

HINKLEY POINT C PEAK CONSTRUCTION: IMPACTS MONITORING AND AUDITING STUDY (2023-24)



Commissioned by the Local Government Association New Nuclear Local Authorities Group (NNLAG)

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Foreword

The New Nuclear Local Authorities Group (NNLAG) is delighted to present this second study of impacts of the construction stage of Hinkley Point C (HPC) New Nuclear Build. As a follow-on by Oxford Brookes University from their initial study of early years construction of HPC in 2018/19, it provides a timely update and further insight into the practicalities of impacts monitoring, now that HPC is nearing peak construction. Much has happened in the nuclear sector of the UK over the last five years, not least the creation of Great British Nuclear, the development consent and commencement of Sizewell C, and the advancement of SMR technology, which is reflected in the study.

Nuclear power projects are unique in their complexity, scale and longevity, which means that changes from the pre-examination stage to implementation are inevitable. This study is important in its recognition of the difficulty in predicting all impacts of a large infrastructure project. This means strong and accurate monitoring, and an adaptive approach to impact assessment and mitigation, is essential for a smooth delivery of a project.

Learning from Hinkley Point C provides vital information for new nuclear sites that follow on – be it large scale, small modular or nuclear fusion projects. Many of the findings are also applicable to other major infrastructure projects, including all Nationally Significant Infrastructure Projects (NSIPs). There is not much research available about the implementation of NSIPs, so this study will hopefully further inform and shape the debate of what good implementation and monitoring of NSIPs should look like – as part of the Government’s NSIP reform as well as for any individual project being developed in the country.

We hope that this document will be a useful reference point for local authorities, project promoters and their teams, and Government, be it for nuclear or other infrastructure projects, to better plan for and implement their projects in a way that maximises benefits and minimises negative impacts, to the advantage of all parties.

*Cllr Richard Rout, Suffolk County Council, Chair of the New Nuclear Local Authorities Group,
October 2024*

About NNLAG

NNLAG is a Local Government Association (LGA) Special Interest Group is the UK’s principal local authority forum for debate and the sharing of knowledge, experience and best practice on new nuclear developments. It consists of 10 Local Authorities from across the UK that already host or are likely to host nuclear new build projects: Anglesey County Council, Bassetlaw District Council, Cumberland Council, East Suffolk Council, Essex County Council, Folkestone and Hythe Council, Maldon District Council, Somerset Council, South Gloucestershire Council, and Suffolk County Council.

This study was funded jointly by four of its member organisations - Suffolk County Council, Essex County Council, Cumberland Council and East Suffolk Council – with in-kind support from Somerset Council, and is supported by all its members.

Executive Summary

The Aims of the Study

This study is the second study of the impacts of the construction stage of Hinkley Point C (HPC) New Nuclear Build (NNB), one of the largest construction projects in Europe. The first HPC study (IAU/NNLAG 2019) focused on the impacts of the early years of construction. The main aim of the second HPC study is to assess the actual socio-economic and biophysical impacts at peak construction (with peak as measured by the size of the workforce) and to compare those with predictions. The study also seeks to explain any differences, how they can be managed and provide recommendations for future planning and assessment processes. The report has three elements:

- 1. Review of implementation of HPC Study 1 recommendations**
- 2. Refresh of HPC Sector Impacts for HPC Peak Construction**
- 3. Examination of relevance for other nuclear and other NSIPs**

1. Review of implementation of HPC Study 1 recommendations

The review of follow-up measures on the 2019 HPC Study 1 recommendations covers both actions to fill gaps in the HPC monitoring organisation and in data sources. In summary, there is continuing good availability and continuity of data on many key impacts of the HPC project primarily through EDF Energy (EDFE) reporting via the Socio-economic Advisory Group (SEAG) and the Transport Review Group (TRG), and through the various community fora. However, on some 2019 recommendations progress appears more mixed. For example whilst there appears to be progress on the organisation of the monitoring of accommodation and environmental monitoring, there is still little publicly available environmental data. There are also continuing limitations on the availability of disaggregated employment information from the six-monthly Workforce Surveys. Administrative issues, including the reorganisation of the Somerset authorities, which initially delayed the public availability of data, are now largely resolved.

2. Refresh of HPC Sector Impacts for HPC Peak Construction

This is the main section of the report. The refresh of the HPC Sector Impact Indicators uses the same three-step approach as in the early construction impacts HPC Study 1: impact identification, assembly of monitoring information for key indicators/KPIs and auditing of findings against targets. As for the initial 2019 HPC Study 1, this new peak construction study is also based on information and data that is already or can be made publicly available, to maximise its credibility and to allow NNLAG to make the study publicly available and utilise it as evidence in support of consultation responses/ evidence at examination for other projects. The main sources of such data for the refresh are again the quarterly reports of SEAG and TRG, plus the Minutes of the various community fora (Community, Site and Transport). The peak construction period to date, as defined by workforce numbers was the 2023-2024 period, although the peak is likely to run for longer, and probably even higher, for several more years. As for the first study, the main spatial scope of the local impacts assessment is the 90 minutes commuting time CDCZ (Construction Development Commuting Zone), and various local authority areas – although the various Somerset districts merged in the April 2023 reorganisation into Somerset Council.

