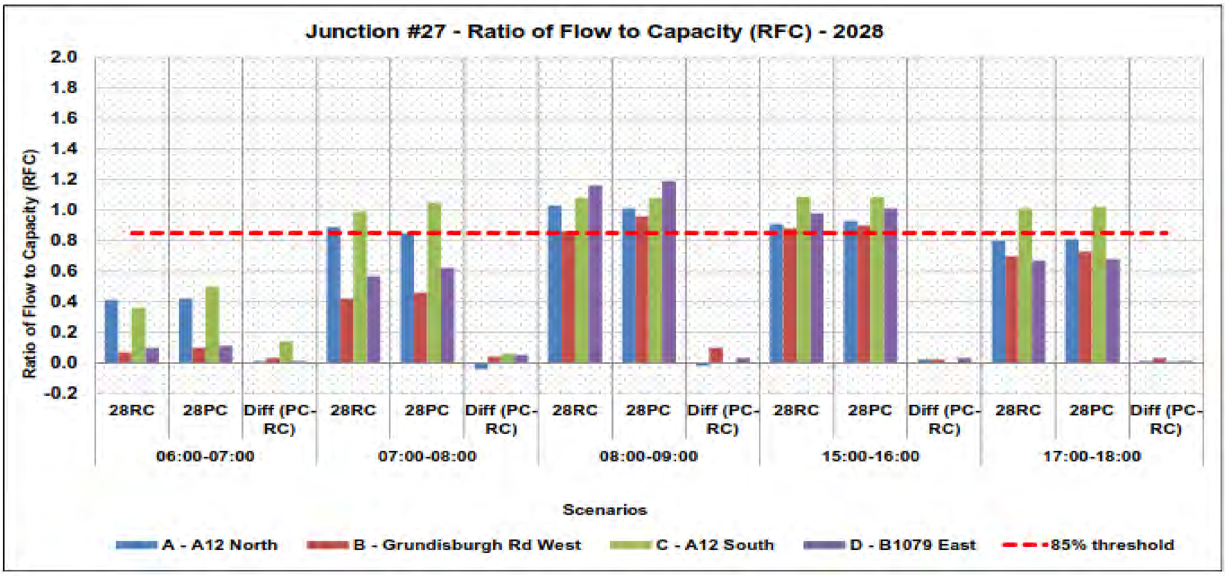
9.25.10 The 2028 Reference Case scenario traffic flows show a large increase in entry demand, relative to the observed base year traffic flows, on the A12 south arm (+100-130 vehicles per hour) but particularly large from 07:00-08:00 and 08:00-09:00 (+230 vehicles per hour). There are moderate increases (+70-150 vehicles per hour) on the A12 north approach in all periods and the B1079 East approach from 08:00-09:00, relative to the base year flows. There are minor reductions on Grundisburgh Road of up to -90 vehicles per hour compared to the base year flows during all periods.

9.25.11 The 2028 Peak Construction scenario shows a large increase of +220 vehicles per hour from the A12 south arm from 06:00-07:00. On all other arms in all scenarios there are minor changes (-60 to +30 vehicles per hour) when compared to the 2028 reference case.

ii. Results analysis

9.25.12 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.113**. The difference is shown as PC-RC.

Plate 9.113: A12 / B1079 / Grundisburgh Road Roundabout 2028 Peak Construction RFC Results



9.25.13 **Plate 9.113** shows that the junction is over threshold capacity on the A12 north and south approaches from 07:00-08:00. The junction is also predicted to operate over threshold capacity on all approaches from 08:00-09:00 and 15:00-16:00 and over threshold capacity on the A12 south approach from 17:00-18:00.

9.25.14 As the Early Years scenario RFC results suggested the junction would be over capacity, it is expected that the junction would be over capacity during Peak Construction.

9.25.15 The increase in demand in 2028, resulting from committed development and background traffic growth, results in this junction operating over the 0.85 RFC threshold and over 1.0 in several periods.

e) Operational Phase (2034)

i. Demand impact

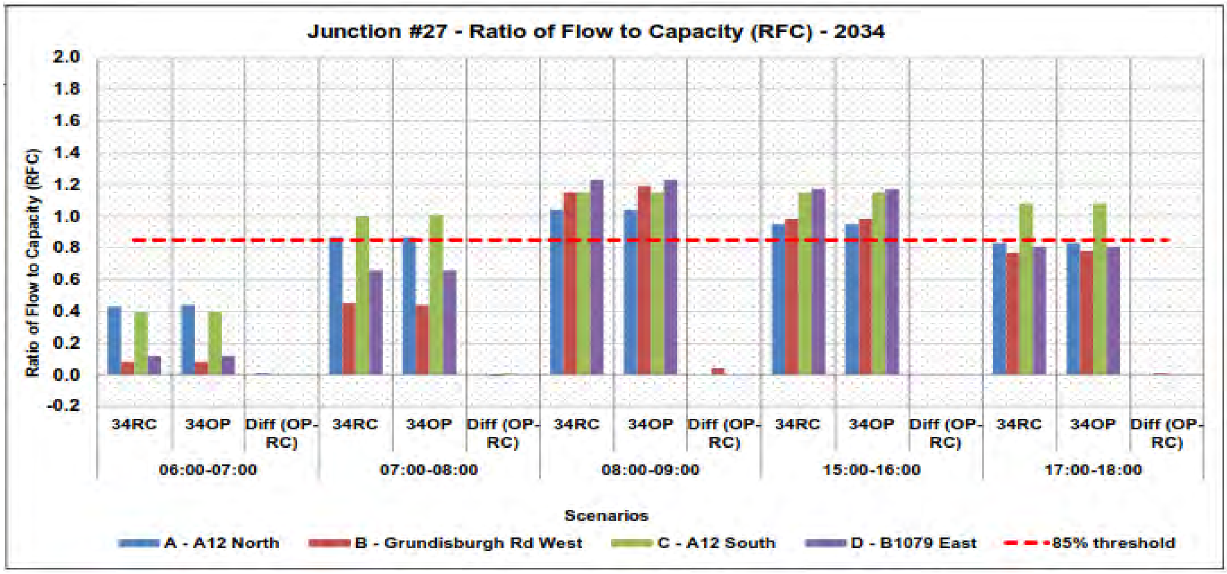
9.25.16 The 2034 Reference Case scenario traffic flows show a large increase in entry demand on the A12 south arm in all periods (+170-350 vehicles per hour), relative to the observed base traffic flow, with small to moderate increases on all other approaches, in all time periods (+30-170 vehicles per hour).

9.25.17 The 2034 Operational Phase scenario shows a negligible change in entry demand on all approaches relative to the 2034 Reference Case.

ii. Results analysis

9.25.18 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.114**. The difference is shown as OP-RC.

Plate 9.114: A12 / B1079 / Grundisburgh Road Roundabout 2034 Operational Phase RFC Results



9.25.19 **Plate 9.114** shows that the junction is predicted to operate over capacity on all arms from 08:00-09:00 and 15:00-16:00. The A12 north and south approaches are predicted to be over capacity from 07:00-08:00 and the A12 south would be over the capacity threshold from 17:00-18:00. From 06:00-07:00 all approaches operate within capacity.

9.25.20 The Operational Phase scenario RFC results are very similar to those for the 2034 Reference Case scenario, which is intuitive given the negligible change in entry demand between the two scenarios.

9.25.21 Although the 2034 Reference Case and Operational Phase RFCs are both above the threshold, the modelling results demonstrate that the traffic flows associated with Sizewell C has a negligible additional impact.

f) Mitigation Analysis

9.25.22 Mitigation measures have not been proposed for Junction 27. While RFC results for the 2023, 2028, and 2034 forecast years indicate that at least one arm of the junction will operate above capacity in all but the 06:00-0700 model hour, the modelled outputs suggest that Sizewell C traffic has no additional impact on junction operation with the poor performance caused by background traffic growth.

g) Sensitivity Test

9.25.23 Due to the strategic location of the A12 / B1079 / Grundisburgh Road Roundabout close to the Adastral Park development, Junction 27 has been subject to a sensitivity test in which lower flows were fed into the model for testing. The same sensitivity test assumptions have been applied to Junction 27 as to Junctions 21 – 26 in order to bring the modelling into line with the modelling exercise undertaken for the consented Adastral Park development.

9.25.24 With the adjustments to the traffic forecasts, flows reduce on all arms in all modelled scenarios up to a maximum of -230 vehicles per hour as seen on the A12 south approach in the 2034 Operational Peak scenario from 08:00-09:00.

9.25.25 The RFC modelling results for the 2023, 2028 and 2034 Reference Case and 'with Sizewell' scenarios, split by each modelled hourly period, are illustrated in **Plates 9.115** to **9.117**.

Plate 9.115: A12 / B1079 / Grundisburgh Road Roundabout 2023 Sensitivity Test RFC Results

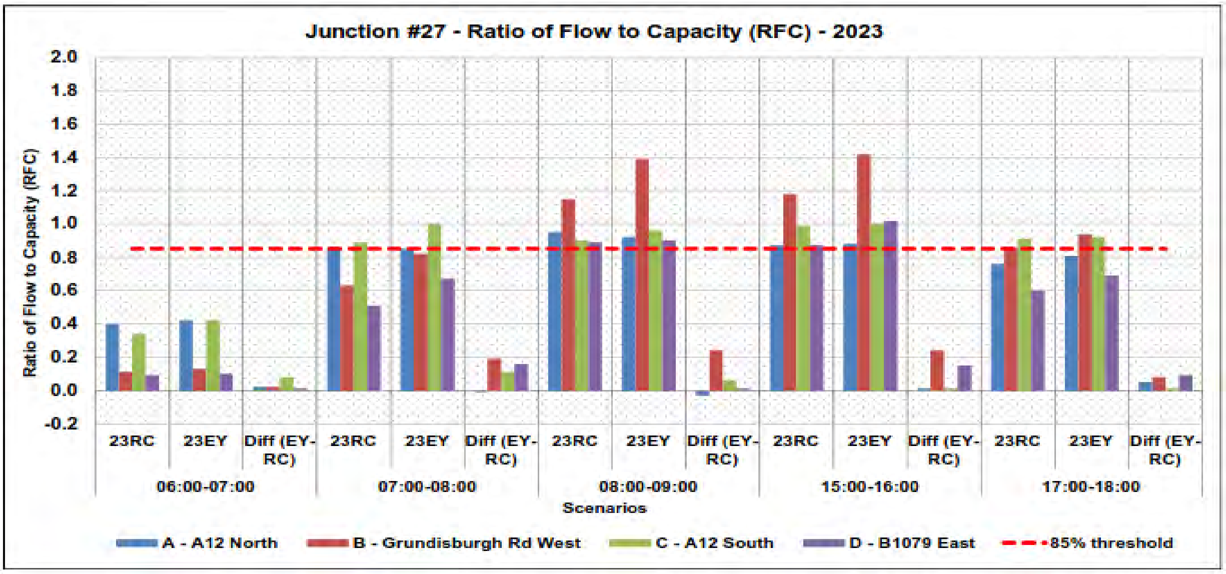


Plate 9.116: A12 / B1079 / Grundisburgh Road Roundabout 2028 Sensitivity Test RFC Results

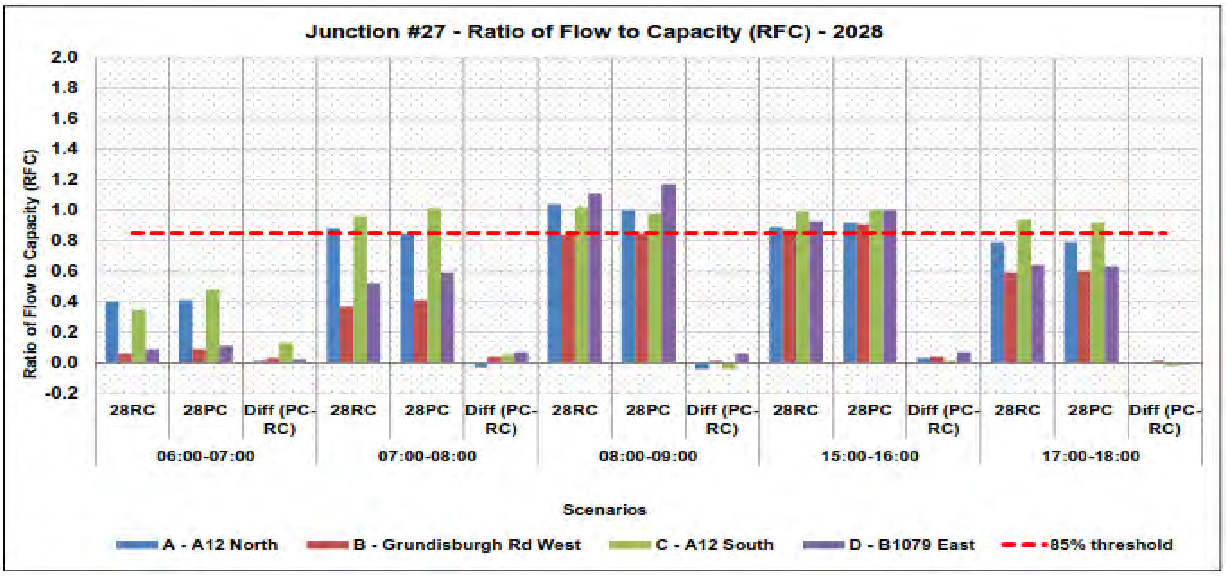
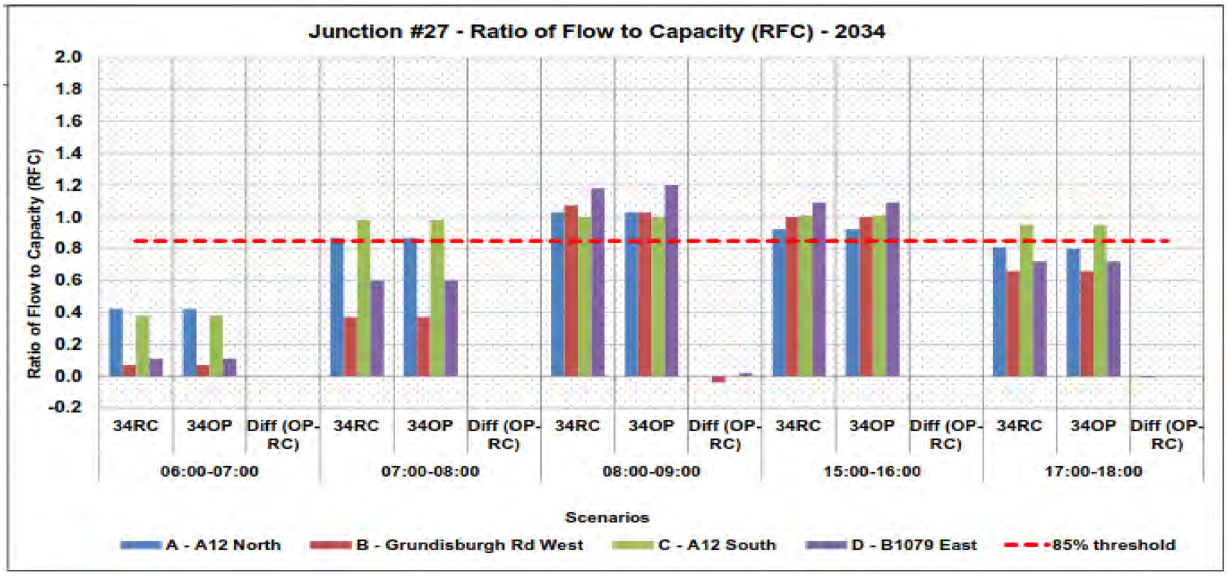


Plate 9.117: A12 / B1079 / Grundisburgh Road Roundabout 2034 Sensitivity Test RFC Results



9.25.26 In each forecast year tested the sensitivity test results are an improvement in comparison to the core results with a reduction in RFC values recorded in all three forecast years with a maximum reduction of -0.14 in the 2023 and 2028 scenarios and a maximum reduction of -0.35 recorded in the 2034 forecast year.

9.25.27 While the sensitivity test flows lead to a reduction in modelled RFC values at Junction 21, the roundabout continues to operate overcapacity in each of the forecast years tested. In all three forecast years at least one arm operates above the 0.85 RFC threshold from 07:00-08:00, 08:00-09:00, 15:00-16:00 and 17:00-18:00, however this is the case in both Reference Case and 'with Sizewell' scenarios which indicates that Sizewell traffic has minimal impact on junction performance.

h) Overview

9.25.28 Initial modelling for Junction 27, using demand flows extracted from the strategic modelling, showed the junction to be operating above capacity in both Reference Case and 'with Sizewell' scenarios in all time periods except the 06:00-07:00 modelled hour. As a result a sensitivity test in which actual flows representing an average work day were fed into the junction model for assessment.

9.25.29 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.40**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or very near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.40: A12 / B1079 / Grundisburgh Road Roundabout RFC Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.38	0.40	0.42	0.40	0.48	0.42	0.42
07:00-08:00	0.84	0.89	1.00	0.96	1.01	0.98	0.98
08:00-09:00	0.99	1.15	1.39	1.11	1.17	1.18	1.20
15:00-16:00	0.98	1.18	1.42	0.99	1.00	1.09	1.09
17:00-18:00	0.91	0.91	0.94	0.94	0.92	0.95	0.95

9.25.30 With sensitivity test flows applied the results see an improvement over the core results with all scenarios operating with a maximum RFC of less than 1.0 from 17:00-18:00. Overall the junction continues to operate above the capacity threshold in both Reference Case and 'with Sizewell' scenarios.

9.25.31 The impact of Sizewell C traffic on overall junction performance is negligible compared with the Reference Case results. The RFC outputs for each Reference Case scenario is very similar its respective with-Sizewell C scenario. Only minimal differences are recorded in maximum RFC values between the 2034 Reference Case and Operational Phase scenarios. The increasing RFCs through the years can be largely attributed to background traffic growth, unrelated to Sizewell C.

9.26 Junction 28 – A12 / A1152 Woods Lane Roundabout

a) Context

9.26.1 Junction 28 is a three-arm roundabout, located to the north of Woodbridge and approximately 15-miles south-west of the Sizewell C site. It is the junction where the A12 meets the A1152. All approach arms comprise of two lanes with varying speed limits of 60mph from the A12 north, 50mph from the A12 south-west and 30mph from the A1152 Woods Lane. Street lighting is in place on all approaches. A satellite image of the existing junction layout is shown in **Plate 9.118**.

Plate 9.118: Existing A12 / A1152 Woods Lane Roundabout Layout

b) Calibration Summary

9.26.2 Observed queue data showed there were minor queues on most approaches, with moderate queues on the A12 south from 08:00-09:00 and during the afternoon periods.

9.26.3 The junction model typically results in higher queues from 08:00-09:00 and slightly lower than those observed in the remaining periods. Due to the relatively minor differences between observed and modelled queuing, the model is considered to represent existing conditions.

c) Early Years (2023)

i. Demand impact

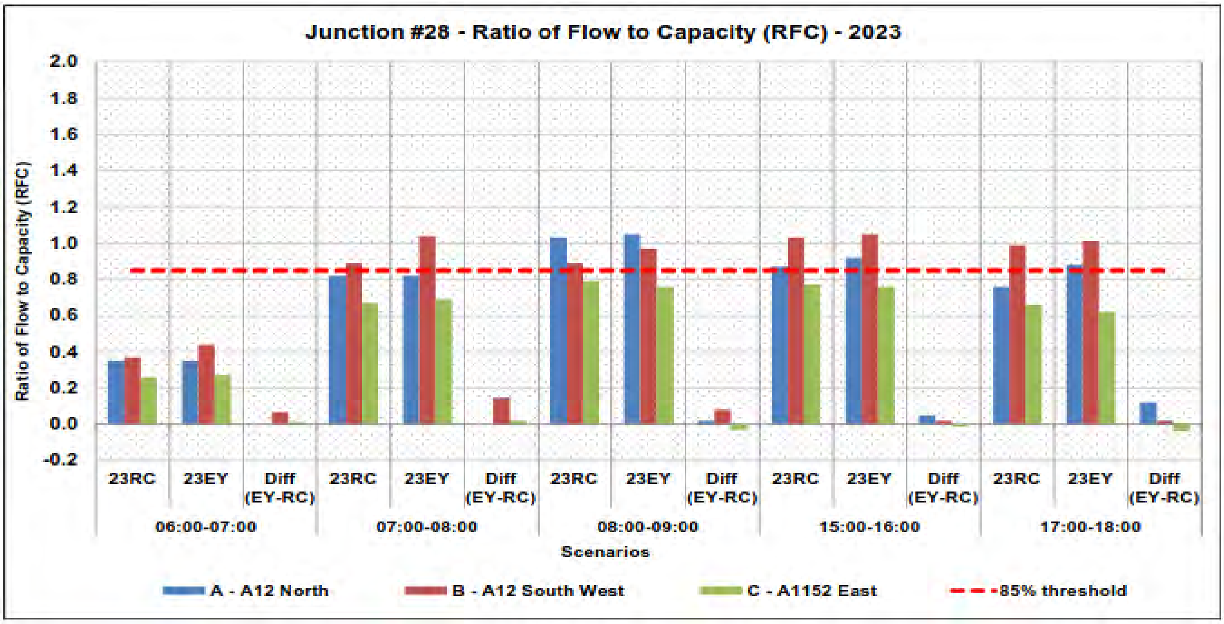
9.26.4 The 2023 Reference Case scenario traffic flows show small to moderate increases in entry demand (+30-110 vehicles per hour) on both A12 north and south arms in all periods compared to the base year. The A1152 arm show reductions (-40-110 vehicles per hour) for all periods except 06:00-07:00 where there is a small increase (+30 vehicles per hour). This decrease is due to congestion on the A12 causing vehicles to reroute via the B1438 instead of the A1152 to access the A12.

9.26.5 The Early Years scenario traffic flows show moderate increases in entry demand on the A12 north arm (125 vehicles per hour) from 17:00-18:00 and large increases on the A12 south arm (+90-190 vehicles per hour) during all morning peaks compared to the reference case. There are minor reductions (up to -90 vehicles per hour) on the A1152 Woods Lane approach from 08:00-09:00, 15:00-16:00 and 17:00-18:00, compared to the 2023 Reference Case.

ii. Results analysis

9.26.6 The RFC modelling results for the 2023 Reference Case (RC) and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.119**. The difference is shown as EY-RC.

Plate 9.119: A12 / A1152 Woods Lane Roundabout 2023 Early Years RFC Results



9.26.7 **Plate 9.119** shows that the junction is predicted to operate over the capacity threshold on the A12 south approach during all modelled hours. The A12 north approach is expected to be over the capacity threshold from 08:00-09:00 and 15:00-16:00 and from17:00-18:00 in the Early Years scenario only. From 06:00-07:00 all approaches are predicted to operate within capacity.

9.26.8 The Early Years scenario RFC results show small increases from the 2023 Reference Case, resulting in the RFC exceeding 1.0 for the A12 south approach from 07:00-08:00 and the RFC exceeding the 0.85 threshold on the A12 north arm from 17:00-18:00.

d) Peak Construction (2028)

i. Demand impact

9.26.9 The 2028 Reference Case scenario traffic flows show a small to moderate increase (+30-130 vehicles per hour) in entry demand on all arms in all periods compared to the base year except from the A12 south arm from 07:00-08:00 and 08:00-09:00 where there are larger increases (+170-220 vehicles per hour) compared to the base year.

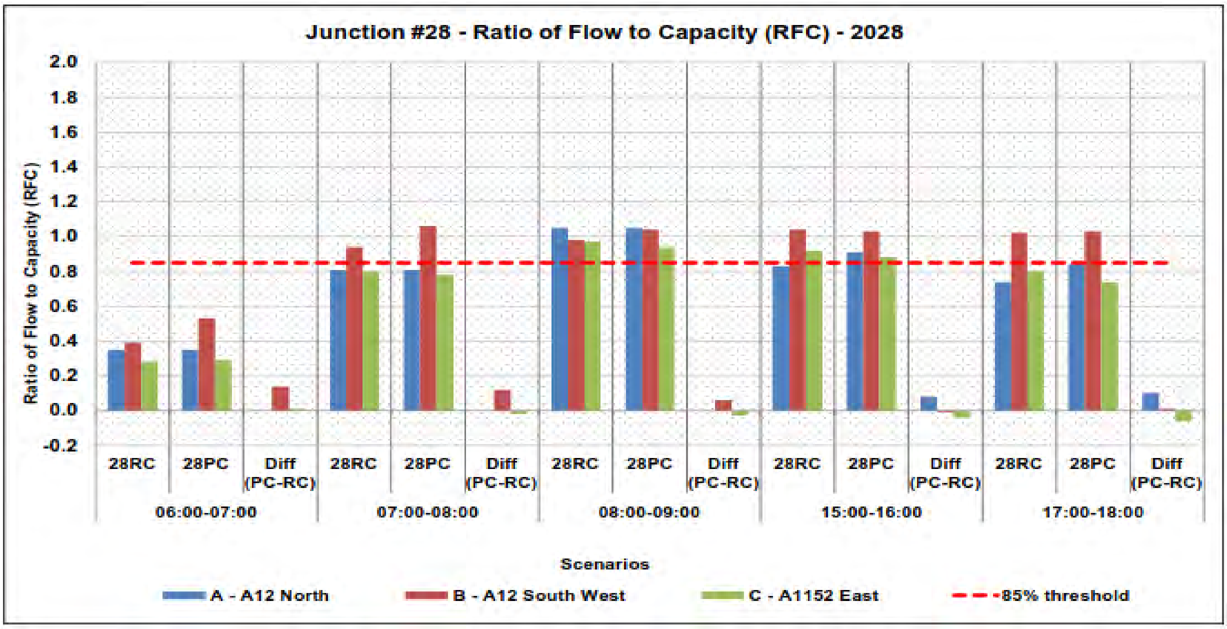
9.26.10 The Peak Construction scenario traffic flows show a large increase in entry demand on the A12 south arm from 06:00-07:00 and 07:00-08:00 (+150-240 vehicles per hour) and on the A12 north arm in the afternoon periods (+100-120 vehicles per hour), compared with the 2028 Reference Case traffic flows.

There is a small decrease (up to 115 fewer vehicles per hour) on the A1152 arm in all periods.

ii. Results analysis

9.26.11 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.120**. The difference is shown as PC-RC.

Plate 9.120: A12 / A1152 Woods Lane Roundabout 2028 Peak Construction RFC Results



9.26.12 **Plate 9.120** shows that the junction is predicted to operate over the threshold capacity on the A12 south approach during the majority of modelled hours. The A12 north arm is over the capacity threshold from 08:00-09:00 and the Peak Construction scenario from 15:00-16:00. From 06:00-07:00 all approaches operate within capacity. The A1152 approach is expected to operate within capacity in the majority of time periods except from 08:00-09:00 and 15:00-16:00 where the RFC exceeds the capacity threshold in both scenarios.

9.26.13 As the Early Years scenario RFC results suggest the junction would be over capacity, it is expected that the junction is also over capacity during Peak Construction.

e) Operational Phase (2034)

i. Demand impact

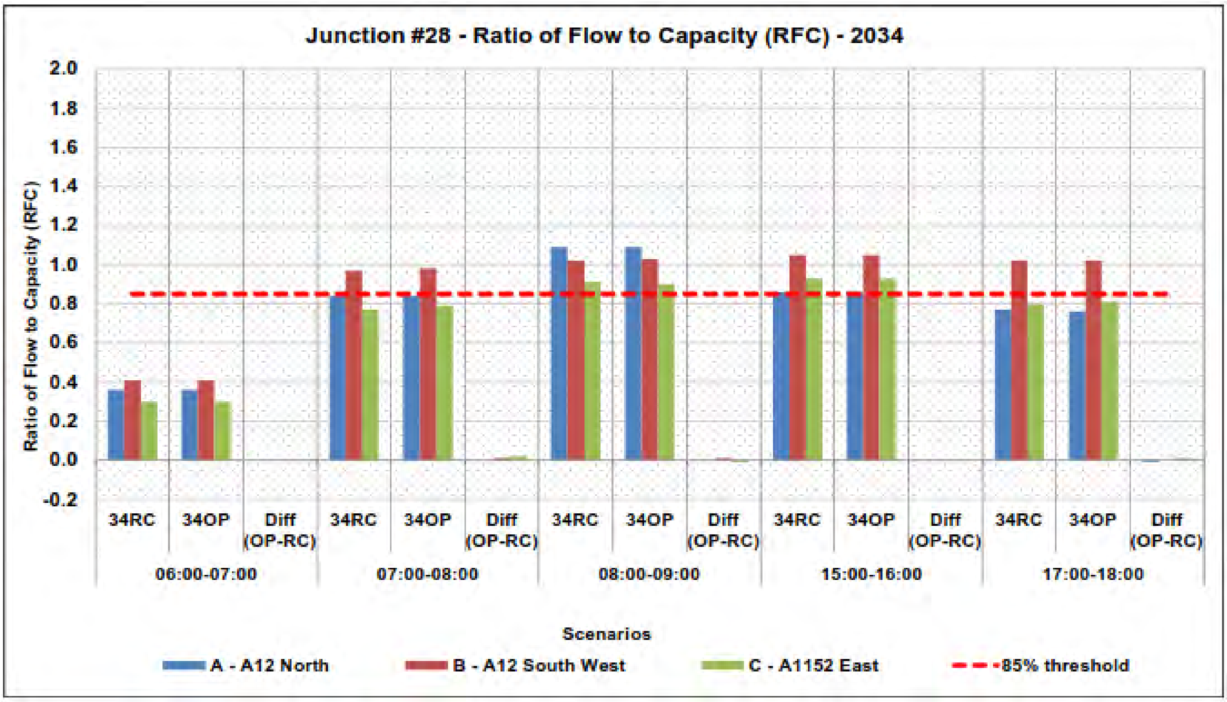
9.26.14 The 2034 Reference Case scenario traffic flows show a large increase in entry demand on the A12 north arm in the afternoon periods (+110-150 vehicles per hour) and the A12 south arm in all periods (+120-300 vehicles per hour), relative to the observed base year flows. There is a small to moderate increase of up to 94 vehicles per hour on the remaining A12 north arm periods and the A1152 arm in all periods.

9.26.15 The Operational Phase scenario shows a negligible change in entry demand on all approaches compared with the 2034 Reference Case.

ii. Results analysis

9.26.16 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.121**. The difference is shown as OP-RC.

Plate 9.121: A12 / A1152 Woods Lane Roundabout 2034 Operational Phase RFC Results



9.26.17 **Plate 9.121** shows that the junction is predicted to operate over capacity on at least one approach during all modelled hours except 06:00-07:00, where all approaches are predicted to operate within capacity. The A12 north approach is predicted to be over capacity from 08:00-09:00, the A12 south approach is predicted to be over capacity in all periods except 06:00-07:00 and the A1152 approach predicted to be over capacity from 08:00-09:00 and 15:00-16:00.

9.26.18 The Operational Phase scenario RFC results are very similar to those for the 2034 Reference Case scenario, which is intuitive given the negligible change in entry demand between the two scenarios.

9.26.19 Although the 2034 Reference Case and Operational Phase RFCs are both above the threshold, the modelling results demonstrate that Sizewell C has a negligible additional impact at this junction.

f) Sensitivity Test

9.26.20 Due to the strategic location of the A12 / A1152 Woods Lane Roundabout close to the Adastral Park development and its importance to the A12 corridor, Junction 28 has been subject to a sensitivity test in which lower flows were fed into the model for testing. The same assumptions have been applied as to the sensitivity test for Junctions 21 – 27 in order to bring the modelling into line with the modelling assumptions used for the consented Adastral Park development.

