HPC Workforce Uplift – Update Transport Topic Paper v2

14 January 2022

Updated Position

1. This topic paper was submitted as part of a package of information sent to the Joint Councils (Somerset County Council, Somerset West and Taunton Council, Sedgemoor District Council and North Somerset Council) alongside other key stakeholders in April 2021. Since then following various discussions and consideration of issues arising, the HPC team has updated, where relevant, the Topic Papers to take account of the feedback provided.

Background to Workforce Uplift

2. Following the completion of the common raft concrete pour on Unit 1 of the HPC Project (known as J0) an internal project review commenced. A range of factors were considered including the underlying commitments to industry leading safety and the highest quality standards as well as maintaining the committed programme to deliver Unit 1 in 2025 (now mid 2026 due to the Covid 19 pandemic) and Unit 2 around 12 months after Unit 1. The review examined the desire to maximise the opportunities to capture and implement leading from Unit 1 when undertaking the same activities on Unit 2. In addition, following the appointment of the MEH Alliance, much more detail about that programme was available to feed into the review. Finally, the review was able to take into account over 4 years of on-site operational practice since the agreement with the Government was finalised and construction activity began in 2016.
3. The conclusions of the review revealed that in order to maintain safety and quality standards and to maintain the programme, the number of workers at the peak of construction will need to be increased above the number that was originally assessed within the Development Consent Order (DCO) application. The review highlighted that there would need to be a greater overlap between the MEH and Civils phases of the project and that the number of support and professional/management roles based at the HPC site would be significantly above the number anticipated in the DCO application.
4. It is therefore anticipated that at the peak of construction around 8,600 workers will be required compared with the 5,600 workers set out within the DCO Application.
5. It is important to highlight that the full implications of the ongoing Coronavirus pandemic are still to be considered and that the review in the latter part of 2019 was conducted and concluded before the pandemic began. That said, the programme for HPC has been extended by 6 months, with Unit 1 due to be operational by June 2026. However, this is dependent on Coronavirus restrictions not constraining activity beyond Quarter 2, 2021.
6. Following an initial high level discussion in early 2020, work to analyse the potential implications from the increased workforce has been undertaken by the HPC team in conjunction with the relevant stakeholders and in particular the relevant local authorities.
7. The conclusion of these discussions resulted in HPC proposing to provide voluntary assessments of the impacts to review the effect of the proposed workforce uplift on the conclusions drawn in the DCO Environmental Statement. Those assessments would enable HPC and the Local Authorities to consider in relation to the section 106 agreement and the relevant strategies and plans under the section 106 agreement whether in each case:
    a. No change would be required; or

b. Changes may be appropriate which that could be made under the processes set out within the DCO s106 agreement itself; or
c. Changes may be appropriate which that cannot be approved under the DCO s106 agreement itself and therefore would require a modification to the DCO s106 agreement.

8. HPC and the Local Authorities agreed, following a review of the DCO Application that the 6 topic areas which needed to be considered were:

i. Accommodation;
ii. Transport;
iii. Workforce Development;
iv. Community Safety;
v. Health; and
vi. Environment

9. Initially, HPC produced a Spatial Distribution Note. to understand the likely spatial distribution of the workforce (which ultimately influences the potential impacts on the housing market and the transport strategy). Relevant factors, including the location of the existing workforce, the type of accommodation the workforce is staying in, the availability of accommodation and the likely make up of the workforce, have been considered.
10. In order to bring together all of the relevant issues within each of the topic areas, HPC will produce a series of Topic Papers which will be discussed with relevant stakeholders and presented to the appropriate decision making meeting (either the Transport Review Group or the Socio-Economic Advisory Group).

INTRODUCTION TO TRANSPORT TOPIC PAPER

11. To understand the likely transport impacts of the workforce uplift, a revised peak workforce number of 8,600 has been reviewed and compared against the DCO Environmental Statement (ES) (Volume 2, Chapter 10), Transport Assessment (TA) and Construction Workforce Travel Plan (CWTP). These assessed a peak construction workforce of 5,600 and included appropriate mitigation measures to address associated impacts.
12. This paper will provide a summary of this review and it will consider whether there are any likely adverse or beneficial transport impacts and effects arising from the workforce uplift. Existing mitigation measures implemented in response to the DCO have been identified; and, if any likely adverse effects resulting from the Workforce Uplift are identified which are over and above those identified within the DCO application, additional mitigation will be suggested.
13. In order to review the assessments, a scope and methodology has been developed along with a supporting spreadsheet model.
14. The proposed scope and methodology were presented, discussed and developed with the Transport Workstream Group (which consists of representatives from the local authorities and Highways England) through a series of workshops on the 1 July, 18 August, 13 October, 24 November and 15 December 2020. The HPC Workforce Uplift Appraisal – Transport Scope and Methodology (October 2020) was prepared by Mott MacDonald on behalf of NNB Genco (HPC) Ltd to support these workshops.

15. A supporting spreadsheet was then developed as a model to apply the proposed scenarios and assumptions in order to quantify the movements and impact. This spreadsheet model aided discussions and was developed further with the Transport Workstream on 24 November and 15 December 2020 with the aim of gaining collective confidence in the assessment work that has been undertaken. A further version of the spreadsheet model has been developed and is presented alongside this updated topic paper to take account of discussions that have taken place and correspondence received from the local authorities.
16. In addition to the series of workshops there have been communications between the Joint Authorities and HPC. HPC provided responses to questions raised on 1 December 2020 and further questions received on the 9 December 2020 were discussed at the workshop on 15 December 2020 and responded to on 29 January 2021. These have also been considered as part of this Topic Paper.

REVIEW OF ORIGINAL DCO

17. The following documents have been reviewed:
    a. ES
    b. TA (including the Addendum)
    c. CWTP

18. The relevant impacts and conclusions from each document are set out below.

DCO Environmental Statement, Volume 2, Chapter 10

19. For Transport, the ES set out the following in relation to the magnitude and significance of impact. It was based on the findings of the DCO Transport Assessment and the assessment of transportation impacts. This was undertaken adopting the methodologies described in Volume 1, Chapter 7 of ES and Section 10.6 of Volume 2, Chapter 10. This included the Institute of Environmental Management and Assessment (IEMA) 'Guidelines for the Environmental Assessment of Road Traffic' (Ref.10.22), to ensure that the environmental impacts arising due to any predicted changes in traffic levels are properly and comprehensively addressed. The Design Manual for Roads and Bridges (DMRB) Volume 11 was also referred to in the ES chapter. In line with the IEMA Guidelines, the ES focused on the potential transport environmental impacts of:

    i. Severance;
    ii. Driver delay;
    iii. Pedestrian delay;
    iv. Pedestrian amenity; and
    v. Accidents and safety.

20. The primary assessments in the ES were undertaken on a daily basis (24 hour Annual Average Daily Traffic) since this reflected the impacts on severance, pedestrian amenity and safety. The peak network periods were also assessed since they were relevant for pedestrian and driver delays and vehicle delays were assessed for all the hours modelled

in the highway model i.e. 06:00 to 10:00 and 13:00 to 20:00. Impacts were assessed by considering individual highway links within the agreed study area, which were represented within a Paramics Highway Model.

Level of Significance (Magnitude and Sensitivity) of Impacts Assessed

21. Table 10.1: Sensitivity of Receptors from the ES provided a summary of the types of receptors and sensitivity of each.

Table 10.1: Sensitivity of Receptors

Receptor Type	Receptor Sensitivity
Receptors of greatest sensitivity to traffic flow: schools, colleges, playgrounds, accident clusters, retirement homes, roads without footways that are used by pedestrians.	Substantial
Traffic flow sensitive receptors: congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, recreation facilities	Moderate
Receptors with some sensitivity to traffic flow: places of worship, public open space, tourist attractions and residential areas with adequate footway provision	Minor
Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions	Negligible

Volume 2 of the DCO Environmental Statement: Chapter 10: Page 42

22. The ES identified the sensitive receptors in the study area in Table 10.2 and the link locations are provided in Plate 10.2 Chapter 10 of the ES.

Table 10.2: Study Area Receptor Sensitivity

Link	Link Ref.	Sensitivity
M5 Junction 23 northbound on-slip	V1	Minor
M5 Junction 23 southbound off-slip	V2	Minor
M5 Junction 23 northbound off-slip	V3	Minor
M5 Junction 23 southbound on-slip	V4	Minor
A39 spur east of Dunball	B	Minor
A39 east of J23	L	Minor
A38 north of Dunball	A	Minor
A38 south of Dunball	G	Minor
A38 between Wylds Road and The Drove	E	Moderate
A38 between The Drove and Cross Rifles	F	Moderate
A38 between Cross Rifles and St. John Street	J	Moderate
A38 between St. John Street and Taunton Road	O2	Minor
A39 (Bath Road) north-east of Cross Rifles	N3	Moderate
St. John Street	SN	Moderate/Substantial
The Clink	SF	Minor
Wylds Road	AD	Minor
The Drove	ZE	Minor
Western Way (west of Chilton Street)	AA	Moderate
B3339 Wembdon Hill	T1	Substantial
M5 J24 northbound on-slip	ST2	Minor
M5 Junction 24 southbound off-slip	ST3	Minor
M5 Junction 24 northbound off-slip	ST4	Minor
M5 Junction 24 southbound on-slip	ST5	Minor
A38 spur east of Huntworth	ST1	Minor
A38 Taunton Road south of Showground	I2	Minor
A38 Taunton Road (south of Broadway)	I1	Moderate
A39 Broadway	K5	Moderate
A39 west of Quantock roundabout	S	Moderate
A39 south-east of Cannington	R	Minor
A39 south of Cannington	P	Minor
A39 west of Cannington	Q	Minor

Link	Link Ref.	Sensitivity
High Street, Cannington	U	Substantial
Main Road, Cannington	ZD	Substantial
Rodway south of bypass	AC	Substantial
Rodway north of bypass	12	Minor
Cannington bypass	Z1	Minor
A39 Williton	2	Substantial

Volume 2 of the DCO Environmental Statement: Chapter 10: Page 43

Magnitude of Impact

23. The ES assessed the magnitude of impact and noted that the impacts assessed were temporary, not permanent, and this affected the significance attached to them. It also referred to the period of relatively high levels of traffic generation related to the construction of HPC and the operation of the associated developments were approximately 5-6 years and, as a worst-case assumption, it was therefore assumed that the impacts assessed for the 2016 period would persist for that length of time.

24. Table 10.3: Magnitude of Impact Criteria in the ES summarised the criteria that was used to determine the magnitude of impacts.

Table 10.3: Magnitude of Impact Criteria

Impact	Magnitude of Impact			
	Negligible	Minor	Moderate	Substantial
Severance	Change in total traffic or HGV flows of less than 30%	Change in total traffic or HGV flows of 30-60%	Change in total traffic or HGV flows of 60-90%	Change in total traffic or HGV flows over 90%
Pedestrian Delay	Two way traffic flow < 1,400 vehicles per hour	A judgement based on the road links with two way traffic flow exceeding 1,400 vehicles per hour in context of the individual characteristics		
Pedestrian Amenity	Change in total traffic or HGV flows < 100%	A judgement based on the routes with >100% change in context of their individual characteristics		
Driver Delay	A judgement based on the journey time assessment			
Accidents and Safety	A judgement based on analysis detailed in the **Road Safety Strategy**			

Volume 2 of the DCO Environmental Statement: Chapter 10: Page 46

Significance of Impacts

25. The significance of the impact was judged on the relationship of the magnitude of impact to the assessed sensitivity and/or importance of the receptor. The predicted significance of the impacts was summarised in 'Table 10.4: Significance of Impacts' in the ES.