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An additional complexity to this study has been a major review, 2019-2022, by EDFE of the likely size of the peak construction workforce and associated socio-economic indicators (Uplift 1). This revealed that in order to maintain safety and quality standards and the construction programme, there was a need to increase the peak number of workers on site from 5,600 to 8,600. EDFE produced a set of six Uplift Topic Papers, covering the various sectors, to assess the local impacts of this uplift. The uplift papers are built into each of the report's sector refresh study; in some cases, there are revised indicator targets. There was a further complexity in 2024 with work by EDFE on another uplift plan (Uplift 2) that is likely to increase peak employment to over 12,000, with additional mitigations on the anticipated changes in accommodation, transport, health and other impacts. The detailed papers underpinning Uplift 2 were not publicly available at the time of this report and there is only limited coverage of possible impact implications.

The audited findings of the 2023-2024 peak period impacts have a similar overall pattern to those of the early construction stage, but with some changes of note as follows in Table E1. The colour coding system is the same as used for Study 1, as set out below:

DG	Predictions very accurate with actuals; fully compliant
LG	Most predictions are good, but with a few topic and/or time gaps, and inaccuracies; largely compliant
A	Mixed accuracy/with several topic and/or time gaps, and inaccuracies; only partially compliant
O	Prediction inaccuracies/gaps in many areas; very limited compliance
R	Prediction very inaccurate; non-compliant
B	No information available; auditing not possible at the time of the study

(NB: letters added to colours for black and white printing, and to aid those with colour reading issues)

Table E1: Summary of the audited findings of the 2023-2024 peak period impacts

<i>Economic Development:</i> good performance against many indicators including local employment content, training and education, apprenticeships, jobs brokerage, local supply chain inputs and tourism. Mitigation and enhancement measures also appear to be working well, including the very significant maintaining of the local content percentage as total numbers rise fast. Yet, on the other hand, the Uplift 1 predicted and very significant construction totals are badly out after only a very short period after the new predictions.	DG	O
<i>Accommodation:</i> findings on the spatial distribution of both No-Home Based (NHB) and Home –Based (HB) workforce appear improved against predictions, compared with the early construction stage. There is still some skew in the tenure mix towards the Private Rented Sector (PRS), but the increase in campus provision has been significant. The housing support strategy, and the resultant delivery of bedspaces, appear to be working well.	LG	A
<i>Social and Community:</i> continuation of good performance against many of the impact indicators. For health, the staffing growth of the on-site Medical Campus has supported well the growth in workforce. For community safety, mitigation measures, including the Worker's Code of Conduct appear to be working well in controlling crime, relative to workforce numbers. There are some possible issues with schoolchildren numbers becoming much higher than the original predictions.	DG	A

<p><i>Transport:</i> There is a continuation into the peak period of good performance against predictions for many transport indicators, including workforce journey by bus to the main site, and the freight Delivery Management System. More mitigation measures, including the jetty and more P&R sites, are also now in place. Less positively, the car share system to P&R sites continues to be less effective than predicted, and there is the continuing issue of fly parking.</p>	DG	O
<p><i>Biophysical and Environmental Health:</i> It is good to see a new set of KPIs to be reported to a new Environmental Monitoring Group. However, as for the earlier study, the topics addressed in this section still lack the detailed publicly available impact data to complete an audit. It must be assumed that HPC environmental impacts are well regulated with monitoring mainly related to any exceedances of standards and thresholds. However, there may be a need for additional monitoring in relation to potential impacts of a currently proposed material change.</p>	LG	B

A number of factors influence such findings, some positively, others less so :

- *Positive factors* include the implementation of the transformational array of skill training measures, accommodation campus developments (including the Medical Centre), Park and Ride (P&R) and the site bus service, Workers Code of Conduct and community safety initiatives, and the implementation of many management plans and EDFE funding initiatives (including for housing and community impact mitigation).
- *Factors that are more negative* include the failure of Uplift 1 to anticipate the scale of the overlap between the Civils and Mechanical and Electrical phases of construction and the Mechanical, Electrical and Heating (MEH) worker requirements for future years. Monitoring and reporting of some impacts, especially some disaggregated workforce details and environmental impacts are sparse. The definitions of some indicators, especially ‘*what is a worker*’, are still under debate.

3. Relevance for Other Studies

Sizewell C and other NNB

The Suffolk local authorities’ Local Impact Report (LIR) made good use of the findings of the 2019 HPC Study 1 as a basis for supporting arguments in the Sizewell C (SZC) examination and in recommendations and conditions in the SZC Development Consent Order (DCO). The Examining Authority also noted the importance of impacts monitoring for the SZC project, as developed in the DCO Requirements and Conditions, in various project construction Management Plans, and in the Planning Statement. Both the findings from the early study and this current study raise further considerations for the project governance of the SZC construction stage, such as: the need to revisit the SZC peak workforce predictions and to clarify the nature of an overall construction stage-monitoring plan. Others for example include the scope for independent auditing of project impacts; and the level of target for some indicators (e.g aiming higher still on local apprenticeships, female employment and skill training provision). Such findings are also relevant for other NNB, which may initially be for Wylfa on Anglesey.