9.26.21 With the adjustments to the traffic forecasts, flows reduce on all arms in all modelled scenarios up to a maximum of -160 vehicles per hour as seen on the A12 South approach in the 2034 Operational Peak scenario from 08:00-09:00.

9.26.22 The RFC modelling results for the 2023, 2028 and 2034 Reference Case and 'with Sizewell' scenarios, split by each modelled hourly period, are illustrated in **Plates 9.122** to **9.124**.

Plate 9.122: A12 / A1152 Woods Lane Roundabout 2023 Sensitivity Test RFC Results

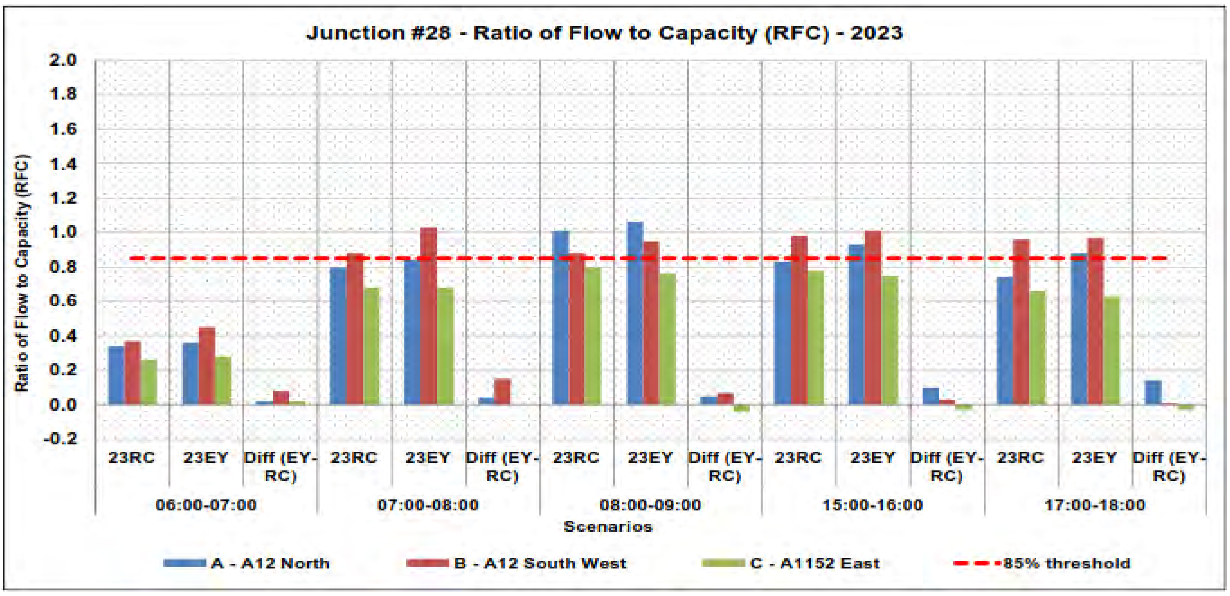


Plate 9.123: A12 / A1152 Woods Lane Roundabout 2028 Sensitivity Test RFC Results

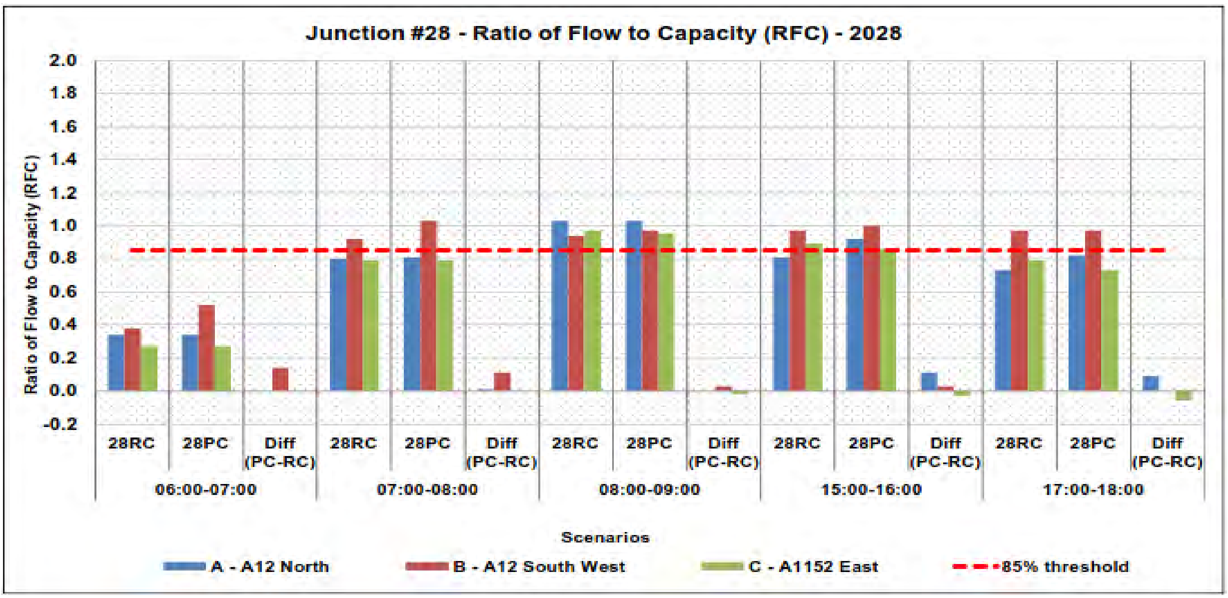
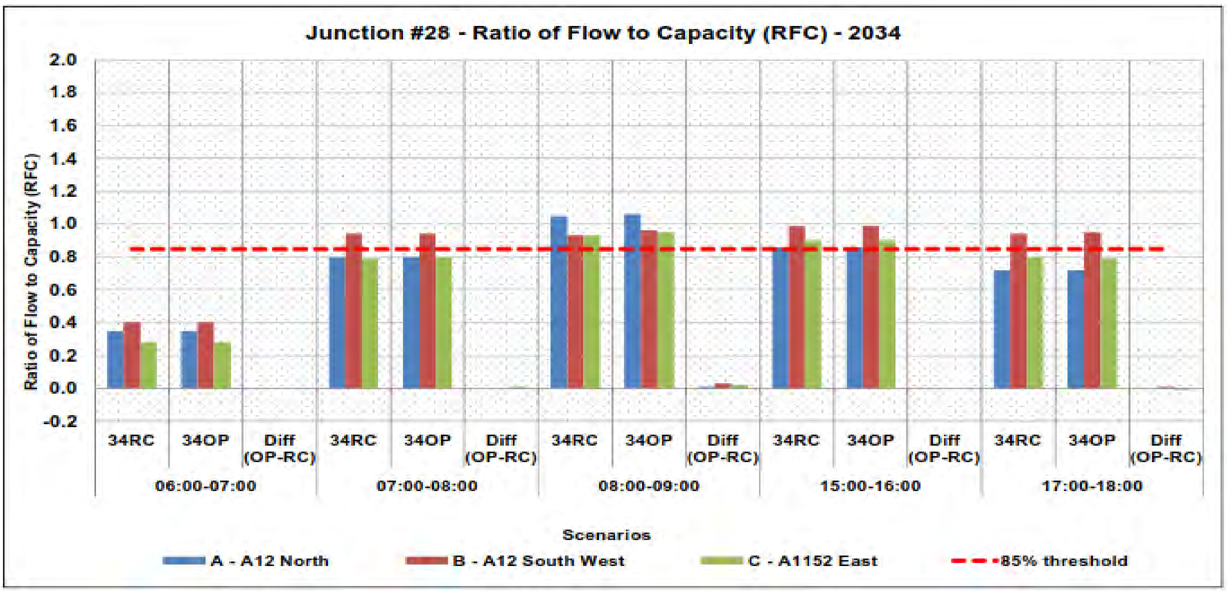


Plate 9.124: A12 / A1152 Woods Lane Roundabout 2034 Sensitivity Test RFC Results



9.26.23 In each forecast year tested the sensitivity test results are an improvement in comparison to the core results with a reduction in RFC values recorded in all three forecast years with a maximum reduction of -0.07 in the 2023 and 2028 scenarios and a maximum reduction of -0.09 recorded in the 2034 forecast year.

9.26.24 While the sensitivity test flows lead to a reduction in modelled RFC values at Junction 21, the roundabout continues to operate slightly over the 0.85 RFC threshold in each of the forecast years tested but are largely below 1.00 RFC. In all three forecast years at least one arm operates above the 0.85 RFC threshold from 07:00-08:00, 08:00-09:00, 15:00-16:00 and 17:00-18:00, however this is the case in both Reference Case and 'with Sizewell' scenarios which indicates that Sizewell traffic has minimal impact on junction performance.

g) Overview

9.26.25 Initial modelling for Junction 28, using demand flows extracted from the strategic modelling, showed the junction to be operating above capacity in both Reference Case and 'with Sizewell' scenarios in all time periods except the 06:00-07:00 modelled hour. As a result, a sensitivity test in which actual flows representing an average work day were fed into the junction model for assessment.

9.26.26 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.41**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or very near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.41: A12 / A1152 Woods Lane roundabout RFC Results Overview

Time period	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.34	0.37	0.45	0.38	0.52	0.40	0.40
07:00-08:00	0.83	0.88	1.03	0.92	1.03	0.94	0.94
08:00-09:00	0.97	1.01	1.06	1.03	1.03	1.05	1.06
15:00-16:00	0.96	0.98	1.01	0.97	1.00	0.99	0.99
17:00-18:00	0.93	0.96	0.97	0.97	0.97	0.94	0.95

9.26.27 With sensitivity flows assigned to the model the impact of Sizewell C traffic on overall junction performance is only shown to affect the 07:00-08:00 modelled hour with the Reference Case scenario results very similar to those for the 'with Sizewell' scenarios for all other hours.

9.26.28 The increasing RFCs through the years can be largely attributed to background traffic growth, unrelated to Sizewell C with the exception of the 07:00-08:00 2023 Early Years and 2028 Peak Construction scenarios which see an RFC increase of 14% and 11% respectively, resulting in the junction operating above 100% capacity in both cases.

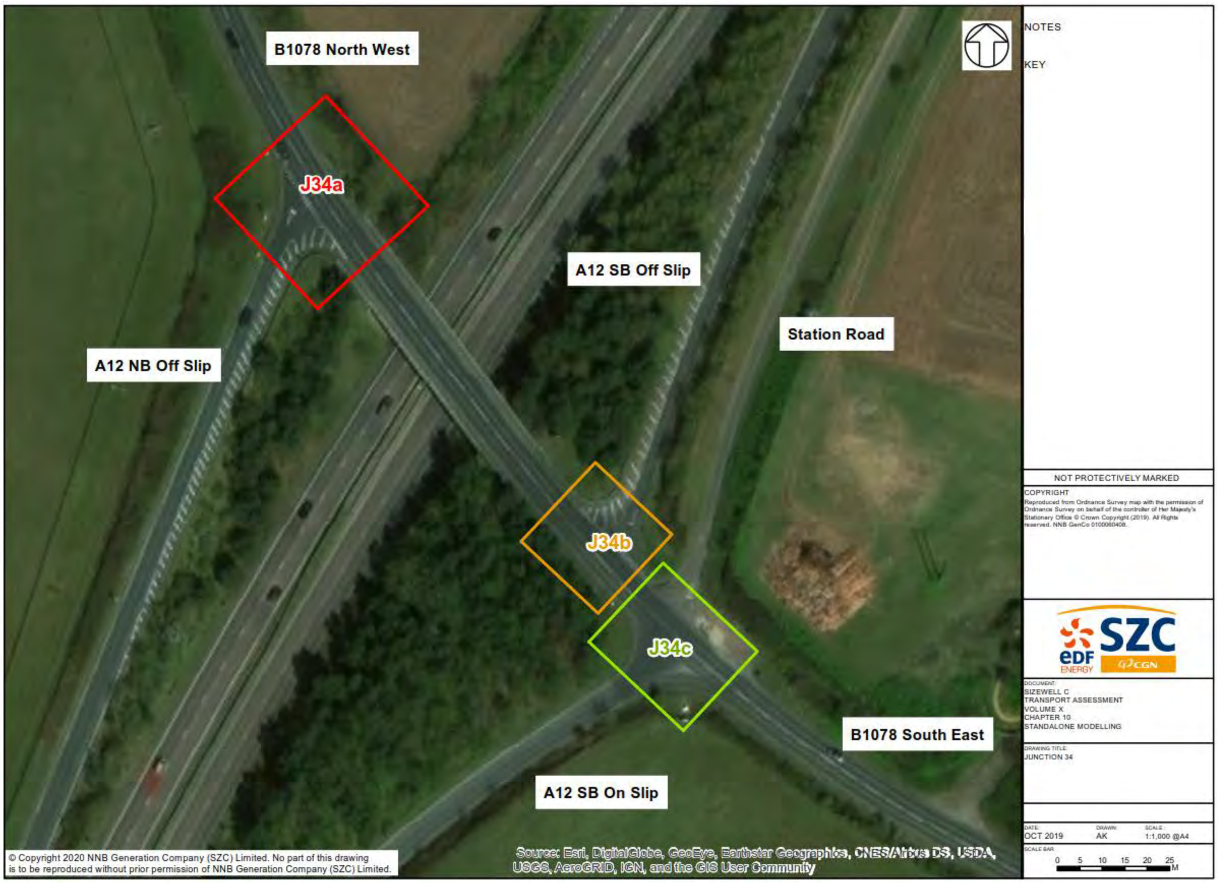
9.27 Junction 34c – A12 Southbound on slip / B1078 / Station Road Crossroads

a) Context

9.27.1 Junction 34c forms the third part of the A12 / B1078 interchange. The A12 southbound on slip and Station Road meet the B1078 via a pair of simple priority T-junctions, forming a crossroads as shown in **Plate 9.125** below. The junction is located 20m south east of Junction 34b (A12 southbound off slip / B1078), to the north east of Wickham Market, and approximately 11-miles south west of the Sizewell C site. Station Road is a lightly trafficked, narrow, single track road which runs roughly parallel to the B1078. It provides access to properties and farmland. The A12 southbound on slip is exit only from the junction, hence no traffic enters from this arm.

9.27.2 Given the proximity of the adjacent Junction 34b, some cross-referencing, particularly queue lengths, has been undertaken to ascertain whether any blocking back of the major arm right turn movement occurs.

Plate 9.125: Existing A12 Southbound on slip / B1078 / Station Road Crossroads Layout



b) Calibration Summary

9.27.3 Observed queue data showed that there was no queuing on Station Road or the south eastern B1075 approach, and small queues on the north-western approach. The level of queuing is such that some blocking back to Junction 34b could occur, resulting in exit blocking from the A12 southbound off slip. The calibrated junction model shows queue lengths that are similar to the observed queues; therefore, the model is considered to be representative of existing conditions.

c) Early Years (2023)

i. Demand impact

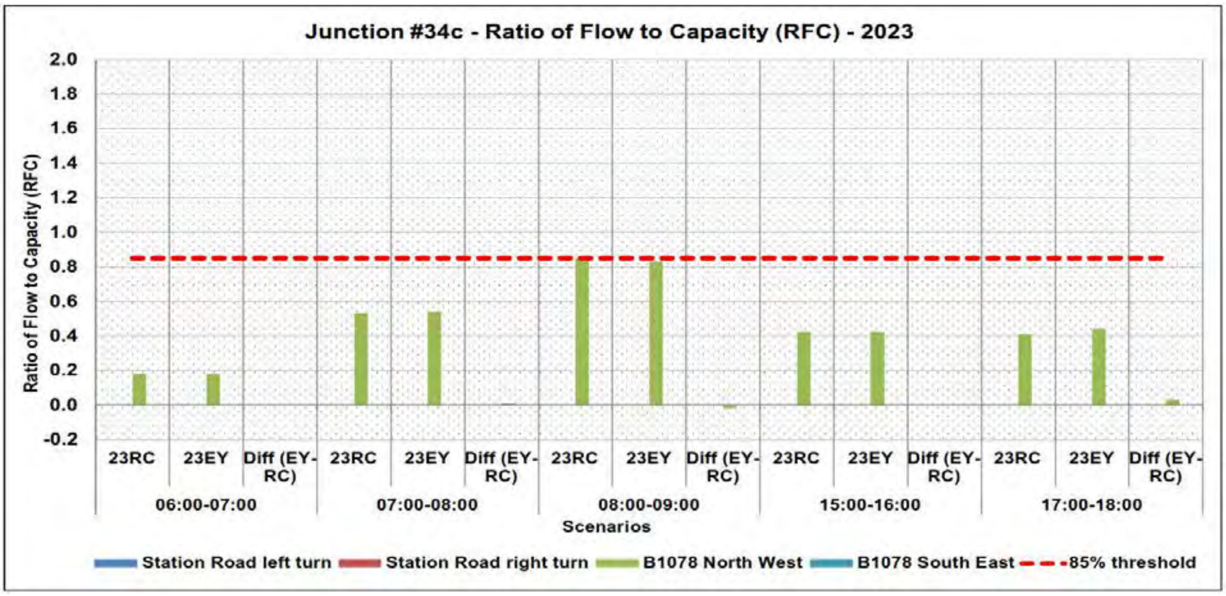
9.27.4 The 2023 Reference Case scenario traffic flows show no changes in entry demand from Station Road, negligible increases on the south eastern B1078 approach and small increases on the north western B1078 approach (+10-40 vehicles per hour), relative to the base year observed traffic flows.

9.27.5 The Early Years scenario traffic flows are forecast to have negligible increases from the 2023 Reference Case scenario.

ii. Results analysis

9.27.6 The RFC modelling results for the 2023 Reference Case (RC) and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.126**. The difference is shown as EY-RC.

Plate 9.126: A12 Southbound on slip / B1078 / Station Road Crossroads 2023 Early Years RFC Results



9.27.7 **Plate 9.126** shows that the junction is predicted to operate at or below the 0.85 RFC threshold in all modelled hours in 2023. The impact from Sizewell C is therefore negligible in terms of RFC and no change is predicted in terms of queues or delays. The largest increase in RFC between the 2023 Reference Case and Early Years scenario is 0.01.

d) Peak Construction (2028)

i. Demand impact

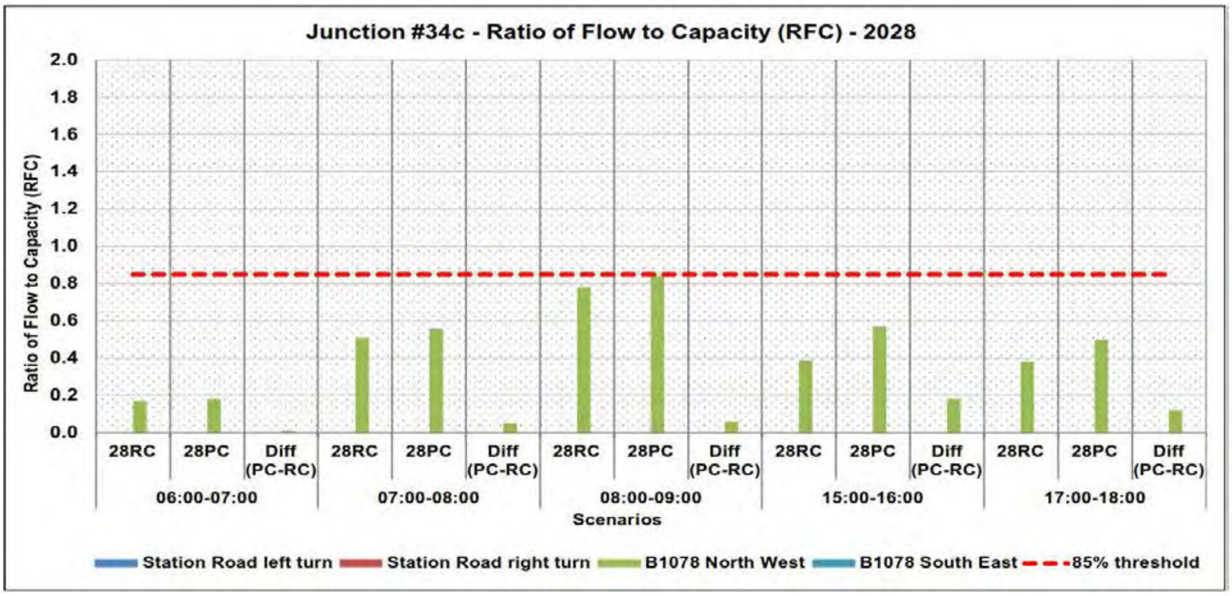
9.27.8 The 2028 Reference Case scenario traffic flows show no changes in entry demand from Station Road and small increases on the south-eastern and north-western B1078 approaches (+10-20 vehicles per hour), relative to the base year observed traffic flows.

9.27.9 The Peak Construction scenario traffic flows are forecast to have negligible increases relative to the 2028 Reference Case scenario, with an exception during the afternoon hours on the B1078 North West approach, where larger increases are forecast (+30 - 90 vehicles per hour). This increase is largely due to workers leaving the southern park and ride site, turning right from the B1078 North West onto the A12 south-bound on slip.

ii. Results analysis

9.27.10 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.127.** The difference is shown as PC-RC.

Plate 9.127: A12 Southbound on slip / B1078 / Station Road Crossroads 2028 Peak Construction RFC Results



9.27.11 **Plate 9.127** shows that the junction is predicted to operate within the 0.85 theoretical capacity threshold during all modelled hours. The largest RFC (0.84) is predicted to occur from 08:00-09:00 on the B1078 north-west approach which is an increase of 0.06 relative to the 2028 Reference Case RFC (0.78). The impact from Sizewell C is small in terms of RFC and also in terms of queues on the B1078 north-west approach which are expected to increase from 4 vehicles in the 2028 Reference Case to 6 vehicles in the Peak Construction scenario.

e) Operational Phase (2034)

i. Demand impact

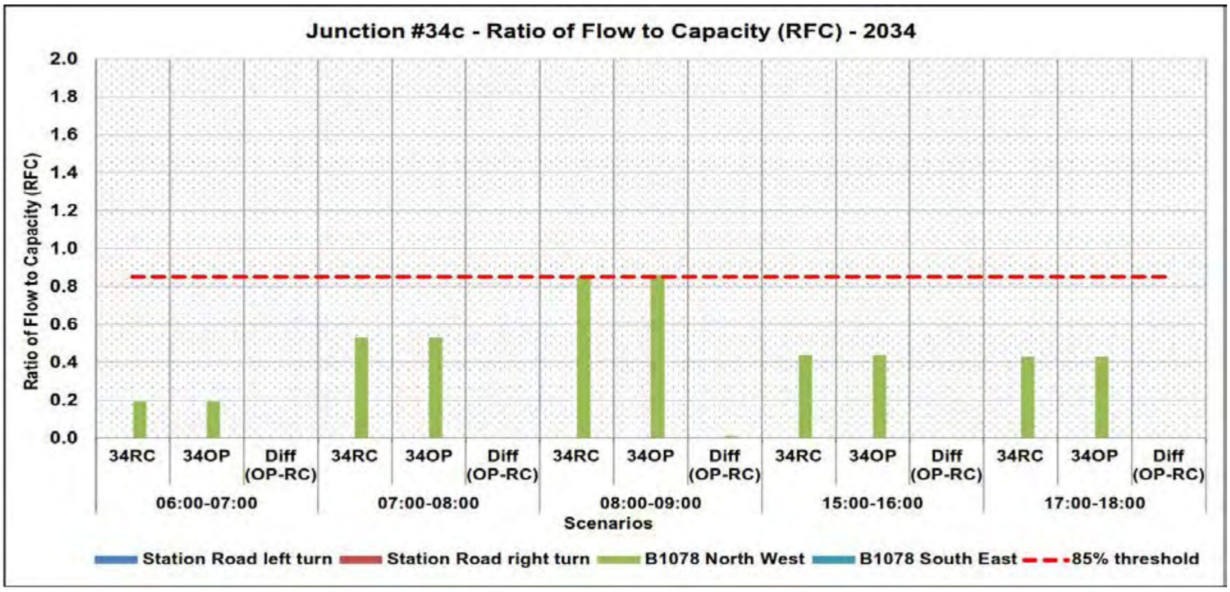
9.27.12 The 2034 Reference Case scenario traffic flows show no changes in entry demand from Station Road and small increases on the B1078 south-east and north-west approaches (+10-60 vehicles per hour) relative to the base scenario.

9.27.13 The Peak Construction scenario traffic flows are forecast to have negligible differences from the 2023 Reference Case scenario.

ii. Results analysis

9.27.14 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.128**. The difference is shown as OP-RC.

Plate 9.128: A12 Southbound on slip / B1078 / Station Road Crossroads 2034 Operational Phase RFC Results



9.27.15 **Plate 9.128** shows that the junction is predicted to operate within the 0.85 theoretical capacity threshold in all modelled hours. The only exception is from 08:00-09:00 when the B1078 north-west approach is predicted to experience an RFC of 0.86 in the Operational Phase scenario compared to 0.85 in the 2034 Reference Case scenario.

9.27.16 The impact of the Sizewell C traffic is small in terms of RFC and the impact on queues and delays is negligible.

f) Mitigation Analysis

9.27.17 Whilst mitigation is not considered necessary from a capacity perspective, it is proposed to make some minor changes to signage at this junction for safety purposes, as illustrated in the **Southern Park and Ride Plans** (Doc Ref. 2.7).

g) Overview

9.27.18 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.42**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or very near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.42: A12 Southbound on slip / B1078 / Station Road Crossroads RFC Results Overview

Time period	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.17	0.18	0.18	0.17	0.18	0.19	0.19
07:00-08:00	0.49	0.53	0.54	0.51	0.56	0.53	0.53
08:00-09:00	0.77	0.85	0.83	0.78	0.84	0.85	0.86
15:00-16:00	0.37	0.42	0.42	0.39	0.57	0.44	0.44
17:00-18:00	0.38	0.41	0.44	0.38	0.50	0.43	0.43

9.27.19 The modelling results show that the junction operates with reserve capacity for all scenarios.

9.28 Junction 38 – A12 / B1125

a) Context

9.28.1 Junction 38 is a three-arm T-Junction located on a 30mph stretch of the A12 approximately 11-miles north of the Sizewell C site. The major arm (A12) passes over a hill and around a bend at the junction, with the minor arm (Angel Lane) located on the outside of this bend. Visibility to the left from Angel lane and ahead for right turners from the A12 south-west is restricted by buildings situated close to the carriageway.

9.28.2 Both A12 arms comprise a single lane with no separate lane to accommodate right-turning vehicles on the major road. Angel Lane is a single lane that widens to a very short flare (one small vehicle at most) at the give-way line. All approach arms are 30mph roads and there is no street lighting at the junction. A satellite image of the existing junction layout is shown in **Plate 9.129.**

Plate 9.129: Existing A12 / B1125 Layout

b) Calibration Summary

9.28.3 Observed queue data showed that there were small queues on Angel Lane in the AM periods, generally no more than 2-3 vehicles in length with one instance of queues reaching 7 vehicles from 08:45-08:50. In the PM periods, maximum queues are slightly higher and are generally 2-6 vehicles in length with the exception of 16:20-16:25 when a maximum queue of 15 vehicles was observed.

9.28.4 The observed queues on the A12 were typically negligible with no queues observed except for a maximum queue of 1 vehicle observed from 09:15-09:20.

9.28.5 The junction model shows no queues on the A12 South West which is consistent with the observed data. Angel Lane shows a modelled queue of 0.1-0.6 vehicles in length whilst the observed data shows queues of 0.4-4.1 vehicles. To replicate observed queues, unrealistic adjustments to the capacity of Angel Lane would be required. Therefore, since observed and modelled queues are of a similar order of magnitude, and delays are similar to those observed in video footage captured during the surveys, the model is considered to be representative of existing conditions.

c) Early Years (2023)

i. Demand impact

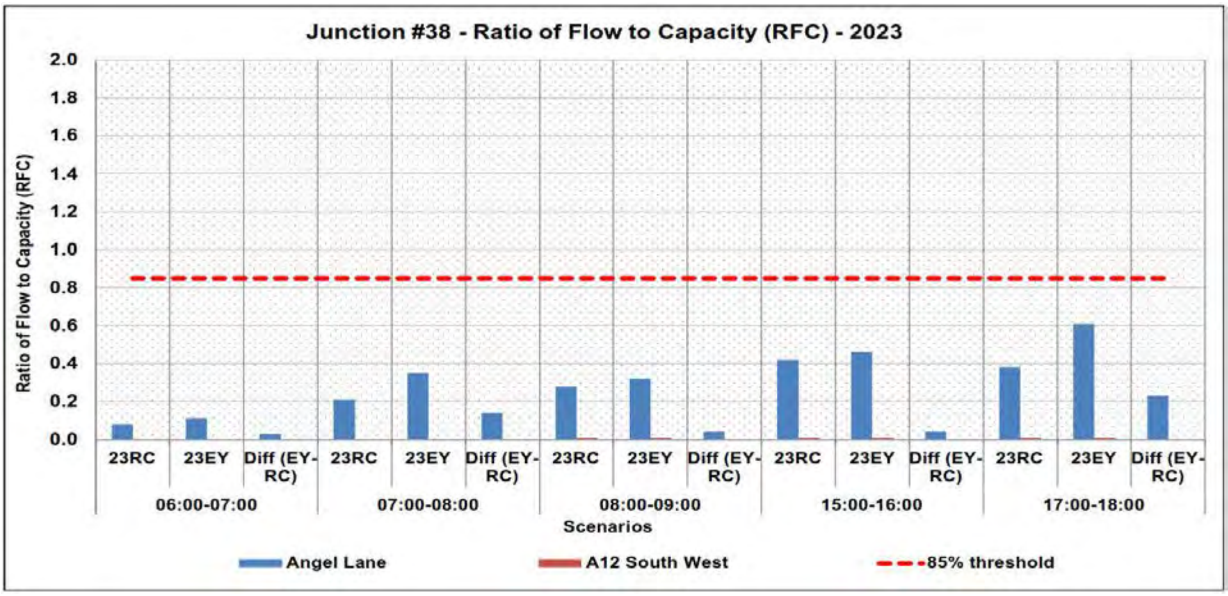
9.28.6 Relative to the base scenario, the 2023 Reference Case scenario shows a small increase in traffic flows (+10-50 vehicles per hour) on all approaches to the junction.

9.28.7 The Early Years scenario traffic flows are expected to increase on the A12 North approach by 80 vehicles per hour from 06:00-07:00 and by 200 vehicles per hour from 07:00-08:00, the increase is expected to be much lower (up to 20 vehicles per hour) during the other modelled hours. The A10 South and B1125 approaches are anticipated to experience an increase of 60-80 vehicles per hour from 17:00-18:00 and much lower increases (10-30 vehicles per hour) during the other modelled hours. These increases represent vehicles from the north accessing the Sizewell C construction sites in the early morning and returning north in the evening.

ii. Results analysis

9.28.8 The RFC modelling results for the 2023 Reference Case (RC) and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.130.** The difference is shown as EY-RC.

