The Sizewell C Project

9.49 Written Submissions Responding to Actions Arising from ISH2: Traffic and Transport Part 1 (7 July 2021)

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APPENDICES

1 ISSUE SPECIFIC HEARING 2: TRAFFIC AND TRANSPORT (PART 1)

1.1 Introduction

1.1.1 This document contains the Applicant's written submissions responding to actions arising from Issue Specific Hearing 2 (ISH2) on Traffic and Transport (Part 1) held on 7 July 2021.

1.1.2 This document corresponds to the Applicant's **Written Summaries of Oral Submissions made at ISH2** (Doc Ref. 9.42) submitted at Deadline 5.

1.2 Programme for rail works and train paths

1.2.1 An updated programme for the actions, steps, agreements and works necessary to secure two trains operating by October 2023 and four by March 2024 is attached to the updated **Statement of Common Ground with Network Rail** (Doc Ref. 9.10.10(A)) submitted at Deadline 5.

1.3 Materials sourcing

1.3.1 SZC Co.'s Delivery team has prepared a detailed note on materials quantities, sourcing and modal split, which is attached as **Appendix A** to this document. The note also takes the opportunity to respond to questions raised by the ExA on a range of matters, including HGV sizes and capacity.

1.4 Abnormal Indivisible Loads

a) Temporary construction AILs on B1122

1.4.1 The **Construction Traffic Management Plan** (**CTMP**) [REP2-054] provides a summary of the forecast temporary construction AILs based on data from Hinkley Point C, which have been assumed to all be delivered by road in order to provide a worst case assessment. **Tables 3.1** and **3.2** of the **CTMP** [REP2-054] provide a summary of the category of temporary construction AIL two-way movements and a breakdown of the widths of the temporary construction AIL movements, respectively. Currently **Tables 3.1** and **3.2** refer to the year of Hinkley Point C data that the tables are based on (i.e. 2017- 2020). However, the ExA has asked for the tables to be updated to reflect the Sizewell C programme and in particular the forecast temporary AIL movements pre and post the delivery of the Sizewell link road. The correlation of the Hinkley Point C data is as follows:

- the 2017 and 2018 data from Hinkley Point C is considered to be representative of the early years phase of the Sizewell C Project prior

to the delivery of the Sizewell link road (i.e. these would all route along the A12 (north or south) and the B1122); and

- the 2019 and 2020 data from Hinkley Point C is considered to be representative of the peak construction phase of the Sizewell C Project once the Sizewell link road is operational.

1.4.2 **Tables 1** and **2** below are based on **Tables 3.1** and **3.2** in the **CTMP** [REP2-054] respectively. It should be noted that discussions are ongoing with Suffolk Constabulary with regards to the analysis of Hinkley Point C data in order to reach agreement as part of the Statement of Common Ground. An agreed position on the tables is expected to be provided in the next version of the **CTMP** [REP2-054] to be submitted at Deadline 6.

Table 1 – Category of temporary construction AILs forecast for Sizewell C (two-way movements)

AIL Category	Early Years via B1122		Peak construction via Sizewell link road		Average
	Y1	Y2	Y3	Y4	
Special Order	2	12	6	0	5
VR1	24	13	3	2	11
STGO 3	159	184	447	243	258
STGO 2	295	194	437	312	310
STGO 1	52	131	166	122	118
C&U	1,523	420	421	399	691
Total	**2,055**	**954**	**1,480**	**1,078**	**1,392**

Table 2 – Forecast width of Sizewell C temporary construction AILs (two-way movements)

AIL Width	Early Years via B1122		Peak construction via Sizewell link road		Average
	Y1	Y2	Y3	Y4	
>5.0m	31 (1.5%)	24 (2%)	9 (1%)	0 (0%)	16 (1%)
>4.4m - 5.0m	12 (0.5%)	21 (2%)	3 (0%)	15 (1%)	13 (1%)
>3.5m - 4.4m	904 (44%)	64 (7%)	115 (8%)	83 (8%)	292 (21%)
>2.9m - 3.5m	956 (47%)	628 (66%)	883 (59%)	628 (58%)	774 (56%)
≤ 2.9m	152 (7%)	217 (23%)	470 (32%)	352 (33%)	298 (21%)
Total	**2,055**	**954**	**1,480**	**1,078**	**1,392**

b) Management of AILs

1.4.3 SZC Co. has engaged with Suffolk Constabulary to develop and agree a risk assessed escorting guide for the movement of AILs by road to/from the main development site during the early years (i.e. AILs that may require police escort, self-escort or no escort). The AIL escorting guide is in the form of a matrix and has been agreed with Suffolk Constabulary for the early years, prior to the delivery of the Sizewell link road and two-village bypass and is provided in **Figure 1** below.

Figure 1 – Agreed Early Years AIL Escort Guide for Sizewell C

SC AIL Escort Matrix

This Matrix provides a risk assessed guide for the movement of AILs during the SZC construction period.

All AIL movements are subject to review by the SC Abnormal Loads Officer; where the full extent of the route and spec load dimension will be assessed and the appropriate level of risk determined.

Key

High Risk (Red) – Recommended that vehicles should have Police Escort

Medium Risk (Amber) – Escort required. Although hauliers may choose to self-escort police escort is recommended as police assistance may be required at specific points.

Medium-Low Risk (Light Green) – Hauliers should consider Self-Escort for the vehicle

Low Risk (Dark Green) – No Escort Required

	A14	A12 Lowestoft to Leiston	A12 Woodbridge to Leiston	B1122 Lovers Lane
VR1				
Special Order				
STGO Cat 3				
STGO Cat 2				
STGO Cat 1				
>5m wide				
4.4m – 4.99m wide				
3.5m - 4.399m wide				
2.91m - 3.499m wide				
<2.9m wide				
Length <18.64m				
Length between 18.65m - 27.3m				
Length between 27.4m – 30m				

1.4.4 AILs will route via the Sizewell link road and two village bypass once they are in place and will therefore not need to route through the Farnham bend on the A12 or along the B1122, except for AILs arriving from the north which will route on the section of B1122 between the A12 and Middleton Moor link roundabout proposed as part of the Sizewell link road. SZC Co. continues to engage with Suffolk Constabulary to agree a 'peak construction' AIL

escorting guide, once the Sizewell link road and two village bypass are operational. The AIL escorting guides will be incorporated in the **CTMP** [REP2-054].

1.4.5 Through discussions with Suffolk Constabulary it has been agreed in principle that SZC Co. would fund a dedicated AIL police escort resource (details to be agreed). SZC Co. has committed to seeking to smooth the profile of AIL deliveries where possible but has explained that that AILs would not be capped. Construction of this scale and complexity involves a degree of planning and co-ordination for which there are few precedents in the UK. AILs form a major part of the project sequencing. AIL deliveries will be booked into the delivery management system (DMS) and any police escort AIL requirements beyond the daily dedicated police escort resource would be provided by Suffolk Constabulary in the same way any other project is currently resourced. Details of the dedicated police resource will be incorporated in the **CTMP** [REP2-054].

c) Journey time of AILs on B1122

1.4.6 During ISH2 the ExA asked how long it would take for an AIL to move along the B1122. During the early years AILs would route along the B1122 to the secondary site access on Lover's Lane, which is circa 5.3 miles. The speed limit varies along the route between 30mph and the national speed limit and it takes general traffic circa 8 minutes to travel this route, which provides an average speed for general traffic of 40mph.

1.4.7 AILs will be restricted to travel along the B1122 at the following speeds:

- C&U: up to 56 mph
- STGO Cat 1: 40 mph (it should be noted that the maximum speed is 60mph on motorways and 50 mph on dual carriageways)
- STGO Cat 2 and 3: 30 mph (it should be noted that the maximum speed is 40mph on motorways and 35 mph on dual carriageways).
- VR1 and Special Order loads: 12mph

1.4.8 Therefore C&U loads will take a similar amount of time to travel along the B1122 as existing traffic. Even though STGO Cat 1 AILs can travel at up to 40mph, if an average speed of 30mph is assumed for STGO Cat 1-3 AILs it would take circa 10.5 minutes to travel along the route, subject to the ability for the AILs to pass other traffic based on their width. It should be noted that all AILs over 2.9m wide will be police escorted on the B1122 which will act to regulate the flow of both the AILs and general traffic.

1.4.9 It is only VR1 and Special Order loads that may take circa 30 minutes to travel along the B1122 under police escort but as demonstrated in **Table 1** above, there is forecast to be low numbers of these types of AILs during the early years.

1.5 Vehicle types

1.5.1 Figure 1 in the note provided in **Appendix A** to this document provides a breakdown of the classification of vehicles over the construction phase. Within Figure 1, freight vehicles that will be monitored for the Sizewell C project as HGVs are categorised as 3.5t-7.5t, 7.5t-18t and 18t-44t.

1.6 Vehicle caps and controls

1.6.1 This section of SZC Co.'s written submissions arising out of Issue Specific Hearing (ISH) 2 deals with the extent to which caps and controls should be imposed on vehicle movements associated with the project. The issue arose in both ISH2 and ISH3.

1.6.2 The structure of this section is as follows:

- Policy
- Overview of vehicle caps and controls proposed by SZC Co.
- HGVs: main development site
- HGVs: associated development sites
- LGVs
- AILs
- Buses
- Cars
- Workforce mode share control

a) Policy

1.6.3 In accordance with paragraphs 4.1.7 and 4.1.8 of Policy in NPS EN-1 SZC Co. has considered what caps and controls, whether by way of requirement

or obligation, are necessary to make the development acceptable in planning terms and reasonable in all respects.

1.6.4 In general, controls are imposed as part of development consent for two reasons. They are imposed by way of parameter plans, in order to limit the development physically to that which has been assessed. Controls may also be imposed to avoid operational harm. Caps on vehicle movements may be necessary to avoid harm, but any such controls must be properly justified.

1.6.5 There have been suggestions from some parties to the examination that everything that has been assessed should be controlled. There is no basis for that approach. Neither law nor policy requires the imposition of controls or monitoring on a project simply to ensure that a project conforms precisely with the outputs of the assessments undertaken at the application stage. In those circumstances every EIA development would be subject to scores of detailed controls. Nor would it be realistic to expect a development to operate precisely as has been assessed in all respects. An assessment does not automatically translate into controls in this way. Rather, the policy tests must be applied to justify controls.

1.6.6 That is consistent with Government policy of not seeking to impose unnecessary burdens on developers. The onerous nature of the additional limits, controls and monitoring sought by, for example, SCC should not be underestimated. They would come on top of the extensive regime of control already proposed and would add to the significant challenges presented by the delivery of a very large and complex infrastructure project.

1.6.7 Accordingly, whilst there is no dispute that controls on HGV movements are reasonable because of the impacts they create and the particular sensitivity of the B1122, it does not at all follow that controls should be imposed in respect of every vehicle movement.

1.6.8 Any such suggestion would also be wholly novel. For example, just down the road the Brightwell Lakes development of some 2,000 homes plus significant employment floorspace has recently been granted permission. The transport assessment for that development assessed very significant numbers of vehicle movements on the same network (i.e. circa 4,000 two-way movements over the 3 hour AM and 3 hour PM peak periods and more over the course of a day) with which this examination is concerned, yet no vehicle movement limits at all were imposed on that permission.

1.6.9 The consequences of imposing controls also need to be considered. This is infrastructure of national significance for which there is an urgent need. Unnecessary controls would conflict with the policy imperative of urgency because it could mean that, if there is a risk of exceeding a cap, then the

project must stop and / or a change must be applied for, which can be a time-consuming process. This context weighs heavily against imposing controls other than those that can be robustly justified. What is required is a framework of necessary controls.

b) Overview of vehicle caps and controls proposed by SZC Co.

1.6.10 SZC Co. is proposing a strict regime of control. The CTMP contains absolute limits not only on numbers of HGVs but also on times, routes and peak hours. In relation to other construction and workforce traffic there are limits on car parking and controls to ensure workers use direct buses or park and ride buses, or to walk or cycle if they are close enough, which will result in 80% of the workers arriving at the main development site by sustainable modes. The **CTMP** [REP2-054] and **CWTP** [REP2-055] contain multiple further measures to address the impacts and which SZC Co. is committing to. It might be technically possible to find some form of control for every measure – cycling, bus, park and ride – but the control over workforce movements is intended to be achieved through the parking limits and the mode share target, which will achieve what is required.

1.6.11 The management plans thereby provide a strong framework of controls within which the Project must operate – but how the project is managed to stay within those limits must be a matter for SZC Co. That provides the necessary control without unnecessarily constraining SZC Co.'s operational flexibility.

1.6.12 The controls are enforceable and real. SZC Co. is committing to them through the **Deed of Obligation** (Doc Ref. 8.17(E)) and the management plans with which the Deed requires compliance. There seemed to be some suggestion in the hearings that the controls are not enforceable or that the limits may be exceeded. That is not so. SZC Co. is submitting at this same deadline a written note relating to ISH1 entitled '**Response to Enforcement Issues'** (Doc Ref 9.48) which explains that the limits within the management plans (including the **CTMP** [REP2-054] and **CWTP** [REP2-055]) are legally enforceable, including by positive or negative injunction if required. They are hard controls. SZC Co. intends to submit a further draft of the **Deed of Obligation** at Deadline 6 (6 August 2021) and SZC Co. will consider whether any further clarity needs to be provided in that draft as to the commitment to the **CTMP** [REP2-054] and **CWTP** [REP2-055]. SZC Co.'s clear position, however, is that the controls are to be enforceable. Engagement with ESC and SCC in the week following Deadline 5 will be used to discuss issues relating to governance and enforceability, so that those matters can be reflected in the Deadline 6 submission.

1.6.13 The Deed of Obligation gives the Transport Review Group (TRG) the power to revise the management plans, but far from relaxing the controls this power is expressly framed as a means to ensure sufficient mitigation is provided. Further and crucially the TRG operates by majority vote and SZC Co. does not have a majority on the TRG. The other parties to the TRG – namely SCC, ESC and the Highways Agency – can hold SZC Co. to the limits to which it has committed.

c) HGVs: main development site

i. Current HGV controls within the CTMP

1.6.14 The **CTMP** [REP2-054] currently provides the following HGV movement caps for the main development site (paragraph 4.4.5 – 4.4.11).

1.6.15 The **maximum daily HGV movements** from the wider highway network to/from the main development site are as follows:

- **Monday to Friday:**
  - during the early years, unless and until the Sizewell link road and two village bypass are available for use, **no more than 600 two-way HGV movements per day** (**300 deliveries**);
  - during the remainder of the construction phase, **no more than 700 two-way HGV movements per day** (**350 deliveries**)
- **Saturday:** throughout the construction period, **no more than 500 two-way HGV movements per day (250 deliveries)**.
- **Sundays and public holidays**: there will be **no Sizewell C HGV movements** to/from the main development site from the wider highway network on Sundays or on public holidays.

1.6.16 The **maximum peak hour HGV movements** from the wider highway network to/from the main development site are as follows:

- During the early years, HGV movements to/from the main development site will be capped at **57 two-way HGVs during the weekday morning peak hour (08:00 09:00)** and **34 two-way HGVs during the weekday evening peak hour (17:00 18:00);** and
- During the peak construction phase, once the Sizewell link road and two village bypass are available for use, HGV movements to/from the main development site will be capped at **63 two-way HGVs during**

the weekday morning peak hour (08:00 09:00) and **42 two-way HGVs during the weekday evening peak hour (17:00 18:00)**.

1.6.17 Further controls on HGVs within the **CTMP** [REP2-054] include:

- **HGV routes**. HGVs travelling to/from the main development site from the wider highway network will be required to comply with the HGV routes set out in **section 3** of the **CTMP** [REP2-054].