Small Modular Reactors (SMRs)

There is considerable interest in SMRs as part of the future UK energy mix, and as a possible complement and/or substitute for large nuclear reactors (LRs) such as HPC and SZC. They have many claimed advantages, but also potential disadvantages compared with LRs. A standardised

design outcome will help progress, and offset some cost/time and risk concerns. Most impact literature on SMRs has focused to date on risk and safety issues. There seems to have been little work on other impacts, social acceptance, and community capacity issues. Whilst the nature of environmental impacts originating from SMRs or LRs may not differ greatly, and our findings are relevant, it is likely that there will be differences in magnitude. UK government consultation on new nuclear National Policy Statements (NPSs) beyond 2025 might provide the opportunity to include a more streamlined regulatory process and tests (e.g EN-6 lite) that could apply to SMRs and other advanced nuclear projects that are smaller in scale and impacts compared to the LR projects. It may also lead to some opening up of more potential nuclear power locations from the present eight named sites, but this should not weaken the consideration of essential biophysical and socio-economic impacts considerations.

Nuclear Fusion Projects

Operational nuclear fusion power station projects are much further in the distance in terms of contributing to the UK energy mix. However, the UK government is committed to building on the pioneering JET project research and in its latest 2023 strategy has set out a vision for UK fusion that is focussed not just on the UK's unique scientific and technical expertise, but also on commercialising that technology by developing a thriving UK fusion sector. The government has chosen West Burton in Nottinghamshire as the initial fusion power site. The government is also consulting on an NPS for fusion energy. The draft Fusion Energy Policy Statement (FENPS) promotes an open site policy that allows developers to identify, shortlist, assess, select and promote those sites which are best placed to meet the technical requirements of the specific fusion technology selected. It sets out a whole host of factors for consideration when siting a fusion station including, for example: flood risk, population densities, transport infrastructure and grid connection, but it currently fails to consider socio-economic impacts. As our research has shown, the consideration of such impacts is crucial for major energy projects, and new fusion will not be an exception.

4. Generic recommendations

These generic recommendations focus on the theme of this research -- that for an effective and efficient adaptive approach to impact assessment, good monitoring of actual impacts and auditing of these against predicted impacts are essential. Flowing from this, the research report recommends:

- A monitoring and auditing framework covering key socio-economic and biophysical indicators should be an integral, clear and easily identifiable element in each of the project Environmental Statement, Development Consent Order and in S106 agreements (as appropriate).
- In addition to covering socio-economic and biophysical impacts, it should cover key stages in the lifecycle of the project, and not just focus on peak construction.
- A clear set of KPIs agreed pre-application (primarily between the developer and local authorities) and easily located in the documentation, provide the essential first step to monitoring and auditing. It is important that key definitional questions, such as 'what is a worker,' are addressed at an early stage.
- Monitoring is a prime responsibility of the developer, in association with the local authorities, the community, and other relevant agencies. Formal data sharing agreements are recommended.
- Quantitative data should be collected on a consistent basis; there is a need to avoid potential bias in content from proponent-led data, and use should be made of community stakeholder knowledge and opinions, which may be qualitative in content.

- An independent body preferably provides the auditing of the monitoring information against predictions. Such auditing can provide a valuable check on findings and a neutral position between the various agencies involved in the project.
- All monitoring and auditing information should be publicly available, and 'published' on a regular basis in an agreed online format based on the initial monitoring and auditing framework. Annual Monitoring and Auditing reports are recommended.
- A rigorous approach to monitoring and auditing, involving primary information collection, can be resource intensive. A monitoring light and proportionate approach, using publicly available data and focussing on significant impacts, as in this latest HPC study, can provide a useful way forward, given developer and local authority co-operation.
- Findings from monitoring and auditing can provide the building blocks for any additional impact mitigation and enhancement measures, and updating of predictions in an adaptive assessment and management approach.
- Monitoring and auditing reports provide a vital resource for future major project developments in all their various sectors. There should be a repository for such reports (PINs re NSIPs—although recent activity not encouraging?)