Plate 9.130: A12 / B1125 - 2023 Early Years RFC Results



9.28.9 **Plate 9.130** shows that the junction is predicted to operate well within capacity during all modelled hours in the 2023 Reference Case scenario. The 2023 Reference Case RFC peaks during the afternoon hours with the Angel Lane approach reaching a maximum RFC of 0.42 from 15:00-16:00. RFCs on A12 South West are negligible in all time periods.

d) Peak Construction (2028)

i. Demand impact

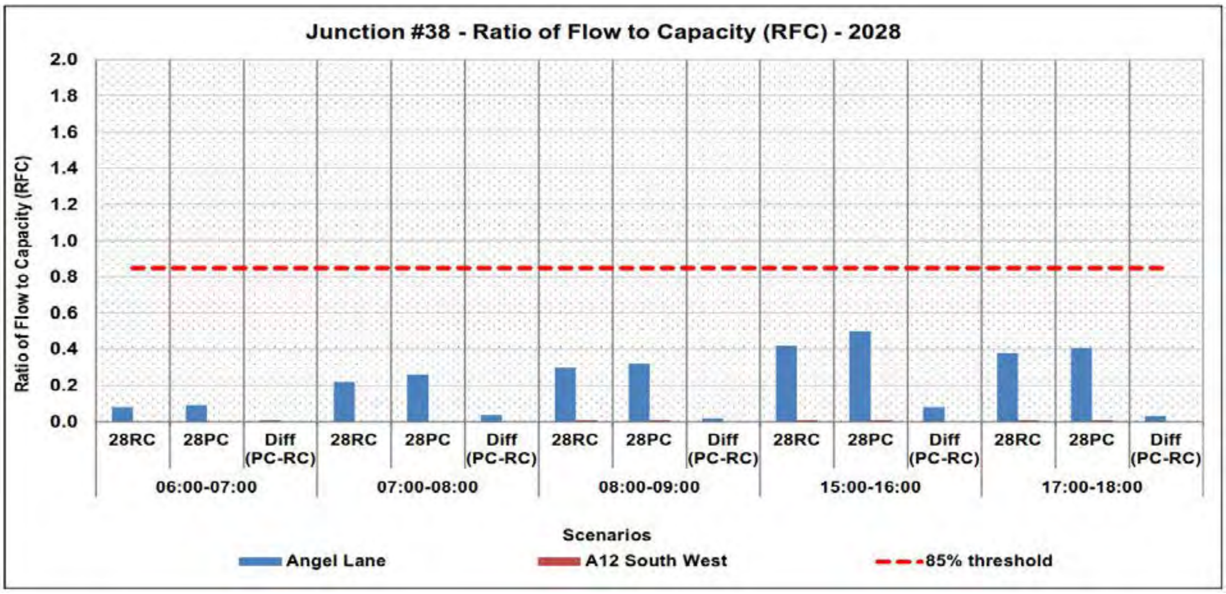
9.28.10 Relative to the base scenario, the 2028 Reference Case scenario shows a small increase in traffic flows (+10 - 50 vehicles per hour) on all approaches to the junction.

9.28.11 The Early Years scenario traffic flows are expected to increase on the A12 north approach by 180 vehicles per hour from 06:00-07:00 and by 130 vehicles per hour from 07:00-08:00, the increase is expected to be much lower (up to 25 vehicles per hour) during the other modelled hours. The A10 south approach is anticipated to experience an increase of 60-80 vehicles per hour from 15:00-16:00 and 17:00-18:00 and much lower increases (10-20 vehicles per hour) during the other modelled hours. Flows on Angel lane are not anticipated to increase more than 15 vehicles per hour (15:00-16:00) relative to the 2028 Reference Case scenario.

ii. Results analysis

9.28.12 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.131.** The difference is shown as PC-RC.

Plate 9.131: A12 / B1125 - Peak Construction 2028 RFC Results



9.28.13 **Plate 9.131** shows that the junction is predicted to operate well within capacity during all modelled hours in the 2028 Reference Case scenario. RFCs are greatest during the PM modelled hours, with Angel Lane reaching a maximum RFC of 0.42 from 15:00-16:00.

e) Operational Phase (2034)

i. Demand impact

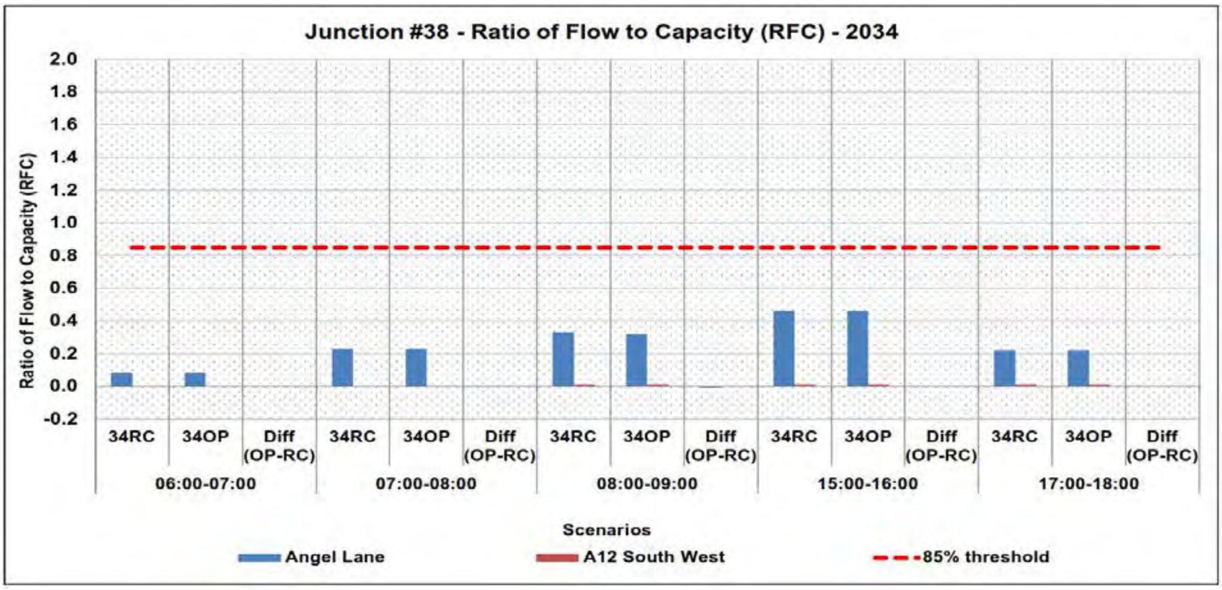
9.28.14 Relative to the base scenario, the 2034 Reference Case scenario shows a small increase in traffic flows on Angel Lane (up to 20 vehicles per hour). Flows on the A12 are predicted to see an increase of up to 80 vehicles per hour.

9.28.15 The Operational Phase scenario shows a very similar level of flow to the 2034 Reference Case scenario.

ii. Results analysis

9.28.16 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.132.** The difference is shown as OP-RC.

Plate 9.132: A12 / B1125 – 2034 Operational Phase RFC Results



9.28.17 **Plate 9.132** shows that the junction is predicted to operate well within capacity during all modelled hours in the 2034 Reference Case scenario, with the maximum RFC being registered on Angel Lane (0.46) from 15:00-16:00.

f) Mitigation Analysis

9.28.18 The A12 / Angel Lane junction is predicted to operate with spare capacity in all scenarios so mitigation is not proposed at this location.

g) Overview

9.28.19 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.43**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.43: A12 / B1125 RFC Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.08	0.08	0.11	0.08	0.09	0.08	0.08
07:00-08:00	0.26	0.21	0.35	0.22	0.26	0.23	0.23
08:00-09:00	0.41	0.28	0.32	0.30	0.32	0.33	0.32
15:00-16:00	0.59	0.42	0.46	0.42	0.50	0.46	0.46
17:00-18:00	0.37	0.38	0.61	0.38	0.41	0.22	0.22

9.28.20 The modelling results show that the junction would operate well below the 0.85 RFC threshold in all scenarios.

9.29 Junction 40 – A12 / Bell Lane T-Junction, Marlesford

a) Context

9.29.1 Junction 40, shown in **Plate 9.133** below, is a simple priority T-junction between the A12 and Marlesford Road, south of the village of Marlesford and approximately 10 miles south-west of the Sizewell C site. The minor arm (Bell Lane) is a single carriageway road connecting the A12 to Marlesford, half a mile to the north. All approaches operate with a speed limit of 40mph. There is no right turning lane on the A12, meaning a single right turning vehicle would block approaching traffic on the A12 from the east. There is recently erected signage at the Bell Lane entry advising that the road is unsuitable for heavy goods vehicles.

Plate 9.133: Existing A12 / Bell Lane T-Junction Layout

b) Calibration Summary

9.29.2 Observed queue data showed that very short queues accumulate on Bell Lane, with up to two vehicles waiting at the give way line. The calibrated junction model shows queue lengths that typically are shorter than observed, with the model showing negligible queues on all arms in the modelled hours. However, as such short queues are difficult to replicate, it is considered that the differences in queue length are **not significant** and that the model is representative of existing conditions.

c) Early Years (2023)

i. Demand impact

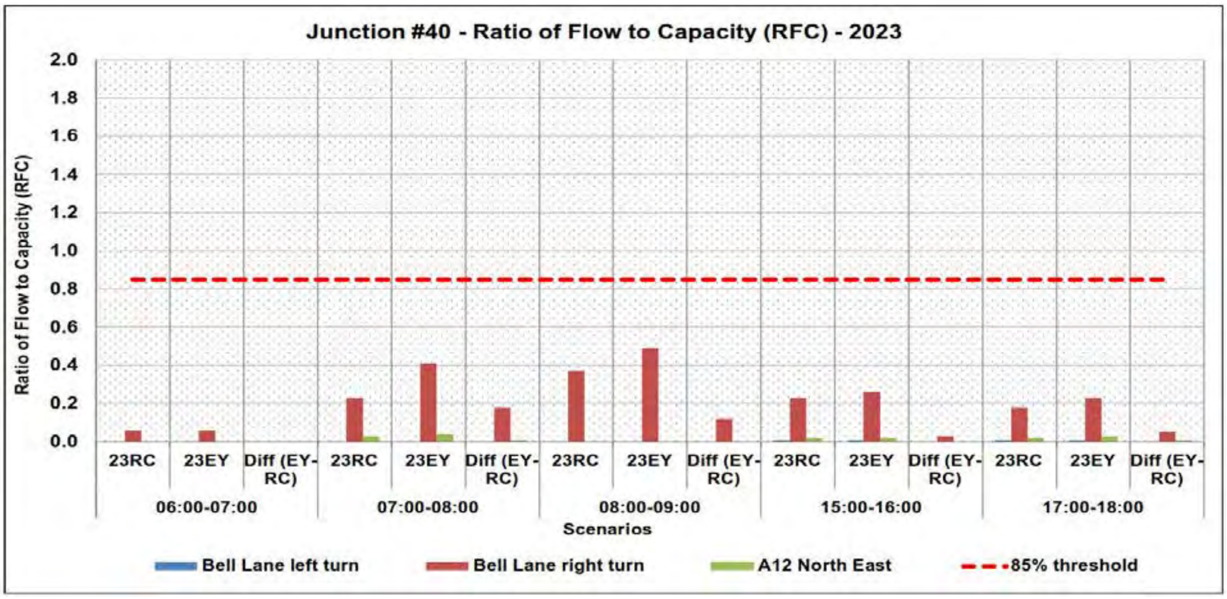
9.29.3 The 2023 Reference Case scenario traffic flows show small increases in traffic on the A12 west approach (+40-80 vehicles per hour) across all modelled hours, relative to the observed base year traffic flows. On the A12 east approach, small increases are forecast in the morning periods (+30-40 vehicles per hour). During the evening periods, flows are expected to increase by 80 vehicles per hour from 15:00-16:00 and 110 vehicles per hour from 17:00-18:00. Negligible changes in traffic flows are forecast on the Bell Lane minor arm.

9.29.4 In the Early Years scenario flows are expected to show a negligible increase on the A12 West approach in the afternoon hours whilst flows in the morning hours are expected to increase by 90-220 vehicles per hour (greatest from 07:00-08:00) relative to the 2023 Reference Case scenario. On the A12 east approach, flows are expected to increase by 20-60 vehicles per hour in all modelled periods except for 17:00-18:00 when an increase of 140 vehicles per hour is predicted. The increase on the A12 in the Early Years scenario represents vehicles travelling to the Sizewell C site in the morning and leaving in the evening. No changes to traffic flows on the Bell Lane approach are forecast in the Early Years scenario, relative to the 2023 Reference Case scenario.

ii. Results analysis

9.29.5 The RFC modelling results for the 2023 Reference Case (RC) and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.134**. The difference is shown as EY-RC.

Plate 9.134: A12 / Bell Lane T-Junction 2023 Early Years RFC Results



9.29.6 **Plate 9.134** shows that the junction is predicted to have ample spare capacity during all modelled hours in the 2023 Reference Case scenario, with the highest RFC of 0.37 being reported from 08:00-09:00 on Bell Lane.

d) Peak Construction (2028)

i. Demand impact

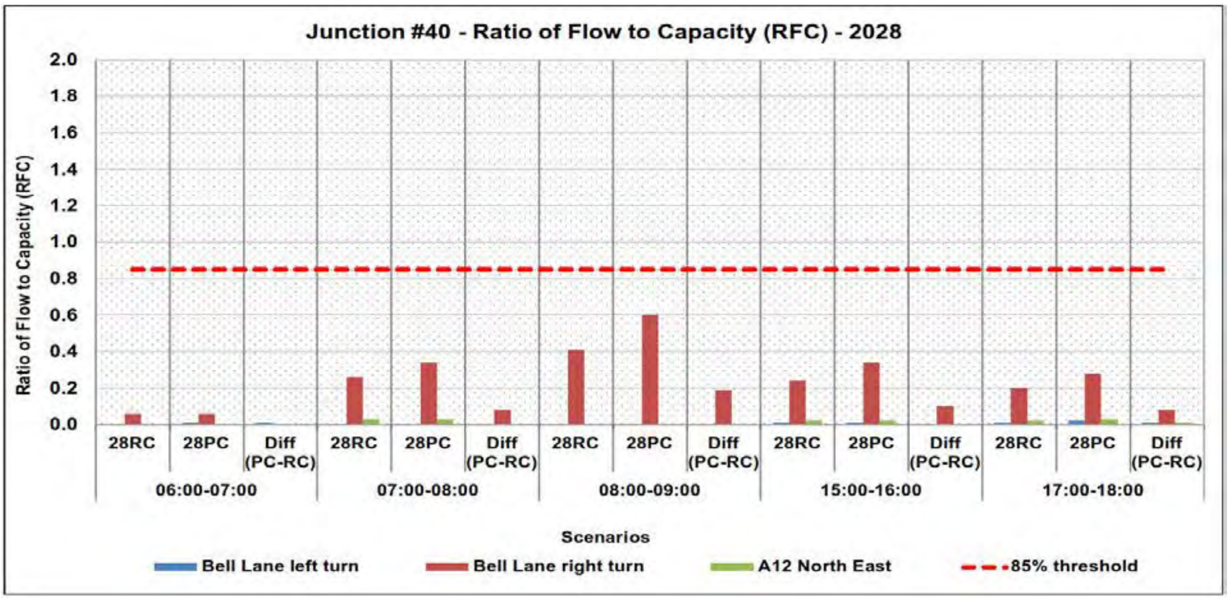
9.29.7 The 2028 Reference Case traffic flows show a small to modest increase in traffic on the A12 west approach (+80-140 vehicles per hour) in all modelled hours, relative to the observed base year traffic flows. On the A12 east approach small increases are forecast in all modelled hours (+40-70 vehicles per hour), except 17:00-18:00, where a modest increase is forecast (+140 vehicles per hour). Negligible changes in traffic flows are forecast from the Bell Lane minor arm, relative to the base year traffic flows.

9.29.8 In the Peak Construction scenario, flow on the A12 west approach are expected to increase by 40-80 vehicles per hour, relative to the 2028 Reference Case scenario. On the A12 east approach, a small increase in traffic flows is expected across all modelled hours (+20-80 vehicles per hour). No changes to traffic flows are forecast on the Bell Lane minor arm in the Peak Construction scenario, relative to the 2028 Reference Case scenario.

ii. Results analysis

9.29.9 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.135.** The difference is shown as PC-RC.

Plate 9.135: A12 / Bell Lane T-Junction 2028 Peak Construction RFC Results



9.29.10 **Plate 9.135** shows that the junction is predicted to operate well within capacity during all modelled hours in the 2028 Reference Case scenario, with the highest RFC of 0.41 being reported from 08:00-09:00 on Bell Lane.

e) Operational Phase (2034)

i. Demand impact

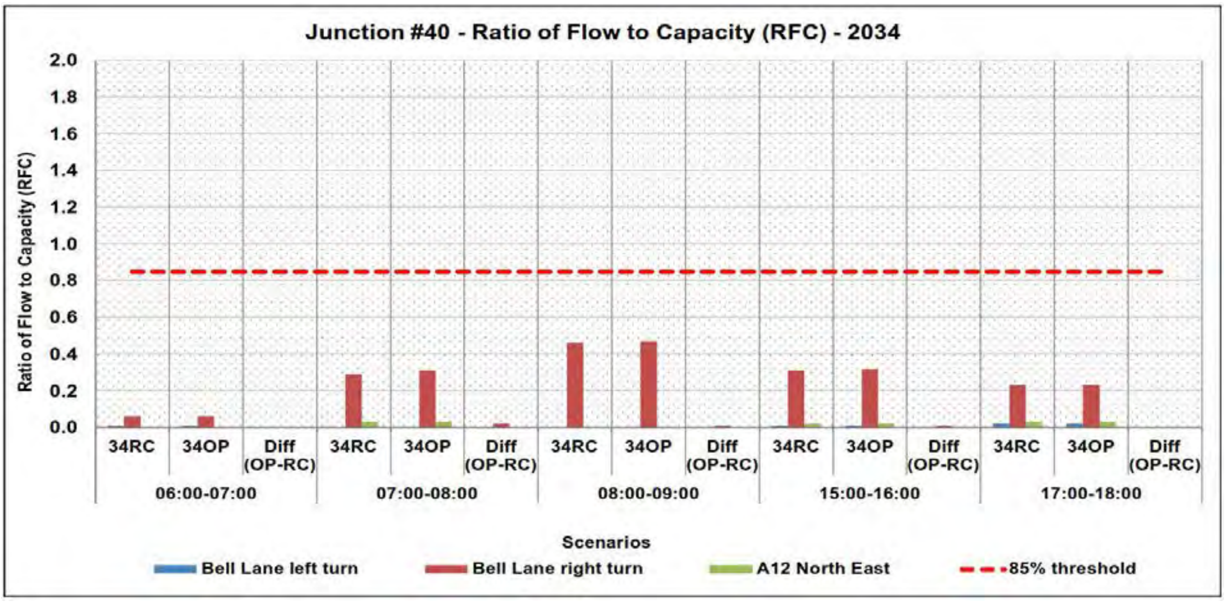
9.29.11 The 2034 Reference Case traffic flows show small to modest increases in traffic approaching the junction on the A12 west approach (+90-160 vehicles per hour) in all modelled hours, relative to the observed base year traffic flows. On the A12 east approach small increases are forecast in the morning modelled hours (+60-90 vehicles per hour), while modest increases are forecast in the afternoon modelled hours (+140-160 vehicles per hour). Negligible changes in traffic flows are forecast from the Bell Lane minor arm, relative to the base year traffic flows.

9.29.12 Compared to the 2034 Reference Case, the Operational Phase scenario is forecast to have a negligible impact on traffic flows on all arms of the junction.

ii. Results analysis

9.29.13 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.136**. The difference is shown as OP-RC.

Plate 9.136: A12 / Bell Lane T-Junction 2034 Operational Phase RFC Results



9.29.14 **Plate 9.136** shows that the junction is predicted to operate well within capacity during all modelled hours in the 2034 Reference Case scenario, with the highest RFC of 0.46 being reported from 08:00-09:00 on Bell Lane.

f) Mitigation Analysis

9.29.15 The modelling of the existing junction shows that the Sizewell C traffic would have a minimal impact on the operation of the existing junction, and it would continue to operate well within capacity. Therefore, mitigation to improve capacity is not proposed at this junction.

g) Overview

9.29.16 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.44**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or very near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.44: A12 / Bell Lane T-Junction RFC Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.05	0.06	0.06	0.06	0.06	0.06	0.06
07:00-08:00	0.18	0.23	0.41	0.26	0.34	0.29	0.31
08:00-09:00	0.28	0.37	0.49	0.41	0.60	0.46	0.47
15:00-16:00	0.16	0.23	0.26	0.24	0.34	0.31	0.32
17:00-18:00	0.13	0.18	0.23	0.20	0.28	0.23	0.23

9.29.17 The modelling results show that the junction operates well within capacity for all scenarios, during all modelled periods. As no capacity problems are foreseen no mitigation is proposed or deemed necessary at the existing junction.

9.30 Junction 41 – A1156 / Felixstowe Road T-Junction, Marlesford

a) Context

9.30.1 Junction 41, shown in **Plate 9.137** below, is a simple priority T-junction between the A1156 and Felixstowe Road, four miles south east of Ipswich and approximately 20 miles south west of the Sizewell C site. The minor arm (Felixstowe Road) is a single carriageway road connecting the A1156 to Felixstowe, routing parallel to the A14. All approaches operate with the national speed limit of 60mph. A right turning lane is provided on the A1156, with space for approximately 12 vehicles to queue before blocking back occurs.

Plate 9.137: Existing A1156 / Felixstowe Road T-Junction Layout

b) Calibration Summary

9.30.2 Observed queue data showed that very short queues accumulate on Felixstowe Road, with up to three vehicles waiting at the give way line. The calibrated junction model shows queue lengths that typically are shorter than observed, with the model showing negligible queues on all arms in the modelled hours. However, as such short queues are difficult to replicate, it is considered that the differences in queue length are **not significant** and that the model is representative of existing conditions.

c) Early Years (2023)

i. Demand impact

9.30.3 The 2023 Reference Case scenario traffic flows show that there are forecast to be small increases in traffic flows (up to +30 vehicles per hour) on the Felixstowe Road minor arm in all modelled hours, relative to the observed base year traffic flows.

9.30.4 The A1156 west approach is predicted to experience small increases in traffic flows (up to +70 vehicles per hour) in all modelled hours, relative to the observed base year traffic flows. The A1156 east approach is predicted to experience small increases in traffic flows from 06:00-07:00, 07:00-08:00, 08:00-09:00, and from 17:00-18:00 (up to +100 vehicles per hour), and a large increase in traffic flows from 15:00-16:00 (up to +140 vehicles per hour) relative to the observed base year traffic flows.

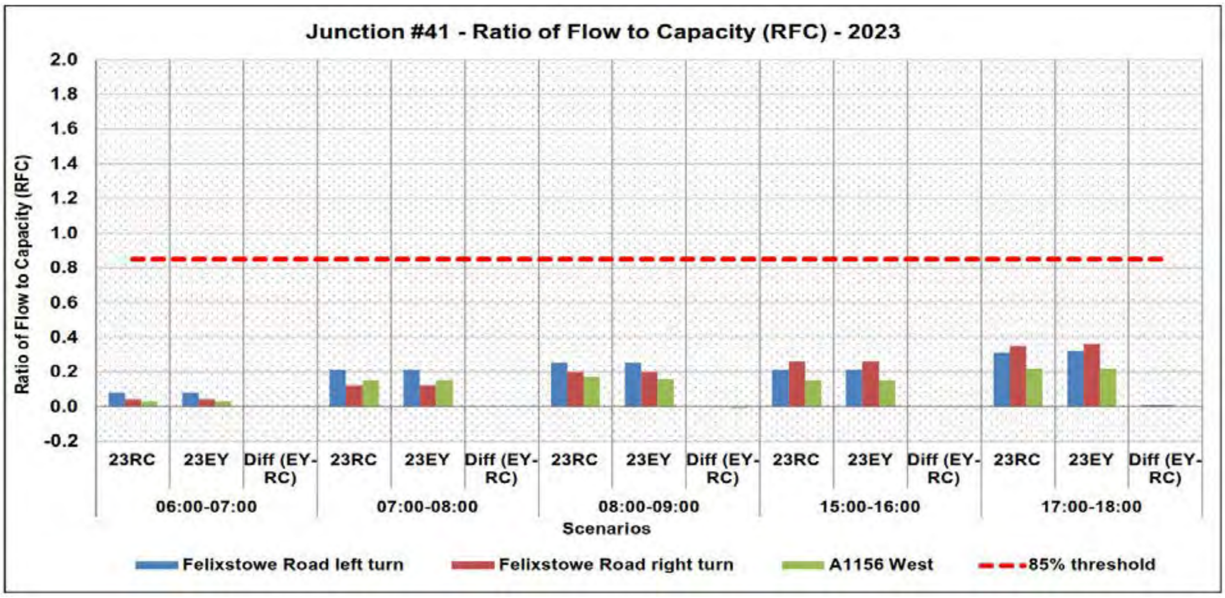
9.30.5 The changes in entry demand, relative to the base year, can be largely attributed to the reassignment of trips between the A14 and the A1156, which occur due to future development and forecast congestion in the Nacton Road area of Ipswich.

9.30.6 The Early Years forecast traffic flows are similar to the 2023 Reference Case, with a small increase in traffic flow (up +40 vehicles per hour) forecast on the A1156 west approach.

ii. Results analysis

9.30.7 The RFC modelling results for the 2023 Reference Case (RC) and Early Years scenarios, split by each modelled hourly period, are illustrated in **Plate 9.138**. The difference is shown as EY-RC.

Plate 9.138: A1156 / Felixstowe Road T-Junction 2023 Early Years RFC Results



9.30.8 **Plate 9.138** shows that the junction is predicted to operate well within capacity during all modelled hours in the 2023 Reference Case scenario, with the highest RFC of 0.35 being reported from 17:00-18:00 on the Felixstowe Road right turn.

d) Peak Construction (2028)

i. Demand impact

9.30.9 The 2028 Reference Case scenario traffic flows show that there are forecast to be small increases on the Felixstowe Road minor arm (+10-40 vehicles per hour) in all modelled hours, relative to the observed base year traffic flows.

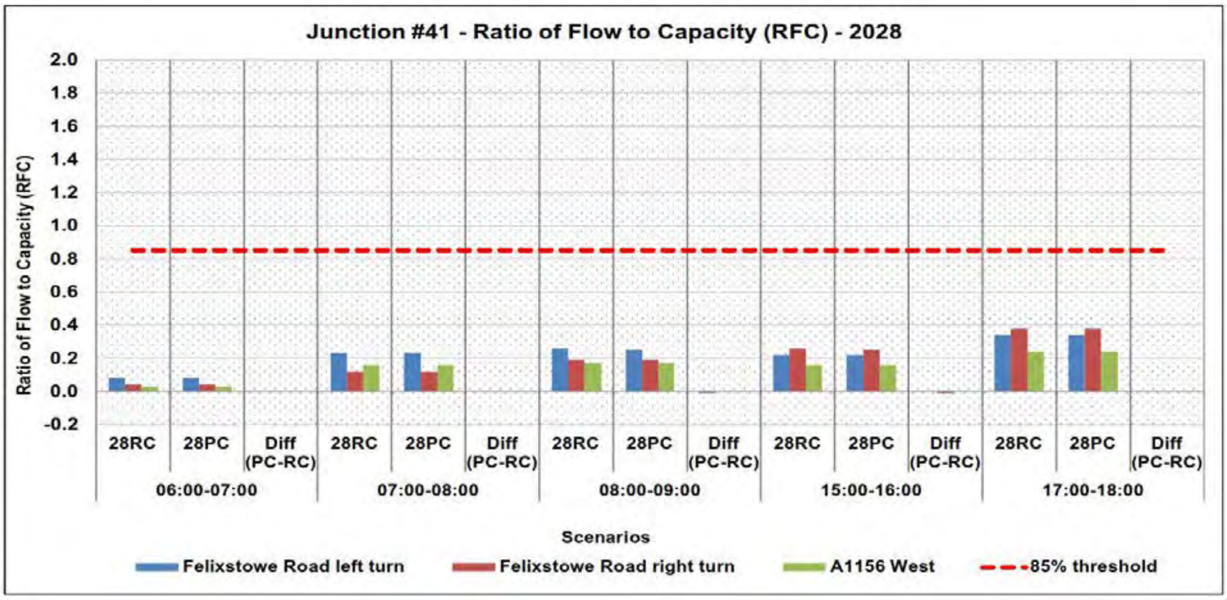
9.30.10 The A1156 east approach is predicted to experience small increases from 06:00-07:00, 07:00-08:00, and from 08:00-09:00 (up to +80 vehicles per hour), and large increases from 15:00-16:00, and from 17:00-18:00 (up to +130 vehicles per hour). Meanwhile, reductions of up to 150 vehicles per hour are forecast on the A1156 west approach in most modelled hours, except from 15:00-16:00, and from 17:00-18:00 when a small increase (up to +40 vehicles per hour) is forecast. The changes in entry demand, relative to the base year, can be largely attributed to the reassignment of trips between the A14 and the A1156, which occur due to future development and forecast congestion in the Nacton Road area of Ipswich.

9.30.11 The Peak Construction traffic flows are predicted to be very similar to the 2028 Reference Case flows in the majority of modelled periods, with reductions of up to 24 vehicles per hour on the A1156 east approach from 08:00-09:00 and from 15:00-16:00, and reductions of up to 40 vehicles per hour on the A1156 west approach from 07:00-08:00 and 08:00-09:00.

ii. Results analysis

9.30.12 The RFC modelling results for the 2028 Reference Case (RC) and Peak Construction (PC) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.139**. The difference is shown as PC-RC.

Plate 9.139: A1156 / Felixstowe Road T-Junction 2028 Peak Construction RFC Results



9.30.13 **Plate 9.139** shows that the junction is predicted to operate well within capacity during all modelled hours in the 2028 Reference Case scenario, with the highest RFC of 0.38 being reported from 17:00-18:00 on the Felixstowe Road right turn.

e) Operational Phase (2034)

i. Demand impact

9.30.14 The 2034 Reference Case scenario traffic flows show that there are forecast to be small increases in traffic flows (+10-40 vehicles per hour) from the Felixstowe Road minor arm in all modelled hours, relative to the observed base year traffic flows.

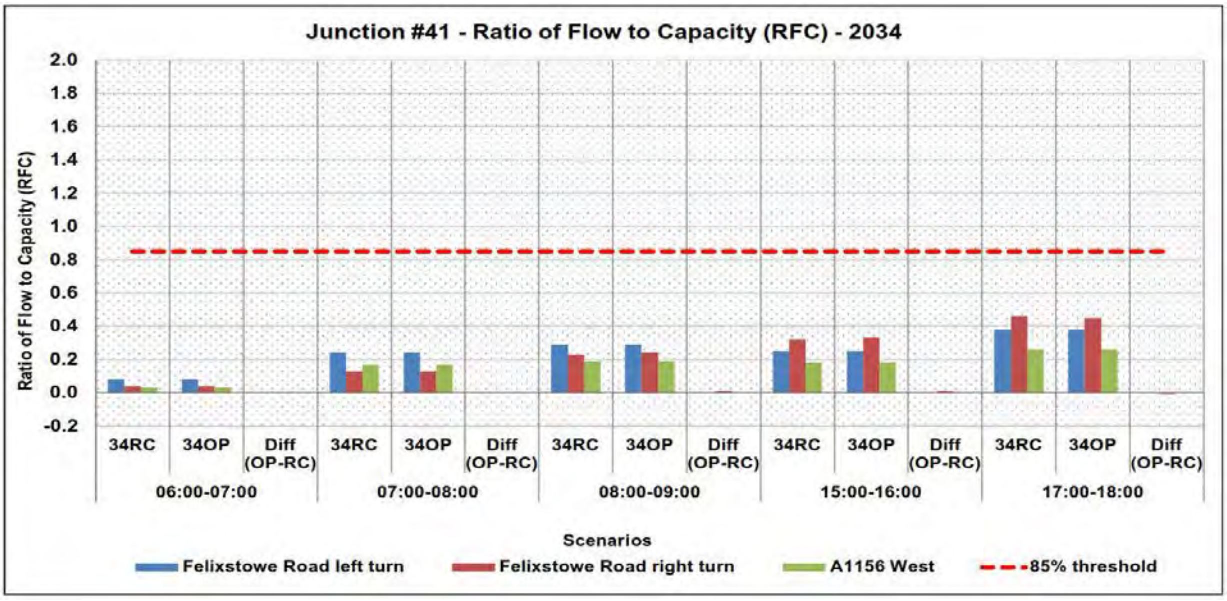
9.30.15 The A1156 east approach is predicted to experience small increases from 06:00-07:00, and from 07:00-08:00 (up to +50 vehicles per hour) and large increases from 08:00-09:00 and from 16:00-17:00 (up to +200 vehicles per hour), and large increases from 15:00-16:00 (up to +250 vehicles per hour). Meanwhile, reductions in entry demand of up to 150 vehicles per hour are forecast on the A1156 west approach from 06:00-07:00, 07:00-08:00 and from 08:00-09:00 are forecast, with small increases in the entry demand of up to 110 vehicles per hour from 15:00-16:00 and from 17:00-18:00 are forecast. The changes in entry demand, relative to the base year, can be largely attributed to the reassignment of trips between the A14 and the A1156, which occur due to future development and forecast congestion in the Nacton Road area of Ipswich.