Table 10.4: Significance of Impacts

Sensitivity of Receptor	Magnitude of Impact			
	Negligible	Minor	Moderate	Substantial
Negligible	Negligible	Negligible	Negligible	Minor
Minor	Negligible	Negligible	Minor	Moderate
Moderate	Negligible	Minor	Moderate	Substantial
Substantial	Minor	Moderate	Substantial	Substantial

Volume 2 of the DCO Environmental Statement: Chapter 10: Page 47

Mitigation and Summary of Impacts

26. The ES considered the transport mitigation schemes set out in the Transport Strategy and the highway improvements. In addition to these, EDF Energy has made significant contributions towards Somerset County Council's Corridor Improvement Schemes and Travel Demand Management programme.

27. The ES set out the following Summary of Impacts and Residual Impacts after Mitigation. This was provided for Assessment Year 2016 as this was considered the peak of construction with 5,600 workers and includes the key impacts along with the impact provided in italics if there is a change in area.

Table 10.24: Summary of Impacts 2016

Description of Impact	Impact	Mitigation Measure	Residual Impact
Severance	Moderate Adverse *Moderate Beneficial*	Additional Traffic calming in Cannington	Moderate Adverse *Substantial Beneficial*
Driver Delay	Negligible	N/A	Negligible
Pedestrian Delay	Negligible *Moderate Beneficial*	N/A	Negligible *Moderate Beneficial*
Pedestrian Amenity	Moderate Adverse *Moderate Beneficial*	Contribution to SCC programme. Additional traffic calming in Cannington	Moderate Adverse *Substantial Beneficial*
Accidents and Safety	Minor Adverse	Contribution to SCC programme	Negligible

Volume 2 of the DCO Environmental Statement: Chapter 10: Page 103

28. The Table in the ES demonstrated that in Bridgwater, the key impacts during the 2016 Peak were:

- Severance and Pedestrian Amenity - generally moderate adverse since the roads affected are all A roads which already carry substantial volumes of traffic.
- Pedestrian Delay - considered negligible and most crossings of the A roads take place at controlled crossings.
- Driver Delay – there are negligible changes to driver delay in 2016.
- Accidents and Safety – becomes negligible when the Somerset County Council's safety programme is taken into account.

29. It is important to note that this was expected to be a short term peak and in line with the ES it was acknowledged that once HPC construction is completed, and there are just operational staff, there would be no material adverse impact on the criteria considered within the ES Chapter 10. Post construction, there would remain moderate beneficial impacts on journey times through Bridgwater due to the transport mitigation schemes that have been implemented.

DCO Addendum to the Environmental Statement (March 2012)

30. Following the submission of the DCO application in October 2011, EDF Energy produced a package of additional information to be considered as part of the examination process. This included revised traffic modelling in response to consultation with Somerset County Council and an assessment of impacts, revised noise and air quality modelling and assessments based on the revised traffic modelling, which identified changes to noise and air quality impacts and an amendment to the number of Abnormal Indivisible Loads (AILS). This was submitted as an Addendum to the Environmental Statement.

31. The Addendum concluded that there would be an overall reduction in traffic demand in the suppressed models compared to the original by 2.5% in total vehicle demand in 2016. The Addendum included a review of the transport chapters of the submitted Environmental Statement as new link flows were derived from the updated traffic modelling set out in the Addendum. This was to determine whether the conclusions regarding the transport environmental impact of the proposed development of HPC would remain valid. This concluded that there were no significant changes that resulted from the revised traffic modelling, either in relation to the traffic impact of the proposed development or in relation to the transport environmental impact of the proposed development, and therefore the information presented in the ES and TA remained valid. Therefore, the demand information applied in the ES and TA has been used in this topic paper.

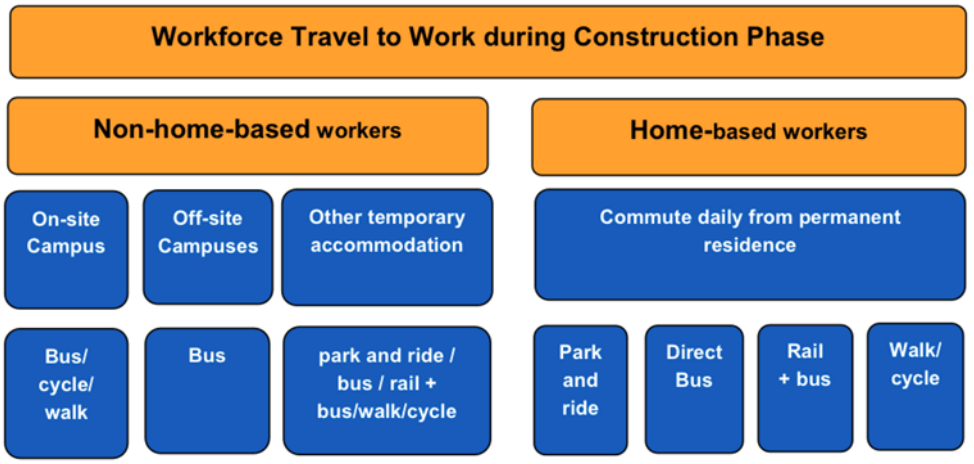
DCO Transport Assessment

32. The Transport Assessment approved as part of the DCO Application sets out the following transport objectives:

> 5.2.1 EDF Energy's principal transport objectives are to:
>
> - minimise the volume of traffic associated with the development of the new power station as far as reasonably practical, at all times, but especially during peak hours;
> - maximise the safe, efficient and sustainable movement of people (i.e. travel by non-car methods) and materials (i.e. delivery by non-road methods) required for the HPC Project as far as reasonably practicable;
> - minimise the impacts both for the local community and visitors to the area using the road network as far as reasonably practicable;
> - provide long-term, sustainable legacy benefits for the local community from new infrastructure, where appropriate;
> - maximise the control of movements associated with the construction of the HPC Project so far as reasonably practicable;
> - take all reasonable steps to ensure the resilience of the transport network in the event of an incident; and
> - take all reasonable steps to protect the natural and built environment.
>
> Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 87

33. In order to meet with the transport objectives set out in the Transport Assessment, the following strategy was developed for work trips to / from the HPC site.

Figure 5.1: Travel to Work Mechanism for Workforce



Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 89

34. An explanation of how the Transport Strategy's objectives were to be fulfilled is set out in the below table extracted from the Transport Assessment:

Table 5.1: Objectives of Transport Strategy

Objectives	People Movement
1. Minimise the volume of traffic associated with the development of the new power station so far as reasonably practicable, at all times, but especially during peak hours.	• Direct Bus Service • park and ride • Car Share • Walking and cycling improvements • Rail and Bus
2. Maximise the safe, efficient and sustainable movement of people (i.e. travel by non-car) and materials (i.e. delivery by non-road) required for the HPC Project so far as reasonably practicable.	• Measures as in (1) above • Travel Plan • Safety improvements on highway network
3. Minimise the impact both for the local community and visitors to the area using the road network so far as reasonably predictable.	• Measures as in (1) above • Cannington bypass • Highways network improvements
4. Provide long-term, sustainable legacy benefits for the local community from new infrastructure, where appropriate.	• Cannington bypass • Highways network improvements • Safety enhancements • Walking and cycling improvements
5. Maximise the control of movement associated with the construction of the HPC Project so far as reasonably practicable.	• Travel Plan • Monitoring of movements • Transport Review Group
6. Take all reasonable steps to ensure the resilience of the transport network in the event of an incident.	• Measures in (5) above • Traffic Incident Manageme Plan • Monitoring of highway and structural conditions
7. Take all reasonable steps to Protect the natural and built environment.	• All above measures

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 93

35. Chapter 6 of the Transport Assessment refers to the development proposals for the construction of HPC. This refers to the use of the Park and Ride sites. For example, for J23 Park and Ride, it includes vehicle parking for 1,300 Park and Ride cars and 120 car parking spaces for the Worker Induction Centre.

> 6.3.30 The proposed development would comprise:
>
> - a park and ride facility, including hardstandings for vehicle parking for 1,300 cars, minibuses and vans, and associated motorcycle, bicycle and bus parking spaces; bus terminus; and ancillary structures, including bus shelters and amenity/welfare and security buildings;
> - a freight management facility, including hardstanding for vehicle parking for 85 heavy goods vehicles (HGVs) and other vehicles; a freight checking area; associated car parking and ancillary structures, including an administration/ amenity and security building;
> - a consolidation facility for postal/courier deliveries comprising a consolidation facility building with associated parking area;
> - a worker induction centre comprising induction space and welfare facilities; and 120 car parking spaces and motorcycle and bicycle spaces;
>
> Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 103

36. The Transport Assessment defined three assessment years for assessing the transport impact. These were as follows and represented a weekday scenario (Monday to Friday):
    - 2013 – the 'early years' of construction;
    - 2016 – the 'peak' of construction; and
    - 2021 – the operational year (including elements of construction).

37. This Topic Paper considers the conclusions of the 2016 'peak' of construction assessments.
38. The following inputs were generated for the original Transport Assessment to assess the people trip generation associated with HPC. These were developed by the HPC Construction Team from its previous experience and working knowledge of the likely construction and operational requirements of HPC:

> **c) Inputs to the Analysis**
>
> 8.2.6 As described within **Chapter 7**, a number of inputs to the analysis have been generated for the purpose of accurately assessing the people trip generation associated with HPC, including:
>
> - workforce numbers;
> - shift patterns;
> - shift start/end times;
> - split of workers per shift;
> - workforce arrival/ departure profile; and
> - business visitors and visitors to the Public Information Centre.
>
> Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 120

39. The key elements of the trip generations were set out in the Transport Assessment in Chapter 8: People Trip Generations and included the following provision for each Park and Ride in 2016 (total 2,290 spaces).

8.2.11 The parking provision for each park and ride site in 2016 is shown at **Table 8.1**.

Table 8.1: Park and Ride Parking Provision 2016

Park and Ride Facility	Car, Minibus and Van Parking Spaces
	2016
Junction 23	1,300
Junction 24	698
Williton	160
Cannington	132

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 122

40. The single occupancy (SO) and car share trips were identified in the table below for both the Park and Rides and HPC site.

Table 8.8: Person Trips by Car Peak Year (2016)

	J23	J24	Can	Wil	HPC	Total
SO Car	281	220	115	84	200	900
Car Share	1,122	618	129	78	0	1,947
Total	1,403	838	244	162	200	2,847

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 128

41. The journey to work trips used in the Transport Assessment are set out in the table below (due to rounding the total does not add up to exactly 5,600). This was based on 2,773 workers using a Park and Ride and 700 single occupancy car trips and 973 car share trips from a Park and Ride (1,673 total car trips arriving at Park and Rides).

Table 8.9: Journey to Work Trips (2016)

	J23	J24	Can	Wil	HPC	TOTAL
Walk	0	0	1	0	1	2
Cycle	9	24	17	5	0	55
Motorcycle	31	15	6	5	0	57
Rail	1	0	0	0	1	2
Direct Bus	0	0	0	0	1,170	1,170
Campus Bus	0	0	0	0	1,450	1,450
Public Bus	5	4	1	2	0	12
SO Car	281	220	115	84	200	900
Car Share	1,122	618	129	78	0	1,947
Total	1449	881	269	174	2,822	5,595

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 129

42. The Transport Assessment was based on the bus capacity from each Park and Ride set out in the following table. The Williton (now Washford Cross) Bus Capacity size was increased to a single decker bus capacity through agreement with West Somerset Council (now Somerset West and Taunton Council). (However, note, as presented later in this Topic Paper, the uplift assessment has assumed the occupancy figures applied at DCO as shown in the table below apply to present a worst-case scenario).