- **HGV timing restrictions**:

  - **Monday to Friday**: During the early years, Sizewell C HGVs will be limited to arrive at the main development site between the hours of **07:15-21:00** and during the peak construction phase, once the Sizewell link road and two village bypass are in use, Sizewell C HGVs will be limited to arrive at the main development site between the hours of **07:00-21:00**. The latest departure of Sizewell C HGVs from the main development site will be **23:00**.

  - **Saturday**: Sizewell C HGVs will be limited to arrive at the main development site between the hours of **08:00-13:00**. The latest departure of Sizewell C HGVs from the main development site will be **14:00**.

  - **Sundays and public holidays**: There will be **no Sizewell C HGV movements** to/from the main development site from the wider highway network on Sundays or on public holidays.

1.6.18 A full list of measures to manage HGVs to/from the main development site is contained in section 4.4 of the **CTMP** [REP2-054].

ii. Proposed changes to the HGV controls

1.6.19 During ISH2 and ISH3 there was a discussion on the scope of and justification for the early years and peak construction HGV caps as well as the proposed location of monitoring the HGV caps in the early years and peak construction. SZC Co. has reviewed the proposed daily HGV caps and provides the following updates and clarifications, which will be incorporated into the next version of the **CTMP** [REP2-054] to be submitted at Deadline 6.

1.6.20 As set out above, the HGV caps vary between the **early years** and the **remainder of the construction phase**:

- The early years for the purposes of HGV traffic[1] is defined as the period before the Sizewell link road and the two village bypass are available for use (**CTMP**, 4.4.6 [REP2-054]). **During the early years, HGV movements are capped at no more than 600 two-way movements per day (300 deliveries)**.

- During the remainder of the construction phase, i.e. once both the Sizewell link road and the two village bypass are available for use, **HGV movements are capped at no more than 700 two-way movements per day (350 deliveries)**.

1.6.21 Based on the discussion at ISH2 and ISH3, the scope of these HGV caps is proposed to be as follows, and this will be incorporated into the next version of the **CTMP** [REP2-054]:

- **Early years:**

  - **All Heavy Duty Vehicle (HDV) movements (i.e. HGVs and buses) associated with SZC, which route through Theberton and Middleton Moor on the B1122 are to be included in the daily HDV cap of 600 two-way movements for the early years.** This includes HGVs for the construction of the main development site (including construction of LEEIE), Sizewell B relocated facilities, Green Rail Route, Lover's Lane improvements and any HGVs for the construction of the SLR.[2] In addition any SZC park and ride or direct buses are also included in the early years cap. Monitoring and enforcement of this will be achieved by use of a GPS geofence. The line of the geofence will be located to include all such movements on the B1122.

  - **HGVs shuttling between the LEEIE and the main development site** are excluded from the cap, as they are not on the wider highway network.

- **Peak construction:**

  - **All HGV movements associated with SZC, which route along the Sizewell link road, are included in the daily HGV cap of 700 two-way HGVs.** This includes HGVs for the construction of

[1] For the definition of the early years for workforce traffic, see the discussion of the workforce modal share controls below.

[2] As explained in the note on **Materials and Modal Split**, there will be HGV movements along the line of SLR when it is under construction, which will transport spoil excavated during construction of the SLR and the TVBP to the main development site for re-use. These movements are not counted in the cap because they will not route on the B1122 through Middleton Moor or Theberton.

the main development site as well as any HGVs from the wider network routing to/from the LEEIE. Monitoring and enforcement of this will be achieved by use of a GPS geofence. The line of the geofence will be located on the Sizewell link road.

- **HGVs shuttling between the LEEIE and the main development site** are excluded from the cap, as they are not on the wider highway network.

1.6.22 During the ISHs, questions were asked with regard to the level of the caps. The level of the caps reflects SZC Co.'s updated freight management strategy, whereby the maximum proportion of construction materials moved by HGVs is 40% and the total by rail and marine is at least 60%. **Appendix A** of this submission is a note entitled **Material Imports and Modal Split**, which provides further information (beyond that already contained in the **Freight Management Strategy** [AS-280]) on the detailed breakdown of the quantities and types of materials required, and the justification for the modal split by reference to material type and source.

1.6.23 The note justifies the early years and peak construction HGV caps as those required to deliver the project, whilst maximising non-HGV modes of transport. In particular, the HGV profiles in Figures 1 – 3 of the note show that HGV movements do not follow a linear profile. They are not evenly distributed across the 12 year construction period, such that there will necessarily be 'white space' under the cap within the profile at points. Accordingly, dividing the total tonnage of freight required by the capacity of an HGV and spreading the resulting number of HGVs evenly out across the construction period does not lead to a daily HGV movement figure that will enable delivery of the project.

1.6.24 The profile is required to deliver the project and it is not realistic that the cap should 'hug' the profile tightly, given the peaks and troughs in the profile. Nor is it desirable that it does so, because any large construction project will inevitably not proceed precisely in accordance with the indicative profile provided at the application stage. There needs to be flexibility to allow this to happen.

1.6.25 The Figures do show, however, that the level of HGV movements is forecast to reduce in the second 'early year' following the opening of the Green Rail Route. During that time, workforce numbers will be increasing so that direct and park and ride busses will also be increasing. To give confidence that these bus movements do not give rise to additional impacts (and notwithstanding that they have been separately assessed), it is proposed to include those bus movements within the capped figure of 600 daily movements in the early years.

1.6.26 It is important to note that, notwithstanding that there will be variability in the number HGVs under the cap, the **Environmental Statement** and the **Consolidated Transport Assessment** [REP4-005] have assessed impacts on the assumption that the caps would be met at all times. Mitigation has been provided on the basis of this assessed full level of movements. The caps are considered to be appropriate on that basis.

1.6.27 **Nevertheless, in light of concerns raised by stakeholders and the ExA, SZC Co. is now proposing a further control by way of a quarterly HGV target for the early years and peak construction, based on average daily movements for the relevant quarter, which would be enforceable by the TRG**. This is additional to the measures currently contained in the **CTMP** [REP2-054] and refinements to the scope of the daily HGV caps, as set out above. The detail of the quarterly measure will be discussed with the local authorities before inclusion in a revised version of the **CTMP** [REP2-054]. It is a control which would limit SZC Co.'s ability to operate continuously at the maximum daily cap. It provides a further mechanism to ensure that the number of HGVs is limited to those necessary to construct the project and would demonstrate SZC Co's commitment to delivering materials by rail and marine.

d) HGVs: associated development sites

1.6.28 It is not proposed to cap HGV movements to offsite associated development sites, with the exception of HGV movements on the B1122 through Theberton and Middleton Moor as set out above.

1.6.29 The associated development HGV movements will be routing primarily on the A12 corridor, where the two village bypass, Yoxford roundabout and northern and southern park and rides are located, or on Felixstowe Road in the case of the freight management facility (collectively referred to in this submission as off-site associated development sites). These HGVs will not be travelling along the B1122.

1.6.30 HGV movements arising from the off-site associated development sites are limited in duration, with all the proposed schemes scheduled to be completed by the end of year 2 (2024), as set out in the **Implementation Plan** [REP2-044]. All parties have a shared incentive to see the timely completion and operation of the associated developments.

1.6.31 The likely impacts of HGV movements to off-site associated development sites have been assessed as part of the **Environmental Statement** and **Consolidated Transport Assessment** [REP4-005] and any appropriate mitigation has been proposed. The assessments indicate that the impacts are acceptable and no impacts have been identified which would justify the

imposition of HGV caps on the construction of the associated development sites along the A12 corridor.

1.6.32 That assessment also assumes all off-site associated development sites are being constructed at the same time and assesses the peak daily HGVs forecast for each site. In fact, the overlap between the majority of the off-site associated development sites will only be for a limited period of the already limited period of construction for these sites (two years overall), as shown in Plate 1.1 of the **Implementation Plan** [REP2-044] and not all of the peak intensity of construction activity and corresponding peak levels of HGVs will overlap.

1.6.33 A full list of measures to manage HGVs connected with the off-site associated development sites is contained in **section 5** of the **CTMP** [REP2-054]. In addition, SZC Co. after discussion with SCC, now propose to not only book the associated development site HGVs into the DMS-booker but to also track the HGV movements to the associated development sites along the HGV routes via the DMS-tracker, to provide further monitoring and control. This will be reflected in the next version of the **CTMP** to be submitted at Deadline 6.

1.6.34 These associated development sites are important mitigation for the construction phase. It is desirable that they are completed as quickly as reasonably possible. The imposition of HGV caps in respect of the associated development sites would be contrary to that aim.

1.6.35 For the above reasons, SZC Co. does not consider that caps on HGV movements to the off-site associated development sites along the A12 corridor are necessary, reasonable or in accordance with national policy.

e) LGVs

1.6.36 There will be two types of LGVs associated with the construction phase of the Sizewell C Project:

- LGV movements associated with the construction of the main development site; and
- LGV movements associated with postal/courier deliveries to the main development site.

1.6.37 It is not proposed to cap LGV movements to/from the main development site or postal consolidation facility.

1.6.38 Whilst LGVs and HGVs have been assessed in the DCO based on standard classifications, for monitoring purposes through the **CTMP** [REP2-054],

SZC Co. has adopted a definition of an HGV to be any goods vehicle between 3.5t and 44t. This means that the SZC Co.'s proposed controls on HGV movements to/from the main development site will capture larger LGVs that would not normally be classified as HGVs. The remaining LGVs are modest sized vehicles with more limited environmental impacts than HGVs and larger LGVs, which weighs against the imposition of caps on them.

1.6.39 LGV movements to/from the main development site have been assessed with route choice in a similar way to existing LGVs on the highway network. Therefore, LGV movements to/from the main development site have been assessed and mitigated through the proposed package of highway works and transport funding within the **Deed of Obligation** (Doc Ref. 8.17(E)).

1.6.40 The **CTMP** [REP2-054] proposes to monitor the number of LGV movements to and from the main development site against the assessed levels (as recorded in the **CTMP**) via the DMS. Exceeding those levels would not constitute a breach but the TRG would have the power to decide if any remedial action was needed or not.

1.6.41 Whilst the postal deliveries for Sizewell C during the construction phase will be predominately if not all secondary trips (i.e. trips already on the network), given the location of the main development site it is likely that many of the trips would need to divert from their original route in order to make the postal delivery to the main development site. Therefore, it is proposed to provide a postal consolidation facility at the southern park and ride facility, which is just off the A12 corridor at Wickham Market.

1.6.42 SZC Co. will then consolidate the post onto 2 LGV deliveries per day (4 two-way LGVs) from the postal consolidation facility to the main development site. These LGVs would route via the A12 and Sizewell link road. This will significantly reduce LGV traffic to the main development site.

1.6.43 A full explanation of measures to manage LGVs is contained in section 6 of the **CTMP** [REP2-054].

1.6.44 For the above reasons, SZC Co. does not consider that caps on LGV movements are necessary, reasonable or in accordance with national policy.

f) AILs

1.6.45 It is not proposed to cap road-based AIL movements to/from the main development site. As set out in the earlier section of these written submissions which deals with AILs, the number of AILs travelling by road to the main development site is a limited proportion of the overall HGVs. AIL movements will be the subject of bespoke arrangements currently in

the process of being agreed with Suffolk Constabulary. This will ensure that AILs will be properly managed and controlled. Further control by way of a cap is not necessary.

g) Buses

1.6.46 Buses will route between the park and ride facilities and the main development site, as described in section 4.3 of the **CWTP** [REP2-055]. There will also be direct buses to the main development site from key locations where there are concentrations of workers, also set out in section 4.3 of the **CWTP** [REP2-055].

1.6.47 The phasing in the **Implementation Plan** [REP2-044] provides that the northern and southern park and rides will be complete and operational a few months (mid-late 2024) before the Sizewell link road (the end of 2024). It is only in this short window that park and ride buses would route down the B1122. Further bus numbers would be limited at this point due to the limited size of the workforce at this stage. However, the early years assessment has not assessed buses routing on the B1122 in the early years.

1.6.48 **Accordingly, any buses on the B1122 in the early years (whether park and ride buses or direct buses) will now be included in the 600 daily HDV (i.e. HGVs and buses) cap for the early years**. This will ensure that the impacts are within what has been assessed and will also serve to protect the B1122.

1.6.49 It is not proposed to include buses in any cap after the early years. Including buses within the cap in the early years is to address the specific concern, raised by the ExA, about the additional impact of buses on the B1122 in the early years in addition to the assessed 600 two-way HGV movements. After the early years, the Sizewell link road will be in place and there will be no buses on the B1122. Park and ride buses have been assessed on the Sizewell link road in addition to the HGVs as part of the peak construction assessment, and therefore do not need to be included in the peak construction daily HGV cap. Bus transport is a key part of the sustainable transport workforce strategy for the project. It is a sustainable mode of transport which should generally be encouraged not capped.

h) Cars

1.6.50 It is not proposed to cap car movements directly. However, they are in effect capped by the limited number of car parking spaces provided. It is proposed to provide a 1,000-space car park at the main development site. SZC Co. will implement a permit system to actively manage parking. The number of parking spaces means that at peak construction, only 12% of the construction workforce will be able to park at the main development site.

This restricted number of spaces, as well as the proposed parking control measures, will act to reduce the impact of construction workforce trips on the local highway network. Further to the ISH, SZC Co. is also considering whether the provision of parking at the main development site should be phased – in practice, SZC co. will need to control its provision and use in order to meet the mode share targets (see further below).

1.6.51 A key parking control measure is that at peak construction only workers living inside the area bounded by the A12, River Blyth, and River Deben (except those living in Leiston or within 800m of the main development site) will be issued a parking permit for the main development site on-site parking. This area is referred to as the 'drive to site' catchment. Workers without a parking permit for the main development site will need to use one of the park and ride sites, a direct bus service, or walk or cycle to the main development site.

1.6.52 1,250 car parking spaces are proposed at each of the northern and southern park and ride facilities. Workers allocated to a park and ride site will not be permitted to drive closer to the main development site and change onto another mode of transport, with fly parking being monitored by a fly parking patrol team in the same way as at Hinkley Point C.

1.6.53 600 car parking spaces are proposed at the temporary park and ride facility at the LEEIE, prior to the completion of the northern and southern park and rides.

1.6.54 Only those workers residing at the accommodation campus will be allocated a parking permit for the campus. If their residence changes then they would be required to surrender their campus parking permit. Those workers living at the accommodation campus would be required to walk or cycle to work at the main development site.

1.6.55 A full description of parking measures is contained in section 4.7 of the **CWTP** [REP2-055].

1.6.56 Accordingly, and particularly in light of the control provided by the limited car parking, SZC Co. does not consider that caps on car movements are necessary or appropriate.

i) Workforce mode share controls

1.6.57 Control on workforce vehicle movements is also provided through SZC Co.'s commitment to achieve the mode share targets which are set out in the **CWTP** [REP2-055] at Table 3.1. SZC Co. is committing to these mode shares through the **CWTP** [REP2-055] which is secured via the **Deed of Obligation** (Doc Ref. 8.17(E)) and will fund measures to achieve them as

part of the rolling action plan set out in Section 5.3 of the **CWTP** [REP2-055].

1.6.58 The mode share targets in Table 3.1 of the **CWTP** [REP2-055] are based on the early years and peak construction assessments within the **Consolidated Transport Assessment** [REP4-005]. The early years with regards to the workforce transport strategy is defined at paragraph 3.4.8 of the **CWTP** [REP2-055]. The 'early years' mode share targets are based on the early years transport strategy prior to the northern or southern park and ride facilities being operational. Accordingly, for the purposes of the **CWTP**, the early years are defined as that period prior to either the northern or southern park and ride being operational. Once the northern or southern park and ride facilities become operational, the 'peak construction' mode share targets would apply.