List of Abbreviations used in the Study

AD	Associated Development
AMR	Advanced Modular Reactor
CDCZ	Construction Development Commuting Zone
CIM	Community Impacts Mitigation (fund)
CoCP	Code of Construction Practice
CTMP	Construction Traffic Management Plan
CWDS	Construction Workforce Development Strategy
CWTP	Construction Workforce Travel Plan
DCO	Development Consent Order
DMS	Delivery Management Strategy
EcoMP	Ecology Management Plan
EDFE	Electricite de France Energy
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EMQR	Environmental Monitoring Quarterly Report
EPSRC	Engineering and Physical Sciences Research Council
ES	Environmental Statement
ExA	Examining Authority
FENPS	Fusion Energy National Planning Policy Statement
FOAK	First Of A Kind
GW	Gigawatt
HB	Home based (workers)
HGV	Heavy Goods Vehicle
HMG	His Majesty's Government
HMO	Home of Multiple Occupation
HPC	Hinkley Point C
HTFG	Health Task and Finish Group
IAU	Impacts Assessment Unit
IMD	Index of Multiple Deprivation
IPA	Infrastructure and Planning Authority
JET	Joint European Torus
KPI	Key Performance Indicator
LGA	Local Government Association
LIR	Local Impact Report
LR	Large Reactor
LSOA	Lower Super Output Area (for IMD)
LWR	Light Water Reactor
MEH	Mechanical Electrical and Heating
MW	Megawatt
NHB	Non-Homed based (workers)
NHS CCG	National Health Service
NIC	National Infrastructure Commission
NIPA	National Infrastructure Projects Association
NNB	New Nuclear Build
NNLAG	New Nuclear Local Authorities Group
NPS	National Policy Statement
NSIPs	Nationally Significant Infrastructure Projects
ONS	Office of National Statistics
P&R	Park & Ride
PINs	Planning Inspectorate

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PRS	Private Rented Sector
PWR	Pressurised Water Reactor
RAG	Read Amber Green (colour coding system)
SDC	Sedgemoor District Council
SEAG	Socio-economic Advisory Group
SMR	Small Modular Reactor
SRN	Strategic Road Network
SZC	Sizewell C
TA	Transport Assessment
TRG	Transport Review Group
UKAEA	United Kingdom Atomic Energy Authority

PART 1: CONTEXT

1. Introduction -- Aim and Scope of the Research

1.1 Aims of the Study

As in most aspects of life, we should learn from experience, and this is certainly the case for the environmental impact assessment (EIA) process. This is particularly so when we are dealing with the socio-economic and biophysical impact of Nationally Significant Infrastructure Projects (NSIPs), such as Nuclear New Build (NNB), where uncertainty and complexity are key features. Such major projects have long construction periods and much longer operational lives. Assessment should be an iterative learning process with monitoring and auditing of actual impacts as essential elements in the process over the project lifecycle. Monitoring involves the identification and measurement of actual impacts; auditing is the comparison of actual impacts with those predicted. Yet there is little experience in this area, as noted in a report by the National Infrastructure Projects Association (NIPA):

'There has been little research on the results of the effectiveness of the environmental monitoring and management during the construction of NSIPs. The sharing of the findings of monitoring could improve decision-making, could provide reassurance to communities for whom the anticipation of impact can be more daunting than the reality, and enable developers to improve environmental management practices' (NIPA 2019).

The report refers to the ongoing Oxford Brookes University Impacts Assessment Unit (IAU) research on HPC impacts monitoring and auditing to help to fill the research gap.

This study is the second study of the impacts of the construction stage of Hinkley Point C (HPC) NNB, one of the largest construction projects in Europe. The first HPC study (IAU/NNLAG 2019) focused on the impacts of the early years of construction. The aim of the second HPC study is to assess the actual socio-economic and biophysical impacts at peak construction (with peak as measured by the size of the workforce) and to compare those with predictions. The study also seeks to explain any differences, how they can be managed and provide recommendations for future planning and assessment processes. This project follow-up can be of great value for the more effective management of current projects and for consents and licenses for future projects.

The Oxford Brookes University IAU has undertaken both HPC studies. The IAU has a long research history of impact assessment of major energy projects, including the pioneering study of the construction of Sizewell B nuclear power station (Glasson 2005). As with the first HPC study, the New Nuclear Local Authorities Group (NNLAG) of the Local Government Association (LGA) has provided some funding support.

1.2 Scope

The work has a number of elements. ***The first element was to revisit the HPC Study 1 recommendations to assess how the project has addressed them.*** The recommendations follow very directly from identified gaps in organisation, process and data. They relate primarily, but not exclusively, to the activities of EDF Energy (EDFE) as the developer. The extent of progress on some of the recommendations was dependent on work on refreshing the Red/Amber/Green (RAG) indicator ratings for the various impact sectors, including improving access to the availability of disaggregated employment information from the HPC Workforce Survey.