Table 8.10: Park and Ride Bus Capacity and .

Park and Ride Facility	Bus Capacity
Junction 23	40
Junction 24	40
Williton	15
Cannington	25

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 129

43. The Transport Assessment was based on a series of bus movements (two-way):
    - Direct Bus – 596 movements;
    - Park and Ride Bus – 508 movements; and
    - Accommodation Campus bus – 128 movements.
    - Visitor Buses – 52 movements

    (Total 1,104 bus movements for Direct and Park and Ride. Total 1,232 if include Campus bus and then Total 1,284 if include visitor buses).

44. For information, what a Direct Bus means is summarised in Paragraph 5.3.14 of the Transport Assessment.

- Direct Bus services: stopping bus services will be provided to pick up workers on key routes to the HPC development site. The routes will need to align to the location of workers and will need to be reviewed on a regular basis in order to respond to changes in demand. The details of the strategy are included the bus and rail strategy Chapter of this TA, **Chapter 12**.

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 88

Table 12.3: 2016 Direct Bus Demand

Route	Number of Buses (two-way)		
	AM Peak (08:00-09:00)	PM Peak (17:00-18:00)	Daily (00:00-24:00)
Weston-Super-Mare – HPC	4	8	76
Brean Burnham – HPC	4	8	80
Taunton – HPC	4	8	76
Minehead and Williton – HPC	4	8	72
Bridgwater 1 – HPC	4	8	72
Bridgwater 2 – HPC	4	8	76
Bridgwater 3 – HPC	4	8	72
Cannington and Nether Stowey – HPC	4	8	72

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 192

Table 8.12: 2016 Park and Ride Bus Demand (Two-way)

Park and Ride Facility	AM Peak (08:00-09:00)	PM Peak (17:00-18:00)	Daily (00:00-24:00)
Junction 23	6	16	176
Junction 24	6	12	128
Williton	6	12	124
Cannington	4	8	80

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 130

Table 8.15: 2016 Accommodation Campus Bus Trips

Route	Number of Buses (Two-way)		
	AM Peak (08:00-09:00)	PM Peak (17:00-18:00)	Daily (00:00-24:00)
Bridgwater A + C Accommodation Campuses	6	12	128

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 132

Table 12.10: Visitor Bus Demand Cannington PandR (number of vehicles) 2016

Park and Ride Site	Visitor Demand (vehicles)		
	AM Peak	PM Peak	Daily (24hr)
Cannington PandR	0	0	52

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 195

45. The estimated workforce distribution used to determine the travel modes in the Transport Assessment is shown in the following table:

Table 10.11: Distribution of HPC Workforce

District	All Workers	
	2013 Distribution	2016 Distribution
Bath and North East Somerset	0.10%	0.53%
Bristol	1.10%	3.96%
North Somerset	8.60%	13.99%
South Gloucestershire	0.00%	0.33%
East Devon	0.80%	0.54%
Exeter	1.60%	1.14%
Mid Devon	1.70%	1.08%
North Devon	0.00%	0.06%
Teinbridge	0.10%	0.05%
North Dorset	0.00%	0.00%
West Dorset	0.10%	0.10%
Mendip	1.60%	2.94%
Sedgemoor	49.70%	45.15%
South Somerset	3.60%	2.59%
Taunton Deane	25.50%	12.01%
West Somerset	5.40%	15.64%
Salisbury	0.00%	0.00%
Total	100%	100%

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 173

46. The TA contains estimated parking accumulation figures for each Park and Ride. As an example, the following table, extracted from the TA, provides the figures for J23 Park and Ride for 2016 which shows a maximum accumulation of 830 vehicles. For information, the corresponding maximum figures for the other Park and Ride sites were:
    - J24 Park and Ride – 396 vehicles
    - Cannington Park and Ride – 121 vehicles

- Williton Park and Ride – 177 vehicles

Table 11.6: Junction 23 Parking Accumulation (2016)

Time of Day	Arrivals	Departures	Accumulation
00:00	0	183	28
01:00	0	28	0
02:00	0	0	0
03:00	0	0	0
04:00	33	0	33
05:00	196	0	229
06:00	191	0	419
07:00	182	45	557
08:00	23	2	578
09:00	0	0	578
10:00	0	0	578
11:00	0	0	578
12:00	51	0	630
13:00	165	0	794
14:00	35	0	830
15:00	0	25	805
16:00	0	199	606
17:00	0	157	448
18:00	0	172	276
19:00	5	77	205
20:00	45	0	249
21:00	0	0	249
22:00	0	0	249
23:00	0	38	211
Total	926	926	

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 181

47. Exceptional circumstances are identified in the Transport Assessment and summarised below. This specifies that additional capacity has been assumed at each of the Park and Ride sites to accommodate additional vehicles in the event of an incident which could affect, for example, access to or use of the Park and Ride sites. To ensure exceptional circumstances could be accommodated to some extent, contingency amounts (over-provisions) were included for each of the Park and Ride sites in terms of their number of spaces. The need for over-provision of parking spaces to enable management of parking and use of the Park and Ride sites in the event of an incident is still required.

e) Exceptional Circumstances

11.4.19 When considering the sizing of proposed park and ride sites, it is essential that EDF Energy consider what may happen in the event of a range of exceptional circumstances which could include an accident or incident that prevents access to, or use of, one or more of the park and ride sites. In addition contingency may be required if it proves necessary to dynamically adjust the balance between provision of direct buses and use of park and ride sites in the light of unexpected fluctuations in the patterns of workforce demand and location. .

11.4.20 Since the transportation of construction workforce to and from the HPC development site is heavily reliant on the use of park and ride sites, it is essential that contingency is built into the proposals in order to ensure that the HPC Project has the flexibility to respond most efficiently to a range of circumstances, to ensure the smooth transportation of the workforce and actively manage impacts on the road network.

11.4.21 For this reason, EDF Energy has allowed for an over-provision at both Junction 23 and Junction 24 as identified at **Table 11.3** to **Table 11.5.** The park and ride developments would not be accessible to any individuals or organisations other than authorised members of the HPC workforce and as such any parking provision not required at a given time could not be utilised for other purposes than those for which they are intended. In addition EDF Energy would monitor and manage the demand for parking at park and ride sites as part of the overall approach to travel planning to ensure optimum use of the facilities in line with the transport strategy and this TA.

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 185

Traffic Analysis

48. The predicted traffic flows on the key links for the 2016 assessment were identified in Chapter 15 in the Transport Assessment. This was based on committed developments and general traffic growth in the area.

49. Journey times were assessed also in Chapter 15 in the Transport Assessment and these focused on the two HGV routes from the M5 to HPC that would take the great majority of HPC generated traffic.

50. The Transport Assessment concluded that the highways improvement proposals would mitigate the traffic impacts of the HPC project to the extent to achieve broadly nil detriment and would bring forward improvements in a number of instances. It also noted that the analysis allowed for basic transport strategy measures, but did not include the Travel Plan measures that would further reduce car movements.

15.14.3 Even with these robust assumptions the analysis shows that in 2016 for the With Development plus Mitigation Case:

- average speeds stay broadly neutral;
- overall junction queuing reduces; and
- journey times on the key HGV routes from the motorway junctions to the HPC development site are broadly neutral.

Environmental Statement – Annex 7: Transport Assessment (October 2011): Page 285

DCO Construction Workforce Travel Plan

51. The Construction Workforce Travel Plan (CWTP) approved as part of the DCO Application had the following objectives:

> 1.3 Transport Objectives
>
> 1.3.1 This DCO Travel Plan has been developed in line with EDF Energy's transport objectives for the HPC Project as a whole which are:
>
> - to minimise the volume of traffic associated with the development of the new power station so far as reasonably practicable, at all times but especially during peak hours;
> - to maximise the safe, efficient and sustainable movement of materials required for the HPC Project so far as reasonably practicable;
> - to minimise the impacts both for the local community and visitors to the area using the road network so far as reasonably practicable;
> - to provide long-term, sustainable legacy benefits for the local community from new infrastructure, where appropriate;
> - to take all reasonable steps to ensure the resilience of the transport network in the event of an incident; and
> - to take all reasonable steps to protect the natural and built environment.
>
> Construction Workforce Travel Plan (August 2012): Page 5

52. The CWTP has a strong focus and commitment on sustainable travel to mitigate and reduce the impact on the local transport network. The Transport Strategy sets out how workers are expected to travel to and from HPC site.

> 2.4 Transport Strategy
>
> 2.4.1 EDF Energy's transport strategy for the movement of workers during the construction phase involves a significant focus on transport by bus. Aside from 200 on-site parking spaces, the up to 510 residents at the HPC accommodation campus who will
>
> walk to work and a small number of workers who may walk or cycle direct to the construction site, all construction workers will be expected to travel to and from the construction site by one of the following bus based means:
>
> - bus to/from one of the four proposed park and ride developments (M5 Junctions 23 and 24, Cannington and Williton);
> - bus to/from the Bridgwater accommodation campuses (A and C); and
> - direct bus to/from a number of specified locations where there are likely to be sufficient concentrations of workers.
>
> Construction Workforce Travel Plan (August 2012): Page 10

53. The following table extracted from the CWTP sets out the travel mode to HPC targets at peak construction.

Table 4.1: HPC Site – 'Final Mode' Journey To Work Peak Construction Targets with Transport Strategy

Final Mode of Travel to HPC Site	Number of Trips	Mode Share
Walk	500	9%
Cycle	0	0%
Public Bus	0	0%
Rail	0	0%
Motorcycle	0	0%
Car	200	4%
Direct Bus	1,170	21%
Park and Ride Bus	2,780	49%
Bridgwater Campus Bus	950	17%
Total	**5,600**	**100%**

Construction Workforce Travel Plan (August 2012): Page 18

54. The following paragraph in the CWTP refers to the actual geographical distribution of workers not being precisely predicted in advance and varying over time and that this consideration will inform the appropriate balance between the use of Direct and Park and Ride Buses. It also refers to the scale of walking, cycling and car sharing in practice will impact on the exact mode share percentage targets.

> 4.2.6 It should be noted in this context that the assessment of mode share targets should be informed by the specific circumstances applied at the time and that a mechanical approach which automatically sought to achieve the precise peak construction modal split would not be appropriate. For example the actual geographic distribution of workers cannot be precisely predicted in advance and will vary over time through the project and this consideration will inform the appropriate balance between use of direct and park and ride buses. During construction of the Associated Development sites greater efficiencies may come from allowing workers constructing the sites to travel direct to the site and this may affect the achievable modal split. Furthermore, the scale of walking, cycling and car sharing experienced in practice, will impact on the exact percentage of workers travelling by bus. It is also possible that a very small number of construction workers associated with construction of marine related works (i.e. the cooling water intake and outfall tunnels) may travel to their point of work at the construction site by boat. These considerations could lead the TRG to amend the precise targets for mode share going forward.

Construction Workforce Travel Plan (August 2012): Page 18

55. The Mode Share targets for the Park and Ride sites are identified in the CWTP and are shown in the table below (which is extracted from the CWTP).

i. Park and Ride Sites as part of Journey To Work

4.2.8 **Table 4.2** below sets out the mode share targets envisaged for the park and ride sites. Once the pattern of where workers not resident in accommodation campuses are living is established, the appropriateness of the targets for the park and ride sites will be considered by the TRG.