1.6.59 It is recognised that the mode share targets are based on two key points in time over the 12 year construction phase (i.e. the point in time just before the delivery of the northern or southern park and ride facilities and the peak of the peak construction when the workforce is at its highest). It is standard travel planning practice to set interim mode share targets to enable progress to be tracked in meeting the mode share. As part of the next version of the **CWTP** [REP2-055] to be submitted at Deadline 6, the ability for the TRG to agree interim mode share targets will be included.

1.6.60 The mode share targets do not directly cap overall vehicle numbers on their own; rather they provide the split to be achieved between the various modes. They represent a highly sustainable strategy. In the early years, 80% of the workforce is transported by bus and only 20% by car. In the peak construction phase, nearly one third is by walk / cycle (28%), over half is by bus (54%), and only 17% is by car.

1.6.61 However, the mode share targets coupled with the limits on car parking set out above do act to limit vehicle trips. This is a standard approach and is the same approach taken at the consented Brightwell Lakes development and accepted by SCC as opposed to capping vehicle numbers to the assessed levels.

1.6.62 To provide further control and protection in this respect, **it is intended to include an early years limit on parking at the main development site prior to the delivery of the northern or southern park and ride facility** as set out in the updated drafting of **Requirement 8** of the **Draft DCO** (Doc Ref. 3.1(D)) submitted at Deadline 5, which will also be incorporated into the next version of the **CWTP** [REP2-055] to be issued at Deadline 6.

1.6.63 Therefore, should the number of workers exceed the assessed 1,500 workers prior to the delivery of the northern or southern park and ride

facility, SZC Co. would continue to be committed to achieve the early years mode share targets set out in Table 3.1 of the **CWTP** [REP2-055] and the proposed early years limit on car parking at the main development site would act to limit vehicle numbers and promote sustainable modes for travel to the main development site.

1.6.64 The mode share targets are enforceable. If it is apparent that any targets are not likely to be achieved or have not been achieved, then SZC Co. is obliged by the **Deed of Obligation** (Doc Ref. 8.17(E)) to propose remedial measures, for approval by the TRG. The control provided by the TRG is explained further in SZC Co.'s **Written Submissions arising from ISH3** on the TRG (Doc Ref 9.50).

1.7 Design of the Yoxford and Middleton Moor roundabouts

1.7.1 SZC Co has designed the proposed Yoxford roundabout to accommodate the expected traffic volumes at 2023 year, 2028 peak construction and at operation in 2034. The design is based on Ordnance Survey mapping and available information on utilities, drainage, traffic management and contractor working space requirements so is necessarily cautious. SZC Co is confident however that the design:

- can accommodate the largest expected AIL movement for both Sizewell B and C;
- has been through the Stage 1 road safety audit process without significant concerns raised;
- will have enough capacity to meet expected traffic demands, within acceptable parameters, after extensive testing in the Junctions9 and VISSIM microsimulation software (and those assessments have been agreed with Suffolk County Council); and
- has been modified where appropriate through public consultation stages 2, 3 and 4 feedback before being included in the DCO documents.

1.7.2 The next stage will be to take the preliminary design scheme through to detailed design to DMRB requirements and produce drawings and the specification for a Stage 2 road safety audit as part of Suffolk County Council's technical approval process. It is conceivable that, during detailed design, some elements of design such as the inscribed circle diameter could change, although and design development would need to remain within the DCO limits of deviation.

1.7.3 The proposed Middleton Moor roundabout, which is shown on drawing SZC-SZ0204-XX-000-DRW-100065, has an Inscribed Circle Diameter of 50m so is not significantly different from the proposed Yoxford roundabout, which will accommodate considerably greater traffic volumes.

1.8 Freight Management Facility alternative access

1.8.1 The Felixstowe Town Council (FTC) written representation [REP2-181] submitted at Deadline 2 proposed an alternative access arrangement for HGVs travelling to and from the proposed freight management facility at Seven Hills. SZC Co. agreed to review the proposals and provide a response at Deadline 5.

1.8.2 FTC's proposed alternative access arrangement for inbound HGVs would require HGVs routing to the freight management facility to continue eastbound on the A14 to Junction 59 at Trimley and u-turn at the grade-separated roundabout and travel westbound to the Levington A14 off-slip and along Felixstowe Road to the freight management facility. This alternative route would be circa 11.5km from the point where HGVs pass under Seven Hills on the A14 to accessing the freight management facility. By contrast the proposed access arrangement via Seven Hills and A1156 is circa 1.5km.

1.8.3 FTC's proposed alternative access arrangement for outbound HGVs would require HGVs to route east along Felixstowe Road to access the Levington A14 on-slip and then west to the Seven Hills westbound off-slip to access the A12 north. This would be circa 5km to access the Seven Hills junction compared with the 1.5km route proposed. The alternative egress arrangement would still require SZC HGVs to route through the Seven Hills roundabout in order to access the A12 in a similar way to the proposed egress arrangement. Indeed, it would add HGVs onto the circulating carriage of the roundabout prior to the A1156 arm of the junction.

1.8.4 SZC Co. has previously discussed the potential for SZC HGVs to route via the Levington on and off slip but the junction is sub-standard and HGVs exiting the off-slip would be required to straddle the mainline carriageway lane, which would result in road safety issues.

1.8.5 SZC Co. has assessed the impact of SZC traffic on the Seven Hills junction within the A12 VISSIM model based on the proposed access arrangement to the freight management facility. The model has been accepted by SCC and Highways England as an acceptable model to assess the effects of the Project on the junction. Highways England has concluded that highway improvements are not required at the junction in order to mitigate the effects of the Sizewell C Project subject to agreeing management measures to be included in the transport management plans.

1.8.6 SZC Co. therefore considers that the alternative access arrangement put forward by FTC would not be more appropriate than the proposed arrangement; indeed, it would be considerably less appropriate for the reasons set out above.

1.9 SLR Alignment: Alternatives and Justification

a) Approach to alternatives

1.9.1 Consideration of alternatives, including any alternatives to the SLR alignment, must have proper regard to the policy framework. NPS EN-1 contains detailed policy on alternatives, which is specific to new energy infrastructure such as Sizewell C.

1.9.2 Paragraph 4.4.1 of NPS EN-1 confirms that, "*From a policy perspective, the NPS does not contain any general requirement to consider alternatives or to establish whether the proposed project represents the best option*". Nor is there any prescribed process for site selection set out in the NPS.

1.9.3 Paragraph 4.4.3 of the NPS provides that consideration of alternatives must take account of the "*level and urgency of need for new energy infrastructure"*. Certain principles are then set out as relevant to the weight that should be given to alternatives. These include "*whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security and climate change benefits) in the same timescale as the proposed development*" (bullet point 2).

1.9.4 Importantly, therefore, the weight to be given to alternatives is bound up with the urgent need for Sizewell C project. No application for development consent has been made with an alternative alignment of the SLR and there is no realistic prospect of any such application delivering the same infrastructure in the same timescale as the proposed development. Accordingly, no alternative would meet the policy objective of urgency. That is a very important consideration.

1.9.5 Other particularly relevant principles in paragraph 4.4.3 of EN-1 include:

> *"alternatives not amongst the main alternatives considered by the applicant (as reflected in the ES) should only be considered to the extent that the [ExA] consider that they are important and relevant to its decision"; and*
>
> *"alternative proposals which are vague or inchoate can be excluded on the grounds that they are not important and relevant to the IPC's decision".*

1.9.6 If the SLR is judged to be acceptable in planning terms, the existence of alternatives is not a reason to reject it. That is the correct approach which objectors do not recognise. The Applicant says there is no realistic or deliverable alternative to the SLR, but even if there was it would not be a reason to reject the SLR. The ExA can of course quite properly consider it appropriate to report the environmental effects of alternatives to the Secretary of State, and indeed NPS EN-1 paragraph 4.4.2 explains that the ES should include information about the main alternatives studied. But the consideration of alternatives in decision-making must take account of the NPS policy on alternatives, which does not require an applicant to show that their option is "*the best option"*, and is also framed around the recognised urgent need, as set out above.

b) The position of SCC and ESC

1.9.7 It is also important to recognise that neither the relevant local highways authority, SCC, nor the local planning authority, ESC, have said that the SLR is unacceptable. SCC (but not ESC) may wish the SLR to be removed post-construction, but SCC notably do not say that the SLR is unacceptable or should be rejected in favour of an alternative. Further and crucially, it is clear that any concerns SCC may have about retention of the SLR have not led SCC to invite the ExA to recommend that development consent is refused. SCC do not invite that. ESC meanwhile agree with the provision of the SLR and recognise that the combination of retention of the SLR and improvements to the B1122 would be "*hugely significant*" in terms of legacy benefits, in their words in comments on written representations ([REP3-060] at 2.11).

c) Consideration of SLR alternative alignments

1.9.8 SZC Co. has properly considered alternative alignments for the Sizewell link road. SZC Co. submitted the **Sizewell Link Road: Principle and Route Selection Paper** at Deadline 2 [REP2-108] (electronic pages 193 to 504). This Response Paper brings together information on route selection and related issues and explains why SZC Co. consider the Sizewell link road (also referred to as Route Z south in the Response Paper) to be the most appropriate route. As required by paragraph 4.4.2 of NPS EN-1, a summary of the alternatives considered during the design development process is provided in **Volume 6**, **Chapter 3** of the **Environmental Statement** (ES) [APP-450].

1.9.9 Since the submission of the DCO, a further review of the options considered by SZC Co. (as set out in **Appendix 11** of the **Response Paper**, electronic pages 341 to 504 [REP2-108]), has been undertaken on the Sizewell route options (Routes W, X, Y and Z) to test the robustness of the previous conclusion that the chosen route was the most suitable route using

information from previous studies and updated using the latest baseline data or studies undertaken by SZC Co. since the submission of the DCO.

1.9.10 This additional review confirms SZC. Co's view that Sizewell link road (Route Z South) is the most appropriate route and alignment for the Sizewell link road.

1.9.11 During the ISH 2, the ExA asked whether sustainability had been considered as part of the route appraisals. Sustainability is a broad term and requires consideration of the environmental, economic and social factors. The options appraisals undertaken by SZC Co., summarised in **Sizewell Link Road: Principle and Route Selection Paper** submitted at Deadline 2 [REP2-108], have considered the likely impacts of the route options on the environment, economic matters, and the community.

d) Vehicle km comparison

1.9.12 SZC Co. agreed at ISH 2 that it would provide a comparison of the total length and mileage of the Sizewell Link Road and the more southerly alignment of Route W north (although for the reasons set out in the Response Paper, Route W is not an available, realistic or preferable alternative). This is provided below.

1.9.13 The data extracted from the VISUM strategic model for peak highway hours 8-9am and 5-6pm shows that there is no material difference between the Sizewell link road and Route W North in total vehicle kilometres travelled by existing traffic as **Table 3** below shows. This finding will be consistent across the day as there is no congestion in the model that would cause rerouting outside peak periods.

Table 3 – Comparison of Total Vehicle Kms (Existing Traffic)

Hour	Car total veh km (Existing)	LGV total veh km (Existing)	HGV total veh km (Existing)	Total veh km
Sizewell link road				
8-9am	895,710	102,376	81,635	1,079,721
5-6pm	993,780	76,507	52,419	1,122,706
Total	1,889,490	178,883	134,054	2,202,427
Route W North				
8-9am	896,109	102,341	81,610	1,080,060
5-6pm	993,286	76,478	52,407	1,122,171
Total	1,889,395	178,819	134,017	2,202,231
W North / SLR ratio	100.0%	100.0%	100.0%	100.0%

1.9.14 **Table 4** below provides a summary of the comparison of total vehicle km for Sizewell C cars and LGVs, which have route choice on the network.

Table 4 – Comparison of Total Vehicle Kms (SZC cars and LGVs)

Hour	Car total veh km (SZC)	LGV total veh km (SZC)	Total veh km
Sizewell link road			
8-9am	6,172	2,593	8,765
5-6pm	18,438	1,783	20,221
Total	24,610	4,376	28,986
Route W North			
8-9am	6,098	2,555	8,653
5-6pm	18,204	1,729	19,933
Total	24,302	4,284	28,586
W North / SLR ratio	98.7%	97.9%	98.6%

1.9.15 It can be seen from **Table 4** that for Sizewell C cars and light goods vehicles, which are not on fixed routes like Sizewell C heavy goods vehicles and buses, there would be a small additional vehicle km in total of approximately 1% for car movements and approximately 2% for light goods vehicles using the Sizewell link road when compared with W North.

1.9.16 The comparisons of vehicle kilometres made in **Appendix 10** of [REP2-108] (pages 336 to 340) reflected the number of HGVs proposed at the time. However, the number of HGVs has reduced as a result of the preferred freight strategy. This now proposes, on the busiest day, 700 HGV movements per day not the 1000 HGV movements proposed and set out in Appendix 10 referenced above and 500 two-way HGV movements on a typical day. This change reduces by approximately 20% (from the total of -4,067 veh km in Table 3 of Appendix 10 to -3297 veh km in the table below) the differential between the vehicle kilometres for the two routes. It should also be noted that the assessment was based on buses from the north routing via the B1122 rather than W North. The assessment has been updated to reflect 500 two-way HGVs in the typical day and 700 two-way HGVs in the busiest day and for the buses from the north to be assigned to W North and not the B1122. This is summarised in **Table 5** below.

Table 5 – Comparison of Total Vehicle Kms (SZC HGVs and buses)

Hour	Number of buses/ HGVs per day	SLR veh km between A12 and MDS	W North veh km between A12 and MDS	Difference
HGVs (typical day)				
South HGVs (85%)	425	5,436	3,557	-1,879
North HGVs (15%)	75	567	1,160	+593
HGVs (busiest day)				
South HGVs (85%)	595	7,610	4,980	-2,630
North HGVs (15%)	105	794	1,624	+830
Buses				
South buses	296	3,786	2,478	-1,308
North buses	224	1,694	3,465	+1,771
HGVs and buses combined				
HGVs (typical) + buses	1,020	11,483	10,660	-823
HGVs (busiest) + buses	1,220	13,884	12,587	-1,337
W North / SLR ratio (typical)			92%	
W North / SLR ratio (busiest)			90%	

1.9.17 It can be seen from **Table 5** that for Sizewell C buses and HGVs, there would be 8-10% additional mileage for buses and HGVs to use the Sizewell link road when compared with W North.

1.9.18 As Table 6 on electronic page 498 of [REP2-108] shows, minimising total vehicle kilometres is only one factor considered in deciding between alternative routes. The environmental impacts of using route W North also need to be considered:

- Route W North would result in an additional 105 HGV per day and 224 buses per day travelling through Yoxford to access the W North route.
- It would reduce traffic flows on the A1094 and B1069 but not by enough to enable these roads to perform a different function, i.e. they would continue to function as today, albeit with lower traffic volumes; and
- It would still result in additional traffic on the B1122 when compared to the Reference Case.

1.9.19 Alternatively, the Sizewell link road route would:

- Increase HGV and bus flows on the A12 Saxmundham bypass, but this would have few environmental impacts compared to W North routing 339 two-way buses and HGVs through Yoxford per day. The Saxmundham bypass is not close to capacity, is not environmentally sensitive and SZC Co. proposes safety improvements at the A12/B1119 junction.

- Entirely relieve Middleton Moor and Theberton of Sizewell C HGV and bus traffic, as communities requested at Stage 1 and 2 public consultation. This would enable the B1122 to be repurposed as a cycle and leisure route, connecting with the Quiet Lanes initiative that Suffolk County Council is promoting locally.