9.30.16 The Operational Phase traffic flows are very similar to the 2034 Reference Case, with only small changes being forecast. There are no changes in entry demand forecast on Felixstowe Road as a result of Sizewell C related traffic, relative to the 2034 Reference Case.

ii. Results analysis

9.30.17 The RFC modelling results for the 2034 Reference Case (RC) and Operational Phase (OP) scenarios, split by each modelled hourly period, are illustrated in **Plate 9.140**. The difference is shown as OP-RC.

Plate 9.140: A1156 / Felixstowe Road T-Junction 2034 Operational Phase RFC Results



9.30.18 **Plate 9.140** shows that the junction is predicted to operate well within capacity during all modelled hours in the 2028 Reference Case scenario, with the highest RFC of 0.46 being reported from 17:00-18:00 on the Felixstowe Road right turn.

f) Mitigation Analysis

9.30.19 The modelling of the existing junction shows that the Sizewell C traffic would have a negligible impact on the operation of the existing junction, and it would continue to operate well within capacity. Therefore, mitigation to improve capacity is not proposed at this junction.

g) Overview

9.30.20 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.45.** RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or very near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.45: A1156 / Felixstowe Road T-Junction RFC Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00	0.07	0.08	0.08	0.08	0.08	0.08	0.08
07:00-08:00	0.19	0.21	0.21	0.23	0.23	0.24	0.24
08:00-09:00	0.21	0.25	0.25	0.26	0.25	0.29	0.29
15:00-16:00	0.20	0.26	0.26	0.26	0.25	0.32	0.33
17:00-18:00	0.28	0.35	0.36	0.38	0.38	0.46	0.45

9.30.21 The modelling results show that the junction operates well within capacity for all scenarios, during all modelled periods and no mitigation is proposed or deemed necessary at the existing junction.

9.31 Junction 45 – A12 / Tinker Brook

a) Context

9.31.1 Junction 45 is a proposed roundabout intended to replace the A12 / Tinker Brook T-junction near the village of Stratford St Andrew. The existing junction is situated on a dual carriageway section of the A12 approximately 8-miles west of the Sizewell C site. As part of the mitigation that is embedded with the Sizewell C proposals, a new bypass (two village bypass) is proposed to be constructed to the south of the A12. The bypass is proposed to begin at Junction 45 and terminate just north of the village of Friday Street at Junction 6 (A12 / A1094). The proposed roundabout is illustrated in the **Two Village Bypass Plans** (Doc Ref. 2.8).

9.31.2 Construction of the roundabout is due to be completed before 2028; therefore, the proposed roundabout layout has been tested in 2028 and 2034 only.

b) Calibration Summary

9.31.3 Base model validation is intended to give confidence that a model is able to replicate observed conditions and is therefore likely to reasonably predict future conditions. As the existing T-junction layout is planned to be replaced with a roundabout, validating a base model of the existing T-junction would not help to give confidence that the proposed roundabout model is realistic under future conditions. The T-junction model and roundabout model would be fundamentally different so validation to give confidence in the roundabout model is not possible.

9.31.4 The assessment contained in this chapter will therefore focus on determining the likely operation of the four-arm roundabout and will not assess the current or forecast operation of the T-junction.

9.31.5 The proposed roundabout has two lane entries on three of the four approaches (A12 east, A12 west and Two Village Bypass) and a single lane on three of the four exits (A12 east, A12 west and Tinker Brook). Therefore, there is potential for unequal lane usage on the two-lane entries, as movements are confined to a single lane. Junctions 9 is not able to take account of unequal lane usage, so where this is present a manual adjustment to the model is needed to prevent the modelled capacity being overestimated.

9.31.6 An assumption has been made regarding the likely allocation of lanes for each movement based on the magnitude of turning flows and number of available exit lanes. This has resulted in the lane usage assumptions and resultant manual adjustments set out in **Table 9.46**.

Table 9.46: A12 / A1094 (proposed roundabout) – Lane Usage Assumptions and Manual Adjustments

2028 PEAK CONSTRUCTION.	Average Lane Usage (%)		Unequal lane usage.	Proposed manual adjustment.
	Lane 1	Lane 2		
A -A12 East	0%	100%	YES	Model 1-lane entry as lane 1 is used infrequently.
B - A12 West	50%	50%	NO	None
C - Tinker Brook.	100%		NO	None
D - Bypass	100%	0%	YES	Model 1-lane entry as lane 2 is used infrequently.
2034 OPERATIONAL PHASE.	Average Lane Usage (%)		Unequal lane usage.	Proposed manual adjustment.
	Lane 1	Lane 2		
A -A12 East	0%	100%	YES	Model 1-lane entry as lane 1 is used infrequently.
B - A12 West	50%	50%	NO	None
C - Tinker Brook.	100%		NO	None

D - Bypass	100%	0%	YES	Model 1-lane entry as lane 2 is used infrequently.

9.31.7 On approaches where one of the two entry lanes are used infrequently, the approach has been modelled as a single lane (4m entry width and a 10m flare length) to reflect the fact approximately half of the road space will be unutilised. Where lane utilisation is split approximately one third to two thirds, the arm has been modelled as roughly one and a half lanes (75% of the measured entry width and 10m flare) to reflect the fact half of the road space will be only partially utilised.

9.31.8 In 2028 and 2034 with the two village bypass open, the dominant movement from the A12 west is the ahead movement onto the bypass arm. The proposed roundabout has been designed with a generous two-lane exit on the bypass arm, which merges some 150m downstream. This is hoped to encourage vehicles on the A12 west approach to use both lanes to make the ahead movement onto the two village bypass to prevent unequal lane usage. For this reason, lane usage is assumed to be equal and the full entry width is used in the 2028 and 2034 scenarios.

9.31.9 These adjustments have been made to avoid over-estimating capacities on approaches where unequal lane usage is present. The results presented below incorporate these adjustments.

c) Peak Construction (2028)

i. Demand impact

9.31.10 The 2028 Reference Case scenario traffic flows have not been modelled with the proposed roundabout, since this layout would only come forward in the scenarios with Sizewell traffic included.

9.31.11 In 2028 the two village bypass would be operational. The majority of traffic to / from the A12 east arm is reassigned to the bypass arm.

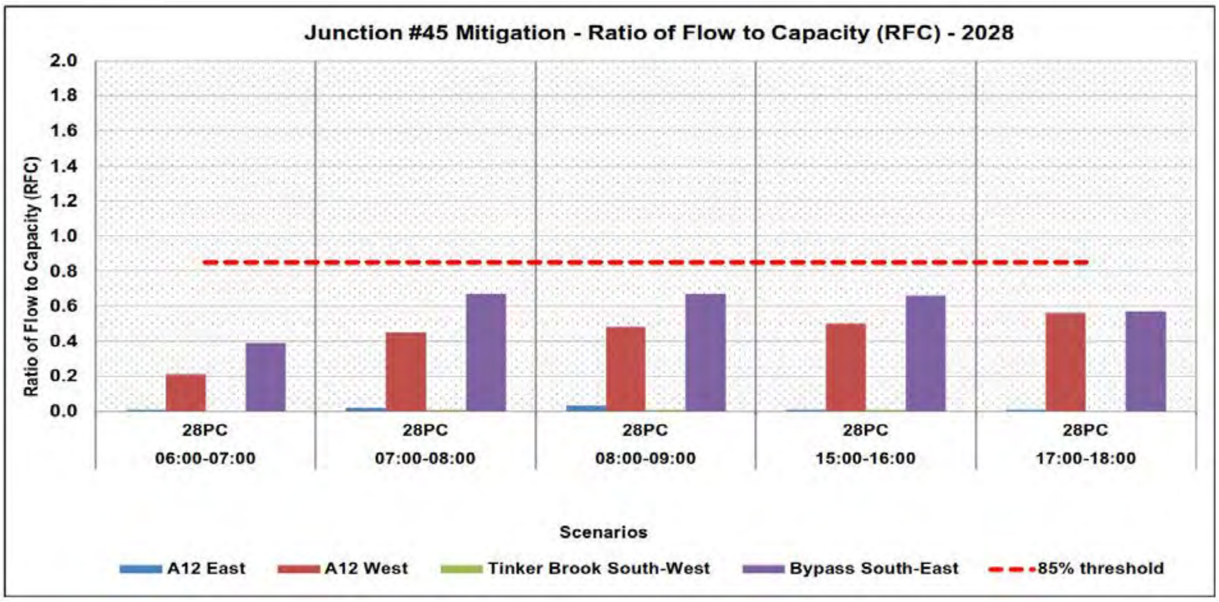
9.31.12 In the 2028 Reference Case, flows on the Tinker Brook and bypass approaches are not predicted to increase, relative to the base year. On the A12 east approach, flows are expected to increase predominantly from 17:00-18:00 (+135 vehicles per hour) with smaller increases (+40-70 vehicles per hour) predicted during the other modelled hours. On the A12 west approach, flows are expected to increase in the morning hours (+70-130 vehicles per hour) with smaller increases expected from 15:00-16:00 and 17:00-18:00 (+70 vehicles per hour).

9.31.13 In the Peak Construction scenario, the bypass is proposed to be open and as a result the 500-800 vehicles per hour using the A12 east approach in the 2028 Reference Case scenario shift to the bypass approach in the Peak Construction scenario. Flows on the A12 west and Tinker Brook approaches remain similar to those in the 2028 Reference Case.

ii. Results analysis

9.31.14 The RFC modelling results for the Peak Construction scenario, split by each modelled hourly period, are illustrated in **Plate 9.141.**

Plate 9.141: A12 / Tinker Brook / Two Village Bypass (proposed roundabout) 2028 Peak Construction RFC Results



9.31.15 **Plate 9.142** shows that the junction is predicted to operate well within capacity during all modelled hours in the 2028 Reference Case scenario.

d) Operational Phase (2034)

i. Demand impact

9.31.16 The 2034 Reference Case scenario traffic flows have not been modelled with the proposed roundabout, since this layout would only come forward with Sizewell C.

9.31.17 Similar to the 2028 forecast, in 2034, the two village bypass would be operational. Therefore, most traffic using the A12 route through Farnham are likely to reroute via the bypass.

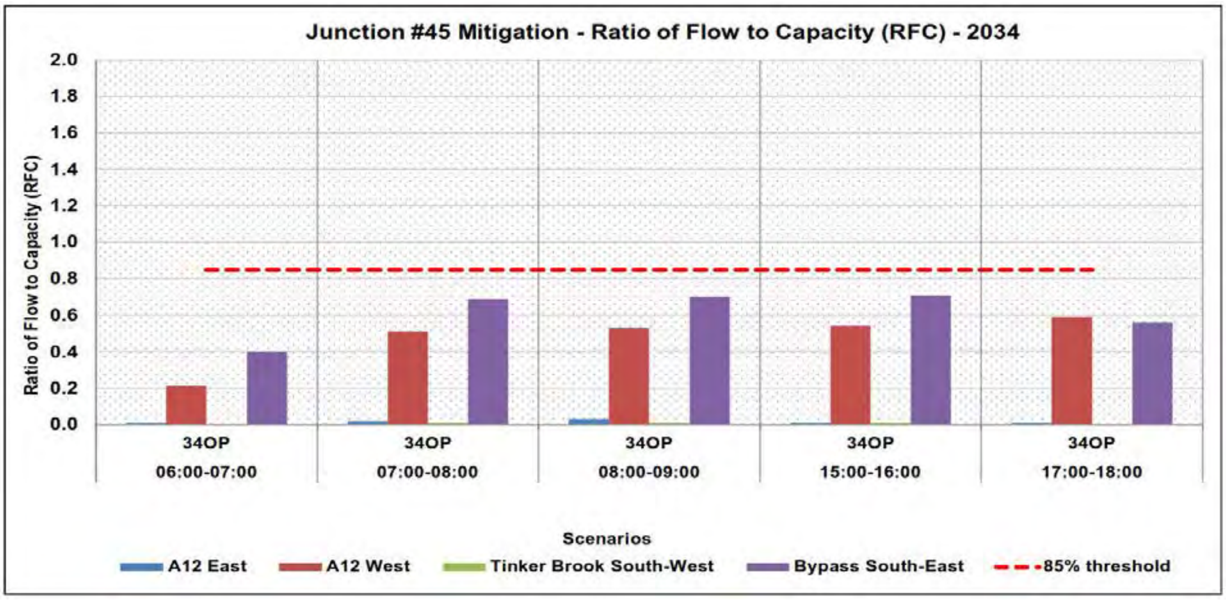
9.31.18 In the 2034 Reference Case scenario, increases in traffic flows are expected on the A12 east and A12 west approaches (+60-160 vehicles per hour) relative to the base scenario. Traffic flow changes on Tinker Brook are negligible.

9.31.19 In the Operational Phase scenario, the bypass would be operational and as a result the 500-800 vehicles per hour using the A12 east approach in the 2034 Reference Case scenario shift to the bypass approach in the Operational Phase scenario. Flows on the Tinker Brook approach remain similar to those in the 2034 Reference Case. The A12 west approach is predicted to experience a small increase, particularly from 08:00-09:00 (+70 vehicles per hour) relative to the 2034 Reference Case.

ii. Results analysis

9.31.20 The RFC modelling results for the Operational Phase scenario, split by each modelled hourly period, are illustrated in **Plate 9.142.**

Plate 9.142: A12 / Tinker Brook / Two Villages Bypass (proposed roundabout) 2034 Operational Phase RFC Results



9.31.21 **Plate 9.143** shows that in the Operational Phase the junction is predicted to operate well within capacity. Low traffic flows from 06:00-07:00 result in low levels of RFC and delay during this time period. The other time periods have higher RFCs, with a maximum of 0.71 on the bypass arm from 15:00-16:00. Based on the RFCs predicted at the junction in the Operational Phase scenario, the junction would operate with reserve capacity and queues would reach approximately two vehicles.

e) Mitigation Analysis

9.31.22 The roundabout is proposed as part of the two village bypass, which forms part of the highway improvement works for the Sizewell C Project.

f) Overview

9.31.23 An overview of the maximum RFC results recorded in each scenario, for each time period, are shown in **Table 9.47**. RFC results less than 0.85 (operating with reserve capacity) are coloured green; 0.85-1.00 (operating at or very near capacity) are coloured orange; and greater than 1.00 (operating over capacity) are coloured red.

Table 9.47: A12 / Tinker Brook / Two Village Bypass (proposed roundabout) - Results Overview

Time period.	Base	2023		2028		2034	
		RC	EY	RC	PC	RC	OP
06:00-07:00					0.39		0.40
07:00-08:00					0.67		0.69
08:00-09:00					0.67		0.70
15:00-16:00					0.66		0.71
17:00-18:00					0.57		0.59

9.31.24 The modelling results show that the roundabout would operate well within capacity.

9.32 Summary

9.32.1 Junction modelling of some 42 junctions across the study area, using industry-standard software, has been completed. Micro-simulation modelling has also been undertaken around Yoxford in order to assess the interaction between neighbouring junctions of A12/B1122 and A12/A1120.

9.32.2 The junctions assessed cover both the immediate area around Sizewell and the wider study area. In order to provide a worst case assessment, the junction modelling includes traffic associated with the Scottish Power development (EAN1 and EA2). Where junctions are shown to experience queuing and delay, sensitivity testing has been undertaken without the Scottish Power development to determine the effects of Sizewell C in isolation.

9.32.3 Most of these junctions are unlikely to experience an observable change in their operational performance because of Sizewell C. The impact is low at 29 of the 42 junctions (69%) assessed due to either:

- the Sizewell C proposals would not generate significant traffic at the junction; or
- the existing junction has sufficient spare capacity to adequately cater for any additional traffic; or
- proposed highway improvement schemes as part of the Sizewell C Project mitigate the predicted impact.

9.32.4 The impacts at the remaining junctions are described below.

a) B1078 / B1079, near Easton and Otley College

9.32.5 The junction currently operates with spare capacity. The assessment shows that additional traffic, primarily from the Ipswich Garden Suburb development, will cause significant queuing in the reference case (i.e. without Sizewell C). Early years traffic increases from Sizewell C would have minimal impact but peak construction traffic would exacerbate queuing.

9.32.6 Modelling shows that only a major scheme involving third party land and likely property demolition would resolve these issues. Such a scheme would be primarily required to mitigate the effects of the Ipswich Garden Suburb rather than Sizewell C. Given this, SZC Co. propose limited works to improve visibility at the junction. No impact is predicted at this location during the operational phase.

b) A1094 / B1069 south of Knodishall

9.32.7 The junction currently has spare capacity. Additional traffic, unrelated to Sizewell C, causes queuing on the B1069 arm in the morning and evening peak hours and Sizewell C early years traffic slightly increases this queuing during these periods. Sizewell C peak construction traffic flows would be lower than early years flows because the southern park and ride would be in operation. The operation of the junction would be similar to the early years during this period.

9.32.8 SZC Co.'s proposed improvements to visibility and reducing the speed limit from 60 mph to 40mph should help B1069 drivers with turning onto the A1094.

9.32.9 Sensitivity analysis shows that without the Scottish Power traffic, the junction would operate satisfactorily.

c) B1122/B1119 Leiston

9.32.10 The junction is signal controlled so there is some limited queuing and delay but the junction operates within capacity currently and would continue to do so during the early years of Sizewell C construction. At peak construction, the junction would operate at capacity in the afternoon and evening peak hours with some additional queuing and delay. In the operational phase, the junction is at capacity in the morning peak hour causing some additional queuing and delay.

9.32.11 SCC has informed SZC Co. that the signal controller will be upgraded at this junction with MOVA, which would help to manage traffic demand more efficiently. In addition to the signal improvements through MOVA, SZC Co. is to fund pedestrian, cycle, and public realm improvements at Leiston to mitigate impacts of additional traffic flows through the town, which is to be secured through obligations in a Section 106 Agreement, provided in the draft **Section 106 Heads of Terms** appended to the **Planning Statement** (Doc Ref. 8.4).

d) A12/A144

9.32.12 The junction currently has consistent queues on the A144 approach during the modelled periods but negligible queues on the A12. The impact of Sizewell C traffic on overall junction performance occurs before the morning peak hour. Queuing and delay is moderate, the junction operates within capacity and queues do not grow over this early morning period.

9.32.13 SZC Co. proposes to upgrade this junction to a single lane dualled T-junction to make it easier for vehicles to turn right from the A144. This mitigation is expected to reduce the impact of Sizewell C traffic at this junction.

9.32.14 No impact is predicted in the operational phase.

e) A1094/B1069 north of Snape

9.32.15 The junction operates within capacity currently and in both the early years and peak construction of Sizewell C. In the operational phase, the junction just reaches capacity in the morning peak hour. Given that the impact of Sizewell C is minimal, no mitigation is proposed.

f) A12/A14 Seven Hills

9.32.16 There is currently moderate peak period queueing on the A12 north and A1156 approaches and longer queues on the A14 westbound exit slip road. The junction will become partially signal controlled, with additional traffic lanes, as part of the Adastral Park committed development. This would lead to a minor improvement in junction performance.

9.32.17 Sizewell C would increase traffic volumes at these junctions by circa 2% in both the early years and peak construction scenarios. This increase is small and no mitigation is proposed. The increase in traffic volumes as a result of Sizewell C traffic is less than 1% in the operational phase, and again no mitigation is proposed to address this minimal impact.

g) A12 Martlesham

9.32.18 The four A12 junctions from Foxhall Road to the A1214 all currently exhibit queuing and congestion during peak periods. There will be additional traffic due to the consented Adastral Park development. Sizewell C adds around 2% to traffic at these junctions during the early years, 1% during peak construction and less than 1% in the operational phase.

9.32.19 The Adastral Park development will signalise the Foxhall Road and Barrack Square junctions. These improvements would result in some improvements to junction performance but queueing and delay would remain during some peak hours. The Adastral Park development would also signalise the Anson Road roundabout but not until after Sizewell C peak construction. There are no committed or proposed improvement works to modify the A1214 roundabout, which is already signalled.

9.32.20 The Sizewell C traffic increases are less than typical day to day variation in volume and, given the modifications already agreed at these junctions as part of the Adastral Park development, SZC Co. do not propose further mitigation measures.

h) A12 Woodbridge

9.32.21 The three A12 junctions from B1438 to the A1152 all currently exhibit queuing and congestion during peak periods. Without the Sizewell C Project, there would be increased queuing in future years largely due to background traffic growth.

9.32.22 Sizewell C adds around 3% to traffic at these junctions during the early years, 1%-3% during peak construction, and less than 1% in the operational phase.

10. Road safety and off-site highway improvements

10.1 Introduction

10.1.1 This chapter considers the potential effects on road safety of the Sizewell C Project and the off-site highway improvements proposed to mitigate the effects of the Sizewell C Project at various junctions. This chapter also considers road safety at several other junctions identified by Suffolk County Council (SCC) in public consultation responses but where no mitigation measures are proposed.

10.1.2 An analysis of recorded collisions on the road network was undertaken, initially based on 2011-2015 data but then updated to consider the most recent publically available data from SCC, i.e. May 2014 to April 2019. A summary of the latest five years of personal injury collision data is provided in **Chapter 2** of this **Transport Assessment** (Doc Ref. 8.5).

10.1.3 All of the proposed highway schemes have been designed in accordance with the Design Manual for Roads and Bridges (DMRB) (Ref 10.1) and have been subject to a Stage 1 road safety audit (RSA). The Stage 1 RSAs for the proposed highway schemes are included in **Appendix 10A** of this **Transport Assessment** (Doc Ref. 8.5) along with the designer's response to these Stage 1 RSAs. When the detailed design is completed, all of the schemes would be subject to a Stage 2 RSA. Prior to construction of the schemes SCC, as local highway authority, would need provide a technical approval for the schemes. One month after opening to traffic, a Stage 3 RSA would be undertaken for each scheme to identify any issues that had arisen during early operation. Finally, there would be a Stage 4 monitoring RSA of each scheme after 12 months of use.

10.2 Road safety of main development and associated development sites

10.2.1 This section considers the road safety aspects associated with accessing the main development site. It also covers the road safety aspects of the highway works at the associated developments, i.e. the park and ride facilities, freight management facility, two village bypass, Sizewell link road, Yoxford roundabout and other highway improvements, and green rail route highway works. The branch line upgrades to the level crossings are excluded from the assessment.

a) Main development site access

10.2.2 The main development site will be accessed during the construction phase via a new five-arm roundabout to be located on the site of the existing junction of Eastbridge Road and the B1122, as described in **Chapter 5** of the **Transport Assessment** (Doc Ref. 8.5). Once the Sizewell C construction phase is complete, one of the two arms of the roundabout into the main development site will be removed and reinstated and a four arm roundabout would be provided for the operational phase of the Sizewell C Project.

10.2.3 A low volume of turning movements currently take place at the junction of Eastbridge Road with B1122, with traffic on Eastbridge Road giving way to B1122 traffic flows. Introducing a new roundabout would change the priorities at the junction. Southbound B1122 traffic will need to give way to cars and LGV entering the construction site from B1122 northbound. Northbound B1122 traffic would give way to construction traffic (i.e. HGVs, LGVs and cars) leaving the site and headed north towards the Sizewell link road.

10.2.4 Daily traffic flow volumes are predicted to increase above reference case levels on the B1122 in the vicinity of Eastbridge Road by around 27% in the early years phase and by around 59% at peak construction. During the operational phase there is expected to be a 24% increase in traffic in the vicinity of the main development site access. Percentage change in daily traffic flows are summarised in **Volume 2, Chapter 10** of the **Environmental Statement** (**ES**) (Doc Ref. 6.3).

10.2.5 In this location there have been no collisions in the five-year period May 2014 - April 2019. With the introduction of the roundabout, it is possible that rear end shunt collisions may occur in the first few months until drivers become used to the new layout. In order to mitigate this, signage will be installed on the approach to the new roundabout to warn drivers of the new junction layout ahead. After that period, the roundabout would be expected to exhibit the low accident rates associated with new roundabouts designed and constructed to DMRB standards.

10.2.6 A Stage 1 RSA has been undertaken for the proposed junctions and is included in **Appendix 10A** of this chapter, along with the designer's response. The Stage 1 RSA did not raise any major issues. The only 'problem' that was reported relates to the proposed bridleway between the north and western arms of the roundabout. The bridleway is 3 metres (m) in width, with an embankment adjacent to its northern edge. The safety audit suggested that the narrow width of the route (considering all users can utilise this facility) combined with its proximity to the top of the embankment could lead to a pedestrian, cyclist, or horse rider falling down the embankment. The RSA recommends that either the bridleway is widened, or a post and rail fence is provided at the top of the embankment. However, it is considered that this could simply be addressed by moving the bridleway slightly towards the roundabout and away from the embankment on the section to the north of the roundabout and by providing a post and rail fence on the section west of the roundabout. This issue raised by they Stage 1 RSA would be addressed at the detailed design stage through consultation with SCC.

b) Secondary site access and LEEIE accesses

10.2.7 A secondary vehicular access to the temporary construction area at the main development site will be by means of a new ghost island priority junction on the northern side of Lover's Lane, a short distance west of the Kenton Hills car park, as described in **Chapter 5** of the **Transport Assessment** (Doc Ref. 8.5). The vehicles using this entrance will be predominantly heavy goods vehicles (HGVs) transferring materials from Land east of Eastlands Industrial Estate (LEEIE).

10.2.8 To access the LEEIE site, there will also be:

- a new ghost island priority junction on Lover's Lane between the Valley Road and King George's Avenue junctions;
- modified access at the Lover's Lane/Valley Road junction; and
- a new simple priority junction on King George's Avenue, east of the existing railway level crossing.

10.2.9 The secondary site access into the temporary construction area and the Lover's Lane new point of access into LEEIE include ghost island right turning lanes. All the new accesses have been designed in accordance with DMRB and have visibility splays appropriate for the expected vehicle speeds.

10.2.10 Daily traffic flow volumes are predicted to increase above reference case levels on Lover's Lane in the vicinity of LEEIE by around 47% in the early years phase, by around 18% at peak construction, and by around 7% during the operational phase. Percentage change in daily traffic flows are summarised in **Volume 2, Chapter 10** of the **ES** (Doc Ref. 6.3).

10.2.11 A Stage 1 RSA has been undertaken for the proposed junctions and is included in **Appendix 10A** of this chapter, along with the designer's response. The Stage 1 RSA carried out for Lover's Lane accesses raised four 'problems,' none of which are considered to be major. The four problems raised are as follows:

- Problem 1 - Bridleway 19 is to cross over the B1122 to the south of its junction with Lover's Lane. Due to the proximity of the bridleway crossing to the Lover's Lane junction, there is a risk that the structure of the bridleway may restrict visibility for drivers attempting to exit Lover's Lane onto the B1122. The Stage 1 RSA recommended that the structure/design of the bridleway be modified to not restrict visibility. This recommendation has been agreed by the designer and will form part of the detailed design.

- Problem 2 – Bridleway 19 is to cross over the B1122 to the south of its junction with Lover's Lane. The bridleway crossing is a pegasus crossing, requiring road users to stop when faced with a red traffic signal, allowing horse riders to cross. However, due to the close proximity of the crossing to the Lover's Lane junction, there is a risk of drivers exiting Lover's Lane and turning left, failing to identify the crossing resulting in a red-light violation, and potentially colliding with horse riders crossing the B1122. The Stage 1 RSA recommended that drivers on Lover's Lane are made aware of the bridleway crossing and the designer's response proposes advance signage for the pegasus crossing as part of the detailed design.

- Problem 3 - There is a new residential development and associated access on the west side of B1122 Abbey Road, close to the location of the realigned Lover's Lane junction. This is not shown on the design drawings and adequate information was not available to determine the geometry of the proposed staggered crossroads. The Stage 1 RSA recommended that the Lover's Lane design considers the new development access to help avoid any safety related issues involving turning vehicles. However, the designer's response to this problem advises that the new residential development will make use of an alternative existing private access located directly to the south of the bridleway crossing. Therefore, the entrance to the new residential development will not be crossed by the bridleway and will not form a crossroads with the new Lover's Lane junction.

- Problem 4 – There is an existing recycling centre off Lover's Lane, use of which is expected to increase. Whilst a 'left turn in' taper is proposed to help alleviate queuing traffic southbound into the recycle centre, a right turn ghost island is not proposed for northbound traffic wishing to turn right into the centre. The Stage 1 RSA recommended that a right turn lane be provided to allow a safe area for vehicles waiting to turn right into the recycling centre. The designer's response to this problem advised that traffic data indicates there is very little northbound traffic turning right into the recycle centre and proposes that right turn into the recycling centre is designed out/prohibited.

10.2.12 Where required, the above problems will be addressed as part of the detailed design in consultation with SCC.

c) Green rail route highway works

10.2.13 The green rail route extends east from the Saxmundham to Leiston branch line and crosses two highways at new level crossings: Buckleswood Road and the B1122 Abbey Road.

10.2.14 The Buckleswood Road level crossing would be located approximately 300m east of the junction with Abbey Lane. The road at this location is derestricted, the traffic flow is low, and there have been no collisions in the area during the most recent five-year period.

10.2.15 The B1122 Abbey Road level crossing would be located between the Lover's Lane and Abbey Lane junctions. There have been no collisions in the area during the most recent five-year period. To facilitate the crossing, the B1122/Lover's Lane junction would be moved approximately 100m south.

10.2.16 At both Buckleswood Road and B1122 Abbey Road automated level crossings are proposed. The detailed scheme for the proposed level crossings would need to be approved by the Office of Road and Rail (ORR) but could include lifting barriers, road traffic lights, instructions to traincrew, or some combination of these. Safety will be a key consideration of the ORR during the design approval process.

10.2.17 The moved Lover's Lane junction with the B1122 would be designed and constructed to the DMRB standards. It would, in particular, have significantly better visibility for traffic joining the B1122 from Lover's Lane.

d) Northern park and ride

10.2.18 The proposed access for the northern park and ride facility at Darsham would be a new roundabout north of the Willow Marsh Lane junction with the A12. A new priority junction would connect the site access road to the existing Willow Marsh Lane alignment, as described in **Chapter 5** of the **Transport Assessment** (Doc Ref. 8.5).

10.2.19 A low volume of turning movements currently take place at Willow Marsh Lane, with that traffic giving way to A12 traffic flows. Introducing a new roundabout would change the priorities at the junction. Southbound A12 traffic would need to give way to southbound park and ride buses, cars exiting the site, and the very small Willow Marsh Lane flows. Northbound A12 traffic would give way to park and ride traffic arriving from the A12 north and the very small Willow Marsh Lane flows.