Table 4.2: Mode Share Targets for Park and Ride Sites

Mode	Junction 23	Junction 24	Cannington	Williton
Sustainable Modes	4%	4%	11%	7%
Car Driver	58%	60%	65%	70%
Car Passenger	38%	36%	24%	23%
Total	**100%**	**100%**	**100%**	**100%**

Construction Workforce Travel Plan (August 2012): Page 19

56. The CWTP included a list of actions to be implemented and refers to the preparation of a new Action Plan for the CWTP which would take account of proposed mitigation and enhancement measures. A new Action Plan would then be submitted to the TRG for review.

4.3 Action Targets

4.3.1 Appendix A provides an initial list of early actions to be implemented for the DCO Travel Plan.

4.3.2 A detailed Action Plan will be developed by the Transport Co-ordinator and will be submitted to the TRG for review. The detailed Action Plan will set out the tasks required to be undertaken in order to implement and manage the DCO Travel Plan and a timescale will be provided against each action.

57. The bus measures are identified in the CWTP and include the bus services from the Park and Ride sites and a range of Direct Bus services from key locations where there are concentrations of workers. These provisions are extracted below.

5.3 Bus Measures

5.3.1 EDF Energy is already committed to an extensive bus system as part of the transport strategy that will be provided free to workers. The system will be prescriptive and workers will be required to use the designated services. Therefore, the DCO Travel Plan measures will focus on the successful enforcement of the already high usage of buses determined by the transport strategy.

a) Scope and Scale of Free Bus Services

5.3.2 The geographic scope of proposed bus services supporting the development is comprehensive. In addition to services from the four strategically sited park and ride sites and dedicated bus services from the Bridgwater accommodation campuses a range of direct bus services will be provided from key locations where there are concentrations of workers.

Construction Workforce Travel Plan (August 2012): Page 24

58. The CWTP sets out the Initial Allocation of Workers to Bus Services process and the principles it will follow.

b) Initial Allocation of Workers to Bus Services

5.3.5 In addition to the general briefing of all inducted workers, it is anticipated that the process on induction day will involve a brief individual interview which, alongside information which may have been supplied in advance, will be used to establish the existing or expected residential location of the worker and on this basis allocate a specific park and ride site or other bus service.

5.3.6 This process will adopt the following principles:

- Any worker with a place at the HPC accommodation campus will be required, if able, to walk directly to the HPC site;
- Any worker with a place at the Bridgwater accommodation campuses will be required to use the provided campus bus services;
- Any workers resident very close to the HPC site and intending to walk/cycle to work on a daily basis will be allowed and encouraged to use these modes of travel;
- All workers living within approximately 800m of a direct bus stop will be allocated to the appropriate direct bus. This will ensure that users of direct bus services are within easy reach of that service and can reach their pick up point via a relatively short walk (approximately 10 minutes); and
- All other workers will be allocated to the specific park and ride site which is closest to their place of residence.

Construction Workforce Travel Plan (August 2012): Page 25

59. Under the CWTP there are also principles applied to how the workforce travel to the Park and Rides.

c) Travel to and from Park and Ride Sites

5.3.8 Workers will have greater flexibility as to how they travel to and from park and ride sites, but the following principles will be adopted:

- any worker living within 800m of a park and ride site will be expected to walk or cycle to that site and will, except in exceptional circumstances (e.g. ill health or disability) not be issued with a parking permit;
- cycling will be encouraged and secure cycle parking will be provided at park and ride sites;
- secure parking for motorcycling and mopeds will be provided at park and ride sites;
- car sharing will be encouraged; and
- workers who are not in a position to adopt a car sharing arrangement or travel by other means to and from the park and ride site will be issued with a parking permit for that site.

Construction Workforce Travel Plan (August 2012): Page 26

60. The CWTP sets out the parking measures and refers to the number of Park and Ride car parking spaces normally in use at the Junction 23 Park and Ride not exceeding 920 unless otherwise agreed by the TRG. It should be noted that the Transport Assessment refers to and considers 1,300 spaces at Junction 23 Park and Ride.

> 5.3.9 The number of park and ride car parking spaces normally in use at the Junction 23 park and ride site will not exceed 920 unless otherwise agreed by the TRG. The number of park and ride car parking spaces normally in use at the Junction 24 park and ride site after the Junction 23 park and ride site has come into full operation will not exceed 575 unless otherwise agreed by the TRG.
>
> Construction Workforce Travel Plan (August 2012): Page 26

SCOPE AND METHODOLOGY

61. This chapter sets out the scope of the present assessment and the methodology applied, before presenting the findings of the assessment itself.
62. The Transport Scope and Methodology v2 (October 2020) set out the proposed approach, workforce travel strategy, baseline information, study area, quantification of movements (including different scenarios), degree of change from the assessment approach, and the next steps.
63. The proposed approach was to:

- Understand and quantify the number of bus movements (direct and Park and Ride) expected to be generated by an increased workforce travelling to and from the HPC site (and accompanying parking capacity at Park and Rides). The focus is on bus movements due to restrictions on use of the HPC site car park controlled by DCO Requirement MS14 and desire to continue focusing on use of the HPC Bus Service and Park and Rides as sustainable travel modes and in line with the Construction Workforce Travel Plan (CWTP);
- Calculate predicted movements based on assumptions for future scenarios of 8,600 and 7,000 workers (however the initial review of the impact from the full 8,600 workers demonstrated that there was no need to review the 7,000 scenario, and therefore the other scenario is not considered in this Topic Paper);
- Consider if existing Park and Rides will continue to operate within the parameters assessed in the ES/TA and their existing permissions;
- Consider if existing Park and Rides will require additional parking capacity or bus services; and
- If it is found that additional capacity is required above that which can be provided at the existing Park and Rides, mitigation will then be considered. This could include the provision of new Park and Rides along with changes to bus services with routes, frequencies or capacities.

64. The above steps allow the most likely scenario in relation to movements to be established.
65. The Transport Scope and Methodology has been further developed through a series of workshops and key assumptions and further details are summarised in this Topic Paper.

Freight Movements (HGVs)

66. The Transport Scope and Methodology (October 2020) noted that an assessment of HGVs movements will not be included in the methodology as there is no proposal or requirement to increase the number of HGVs as part of the workforce uplift.

67. Whilst it is expected that the number of daily deliveries will rise from current levels, they are not predicted to reach levels that were seen prior to the temporary jetty opening and therefore, the number of HGV movements are not forecast to increase above those that were consented within and controlled by the DCO. Information regarding HGV movements alongside a new forward projection of HGV numbers will continue to be presented to the Transport Review Group in the Quarterly Report to demonstrate compliance with the DCO and forecast against caps within the DCO allowing discussion on potential mitigation if required.
68. HGV movements have been scoped out and have not been considered further in this assessment due to:

    - HGVs are already restricted to travelling outside of the peak workforce travel times therefore they will not coincide with any change in workforce travel patterns.
    - HGV movements being managed, controlled and reported through the Construction Traffic Management Plan and Transport Review Group in line with the current agreed conditions and practices.
    - No material change in HGV movements being proposed associated with the workforce uplift.

69. As part of any junction modelling, then approved HGV movements will form part of the assessment.

Key Notes and Assumptions

70. The Transport Scope and Methodology (October 2020) set out the key notes and assumptions that the proposed approach is based upon. This included:
    - Only journey to/from work to be assessed, with no private or non-work trips being considered as these have already been assessed in the DCO and workers would utilise existing provisions for accommodation, which already have permissions for use covering other movements.
    - Return journeys assumed to use the same mode as outward trip.
    - Worker movements will cover those who are both home based (HB) and non-home based (NHB) with no distinctions made between these other than the location to which they are travelling to/from.
    - Quantification of private car movements to/from the Park and Rides will be undertaken to inform parking capacity required at each site. Only where Park and Rides are required to exceed their permitted capacity to accommodate the new workforce (or in the instance of new sites) will further consideration be given to the potential impact of these movements on the highway network.
    - An hour by hour assessment of worker movements based on shift patterns which will be introduced when coronavirus measures are no longer required will be assessed.

Workforce Travel Strategy

71. The current strategy for worker movements to and from the HPC site is summarised in The Transport Scope and Methodology (October 2020). The strategy follows the DCO Construction Workforce Travel Plan and is reported on a quarterly basis to the Transport Review Group (TRG). The 2020 Q1 report provides the most recent reflection of how workers were travelling to and from HPC prior to the temporary changes to working habits due to Covid-19. Subsequent reports have been provided in Q2, Q3 and Q4 2020 and Q1, Q2 and Q3 2021.
72. The travel strategy is proposed to continue in line with the Construction Workforce Travel Plan (CWTP) and continuing to focus on sustainable travel modes.

QUANTIFICATION OF WORKER UPLIFT MOVEMENTS

73. Due to workers' travel being managed, with options available only consisting of Park and Ride buses, direct bus services, parking for workers at the HPC site (limited to 200 cars and 50 motorcycles, with no change proposed) and walking and cycling, the main transport impact from an increased workforce will therefore be associated with increased bus movements and increased parking at Park and Rides, with associated changes to Park and Ride car movements. Therefore, the following have been quantified (using the spreadsheet model) and reviewed:

    - The number of bus movements required to underpin the strategy; and
    - The number of parking spaces required at the Park and Rides, considering in the main if this exceeds the existing provisions or permissions. Associated with this is a review of the movement of cars in and out of the Park and Ride sites.

74. The maximum future peak is expected to be 8,600 workers. This number is considered the maximum, or the 'peak of the peak', and is therefore higher than that applied by other disciplines (where the peak is based on the 3 month rolling average of the workforce (those meeting the 5 day rule)).
75. Whilst the maximum peak assumes 8,600 workers, it is reasonable to assume that there would be an element of annual leave, sickness and home working taking place on any typical day, and therefore a conservative 5% reduction has been applied to the number of workers to account for this, which equates to a revised total of 8,170 being taken forward for assessment.
76. The number of workers that attend site based on 1, 2, 3 and 4 days within the month will be presented as part of the Quarterly Report to provide a complete picture of the number of people accessing site.
77. The following sections present how key elements of the assessment have been calculated and applied using the spreadsheet model.

Shift Patterns

78. The original shift patterns set out in the DCO were:

Table 1: DCO Shift Patterns

Row Number	Shift	Number of Workers
1	Double Day Shift – First shift	1,480
2	Double Day Shift – Second shift	1,440
3	Night shift	380
4	Single Day shift	1,480
5	Office personnel	840
Total		5,600

79. The proposed shift patterns have been carefully developed and importantly takes account of the long held commitment not to move significant bus / HGV traffic during school arrival and departure times. It also takes account of the availability of canteen space during break times and patterns of movement around HPC site.