1.9.20 Route W north is not therefore able to realise the B1122 traffic relief at Middleton Moor and Theberton, requested by local communities, that the Sizewell link road does in addition to relief of HGVs and buses through Yoxford.

e) Conclusion

1.9.21 The conclusions of the **Sizewell Link Road: Principle and Route Selection Paper** at Deadline 2 [REP2-108] (electronic pages 193 to 504) remain valid in that the Sizewell Link Road minimises the effects on local residents, which is the main objective of the new road, has less impact on landscape and visual amenity than the alternatives, involves the least land take and avoids conflict with any Local Plan allocations.

1.9.22 Based on the vehicle km assessment set out above, it can be concluded that there would be no material difference between the Sizewell link road and Route W North in total vehicle km travelled by background traffic. There would only be a small additional vehicle km of approximately 1% for car movements and approximately 2% for light goods vehicles using the Sizewell link road when compared with W North and 8-10% additional mileage for buses and HGVs to use the Sizewell link road when compared with W North.

1.9.23 These differences do not approach a scale where they could affect the balance of advantage; even if route W North was an available and realistic alternative.

1.10 Early Years Traffic Modelling

1.10.1 The ExA asked what the consequence of the northern or southern park and ride facility being delayed would be in terms of the workforce numbers

increasing and there being potentially a greater level of vehicular trips, and in particular worker car trips, than that assessed within the early years assessment in the **Consolidated Transport Assessment** [REP4-005]. This is addressed in response to Vehicle Caps and Controls within Section 1.5(i) of this note.

1.11 Seasonality

a) Seasonality and Outages

1.11.1 During ISH2 the ExA asked for further clarity on seasonal traffic analysis and outages with respect to SZC Co.'s response to ExQ1 TT.1.41 [REP2-100]. The question posed by the ExA related to how the volumes of traffic that have been modelled for a periodic outage at Sizewell B (which have been modelled) compare with seasonal traffic flows during August (which have not been modelled). **Appendix B** provides a response to this question.

b) Letter from DfT regarding seasonality

1.11.2 As part of his Deadline 2 submission, Mr Galloway submitted a letter from the Department for Transport (DfT) dated 4th March 2019 regarding WebTAG guidance and seasonality [REP2-310]. The letter confirmed that the Department's Transport Analysis Guidance (TAG) Unit M1.2. paragraph 3.3.6 states that:

> *"Surveys should be carried out during a 'neutral', or representative, month avoiding main and local holiday periods, local school holidays and half terms, and other abnormal traffic periods."*

1.11.3 It goes on to state that:

> *"For the majority of transport schemes, it may be considered disproportionate to analyse a large number of model runs to reflect seasonal variation in each of the uncertainty assumptions tested, as transport modelling is very resource-intensive and time-consuming."*

1.11.4 The letter concludes by stating that:

> *"However, it is possible that the business case for a scheme could depend heavily on seasonal impacts, and in this instance it would be good practice for analysts to seek agreement with assessors about the appropriate analytical approach at an early stage…"*

1.11.5 WebTAG (Web-based Transport Analysis Guidance) is the Department for Transport's appraisal guidance and toolkit. It consists of software tools and guidance on transport modelling and appraisal methods that are applicable for highways and public transport interventions. These facilitate the appraisal and development of transport interventions, enabling analysts to build evidence to support business case development, to inform investment funding decisions. Development of analysis using WebTAG guidance is a requirement for all interventions that require government approval and funding. For interventions that do not require government approval and funding the guidance serves as a best practice guide.

1.11.6 SZC Co. makes the following points in response to Mr Galloway's written representation:

- All mitigation proposed for the Sizewell C Project is to be funded by SZC Co. and will not require any government funding. Notwithstanding this, SZC Co. has referred to the best practice guidance set out in WebTAG as part of the development of the **Consolidated Transport Assessment** [REP4-005].

- The **Consolidated Transport Assessment** [REP4-005] has been scoped with SCC and an assessment of seasonality was not considered necessary, as confirmed by SCC at ISH2.

- SZC Co. has sought to include a reasonable level of robustness in the assessment and included a periodic outage at Sizewell B within the Reference Case scenarios even though outages only occur every 18 months for up to 2 months. Please refer to **Appendix B** of this note for further analysis of seasonality and comparison with outage traffic.

c) Latest WebTAG guidance

1.11.7 As set out at the ISH2 and 3, the traffic modelling undertaken includes a forecast of future traffic growth to the future assessment years of 2023, 2028 and 2034. The approach to traffic growth has been agreed with the highway authorities and is summarised in Chapter 8 of the **Consolidated Transport Assessment** [REP4-005] and includes committed developments and growth based on the DfT TEMPro database.

1.11.8 The DfT has published a series of documents since the COVID-19 pandemic. In July 2020 the DfT published "Appraisal and modelling strategy: route map for updating TAG during uncertain times."

1.11.9 Paragraphs 2.4 and 2.5 of the document state that *"demand for travel tends to be positively correlated with both GDP and population"* and that based

on the new economic projections published in March 2020 by the Office for Budgetary Responsibility (OBR), *"the long-term assumption of GDP per capita growth has been reduced significantly from an annual average of 1.9% (2.1% in 2068) to 1.4% (1.5% in 2069) between the years 2019-2069. The cumulative impact of this downward revision in per annum growth rates is that by 2069 GDP per capita is 23.7% lower than previously estimated. This represents a much more significant change to long-term growth assumptions than in any previous update of OBR projections."*

1.11.10 With regards to population growth forecasts, paragraph 2.6 of the document states that *"the OBR have also moved to using the ONS's 2018-based zero net EU migration population projection. The long-term assumption of population growth has been reduced from an average of 0.3% per annum (0.21% in 2069) to 0.15% per annum (0.04% in 2069) between the years 2019-2069. As a result, the UK's population is projected by the OBR to be 8.4% lower by 2069 than previously assumed."*

1.11.11 Both of these two factors will impact on traffic growth forecasts included in TEMPro. The **Consolidated Transport Assessment** [REP4-005] was based on a version of TEMPro that took account of the previously forecast higher GDP and population. It is therefore likely that any future version of TEMPro that takes account of the reduction in GDP and population, would result in lower levels of traffic growth.

1.11.12 Paragraphs 2.11 and 2.13 of the document deals with the uncertainty that the COVID-19 pandemic has had on forecasting travel behaviour. Paragraph 2.11 states:

> *"It is too early for us to fully understand the impacts that COVID-19 may have on future travel demand and travel preferences…."*

1.11.13 It should be noted that the document was published in July 2020 and would have been drafted at the start of the pandemic.

1.11.14 Paragraph 2.13 goes on to state that:

> *"…in the long-term there are likely to be other uncertainties (around technology development and travel behaviour) that may have as significant an impact on travel demand as well as the pandemic."*

1.11.15 Since the publication of the document in July 2020, the DfT has published the "TAG Uncertainty Toolkit" in May 2021 as supplementary guidance. On Page 44 of the guidance it provides six scenarios for government business cases to potentially consider. One of the scenarios is with respect to travel behaviour, with the scenario seeking to capture a future where:

> *"people embrace new ways of working, shopping and travelling. Important behavioural trends which have emerged in recent years accelerate, in part because of the Covid-19 pandemic, which include: changes in the travel behaviour of young people; increased flexible working; and increased online shopping."*

1.11.16 The travel behaviour scenario would be based on the following:

- ***"Trip Rates** extrapolation of existing trip rate trends meaning overall trips continue to fall*
- ***Licence Holding** -reduced rates among younger cohorts throughout forecast period*
- ***Rail trips** -reduced, reflecting reductions in commuting as more people work from home."*

1.11.17 In summary, SZC Co. contends that the forecast growth in traffic within the **Consolidated Transport Assessment** [REP4-005] is robust and takes no account of the effect of the reduced GPD and population forecasts or changes in travel behaviour. Any suggestion of a need to assess higher than average seasonal traffic flows at certain times of the year must therefore also take account of this context.

1.12 Yoxford VISSIM model

1.12.1 The Heveningham Hall Estate raised technical issues with the Yoxford VISSIM modelling as part of their written representation made at Deadline 2 [REP2-287]. SZC Co. agreed to respond to the points raised in writing as part of the Deadline 5 submission.

1.12.2 The Yoxford VISSIM model was developed in line with DfT TAG and Transport for London (TfL) modelling guidance and is considered to be representative of traffic conditions in the Yoxford area. The base model is demonstrated to closely replicate observed conditions as presented in chapter 4 of Appendix 9B of the **Consolidated Transport Assessment** [REP2-050].

1.12.3 The VISSIM model was also independently audited and improved through discussions with Suffolk County Council and is therefore considered to be a robust tool for the purpose of assessing Sizewell C impacts.

1.12.4 There are a small number of instances where the level crossing queues do not materialise at exactly the same time of day in the model and in the observed data. This is simply because the trains in the VISSIM model are

assumed to run to timetable whilst a small number of trains captured in SZC Co.'s observations were not on time. This therefore does not indicate a calibration problem with the model. Detailed queue length calibration graphs are presented in **Consolidated Transport Assessment Appendix 9B** [REP2-050] (p220-252) and demonstrate a high degree of correlation with observed conditions.

1.12.5 Tables 12, 13 and 14 of Appendix 9B of the **Consolidated Transport Assessment** [REP2-050] demonstrate that travel times on the A12 correlate well with those observed, with almost all modelled travel times falling within 15% of the observed time, as per DfT TAG guidance. The travel times are presented for four sections of the A12 respectively, allowing the reader to understand how well the model matches the observed times at different points along the A12. The small number of travel times that do not meet the +/-15% criteria are highlighted in red and text is also provided to explain why this is likely to be. This information helps to provide confidence that the modelled times either match or are comparable to those observed.

1.13 Gravity model and allocation to park and ride facilities

1.13.1 The Heveningham Hall Estate raised technical issues with the gravity model as part of their written representation made at Deadline 2 [REP2-287]. SZC Co. agreed to respond to the points raised in writing as part of the Deadline 5 submission.

1.13.2 SZC Co. provided a response to the Heveningham Hall Estate written representation as part of the Deadline 3 submission (please refer to Table 8.1 in SZC Co. **Comments on Written Representations** [REP3-042]).

1.13.3 At the ISH2, SZC Co. agreed to provide a written response with regards to the following comments made by Heveningham Hall Estate:

- Why the 3,000 workers allocated to the accommodation campus and caravan park are not included in the gravity model and the Estate's suggestion that there may be an underestimate of workers in the gravity model if there are less people living in the campus and caravan park at peak construction than forecast;
- Why the **Consolidated Transport Assessment** [REP4-005] has note assessed trips associated with residents and the campus and caravan park travelling to their permanent residence;
- Why the car share factor has been calculated to be 1.06 as this is lower than observed at Hinkley Point C; and

- Why according to Plate 7.4 of the Transport Assessment, workers living west of Saxmundham are assigned to the northern park and ride facility when they live nearer to the southern park and ride facility.

1.13.4 With regards to the first point, SZC Co. is confident that the proposed project accommodation will be fully occupied at the peak. Experience at Hinkley Point C, set out in response to **ExQ1 AR.1.2, CI.1.2 and CI.1.6** [REP2-100] suggests that there will be substantial demand for this accommodation, and SZC Co. will price the accommodation to fill it. Please also see the comments in respect of worker mode share targets and limits on parking set out earlier in this note, which act as appropriate controls.

1.13.5 With regard to the second point, please refer to SZC Co. response to **ExQ1 TT.1.59** [REP2-100] submitted at Deadline 2;

1.13.6 With regard to the third point, the updated figures in the **Consolidated Transport Assessment** (Table 2 in Appendix 7A [REP2-046]) for the northern park and ride are 1,485 workers, using 1,206 vehicles. This equates to an overall car sharing factor at the northern park and ride of 1.23. Heveningham Hall Estate has quoted numbers from Table 2 in Appendix 7A of the original **Transport Assessment** [APP-603], which were incorrect, as these numbers should have been 1,419 workers using 1,151 vehicles, equating to an overall car sharing factor at the northern park and ride of 1.23. Therefore, the car share ratio is in accordance with the observed ratio at Hinkley Point C.

1.13.7 Finally, within the gravity model, workers have been allocated to either the northern or southern park and ride based on their quickest overall journey time to the main development site (i.e. including journey time to the park and ride facility, transfer from car to bus and then onward journey by bus to the main development site). The gravity model park and ride allocation has not been based on the nearest park and ride facility to worker residence. It should be noted that the gravity model is based on Census boundaries and not worker postcodes but it is considered that it provides a reasonable basis from which to assess the effects of worker trips.

1.13.8 In reality, workers will be allocated to park and ride facilities based on their postcode rather than Census output area and there will be pragmatic judgements made with regard to the allocation between northern and southern park and ride facility. The issue raised by Heveningham Hall Estate relates to the area west of Saxmundham and that these workers have been allocated within the gravity model to the northern park and ride rather than the southern park and ride. Interrogation of the gravity model shows that this rural area is forecast to have 16 worker trips originating from it, which have been assigned to the northern park and ride as this would provide the shortest overall journey time. Even if in reality they were

assigned to the southern park and ride it would not impact the conclusions of the **Consolidated Transport Assessment** [REP4-005].

APPENDIX A: Material Imports and Modal Split

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Material Imports and Modal Split

July 2021
Deadline 5 submission by SZC Co.

1. Introduction

The project is seeking to optimise the use of sustainable transport means for the import of materials in order to meet the commitments within the DCO to limit HGV traffic to the project site. Therefore, where practical and cost effective rail and marine methods of transport have been used.

This report seeks to record the primary construction materials and the current assumed means of transport to the project, the reason for this choice of haulage and any potential further opportunity or obstacles to increase the proportion of the transport mode share delivered by more sustainable means i.e. rail or sea.

The anticipated volumes of materials have continued to be developed as design, construction methods and delivery are developed and revised details and tonnages were stated within the updated DCO in the Freight Management Strategy [AS-209].

Table 2.1: Breakdown of expected import material by type

Type	Imported materials by weight (million tonnes)	
	Original assumption	Updated assumption
Concrete materials	5.1 (50%)	4.8 (40%)
Backfill	2.0 (20%)	3.3 (27%)
Steel	1.0 (10%)	1.0 (8%)
Bitumen	1.0 (10%)	1.0 (8%)
Other	1.0 (10%)	2.0 (17%)
Total	**10.1 (100%)**	**12.1 (100%)**

The updated assumption of materials quantities has been assessed and is considered more accurate. Our analysis has indicated this would provide an improved modal split in favour of rail and sea (see summary section).

2. Strategy

The construction and delivery of the nuclear power station in accordance with the project programme and milestone target dates aligned to the government's strategy for green energy are critical to the project. To achieve these dates the most suitable, sustainable and efficient means of transport for all of the construction materials is required for the project. The project is therefore progressing design and delivery of the necessary rail and marine infrastructure to provide as much capacity as possible for materials to be imported by these means.

The logistics of the bulk materials are very well suited to the rail and marine means of transport, with these modes generally being more practical and cost effective than road transport. These materials are required in very large volumes and are typically sourced from a single origin point to the project. The selection of rail or sea depends on the existing rail infrastructure and nature of the origin point in proximity to a local port.

The non-bulk materials are not suited to rail and marine modes of transport. This is because these materials are:

- only required in small volumes or
- required in larger volumes of material but spread over the 10+ year construction period resulting in continuous, lower delivery volumes or
- sourced from areas local to the project.