The second, and most important and substantial element in the research, was to revisit and to refresh the RAG indicator ratings, for a set of Key Performance Indicators (KPIs) across the topic areas. As per recommendations from the previous study, there should be a focus on a narrower set of key indicators drawing on HPC Study 1 findings; but a consideration of possible opportunities for any limited filling of any key identified gaps, as long as information is publicly available. There should also be more study of construction and operational stage employment impact as possible (jobs, training, opportunities, possible long-term impacts etc). The stage included the following steps:

- *An identification of set of key indicators/KPIs across the six sectors used in HPC Study 1 (i.e: economic development, transport, social and community, accommodation, environmental health and biophysical environment).*
- *Assembly of monitoring information on the indicators for 2023/24 peak construction employment, including trend data as available, using publicly available information.*
- *Auditing of indicator performance against KPI projections from relevant contexts (i.e. original ES, DCO and S106 documents, and more recent refresh of projections undertaken for EDFE in 2020/22 in relation to increase in projected peak workforce to 8500; new S106 etc). This should use the original HPC Study 1 RAG approach to allow comparisons over time.*

The main sources of data for the refresh are from the quarterly reports of the Socio-Economic Advisory Group (SEAG) and the Transport Review Group (TRG), plus the Minutes of the various Fora (Community, Site and Transport). There is some data on several key topics, including especially employment, transport, social and community, accommodation and a little on the biophysical environment. The transport and accommodation are improved and more in depth than for HPC Study 1 but there is still a lack of in-depth and publicly available information on several key economic indicators from the 6-monthly Workforce Surveys. As for the first HPC study, the primary spatial scope of the local impacts assessment is the 90 minutes commuting time CDCZ (Construction Development Commuting Zone), and various local authority areas – although the various Somerset districts merged in the April 2023 reorganisation into one Somerset Council.

A third, more limited element of the research, was to examine the relevance of the work to other likely NNB projects, especially the immediate Sizewell C (SZC), to more long-term emerging new nuclear technologies, and to other NSIPS. The SZC work explored the extent to which key documents, including the Local Impact Report (LIR) (Suffolk Councils 2020), the Sizewell C Environmental Statement (ES, EDF 2019) and the Examination Report and Development Consent Order (DCO) drew on some of the findings and recommendations of the earlier HPC Study 1. The work reports on both coverage of findings and recommendations for SZC proposals/requirements etc. It also adds any implications for SZC of the findings of this HPC Study 2.

The review of findings for potential other new nuclear technologies includes particular reference to SMR (small modular reactors), and nuclear fusion projects. The review draws on international and academic documentation on these emerging technologies, plus emerging proposals for implementation in the UK. A final review examines more generally any implications of the research for other NSIPs with major long-term construction periods. Reflecting the three main elements of the research, the report has three main sections:

1. Context**2. Refresh of HPC Sector Impacts for Peak HPC Construction****3. Relevance for Other Studies.****1.3 Research Parameters**

The research uses and adapts as appropriate the same set of parameters as used for the initial early stage construction study (HPC Study 1 IAU/NNLAG 2019).

Key elements of the project: the study includes the impacts of the main site development, and also associated developments (especially accommodation campuses and transport projects), at peak construction in 2023-2024.

Impacts focus: the research identifies, monitors and audits key predicted impacts under the topic headings (economic development, traffic etc), including an assessment of good predictions as well as those falling outside predicted ranges, and unforeseen impacts.

Testable predictions: there is a focus on testable predictions, or statements of developer intent/requirements, rather than on general discussions of possible impacts.

Monitoring and auditing accuracy: for some predictions, auditing accuracy will be a matter of whether a requirement has been carried out in a timely manner; for others accuracy will involve an assessment of whether the actual impacts fall within predicted ranges, which will be specified as far as possible.

Publicly available information: as for the initial HPC Study 1, this study will also '*be based on information and data that is already or can be made publicly available, to maximise its credibility and to allow NNLG to make the study publicly available and utilise it as evidence in support of consultation responses/ evidence at examination.*' There are degrees of public availability and, as appropriate and with provider's permission, the study seeks to add to the stock of relevant publicly available information.

Range of impact scales: impacts are audited across a range of spatial scales, as included in predictions. For example, noise impacts may be assessed at the level of local villages adjacent to the site and transport routes, other impacts may be district and/or county wide. Some impacts, such as employment, supply chain and traffic, may stretch much wider on a sub-regional and 90 minutes CDCZ (construction daily commuting zone) scale.

Baseline context: the disaggregation of project-related impacts from baseline trends can raise methodological challenges. Data will be available that indicate local trends in a number of variables, such as unemployment levels, traffic volumes and crime levels. However, there can be problems when we attempt to explain these local trends. To what extent are they due to (a) the construction project itself, (b) national and regional factors or (c) other local changes independent of the construction project? It may be straightforward to isolate the role of national and regional factors, but the relative roles of the construction project and other local changes may sometimes be difficult to determine.

A snapshot in time: this short study seeks to apply these parameters and criteria to a comprehensive set of key impacts for the peak construction stage of the HPC project, but in such a timescale the

focus will be on key strategic impacts. There is not scope for additional tailor-made studies to collect new data.

1.4 Research team

The IAU team comprised Prof. John Glasson (research lead and main author), Dr Bridget Durning (admin lead), and Visiting Prof. Martin Broderick (specialist inputs). The team wish to acknowledge the support of the NNLAG Steering Group, especially Michael Moll (Suffolk CC) and the officers from the Somerset Local Authorities, especially Joanna Whitehead and Andy Coupe, who have helped to identify and interpret various data sources.