80. Essentially, the First Shift, Single Day Shift and Office personnel shifts have been merged into one single arrival window. In the DCO the arrival times for those shifts were expressed as 6am-7:30am, 7am to 8:30am and 7:30am to 9am respectively.
81. Expressed as a percentage those numbers are:

Table 2: DCO Shift Patterns expressed as a percentage

Shift	Percentages (rounded up to nearest whole number)
Early (Rows 1, 4, 5 from the table above)	68%
Late (Row 2)	26%
Night (Row 3)	7%

82. The proposed shift patterns are shown in the table below.
Table 3: Proposed Shift Patterns (travel windows) applicable to worker uplift scenario

Shift	Arrival window	Departure window	%	No.
Early	06:00 - 08:00	16:00 - 19:00	60%	4,902
Late	09:00 - 11:00	22:00 - 00:00	20%	1,634
Night	15:00 - 20:00	03:00 - 06:00	20%	1,634
TOTAL			100%	8,170

83. The primary shift pattern at the peak of construction will be based on the Civils and MEH workforce working three shifts. These shifts have been built into the spreadsheet model and reflect a 60:20:20 split of the peak workforce.
84. The site services and professional / management shifts have been built around these main shift patterns to ensure that the Civils and MEH workforce at peak are able to work as productively as possible.
85. An hour by hour assessment of worker movements based on the shift patterns which will be introduced when coronavirus measures are no longer required has been presented within the spreadsheet model discussed on 24 November 2020 and shared for discussion as agreed. An hourly comparison against the original assessment will be presented along with a view regarding potential mitigation if it is required.

Visitors

86. The anticipated number of visitors to the HPC site has not changed and is not proposed to be changed as part of the workforce uplift.
87. The only difference between current practice and the DCO is that all visitors are directed to the Cannington Park and Ride instead of the HPC car park on site. The number of movements through Bridgwater is therefore no different. The assessment of available spaces at Cannington Park and Ride within the spreadsheet model takes account of this and this change was discussed and presented as part of the planning application for a temporary Park and Ride at Quantock Lakes. HPC continues to take the view that it is more appropriate for visitors to park at the Cannington Park and Ride where they can visit Cannington Court visitor centre and avoid travelling along the unfamiliar C182.

88. At the workshop on the 15 December, information on the number and extent of visitors to HPC expected from 2021 onwards was provided along with information on 'business visitors' travelling from Cannington Park and Ride and the HPC car park.
89. HPC will provide data on the number of visitors (i.e. people who visit site who do not have a site pass (which will include professional visitors, VIPs and people undertaking a site tour).

Worker Origins

90. The data on worker origins presented in the spreadsheet model has been calculated in the same method as set out in the Spatial Distribution Note presented in September 2020 and also presented within the Accommodation workshops. This is with a % for each ward cluster provided, combining the home-based (HB) and non-home based (NHB) numbers together, as this factor is not relevant to the transport work.
91. There is also an assumption that the worker accommodation campuses would operate at near full capacity to mirror both the assumptions made for the DCO application but also reflecting current occupancy levels.
92. The predicted origins of the workers is set out in following table, considering two HB:NHB scenarios.

Table 4: Worker origins by ward cluster

	38:62 HB:NHB scenario		34:66 HB:NHB scenario	
Location	**No. workers**	**% Total Origin**	**No. workers**	**% Total Origin**
Bridgwater	2586	31.7%	2658	32.5%
Burnham & Highbridge	314	3.8%	294	3.6%
Cannington	694	8.5%	769	9.4%
Cheddar	10	0.1%	9	0.1%
Glastonbury	29	0.3%	28	0.3%
Hinkley Point/Stogursey	200	2.4%	218	2.7%
Minehead	95	1.2%	85	1.0%
Somerset South	86	1.0%	76	0.9%
Somerset West	29	0.3%	28	0.3%
Taunton	685	8.4%	664	8.1%
Watchet & Williton	162	2.0%	161	2.0%
Weston-Super-Mare	171	2.1%	152	1.9%
Bristol	228	2.8%	209	2.6%
Rest of SW England	380	4.7%	342	4.2%
Other	238	2.9%	209	2.6%
Sedgemoor Campus	1266	15.5%	1266	15.5%
HPC Campus	650	8.0%	650	8.0%
Quantock caravans	165	2.0%	165	2.0%
Moorhouse Farm	78	1.0%	78	1.0%

Mill Farm	107	1.3%	107	1.3%
TOTAL	8,170	100%	8,170	100%

Uncertainty

93. The table above setting out worker origins builds on the agreed methodology within the DCO application for establishing likely worker origins however, as with any large development there may be from time to time some variation from the likely distribution. As such, in order to ensure that there are no unintended consequences of those travelling by private vehicle to a Park and Ride not being able to park, it is important that some flexibility and contingency (namely over provision) is built in to ensure that workers are able to park and catch the bus to work in a timely fashion without impacts on the surrounding road network and residents.
94. Quarterly monitoring is already provided to the TRG regarding usage of Park and Rides and bi-annual data is collected via the workforce survey on worker origins which will allow the TRG to track compliance and debate the provision of mitigation if trends suggest that the worker origin information set out above is somehow not sufficiently accurate and representative.

Mode of Travel

95. HPC remain focused on sustainable travel instead of increasing use of, or reviewing the feasibility of extending, the car park at HPC. In line with the Construction Workforce Travel Plan there remains a strong focus and major commitment to use sustainable transport modes to mitigate and reduce the impacts of the workforce uplift on the local transport network.
96. HPC's Bus Strategy which has been revised and is presented as an appendix to this topic paper is to run a bus service that is efficient and effective at getting workers to site to enable them to carry out their work, the bus strategy also addressed options for rail travel. The aim is to continue developing a network of direct bus services to minimise the need for Park and Ride provision. Recently there has been a focus on identifying areas of high demand where centres of populations have significant number of workers (Bridgwater, Taunton and subsequently Burnham-on-Sea and Weston-Super-Mare). This enables re-focused direct bus services to provide core services between areas of high demand from a centralised location (referred as Walk and Ride services) and reduce the frequency of the bus stopping at public bus stops, which then improves journey time and the passenger experience. For villages closest to HPC (Stogursey, Cannington. Combwich etc) the project has reintroduced the direct bus services now that Covid-19 restrictions are largely removed. Additionally, direct bus services have been reintroduced in Bridgwater in addition to the Walk and Ride services given the number of workers and geographic dispersal of those workers expected to be staying within the town, additional information on all bus services is set out in the revised Bus Strategy.
97. The Bus Strategy will continue to be evolved as required and consider measures to avoid the hub-related issues raised by the Joint Councils including use of Bus Marshalls if necessary at peak times to manage crowd flows etc. Bus Marshalls currently in place at the Park and Ride's are working effectively and have been used at popular bus stops as part of the fly parking monitoring.
98. As has been the case since 2016 these bus services will be robustly monitored and managed, to ensure that the services can be adapted to accommodate any variance from the scenarios and maximise use of services. The monitoring and management will be supported by the new bus passenger system being introduced by the bus service provider.

99. In line with the Construction Workforce Travel Plan's Allocation of Worker to Transport principles, workers who are unable to use a direct bus service will be allocated to the nearest Park and Ride and encouraged to consider using sustainable travel to reach the Park and Ride site instead of private car.

100. The following table provides a breakdown of which modes workers would be using, based on their origin. It should be noted that no allowance is made for direct walking and cycling to the HPC site, which would negate the need for use of Park and Ride spaces or buses for these workers.

101. The quantum of trips materialising from outside of Somerset is low compared to the daily numbers arrived at site each day. That traffic is also dispersed across the wider network in Devon and Dorset, both too and from the site, and is not considered to have a detrimental impact on the network.

Table 5a: Worker Mode of Travel by Ward Cluster- (38:62)

Location	HPC parking	J23	J24	J25	Cannington	Washford	Quantock Lakes	Direct Bus
Bridgwater	4.2%	4.8%	19.2%	0.0%	0.0%	0.0%	4.8%	67.0%
Burnham & Highbridge	4.1%	28.8%	0.0%	0.0%	0.0%	0.0%	0.0%	67.1%
Cannington	4.2%	0.0%	0.0%	0.0%	24.0%	0.0%	0.0%	71.9%
Cheddar	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glastonbury	3.5%	96.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hinkley Point/Stogursey	4.0%	0.0%	0.0%	0.0%	0.0%	0.0%	24.0%	72.0%
Minehead	4.2%	0.0%	0.0%	0.0%	0.0%	57.5%	38.3%	0.0%
Somerset South	3.5%	0.0%	48.2%	48.2%	0.0%	0.0%	0.0%	0.0%
Somerset West	3.5%	0.0%	48.2%	48.2%	0.0%	0.0%	0.0%	0.0%
Taunton	4.1%	0.0%	0.0%	38.4%	0.0%	0.0%	0.0%	57.5%
Watchet & Williton	3.7%	0.0%	0.0%	0.0%	0.0%	96.3%	0.0%	0.0%
Weston-Super-Mare	4.1%	19.2%	0.0%	0.0%	0.0%	0.0%	0.0%	76.7%
Bristol	3.9%	96.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rest of SW England (not including Wales)	4.2%	19.2%	19.2%	57.5%	0.0%	0.0%	0.0%	0.0%
Other	4.2%	95.8%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sedgemoor Campus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
HPC Campus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Quantock caravans	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Moorhouse Farm	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Mill Farm	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Table 5b: Worker Mode of Travel by Ward Cluster- (34:66)

Location	HPC parking	J23	J24	J25	Cannington	Washford	Quantock Lakes	Direct Bus
Bridgwater	4.2%	4.8%	19.2%	0.0%	0.0%	0.0%	4.8%	67.1%
Burnham & Highbridge	4.1%	28.8%	0.0%	0.0%	0.0%	0.0%	0.0%	67.1%
Cannington	4.2%	0.0%	0.0%	0.0%	24.0%	0.0%	0.0%	71.9%
Cheddar	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Glastonbury	3.5%	96.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Hinkley Point/Stogursey	4.1%	0.0%	0.0%	0.0%	0.0%	0.0%	24.0%	71.9%
Minehead	3.5%	0.0%	0.0%	0.0%	0.0%	57.9%	38.6%	0.0%
Somerset South	4.0%	0.0%	48.0%	48.0%	0.0%	0.0%	0.0%	0.0%
Somerset West	3.5%	0.0%	48.2%	48.2%	0.0%	0.0%	0.0%	0.0%
Taunton	4.2%	0.0%	0.0%	38.3%	0.0%	0.0%	0.0%	57.5%
Watchet & Williton	3.7%	0.0%	0.0%	0.0%	0.0%	96.3%	0.0%	0.0%
Weston-Super-Mare	4.0%	19.2%	0.0%	0.0%	0.0%	0.0%	0.0%	76.8%
Bristol	3.8%	96.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Rest of SW England (not including Wales)	4.1%	19.2%	19.2%	57.5%	0.0%	0.0%	0.0%	0.0%
Other	3.8%	96.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Sedgemoor Campus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
HPC Campus	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Quantock caravans	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Moorhouse Farm	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
Mill Farm	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%

Average Bus Occupancy

102. To quantify the number of buses required to transport workers to/from the HPC site, the time of travel and the number of workers travelling within that time period, from each ward cluster, has been calculated and a maximum bus occupancy figure applied to determine the resultant number of buses needed to transport the workers.

103. The spreadsheet model has been based on an average bus occupancy of 40 bus passengers for Park and Ride and direct bus services with the exception of Cannington and Williton (now known as Washford Cross) which are set at 25 and 15 respectively (to mirror the DCO and to ensure a like for like comparison). An initial suggestion of 50 workers per bus was not considered to represent a realistic worst case scenario and has therefore not been applied, even though occupancy on buses at peak shift change over times is expected to be significantly higher than 40 passengers.

104. At present, both for journey's to and from HPC from the Park and Rides and the Sedgemoor Campus the average occupancy of buses is 81%. At full capacity, a Double Decker carries 81 passengers and a coach carries 53, which, at current occupancy levels, would equate to 65 passengers and 43 passengers respectively.