The central strategy of the project Materials Management Plan has therefore been to target the rail and marine import for the large volume of bulk materials (mainly fill and concrete aggregates) as far as practical, leaving road import for the lower volume materials and equipment. This approach is likely to result in 60% of all materials being delivered by rail or sea, with the residual 40% requiring road transport.

Further development and supply chain engagement is ongoing to determine if further opportunities exist for diverting materials away from road transport to more sustainable means, if their nature and the quantity in which they are required makes this practical and cost effective.

It is important to state that SZC is incentivised to ensure the most appropriate from of transport is used for each different material type. This incentive takes a number of forms, but includes:

- Operational efficiency – having to process large numbers of road vehicles through the CTMP control mechanisms (FMF, DMS, vehicle tracking, safety & compliance checking, security etc.) requires considerable resource and therefore moving the high volume materials by other means avoids having to do this. The scale of logistics operation required if all of these materials were moved by road would be extremely challenging.
- Site efficiency – higher quantities of road vehicles than necessary will impact the productivity of operations on site with congested haul roads, additional plant, additional operatives to the extent that the site would be significantly constrained.
- Safety – moving significant quantities of bulk materials by rail and sea is inherently safer as there are fewer interfaces to manage and less interaction with vulnerable road users.
- Cost – moving large quantities of bulk materials long distances is more expensive by road transport.
- Available capacity of road transport – the road transport industry has significant, well known issues with driver shortages. The scale of the project's requirement for material transport could not be met by road transport solutions.

3. Transport Modes

3.1. Road

Road will be the primary means of haulage in the early years as the rail and marine infrastructure will not yet have been constructed and be available.

The use of the largest vehicles to haul bulk materials where practical is proposed to minimise the number of individual vehicle movements.

The delivery of the main associated development (referred to within the project as AD3 schemes) (SLR, TVBP and Yoxford) will divert the traffic away from the sensitive receptors e.g. those located on or near the B1122, in Yoxford and at Farnham.

The project has been able to commit to reducing its HGV movements by increasing the available rail capacity and adding a marine bulk import capability. As a result, HGV movements after the early years are forecast as follows, compared with those proposed in the originally submitted DCO application:

Typical	325 daily deliveries (650 movements) reduced to 250 (500)
Peak	500 daily deliveries (1,000 movements) reduced to 350 (700)

To help stakeholders understand the types of vehicles delivering to the project the graph below (Figure 1) breaks the HGVs down into the anticipated sub-categories of vehicle type i.e. 3.5t-7.5t Gross Vehicle Weight (GVW) (these would be considered LGVs more normally), 7.5t-18t GVW HGVs and 18t-44t GVW HGVs. This breakdown should help stakeholders understand that not all HGVs are the larger category. This profile (Figure 1) is an extract from the overall forecast SZC HGV Histogram (Figure 2) and is based on the same assumptions and HGV build up as the overall profile. Please refer to Figure 2 below for further details.

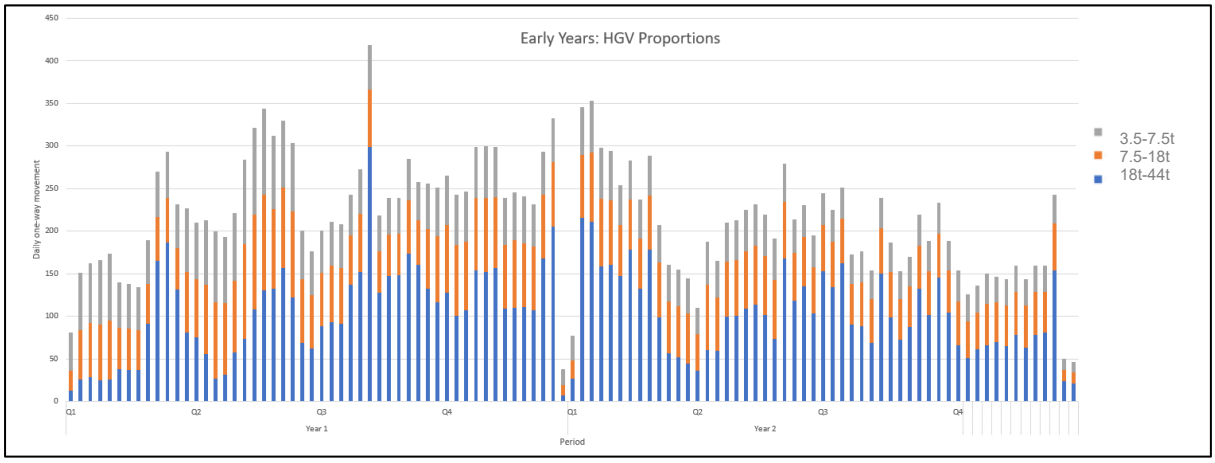

Figure 1 – Early Years HGV proportions by type

The overall HGV profile is shown in the graph below (Figure 2) with the proposed HGV limits included. The exceedances will be smoothed/managed through the Delivery Management System (DMS) by allocating daily movements to ensure activity remains within the proposed limits. This day by day smoothing opportunity has been reviewed and the Project is confident it can be delivered through having transparency of operations provided through the DMS.

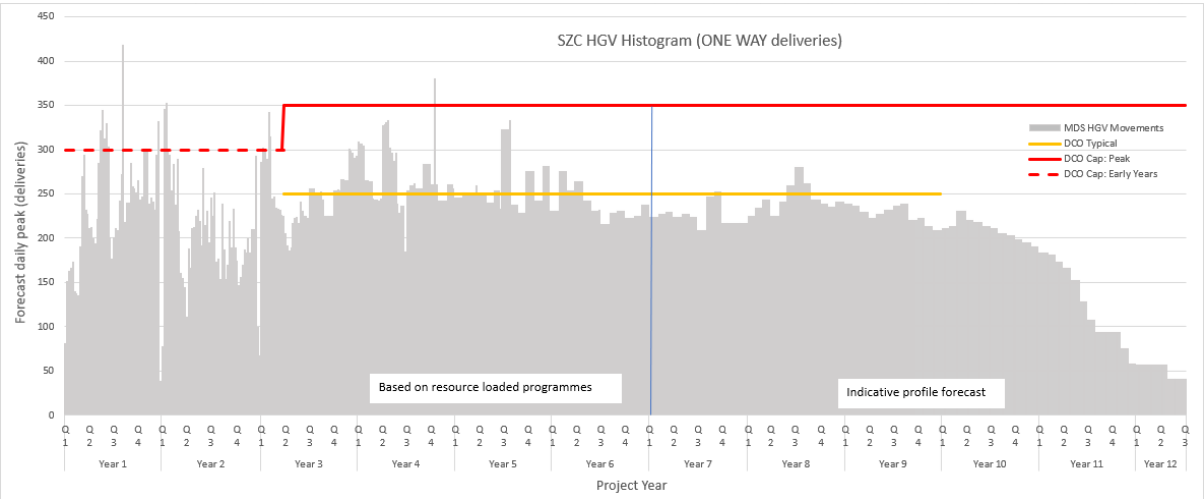

Figure 2 – SZC HGV Histogram (one-way deliveries)

The HGV profile (Figure 2) has been derived based on a bottom-up material requirements basis from the resource loaded programme up to the end of year 6 (blue line), therefore the activities to this point provide more certainty over HGV requirements. The profile after year 6 (to the right of the blue line) has not been calculated to the same level of granularity because there is not sufficient information to do this at this stage. Therefore, these movements are indicative.

The profile (Figure 2) includes all HGVs that are required to route along the B1122 and through the villages of Middleton Moor and Theberton. All HGV movements will be counted at a suitable point (by way of a geofence) on the B1122 in the early years. After the SLR is complete and there are no longer any HGVs on the B1122, the monitoring point will move to the SLR (and potentially additional or alternative locations) in order to capture all HGVs travelling to the main development site from the wider network. This will include any HGVs travelling from the wider network to the LEEIE.

The profile includes all construction traffic for the main development site (including LEEIE), the green rail route, improvements to Lover's Lane, the consented relocated Sizewell B facilities and any Sizewell link road (SLR) traffic that needs to travel along the B1122 to access the SLR construction area from the east. Careful phasing of the construction of the SLR has also been undertaken to further minimise the project traffic along the B1122. This allows the reuse of material (refer to section 4.2.1 below) and the early use of the SLR alignment for the haulage of some material. The SLR construction focus on the early delivery of the ESK overbridge allows the SLR alignment to then be used to move material along the SLR trace (within the red line boundary for the SLR scheme) from the A12 over the ESK line to the eastern B1122 tie in without entering onto the B1122. Therefore, surplus material from the two village bypass and SLR can be moved to the main development site without increasing traffic on the B1122.

As can be seen in Figure 2 above there are periods where activity levels are below the proposed HGV limits but also short periods where activity levels exceed these limits e.g. Year 1 and Year 2. The nature of the construction programme is such that core activities (with a high number of HGV movements associated to them) are sequenced with one activity following another with the associated material quantities for each activity driving the profile of HGV movements. To this extent it is not possible to change the sequence of activities by re-timing activities and still maintain the overall programme. Discrete peaks which exceed the capped limit will be managed using the DMS by controlling the allocation of delivery slots each

day. Generally, where the forecast shows a peak exceedance the material will be imported in advance and stored on site for later use, allowing a flattening of the profile (so that activity levels remain always within the limits.) However, it is important to recognise that the demand and project requirements will necessarily mean that the profile has peaks and is not flat, and that any cap needs to accommodate that.

3.2. Rail

Rail is seen as the primary / preferred bulk material transport mode due to both resilience of delivery, haulage cost, year-round operation and the use of existing infrastructure for the majority of material origin sites.

Current assumptions are:

Ancillary Construction Area (ACA also known as LEEIE): 2 trains per day, 5 days per week

Green Rail Route (GRR): 4 trains per day, 5 days per week (6th day to be used as contingency if required).

- Train length is limited to 339m due to existing classification of the East Suffolk Line (ESK).
- Train weight limited to 2,000t trailing weight (gross weight a single locomotive can pull) due to the gradient of slope on the branch line (from Saxmundham) and elements of the ESK.
- Rail wagon payloads limited by Route Availability (RA) classification of the line, RA7 – max axle load of 21.5t, 86t gross for 4 axled wagon.

The project's new infrastructure seeks to maximise the use of rail while mitigating the impact on the local stakeholders:

- Trains will not pass through Leiston at night
- Bypassing Leiston with the GRR so trains do not pass through the town.
- Reducing the line speed to 10mph to minimise rail noise and ground vibration.
- Restricting the length and weight of the trains to suit the rail infrastructure / avoiding the need for extensive renewals.
- Using enclosed wagons to avoid dust from aggregate deliveries.
- Undertaking additional infrastructure works to mitigate the impact of noise and vibration.

The delivery of the rail is critical to the ability to achieve the HGV profile and to deliver the project as a whole. The ACA rail head allows 2 trains per day (tpd) from October 2023, reducing the road import of fill by 92[1] HGV movements per day (Year 1).

The GRR allows a further 2 tpd from March 2024, resulting in a total of 4 tpd, therefore providing a further reduction of 92 HGVs per day, or a total of 184 HGVs for import.

[1] 1 train = 1,250t payload. 1 bulk HGV = 27t payload. Therefore 1,250 / 27 = 46 deliveries or 92 movements

It is necessary for the rail capacity to be provided by October 2023 (two trains per day) and March 2024 (four trains per day), otherwise the HGV limits would constrain the ability to bring material to the Main Development Site in sufficient quantities to support the construction programme. Similarly, the marine capacity from the MBIF is also needed from the end of Q1 2025 to supplement the rail and road capacity for the same reason. The construction programme has been built around the assumed release of the rail and marine capacity at these times and SZC Co. is fully incentivised to ensure that the rail and marine capacity is brought on-line in time.

Figure 3 below shows how the introduction of trains in Year 2 reduces early years HGV movements.

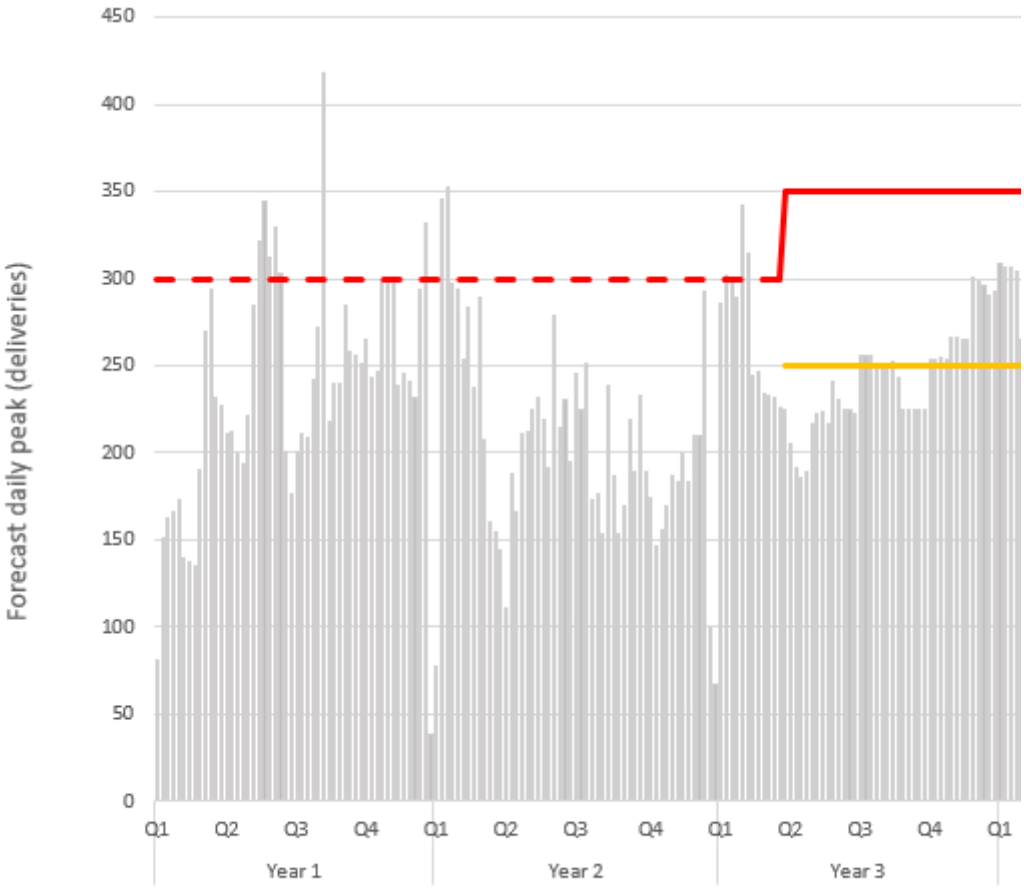

Figure 3 – Early Years HGV profile

Supply chain engagement and train pathing studies have been undertaken for the national and local rail paths.

Concrete Aggregates - Supplied from SW England (see detail in section 4.2 below). Jumbo trains, 40-42 wagons, to Acton then split into 2 smaller trains of 20 wagons (compliant with the above project / local rail infrastructure constraints) and pathed to site for discharge.

Fill Aggregates - Supplied from N Wales / N England (see detail in section 4.2 below), Jumbo trains, 40-42 wagons, to Ipswich Rail Yard[2] then split into 2 smaller trains of 20 wagons

[2] Ipswich is emerging as the preferred local hold point, although Harwich is also being investigated.

(compliant with the above project / local rail infrastructure constraints) and pathed to site for discharge or to Griffin Wharf (West Bank), Ipswich Port for transhipment to marine vessels.

Cement - Supplied from Midlands / N England (see detail below in bulk materials) standard trains of 20 wagons and routed to Griffin Wharf, Ipswich Port for discharge into the project's offsite powder terminal.