2. Follow-up on HPC Study 1 Recommendations

The recommendations follow directly from the gaps identified in s5.4 of the earlier HPC Study 1 (IAU/NNLAG 2019). They relate primarily, but not exclusively, to the activities of EDFE as the developer. It is noted where other stakeholders should be involved. The section on the right of Table 2.1 provides a report on current responses to the issues raised in the 2019 report, set out on the left.

Table 2.1: Specific 2019 issues and current responses for HPC construction stage monitoring issues

	Issues raised in 2019 report	Current responses in 2023/24
Gaps in monitoring organisation and process	<ul style="list-style-type: none"> There is a strong case for reviewing the operational effectiveness of the various monitoring groups feeding especially into the SEAG. For employment, this is already in hand, as outlined in the Construction Workforce Development Strategy (CWDS) and Implementation Plan (EDFE 2018), with plans to rationalise workforce- monitoring arrangements by assessing progress in three strategic themes: Employment, Skills, Apprenticeships and Young People. Associated with this should be a review of the utility of some of the current indicators/KPIs used in some of the various sectors (eg in accommodation). There is a need for an environment-monitoring group, and an improvement in the operation of the accommodation-monitoring group. 	<ul style="list-style-type: none"> Quarterly meetings of SEAG, with major membership from NNB Genco HPC, local authorities, NHS CCG, Avon and Somerset Police, Somerset Community Foundation and others, report on data across the main impact sectors. The sectors include Employment/ Skills/Supply Chain/Tourism, Transport, Accommodation, Health/Community Safety/Community Relations, and Environment data findings derived from meetings of various monitoring sub-groups. The scope of the sub-groups appears to have improved since HPC Study 1, especially for Accommodation and Environment sectors. It is good to see the introduction of an Environment monitoring sub-group, as recommended. Since April 2023, local authority membership has shifted from Districts and Somerset County to the new Somerset Council authority. TRG continues to operate efficiently as the formal group monitoring workforce travel and construction traffic activities. Major membership is again from NNB Genco HPC, Somerset LAs, and National Highways. TRG produces a quarterly monitoring report.

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	<ul style="list-style-type: none"> An improved, full, transparent and publicly available Workforce Survey is needed to underpin better the auditing of many socio-economic impacts (again in hand, but needs to be fully and openly reported to SEAG). There may also be a case for reviewing the content and management of the onboarding (worker induction) survey. Some Economic Development data (eg on impact of HPC construction on employment in local firms) is more qualitative. A survey would help. Other topics may also benefit from some tailor-made survey activities at intervals during the construction period. This may involve adding in new questions to the Workforce Survey). There is a need to pick up the evolution of various socio-economic issues (eg local accommodation tenure, community safety) as the site workforce builds up to peak, and the Bridgwater Campus accommodation becomes more fully used. 	<ul style="list-style-type: none"> The various community fora – Community Forum, Transport Forum and Main Site Neighbourhood Forum – continue to meet quarterly and the minutes provide a valuable barometer of locally perceived issues. There is a Workforce Survey every six months (December for Winter Survey and June for Summer Survey) with results analysed and disseminated by EDFE primarily via SEAG meetings. It is good to see more information on the sample/confidence basis of the survey, plus some additional workforce information – including age and gender information, time worked on project, employment by contractor, in addition to detailed information on accommodation (including Non –Home Based [NHB] families) and on Transport and Travel. However, the full scope of the survey and its findings is still unclear, nor is it clear whether a full and transparent Workforce Survey is publicly available. There is no information on the scope of the onboarding (worker induction) survey. The Socio-Economic Impact reports (2022, 2023) produced by EDFE provide some overview information on the important supply chain impact of the project on local and regional SW firms. However, it is unclear whether this information involved a local firm survey dimension. The data reported to SEAG, especially on accommodation, does pick up various evolving socio-economic issues. The impact of the build up to peak construction employment is set out in the refreshing of KPIs in subsequent sections of this report. The accommodation data includes the build-up in use of the Bridgwater and other Campuses and implications for other accommodation tenure groups, especially the Private Rented Sector (PRS).
<p>Gaps in monitoring data</p>	<ul style="list-style-type: none"> The monitoring system is not delivering enough accurate and <i>disaggregated employment information</i>, especially on local content by skill category and by 	<ul style="list-style-type: none"> There is no publicly available information from the Workforce Survey on local employment by skill category. As such, it is not possible to assess whether local people are gaining some of the most