105. Operational experience suggests a slight preference from workers in favour of travelling on a coach. On this basis, the assumption of 40 passengers per bus is considered sound and reflective of current occupancy rates. Noting that it is likely that there will be more than 40 bus passengers per bus during the peak periods and the HPC Site Operations Team will continue to review the bus services to increase utilisation further.

106. HPC has no desire to either under or over provide services for the transport of workers to HPC in good time to begin their shifts. Constant monitoring, liaison between the HPC Site Operations Team, the bus provider SPS, Bus User Group and contract partners will continue throughout the construction phase of the project to ensure that an efficient and effective service is provided.

107. In addition, the soon to be introduced bus passenger system to track bus occupancy and boarding location will allow accurate monitoring of occupancy levels and this information can will be summarised and reported to the Transport Review Group. This can include a comparison against the assumptions set out in the spreadsheet model reported more regularly in the lead up to the peak workforce to ensure that early consideration is given to any measures / mitigation that may need to be taken in the event that the 'target(s)' are unlikely to be achieved.

Total Bus Movements

108. The number of bus movements estimated to be used at the proposed peak has been compared to the estimates provided in the DCO application in the following table. This is based on the Park and Ride and Direct buses so does not include Visitor bus movements. The table shows that there will be a reduction in the number of bus movements (two-way) overall.

Table 6: DCO estimated Bus Movements v Proposed Peak estimated Bus Movements (two-way)

Bus Type *(Scenario 38:62)*	**Bus Movements (two-way)**	
	DCO	**Proposed Peak (excluding empty running)**
Park and Ride	508	244
Direct	596	273
Campus (Bridgwater)	128	75
Total	1,232	592

Bus Type *(Scenario 34:66)*	**Bus Movements (two-way)**	
	DCO	**Proposed Peak**

		(excluding empty running)
Park and Ride	508	229
Direct	596	279
Campus (Bridgwater)	128	75
Total	1,232	583

109. The Bus Strategy includes an explanation to how the HPC Allocation of Worker to Transport policy will operate to achieve the proportions set out in the spreadsheet model.

110. The maximum total daily bus movement of 592 bus trips is still 52% lower than that calculated and assessed at the DCO application stage in the TA and ES

111. It is expected that there may by a small number of additional 'skeleton services' running during shifts to maintain connectivity with the Park and Ride sites and some ward clusters. It is assumed that these would provide a much reduced service of, for example, one service per hour outside of the shift window travel times to each of the Park and Ride sites and the six ward clusters and the Moorhouse Farm and Mill Farm dedicated accommodation sites which are served by direct buses. The inclusion of a skeleton service would mean an increase to the total number of bus movements, but this would be low, and mean that the total number of buses proposed would still be lower than what was assessed at DCO, and HPC would continue to carefully manage these buses to limit the number of empty bus movements. An assumption for skeleton services is set out briefly below.

112. For each hour between 04:00 and midnight for which there is currently no service operating between the P&R sites, the six ward cluster sites and Moorhouse Farm and Mill Farm and the HPC site, it is assumed that an hourly service (one in each direction) would take place to maintain connectivity. Based on the shift patterns assessed, this currently equates to 126 skeleton bus movements occurring between the P&R sites and HPC and a further 168 between the ward clusters and dedicated employment sites (which are the same regardless of the HB:NHB split), taking the total to 294.

113. A comparison of estimated bus movements (Park and Ride, direct, Bridgwater Campus) against those assessed in the DCO, across the peak hours has also been undertaken below.

Table 7: DCO v Proposed Bus Movements (Peak Hours)

Bus movement *(Scenario 38:62)*	**AM peak (08:00 – 09:00)**		**PM peak (17:00 – 18:00)**	
	DCO 2016	**Proposed peak**	**DCO 2016**	**Proposed peak**
Park and Ride	22	0	48	34
Direct bus	32	0	64	36
Campus	6	0	12	11
Skeleton	0	28	0	0

Total	60	28	124	81

Bus movement *(Scenario 34:66)*	AM peak (08:00 – 09:00)		PM peak (17:00 – 18:00)	
	DCO 2016	Proposed peak	DCO 2016	Proposed peak
Park and Ride	22	0	48	32
Direct bus	32	0	64	37
Campus	6	0	12	11
Skeleton	0	28	0	0
Total	60	28	124	80

114. If the allowance for skeleton services was added on top of the proposed peak daily movements, this would be no higher than the number previously assessed at DCO. It is important to note that skeleton services have been part of the HPC bus service since 2016 and are a fundamental part of delivering a modal split with such a high percentage of bus journeys to workers 'final destination' / place of work. Services are periodically reviewed to ensure that unnecessary services are removed from the timetable.

Empty Bus Movements

115. The running of buses when bus passengers are not travelling on them to facilitate vehicle re-positioning, are often referred to as 'empty running' bus movements. These are in addition to the number of bus movements quoted in Table 6 as part of the assessment.

116. The shift patterns result in two peak movements to and from HPC and there is currently limited capacity for storing buses at HPC, which results in 'empty' buses running to and from J24. Additional capacity to hold buses (around 40) at HPC is available now that works to the Northern Plaza are complete and (subject to Planning Permission) at Pixie's Field which will be used in the afternoon / early evening. The Northern Plaza will also allow buses to be re-positioned to HPC before the start of the shift changeover time in a phased approach, to remove a significant number of buses moving into position within a short time period or within network peak periods. This is also HPC's preferred option as there is minimal risk in buses being delayed in potential traffic prior to collecting bus passengers from HPC for their return journey.

117. It is in HPC's interest to reduce the number of 'empty' bus movements and carefully manage these to avoid 'empty' running where possible. It is inevitable that there will still be 'empty' buses that return to J24 to either make a return journey, move onto another route, be stored in advance of the PM services or visit the Vehicle Maintenance Unit. There will be the need for drivers to be repositioned as well as the buses themselves.

118. The spreadsheet model demonstrates that due to the timing of shift patterns proposed during the peak period, there will be time when the movement of workers will be significantly reduced, with potentially only skeleton

services running. Within these periods of lower HPC worker movements, and outside of the highway network peaks, there will be a requirement for some repositioning of vehicles to support the shift changeover movements. Assumptions in relation to empty running buses are set out in the revised spreadsheet model, and estimates these would be in the region of 262 daily (two-way) movements.

Table 8: DCO vs Proposed total bus movements (two-way)

Total buses	**DCO**	**38:62**	**34:66**
P&R	508	244	229
Direct	596	273	279
Campus	128	75	75
Skeleton service	0	294	294
Empty Running	0	262	262
Total	**1232**	**1148**	**1139**

119. It is apparent that the DCO TA did not take account of either skeleton services or empty running buses and that by adding these movements into the model a comparison between the peak of construction and that assessed in the DCO is not a like for like comparison. What is clear however, is that even by adding in these movements it would not result in higher bus numbers than was assumed in the DCO application and HPC will continue to manage these to limit the number of empty bus movements and only run these where necessary for reasons set out above.

120. Further detail has been provided in the Note issued to the Joint Authorities on 29 January 2021 and will be available in the HPC Bus Strategy.

Park and Ride Car Movements

121. Movements to the Park and Ride sites by cars (i.e. workers arriving and departing) have been calculated based on the number of workers expected to travel to each Park and Ride, the time of their travel (to correspond to shift patterns) and the number of workers per car (car sharing).

122. The proposed car movements (two-way) at the Park and Ride sites estimated at peak has been compared to the DCO in the following table.

Table 9: DCO v Proposed Car Movements (two-way)

Park and Ride (38:62)	**Car Movements (two-way)**		**% Difference**
	DCO	**Proposed Peak**	
J23	1,852	1,373	-25.9%
J24	1,164	1,010	-13.3%
Cannington	272	2,98	9.5%
Williton / Washford Cross	398	331	-16.9%
Sub-total	**3,686**	**3,011**	**-18.3%**
Quantock Lakes	0	469	0.00%
J25	0	985	0.00%
Total	**3,686**	4,466	+21.2

Park and Ride (34:66)	Car Movements (two-way)		% Difference
	DCO	Proposed Peak	
J23	1,852	1,273	-31.2%
J24	1,164	1,012	-13.0%
Cannington	272	330	21.3%
Williton / Washford Cross	398	322	-19.1%
Sub-total	**3,686**	**2,938**	**-20.3%**
Quantock Lakes	0	475	0.00%
J25	0	921	0.00%
Total	**3,686**	**4,334**	+17.6%

123. A comparison between the car movements to the Park and Ride sites now predicted with those assessed in the DCO has been undertaken by hour for the Park and Ride sites. For the Park and Ride sites assessed at DCO, the use of the sites is proposed to be lower than what was originally assessed in all apart from Cannington, where an 9.5% increase is estimated for the Scenario 38:62 and 21.30% for the Scenario 34:66. There has however been the introduction of Quantock Lakes Park and Ride and J25 Park and Ride which were not part of the strategy or assessment at the DCO, with the total movements across the P&R sites being around 20% higher than what was assessed at DCO.

124. A summary of movements by peak hour period is provided below.

Table 9: DCO v Proposed Park and Ride Car Movements in the Peak Hours

2-way vehicles		08:00 – 09:00	17:00 – 18:00 *(38:62 scenario)*	17:00 – 18:00 *(34:66 scenario)*
J23	Proposed peak	0	218	202
	DCO	25	157	157
J24	Proposed peak	0	160	161
	DCO	16	99	99
Cannington	Proposed peak	0	47	52
	DCO	3	23	23
Washford	Proposed peak	0	52	51
	DCO	6	34	34
Total P&R (Proposed Peak)		0	478	466

Total DCO P&R (DCO)		50	313	313
	New P&R Sites			
J25	Proposed Peak	0	156	146
	DCO	N/A	N/A	N/A
Quantock Lakes	Proposed Peak	0	75	75
	DCO	N/A	N/A	N/A
New P&R Total		0	231	222

125. It can be seen from Table 8 that in the AM peak, due to the re-timing of shifts, there is not forecast to be any movements to/from the Park and Ride sites. It is noted that in a realistic scenario however, there may be a small amount of movements to/from the site outside of the prescribed shift patterns due to irregularities such as workers arriving late (planned or unplanned) who would make use of the skeleton services. This however is not something that is expected to contribute a significant amount of movements or be something that is supported except in exceptional circumstances which were expected and allowed for within the DCO assessment.

126. The new peak periods for the proposed car movements can be seen in the Spreadsheet Model.

127. In the PM peak, there is expected to be higher levels of car movements compared to what was assessed at the DCO. In actual numbers this is an additional 61 two way movements at both J23 and J24, an addition 24 two way movements at Cannington and an additional 18 two way movements at Washford in the PM peak. All park and rides can accommodate the change in demand both in terms of parking spaces and capacity on entering and existing the sites due to the staggard arrivals and departures over the hour. The greatest impact across the 4 sites is an additional 51 cars departing from J24 over the PM peak hour).

Car Share

128. Conservative car share assumptions have been built into the spreadsheet model (and are included in the results shown above) based on actual car share data rather than using the DCO assumptions and therefore represented a worst-case scenario (being lower than the DCO assumption of 2 people/car). These are summarised below, and have been calculated based on actual, observed data from Q1 2020 (prior to Covid-19).

Table 10: Average occupancy per car for each Park and Ride site

Park and Ride	**Assumed Occupancy** (people per vehicle)
J23	1.2
J24	1.3
J25	1.1
Cannington	1.1

Washford	1.3
Quantock Lakes	1.3

129. HPC recognise that car share targets have been difficult to achieve to date especially with a varied and dynamic workforce. HPC is committed to improving car sharing and, when restrictions allow, intends on rolling out targeted initiatives to parts of the workforce where additional car sharing is most likely – for example with a focus on office based workers and those long term HPC workers who may remain working at HPC when it becomes operational, providing a legacy benefit.