Potential use of Parkston Quay, Harwich as an alternative to Ipswich Rail Yard.

Materials supplier (Hanson) and their rail freight supply chain partners (Freightliner for SW England / concrete aggregates and GBRf for N England / powder and fill) are engaged and supportive of the above strategy. They are also already well engaged with Network Rail (NR) which is separate from the project's direct engagement with NR.

As detailed in the Freight Management Strategy [AS-280] the requirement to move these bulk materials by rail sees the following anticipated number of train movements per day over the construction programme as shown in Table 1. A more detailed forecast for the first half of the construction programme is shown in Figure 4.

Construction Year	Nominal number of trains per day
2023	0 (2 in Q4)*
2024	2 (4 from Q2)**
2025 - 2027	4
2028 - 2029	3
2030 - 2031	3 reducing to 2
2032 - 2034	2 reducing to 0

Table 1 – Nominal train deliveries

* ACA rail head provides 2 tpd 5 or 6 days a week from October 2023
** GRR and TCA sidings provide 4 tpd 5 or 6 days a week from March 2024

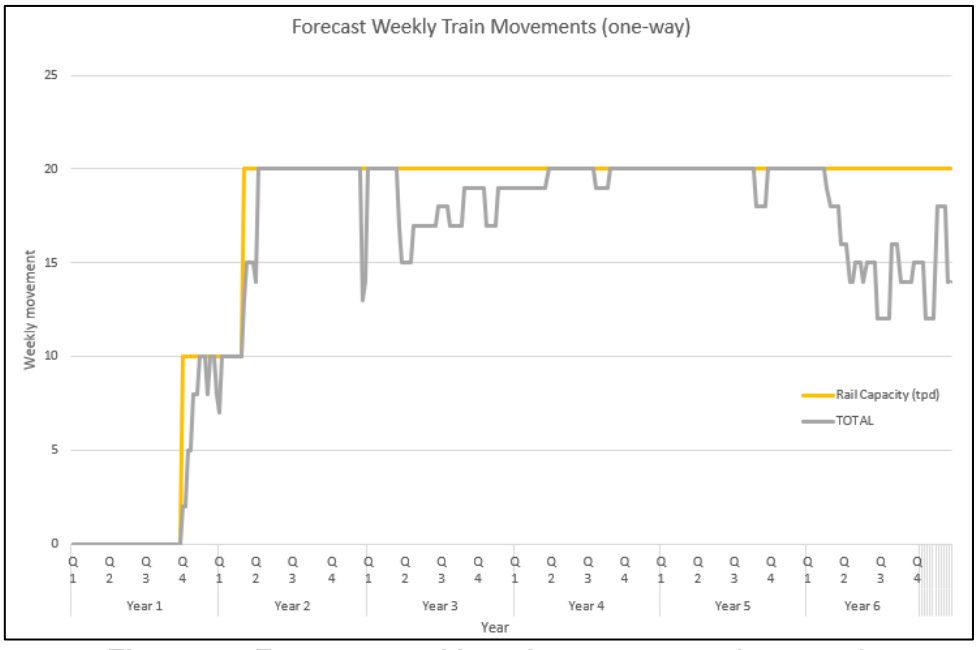

Figure 4 – Forecast weekly train movements (one-way)

The potential for a fifth train at the very peak of construction has been identified, although current studies suggest that it is unlikely there would be a train path available. As a worst case, its environmental effect has been assessed in the ES Addendum.

Any further increase of rail movements, (i.e. 6th day of operation), would allow greater rail import, and provide contingency train paths when the rail is at high utilisation and in case of rail disruption as well as improving the resilience for the project rail imports. The current import forecast (shown in Figure 4) indicates that between 2023 and 2028 the rail will be operating at or near full capacity. Therefore, the probability of use on the 6th day will be higher during these years, circa 75%. Outside of these years when the rail import demand is lower the use of the 6th day would be much lower (circa 30%).

3.3. Marine

The project is investing in two marine infrastructure facilities to enable it to meet its obligations to deliver more materials by sustainable means:

Beach Landing Facility (BLF) – the primary purpose of the BLF is to enable the delivery by sea of the permanent equipment AILs to the project site. These Permanent Equipment AILs will likely be shipped to a Muster Port (Lowestoft is a likely option) for temporary storage prior to being required at the Project site. The permanent BLF is not proposed to be utilised for bulk material deliveries as it would require additional off-loading infrastructure to off-load material from the barges. This off-loading infrastructure would require additional space, which is not available, and in addition the infrastructure required would impinge on the ability to receive the AILs for which the permanent BLF is designed. The permanent BLF also has to be demobilised during the winter period making it unavailable to receive other materials in this period. Therefore, the temporary and permanent BLFs have been designed to separately accommodate bulk materials and AILs respectively.

Temporary Marine Bulk Import Facility (MBIF) – this facility will be constructed and is scheduled to be available from Q2 2025. It has been designed to be used solely for imported fill aggregates. Due to the marine environment and ecological constraint the design of the MBIF has been limited to minimise the extent of marine piling required and this resulted in the MBIF projection into deep water being limited and therefore only suitable for shallower draft 'coaster' vessels. This makes the MBIF more susceptible to unsuitable weather, both wind, wave and swell, resulting in vessels not being able to berth. To this extent the off season (November to March) is not planned or assumed for receiving bulk materials by sea.

The theoretical capacity of the MBIF, making allowance for suitable tides and weather, is approximately 1,400,000t within the annual marine campaign dates from April to October.

The minimum requirement for marine imported material is 700,000t per year. This is the quantity of material that cannot be imported by rail due to the project maximising use of the available rail capacity and demand for the rail import of other materials. It is therefore currently anticipated that the MBIF will operate at 50% of its potential theoretical capacity. Weather variability limits the ability to rely on the MBIF to achieve more. The experience of marine operations at HPC has seen very similar levels of utilisation of the marine infrastructure and to this extent 50% is the practical reliable capacity. This offers useful additional import capability and resilience in the event of disruption to the rail supply.

Some change of material supply route between rail and sea can reasonably be achieved as the strategy allows for a transhipment facility to move material between rail and marine modes. The volume of on-site stockpiles reflects the planned import profile of materials. However, these stockpiles are constrained by required compliance with parameter plans which limit their height and therefore the quantity of material that can be held.

The import profile for permanent works backfill and the proportions transported between rail and marine supply is shown below in Figure 5.

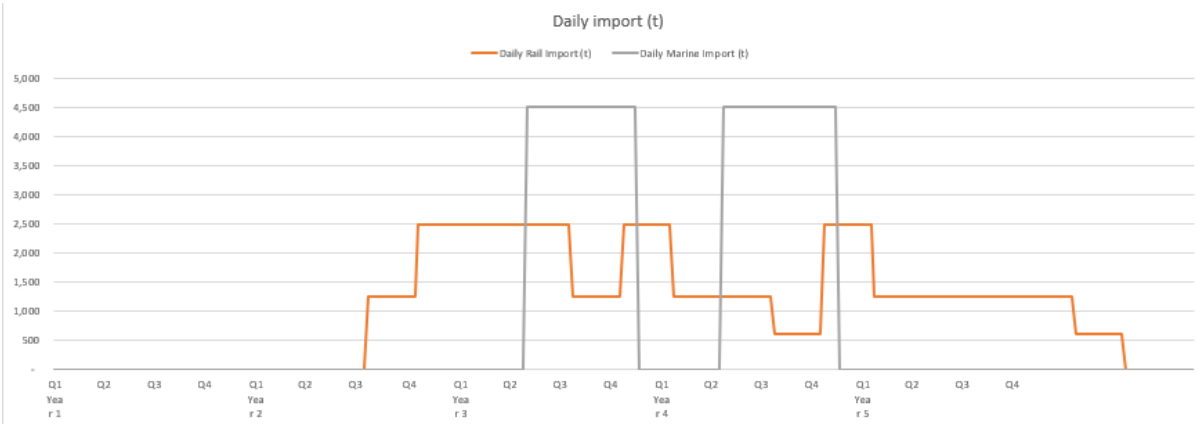

Figure 5 – Rail and Marine import of Permanent Works Backfill

The experience of operation of the temporary jetty at Hinkley Point C, which reflects the practical constraints on import by sea, means that it would not be sensible to rely on achieving the theoretical maximum capacity of the MBIF. To do so would be unrealistic and introduce unacceptable levels of risk. Further and in any event, it cannot practically be used in this way as material would accumulate at the site more quickly than it can be used and beyond the capacity of the stockpiles.

The Project will continually review opportunities to make additional use of this marine infrastructure so as to maximise delivery by more sustainable means and optimise the return from the investment made in its provision.

4. Material Transport Modes

This section details the proposed means of transport for each material required for the construction of the project, including its origin point, national and local means of transport and the impact, risks and opportunities that go with these assumptions.

4.1. AILs

As referred to in the marine section above, there are two categories of AIL:

- Permanent Equipment
- Temporary Construction Equipment

Permanent Equipment AILs will, wherever possible and in accordance with Highways England Water Preferred Policy, be delivered by sea to the permanent Beach Landing Facility (BLF). As set out in paragraph 2.2.64 of **Volume 1, Chapter 2** of the **ES Addendum** [AS-181], it is

estimated that annual campaign periods (approximately April to October) for a total of approximately 4 years would result in approximately 400 beach landings at the permanent BLF, with each barge accommodating an average of 1.5 permanent equipment AILs. The refined design of the permanent BLF has therefore been assessed to accommodate up to 600 AILs during the construction phase.

With regards to the temporary construction AILs, as a worst case, these have all been assumed to be transported by road but SZC Co. will seek to utilise spare capacity within the enhanced permanent BLF to deliver some of the heavier / larger temporary construction AILs by sea aspects as programme and weather allow.

Any temporary construction AILs required before the BLF has been constructed will need to be delivered by road and therefore this is as per the HGV assessment/modelling work undertaken.

4.2. Bulk Materials

The selection of which transport mode is to be used relies heavily on the origin location and the existing supply chains of material suppliers. SZC is proposing, where practical, to use existing suppliers, all of which have well established means of transporting their materials to customers and therefore using these existing methods ensures efficient and economic means of transport.

The majority of the bulk materials will be the aggregates for the use in backfill and concrete production. Approximately 8Mt of these materials will be required for the project. Other bulk materials include the binder powders such as cement and Ground Granulated Blast-furnace Slag (GGBS).

4.2.1. Enabling Works Backfill

The early requirement for backfill will be minimised by the project's strategy to reuse the site won material generated from the project, including the construction of the off-site associated development new highway schemes.

By reusing the site won material from the SLR and TVBP, circa 140,000m3 of surplus material will be diverted from off-site disposal to on-site reuse. This saves the export of HGV movements, equivalent to 20,000 two-way movements, assuming 27t capacity HGVs, or 30,000 HGVs assuming 18.5t capacity. This material will be used to reprofile the TCA to suit the project's requirements for laydown platforms and roads and to achieve the landscape requirements and bunds around the site.

In additional to the saving of removing the material from site, there is a further reduction in the import requirements for general fill material, again this is equivalent to a further 20,000 to 30,000 two-way movements.

However, there will be a requirement for capping material which has a higher specification and physical and geotechnical properties to the site won material. This capping material will have to be imported by road to establish the initial access routes and platforms as well as the track bed for the ACA rail head and GRR. The early requirement for capping material is estimated to be 500,000t prior to the rail head (mix of fill aggregate / capping and stabilised materials for the platforms), with a further 400,000t by the ACA rail head (mix of fill aggregate / capping and stabilised materials for the platforms).

The source of this material is not yet established. There are no local quarry sources for hard stone as this material is not present in the SE of England. It is therefore likely that the material will be transported by rail from a national quarry to a local transhipment area for onward transport by the mix of road and rail (described above) to the project depending on the availability of the site rail infrastructure.

4.2.2. Permanent Works Backfill

The backfill aggregate represents the largest volume of material import to the project. This has been minimised as far as possible through the proposed reuse of crag which will be blended with the imported fill aggregate to create a suite of blended backfill materials. These will have different specifications and proportions of site won crag, imported primary aggregate and cement binder. The delivery programme requires a high import rate to maintain the outputs for the large-scale bulk earthworks operations and backfill placement.

Supply chain engagement to identify the most appropriate source for this material is ongoing and there are several potential sources of suitable material. These have all been considered for the import logistics to site.

Hanson have two quarries that could supply this material – Penmeanmaer, North Wales and Shap in the Peak District. Both of these quarries have rail terminals to allow loading of material to train for transport. In addition to this, Hanson also have an option to supply these materials from Norway by sea.

Aggregate Industries have a super-quarry in Glensanda, Scotland. This facility is only accessible by sea, with a dedicated port for loading bulk dry cargo vessels to ship all over Europe.

Tarmac has a large quarry at Mont Sorrel in Leicestershire, which like the Hanson UK quarries, has dedicated rail sidings for loading of trains.

While the origin of the fill material is not yet certain and the means of national haulage from the quarry is not known, the project's strategy seeks to ensure any of the above suppliers can do so in accordance with the project's Materials Management Plan. Due to the capacity limitations on the rail and high demand for rail imported concrete aggregate in parallel, the fill aggregate import will need to be split between rail and marine transport.

Approximately 1.3Mt of material will be delivered by sea, 700,000t in the first campaign and 600,000t in the second campaign. This will be parallel and continuous alongside imports by rail of approximately 1.5Mt. This split mode of transport requires the material to be delivered to an offsite transhipment site where, depending on source, it can be loaded from rail to coaster vessel, bulk cargo ship to rail and smaller coaster vessel or to split large jumbo trains for onward routing to the project.

Figure 6 below shows the import of backfill material over the main earthworks phase of the project.

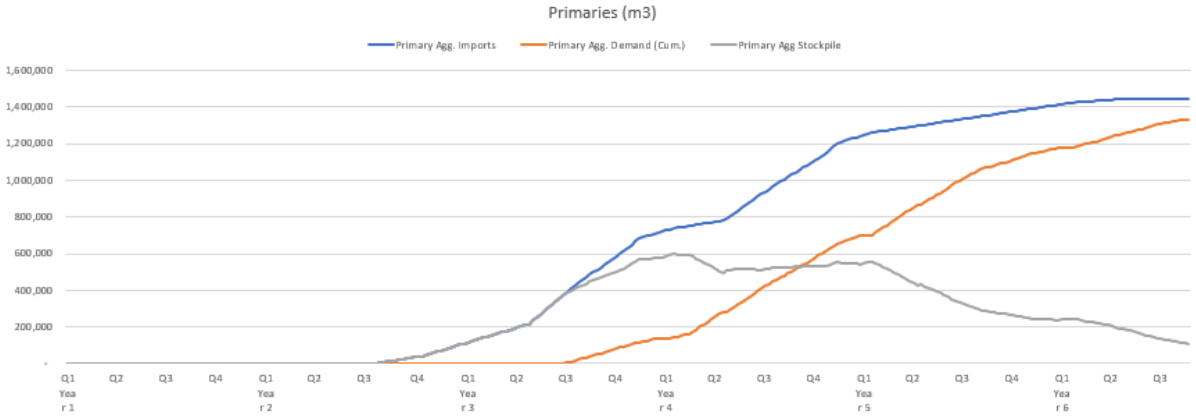

Figure 6 – Import of primary fill aggregate

4.2.3. Enabling Works Concrete

In the initial phase of the project the rail and marine infrastructure will not yet have been constructed and there will be a requirement for material imports for their construction as well as other site establishment and enabling works. These early materials will, therefore, need to use road transport until the other infrastructure is available.