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	<p>disadvantaged and under-represented groups (see organisational recommendation above).</p> <ul style="list-style-type: none"> • Similarly, there is a lack of <i>disaggregated data on supply chain impacts</i> in Somerset and districts (see organisational recommendation above). • Various omitted transport issues need to be monitored, and reported to the TRG, including: fly parking, EURO IV (exhaust emissions), deflectograph road condition surveys, increased delay to local drivers and reduced highway capacity, bus passenger movements to site, LGV movements, and take-up of traffic noise insulation scheme. A bulk delivery materials plan should be submitted to LAs by developer before temporary jetty operational • The data on accommodation is fragmented, limiting effective auditing and monitoring. Targets need to be clarified and data reporting needs to be full and regular. Monitoring the use and users of the accommodation campuses provides a straightforward data opportunity. 	<p>skilled jobs, and whether local training initiatives are opening up opportunities to such jobs. Is such information collected in the Workforce Surveys, as recommended here, and as set out by the Joint Councils in discussions on the revised peak workforce in the 2020/21 version of Workforce Uplift papers (April 2021)*?</p> <p><i>*Breakdown of output from workforce survey to provide:</i></p> <ul style="list-style-type: none"> • Worker type (Civils; MEH; Professional / Management; Operational; Site Services) • Ratio of HB to NHB by worker type • Age Profile of the workforce • Gender of the workforce • Ethnicity of the workforce • Workforce reporting a disability • HB and Somerset breakdown of the total workforce <ul style="list-style-type: none"> • There is information reported to SEAG on local business registrations by former Districts, but not on value of contracts by District. In contrast, the annual Socio-Economic Impacts Reports (see EDF 2023, 2024) do provide useful summary supply chain information for UK regions/nations – including for each: the number of companies building HPC, number of jobs expected to be supported and the projected economic value to the region. • The Transport Review Group Quarterly Report provides very detailed information on bus and other modes of travel between the various P&R sites, the Main Site and various Associated Development sites. It also provides detailed information on freight traffic movements. There is close monitoring of the ongoing fly parking issue. • There appears to be improved monitoring and regular reporting of accommodation data, including tenure type numbers of NHB workers by administrative areas, and various housing funding initiatives.
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	<ul style="list-style-type: none"> • Is the wellbeing of the communities local to HPC being adequately monitored (especially the impacts on the older residents), and is the Community Impacts Mitigation (CIM) fund effectively responding to project impacts on local wellbeing? (also LA issue) • There is a need to update some relevant contextual LA and central government indicators (eg IMD, fear of crime, housing affordability) which are not available until mid-2019 onwards (also LA issue). • There is a major absence of <i>publicly available</i> information on environmental health and biophysical environmental impacts. Data collected by various stakeholders (especially EDFE and the LAs) should be publicly reported as part of the monitoring and auditing process (also LA issue). 	<ul style="list-style-type: none"> • Over £15m of the £20m CIM fund is now allocated. There is a wide mix of projects targeted across various age groups in the local community, with many responding to local wellbeing issues. • This is now possible as now have 2019 IMD information that covers the early years of HPC— although not the peak. The various IMD domains in relevant sectors – e.g. transport and health — are covered in the sector studies. • There is some improvement with a new Environmental sub-group and improved reporting of environmental monitoring. However, as for the earlier study, the topics addressed in this sub-group still lack the detailed publicly available impact information needed to complete an audit.
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In summary, whilst there is continuing good availability on much impacts monitoring data through EDFE reporting via SEAG and TRG, progress on the 2019 recommendations appears mixed. For example whilst there appears to be some progress on accommodation and environmental monitoring, there are continuing limitations on the availability of disaggregated employment information from the Workforce Survey. Administrative issues, including the reorganisation of the Somerset authorities, initially delayed the public availability of data.

PART 2: REFRESH OF SECTOR IMPACT INDICATORS FOR PEAK HPC CONSTRUCTION

3. Introduction

The refresh of the HPC Sector Impact Indicators uses the same three-stage approach as in the early construction impacts study (HPC Study 1, IAU/NNLAG 2019): impacts identification, assembly of monitoring information for key indicators/KPIs and auditing of findings against predictions. As for the initial 2019 study, this new peak construction study is based on information and data that is already or can be made publicly available, to maximise its credibility and to allow NNLAG to make the study publicly available and utilise it as evidence in support of consultation responses/ evidence at examination. The main sources of such data for the refresh are again the quarterly reports of the Socio-Economic Advisory Group (SEAG) and the Transport Review Group (TRG), plus the Minutes of the various Fora (Community, Site and Transport). These were all previously publicly available on the Sedgemoor DC website, but availability there lapsed a little in mid-2022, possibly because of staffing pressures, and partly because of pending Somerset local authority reorganisation. However, via the good offices of staff at the new Somerset Council, much data subsequently became available. They continue to be available on EDFE's dedicated HPC website. As for the first study, the main spatial scope of the local impacts assessment is the 90 minutes commuting time CDCZ (Construction Development Commuting Zone), and various local authority areas – although the various Somerset districts merged in the April 2023 reorganisation into Somerset Council.