130. Additional measures will include:

- New car share system and associated policy;
- Consistent car share signage;
- Enforcement on car share parking bays;
- Communications campaign including identifying supporters/influencers;
- Internal team training / briefings to ensure on board with promoting car sharing;
- Review of car share information provided; and
- Focus on office based workers and potential long term HPC workers;

131. A further Car Share Note will be developed and presented to the Transport Review Group. This will include identifying appropriate measures to further increase car sharing and a review of the recent car share numbers at each Park and Ride site. If necessary the note will set out proposals for drawing down of s106 contingency funding for discussion at the TRG in accordance with the provisions of the s106 agreement.

132. Information on car sharing will continue to be presented to the Transport Review Group in the Quarterly Report to enable appropriate scrutiny of such initiatives.

Change Log

133. The HPC Project has been subject to a number of changes since the DCO was consented in 2013 and the Joint Authorities have noted that the effects of which have not been the subject of any cumulative assessment. These changes include a delay to the construction works beginning on main HPC site and delays in the delivery of the associated development schemes and mitigations measures. The HPC Change Log RAG (Latest dated 14 January 2021) sets out the changes experienced in the project to date and provides an explanation of their relevance to the workforce uplift and an explanation of how they have been taken into account within the methodology and assessment.

Traffic Modelling

134. The Joint Authorities in a letter dated 23 October 2020 noted that at that stage they did not expect that it will be necessary to repeat the traffic modelling undertaken for the DCO application, but local traffic modelling may

need to be carried out to assess the potential impact on the local road network unless it is demonstrated that this is not necessary.

135. A note was provided to the Councils by HPC on 29 January 2021 to provide information on initial analysis undertaken on the Dunball Roundabout outside of the J23 Park and Ride. This junction was chosen to assess as it is outside the largest of the Park and Ride sites and will therefore be subject to the most Park and Ride car movements out of all of the Park and Ride sites, and recent traffic flow data was made available to undertake an initial review. It is also a location that the joint authorities have expressed concerns about.

136. This analysis was undertaken following receipt of information from Highways England in relation to traffic surveys undertaken at Dunball Roundabout in 2018, which informed the Highways England J22 and J23 Paramics Model. The analysis looked at the % change for each link (to enable comparison as reported in the ES) – it did not assess the capacity of functionality of the junction. It concluded that for all the approach arm links to the junction, the flow increases were expected to be lower than the 30% trigger for reviewing severance. Further assessment at Dunball Roundabout will be undertaken utilising the Highways England J22 and J23 Paramics Model to ascertain the queue lengths for each arm of the roundabout and journey delay factors, which can then be compared to the DCO assessment results for this location.

137. Given that the relevant local authorities (Somerset County Council and Sedgemoor District Council) are in the process of designing and delivering significant junction improvements to the Dunball Roundabout it has been agreed that any modelling of HPC impacts to support any future request(s) to use more than 920 spaces at the Junction 23 Park and Ride site will be delayed until that design is available and can be modelled. Given that the s106 agreement provides for TRG to allow more than 920 spaces already, any modelling work would simply support the TRG in reaching any such decision.

138. In addition, throughout the duration of the project to date various changes have occurred on the transport network to either improve safety, capacity or access the network. It is therefore not possible to provide a direct and complete comparison of the network now compared to what is was at the time of the DCO. However where relevant these schemes have been taken into account.

Incident Management

139. A note has been provided to demonstrate how the arrival of workers to Park and Rides can be managed in the event of an incident. This included an assessment of spare capacity parking spaces.

140. The analysis of the parking capacity at each Park and Ride showed the capacity of each site, the maximum accumulation expected within any 24 hour period and any corresponding remaining capacity. The analysis showed that there remains spare capacity at all of the Park and Rides except for J25 Park and Ride. J25 Park and Ride has however recently received planning consent to use up to 400 spaces ,which will add significant capacity to deal with incidents.

141. The management arrangements to deal with incidents on the network would continue as set out in the DCO Traffic Incident Management Plan (TIMP). The TIMP was prepared to demonstrate HPC's commitment to constructively work with the highway authorities and emergency services to manage traffic incidents on the highway network. The TIMP sets out the controls HPC have in place to control HGV and bus movements to and from HPC in the event of an incident within the Incident Management Area (IMA).

142. If there was an incident of significance which meant buses were unable to operate to transport workers between the Park and Ride and HPC, which may lead to a build up of vehicles at the Park and Rides, HPC would use communications channels in place to advise workers to return home or not travel to a Park and Ride / HPC.

- Management measures include the following:

- Implementation of Operation Harold (The main road C182 from Cannington – HPC site) if applicable;
- Implementation of Operation WADER (remainder of the Incident Management Area) if applicable;
- Security staff at Park and Ride to assist with setting necessary measures up and crowd control;
- Appropriate cordons to ensure Park and Ride entry and exit points not impeded;
- Prevention of vehicles parking outside of marked bays at Park and Rides unless under instruction of a Marshall (stacking in lanes may be required but would need to managed);
- New vehicles being turned away prior to their entry to the Park and Ride via closure of site entry; and
- Workers being advised to travel to an alternative Park and Ride or return home;

143. The spreadsheet model provides information to suggest that this approach is sufficiently robust and flexible to accommodate the peak workforce.

ASSESSMENT OF PROPOSED CHANGES

144. This section takes the key impacts identified and assessed in the ES, and considers whether the proposed workforce uplift results in unchanged, adverse or beneficial impacts.

145. The TA objectives are also reviewed and consideration is given to whether those objectives can still be achieved in light of the proposed Workforce Uplift.

146. Where an adverse impact is identified which is materially new or different compared to the relevant impact identified in the original ES, or the TA objective cannot be achieved, suggested mitigation is set out under Mitigation Proposals.

147. As would be expected, since the DCO was granted in 2014, a range of improvements to the transport network have been implemented either by the Highway Authority, by the HPC project in accordance with the DCO or by 3rd parties to address the impacts of their own developments. Where relevant these schemes have been taken into account in the assessments against Environmental Statements impacts below.

148. Consideration is also given to the CWTP and whether any revisions to the Travel Plan are necessary as a result of the above assessment.

ES Impacts

149. As noted in the early stage of this topic paper, the significance of effects was linked to both the sensitivity of a receptor and the magnitude of the effect. The magnitude was associated with % change increases in flow for all impacts (except for accidents). The % change to flows along links was determined by the highway model built to support the DCO.

150. As the model is no longer available, it has not been possible to replicate the assessment; however the change in flows associated with the worker uplift specifically into and from the Park and Ride sites has been calculated based on daily totals for bus and car movements and comparing these to those assessed at DCO to determine if the level of impact will exceed that considered at DCO.

Severance

151. For severance, link flow increases of 30% or more were deemed significant. This assessment has shown for the workforce uplift proposed peak scenarios that:
- For buses, the total number of daily movements will be lower than assessed at DCO, even with assumptions on empty running and skeleton services included.
- For car movements to/from the Park and Ride sites, for those Park and Ride sites which were included in the DCO assessment, the number of daily movements will be lower than at DCO, with the exception of Cannington, depending on the HB:NHB scenario, which will be up to 21.3% higher (Table 8).

152. This assessment therefore concludes that, for severance, the impact will be no greater than that assessed at DCO. For the new Park and Ride sites at J25 and Quantock (which weren't assessed at DCO and therefore cannot be compared), these have been subject to individual Transport Statements as part of obtaining permission for their use.

153. This has been assisted through the proposal of more efficient bus services, which will result in less bus movements on the network over 24 hours than assessed in the DCO.

154. Additionally, the use of Quantock Lakes and J25 for Park and Ride services, and the increase in parking at J23 (to utilise existing spaces, not create new ones) means that there are more facilities to support a more efficient transport strategy, reducing the distance workers need to travel to reach a bus service, and therefore minimising impacts on locations such as Bridgwater and Cannington.

Driver Delay

155. For driver delay, the significance of the effect was based upon professional judgement and reviewing journey time survey data. Due to the Covid-19 pandemic, new journey time surveys have not been undertaken as the traffic conditions over the past year have not been representative of the usual levels of traffic.

156. Given that the total number of movements for both buses and Park and Ride cars is lower than was assessed at DCO, and that the conclusion of significance for this impact at DCO was 'negligible', it is not considered that the proposed workforce uplift will have an adverse effect upon journey times and subsequent delay to drivers.

Pedestrian Delay

157. For pedestrian delay, the highway model was used to determine change in link flows, with the threshold for driver delay set at two-way link flows of 1,400 per hour.

158. More efficient bus services would result in less bus movements on the network over 24 hours than assessed in the DCO

159. As both the bus and Park and Ride car movements are not proposed to be above the level that was assessed at the DCO application stage, it is therefore considered that the effect of the workforce uplift on pedestrian delay would be no greater than those concluded at DCO, which was negligible.

Pedestrian Amenity

160. Pedestrian amenity is measured by reviewing the change in total traffic flows where <100% is negligible. If the change in flow is over 100%, the significance of the impact depends on the individual characteristics of the road. Given that the calculations for the proposed workforce uplift are not proposed to be above the level that was assessed at DCO, it is therefore considered that the effect of the workforce uplift on pedestrian amenity would be no greater than those concluded at DCO, which was negligible

Accidents and Safety

161. Similarly for accidents and safety, given the proposed flows are predicted to be lower than those assessed at DCO, it is not considered that there would be a change from the conclusions presented at DCO.

Summary

162. The following Table summarises the impacts identified in the ES, including considering of the Uplift Impacts, mitigation proposed, and whether there is any residual impact after mitigation.

Table 11: ES Impacts vs. Workforce Uplift

Description of Impact	**Sensitivity of Receptor**	**Magnitude of Impact**	**Significance of Impact**	**ES 2016 Residual Impact (with mitigation)**	**Summary of Proposed Change (including mitigation / enhancement)**	**Assessment of Uplift Impact** *(No Change, Adverse Change, Beneficial Change)*	**Proposed Residual Impact**
Severance	Varies by link	Varies by link	Varies by link	Moderate Adverse *Substantial Beneficial*	An updated HPC Bus Strategy would enable more efficient bus services which would result in less bus movements on the network than assessed in the DCO. Amendments to shift patterns will encourage travel outside of main peak periods and a new HPC Car Share scheme will encourage less reliance on the private car. Car movements to/from the DCO Park and Rides will be lower than assessed in DCO, with the exception of J24 and Cannington (depending on the HB:NHB scenario) which will be less than 5% higher (Table 8).	No Change	No Change (If required, applications for additional spaces and new/retained park and rides (as required) will be assessed separately)

Driver Delay	Varies by link / route - the key routes for journey times assessed in the EA were the two HPC HGV routes from the M5	The TA included a detailed analysis of journey times and demonstrated there is no material detriment to journey times within Bridgwater as a whole.	The ES assessed Route 1 and found there is no statistically significant change in journey times when the scenario with HPC traffic plus mitigation is compared with the Reference Case.	Negligible	The total number of movements for both buses and Park and Ride cars is lower (with the exception of J24) than was assessed at DCO as a result of the proposed Transport Strategy measures.	No Change	No Change
Pedestrian Delay	Varies by link	No link experienced traffic flow increases greater than 30%. In Cannington, the improvements led to a moderate beneficial impact	Varies by link	Negligible *Moderate Beneficial*	An updated HPC Bus Strategy would enable more efficient bus services which would result in less bus movements on the network than assessed in the DCO.	No Change	No Change
Pedestrian Amenity	Varies by link	Varies by link	Bridgwater is moderate adverse and Cannington is moderate beneficial	Moderate Adverse *Substantial Beneficial*	The proposed Transport Strategy measures combined will provide a more efficient transport strategy overall and reduce the distance workers need to travel to reach a bus service, and therefore minimising impacts on locations such as Bridgewater and Cannington.	No Change	No Change
Accidents and Safety	Varies by link	Minor Adverse based on the Road Safety Strategy appended to the TA.		Negligible	An improved HPC Bus Strategy would enable more efficient bus services which would result in less bus movements on the network than assessed in the DCO. If required, applications for additional spaces and new/retained park and rides (as required) will be presented with localised information.	No Change	No Change

163. It is important to note that this is a short term peak and in line with the ES, it is acknowledged that when HPC construction is completed and there are only operational staff, it can be concluded that there would be no material adverse impact on the criteria considered within the ES Chapter 10: Transport as a result of the operational phase of HPC. There would remain to be moderate beneficial impacts on journey times through Bridgwater due to the transport mitigation schemes that have been implemented.