The early delivery of the ACA (LEEIE) rail head in October 2023 to provide a means of rail imported materials is critical to the project's ability to divert materials away from road haulage. The further capacity of the Green Rail Route (GRR) then increases this rail capacity from March 2024.

For the first 6 months, any concrete requirements will need to be supplied by existing concrete batching plants and concrete mixer trucks, either 6 or 8 cubic metre capacity. There is limited capacity of this material in the local area and concrete has a maximum 2-hour handling period meaning larger plants further away cannot be used. This therefore means that the supply of **Ready-Mix Concrete (RMC)** to the project via road will be limited. Circa 5,000m3 will be required in the first 6 months resulting in a total of between 700-800 deliveries, or 17-19 daily deliveries at peak.

The project strategy seeks to minimise the requirement for concrete in this early period as far as possible and establish an onsite temporary batching plant (different to the 'permanent' project batching plant) as soon as possible. When this temporary plant is available the bulk constituents (concrete aggregate and powder materials) can be imported in larger vehicles to reduce the number of HGV deliveries required. This **early site batched concrete** will make use of local aggregate suppliers such as Banham Sand and Gravel pit (Tarmac) or Birch Quarry (Hanson). As soon as the ACA rail head is available concrete aggregates will be delivered by rail removing the HGVs from the road. Approximately 5,000t of concrete aggregate will need to be imported before the rail infrastructure is available, with a further 860,000t by rail when the ACA rail head and later GRR is commissioned (Marine import infrastructure will also not be available at this point in the project).

4.2.4. Permanent Works Concrete Aggregates

The source of the permanent works concrete aggregate is to be replicated from HPC to allow the use of the same mix designs, therefore benefiting from the extensive trials and testing undertaken to achieved certification for Nuclear Quality Related Activities (QRA) concrete.

Coarse Aggregate

4/10mm and 10/20mm crushed rock, course aggregate will be sourced from Hanson's Whatley quarry in Somerset, SW England. This is the largest quarry in Hanson UK and produces over 3mt of limestone per annum. The quarry has a rail loading siding and direct access onto the rail network with around two thirds of the output already delivered by rail to depots in London and South East England. The Mendip Rail Joint Venture between Hanson, AI and Freightliner operate jumbo trains, with up to 46 wagons, from the quarries to Acton, where they are split into two smaller (20-23 wagon) trains to traverse into, through and beyond London.

It is the intention of the project to utilise this existing rail logistics strategy, with the circa 1.7M t of 4/10mm and 10/20mm aggregate rail hauled directly to the project TCA.

Fine Aggregate

There are several fine aggregate sources for the differing concrete mixes, these include Batts Combe quarry and Master's Quarry both in SW England and the marine licenced dredging site in the Bristol Channel.

Batts Combe is another Hanson site in Somerset, South West England producing fine and ground hardstone aggregates, **0/4mm manufactured sands** and powders. As Batts Combe does not have a rail connection, direct haulage via rail is not possible. It is therefore the current strategy to road transport the circa 0.69M t of this manufactured sand / fine aggregate material to a transhipment site, likely to be Avonmouth, to load onto trains and then use rail transport to site in the same manner as the coarse aggregate.

The **dredged marine sand** aggregate for the Bristol Channel would also use a transhipment site at Avonmouth to load onto the rail allowing the haulage to the project. Marine haulage from the Bristol Channel to a SE port has also been considered. If this option were used then the 0.69M t of marine sand would be transhipped to rail at the SE port, this could potentially be either Ipswich or Harwich Ports. There is also further potential to secure an alternative source of this material from an East Coast dredging licenced area off the coast of Lowestoft. Further assessment and testing of this are required before this can be confirmed but the materials transport would remain broadly the same i.e. the material would either be directly discharged to the project via the MBIF, or be transhipped to rail at the project's / materials supplies transhipment port at Ipswich or Harwich.

The Master's Quarry is a Hanson site producing **0/4mm natural land sand** located in Dorset, between Weymouth and Bournemouth. Again, this site has no rail connection and is considered too far from Avonmouth to utilise the proposed transhipment site. Only a small volume of this material is required over the duration of the project for the specialised concrete mixes for the inner containment liners, circa 40,000t of natural land sand will therefore be transported by road to the project site. This volume represents approximately 0.3% of the project's imported material, equivalent to 1,480 HGV deliveries, over the duration of the concrete production and therefore is not considered to suit an alternative means of haulage. It is 242 miles from the origin quarry to the project site and at peak circa 30-50 deliveries per week would be required.

4.2.5. Binder Powders

The binder powders for the concrete production again need to replicate the HPC sources. For the '**normal heat' cement** this is sourced from Hanson's cement works in Ribblesdale, Clitheroe, North England. The 255,000t of cement powder for the permanent works will be transported by rail directly from the cement works dedicated rail siding to an offsite powder terminal, likely to be sited at Ipswich port. This will allow large volume stocks to be held close to the project which will be road hauled as required to replenish the site siloed stocks.

This material cannot be transported by rail directly to the project as during years 2 – 6 there are insufficient train paths or capacity within the on-site rail sidings to allow the direct rail import to site of the required bulk materials, backfill aggregate, concrete aggregate and cement powders. The project strategy has therefore been to prioritise the largest volume of material delivery by rail, this is the backfill and concrete aggregate. As the demand for backfill reduces the potential available rail paths could be used for powder however the investment and delivery of the offsite powder terminal would need to be reproduced on site to allow the discharge and handling of the powders. The programme duration to establish this infrastructure and cost associated with a duplicate facility are not economic. At peak concrete production there will be approximately 9 daily deliveries, 18 movements, for the haulage of cement powder from the offsite powder terminal to the project.

In additional to the 'normal heat' cement, which represents the majority of the cement requirements, there is a small demand for specialist '**low heat' cement**. This very specific product cannot be sourced in the UK and the source for both HPC and SZC will be from Vicat cement works in the South of France, the 10,000t of this material will be road transported from the source, through France and to the project site. This material represents less than 0.1% of the project import materials and will require around 360 HGV deliveries.

The 0.45Mt of **GGBS** powder will be sourced from Port Talbot Steel Works where it can be directly loaded to rail and transported to the project's offsite powder terminal. As with the cement this powder will then be held in large capacity stocks at the powder terminal to allow road transport to the project site as required. At peak concrete production there will be approximately 20 daily HGV deliveries for GGBS required.

The **filler powder**, which is a ground limestone dust, is classified as an aggregate but due to its nature needs to be transported in the same types of vehicles as the other binder powders i.e. airtight tankers. Circa 70,000t of this material is required throughout the concrete production phase as it is used in all the mixes. This special material will be sourced from Batt Combe quarry but with further processing at Francis Flower Mills in Radstock, 14 miles from the quarry, to mill the limestone aggregate to a fine powder. At peak concrete production 3 deliveries per day would be required via 28T road tankers.

The project demand for site batched concrete in the first 6 years and is shown below in Figure 7

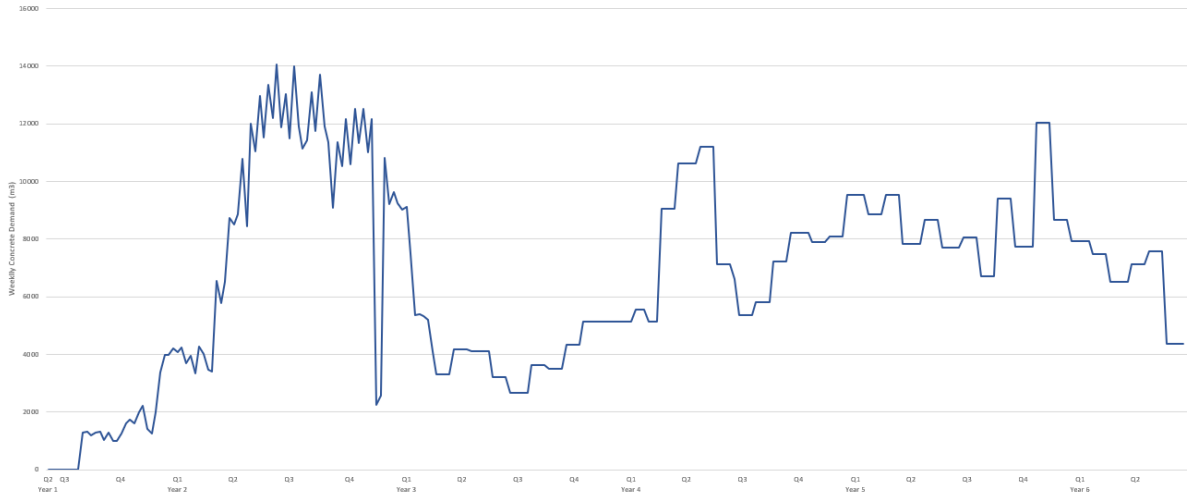

Figure 7 – Concrete demand

4.2.6. Steel

A large amount of reinforcement will be required for both the enabling works and permanent works phase of the project. The procurement of this is still progressing therefore the supplier is not yet known. Due to the quality requirements and high level of traceability it is likely that the same supplier as HPC will be a favoured option. Express Reinforcements supply HPC from their Neath facility in South Wales but they also have a further site in Walsall and are also considering the establishment of a local manufacturing facility as a source of supply to the project.

At this stage, the current proposal is to transport the reinforcement to site via 40ft articulated lorries as the existing facilities do not have direct access to rail or marine transport. The management of the supply also requires some flexibility to allow for programme and design development during delivery. Additionally, due to the nature of cut and bent reinforcement it is not possible to achieve high density of payloads, resulting in low utilisation of the gross payload capacity and inefficient haulage, whereas marine and rail haulage is efficient for dense products that can achieve fully gross capacity. To this extent cut and bent reinforcement would attract a high haulage cost per tonne.

Experience from HPC is that ‘call off’ orders of small tonnages of reinforcement, circa 25t per vehicle, allows the delivery team to minimise the amount of material stocked on site. Even with this arrangement HPC have had instances where a large number of trailers have been parked up with reinforcement unable to be unloaded due to delays in delivery. Reliance on import of large tonnages by rail or marine would increase this issue and have a knock on effect of the other materials that require these modes of transport.

The opportunity to establish a local facility to cut and bend reinforcement could allow the import of stock lengths of straight bar to be rail hauled to the local area. This would reduce the national haulage by road but still require movement to site by road but it would require a coincidence of a suitable supplier and a rail served location.

Structural steel presents a similar issue for transport as the shapes and lengths of the elements do not allow compact stacking.

Additionally, road delivery allows for greater efficiency of site operations, the ability to deliver the steel directly to the point of use to be unloaded, or the trailer parked up for later movement

gives significant logistics benefits e.g. not having to double handle material, unloading from a train to a storage area and then reloaded onto a site lorry for delivery to the workface.

4.2.7. Asphalt

The requirement for asphalt is predominantly driven by the construction of new roads and hardstanding for the project within the ACA and TCA in the early site establishment phase before the rail or marine infrastructure is available.

The nature of this material also requires specialist transport in insulated wagons with a time limit on the material's life from production to placement. The early demand for a large proportion of this material to create the new access point, road re-alignments and access roads means the use of existing local infrastructure is required. Existing plants in Ipswich (Tarmac) and Brightwell (Eurovia) are likely sources as they are situated within a reasonable distance from the project. Other sites near Norwich could also supply the project but are on the limit for travel time to the site.

An alternative option being considered is the establishment of a new / temporary plant in the local area, to make use of rail supply of the constituent materials from the national supply quarries, and then to SZC by road in insulated trucks. The location of this could be Ipswich or Lowestoft. A facility on site would not be suitable as there is not sufficient rail capacity to import these materials to produce the asphalt at the time it is required.

4.3. Other Bulk Materials

In the DCO Freight Management Strategy the breakdown of imported bulk materials was presented by large grouped types, the below materials all fall within the 'Other' grouping.

4.3.1. Bentonite

A large volume of bentonite will be required at the commencement of the diaphragm wall and later the tunnelling operations to produce the initial slurry volume requirements. This will be imported in advance over an extended period to limit the daily HGV movements, therefore an advanced onsite silo / stock will be maintained. Once the operations commence the bentonite slurry is recycled for reuse with a small proportion being lost in the cleaning process and requiring the addition of new bentonite.

The peak requirement for the d-wall operations is 285t per week, this equates to 10 x 28t tanker deliveries or 2 per day. For the tunnelling operation, at peak with two TBMs in operation, 4 28T HGV tankers of material will be required per day to replenish the site stocks. These operations do not occur in parallel therefore 4 bentonite deliveries per day will represent the maximum flow of material.

The source of this material has not yet been established, depending on the location of the source it will either be transported by road directly to the project or potentially to an offsite silo of material held at the powder terminal which would be supplied by rail and then road hauled to the project from the powder terminal.

4.3.2. Offsite manufactured elements e.g. tunnel segments, CRF (Circuit de Refroidissement / Cooling water circuit) Pipe, tunnel heads

The supply of these materials has yet to be confirmed, however, utilising the experience from HPC it is likely that a precast manufacturing facility will need to be established for the tunnel segments and tunnel heads production. The tunnel heads will be installed in the sea at the base of the shafts and therefore they will need to be transported by sea. To this extent the production of these units is well suited to be based at a port location. We have not yet confirmed where this operation will be located but Ipswich is a potential option.

With the tunnel head production being potentially located in Ipswich it may be sensible to locate the other precast manufacturing facility adjacent to this to benefit from shared management, concrete supply and other resources. Tunnel segments could then be delivered by road or sea. The latter will require there to be availability of the BLF (no conflict with AIL shipments) and appropriate cranage or other offloading facilities which are not proposed. At this stage the HGV profiles are based on tunnel segments being delivered by road. This is a total of circa 220,000t which equates to approximately 12,500 deliveries, however these are spread over the long period of tunnelling operations of circa 16m, assuming 12 to 13m tunnel advance per day. This requires 7 to 8 tunnel rings per day per TBM. Therefore, the demand for tunnel rings of 16 per day would require 32 HGV movements.

The CRF pipe may benefit from the same advantages of being precast offsite at a shared location with the similar construction activity of the tunnel sections. These pipe sections could benefit from the same transport mode as the tunnel segments, however at this stage have been assumed to count towards the DCO HGV profile. Approximately 14,000t of these sections will be required resulting in 800 HGV deliveries over a period of 2 years for both units, therefore the daily peak HGV deliveries required will not exceed 2 per day.

4.3.3. Binder Powders

The requirement for cement and lime for the production of Cement Bound Granular Material (CBGM) is in addition to the requirement for concrete production.

While the source of this material does not need to replicate the cement source for concrete it simplifies the supply chain and logistics to have a single source. The same logistics would be used, with supply by rail to the project powder terminal and road delivery to site.

If an alternative source were required, as there are no local cement works other national sources would need to be used. The movement of large volumes of cement, circa 440,000t is not feasible by road nationally from a cost and road transport capacity perspective and therefore this necessitates movement by rail to the project's powder terminal.

The very small volume of lime, circa 10,000t is more able to be transported by road, requiring circa 360 HGV deliveries. Depending on the source of this material either road haulage direct to site, or rail transport to the powder terminal for onward road haulage will be used.

4.3.4. Grouts

The materials for the production and batching of grout will be similar to the production of concrete, however, this will require additional add mixtures. The main proportions of material

will be cements and fine aggregate, both of which will be supplied by the same means as for concrete.

5. Non-Bulk Materials

The total tonnage of the non-bulk material is just over 1Mt and represents around 8% of the total import of material to the project. These materials are, in most cases, only required in very small quantities, generally under 6,000t for each and are required over the duration of the project. Therefore, deliveries will be in small quantities over the project lifecycle and do not suit movement in bulk by rail (1,250t payloads) or sea (4,500t payloads).