10.2.20 Daily traffic flow volumes are predicted to increase above reference case levels on the A12 in the vicinity of northern park and ride facility by around 4% in the early years phase and by around 6% at peak construction.

Percentage change in daily traffic flows are summarised in **Volume 2, Chapter 10** of the **ES** (Doc Ref. 6.3).

10.2.21 There have been no collisions in this location in the five-year period May 2014 – April 2019. The roundabout has been designed in accordance with DMRB standards for the design speed of the road. A Stage 1 RSA has been undertaken for the proposed roundabout junction and is included in **Appendix 10A** of this chapter.

10.2.22 The Stage 1 RSA carried out at the northern park and ride site access raised three 'problems,' none of which are major. The three problems raised are as follows:

- Problem 1 at Willow Marsh Lane - Willow Marsh Lane provides access for agricultural vehicles to fields and barns but the western approach to Willow Marsh Lane appears to be very narrow. This could force large vehicles on Willow Marsh Lane to either encroach into the opposing traffic lanes or drive on the highway verge which may bring dirt and mud onto the carriageway. The designer's response highlights that the access is expected to be used mainly by cyclists as the national cycle route is retained on Willow Marsh Lane. White House Farm will still retain its main access on the A12 which will also grant right of way to all the surrounding fields. Therefore, expected vehicular traffic flow along Willow Marsh Lane will be minimal and the risk of mud being brought onto the carriageway will also be minimal.

- Problem 2 at A12/western approach to the proposed roundabout – the western approach of the proposed roundabout has a single chevron sign proposed. This may increase the risk of a driver failing to identify the need to proceed to the left at the roundabout. The Stage1 RSA recommendation is to provide a minimum of two chevrons along with keep left arrow on each arm of the roundabout, which is accepted and will be addressed at the detailed design stage in consultation with SCC.

- Problem 3 at A12 northbound approach to roundabout - existing speed limits change signage is shown to be installed on the 'old' line of the A12. This may result in drivers approaching the roundabout at excessive speeds. Also, the visual 'gateway' created by the signage may result in drivers heading towards them and entering the opposing traffic lane. The designer's response highlights that the existing speed limit signs on the "*old*" A12 line are shown on the design as being removed. The proposed speed limit change is now located on the A12 north of the roundabout, therefore it is considered that this problem has been designed out already.

e) Southern park and ride

10.2.23 Located on the two-way A12 northbound entry slip road, the site access for the southern park and ride facility at Wickham Market would be a simple priority junction including a deceleration lane for traffic turning left into the site, as described in **Chapter 5** of the **Transport Assessment** (Doc Ref. 8.5). In this location, there was one collision of slight severity in the five-year period May 2014 – April 2019, from a vehicle suffering engine trouble.

10.2.24 Cars arriving at the site would be turning left into the site. Cars would turn right out of the site when leaving. Park and ride buses would turn left when leaving the site to travel north to the main development site and left into the park and ride facility when returning via the A12/B1078 grade-separated junction.

10.2.25 Daily traffic flow volumes are predicted to increase above reference case levels on the A12 in the vicinity of southern park and ride facility by around 15% in the early years phase and by around 133% at peak construction. Percentage change in daily traffic flows are summarised in **Volume 2, Chapter 10** of the **ES** (Doc Ref. 6.3).

10.2.26 The site access junction has been designed in accordance with DMRB standards for the design speed of the road. A Stage 1 RSA has been undertaken for the proposed junction and is included in **Appendix 10A** of this chapter, as well as the designer's response.

10.2.27 The Stage 1 RSA carried out at the southern park and ride raised three 'problems,' none of which are major. The three problems raised are as follows:

- Problem 1 at A12 northbound immediately after the off-slip to the B1078 – no advance signage associated with the lane drop/reduction. If drivers are not notified of the lane drop in advance this could result in late lane change manoeuvres.
- Problem 2 at A12 northbound between the off-slip and on-slip - the end of the offside lane of the A12 is close to the retained layby. This may increase the risk of collisions between vehicles on the A12 with vehicles entering or exiting the layby.
- Problem 3 at A12 northbound on-slip - risk of vehicles colliding with power line poles. The poles may also obstruct pedestrian movement on the footway.

10.2.28 The problems raised have been noted and are considered to be able to be addressed within the red line boundary at the detailed design stage.

f) Freight management facility

10.2.29 The freight management facility would be accessed via a new ghost island junction on the single carriageway section of Old Felixstowe Road. This would be a new access and there are currently no turning movements on this part of Old Felixstowe Road.

10.2.30 There has been one collision in this area in the most recent five-year period May 2014 – April 2019, which was of slight severity. It was attributed to a failure to look properly when overtaking at the start of the eastbound dual carriageway section of Old Felixstowe Road.

10.2.31 The site access junction for the freight management facility has been designed in accordance with DMRB standards for the design speed of the road. A Stage 1 RSA has been undertaken for the proposed junction and is included in **Appendix 10A** of this chapter. No 'problems' were identified as part of the Stage 1 RSA.

g) Two village bypass

10.2.32 The two village bypass would comprise a new, permanent, 2.4 kilometre (km) single carriageway road that would depart from the A12 to the south-west of Stratford St. Andrew at Tinker Brook, bypass Stratford St Andrew and Farnham to the south and re-join the A12 to the east of Farnham at the A1094, as described in **Chapter 5** of the **Transport Assessment** (Doc Ref. 8.5). The existing section of the A12 through the two villages would be retained and downgraded.

10.2.33 A Stage 1 RSA has been undertaken for the proposed two village bypass and is included in **Appendix 10A** of this chapter, along with the designer's response. The RSA carried did not raise any major 'problems' with the design of the two village bypass. The following two problems were identified:

- Problem 1 – the first problem related to the new roundabout at A12/A1094. The Stage 1 RSA suggested that due to the rural nature of the surrounding area, drivers may not expect an at grade roundabout at this location and recommended that the roundabout is adequately signed in advance on the A12 and the location of the roundabout is made clear to drivers. This recommendation is accepted and will be addressed as part of the signage strategy for the detailed design.
- Problem 2 - the second problem relates to the public rights of ways crossing the bypass and pedestrians crossing the bypass at grade. The Stage 1 RSA recommends that adequate warning is provided for vehicles that pedestrians may be crossing the carriageway and that adequate visibility is provided to allow pedestrians to safely judge gaps

in traffic prior to crossing. This recommendation is accepted and will be addressed as part of the signage strategy for the detailed design.

10.2.34 SZC Co. has noted the recommendations and they will be addressed at the detailed design stage in consultation with SCC.

i. A12 between Tinker Brook and A1094

10.2.35 On the A12 between Tinker Brook and the A1094, there have been seven collisions in the most recent five-year period. Six of the collisions were slight, with the one serious involving an alcohol-impaired driver. SCC have 'tagged' the cause of collisions as

- four attributed to shunts, including two right turns (at different locations);
- two attributed to loss of control (at different locations), one due to alcohol; and
- one attributed to pulling out of a junction.

10.2.36 There is no pattern to the collisions and there is not considered to be an accident issue on this stretch of road.

10.2.37 Daily traffic flow volumes included in **Volume 2, Chapter 10** of the **ES** (Doc Ref. 6.3) estimate that in the early years, the traffic volume through the villages on the A12 would increase by 7%. The traffic flow increase during the early years phase of the Sizewell C Project would be less than daily variation, with no increase in turning movements. As such, there is expected to be a negligible effect on accidents while the bypass is being built.

10.2.38 Once the bypass is completed and open to traffic, the residual flow on the former A12 would reduce by circa 99% to approximately 275 vehicles per day while the new bypass would carry circa 22,000 vehicles per day during the peak construction phase and circa 22,400 vehicles per day during the operational phase. Once open to traffic, the bypass would reduce the traffic volume on the former A12 road to a very low level. It is therefore anticipated that the bypass would significantly reduce the risk of collisions on this length of road.

ii. Two village bypass A12/Tinker Brook junction

10.2.39 Tinker Brook to the south and an unnamed road to the north both join the A12 at simple priority junctions. A new four arm roundabout, east of Parkgate Farm and Stratford Plantation, would connect the western end of the bypass to the existing A12 and Tinker Brook, as described in **Chapter 5** of the **Transport Assessment** (Doc Ref. 8.5).

10.2.40 There have been no collisions in this location in the five-year period May 2014 – April 2019.

10.2.41 A low volume of turning movements currently take place at both existing side roads, with that traffic currently giving way to A12 traffic flows. Introducing a new roundabout changes the priorities at the junction. Southbound A12 traffic would need to give way to the very small volume of traffic from the unnamed road and the bypassed A12. Northbound A12 traffic would give way to a similarly small traffic volume entering from Tinker Brook.

10.2.42 Once the roundabout is open to traffic, it is expected to exhibit the low accident rates associated with new roundabouts designed and constructed to DMRB standards.

iii. Two village bypass A12/A1094 junction

10.2.43 The existing A12/A1094 junction is a priority junction on a dual carriageway section of the A12 north-east of Farnham. It has both merge and diverge lanes for all movements in and out of the A1094. There are additional ‘give way’ lines for the right-turn movement from the A12 to A1094 and vice versa. The speed limit on the A12 is 50mph, whilst the A1094 has a speed limit of 40mph on the approach to the junction.

10.2.44 As part of the two village bypass scheme, it is proposed to build a four-arm roundabout to replace the A12/A1094 junction as described in **Chapter 5** of the **Transport Assessment** (Doc Ref. 8.5). On dual carriageways, such as this localised length of the A12, accommodating right-turn manoeuvres at a roundabout has been shown to enhance safety.

10.2.45 At this junction, there have been 12 collisions in the most recent five-year period. One of the collisions was serious and the remaining 11 slight. All occurred during daylight and only two during wet or damp road conditions. SCC have ‘tagged’ the cause of collision as:

- seven attributed to reckless driving, with two involving right turns;
- two other personal injury collisions are attributed to right turns;
- two more personal injury collisions as shunts at a right turn; and
- one attributed to a shunt.

10.2.46 All Sizewell HGV traffic would proceed along the A12 and would not make any turns at this junction. Only a proportion of the Sizewell cars and LGVs would turn at this junction to/from the A1094, which may present a slight increase in risk of personal injury collisions involving right turns during the early years, prior to the proposed roundabout being operational.

10.2.47 As set out in the **Implementation Plan** included as **Appendix I** to the **Planning Statement** (Doc Ref. 8.4), SZC Co. intends to construct the roundabout at the start of the two village bypass construction period, estimating a six month programme for roundabout completion. The roundabout has been designed to be built "*off-line*", meaning that the existing A12/A1094 would be largely unaffected during the roundabout construction. An obligation contained in the Section 106 Agreement would require SZC Co. to use reasonable endeavours to deliver the roundabout in accordance with the **Implementation Plan** – see the draft **Section 106 Heads of Terms**, which is provided as **Appendix J** to the **Planning Statement** (Doc Ref. 8.4).

10.2.48 Once the roundabout is open to traffic, it is anticipated that the new roundabout would result in a significant reduction in the number of collisions. The roundabout would be expected to exhibit the low accident rates associated with new roundabouts designed and constructed to DMRB standards.

h) Sizewell link road

10.2.49 The Sizewell link road would comprise a new, permanent, 6.8km single carriageway road, with a design speed of 60mph, which begins at the A12 south of Yoxford, bypasses Middleton Moor and Theberton before joining the B1122. It includes a new three arm roundabout on the A12 as well as ghost island priority junctions at Middleton Moor link, Fordley Road, Trust Farm, B1125, Pretty Road, Moat Road and the existing B1122 to access Theberton.

10.2.50 The new road would change daily traffic volumes. The changes in traffic flows on the A12 and B1122 as a result of the Sizewell link road and the collisions during the most recent five-year period are shown in **Table 10.1**, which have been taken from **Volume 2, Chapter 10** of the **ES** (Doc Ref. 6.3).

Table 10.1: Changes in typical day (24-hour) AAWT traffic flows and five-year collisions

Link	Early Years	Peak Construction	Operational	Fatal	Serious	Slight
A12 south of Yoxford	+8%	-5%	-7%	1	2	5
A12 at Yoxford	+8%	0%	-4%	0	0	1
B1122 Yoxford – Middleton Moor	+27%	+8%	-9%	0	1	0
B1122 east of Middleton Moor	+27%	-91%	-92%	0	1	7
	Note - collisions at the existing A12/B1122 junction in Yoxford are assessed in the next section about the Yoxford roundabout scheme.					

10.2.51 SCC has attributed the cause of the A12 collisions as:

- 6 attributed to loss of control, 2 of which were due to road conditions, 1 was on a bend, 1 as a result of the driver being dazzled by headlights, and 2 were other loss of control causes;
- 2 attributed to a shunt whilst turning right; and
- 1 attributed to reckless driving.

10.2.52 The B1122 collisions were attributed by SCC as:

- 3 attributed to reckless driving;
- 2 attributed to a slippery road surface in the wet; and
- 1 each attributed to driver being impaired by drugs; excessive speed; an animal in the road; and to a defective road surface.

10.2.53 The increase in link flows on the A12 south of and in Yoxford during the early years set out in **Table 10.1** is unlikely to result in any significant change in risk of collision during the Sizewell link road construction period.

10.2.54 There has been only one collision in the most recent five years on the B1122 between Yoxford and the point at which the Middleton Moor link would join it, caused by an animal running into the road. It is considered that the traffic flow increase in both the early years and at peak construction is unlikely to change the risk of collisions over this stretch of road.

10.2.55 On the B1122, east of this location, traffic flows are predicted to increase by 27% during the early years phase. Half the accidents over the most recent five year period along this link were related to reckless driving, driver impairment and excessive speed. The additional traffic would be Sizewell C construction related traffic and as part of the **Construction Traffic Management Plan (CTMP)** (Doc Ref. 8.7), construction related traffic will be required to adhere to the SZC Co. driver rules, which will set out what the responsibilities are for drivers of construction traffic related to the Sizewell C Project. In addition, workers would be randomly drink and drug tested at site.

10.2.56 Once the Sizewell link road is open to traffic, the volume on the existing B1122 would reduce by over 90%, as **Table 10.1** shows. We anticipate that this would result in a substantial reduction in the number of collisions on this length of road.

10.2.57 The Sizewell link road has been designed, and would be constructed, to DMRB standards that would give a significantly better horizontal and vertical alignment, road surface, junctions, drainage, signage, and lighting than the existing B1122.

10.2.58 A Stage 1 RSA has been undertaken for the Sizewell link road and is included in **Appendix 10A** of this chapter, along with a designer's response.

10.2.59 The Stage 1 RSA carried out at the Sizewell link road raised four 'problems,' none of which are major. The four problems raised are as follows:

- Problem 1 relates to the Sizewell link road being constructed using cuttings which would result in the carriageway having high embankments reducing forward visibility. The Stage 1 RSA recommends that stopping sight distances are maximised, especially on approach to junctions. In response to this, it should be noted that the Sizewell link road alignment was originally designed for 85kph and 160m forward visibility splay. Thus, the design is compliant to this speed. However, further checks will be required during detailed design, which will include the introduction of vehicle restraint systems. Depending on the barrier height and location of the vehicle restraint systems, it is possible that minor local widenings will be required to achieve the forward visibility.
- Problem 2 relates to the Sizewell link road being located on high embankments. The RSA recommends that all high embankments are protected by vehicle restraint systems. The design team recognises the need for a road restraint risk assessment process to be carried out at the detailed design stage. Mindful of this need, the design has already allocated for extra verge width to accommodate vehicle restraint systems.
- Problem 3 relates to B1122/Middleton Moor link road and suggests there is a risk that the alignment of the link road will encourage high vehicle speeds and potentially lead to vehicles overshooting the give way/stop line at the junctions. The RSA recommends speed reduction measures. This is noted and measures will be incorporated into the next stage of the design.
- Problem 4 relates to right turn lanes (ghost islands) or lack of them on the Sizewell link road. The RSA recommends that adequate provision is made to allow for safe right turn manoeuvres into side roads. However, it should be noted that the current design includes right-turn lanes for all the T-junctions along the Sizewell link road and this RSA identified problem has therefore already been addressed.

10.2.60 The problems raised for the Sizewell link road have been noted and will be addressed at the detailed design stage.

i) Yoxford roundabout

10.2.61 The B1122 currently meets the A12 at the northern end of Yoxford village at a ghost island junction. This junction is located on the outside of a bend on the A12. The proposed roundabout would be located approximately 100m north of the existing junction. It would include a realignment of the A12 so that the roundabout could be built offline, minimising traffic disruption during construction.

10.2.62 Introducing a new roundabout changes the priorities at the junction. Southbound A12 traffic would need to give way to traffic turning right towards the B1122. Northbound A12 traffic would give way to B1122 traffic turning right to travel north on the A12 north. B1122 traffic would still give way to southbound A12 traffic but would have priority over A12 northbound traffic.

10.2.63 At the existing junction, there have been four collisions in the five-year period. All of the collisions have been of slight severity. SCC have 'tagged' the cause of collision as:

- one attributed to a shunt;
- one attributed to right turn;
- one attributed to lost control; and
- one due reckless driving, colliding with pedestrian.

10.2.64 Roundabouts have a lower accident rate than priority junction and this scheme would result in fewer collisions.

10.2.65 The roundabout has been designed in accordance with DMRB standards for the design speed of the road. A Stage 1 RSA has been undertaken for the proposed roundabout junction and is included in **Appendix 10A** of this chapter. No 'problems' were identified as part of the Stage 1 RSA.

10.3 Off-site highway improvements

10.3.1 A safety study was undertaken by SZC Co. in 2016 to identify junctions where on the local highway network there were existing safety concerns. The study was based on collision data for 2011-2015. Road safety improvements were proposed where safety concerns were identified, and these mitigations now form part of the off-site highways works, which are either to be delivered as part of the Development Consent Order (DCO) or to be implemented or funded by SZC Co. and secured through obligations in a Section 106 Agreement, as described in the draft **Section 106 Heads of Terms** which are provided as **Appendix J** to the **Planning Statement** (Doc Ref. 8.4).

10.3.2 Highway improvement schemes to be delivered as part of the DCO are proposed at or near the following junctions:

- A1094/1069 junction south of Knodishall;
- A12/A144 junction south of Bramfield; and
- A12/B1119 junction at Saxmundham.

10.3.3 In addition, SZC Co. would provide for B1078 Transport Safety Measures through the Section 106 Agreement, as set out in the draft **Section 106 Heads of Terms**, provided at **Appendix J** to the **Planning Statement** (Doc Ref. 8.4). These B1078 Transport Safety Measures would include safety measures, incuding vegetation maintenance, signage and road markings, at or near the following junctions:

- B1078 in the vicinity of Easton and Otley College; and
- A140/B1078 junction west of Coddenham.

10.3.4 The above locations were identified from analysis of accident data for the five years period 2011 to 2015 and from junction capacity testing of the A12/A144 junction. Safety led improvements were proposed to mitigate the impact of Sizewell C where the number of collisions was higher than expected and the junction would experience a discernible traffic increase during the Sizewell C construction phase.

10.3.5 The mostly recently available collision data (1st May 2014 to 30th April 2019) was subsequently analysed to assess the proposed improvements and is set out below for each scheme.

a) A1094/B1069 south of Knodishall

10.3.6 The A1094/B1069 junction is a single carriageway priority T-junction situated approximately 2.6km south of Knodishall and 1.1km south-east of Friston about 6km southwest of the Sizewell C construction site. The junction has a narrow, painted island provided for right-turning traffic from the A1094 onto the B1069 but this is not wide enough for westbound traffic to pass a vehicle waiting to turn right. The major arm (A1094) passes through a shallow bend at the junction, with the minor arm (B1069 Snape Road) located on the inside of this bend, restricting visibility to the left and right which is further impeded by overgrown vegetation in the verge. The speed limit at the junction is 60mph and there is no street lighting.

10.3.7 The 2016 safety study identified eight collisions in 2011-2015 at this junction, six of which involved vehicles turning at the junction. However, the most recent five year data shows this has reduced significantly to three slight collisions. SCC attributed the cause of these collisions as:

- two attributed to loss of control, one on the A1094 and one on the B1069;
- one attributed to pulling out of the B1069 junction.

10.3.8 The safety issues at this junction appear to be a combination of speeds on the A1094 and poor visibility to both left and right from the B1069 give way line.

10.3.9 Daily traffic flow volumes are predicted to increase above reference case levels on the A1094 in the vicinity of the junction with B1069 by around 4% in the early years phase, by around 6% at peak construction and around 2% in the operational phase. Percentage change in daily traffic flows are summarised in **Volume 2, Chapter 10** of the **ES** (Doc Ref. 6.3).

10.3.10 To mitigate the effects of these increases, SZC Co. proposes safety improvements at the A1094/B1069 junction.

10.3.11 **The Yoxford Roundabout and Other Highway Improvements Plans** (Doc Ref. 2.9) shows the proposed highway improvements at the A1094/B1069 junction that would be implemented by SZC Co. These improvements would be:

- vegetation maintenance to improve visibility both to the left and right for vehicles exiting the B1069;
- reduction in the speed limit at the junction to 40mph. This would match the required stopping distance to the visibility available when vegetation has been removed, assisting vehicles turning right out of the B1069 to find suitable gaps in the A1094 traffic and safely complete the manoeuvre; and
- signage and road markings: the condition of signs and road markings would be checked, and where necessary, they would be cleaned or renewed to comply with current regulations. Additional signage, including speed limit reduction signs, would increase driver awareness prior to the junction.

10.3.12 Improving visibility at the junction and reducing the speed limit to 40mph would result in a significant reduction in collisions at the junction. Since the new speed limit extends to **east** and west of the junction, it could also address the single collision recorded to the east of the B1069 and the one at the A1094/B1121 Friston junction.

10.3.13 The traffic modelling assessment in **Chapter 9** of this **Transport Assessment** (Doc Ref. 8.5) shows that there is no capacity concern for the right turn into the B1069 and that the visibility improvement would make a small improvement to the capacity of the B1069 movement at the junction.

b) A12/A144

10.3.14 The A12/A144 is a priority ghost island T-junction, located approximately 6-miles north-west of the Sizewell C main development site. There is a holiday home, Stone Cottage, on the north-west side of the junction which can be accessed from both the A12 and A144. The national speed limit of 60mph applies on all arms. Street lighting is limited to a single lamp located on the central island on the southern arm of the junction.

10.3.15 There have been six collisions at this junction in the latest 5-year period, of which one was serious and five were slight. SCC have attributed the cause of collisions as:

- four attributed to a rear end shunt, whilst a vehicle was turning right from the A12;
- one attributed to pulling out of the A144; and
- one attributed to reckless driving, pulling out without looking

10.3.16 Daily traffic flow volumes are predicted to increase above reference case levels on the A12 in the vicinity of the junction with A144 by around 3% in the early years phase, by around 16% at peak construction and less than 1% during the operational phase. Percentage change in daily traffic flows are summarised in **Volume 2, Chapter 10** of the **ES** (Doc Ref. 6.3).

10.3.17 The proposed improvements to the A12 and A144 junction would comprise:

- provision of a physical central reservation island and waiting area. The waiting area within the junction allows vehicles turning right from the A144 to legally undertake the manoeuvre in two stages. Drivers would need to find a suitable gap in the northbound A12 traffic, move to the central area and then find a gap in the southbound A12 traffic;
- widening of the A12 to facilitate the provision of the central reservation island and waiting area; and
- revised access arrangements for Stone Cottage.

10.3.18 **The Yoxford Roundabout and Other Highway Improvements Plans** (Doc Ref. 2.9) shows the mitigation measures which are proposed for the A12/A144 junction.

10.3.19 The proposed single lane dualling would prevent vehicles turning right into Stone Cottage from the southbound A12, which were two of the reported collisions. Such vehicles would in future need to turn right into the A144 and use the retained existing access to Stone Cottage. The scheme would increase capacity for the additional traffic volume turning right from the A144 to the A12, limit the additional delay, and reduce the risk of frustrated drivers pulling out into the path of a northbound A12 vehicle.

c) A12/B1119 junction at Saxmundham

10.3.20 The A12/B1119 junction is a staggered crossroads on the A12 situated 1.1km west of Saxmundham and approximately 8km from the Sizewell C site. In addition to the usual staggered crossroad give-way lines, there are additional 'give way' lines for both A12 left-turn movements and offside diverge lanes for right-turning traffic. Both the A12 and B1119 Rendham Road are national speed limit roads (60mph), although the speed limit reduces to 30mph about 60m to the east of the junction. There is no street lighting at the junction.

10.3.21 Between 2011 and 2015, four out of the five collisions were side-on collisions, and three of them occurred in conditions of low light or darkness. The collisions occurred at the northern junction and involved vehicles turning right out of the B1119 junction onto the southbound A12.

10.3.22 In the five year period; 2014 to 2018 the number of collisions increased to 11, 3 of which were serious and the remaining 8 slight. SCC have attributed the cause of collisions, as:

- five attributed to right turns with 3 tagged as pulling out;
- four attributed to reckless driving, including one involving alcohol;
- one attributed to road conditions; and
- one attributed to pulling out at a junction turning left.

10.3.23 Daily traffic flow volumes are predicted to increase above reference case levels on the A12 in the vicinity of the junction with B1119 by around 6% in the early years phase, by around 5% at peak construction and by less than 1% during the operational phase. Percentage change in daily traffic flows are summarised in **Volume 2, Chapter 10** of the **ES** (Doc Ref. 6.3).

10.3.24 There would be very little additional traffic turning right from the B1119 at this junction. The impact on the overall junction performance would therefore be minimal. Notwithstanding this, the additional traffic generated from Sizewell C construction could exacerbate the road safety issues. To minimise this risk, SZC Co. proposes safety improvements for the A12/B1119 junction.

10.3.25 **The Yoxford Roundabout and Other Highway Improvements Plans** (Doc Ref. 2.9) shows the highway improvements that SZC Co. proposes on the A12/B1119 junction. The proposed improvements are:

- vegetation maintenance to improve visibility from the B1119;
- signage and road markings as existing signage interferes with driver visibility in some locations, so existing signs would be mounted higher, or relocated if necessary;
- new 'give way' signs would be situated before the bend on the B1119 approach to the northern junction to raise awareness of the junction. The existing roads signs would be, where necessary, cleaned or replaced; and
- new road markings would be applied within the junction, to clarify the priority within the central reserve and provide better guidance, visibility and vehicle placement for right-turning traffic from the B1119 to negotiate the junction in two manoeuvres, improving operation and safety.

10.3.26 It is expected that these highway improvements would reduce the number of collisions at the A12/B1119 junction by providing better guidance, visibility and vehicle placement for right-turning traffic and mitigate the impact of additional Sizewell C traffic on the junction.

d) B1078 in the vicinity of Easton and Otley College

10.3.27 The B1078 in the vicinity of Easton and Otley College is on the approach to the B1078/B1079 priority T-junction approximately 1.5km south of Otley and approximately 31km from the main development site. The B1078 is subject to a 40mph speed limit.

10.3.28 **Chapter 9** of this **Transport Assssment** (Doc Ref. 8.5) explains that the junction of B1078/B1079 currently operates with spare capacity. There has been only one collision at the junction in the most recent five year period, which was attributed to a car pulling out of the B1078 into the path of a vehicle southbound on the B1079.

10.3.29 **Chapter 9** also explains that, unrelated to Sizewell C, there is additional traffic forecast to use this junction due to the Ipswich Garden Suburb residential development on the north side of Ipswich, the first phase of which now has planning permission. This is included in the traffic modelling and is expected to cause an increase in queuing and delay at the junction during peak hours. This impact is particularly evident in the early years reference case modelling (i.e. prior to any Sizewell C traffic), but no highway improvements are proposed at this junction as part of the Ipswich Garden Suburb.

10.3.30 Traffic flows in the area are forecast to increase by 2% due to Sizewell C in the early years phase and this makes little difference to junction operation, which is more significantly affected by the Ipswich Garden Suburb impacts. At peak construction, the Sizewell C increase is expected to be circa 11% and the junction modelling shows a disproportionately large increase in queuing and delays because the junction performance has already been eroded by the Ipswich Garden Suburb development. At operation, there is expected to be a negligible change in traffic.

10.3.31 The most significant impacts at this junction are not related to Sizewell C. There is still much uncertainty about the Ipswich Garden Suburb going ahead, though it has been included in the modelling at SCC's request. Given this, and that there has been only one collision in the last five years at the junction, SZC Co. proposes vegetation maintenance to increase visibility for vehicles at the B1078/B1079 junction to reduce the risk of collisions.

10.3.32 On the B1078 approach to the junction, between Easton and Otley College and the B1079, there have been five collisions in the five-year period. All have been of slight severity. The cause of collisions is as follows:

- three attributed to loss of control due to road conditions (there is a noticeable highway or land drainage problem here and all of these collisions occurred in wet/damp conditions);
- one attributed to reckless driving (with a subsequent loss of control in wet conditions); and
- one attributed to a shunt due to sudden braking.

10.3.33 Notwithstanding the additional traffic from Ipswich Garden Suburb, SZC Co. propose to implement works during the early years of the construction programme to mitigate any safety risk in advance of the 11% increase in B1078 flows predicted at peak construction. The proposed improvements include:

- vegetation maintenance to improve forward visibility on the B1078 between Easton and Otley College and the B1079; and
- additional signage and road markings on the B1078 approach to the B1079. The centre warning line of the carriageway would be highlighted with road studs to increase driver awareness. The condition of roads signs would be checked, and where necessary, cleaned or replaced during the Sizewell C construction period.

10.3.34 **Volume 7, Figure 2.5** of the **ES** (Doc Ref. 6.8) shows the proposed safety improvements on the B1078 in the vicinity of the B1078/B1079 junction. The proposed safety measures would be either implemented or funded by SZC Co. and will be secured through obligations in a Section 106 Agreement, as set out in the draft **Section 106 Heads of Terms** provided as **Appendix J** to the **Planning Statement** (Doc Ref. 8.4).

10.3.35 The proposed improvements would make drivers more aware of the road conditions, should help to lower speeds and therefore reduce the risk of collisions to mitigate the impact of Sizewell C traffic during the peak construction phase.

e) A140/B1078 junction west of Coddenham

10.3.36 The A140/B1078 junction is a priority T-junction on a dual carriageway. It is situated approximately 3.2km east of Needham Market and 650m north-east of the A14/A140 Beacon Hill junction. The right turn movement from the A140 south to the B1078 is facilitated by a right-turn deceleration lane between the two carriageways. The B1078 approach is restricted to left-turn movements only and an acceleration lane is provided for access to the A140 southbound. The layout of the junction is such that the A140 south right turn forms a crossroads with the B1078 and A140 southbound carriageway. The A140 is subject to a 50mph speed limit, which is enforced by a southbound speed camera installed due to a known accident problem at this location, whilst the B1078 is 60mph. There is no street lighting at the junction.

10.3.37 From 2011–15, 8 out of 11 collisions (73%) involved vehicles turning into the B1078 across the A140 colliding with southbound vehicles. In the most recent five year period, the number of collisions reduced to 8, of which 2 were serious and 6 were slight. SCC have attributed the cause of the most recent collisions as:

- six collisions (75%) attributed to pulling out;
- one attributed to lane change; and
- one attributed to a shunt at the junction.

10.3.38 The junction assessment included in **Chapter 9** of this **Transport Assessment** (Doc Ref. 8.5) shows that the junction currently operates within capacity, though with small queues at both A140 and B1078 give way lines during peak periods.