164. As set out below, measures required to avoid significant impacts include two additional park and ride sites at Quantock Lakes and at Junction 25. These sites are both existing sites with either very limited or no physical development proposed to allow for use by HPC workers. Both sites are subject to Town and County Planning Act applications which include relevant assessments including standalone Transport Statements which address their role in the HPC Project's transport proposals and their impact on the nearby transport network. Taken cumulatively and in-combination these additional sites are not expected to give rise to any new or materially different environmental effects whether in relation to Transport or any other topic. Should either site require mitigation to reduce impacts to acceptable levels, this will be addressed through the TCPA process.

Mitigation Proposals

165. Based on the outcome of the assessments to date, the following measures would likely be needed to avoid significant impacts on the transport network (the first two being continuations of existing measures which have been included in the assessments above):

- **Quantock Lakes Park and Ride (160 spaces)** – A TCPA application for a further temporary permission to allow use to continue until the end of construction (the current temporary permission expires in September 2021). An application was approved to retain use of Quantock Lakes on 3rd August 2021 until 31st December 2025.

- **M5 J25 Park and Ride (400 spaces)** – A TCPA application was approved 28th June 2021 for the use of up to 400 spaces by HPC workers until 31st December 2025.

- **J23 Park and Ride (potential increase from 920 to 1,300 spaces)** – to note the opportunity to seek permission from Transport Review Group to have the option to use more of the available spaces if required and subject to further modelling of the Dunball Roundabout. Paragraph 5.3.9 of the Construction Workforce Travel Plan refers to if an increase is required then this would need to be approved by the Transport Review Group and this is permitted under the DCO.

166. In addition to the above, the following is a summary of further measures and enhancements proposed to prevent the workforce uplift from resulting in any materially new or different environmental effects compared to those identified in the original ES:

Proposed Transport Strategy Measures:

- Amendments to the time of travel of workers, based on reviewing /changing shift patterns and corresponding times of travel to work to encourage travel outside of main peak periods.

- Amendments to the mode split of worker travel, with a reassessment having taken place to identify where workers will likely reside and therefore the best mode of travel for their journey. This has resulted in changes to the number of movements by vehicle type and also by location.

- Update to the HPC Bus Strategy to be included in the new CWTP Action Plan, which includes:
    - A focus on minimising the need for Park and Ride provision (including re focused direct bus services to provide core services between areas of high demand and reintroduce more direct bus services in local areas when appropriate);
    - New Bus Passenger System (and associated training) to include mechanisms to have flexibility to adjust bus services when and where required;
    - Better promotion of use of sustainable modes to reach Park and Rides to reduce reliance upon private cars;
    - Improved bus, parking and fly parking monitoring arrangements; and
    - More efficient use of the existing Park and Rides (maximising capacity).
    - New HPC Car Share Scheme (including a focus on office-based workers and long-term HPC workers to provide a legacy benefit).

Other Measures:

- New Construction Workforce Travel Plan Action Plan.
- HPC would also continue to support the local community by:
    i. Continuing the HPC Community Bus Service between Minehead and Bridgwater town centre; and
    ii. Work with Somerset County Council to further develop the opportunity for cycling between Combwich to Hinkley Point to provide the missing link from Bridgwater.

TA Objectives

167. A series of objectives were set out in the TA, and in the table below, we explain how the workforce uplift will be managed and mitigated to continue to support these objectives going forwards.

Table 12: Review of TA Objectives

Objective	Review
Minimise the volume of traffic	Table 5.1 of the TA sets out the measures necessary to meet the objective. Those measures are: • Direct bus service • Park and ride • Car Share • Walking and cycling improvements • Rail and Bus

	The proposed workforce uplift is continuing to support this strategy, with a focus on bus services to transport workers to site, and a better, more efficient bus service than that envisaged at DCO or that has run to date will support in the minimising of road movements as much as possible. The retiming of shifts will also support with the retiming of movements on the network, meaning impacts at peak times can be reduced to the benefit of other road users.
Maximise the safe, efficient and sustainable movement of people	By promoting an enhanced bus strategy to encourage more focussed and strategic bus services, there will be a continued effort to support the safe, efficient and sustainable movement of workers to and from the HPC site.
Minimise the impacts for the local community and visitors	The introduction of new Park and Ride facilities at J25 and Quantock Lakes, supported by a more efficient and effective bus service has meant that there is less pressure on fewer Park and Ride facilities, and reduced traffic in the vicinity of these, as demonstrated through the calculations earlier in this documents showing flows to/from the Park and Ride sites assessed at DCO being lower than envisaged.
Provide long-term legacy benefits for the local community	As part of the construction and mitigation of HPC a suite of transport infrastructure improvements were implemented to support better local movements as well as movements associated with the proposed development. HPC also contributed towards SCC's Travel Demand Management programme which looks at promoting sustainable travel behaviours with a focus on the local community, schools and local businesses.
Maximise the control of movements associated with the Construction of HPC	The proposed strategy for supporting an increased workforce includes allocating modes of travel to workers to manage their travel and associated impacts upon the highway network during the construction period.
Take all reasonable steps to ensure the resilience of the transport network in the event of an incident	The TIMP will ensure that there is continued resilience on the transport network in the event of an incident.
Take all reasonable steps to protect the natural and built environment	As part of the proposed workforce uplift, no additional facilities are proposed to be used, with the additional spaces at J23 Park and Ride already being in existence, as well as the Park and Ride facilities at J25 already being in operation. The Quantock Lakes Park and Ride facility is considered temporary in nature and has been in operation for over a year and has been developed in a considerate manner to reduce impacts upon the natural and built environment.

Review of Construction Workforce Travel Plan based on Proposed Changes

168. The following table summarises the impact that the workforce uplift would have on the measures set out in the CWTP.

Table 13: CWTP Summary of Change

CWTP Chapter / Section	Proposed Change	Summary of Proposed Change	Proposed Impact to CWTP
1.3 Transport Objectives	No Change	No Change	No Change
3. Management Structure	No Change	No Change	No Change
4. Targets	Car share targets have been difficult to achieve to date. New Action Plan to be developed.	Continue to work towards meeting car share targets and relaunch HPC Car Share when appropriate. New Action Plan to be developed and reviewed by TRG.	New Action Plan to be reviewed by TRG *(Section 4.3.2 of CWTP)*
5. Measures for Transport to HPC Site	Set out under the Mitigation Proposals section.	There are changes in the operation of the bus services and number of Park and Rides, but these are still in line with the measures set out in the CWTP.	No Impact. Measures to be included as part of new Action Plan.
6. Site Specific Measures	New Park and Ride sites introduced. Increase from 920 to 1,300 spaces at J23 Park and Ride – if required.	It is proposed that use of the two additional Park and Ride sites at Quantock Lakes, Nether Stowey and Taunton Gateway Park and Ride (known as Junction 25) will continue until the end of construction. Request use of the additional spaces at J23 Park and Ride in line with the TA and CWTP – if required.	New Park and Rides sites to be included in the new Action Plan and the TRG reporting.
7. Monitoring and Review	Request for further reporting by Joint Authorities. New Action Plan to be developed.	The further reporting requirements will be considered as part of the new Action Plan.	No change to existing monitoring measures and review process. Further measures to be included as part of new Action Plan.
8. Enforcement	No Change	No Change	No Change

CONCLUSION

169. The analysis and assessment set out within the topic paper demonstrates that there would be no change in each of the five assessment criteria set out in the DCO Environmental Statement (severance, driver delay, pedestrian delay, pedestrian amenity and accidents and safety).

170. The objectives of the Construction Workforce Travel Plan and the key mitigation measures to ensure that the transport impact of the HPC Project remain relevant and analysis and assessment within the topic paper demonstrates that with the additional measures proposed including revisions to the HPC bus strategy, car sharing measures and a revised Construction Workforce Travel Plan Action Plan, there would not be any new or materially different environmental effects from the proposed increase in the workforce. Furthermore, the s106 agreement includes a mechanism under which contingency payments will be made if impacts arise as a result of the methods set out within the Construction Workforce Travel Plan not being effective.

171. On this basis and on the basis of the analysis set out within this topic paper, the Construction Workforce Travel Plan does not need to be amended as a result of the workforce uplift. That is, with the proposed measures referred to above in place, no breaches of the s106 obligations relating to the CWTP are anticipated and the CWTP targets are expected to be achievable; and in any event the DCO s106 agreement already includes a mechanism which provides for additional mitigation (in the form of additional measures/payments) in the event CWTP targets are not being met.

Legal Position

172. This Topic Paper concludes that - taking into account the existing mitigation available under the DCO s106 agreement, the continuation of the additional Park and Ride sites and J25 and Quantock Lakes the Workforce Uplift and relevant proposed enhancements to various transport strategies – the workforce uplift is not anticipated to give rise to any materially new or different relevant effects on transport compared to the conclusions of the relevant assessments in the original ES and the TA objectives.

173. The existing s106 obligations relating to transport matters are set out in Schedule 11 to the DCO s106 agreement. Based on the conclusions of this Topic Paper, as set out in the preceding section above, the Workforce Uplift is not expected to give rise to any potential breach of the transport-related obligations in Schedule 11 to the DCO s106 agreement (including the Construction Workforce Travel Plan). Accordingly, no amendments to the transport obligations in Schedule 11 to the DCO s106 agreement (including the CWTP) are required in connection with the Workforce Uplift however, to aid the effective monitoring and management of the workforce uplift an Addendum to the Construction Workforce Travel Plan will be prepared and presented to the Transport Review Group.

174. Furthermore ,the DCO s106 agreement includes a mechanism under which contingency payments will be made if impacts arise as a result of the methods set out within the Construction Workforce Travel Plan not being effective or otherwise as a result of unforeseen impacts on the transport network (paragraphs 3.3 and 3.4 of Schedule 11 to the DCO s106 agreement).

Recommendations to the TRG

- Recommendation to review and agree the addendum to the Construction Workforce Travel Plan via the TRG (Paragraph 4.3.2 in CWTP).

APPENDICES

- HPC Transport Change Log RAG (version 2)

- Revised Bus Strategy
- Updated Modelling Spreadsheet (v8)

To Follow:

- Further HPC Car Share Note *(to follow)*
- Addendum to CWTP *(to follow)*