The supply chain and sources for these materials have not yet been established but in the majority of cases it is highly likely that the origin will not have direct access to rail or sea borne facilities and would therefore require double handling to deliver to a rail or marine loading facility for onward transport to the project and then unloading to stores and warehousing on the project. This is not practical or cost effective.

The strategy to use the local supply chain where possible also impacts the selection of transport mode. It would not be efficient for these suppliers to transport their goods further to a rail or marine transfer site compared to directly to the project. Local suppliers may include builders' merchants, food producers, suppliers of consumables and other SME's which have established relationships and agreements with hauliers. Maintaining these relationships and agreements ensures the most efficient supply rather than introducing additional haulage steps.

Where appropriate these smaller deliveries may be consolidated further up the supply chain to further reduce the road traffic to the project site.

6. Summary

The current assessment and delivery plan supports the ability for the project to achieve 60% of its material imports by non-road transport means, i.e. rail and sea.

There are additional potential opportunities that will be explored to deliver more materials by rail if a greater quantity of marine import were used. Experience from HPC indicates that marine import is more complex than rail, therefore at this stage the project has currently assumed a precautionary level of utilisation. If the first marine season demonstrated that a greater volume by sea could be imported than anticipated this could release rail capacity for other materials e.g. steel, tunnel segments (subject to manufacturing locations) and CRF pipes, or sea e.g. tunnel segments and steel. In total, these might achieve a further 6% reduction in road transport if all of these could be converted to a practical means of delivery by rail. However, there are a significant number of variables that would need to be managed and on-site constraints that would need to be overcome to achieve this. To this extent and in order to ensure sufficient resilience in delivery of the project is retained SZC Co. will monitor events and discuss with stakeholders as our design and operational solutions are developed.

The rail operations will be at capacity for a significant duration and therefore it is important to be able to have the spare marine capacity as a contingency for this. There are also some significant cost implications to moving some materials (e.g imported fill) by sea instead of by rail and therefore it is not cost effective to switch material transport from rail to sea in order to free up additional rail capacity.

The commitment to HGV limits which constrain transport options to deliver a maximum of 40% by road already takes every known opportunity to use rail and marine capacity and commitments beyond this level cannot be given without risking the efficient and timely delivery of the project.

Bulk Materials

Material	Total Tonnage	Tonnage (by material)	Mode 'thru the gate'	Total proportion by tonnage 'thru the gate'			Comments
				Road	Rail	Marine	
Permanent Works (PW) Concrete							
Whatley 4/10	4,800,000	860,000	Rail		6.5%		Railed direct from origin (SW England)
Whatley 10/20		860,000	Rail		6.5%		
Batts Combe 0/4		690,000	Rail		5.2%		Road hauled from origin (SW England) to transhipment site (SW England) to rail, railed directling to project
Marine sand 0/4		690,000	Rail (or marine)		5.2%		Bristol channel source transhipped at Avonmouth and railed, East coast source via MBIF or transhipment port
Masters 0/4		40,000	Road	0.3%			Small volume, road import from origin (SW England)
Cement		255,000	Road	1.9%			Railed to local terminal but road import to the project
GGBS		450,000	Road	3.4%			
Filler		70,000	Road	0.5%			
Low Heat Cement (France)		10,000	Road	0.08%			Small volume, road import from South France
Enabling Works (EW) Concrete							
Off site batch (Mixer truck delivery)		10,000	Road	0.1%			Existing local concrete batching plant (Ipswitch, Beccles etc) road hauled as no rail or marine infrastructure
On site batch (HGV material delivery)		5,000	Road	0.0%			Existing local quarry (Barham, Birch etc) road hauled as no rail or marine infrastructure available at time of demand
On site batch (Rail delivery)		860,000	Rail		6.5%		Existing local quarry (Birch) railed when infrastructure available at time of demand
Steel							
Reinforcement (EW)	1,000,000	1,000,000	Road	7.5%			Supply chain and origin TBC
Reinforcement (PW)			Road				Supply chain and origin TBC
Structural Steel			Road				Supply chain and origin TBC
Asphalt / Bitumen	1,000,000	1,000,000	Road	7.5%			Existing local Asphalt plant (Ipswich) road hauled in insulated wagons
Other							
Tunnel Segments	2,005,000	220,000	Road	1.7%			Supply chain and manuafcturing site TBC
Outfall, Intake shafts		86,000	Marine			0.6%	Marine construction fed from local port (Ipswich)
Outfall, Intake heads		222,000	Marine			1.7%	Offsite construction, marine transported and placed
PCC elements		14,000	Road	0.1%			CRF pipes etc
Stabilised hardstanding material		200,000	Road	1.5%			Supply chain and origin TBC, road hauled as no rail or marine infrastructure available at time of demand
Stabilised hardstanding material		200,000	Rail		1.5%		Supply chain and origin TBC, potential rail haulage after ACA rail head available
Hard Coastal Defence		300,000	Marine			2.3%	Rock armour imported and placed directly from the sea
Coastal Landscaping material		200,000	Marine			1.5%	Natural beach / dune material, imported and placed from the sea
Binder Powders							
Grout (TBM, Ground Anchors, PT Ducts)		20,000	Road and Rail	0.1%	0.1%		Small volume, powder by road, aggregate by rail
Cement (R1 / R1++ binder)		130,000	Road	1.0%			Railed to local terminal but road import to the project
Cement / Lime (Superficial stabilisation)		280,000	Road	2.1%			
Cement / Lime (Marine arisings)		48,000	Road	0.4%			
Bentonite		85,000	Road	0.6%			Supply chain and origin TBC
Backfill Aggregate							
Coaster vessel	3,380,000	1,330,000	Marine			10.0%	Potential for additional marine imported material if required, limited by demand
Rail		1,550,000	Rail		11.7%		Maximum volume of rail import availble with 4 tpd and other rail imported materials
EW Capping (road)		300,000	Road	2.3%			Supply chain and origin TBC, road hauled as no rail or marine infrastructure available at time of demand
EW Capping (rail)		200,000	Rail		1.5%		Supply chain and origin TBC, potential rail haulage after ACA rail head available
Total (Bulk)		**12,185,000**		**31.2%**	**44.7%**	**16.1%**	

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Non-Bulk Materials

Material	Total Tonnage	Tonnage (by material)	Mode 'thru the gate'	Total proportion by tonnage 'thru the gate'			Comments
				Road	Rail	Marine	
aluminium	1,062,555	726	Road	0.01%			Small volumes required over the duration of the project. Supply chain and origin TBC but not likely to be located to suit rail or marine transport
Soft Wood		6,283		0.05%			
ceramic		67		0.00%			
copper		1,281		0.01%			
Glass fiber reinforced plastic		96		0.00%			
Iron		322		0.00%			
mortar		79		0.00%			
screed		466		0.00%			
Polypropylene		10		0.00%			
timber		982		0.01%			
uPVC		1,743		0.01%			
various		11		0.00%			
Vinyl		101		0.00%			
polyester		24		0.00%			
paint - acrylic		1		0.00%			
gypsum		2		0.00%			
paint - epoxy resin		109		0.00%			
paint - intumescent		245		0.00%			
paint - emulsion		8		0.00%			
Waste removal		250,000		1.89%			Removal offsite to local processing facilites
Consumables		500,000		3.77%			General stores tools and materials coming for a wide supply chain and different origin points
Canteen supplies and food		150,000		1.13%			Local supplies of fresh produce and general supplies for mulitply cuppliers
Temporary modular welfare		150,000		1.13%			Specialst units, pre-fabriacted off site
TOTAL (non bulk)		**1,062,555**		8.0%	0.0%	0.0%	
Total (Bulk + Non Bulk)		**13,247,555**		**39.2%**	**44.7%**	**16.1%**	exc. MEH and construction plant and equipment

APPENDIX B: Comparison of Outage vs Seasonality traffic flows

CONTENTS

1 SEASONALITY AND SZB OUTAGE

1.1 Introduction

1.1.1 During ISH2 the ExA asked for further clarity on seasonal traffic analysis and outages with respect to SZC Co.'s response to ExA question TT.1.41. The question posed by the ExA related to how the volumes of traffic that have been modelled for a periodic outage at Sizewell B (which have been modelled) compare with seasonal traffic flows during August (which have not been modelled). This note provides a response to the question.

1.1.2 The observed traffic data upon which the strategic modelling is based was observed in May 2015. May is considered to be a 'neutral month' according to Department for Transport (DfT) Transport Analysis Guidance (TAG) Unit M1.2 "Data Sources and Surveys", and this guidance suggests that transport assessments should represent typical traffic conditions and are not intended to assess the busiest day of year.

1.1.3 It is stated in **Section 8.2** of the **Consolidated Transport Assessment** [REP2-045] that the traffic modelling (all future year scenarios, including reference case) includes traffic generated by periodic outages at Sizewell B, which adds a level of robustness to the assessment and it was not considered proportionate to add higher seasonal traffic flows on top of this.

1.2 Comparison of Sizewell B outage and seasonal traffic flows

a) Sizewell B outage traffic

1.2.1 The derivation of the Sizewell B outage traffic inputs is described in **Appendix 8B.1** to the **Consolidated Transport Assessment** [REP2-047], which would be expected to be similar to an outage at Sizewell C and it is intended that planned outages at Sizewell B and C would not coincide.

1.2.2 The total vehicles generated by a planned outage at Sizewell B are summarised in Table 1, for 'AM peak average hour' (6-9am), 'PM peak average hour' (4-7pm) and 24 hours.

1.2.3 The 'average AM hour' and 'average PM hour' flows are derived from **Tables 61 to 63** in **Appendix 8B.1** to the **Consolidated Transport Assessment** [REP2-047]. These periods have been presented to be comparable with the seasonality assessment presented in **Section 2.3.e)** of the **Consolidated Transport Assessment** [REP2-045], and discussed later in this appendix.

1.2.4 The 24-hour flows were derived directly from the Automatic Traffic Count (ATC) data that informed those calculations. ATCs were undertaken across four days in Spring 2016; on 17-18 May 2016 there was an outage, and on 21-22 June 2016 there was no outage. The average ATC at 'site 1' (Sizewell Gap west of the Sizewell B access) was produced for each two-day period to yield a daily traffic flow 'with outage' and a daily traffic flow 'without outage' in each direction. The approximate proportions of this traffic on different routes have been estimated based on the observed distributions for the hourly movements.

Table 1 – Sizewell B Outage Trips – Total Vehicles

AREA	AM PEAK (AVERAGE HOUR 6-9AM)			PM PEAK (AVERAGE HOUR 4-7PM)			24 HOURS		
	TO	FROM	TOTAL	TO	FROM	TOTAL	TO	FROM	TOTAL
A12 north of B1122	35	24	**59**	18	36	**54**	220	228	**448**
B1125	15	9	**23**	7	13	**21**	91	84	**175**
B1119	18	13	**31**	10	19	**28**	112	120	**232**
A12 south of A1094	57	37	**94**	29	55	**84**	353	350	**703**
Aldeburgh	47	33	**80**	24	49	**73**	293	314	**607**
Leiston	8	5	**12**	4	7	**11**	49	44	**92**
Total (Sizewell Gap)	**179**	**120**	**299**	**91**	**178**	**269**	**1,119**	**1,139**	**2,257**

1.2.5 This analysis indicates around 2,257 two-way trips per day on Sizewell Gap, with 703 of these vehicular trips on the A12 south of the A1094 and 448 trips on the A12 north of the B1122.

1.2.6 On the A12 south of the A1094, the average peak hour outage flows are around 94 vehicles in the AM (average 6-9am) and 84 vehicles in the PM (average 4-7pm).

1.2.7 On the A12 north of the B1122, the average peak hour outage flows are around 59 vehicles in the AM (average 6-9am) and 54 vehicles in the PM (average 4-7pm).

b) Seasonal traffic flows

1.2.8 **Plates 2.1 and 2.2** in the **Consolidated Transport Assessment** [REP2-045] present a comparison of observed traffic flows on the A12 at Farnham and at Wangford in May and August 2015. These locations were used as data was available for both months from Suffolk County Council (SCC)'s

permanent ATCs and the A12 is a key route for SZC traffic. The ATC data informing these graphs is tabulated in **Table 2** below, showing 'AM peak average hour' (6-9am), 'PM peak average hour' (4-7pm) and 24 hours (average weekday).

Table 2 – Seasonality of A12 Traffic – Total Vehicles

AREA	AM PEAK (AVERAGE HOUR 6-9AM)			PM PEAK (AVERAGE HOUR 4-7PM)			24 HOURS		
	MAY	AUG	DIFF	MAY	AUG	DIFF	MAY	AUG	DIFF
A12 Wangford									
Average Monday-Thursday	539	511	**-29**	683	765	**82**	9,173	10,019	**846**
Friday	553	491	**-62**	769	854	**85**	10,502	11,651	**1,149**
A12 Farnham									
Average Monday-Thursday	993	922	**-71**	1,308	1,429	**120**	17,971	18,901	**930**
Friday	814	895	**81**	1,234	1,659	**425**	16,942	22,657	**5,715**

1.2.9 This analysis demonstrates that in the AM peak period (average hour 6-9am) traffic flows are generally lower in August than in May at both locations on the A12 (noting that the Wangford survey location is further north than the outage survey site north of the B1122), with the exception of Friday mornings at Farnham where there were 81 vehicles more observed in August than in May. This is similar to the additional 94 vehicles that have been modelled representing a SZB outage in this time period.

1.2.10 In the PM peak period (average 4-7pm), traffic flows are generally slightly higher in August than in May, however the additional vehicles observed on an average Monday-Thursday in August (82 vehicles (+12%) at Wangford, and 120 vehicles (+9%) at Farnham), are only slightly higher than the additional traffic that has been modelled to represent a SZB outage in this period (54 vehicles (+8%) north of the B1122 and 84 vehicles (+6%) south of the A1094).

1.2.11 On a Friday afternoon the increase in traffic on the A12 at Farnham during August is greater, with an additional 425 vehicles (+34%) observed in this period, in this location.

1.3 Summary and conclusion

1.3.1 This appendix seeks to demonstrate the differences in traffic flow levels associated with a periodic outage at Sizewell B, which have been included within the Sizewell C transport modelling, and those associated with occasional higher flows during the summer, which have not been modelled.

1.3.2 The calculation of 'outage' traffic flows is provided in **section 6** in **Appendix 8B.1** to the **Consolidated Transport Assessment** [REP2-047]. A summary of the 'seasonality' of traffic flows is provided in **section 2.3.e)** of the **Consolidated Transport Assessment** [REP2-045].

1.3.3 This appendix presents a more detailed comparison of the flows generated in an 'average AM hour' (average 6-9am) and an 'average PM hour' (average 4-7pm), between the 'outage' and the 'seasonality' effects.

1.3.4 In the AM period, traffic flows are generally higher on the A12 in May 2015 than in August, which reflects the robustness in the modelling which is based on May 2015 survey data. Where traffic flow is slightly higher, on a Friday morning at Farnham, the increase is broadly similar to the additional flow which has been modelled as part of a periodic SZB outage.

1.3.5 In the PM period there is generally more traffic on the A12 in August than in May; on an average Monday-Thursday the increase is only slightly greater than the additional flow which has been modelled as part of a periodic SZB outage. On a Friday afternoon at Farnham, the increase in traffic in August compared to May is notably more at around 425 additional vehicles, compared with the 84 additional 'outage' vehicles that have been modelled. However, based on experience at Hinkley Point C, Sizewell C traffic flows are expected to be lower than modelled on Fridays due to the nature of the proposed shift-working patterns, whereby a proportion of the workforce would take long-weekends and would not be present on a given Friday.