10.3.39 Daily traffic flow volumes are predicted to increase above reference case levels on the A140 in the vicinity of the junction with B1078 by around 1% in the early years phase, by around 3% at peak construction and a negligible increase during the operational phase. Percentage change in daily traffic flows are summarised in **Volume 2, Chapter 10** of the **ES** (Doc Ref. 6.3).

10.3.40 To mitigate the effects of these increases on safety, SZC Co. proposes some improvements at the A140/B1078 junction.

10.3.41 **Volume 7, Figure 2.6** of the **ES** (Doc Ref. 6.8) shows the proposed safety measures for the B1078 in the vicinity of the A140/B1078 junction. The proposed safety measures would be either implemented or funded by SZC Co. and will be secured through obligations in a Section 106 Agreement, as set out in the draft **Section 106 Heads of Terms**, provided as **Appendix J** of the **Planning Statement** (Doc Ref. 8.4). The works include:

- vegetation maintenance: to improve visibility for vehicles turning right into the B1078 and left onto the A140; and
- additional or alterations to existing signage and road markings:
  - change the existing sign and road marking at the right turn from the A140 northbound towards the B1078 from a give way to a stop, requiring drivers to observe oncoming vehicles on the A140 southbound before crossing safely;
  - update existing signs to comply with highway regulations and provide sufficient notice in advance of the junction. The signs would be cleaned, and where necessary, replaced during the Sizewell C construction period;
  - extend the existing hatching to the full length of the right turn lane on both sides, preventing vehicles from stopping parallel to each other and obscuring visibility; and
  - road markings would be renewed where necessary.

10.3.42 The junction assessment included in **Chapter 9** of this **Transport Assessment** (Doc Ref. 8.5) shows that there is no capacity concern for the right turn into the B1078 in either early years or at peak construction. The left turn from B1078 onto the A140 is marginally above capacity between 08:00 and 09:00 in both the 2028 reference case and the Sizewell C traffic makes little difference (as would be expected, since little Sizewell C traffic would be headed away from the site at that time of day). The visibility to the right for this movement is already good.

10.3.43 However, SZC Co. expects that the improvements should lead to a reduction in collisions at the A140/B1078 junction and mitigate the road safety impact of the Sizewell C traffic.

10.4 Other junctions considered

10.4.1 Several other sites identified by SCC in consultation responses or in Police and Crime Commissioners annual reports have been considered. No mitigation is proposed at these junctions.

a) A14/A140 Beacon Hill and A14/A12 Copdock interchanges

10.4.2 These are the grade separated junctions on the A14 at the A140 and A12 interchanges.

10.4.3 At the A140 Beacon Hill, there were 20 collisions in the five year period, of which 18 were slight and two serious. SCC attributed the cause of collisions as

- 14 attributed to shunts (70%);
- four attributed to loss of control including 3 due to alcohol and 1 due to fatigue;
- one attributed to reckless driving; and
- one attributed to lane change.

10.4.4 At the A14/A140 Beacon Hill junction, there is a limited amount of queuing at the junction, though there is some on the A14 eastbound exit slip for the A140. The Sizewell C Project would add approximately 2% to traffic flows at the junction in both the early years and peak construction scenarios and a negligible increase during the operational phase. This is less than the typical day to day variation in traffic flows and is unlikely to result in any significant change in the number of collisions at the junction.

10.4.5 At Copdock, there were 37 collisions during the latest five year period, of which one was fatal (a broken down vehicle was hit by another vehicle), two serious and the remainder slight. SCC attributed the collision causes as:

- 20 attributed to shunts;
- five attributed to reckless driving;
- four attributed to loss of control;
- three attributed to the roundabout;
- two due to turning right; and
- one each attributed to overtaking, lane change and pulling out.

10.4.6 Shunt collisions generally take place in queuing or slow-moving traffic conditions. This is evident during large parts of the day at this junction, particularly on the A12 approach from the south and drivers would be expecting queues. The Sizewell C Project is expected to increase daily traffic volumes at the Copdock A14/A12 interchange by about 1% in both the early years and peak construction scenarios. This is considerably less than day to day traffic flow variations but could increase queue lengths at peak periods and it would not be expected to result in a discernible increase in collisions at this junction.

10.4.7 Development work for future improvements to Copdock Interchange is being supported with funding from the port infrastructure fund, related to growth at Felixstowe. Further funding and improvements may form part of Highways England's second road investment strategy (RIS2), which is due to be announced during 2020.

b) A12/A14 Seven Hills interchange

10.4.8 There have been 34 collisions at this grade separated junction in the latest five-year period, of which one was serious and the remainder slight. SCC attributed the cause of the collisions as:

- 22 attributed to shunts;
- five attributed to loss of control;
- four attributed to pulling out with three of these at the roundabout; and
- one each attributed to sudden braking, overtaking and reckless driving

10.4.9 There is currently moderate peak period queueing on the A12 north and A1156 approaches to the junction and longer queues on the A14 westbound exit slip road.

10.4.10 The Seven Hills junction will become partially signal controlled, with additional traffic lanes, as part of the Adastral Park committed development, as reported in **Chapter 9** of this **Transport Assessment** (Doc Ref. 8.5). This would lead to a minor improvement in junction performance.

10.4.11 Sizewell C would increase traffic volumes at this junction by about 2% in both the early years and peak construction scenarios and a negligible amount during the operational year. This increase is small but could lead to some additional queuing during peak periods and therefore the potential for shunts to occur further back from the junction, but the increase in the number of such incidents is likely to be insignificant.

10.4.12 Signalisation should significantly reduce the number of pulling out collisions. Loss of control and reckless driving collisions can be speed-related, which should also reduce on signalisation. SZC Co. would make speed awareness an important part of the construction workforce induction as part of the **Construction Worker Travel Plan (CWTP)** (Doc Ref. 8.8) to further mitigate this risk. SZC Co. would also monitor HGV movements through the **CTMP** (Doc Ref. 8.7) to identify and address any inappropriate driver behaviour that might contribute to collisions.

c) A12 roundabouts at Martlesham

10.4.13 There are a series of at-grade roundabouts on the A12 at Martlesham:

- A12/Foxhall Road;
- A12/Barrack Square;
- A12/Anson Road;
- A12/A1214, which is signal-controlled;

10.4.14 At the A12/Foxhall Road roundabout, there have been 11 collisions in the latest five-year period, of which one was serious and the remaining 10 slight. SCC attributed the collisions as:

- eight attributed to shunts (73%);
- two attributed to loss of control; and
- one attributed to the roundabout

10.4.15 Observations showed that there are currently minor queues on all arms with larger queues on Foxhall Road and the A12 south, particularly in the morning peak hour.

10.4.16 There were 10 collisions in the latest five-year period at the A12/Barrack Square roundabout. One of these was fatal (a child incorrectly strapped into the front seat), two were serious, and seven were slight.

10.4.17 SCC attributed the collision causes as:

- seven attributed to shunts (70%);
- two attributed to loss of control; and
- one attributed to a right turn manoeuvre

10.4.18 Observed queue data shows minor queues on all approaches with moderate queues experienced on the A12 north.

10.4.19 As part of the consented Adastral Park development, both junctions will be converted to signalised roundabouts with additional traffic lanes to enhance capacity. This would take place after 2023, the Sizewell C early years scenario. The junction assessment reported in **Chapter 9** of this **Transport Assessment** (Doc Ref. 8.5) indicates that this would result in some improvements to junction performance but would not eliminate queueing during some peak periods.

10.4.20 Sizewell C adds approximate 2% to traffic volumes during the early years scenario, 1% during peak construction and a negligible amount during the operational phase, which modelling shows would make little difference to junction operation and some queuing would still be present during peak periods. The causes and severity of the largely shunt accidents at this junction are unlikely to change significantly due to Sizewell C traffic volumes.

10.4.21 At the A12/Anson Road roundabout, there were three collisions in the latest five-year period, all of which were slight and attributed by SCC to sudden braking, loss of control and a shunt. Observations show minor queues on all approaches, with moderate queues on the A12 north and south approaches in the morning peak hour and on the A12 south and Anson Road arms in the afternoon.

10.4.22 This roundabout will be signalled as part of the consented Adastral Park development, but not until after completion of the Sizewell C construction phase. Until then, the junction would continue to operate with some queueing and the nature and number of collisions is unlikely to change significantly.

10.4.23 The A12/A1214 junction is a five-arm signalised roundabout. There have been seven collisions in the latest five-year period, two of which were serious collisions and five slight. SCC attributed four of these to reckless driving and one each to loss of control, the roundabout itself and a shunt. Queue observations show minor queues on all approaches in the morning, with moderate queues in the afternoon. Signal controlled junctions generally exhibit queuing during peak periods.

10.4.24 The consented Adastral Park development does not include mitigation at this junction. The modelling work in **Chapter 9** of this **Transport Assessment** (Doc Ref. 8.5) indicates that the junction operates with spare capacity until 08:00. Sizewell C traffic leads to marginal levels of increased congestion at other times of the day. No physical measures would address the reckless driving collisions but SZC Co. would make speed awareness an important part of the construction workforce induction as part of the **CWTP** (Doc Ref. 8.8) to further mitigate this risk.

d) A12 roundabouts at Woodbridge

10.4.25 There are three at-grade roundabouts on the A12 at Martlesham:

- A12/B1438 Seckford Hall;
- A12/B1079; and
- A12/A1152 Woods Lane

10.4.26 There have been eight collisions in the latest five-year period, with one of them serious and the others slight, at the A12/B1438 roundabout. SCC attributed three to loss of control (suggesting excess speed was a factor), two to shunts (25%) in slow moving traffic, one to a right turn manoeuvre and one to the roundabout itself. Queue observations showed minor queues on all approaches, with moderate queues in the morning peak hour on the A12 south and north approaches and on the south in the afternoon periods.

10.4.27 Sizewell C adds about 3% to traffic volumes at the junction, in both the early years and peak construction scenarios and a negligible amount during the operational phase. While the junction is operating above desirable capacity from 2023 onwards, this is primarily due to background traffic growth and the impact of Sizewell C traffic on overall junction performance is minimal. The types and number of collisions would not be expected to change significantly. However, SZC Co. would make speed awareness an important part of the construction workforce induction as part of the **CWTP** (Doc Ref. 8.8) to further mitigate this risk.

10.4.28 At the A12/B1079 Grundisburgh Road roundabout, there have been seven slight collisions in the five-year period. SCC attributed four (57%) to shunts, two to cyclists on the circulatory carriageway and one to reckless driving. Observations showed moderate queues on the west and south arms in the morning peak hour and afternoon periods. There were larger queues on the north approach in the morning peak and moderate queues during the afternoon periods. Drivers would expect to encounter some queuing at the junction during peak periods.

10.4.29 The increased queuing in future years can be largely attributed to background traffic growth. The impact of Sizewell C traffic, about 3% in the early years and 1% at peak construction, on overall junction performance is negligible. With increasing queuing, the location of the shunt collisions could change but should not increase in number.

10.4.30 There have been five collisions, all slight, in the latest five-year period at the A12/A1152 Woods Lane roundabout. SCC attributed three to shunts, one to a loss of control and one to a cyclist on the roundabout. There are minor queues on most approaches, with moderate queues on the south approach during the morning peak hour and during the afternoon periods.

10.4.31 Congestion increases over time, which can be largely attributed to background traffic growth. The Sizewell C Project adds about 3% to traffic volume in the early years but this only affects junction performance noticeably during the period 07:00 to 08:00. During this time period, there could be queuing that could contribute to shunt collisions. At other periods, and at peak construction when the Sizewell C Project adds 2%, the junction performance and the type and number of collisions would be unlikely to significantly change.

e) A12 around Blythburgh

10.4.32 There are five at grade priority junctions joining the A12 in this area:

- A12/B1387;
- A12/B1125 Blythburgh;
- A12/A145;
- A12/A1095; and
- A12/B1126 Wangford.

10.4.33 At the A12/B1387 simple priority junction, there have been six collisions, all slight, in the latest five-year period. SCC attributed four (67%) to shunts associated with vehicles turning right into the B1387, one to pulling out of the B1387 junction and one to a loss of control. The only queuing at the junction occurs when a vehicle waits for a gap in the A12 southbound traffic to turn right into the B1387.

10.4.34 The Sizewell C Project would add circa 6% to traffic volumes on the A12 in the early years scenario, around 14% at peak construction and a negligible amount during the operational phase. It is unlikely that any Sizewell C traffic would be turning right into the B1387 since such traffic would be able to use the B1125 instead. Although A12 flows would increase because of the Sizewell C Project, it is unlikely that there would be an increase in collisions at the junction during the construction phase.

10.4.35 There have been eight collisions, all slight, in the five-year period at the A12/B1125 simple priority junction. SCC attributed three to reckless driving, two to shunts, one to a right turn and one to loss of control due to alcohol. The junction currently operates with significant spare capacity, as reported in **Chapter 9** of the **Transport Assessment** (Doc Ref. 8.5).

10.4.36 In the early years and peak construction scenarios, Sizewell C would add 11% and 12% respectively to traffic volumes at the junction. There would continue to be significant spare capacity at the junction. Sizewell C drivers would not be impaired by alcohol (there would be strict controls in place) and SZC Co. would make speed awareness an important part of the construction workforce induction as part of the **CWTP** (Doc Ref. 8.8) to further mitigate this risk. Given this, the likelihood of additional collisions at this junction would be small.

10.4.37 At the A12/A145 single lane dualling junction, there have been four collisions, all slight, in the latest five-year period. SCC attributed two to reckless driving and two to shunts, one turning right into, and one turning left out of, the A145.

10.4.38 The Sizewell C Project would add 8% to traffic flows in the early years scenario and 10% at peak construction. Given the nature of the junction and low level of collisions in the past, there is unlikely to be any significant change in the number of collisions at the junction during Sizewell C construction.

10.4.39 There have been five collisions in the latest five-year period at the A12/A1095 ghost island junction. One of these was serious and the remaining four slight. SCC attributed three (60%) collisions to shunts, one to turning left and one (serious) to reckless driving. All of the slight collisions involved vehicles turning left from the A1095 onto the southbound A12.

10.4.40 The Sizewell C Project would add 8% to traffic flows in the early years scenario and 10% at peak construction, primarily on the A12. There is likely to be a small element of additional traffic on the A1095 but given this and the low number of collisions at the junction in the past, there is unlikely to be any significant change in the type or number of collisions at the junction due to the Sizewell C Project.

10.4.41 At the A12/B1126 Wangford single lane dualling junction, there have been ten collisions in the latest five-year period. Three of these were serious and the remaining seven slight. SCC attributed five (two serious) to reckless driving, three (one serious) to pulling out at the junction and one each to a shunt and turning right. There is some queuing during peak periods on the eastern arm.

10.4.42 The Sizewell C Project would add 10% to traffic flows at peak construction, primarily on the A12 but there is likely to be a small element of additional traffic on the B1126. SZC Co. would make speed awareness an important part of the construction workforce induction as part of the **CWTP** (Doc Ref. 8.8) to mitigate the potential for reckless driving. The low number of collisions at the junction attributed to other causes suggests there is unlikely to be a significant change in the type or number of collisions at the junction due to the Sizewell C Project.

f) B1125

10.4.43 This section considers the B1125 south of Blythburgh at the junction with the B1387 and through Westleton as these were locations identified by SCC in their public consultation responses.

10.4.44 At the B1125/B1387 crossroads junction, there have been five collisions, all slight, recorded accident data provided by SCC for the five-year period. SCC attributed three of these to reckless driving and two were attributed to pulling out.

10.4.45 Not included with the SCC data, but identified from internet searches, was a fatal collision that occurred during the five-year period. This was on the B1125 approximately 700 metres to the south of the junction. From the limited information available (more requested from SCC), this was a motorcycle, which hit an animal in the carriageway. Given the location and circumstances, this cannot be considered a collision at the B1125/B1387 crossroads.

10.4.46 The Sizewell C Project would add circa 26% to B1125 traffic south of Blythburgh during the early years. During the peak construction period, the increase would be much lower, some 8%, due to worker traffic having to use the northern park and ride site, and the operational phase would add a negligible amount of traffic. There would be an insignificant increase in flows on the B1387. For a crossroads such as this, it is more difficult to predict the change in collisions. SZC Co. would make speed awareness an important part of the construction workforce induction as part of the **CWTP** (Doc Ref. 8.8) which should significantly reduce instances of reckless driving. It is likely that over the whole construction period there would be an insignificant increase in the number of collisions at this junction.

10.4.47 There have been six collisions, all slight, at Westleton during the latest five-year period. Three of them occurred about 400m north of the Dunwich Road junction, one at that junction, one at the southern edge of the village and one further south. SCC attributed all of them to a loss of control – two when animals ran into the vehicle path, two were skidding due to road conditions (one on black ice), one loss of control of a motorcycle and one loss of control at a bend. While loss of control can suggest speed is a factor, the collision descriptions do not mention speed.

10.4.48 The Sizewell C Project would add some 19% to B1125 traffic through Westleton during the early years, 10% at peak construction and circa 4% during the operational phase. It would not be possible to mitigate for animals running into the road but SCC maintenance should reduce the incidence of black ice. Notwithstanding this, the predicted traffic flow increases could lead to a small increase in the number of collisions over the construction period. SZC Co. would make speed awareness an important part of the construction workforce induction as part of the **CWTP** (Doc Ref. 8.8) to mitigate this risk.

g) B1121/B1119 Saxmundham

10.4.49 At this signalled crossroads in Saxmundham there have been six collisions, all slight, in the latest five-year period. SCC attributed three collisions to reckless driving, two to pedestrians and one to a shunt. Small to moderate queues were observed on all arms in the morning peaks whilst larger queues were present from 17:00-18:00. The junction is generally operating within capacity.

10.4.50 The Sizewell C Project would increase traffic flows at the junction by circa 8% in the early years, 4% at peak construction and a negligible amount during the operational phase. These increases are unlikely to result in any significant change to the nature and number of collisions at the junction.

10.5 Junctions not considered

10.5.1 SCC highlighted road safety at the junctions shown below in public consultation responses. However, these have not been considered because over the latest five-year period May 2014 – April 2019 there were fewer than five accidents, which is the threshold SCC use to identify sites for further investigation:

- B1069/B1119 Leiston - one collision;
- B1078 Wickham Market – one collision; and
- B1078 Hemingstone crossroads – three collisions.

10.6 Monitoring

10.6.1 Throughout the Sizewell C construction and operational phases, SCC will continue to monitor road safety as their role as local highway authority.

10.6.2 In addition, the transport review group, which is to be established prior to commencement of construction and consists of the highway authorities and SZC Co. representatives, would meet quarterly (unless the transport review group decide to meet at a different frequency) to review the transport management plans – i.e. the **CTMP** (Doc Ref. 8.7), **CWTP** (Doc Ref. 8.8) and **TIMP** (Doc Ref. 8.6).

10.6.3 Part of the quarterly meetings of the transport review group would be to review any road safety concerns raised. A key source of feedback will be members of the public reporting any road safety concerns to both SCC and SZC Co.

10.6.4 The establishment of the transport review group would be secured through an obligation in the Section 106 Agreement (see draft **Section 106 Heads of**

Terms provided as **Appendix J** to the **Planning Statement** (Doc Ref. 8.4)) which would also set ou the governance, scope and authority of the transport review group.

11. Rail Strategy

11.1 Introduction

11.1.1 As part of the transport strategy it is proposed that rail transport would be used to move construction material to build Sizewell C and thereby reduce the number of heavy good vehicles (HGVs) on the road. This section summarises the rail strategy for the construction of the Sizewell C Project.

11.1.2 The existing baseline conditions of the rail network are described in **Chapter 2** of this document. The **Site Selection Report**, which forms **Appendix A** of the **Planning Statement** (Doc Ref 8.4), summarises the approach to selecting the final rail proposals.

11.2 Overview of rail proposals

11.2.1 This section provides an overview of the rail proposals. Further details of the rail proposals are provided in **Volume 9, Chapter 2** of the **Environmental Statement (ES)** (Doc Ref. 6.10) on the green rail route and **Volume 2, Chapter 3** of the **ES** on the main development site.

a) Green rail route

11.2.2 As part of the transport strategy, it is proposed to construct a new rail route, referred to as the green rail route, which would branch off the existing Saxmundham to Leiston branch line into the main construction area on a temporary basis during construction. The green rail route is approximately 4.5 kilometre (km) in length and is made up of three main parts:

- Saxmundham Road to Buckleswood Road.
- Buckleswood Road to B1122 (Abbey Road).
- B1122 (Abbey Road) to Sizewell C main development site.

11.2.3 The proposed green rail route would connect into the existing Saxmundham to Leiston branch line via a new junction approximately 500 metres (m) east of the Saxmundham Road level crossing and approximately 230m south of Buckle's Wood. The section between Saxmundham Road and Buckleswood Road would be approximately 400m long and at grade.

11.2.4 From Buckleswood Road, the proposed rail extension route would continue further north-eastwards through open countryside and farmland to the south of Abbey Lane. This section would be approximately 1.4km long with elements at grade, on embankments up to 2.5m high (above ground level) and in cuttings to a depth of up to 3.5m.

11.2.5 The rail extension route would enter the main development site at the approximate location of the existing B1122 (Abbey Road) / Lover's Lane junction. The route would cross the B1122 (Abbey Road) by means of a level crossing. The section of the green rail route within the main development site would be approximately 2.7km long.

11.2.6 Construction work for the green rail route is envisaged to take circa 18 months and is expected to be operational within the first two years of the Sizewell C Project construction programme as shown in the Indicative Phasing Schedule in the **Implementation Plan**, which is **Appendix I** of the **Planning Statement** (Doc Ref. 8.4). SZC Co. would be required to use reasonable endeavours to deliver the **Implementation Plan** via a Section 106 Agreement (see draft **Section 106 Heads of Terms** provided as **Appendix J** of the **Planning Statement** (Doc Ref. 8.4)).

11.2.7 Once the green rail route is operational, three trains (six movements) per day will travel along the Saxmundham to Leiston branch line before turning onto the proposed rail extension route and passing along the green rail route to the new terminal within the main development site.

11.2.8 It is anticipated that the green rail route would be privately owned and operated by SZC Co., with its construction, operation and maintenance being SZC Co.'s responsibility.

11.2.9 The proposed rail extension route is intended to operate for the duration of the construction programme, after which it will be removed and land reinstated to agricultural use and the temporary level crossings reinstated to highway.

b) Saxmundham to Leiston branch line upgrades

11.2.10 Prior to the operation of the green rail route, it is proposed to run two trains (four movements) per day along the East Suffolk line and Saxmundham to Leiston branch line to the Land East of Eastlands Industrial Estate (LEEIE). This would mean trains passing through Leiston on the Saxmundham to Leiston branch line.

11.2.11 Following a review of the condition of the track on the Saxmundham to Leiston branch line undertaken by Network Rail, a need to upgrade the track has been identified in order to accommodate the number of freight train movements. The proposed rail improvement works on the Saxmundham to Leiston branch line comprise:

- track replacement on the Saxmundham to Leiston branch line; and
- upgrade works to up to eight level crossings on the Saxmundham to Leiston branch line.

11.2.12 All of the proposed rail improvement works on the Saxmundham to Leiston branch line would be retained following completion of the construction of Sizewell C main development site. As such, there would be no removal and reinstatement phase concerning these works.

11.2.13 In addition to the Saxmundham to Leiston branch line upgrades, it is proposed to provide a rail extension into the LEEIE which would comprise a single railway track with sidings and a passing loop for the locomotive. There would be no night-time deliveries through Leiston into the LEEIE by rail as freight trains would be held on the Saxmundham to Leiston branch line overnight.

11.2.14 The LEEIE sidings would be used during the early years of construction to unload construction materials from trains. This would then be transported via Lover's Lane to the Sizewell C main development site.

11.2.15 This strategy would maximise use of the existing infrastructure to enable rail freight to be used to transport material as early as practically possible in the construction programme.

11.2.16 The Saxmundham to Leiston branch line is expected to be operational within the first 12 months of the Sizewell C Project construction programme as shown in the Indicative Phasing Schedule in the **Implementation Plan**, included as **Appendix I** of the **Planning Statement** (Doc Ref 8.4). SZC Co. would be required to use reasonable endeavours to deliver the **Implementation Plan** via a Section 106 Agreement (see draft **Section 106 Heads of Terms** provided as **Appendix J** of the **Planning Statement** (Doc Ref. 8.4)).

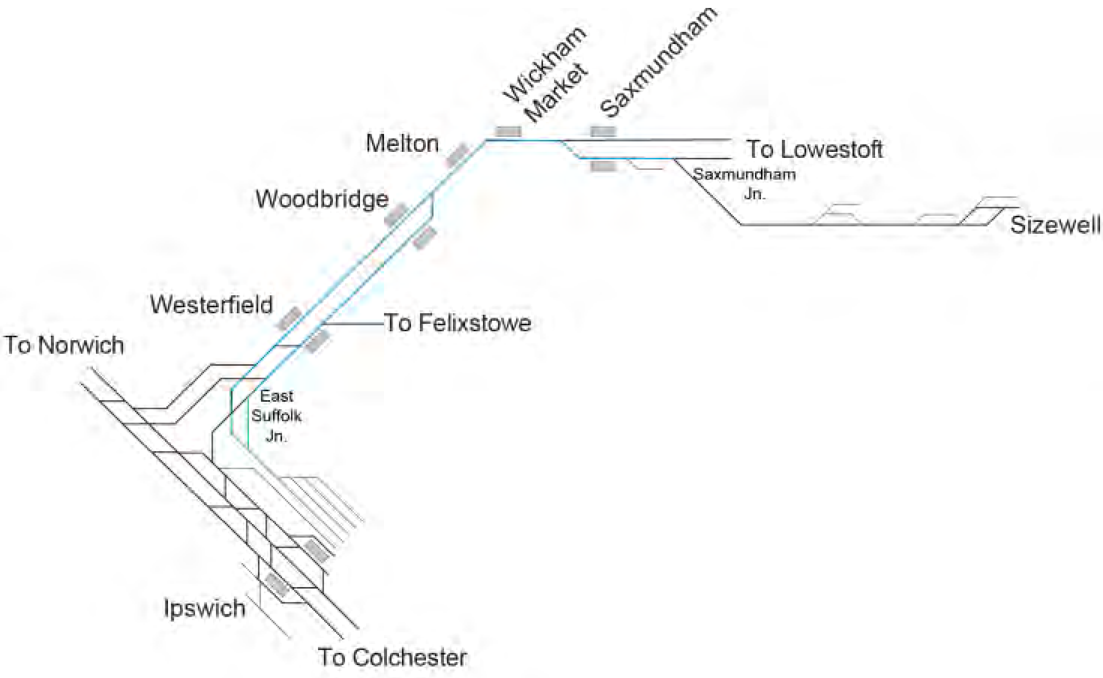
11.3 Proposed rail operations

a) Early years rail operation

11.3.1 The early years rail operation would consist of two return freight trains per day operating once the Saxmundham to Leiston branch line had been upgraded and sidings had been constructed in the LEEIE.

11.3.2 As shown in **Plate 11.1** a single-track section of the East Suffolk line between Woodbridge and Saxmundham constrains the capacity on the line. To avoid this constraint, the train paths identified would operate overnight. Construction trains would operate after the last passenger train in the evening and before the first passenger train the following morning.

Plate 11.1: Schematic map of the East Suffolk Line between Ipswich and Sizewell via Saxmundham



11.3.3 As trains would run on consecutive days, there would usually already be two trains from the previous day at the Sizewell end of the branch line. With this in mind the indicative method of operation would be as follows:

- after being unloaded during the daytime, two empty construction trains would travel from the sidings at LEEIE to a waiting position at the Saxmundham end of the branch line;
- the Sizewell C freight trains would be flighted one after another onto the East Suffolk line after the last passenger train of the day;
- overnight two inbound (full) Sizewell C trains would enter the East Suffolk line from the direction of Ipswich travelling north;
- the two inbound trains would enter the Saxmundham to Leiston branch line and would be held on the line until the morning; and
- in the morning, the inbound trains would then travel to the sidings at LEEIE to be unloaded during the daytime. Trains would not travel through Leiston overnight.

11.3.4 At the waiting positions the driver would remain on board the train so no trackside facilities are provided.

11.3.5 This method of operation would be used while the green rail route was being constructed. Further information on construction is detailed in **Volume 9, Chapter 2** of the **ES**.

11.3.6 During the early years of construction of the Sizewell C Project there would be two trains in and two trains out (four movements) at night on the East Suffolk Line between 23:00 to 06:00. Freight trains would be held on the branch line, off of the East Suffolk line, between 06:00 to 07:00 due to the passenger service commencing on the main East Suffolk line. An indicative timetable for the early years rail operation is shown in **Table 11.1**.

Table 11.1: Indicative timetable for early years rail operation

Location	Train 1 outbound.	Train 2 outbound.
LEEIE	20:00	21:00
Waiting postion A (on Saxmundham to Leiston branch line).		Arrive 21:18 Depart 23:48
Waiting positon B (on Saxmundham to Leiston branch line).	Arrive 20:30 Depart 23:04	
Saxmundham Junction.	23:13	00:08
Westerfield Junction.	00:15	01:10
Location	**Train 1 inbound.**	**Train 2 inbound.**
Westerfield Junction.	04:01	04:47
Saxmundham Junction.	05:05	05:50
Waiting postion B (on Saxmundham to Leiston branch line).		Arrive 05:58 Depart 09:58
Waiting position A (on Saxmundham to Leiston branch line).	Arrive 05:27 Depart 08:59	
LEEIE	09:21	10:28

b) Full rail operation

11.3.7 Following the construction of the green rail route there would be the capability for up to three return freight trains per day (six movements) delivering construction material to the Sizewell C main development site.

11.3.8 The capacity constraint of the single line between Woodbridge and Saxmundham would remain and most freight trains would continue to travel on the East Suffolk line and Saxmundham to Leiston branch line overnight. Trains would leave the existing branch line and join the green rail route at a junction located approximately 490m east of Saxmundham Road level crossing.

11.3.9 As trains would no longer pass through Leiston, there would not be a need to hold trains overnight on the Saxmundham to Leiston branch line while they wait to enter the East Suffolk line. This would allow SZC Co. to move trains in and out of the Sizewell C main development site more flexibly. The analysis undertaken has demonstrated that this flexibility could enable the operation of one inbound train during the daytime.

11.3.10 The indicative method of operation would be as follows:

- Empty freight trains would leave the Sizewell C main development site in the evening. The first one to leave the site would be timed to join the East Suffolk line after the last passenger train of the evening.
- The second and then third empty freight trains would leave the main development site in line with their planned departure times.
- Overnight two inbound (full) construction trains would enter the East Suffolk line from the direction of Ipswich travelling north.
- At Saxmundham Junction the two inbound trains would be routed onto the Saxmundham to Leiston branch line and then on to the green rail route. They would arrive sequentially at the Sizewell C main development site where unloading would take place the following morning.
- The third inbound train would operate in an existing gap in the passenger timetable between 08:00 and 09:00. As described in **Volume 2**, **Chapter 10** of the **ES** this is outside the peak time for traffic movements between 07:00 and 08:00.
- Upon arrival at the Sizewell C main development site, the third train would also be unloaded during the day.

11.3.11 Due to the constraints of the single line sections on the East Suffolk line, any delays to the passenger services could cause the cancellation of the daytime freight train. There would be flexibility in the timetable to operate a replacement service overnight if the daytime freight train was cancelled.

11.3.12 An indicative timetable for the full rail operation is shown in **Table 11.2**.

Table 11.2: Indicative timetable for full rail operation

Location	Train 1 outbound.	Train 2 outbound.	Train 3 outbound.
Sizewell C Main Development Site.	21:15	22:20	23:10
Saxmundham Junction.	22:00	23:05	23:55
Westerfield Junction.	23:55	00:37	01:20
Location	**Train 1 inbound.**	**Train 2 inbound.**	**Train 3 inbound.**
Westerfield Junction.	03:50	04:47	08:07
Saxmundham Junction.	04:54	05:51	09:18
Sizewell C Main Development Site.	05:42	06:38	10:07

11.3.13 In the indicative timetable in **Table 11.2,** train 1 inbound is shown operating earlier than in **Table 11.1** as the Sizewell C main development site would be further away than the LEEIE, so the trains must be spaced further apart.

11.3.14 The environmental assessment for both the early years and full rail operation is documented in **Volume 9** of the **ES**.

11.4 Level crossings

a) Existing level crossings on the Saxmundham to Leiston branch line

11.4.1 Upgrades would be undertaken to up to eight level crossings on the Saxmundham to Leiston branch line in order to mitigate the level crossing risk relating to an increased number of trains using the Saxmundham to Leiston branch line.

11.4.2 In addition to reducing risk at public road level crossings, the upgrades would enable the barriers to be closed to vehicles for a shorter amount of time. The current barriers take approximately five minutes to operate. New automatic barriers would take approximately one minute to operate.

b) New level crossings on the green rail route

11.4.3 As part of the green rail route, two new level crossings would be constructed at Buckleswood Road and B1122/Abbey Road.

11.4.4 These level crossings would be of a modern, automatic type and would be closed to traffic for approximately one minute for each train. Once operational this would cause six minutes of barrier down time in every 24-hour period. As detailed in **Volume 2**, **Chapter 10** of the **ES** a change of this magnitude would be unlikely to be noticeable.

11.5 Post construction

11.5.1 Once the construction phase of Sizewell C is complete there will no longer be a requirement for trains to access the main development site. The green rail route and sidings at LEEIE would be reinstated to their original use.

12. Walking and Cycling

12.1 Introduction

12.1.1 This chapter summarises the walking and cycling strategy for the Sizewell C Project.

12.1.2 The purpose of this chapter is to identify the infrastructure improvements that will be made to the walking and cycling environment by the Sizewell C Project. Proposed improvements to the local walking and cycling network will assist sustainable travel by workers living within Leiston and other villages immediately surrounding the Sizewell C main development and associated development sites.

12.1.3 The Overarching National Policy Statement for Energy (NPS EN-1) (Ref 12.1) paragraph 5.13.4 states that:

> *"Where appropriate, the applicant should prepare a travel plan including demand management measures to mitigate transport impacts. The applicant should also provide details of proposed measures to improve access by public transport, walking and cycling, to reduce the need for parking associated with the proposal and to mitigate transport impacts."*

12.1.4 **Chapter 13** of this volume discusses the **CWTP** (Doc Ref. 8.8). This sets out a range of other measures to encourage the use of sustainable travel by the workers and visitors of the Sizewell C main development and associated development sites. The implementation of the Construction Worker Travel Plan would be secured through an obligation in a Section 106 Agreement (see draft **Section 106 Heads of Terms** provided as **Appendix J** to the **Planning Statement** (Doc Ref. 8.4)).

12.1.5 The existing conditions in respect of walking and cycling, around the main development site and associated development sites are described in **Chapter 2** of this volume.

12.2 Walking and cycling

12.2.1 In order to provide a robust assessment of the residual highway impacts of the Sizewell C Project it has been assumed that no construction workers would travel to the Sizewell C main development site or associated development sites on foot or bicycle. However, in practice it is expected that some workers living within walk and cycling distance of the Sizewell C main development and associated development sites would choose to walk or cycle to the sites.

12.2.2 It is generally recognised that walking and cycling have the potential to replace shorter car trips of under 2 kilometres (km) in distance for walking and trips of under 8km in distance for cycling. Given this, there is potential for some journeys to the Sizewell C main development site and associated development sites to be undertaken on foot or by bicycle.

12.2.3 When considering walking and cycling as viable modes of transport for the Sizewell C Project it is important to consider the relatively remote location of the Sizewell C main development and associated development sites, the hours during which workers are most likely to travel and the types of activities that construction workers would be undertaking.

12.2.4 For this reason, the walking and cycling strategy for the Sizewell C Project focuses on the following:

- walking and cycling to / from the Sizewell C main development site by construction workers living in Leiston;
- walking and cycling between the Sizewell C main development site and Land East of Eastlands Industrial Estate (LEEIE);
- walking and cycling between the Sizewell C main development site and proposed sports pitches in Leiston;
- walking and cycling to / from the northern and southern park and ride facilities in Darsham and Wickham Market, respectively; and
- non-work trips between the accommodation campus, caravan site and Leiston town centre.

12.2.5 The walking and cycling strategy also considers background levels of walking and cycling in the local area by residents, visitors, and workers (e.g. via the extensive (Public Rights of Way (PRoW) network)) and the impact that the proposed development may have on these trips.

12.3 Aim and objectives

a) Aim

12.3.1 The overarching aim of the walking and cycling strategy is:

- to improve the pedestrian and cycle accessibility of the Sizewell C main development and associated development sites and encourage residents, visitors and workers to walk and cycle in the local area.

b) Objectives

12.3.2 The walking and cycling strategy has three objectives, these are:

- to maximise the safe, efficient, and sustainable movement of people by walking and cycling as far as reasonably practical;
- to minimise the impacts of the construction of the Sizewell C Project on the local highway network so far as reasonably practical; and
- to provide long-term sustainable legacy benefits for the local community through the provision of new walking and cycling infrastructure.

12.4 Walking and cycling improvements

12.4.1 A number of walking and cycling improvements are proposed to mitigate the effects of the Sizewell C Project. Further, these improvements should also help to encourage construction workers living in the area to travel on foot and by bicycle.

12.4.2 These improvements would be delivered through a series of highway improvement schemes as well as a number of stand-alone walking and cycling schemes. The walking and cycling improvements associated with the Sizewell C main development and associated development sites are discussed below.

a) Sizewell C main development site

i. Sizewell C site access roundabout

12.4.3 Pedestrian and cycle access to the Sizewell C main development site would be via a new roundabout on the B1122. The proposed design includes a signalised toucan (to assist pedestrians and cyclists) and pegasus crossings (to assist equestrian users) on the B1122 north and Eastbridge Road arms.

12.4.4 A shared footway / cycleway would run along the north side of the primary access road extending into the Sizewell C main development site. This would connect with a new footway / cycleway and bridleway on Eastbridge Road and would be the principle pedestrian and cycle route to / from the Sizewell C main development site.

12.4.5 For pedestrians, cyclists and equestrians wishing to travel north towards Eastbridge and Westleton Walks, an off-road footway/cycleway and bridleway to the north of the roundabout would connect into the realigned Eastbridge Road where it would run along the east side of Eastbridge as far as the northern end of Bridleway 19 (E-363/019/0).

12.4.6 For pedestrians, cyclists, and equestrian users travelling south, the main development site entrance would connect with a new off-road cycle route. This would be delivered during the early stages of the Sizewell C construction and is described below.

ii. Public Rights of Way diversions

12.4.7 During the construction period, the Sizewell C main development site would have an impact on various PRoW, including temporary and permanent diversions and closures. The proposed changes to the PRoW within the vicinity of the main development site are shown in the **Access and Rights of Way Plans** (Doc Ref 2.4) and are secured by the **Draft Development Consent Order** (**DCO**) (Doc Ref. 3.1).

Coast path (Footpath E-363/021/0)

12.4.8 The coast path (Footpath E-363/021/0) and publicly accessible wider coastline would be subject to disturbance and change as a result of the construction of new sea defences and cross shore infrastructure. During the early construction phase, the existing coastal path would be realigned eastwards to accommodate the construction of the sea defence works. Following the completion of the sea defence works the path would be moved west on the coast, to extend parallel to a temporary screening bund and within a wider recreational corridor. The Suffolk Coast Path Sandlings Walk and England Coast Path would be diverted along this route.

12.4.9 Public access along the coastline will need to be temporarily closed during construction of the sea defences and beach landing facility. During these periods there would be an inland diversion path in place for the Suffolk Coast Path, Sandlings Walk and England Coast Path and Goose Hill Permissive right of way.

12.4.10 The inland diversion will be from Sizewell village to the south and Minsmere Sluice to the north. The diversion would be via the existing PRoW network (Sandy Lane / Bridleway 19 (E-363/019/0) and Footpath E-363/020/0) and a new north-south (off-road) bridleway, cycleway, and footway between the accommodation campus and Sizewell Gap.

12.4.11 Following completion of construction, the coast path comprising PRoW E-363/021/0, the Suffolk Coast Path, Sandlings Walk, and England Coast Path would be reinstated on a slightly realigned route fronting Sizewell C and east of the new sea defences once constructed.

Bridleway 19 (E-363/019/0)

12.4.12 Bridleway 19 extends through the main development site. The majority of this bridleway will be closed during the construction phase. During this time, the northern part of the route would be diverted along the proposed new north-south (off-road) bridleway, cycleway, and footway parallel to Lover's Lane, B1122 and Eastbridge Road.

12.4.13 The southern end of Bridleway 19 would remain open to the public during the construction phase, enabling access to the Kenton Hills car park and extensive permissive footpath routes within Kenton Hills. A short, normally gated, permissive footpath that connects Bridleway 19 to Kenton Hills would be closed during construction, but reopened once construction is complete. A new formalised link between Kenton Hills car park will be provided. This would improve connectivity to the existing PRoW and permissive footpath network.

Bridleway E-363/013/0

12.4.14 Bridleway E-363/013/0 which currently runs on road along Lover's Lane would be diverted along the new north-south (off-road) bridleway, cycleway, and footway. Further information on the new north-south route is provided below.

Sandlings Walk

12.4.15 Sandlings Walk is a long-distance footpath route that extends through the main development site, along definitive rights of way and permissive footpaths. The route extends along the coast and through Kenton Hills to connect to Bridleway 19. A portion of Sandlings Walk that extends along a permissive footpath from the coast to Kenton Hills would be closed during the construction phase along with an additional permissive footpath loop at Goose Hill. Sandlings Walk would be diverted along the existing Footpath E-363/020/0 to the north that connects Minsmere Sluice to Eastbridge.

Suffolk Coastal cycling route / Sustrans regional cycling route

12.4.16 The Suffolk Coastal Cycling Route or Sustrans Regional Cycling Route will be diverted along the new north-south (off-road) bridleway, cycleway, and footway. This will enhance the quality of this route by removing the on-road section along the B1122 between Eastridge Road and Leiston Abbey. Further information on the new north-south route is provided below.

Public Rights of Way improvements

12.4.17 SZC Co. will improve existing rights of way and routes that are to receive diverted pedestrians, such as improvements to surfaces, gates, stiles, and signage. The **Rights of Way and Access Strategy** in **Appendix 15I** of **Chapter 15, Volume 2** of the **Environmental Statement** (**ES**) (Doc Ref. 6.3) sets out the strategy for PRoW, permissive paths, long distance walking routes, cycle routes, open access land, and the beach during the construction and operational phases for the main development site and the green rail route. This strategy is expected to inform the relevant Footpath Implementation Plan, which will be prepared by SZC Co. and submitted to the highway authority for agreement pursuant to the **Draft DCO** (Doc Ref. 3.1).

iii. New north-south (off-road) bridleway, cycleway, and footway

12.4.18 A new north-south off-road bridleway, cycleway, and footway would be provided between Sizewell Gap in the south and Eastbridge Road, at the junction with the northern end of Bridleway E-363/019/0, in the north, connecting with the Suffolk Coastal Cycling Route. The route would create a new off-road walking, riding and cycling route between Leiston, LEEIE, the Sizewell C main development site access and Eastbridge.

12.4.19 The new route would be designated as a combined bridleway, cycleway, and footpath and, as discussed above, enable the diversion of the Suffolk Coast Path, Sandlings Walk, and the England Coast Path and include diversion of bridleways E-363/019/0 (Bridleway 19) and Bridleway E-363/013/0, and the Suffolk Coastal Cycling Route / Sustrans Regional Cycle Route during the construction phase of development. The new off-road route would enable workers living in Eastbridge and Leiston to access safely the Sizewell C main development site on foot or by bicycle. It would also enable workers living in the accommodation campus to access Leiston town centre on foot or by bicycle. Due to the ecological, landscaping, and visual impacts it is not possible to provide lighting along the new route. As such, this may be a less attractive route option for workers commuting in the early morning or late evening.

12.4.20 The route would start from a point east of the junction of Sizewell Gap and King George's Avenue. The new pedestrian, cycle, and equestrian route would run northwards along the eastern side of Lover's Lane, separated from the carriageway.

12.4.21 North of the junction with Valley Road, the route continues along the west side of Lover's Lane. Pegasus crossing facilities would be provided to the north of Sandy Lane to allow equestrians, pedestrians, and cyclists to cross the road in safety. A separate pedestrian, cycling and equestrian route will be provided along the west side of Lover's Lane between Valley Lane and the new Pegasus crossing. This will provide access to the main urban area of Leiston and caravan accommodation at LEEIE to the south of Valley Lane.

12.4.22 The route continues in a north west direction following Lover's Lane and existing field boundaries. The route connects with the B1122 to the south of the realigned B1122 Abbey Lane / Lover's Lane priority junction. The route then continues northwards along the west side of the B1122. Pegasus crossing facilities would be provided at this junction to allow equestrians, pedestrians and cyclists to cross the road in safety.

12.4.23 The level crossing on the B1122 for the green rail route would require the existing alignment of Lover's Lane to be slightly modified to provide the necessary waiting areas either side of the railway for pedestrians, cyclists, and equestrians. During the construction of the level crossing, pedestrians, cyclists, and equestrians would be diverted via a new temporary route to the west.

12.4.24 Uncontrolled bridleway crossings would be provided at the junction of the B1122 / Abbey Lane and B1122 / unnamed road leading to Leiston Abbey.

12.4.25 The route then connects with the signalised toucan and pegasus crossings at the Sizewell C main site access roundabout.

12.4.26 The new route would be retained following the completion of construction of the development and extended to the junction with the northern end of Bridleway 19.

iv. Signage and surface improvements

12.4.27 During the operational phase of the Sizewell C Project many of the temporary PRoW diversions would be removed and the PRoW would revert back to their original alignments. As set out in the **Rights of Way and Access Strategy**, provided as **Appendix 15I** to **Volume 2, Chapter 15** of the **ES** (Doc Ref. 6.3), SZC Co. would apply and maintain a best practice approach to on-site signage in accordance with a footpath implementation plan. The footpath implementation plan would be agreed with SCC and ESC pursuant to the **Draft DCO** (Doc Ref. 3.1).

12.4.28 In addition, SZC Co. would provide a PRoW Fund to support improvements to the existing public rights of way network, such as surfacing, gates and signage. This PRoW Fund will be secured through the Section 106 Agreement, as set out in the draft **Section 106 Heads of Terms** provided as **Appendix J** to the **Planning Statement** (Doc Ref. 8.4).

v. Preferred cycling routes

12.4.29 It is generally accepted that cycling has the potential to replace shorter car trips of under 8km in distance. As such there is the potential for workers living within settlements immediately surrounding the Sizewell C main development site to cycle.

12.4.30 Based on the results of the 2015 cycling audit, summarised in **Chapter 2** of this volume, and proposed cycle route improvements outlined above, a number of preferred cycle routes from nearby settlements to the main development site have been identified.

12.4.31 The preferred cycling routes from towns and villages surrounding the Sizewell C main development site are described below and shown in **Figure 12.1**.

- Leiston: The most direct route from Leiston town centre to the Sizewell C main development site access is via the B1122 Abbey Road / Suffolk Coastal Cycling Route. Heavy good vehicle traffic would approach the Sizewell C main development site from the B1122 to the north to avoid Leiston town centre. As such on-road cycling is considered appropriate. Cyclists travelling from Leiston will also be able to utilise the new off-road north-south bridleway connection between the junction of the B1122 and Lover's Lane and the main development site access.

- Snape: It is recommended that cyclists use an off-road cycle route between Priory Street, north east Snape, and the A1094 / B1069 priory junction (restricted byway E-470/015/A) and the B1069 towards Lesiton via Coldfair Green. From Leiston, cyclists can utilise the new north-south bridleway connection between the junction of the B1122 and Lover's Lane and the main development site access. An alternative route from Snape exists via Friston and Knodishall (Suffolk Coastal Cycling Route), which not only minimises interaction with the A1094 and B1069, but also bypasses the centre of Leiston, allowing cyclists to approach the Sizewell C main development site via the B1122 Abbey Road / new off-road north-south bridleway connection. This route does however require cyclists to travel for a short section along the A1094. Furthermore, during construction of the proposed Scottish Power East Anglia 1 North and East Anglia 2 (EA1(N) and EA2) scheme, Grove Road north of Friston is expected to be closed. During this time period cyclists could travel north towards Leiston via the B1069, but route north west at Coldfair Green via School Lane, to rejoin the Suffolk Coastal Cycling Route at Knodishall.

- Saxmundham: It is recommended that cyclists travel east from Kelsale along Lowes Hill. Lowes Hill is recommended over an alternative route via Clayhill Road as it is more likely that construction workers travelling by private car from Saxmundham to the Sizewell C main development site would use Clayhill Road. Cyclists would then join Abbey Lane / Suffolk Coastal Cycling Route. Approximately 200m west of the B1122 there is an off-road route via Leiston Abbey. At the connection with the B1122 cyclists would join the new off-road north-south cycle route towards the Sizewell C main development site. Abbey Lane is a single track road, and whilst this is likely to be lightly trafficked and suitable for on-road cycling, cars may end up passing close to cyclists. Should cyclists wish to avoid Abbey Lane, an alternative route exists via Buckleswood Road and the centre of Leiston. Here cyclists can join the new off-road north south cycle route towards the Sizewell C main development site.

- Aldeburgh and Thorpeness: It is recommended that cyclists travelling from Thorpeness and Aldeburgh use Thorpe Road and an off-road track just inland from the coast (SSCR Route 4) (byways E-106/020/0 and E-106/025/0). This route connects with a shared foot and cycleway along Sizewell Gap. Crossing to the other side of Sizewell Gap, a further stretch of off-road track via Broom Covert leads to Lover's Lane (bridleway E363/019/0). From here cyclists can use the new off-road north-south cycle route that runs parallel to Lover's Lane and B1122 Abbey Road. This route allows cyclists approaching from the south to avoid the B1122 between Aldeburgh and Leiston, as well as Sizewell Gap which carries existing traffic associated with Sizewell B. It is recognised however that the proposed route between Thorpeness and Sizewell Gap is sandy and may not be passable on bicycle all year round. In this instance cyclists would need to use an alternative off-road route between Thorpeness and Leiston (such as the former railway trackbed from Sizewell to Aldeburgh), or route via the B1353 and B1122 Aldeburgh Road.
- Westleton and Dunwich: It is recommended that cyclists travelling from Westleton and Dunwich use the Suffolk Coastal Cycling Route. The route includes an unsurfaced track through Minsmere Nature Reserve. The tarmacked alternative to the east is not a PRoW, and the next road to the west (through Middleton) requires cyclists to use the B1122 through Theberton. Cyclists travelling to / from Westleton would divert from the Suffolk Coastal Cycling Route at the junction with Mill Road and follow the SSCR Route 3. Cyclists travelling to Westleton could also use the route via an unsurfaced highway between Mill Lane and Eastbridge although this road often has large puddles, ruts, and muddy areas depending on the season and as such may not be suitable all year round.
- Yoxford and Darsham: It is recommended that cyclists travelling from Yoxford and Darsham use lightly trafficked roads via Westleton, before proceeding along Mill Road to join the Suffolk Coastal Cycling Route.

b) Associated Development Sites

i. Accommodation campus

12.4.32 Pedestrian and cycle access to the accommodation campus would be via the main development site access roundabout on the B1122. A shared foot and cycleway would run along the north side of the internal access road running into the Sizewell C main development site. This would connect with the new north-south pedestrian, cycle, and equestrian route between Eastbridge and Sizewell Gap.

12.4.33 Leiston is the closest town to the Sizewell C main development site and likely to be one of the main leisure and recreation trip attractors for workers staying at the accommodation campus. The new north-south pedestrian, cycle, and equestrian route would provide a safe off-road route for workers travelling between Leiston and the accommodation campus. This would help encourage construction workers to travel between the accommodation campus and Leiston by active modes of travel.

ii. Sports pitches

12.4.34 Pedestrian and cycle access to the new off-site sports pitches from the south and west is via the B1122 Aldeburgh Road and Red House Lane. There is an existing footway along the north side of Red House Lane which provides pedestrian access to the wider urban area of Leiston. From the north and east, the sports pitches can be accessed from King George's Avenue and Sizewell Gap via Bridleways E-363/028/0 and E-363/027/0 which connect with Red House Lane.

iii. Caravan accommodation

12.4.35 Pedestrian and cycle access to the caravan pitches would be via a new priority junction on Valley Road, immediately to the west of Lover's Lane. To the north of Valley Road, a new off-road cycleway route link would be provided along the west side of Lover's Lane. This would connect the entrance to the caravan accommodation with the new north-south pedestrian, cycle, and equestrian route. This would enable workers at the caravan accommodation to travel to the Sizewell C main development site on foot and by bicycle. It would also enable users of the new north-south route to access Leiston town centre via Valley Road.

12.4.36 To the south of Valley Road, a new pedestrian footway would be provided along the west side of Lover's Lane between Valley Road and the vehicular access to LEEIE. This would enable workers at the caravan accommodation to safely access the park and ride facilities at the LEEIE.

iv. Green rail route

12.4.37 The green rail route crosses five PRoW. These PRoW would be diverted for the construction and operation of the rail route.

12.4.38 During the operation of the green rail route, Footpath E-363/003/0 would be diverted via a new level crossing on Buckleswood Road. During construction of the level crossing the Footpath E-363/003/0 would be diverted via a new temporary highway to the south west.

12.4.39 Footpath E-363/006/0 and E-363/010/0 would be diverted eastwards onto the new north-south pedestrian, cycle, and equestrian route on the B1122 Abbey Road. These users would then cross the proposed rail route via a new level crossing on Abbey Road which would accommodate pedestrians, cyclists and equestrians as well as motor vehicles. This would allow all users to cross the railway line safely. Users would then continue north along the new north-south pedestrian, cycle and equestrian route before heading west via a new temporary footpath along the south side of Abbey Lane. Users would then be able to re-join the existing alignment of Footpaths E-363/006/0 and E-363/010/0. During the construction of the level crossing users of Footpaths E-363/006/0 and E-363/010/0 would be temporarily diverted via a new pedestrian, cycle, and equestrian route to the west of the level crossing.

12.4.40 Bridleway E-363/013/0 will be diverted along a new off-road shared pedestrian, cycle and equestrian route along Lover's Lane and B1122 Abbey Road. These users would then cross the proposed rail route via a new level crossing on Abbey Road which would accommodate pedestrians, cyclists, and equestrians as well as motor vehicles. During the construction of the level crossing users would be temporarily diverted via a new pedestrian, cycle, and equestrian route to the west of the level crossing. During the construction of the level crossing users of Bridleway E-363/013/0 would be temporarily diverted via a new pedestrian, cycle, and equestrian route to the west of the level crossing.

12.4.41 The northern part of Bridleway 19 (E-363/019/0), which crosses the green rail route, will be stopped up and users diverted via a new north-south shared pedestrian, cycle, and equestrian route along Lover's Lane and B1122 Abbey Road (as described above).

12.4.42 Following the construction of Sizewell C, the green rail route and PRoW diversions would be removed and the footpaths returned to their original state. The exception is the new footpath link between Footpath E-363/006/0, Footpath E-363/010/0 and B1122 Abbey Lane which would be retained and represents a permanent improvement to the PRoW network.

12.4.43 The proposed changes to the PRoW within the vicinity of the green rail route are shown in the **Access and Rights of Way Plans** (Doc Ref. 2.4).

v. Sizewell link road

12.4.44 The Sizewell link road runs in an east-west direction. It connects the A12 at a new roundabout, north of Town Farm Lane between Saxmundham and Yoxford with the B1122 south of Onners Lane, Theberton.

12.4.45 The existing alignment of the A12 to the west of the new roundabout would be stopped up and permanently converted to a footpath, retaining pedestrian connectivity along the west side of the A12.

12.4.46 No pedestrian or cycling infrastructure is proposed along the Sizewell link road. However, where the route crosses existing PRoW, new walking and cycling infrastructure is proposed to maintain pedestrian, cycle, and equestrian connectivity during construction and operation of the Sizewell link road. Details of the proposed walking and cycling infrastructure improvements at these locations is summarised below.

12.4.47 The Sizewell link road crosses PRoW at eleven locations. Named from west to east these are: E-344/014/0, E-344/013/0, E-584/016/0 and E396/017/0, E-396/023/0, E-396/020/0, E-396/015/0 and E-515/005/0, E-515/003/0, E-515/004/0, E-515/007/0, and E-515/013/0.

12.4.48 Footpath E-344/014/0 will be stopped up and diverted to the east of the existing alignment, crossing Sizewell link road at a new at-grade crossing. The diversion would commence immediately to the north and south of the Sizewell link road, minimising the diversion distance for pedestrians.

12.4.49 Footpath E-344/013/0 will be stopped up and diverted to west of the footpath's existing alignment, crossing Sizewell link road at a new at-grade crossing. The diversion would commence immediately to the north and south of the Sizewell link road, minimising the diversion distance for pedestrians.

12.4.50 E-584/016/0 would be stopped up and a diversion route provided. To the south of the Sizewell link road the diversion route will run perpendicular to the current PRoW and cross the Sizewell link road at a new at-grade crossing. The route will then run parallel along the northern side of the carriageway until it re-joins the original PRoW route.

12.4.51 Footpath E396/017/0 would be stopped up and diverted via an at-grade crossing west of the current PRoW, maintaining connectivity of the route. This diversionary route would also be used by pedestrians travelling along Fordley Road.

12.4.52 Footpath E-396/023/0 would be stopped up and diverted via a new at-grade pedestrian crossing between a new right-left staggered priority junction, to the south of the footpaths existing alignment. During construction of this junction a temporary footpath diversion would be provided to the north.

12.4.53 Footpath E-396/020/0 would be stopped up and diverted via an at-grade crossing east of the current PRoW. The diversion would re-join the original PRoW route and continue northeast.

12.4.54 Footpaths E-396/015/0 would be stopped up and diverted south along a new route to the west of Sizewell link road, connecting with Pretty Road. Users will cross the Sizewell link road via a new non-motorised user (NMU) bridge along the existing alignment of Pretty Road. This connects with the existing alignment of Footpath E-515/005/0. A new footpath link between E-515/005/0 and E-396/015/0 will also be provided to the east of Sizewell link road to retain pedestrian connectivity to footpath E-515/005/0. During construction of the Sizewell link road and Pretty Road NMU bridge, Footpath E-396/015/0 and E-396/015/0 will be temporarily diverted via a new route, south of the footpath's existing alignment, north of Pretty Road.

12.4.55 Footpath E-515/003/0 would be stopped up and diverted along a new footpath along the west side of Sizewell link road. This will connect with Pretty Road where users will cross Sizewell link road via a new NMU bridge. This will connect with the existing alignment of Footpath E-515/003/0. During construction of the NMU bridge the footpath will be temporarily diverted via a new route to the south of the existing alignment of Footpath E-515/003/0. This would connect with a new permanent footpath link on the east side of Sizewell link road connecting Footpath E-515/003/0 and E-515/004/0.

12.4.56 Footpath E-515/004/0 would be stopped up and diverted along a new footpath and an at-grade pedestrian crossing south east of the existing PRoW route.

12.4.57 Footpath-515/007/0 would be stopped-up and diverted via Moat Road to the east and new footpath along the north side of a new highway link between the B1122 Leiston Road and Sizewell link road. The footpath crosses the Sizewell link road at a new at-grade pedestrian crossing to the north of a new priority junction. The footpath then continues northwards along the west side of the Sizewell link road, connecting with Moat Road. During construction the footpath will be temporarily diverted via a new route to the north of Moat Road.

12.4.58 Footpath E-515/013/0 would be stopped up and diverted via a new at-grade crossing to the south of the footpath's existing alignment.

12.4.59 In addition to the proposed PRoW diversions, walking and cycling enhancements are proposed along the Sizewell link road at two key locations: Littlemoor Road and Fordley Road.

12.4.60 A new footpath will be provided to the east of the location where Littlemoor Road crosses the Sizewell link road. The footpath will run east from Littlemoor Road along the south side of the Sizewell link road, crossing at a new at-grade crossing. The footpath will then continue along the new alignment of Littlemoor Road, connecting with the existing route.

12.4.61 A new footpath will be provided to the east of the location where Fordley Road crosses the Sizewell link road. The footpath will run east from Fordley Road along the north and south side of the Sizewell link road connecting with the existing alignment of Footpath E-396/017/0

12.4.62 Following construction of the Sizewell link road the proposed changes to walking and cycling network would be permanently retained.

12.4.63 The proposed changes to the PRoW within the vicinity of the Sizewell link road are shown in the **Access and Rights of Way Plans** (Doc Ref. 2.4).

vi. Other rail works and changes to level crossings

Rail sidings or rail spur

12.4.64 SZC Co. are proposing a new rail spur within the LEEIE on the existing Saxmundham to Leiston branch line.

12.4.65 Pedestrian and cycle access to the LEEIE would be via two new priority junctions on Lover's Lane and King George's Avenue. A new footway would be provided along the west side of Lover's Lane. This would connect with the existing footway along King George's Avenue and new north-south shared pedestrian, cycle, and equestrian route between Sizewell Gap and Eastbridge.

12.4.66 The LEEIE also includes a park and ride facility. The proposed access arrangement and new footway provision would enable workers living in Leiston to safety travel to the LEEIE and park and ride facility on foot.

Saxmundham to Leiston branch line

12.4.67 Up to eight level crossings on the Saxmundham to Leiston branch will be upgraded to enable trains to travel along the branch line more efficiently. The four public road crossings will be upgraded to reduce the time the barriers are closed across the road. The proposed upgrades will have no impact on existing pedestrian and cycle routes across the railway line but will reduce the waiting time for pedestrians and cyclists when the barriers are down. During construction temporary closures of the level crossings may be required. In such instances users will be diverted via existing rights of way.

12.4.68 The proposed changes to the PRoW along the Saxmundham to Leiston branch line are shown in the **Access and Rights of Way Plans** (Doc Ref. 2.4).

vii. Two village bypass

12.4.69 The two village bypass runs in a north-south direction. To the south, the two-village bypass connects with the A12 at a new roundabout, east of Tinker Brook. The existing alignment of the A12 to the north of the roundabout will be stopped up to vehicular traffic and permanently converted to a footpath. This will tie up with the existing footways along the west side of the A12.

12.4.70 To the north, the two village bypass connects with the A12 at a new roundabout to the south west of the existing A12 / A1094 priority junction. The existing alignment of the A12 to the north of the roundabout will be stopped up to vehicular traffic and permanently converted to a footpath. This will tie up with the existing footways along the north side of the A12.

12.4.71 The two village bypass would intersect PRoW at four locations. From west to east these are: Footpaths E-243/001/0, E-243/003/0, E-243/004/0 and E-243/006/0. Detail of how pedestrian connectivity would be maintained with the two village bypass is summarised below.

12.4.72 Footpath E-243/001/0 would be permanently realigned to the east of its existing alignment. It would cross the two village bypass at a new informal at-grade crossing facility, maintaining connectivity of the PRoW. Following further assessment, appropriate gates and stiles would be implemented at crossing points in accordance with a footpath implementation plan agreed with SCC and ESC (see **draft Development Consent Order** (Doc Ref. 3.1). During construction of the new at-grade crossing facility the footpath would follow its existing alignment.

12.4.73 Footpath E-243/003/0 and Footpath E-243/004/0 would be permanently stopped up and diverted via footpaths along either side of the new bypass. These would connect to a new NMU bridge located between the two existing PRoW. E-243/003/0 would be diverted north to the bridge and E-243/004/0 would be diverted south to the bridge. During construction of the new NMU bridge the footpaths would follow their existing alignments.

12.4.74 Footpath E-243/006/0 would be permanently realigned to the south of its existing alignment. It would cross the two village bypass at a new informal at-grade crossing facility, maintaining connectivity of the PRoW. Following further assessment, appropriate gates and stiles would be implemented at crossing points in accordance with a footpath implementation plan agreed with SCC and ESC (see **draft Development Consent Order** (Doc Ref. 3.1).

12.4.75 No additional walking or cycling infrastructure is proposed along the route of the two village bypass.

12.4.76 Following construction of Sizewell C, the two village bypass and proposed changes to the walking and cycling network would be permanently retained.

12.4.77 The proposed changes to the PRoW within the vicinity of the two village bypass are shown in the **Access and Rights of Way Plans** (Doc Ref. 2.4).

viii. Northern park and ride facility

12.4.78 Pedestrian access to the northern park and ride facility would be via the existing public footway along the west side of the A12. This would enable construction workers living in Darsham to travel to the park and ride facility on foot via existing footways and PRoW, as well as encourage construction workers to travel to Darsham by rail and then get the bus to the main development site.

12.4.79 Cycle access to the northern park and ride facility would be via Willow Marsh Lane and the main vehicular access. Willow Marsh Lane would be temporarily converted to a footpath and private means of access whist the park and ride is in operation. This will enable cyclists travelling from the south to avoid using the new roundabout on the A12 north of White House Farm.

12.4.80 Footways will be provided on both sides of the A12 at and on approach to the new roundabout, retaining existing north-south pedestrian connectivity along the A12. The existing alignment of the A12 to the east of the new roundabout will be stopped up to vehicular traffic and temporarily converted to a footpath.

12.4.81 Following the construction of Sizewell C, the northern park and ride facility and new roundabout would be removed and the A12 would return to its original alignment.

12.4.82 The proposed changes to the PRoW within the vicinity of the northern park and ride facility are shown in the **Access and Rights of Way Plans** (Doc Ref. 2.4).

ix. Southern park and ride facility

12.4.83 Pedestrian access to the southern park and ride facility would be via Footpath E288/008/0 to the north west of the site and a new footway along the north side of the B1078.

12.4.84 Footpath E-288/008/0 crosses the internal access road within the site. A new safe crossing for the PRoW over the proposed access road would be provided. During the construction of the southern park and ride facility Footpath E-288/008/0 will be temporarily diverted along the B1078 and a new temporary footpath to the west of the site's vehicular access road.

12.4.85 The new footway along the north side of the B1078 would connect with the existing footway network and enable workers living within Wickham Market to travel to the southern park and ride site on foot.

12.4.86 Cycle access to the southern park and ride facility would be via a new priority junction on the B1078.

12.4.87 Following construction of Sizewell C, the southern park and ride facility and new priority junction would be removed. The existing footway along the north side of the B1078 would be restored.

12.4.88 The proposed changes to the PRoW within the vicinity of the southern park and ride are shown in the **Access and Rights of Way Plans** (Doc Ref. 2.4).

x. Freight management facility

12.4.89 The function and remote location of the freight management facility at Seven Hills means that staff and construction workers of the facility are not anticipated to travel to the site by foot or bicycle.

12.4.90 Bridleway E-365/021/0 runs along the eastern boundary of the freight management facility. This bridleway will remain unchanged during the construction and operation of the freight management facility.

12.4.91 There is no other existing walking or cycling infrastructure within the immediate locality of the freight management facility. As such no new provision for pedestrians or cyclists is proposed as a part of this associated development site.

12.4.92 Following construction of Sizewell C the freight management facility would be removed. There would be no changes to the existing walking or cycling infrastructure or PRoW within the immediate locality of the site.

xi. Yoxford roundabout

12.4.93 The proposals for the Yoxford roundabout include new footways on both sides of the carriageway at and on approach to the new roundabout at Yoxford. This would tie in with existing footways along the A12 and B1122. The proposed scheme would maintain pedestrian connectivity between the A12 and B1122.

12.4.94 The existing alignment of the A12 to the west of the new roundabout would be stopped up and permanently converted to a footpath.

12.4.95 Access to Rookery Lodge to the south of the new roundabout would be via a new priority junction off the south-eastern approach to the roundabout. The existing section of B122 Middleton Road between this new access road and new south-eastern approach to the roundabout will be stopped-up and permanently converted to a footway.

12.4.96 Following construction of Sizewell C, Yoxford roundabout and proposed changes to the walking and cycling network would be permanently retained.

12.4.97 The proposed changes to the PRoW within the vicinity of Yoxford roundabout are shown in the **Access and Rights of Way Plans** (Doc Ref. 2.4).

xii. Highway improvement schemes

12.4.98 Highway improvement schemes are proposed at the following junctions:

- A12 / B1119 at Saxmundham.
- A1094 / B1069 south of Knodishall.
- A12 / A144 south of Bramfield.

12.4.99 The highway improvement schemes include no new provision for pedestrians and cyclists. This is due to the remote location of the highway improvement schemes and / or absence of any PRoW / existing walking and cycling infrastructure.

12.4.100 As such the proposed highway schemes would result in no change to the existing walking and cycling provision / connectivity at these junctions.

xiii. Other walk, cycle and public realm improvements

12.4.101 SZC Co. will provide funding for walk and cycle improvements, which would be secured through obligations in a Section 106 Agreement, provided in the draft **Section 106 Heads of Terms** which are appended to the **Planning Statement** (Doc Ref. 8.4). The following funding is proposed to be secured:

- a Leiston Transport Contribution to fund pedestrian, cycle and public realm improvements in Leiston;
- a Wickham Market Transport Contribution to fund pedestrian, cycle and public realm improvements in Wickham Market;
- a Cycle Network Connectivity Fund to fund enhancements to the local cycle network to encourage construction workers to cycle to work; and
- a Public Right of Way Fund to fund improvements to the existing public rights of way network.

13. Overview of Management Plans

13.1 Introduction

13.1.1 As part of the overall transport strategy for the construction phase of Sizewell C, SZC Co. proposes that freight and construction worker movements on the highway network are managed, controlled and monitored through the implementation of a package of management plans. The purpose of the management plans is to support delivery of key elements of the transport strategy as set out in this **Transport Assessment** (Doc Ref. 8.5).

13.1.2 Three standalone draft management plans have been prepared and form part of the Development Consent Order application. They are:

- Traffic Incident Management Plan (TIMP) (Doc Ref. 8.6).
- Construction Traffic Management Plan (CTMP) (Doc Ref. 8.7).
- Construction Worker Travel Plan (CWTP) (Doc Ref. 8.8).

13.1.3 The implementation of the **TIMP** (Doc Ref. 8.6), **CTMP** (Doc Ref. 8.7), and **CWTP** (Doc Ref. 8.8) by SZC Co. will be secured through obligations in a Section 106 Agreement, as set out in the draft **Section 106 Heads of Terms** which are appended to the **Planning Statement** (Doc Ref. 8.4).

13.2 Traffic Incident Management Plan

13.2.1 The **TIMP** (Doc Ref. 8.6) sets out the management of Sizewell C construction heavy goods vehicles (HGVs) and Sizewell C buses during an event or incident within the Traffic Incident Management Area, as defined in the **TIMP** (Doc Ref. 8.6). The **TIMP** (Doc Ref. 8.6) would help minimise potential impacts of Sizewell C construction on response times and delivery of emergency services in the event of an incident.

13.3 Construction Traffic Management Plan

13.3.1 The **CTMP** (Doc Ref. 8.7) deals with the management of all freight traffic during the construction of the Sizewell C Project (i.e. HGVs, light goods vehicles (LGVs), and abnormal indivisible loads to the main development site and associated development sites. This includes the implementation of a package of measures to manage and monitor freight traffic. The measures proposed within the **CTMP** (Doc Ref. 8.7) for each element of the freight traffic are commensurate with the level and duration of traffic impact during the construction phase.

13.3.2 The **CTMP** (Doc Ref. 8.7) is envisaged to:

- minimise the volume of freight traffic associated with the construction of Sizewell C, so far as reasonably practicable;
- maximise the safe and efficient movement of materials required for Sizewell C, so far as reasonably practicable; and
- minimise the impacts both for the local community and visitors to the area using the road network, so far as reasonably practicable.

13.4 Construction Worker Travel Plan

13.4.1 The focus of the **CWTP** (Doc Ref. 8.8) is on managing the daily movements of the construction workforce to and from the Sizewell C main development site and associated development sites. These movements would represent most construction workforce movements associated with the construction phase of the Sizewell C Project. In addition, the **CWTP** (Doc Ref. 8.8) also considers the scope for encouraging sustainable mode choice for non-work travel by the non-home-based construction workforce.

13.4.2 A key focus of the **CWTP** (Doc Ref. 8.8) is on the approaches which would be put in place to ensure successful delivery of a bus-based approach to the daily movement of the construction workforce. These procedures are designed to deliver confidence that the strategy would be effectively delivered and that the impacts on the local transport network would be managed and mitigated as set out in the **Transport Assessment** (Doc Ref. 8.5).

13.5 Administration of management plans

13.5.1 SZC Co. would be responsible for the implementation and administration of the management plans. However, the following groups and individuals would be in place to assist with the administration and monitoring of the management plans:

- Transport co-ordinator.
- Transport review group.
- Local transport and traffic groups.

a) Transport Co-ordinator

13.5.2 A transport co-ordinator would be appointed by SZC Co. and be in place throughout the construction phase of the Sizewell C Project to manage the implementation of the transport management plans. The appointment of the transport co-ordinator by SZC Co. will be secured through an obligation in the Section 106 Agreement (see the draft **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)).

13.5.3 This role would be appointed prior to commencement of the construction of the Sizewell C Project and at an appropriately senior level.

b) Transport Review Group

13.5.4 A transport review group will be established via the Section 106 Agreement (see the draft **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)) with members taken from the key transport stakeholders and SZC Co. The transport review group would be formed prior to commencement of construction and, unless otherwise agreed, would meet on a quarterly basis throughout the construction phase. The transport review group would be able to delegate issues or functions to a sub-group of members.

13.5.5 The transport review group members would comprise:

- the transport co-ordinator;
- one representative to be nominated by Highways England;
- one representative to be nominated by Suffolk County Council (SCC);
- one representative to be nominated by East Suffolk Council; and
- two representatives, in addition to the transport co-ordinator, to be nominated by SZC Co.

13.5.6 Membership of the transport review group will not fetter the members' planning and other statutory duties.

13.5.7 The transport review group would receive reports on a quarterly basis prepared by the transport co-ordinator, unless otherwise agreed, on the implementation and monitoring of the management plans (**TIMP** (Doc Ref. 8.6), **CTMP** (Doc Ref. 8.7) and **CWTP** (Doc Ref. 8.8)). The transport review group would discuss these reports and advise SZC Co. on the implementation of the management plans, as well as enforcing compliance with the implementation of the plans.

c) Local transport and traffic groups

13.5.8 Prior to commencement of construction, SZC Co. intends to establish local transport and traffic groups with local stakeholders which would form key links between the transport review group and the wider community and provide an indication of the transport-related issues that are impacting the general public.

13.5.9 SZC Co. will submit proposals for the formation, terms of reference, and membership of these local transport and traffic groups to the transport review group for approval. Once established, the local transport and traffic groups would meet regularly to discuss any relevant transport-related feedback from the public. Minutes of each local transport and traffic group meeting would be provided to the transport review group as part of SZC Co.'s transport monitoring.

13.5.10 The establishment of the local transport and traffic groups will be secured through an obligation in the Section 106 Agreement (see **draft Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref. 8.4)).

13.6 Monitoring and review

13.6.1 The management plans (**TIMP** (Doc Ref. 8.6), **CTMP** (Doc Ref. 8.7) and **CWTP** (Doc Ref. 8.8)) would require monitoring and review to ensure they remain effective. Compliance with the monitoring and review mechanisms set out in the **TIMP** (Doc Ref. 8.6), **CTMP** (Doc Ref. 8.7) and **CWTP** (Doc Ref. 8.8) and summarised here would be secured through obligations in the Section 106 Agreement (see draft **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref 8.4)).

13.6.2 All monitoring would be the responsibility of SZC Co, who would collect the relevant monitoring data. Monitoring reports are proposed to be submitted to the transport review group on a quarterly basis. The preparation and submission of the monitoring report will be secured through an obligation in the Section 106 Agreement (see the draft **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref 8.4)).

13.6.3 The transport review group will meet every quarter throughout the construction phase, unless otherwise agreed. The transport review group meetings will discuss the monitoring reports and agree any refinements to the management plans that may be required.

13.6.4 The management plans set out the default mechanisms which will be used to ensure that impacts are mitigated. A Transport Contingency Fund will be established by SZC Co. (see the draft **Section 106 Heads of Terms** provided as an appendix to the **Planning Statement** (Doc Ref 8.4)) and made available to the transport review group. In the event of non-compliance with the management plans, any corrective actions approved by the transport review group would be funded by the Transport Contingency Fund.

14. Summary and Conclusions

14.1 Introduction

14.1.1 This chapter provides the conclusions to this **Transport Assessment** (Doc Ref. 8.5). The information provided within this chapter does not aim to repeat the information provided within the Executive Summary of this document, rather it seeks to draw conclusions to the **Transport Assessment** (Doc Ref. 8.5) based on the policies set out in **Chapter 3** of this **Transport Assessment**.

14.2 Assessment criteria

14.2.1 National Policy Statement (NPS) EN-1 paragraph 5.13.3 states that a Transport Assessment to support an Environmental Statement should be based on NATA/WebTAG or successive policies (Ref. 14.1).

14.2.2 Paragraph 5.13.4 of EN-1 states that details should be provided of measures to mitigate transport impacts and promote the use of sustainable transport modes.

14.2.3 The Ministry of Housing, Communities and Local Government published its guidance on 'Travel Plans, Transport Assessments and Statements' in March 2014 and 'Transport evidence bases in plan making and decision taking' in March 2015 as part of its planning practice guidance (Ref. 14.2). The guidance sets out the following principles which a transport evidence base, in conjunction with the WebTAG assessment methodology, should highlight:

- opportunities for encouraging a shift to more sustainable transport usage;
- infrastructure requirements for inclusion in infrastructure spending plans linked to the Community Infrastructure Levy, section 106 provisions, and other funding sources; and
- possible transport mitigation measures.

14.2.4 Paragraph 102 of the National Planning Policy Framework (NPPF) (Ref. 14.3) states that transport issues should be considered from the offset of the development of proposals, in order that:

- potential impacts of development on the transport network can be assessed;
- opportunities for use of existing or proposed transport infrastructure can be maximised;

- opportunities to promote use of sustainable transport modes are identified and pursued;
- environmental impacts of traffic and transport can be taken into account, with appropriate measures put in place where appropriate to mitigate adverse effects and seek net environmental gains; and
- patterns of transport movements and infrastructure are integral to scheme design and contribute to making high quality places.

14.2.5 The conclusions of this **Transport Assessment** (Doc Ref. 8.5) are set out with regard to the NPPF objectives above. The conclusions are also broken down into freight and passenger transport, reflecting the fact that there are different measures applicable to each. However there are also conclusions applicable to both freight and passenger transport, for example the assessment of impacts, reflecting the fact that much of the transport infrastructure will be common to both; the conclusions reflect this where applicable.

14.3 Maximising use of existing and proposed transport infrastructure

a) Transport of materials

14.3.1 Accessibility has been a key consideration when planning the transportation of construction materials as part of the Sizewell C Project.

14.3.2 The provision of a beach landing facility adjacent to the main development site maximises the potential for sea transport of construction materials.

14.3.3 Rail transport of materials to the construction site will be achieved by upgrading an existing railway line (the Saxmundham to Leiston branch line) and creating a new rail link directly to the main development site (the green rail route). Rail infrastructure is thus being created to enhance capacity and allow as much material as practicable to be transported by non-road means.

14.3.4 The construction of the new Sizewell link road will enhance the main development site’s road accessibility and facilitate efficient deliveries by road. The two village bypass will significantly reduce the volume of traffic passing through Farnham and Stratford St Andrew, both during and after the construction of Sizewell C.

14.3.5 The southern park and ride site, given its strategic location at the convergence of the A12 and a number of key approach routes, will also serve as the site for consolidating postal deliveries as well as a temporary holding area for lorries in the event of a traffic incident. The freight management facility at Seven Hills will enable the flow of HGVs along the A12 to be managed.

14.3.6 The Sizewell C Project represents an opportunity to proactively deliver highway capacity enhancements at a number of off-site locations, thereby reducing the negative economic effects of allowing congestion to increase unchecked. The proposed highway improvements, including the works to Yoxford roundabout and other highway improvements, not only mitigate the effects of the Sizewell C Project, but also provide long-term benefits to the local community.

b) Transport of workers

14.3.7 A number of measures are proposed to limit the impact of construction worker traffic on local roads.

14.3.8 The Sizewell C Accommodation Strategy proposes the development of an on-site accommodation campus and a facility for construction worker caravans on land east of Eastlands Industrial Estate in order to remove the need for road based transport for a significant proportion of the workforce.

14.3.9 Two proposed park and ride sites will be located at strategic locations on the A12 to intercept traffic, removing car trips from the highway network surrounding the main development site.

14.3.10 Direct bus services will also be provided from principal towns, thereby further reducing the number of car trips to and from the main development site.

14.3.11 A new off-road diversionary route for Bridleway 19 will also provide a pedestrian and cycle route from Leiston and LEEIE to the main development site, thereby offering a car-free alternative for workers to travel between these locations.

14.3.12 With regards to daily workforce trips to and from Sizewell C, the majority of the peak workforce would either already be resident at the Sizewell C accommodation campus or arrive at and depart from the Sizewell C main development site by bus. These bus services maximise accessibility by non-car modes to the Sizewell C main development site.

14.4 Promoting use of sustainable modes of transport

a) Transport of materials

14.4.1 The construction of the green rail route and the enhancement of the Saxmundham to Leiston branch line will allow materials to be transported directly in and out of the main development site by train, thereby removing these trips from the road network. During the early years of construction, full use will be made of the existing rail infrastructure to transport materials to LEEIE while the green rail route is still under construction.

14.4.2 The beach landing facility will also enable vessels transporting the largest components to access the main development site directly on the shoreline.

b) Transport of workers

14.4.3 Consideration of walking and cycling modes has further been considered in the walking and cycling strategy, described in **Chapter 7** of this **Transport Assessment** (Doc Ref. 8.5). The analysis has indicated that, while there are opportunities for walking and cycling on the journey to work, these would not represent a feasible option for the majority of workers. However, the **Construction Worker Travel Plan** (Doc Ref. 8.8), the implementation of which will be secured by an obligation in a Section 106 Agreement (see draft **Section 106 Heads of Terms** appended to the **Planning Statement** (Doc Ref. 8.4)), and proposed walking and cycling improvement measures (such as the Bridleway 19 diversionary route) provide a mechanism through which walking and cycling would be encouraged, particularly for non-work trips such as the residents of the accommodation campus and LEEIE caravans walking or cycling to Leiston town centre or the off-site sports facilities.

14.4.4 Similarly, ensuring access to bus and rail services has also been considered important in the transport strategy, which is outlined in **Chapter 4** of this **Transport Assessment** (Doc Ref. 8.5). Two park and ride sites will intercept car trips along the A12 with frequent buses transferring workers to the main development site. Buses will also connect nearby towns directly with the main development site, thereby eliminating some car trips altogether. The northern park and ride site is located adjacent to Darsham railway station which will also facilitate intermodal interchange.

14.4.5 During the operational phase of Sizewell C, sustainable transport will be promoted by means of an off-road pedestrian and cycle route linking the B1122 directly to the power station. Additionally, mitigation measures installed during construction such as the Bridleway 19 diversionary route will remain in place post-construction, providing additional facilities for workers to walk or cycle to the site as well as for use by the public at large.

14.4.6 The transport strategy for the Sizewell C Project is not conventional. Rather than simply providing encouragement to use sustainable modes of transport, SZC Co. would require Sizewell C construction workers to use a prescribed mode of travel. As a result, the transport strategy delivers a very high non-car mode share due to the combination of transport infrastructure and services associated with the Sizewell C Project together with strict procedures to enforce adherence to the transport strategy, details of which are contained in the **Construction Worker Travel Plan** (Doc Ref. 8.8).

14.4.7 Moreover, the proposed Travel Plans and package of walking and cycling improvements set out within this **Transport Assessment** (Doc Ref 8.5) offer the opportunity to create a modal shift towards more sustainable non-car modes of transport among construction and operational workers.

14.4.8 Through the successful implementation of this transport strategy, excellent accessibility for construction and operational site workers would be achieved.

14.5 Assessing impacts and implementing mitigation

14.5.1 The full environmental impact of the proposed development has been assessed in the **Environmental Statement** (Doc Ref. Book 6) which this **Transport Assessment** (Doc Ref. 8.5) accompanies. Transport forms just one part of the full **Environmental Statement** (Doc Ref. Book 6) which considers the Sizewell C main development site and each associated development site individually.

14.5.2 The **Environmental Statement** (Doc Ref. Book 6) concludes that adverse effects arising from additional traffic on the highway network on a range of receptors would be mitigated by the additional infrastructure and management measures which form part of the development proposals.

14.5.3 The development proposals have been designed with safety being a consideration of the highest importance. Road safety has been considered in detail in **Chapter 2** and **Chapter 10** of this **Transport Assessment (**Doc Ref. 8.5). In the context of this report, road safety relates to accidents on the highway network as recorded in data held by Suffolk Highways. In addition, the safety aspects of the rail proposals are considered in **Chapter 11** of this **Transport Assessment** (Doc Ref. 8.5).

14.5.4 The road safety analysis included a study of personal injury accidents on the highway network broken down by location and by different categories of road user. The analysis included an evaluation of locations' accident records and the likelihood of the accident rate increasing as a result of the proposed development. The assessment has demonstrated that when the impact of the development-related traffic is considered, the expected increase in the number of accidents is small.

14.5.5 Notwithstanding this, SZC Co. has assessed a series of potential road safety improvement schemes which address existing accident issues at junctions on the local highway network. These provide a package of recommended improvements to be delivered by SZC Co. or funded by SZC Co. as part of Suffolk Highways' ongoing road safety programme. Additionally, there are a number of enhancements to facilities for pedestrians, cyclists, and equestrians which will benefit existing users as well as new ones.

14.5.6 The package of road safety improvements put forward in this **Transport Assessment** (Doc Ref. 8.5) would not only benefit the proposed Sizewell C

Project but would also provide a lasting legacy to residents of the surrounding towns and villages.

14.5.7 The rail proposals which form part of Sizewell C have been designed with safety as a primary consideration. Use of rail to transport construction materials reduces the number of heavy good vehicles on the road network, thereby helping to reduce the potential for conflict between different road users.

14.5.8 The design of the proposed rail infrastructure has been undertaken having regard to the latest design standards and brings with it a number of enhancements compared to the existing situation, particularly along the Saxmundham to Leiston branch line. A range of safety features are applied to the proposed new and upgraded level crossings.

14.5.9 When the full highway mitigation package is in place, the analysis shows that, even in the peak construction period, traffic volumes during the peak hours show only small impacts across the network, within the bounds of usual daily variation. Across the day, some roads would experience a notable increase in traffic although road capacity would not be exceeded and the junctions with proposed mitigation in place are shown to operate within capacity. However, the B1122 through Theberton and Middleton Moor, and the A12 at Farnham and Stratford St. Andrew, will experience significant traffic reductions as a result of the proposed bypasses.

14.5.10 Journey times across the network could increase slightly on some routes, though in the majority of cases the increases would be indistinguishable from daily variation in travel time. On some routes journey times would reduce significantly as a result of the proposed mitigation.

14.5.11 During the early years of construction, in 2023, before any mitigation is completed there would be significant impacts on the highway network particularly on the A12 and B1122. Therefore, the delivery of the major highway schemes (i.e. the A12 / B1122 roundabout, two village bypass and the Sizewell link road) will be brought forward as soon as practical and SZC Co. will use reasonable endeavours to deliver these in accordance with the **Implementation Plan**, which is included as **Appendix I** of the **Planning Statement** (Doc Ref. 8.4).

14.5.12 Once the Sizewell C site is fully operational, traffic impacts would be limited, with some areas experiencing significant improvement as a result of the legacy benefit of the proposed bypasses.

a) Transport of materials

14.5.13 The scale of the proposed development is such that significant transport impacts would have arisen if only road transport were to be used for the movement of construction materials. The transport strategy therefore includes the use of both sea and rail as modes of transporting materials to the main development site.

14.5.14 The largest construction components will travel to the main development site by sea, using the beach landing facility, which will mitigate the potential traffic impacts associated with the movement of these components on the road network.

14.5.15 There will be other large components which will be transported by road in the form of abnormal indivisible loads. In order to mitigate the potential disruption associated with these large and slow-moving vehicles, regular liaison with the emergency services and the highway authorities will enable the effective management of these deliveries. Details of these measures are provided in the **Construction Traffic Management Plan** (Doc Ref. 8.7), the implementation of which will be secured through an obligation in a Section 106 Agreement (see **Section 106 Head of Terms**).

14.5.16 Goods vehicles approaching from the south will use the freight management facility which will spread the deliveries across the day in order to mitigate potential pinch-points.

14.5.17 In the event of traffic disruption on the network, the **Traffic Incident Management Plan** (Doc Ref. 8.6) (secured via the Section 106 Agreement) will mitigate the potential exacerbation of traffic delays.

b) Transport of workers

14.5.18 The provision of on-site worker accommodation and the provision of two park and ride sites will reduce the number of vehicle trips on the highway network surrounding the main development site.

14.5.19 Direct bus services from nearby towns will remove some car trips from the highway network entirely.

14.5.20 Walking and cycling will be promoted among workers by means of the provision of off-road routes during both the construction and operational phases.

14.5.21 The **Construction Worker Travel Plan** (Doc Ref. 8.8) sets out the range of measures which will encourage sustainable travel among the construction workforce.

14.6 Contributing to high quality places

14.6.1 Sizewell C will bring with it a number of elements of transport infrastructure, both temporary and permanent. These, together with the trips generated across all transport modes, bring with them important considerations for landscaping and quality of life. These have been analysed throughout the **Transport Assessment (**Doc Ref. 8.5**)**.

a) Transport of materials

14.6.2 All sites where development is proposed have been designed with placemaking in mind, seeking to mitigate impacts on the natural and built environments and to offer a positive contribution towards quality of life in the wider area.

14.6.3 Recognising that the green rail route passes close to Leiston Abbey, the railway design incorporates bunding to mitigate the visual and noise impacts of passing trains.

14.6.4 During the development of the rail strategy, the quality of life implications of idling locomotives at Wickham Market was considered. Throughout the consultation process, different designs for the passing loop were developed in collaboration with stakeholders. Quality of life for residents has been at the heart of the development of the transport strategy.

14.6.5 Alongside sustainable modes, roads are also an important part of Suffolk's transport infrastructure for local residents, businesses, and the tourist industry. Minimising congestion and maximising the resilience of the highway network is a fundamental part of the transport strategy: it contributes to high-quality spaces by minimising emissions and the visual impact of traffic, but also enabling all users of the road network to travel safely and efficiently. New highway infrastructure will be put in place where the assessment has demonstrated a need for it: the Sizewell link road, two village bypass and off site highway improvements, including the works to Yoxford roundabout, carry both safety and capacity benefits for all road users.

14.6.6 Users of the highway are not limited to car drivers: pedestrians, cyclists, and equestrians have all been considered extensively during the development of the transport strategy and the infrastructure which delivers it. Creation of a new permanent bridleway is just one of a series of improvements for these groups.

b) Transport of workers

14.6.7 The transport strategy has been designed to minimise the need for worker car trips to the main development site, in turn reducing the noise and visual impacts of large volumes of cars passing through the wider area. This will be achieved through the provision of two park and ride facilities, both of which incorporate landscaping to reduce as far as possible the sites' visibility from their surroundings.

14.6.8 Safety and junction improvements are proposed along the B1078, and pedestrian, cycle and public realm improvements are proposed in Wickham Market, in order to mitigate impacts associated with traffic increases during the construction period.

14.6.9 Dedicated bus services from local towns and the two park and ride sites will enable workers to travel to and from the main development site without using a car for the final leg of the journey or, in many cases, at all.

14.6.10 Workers will also share several elements of the transport infrastructure with the public. A new, lit, off-road route for pedestrians and cyclists from Leiston to the main development site access will also benefit residents of Eastbridge, while the East Suffolk line will be used by workers connecting to park and ride buses at Darsham. Pedestrian, cycle and public realm improvements are proposed in Leiston to mitigate impacts of additional traffic flows through the town. Encouraging active travel among workers will also serve to boost the profile of walking and cycling among the wider population, bringing with it health benefits and further contributing to the promotion of sustainable travel for all.

14.7 Conclusion

14.7.1 NPS EN-1 recognises that a new energy Nationally Significant Infrastructure Project can give rise to substantial impacts on the surrounding infrastructure, and that the decision maker should ensure that the applicant has sought to mitigate these impacts, see paragraph 5.13.6 of this **Transport Assessment** (Doc Ref 8.5). This **Transport Assessment** (Doc Ref. 8.5) identifies these impacts and proposes mitigatory measures.

14.7.2 As SZC Co. is willing to enter into the agreements or requirements necessary to deliver any required mitigation, development consent should not be withheld and appropriately limited weight should be applied to any residual effects on the transport network.

14.7.3 The **Transport Assessment** (Doc Ref. 8.5) has assessed the potential for significant impacts on the surrounding transport infrastructure and proposed a range of mitigatory measures. These include:

- the provision of worker accommodation close to the main development site;
- using both rail and sea transport to reduce the number of deliveries being made by road;
- constructing two new roads to bypass the villages which would otherwise experience the most significant traffic impacts;

- implementing a park and ride system in order to mitigate the impact of construction worker car trips on the highway network surrounding the main development site;
- using a freight management facility and other measures to control the movement of vehicles delivering materials to the main development site;
- designing the main development site and associated off-site developments in such a way as to encourage the use of sustainable travel modes, supported by the **Construction Worker Travel Plan** (Doc Ref. 8.8); and
- incorporating facilities for non-motorised users at the main development site and associated off-site developments.

14.7.4 Potentially significant transport impacts have been dealt with by way of embedded mitigation within the development proposals. In addition, the implementation of transport management plans (the **CWTP**, the **TIMP,** the **CTMP** and the proposed Operational Travel Plan), which will contain measures to mitigate transport impacts, will be secured through obligations in a Section 106 Agreement (see draft **Section 106 Heads of Terms** appended to the **Planning Statement** (Doc Ref. 8.4)).

14.7.5 Funding contributions (where required), such as the public rights of way fund, cycle network connectivity fund and transport contingency fund, will also be secured through obligations in a Section 106 Agreement (see draft **Section 106 Heads of Terms**).

14.7.6 As per NPS EN-1 paragraph 5.13.7, limited weight should be applied to any residual effects on the transport network. However, following the application of the mitigation measures set out in this **Transport Assessment** (Doc Ref. 8.5), the Sizewell C Project will have addressed its residual significant transport impacts as far as practicable.

14.7.7 On the basis of these commitments, the application proposals comply with all relevant transport policies.

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