An additional complexity to our analysis this time around has been a major review, 2020-2022, by EDFE of the likely size of the peak construction workforce and associated socio-economic indicators (Uplift 1). **The indicator update followed from an EDFE 'internal review of the project in 2019 that revealed that in order to maintain safety and quality standards and the construction programme, there was a need to increase the peak number of workers on site from 5,600 to 8,600'.** EDFE produced a set of six Uplift Topic Papers, covering the six sectors of this and previous reports, to assess the local impacts of this uplift. 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 would need to increase 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 Mechanical Electrical and Heating (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. The various uplift papers are built into each of this report's sector refresh studies. In some cases, they introduce revised targets; where not, the default position is the original targets/KPIs.

As for the 2019 HPC Study 1, this peak construction indicator refresh includes three key steps for each sector:

-- *An identification of set of key indicators/KPIs.*

-- *Assembly of monitoring information on the indicators for 2023/24 peak construction employment, including trend data as available, using publicly available information;*

-- Auditing of indicator performance against KPI projections from relevant contexts (i.e. original ES, DCO and S106 documents, and more recent refresh of projections undertaken for EDFE in 2019/22 in relation to increase in projected peak workforce to 8500; new S106 etc). This should use the original HPC Study 1 RAG approach to allow comparisons over time.

In addition to comments on each impact issue indicator, we have applied a very simple colour code audit (RAG system) as used in the 2019 HPC Study 1 report, ranging from Dark Green (very accurate/compliant), through Amber to Dark Red (very inaccurate/non-compliant). A blue colour coding indicates 'No Information Available' yet. In undertaking the refresh, the progress of any measures or governance proposals implemented since the original study are assessed along with any particular issues that have come up since 2019 and which were not considered in the original study.

There was a further complexity in 2024 with work by EDFE on another uplift plan (Uplift 2). This is likely to increase peak employment to over 12,000, and the length of the peak, with additional mitigations on the anticipated changes in accommodation, transport, health and other impacts. The detailed papers underpinning Uplift 2 were not publicly available for this study, but some likely assessments of implications are included in Section 9 of this report.

4. Refresh RAG Indicator Ratings: Economic Development

4.1. Context: Strategic Issues and Indicator Update

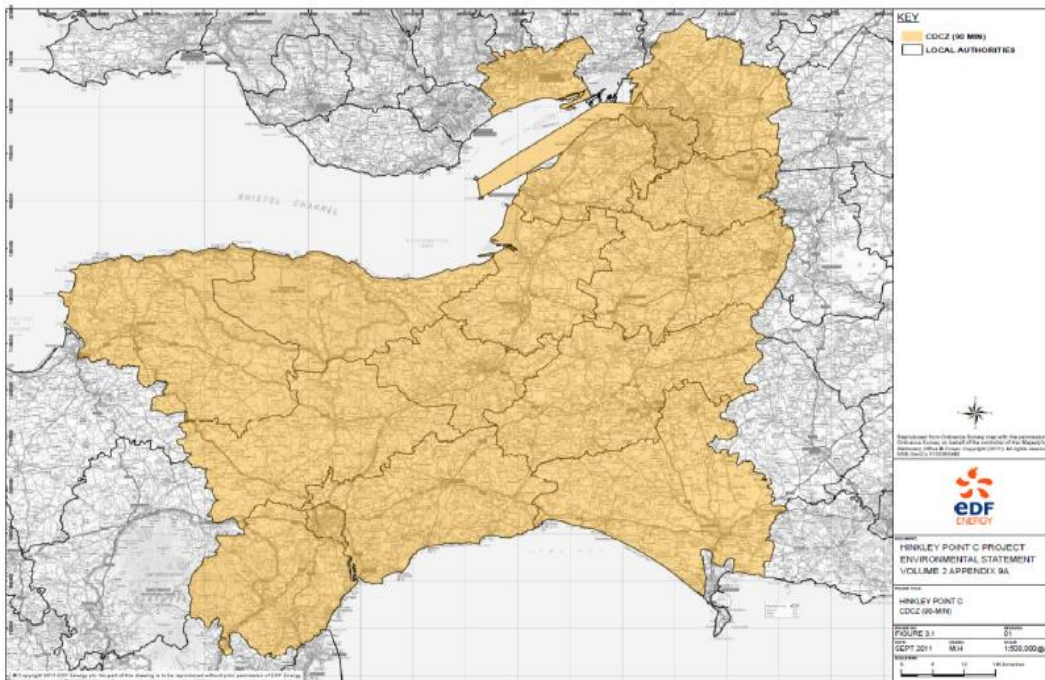
The economic development section focuses on HPC peak construction employment, skills and supply chain impacts and issues. Many local and regional impacts flow from the extent of the local content of construction employment. Home-based (HB) construction workers already have accommodation and ongoing interactions with a whole range of local services (e.g. schools, doctors). In contrast, Non Home-based (NHB) workers place new demands on local accommodation and other services. Local suppliers to the project can have a multiplier effect on local and regional benefits of the project, but there may also be some issues including job displacement from local firms and wage inflation.

The report draws on a range of sources. Our 2019 HPC Study 1 Report on the impacts of early stage construction sets out the sources of key indicators/KPIs. This new peak construction report updates these with information from a set of Topic Papers prepared for the 2021-22 Uplift Study (EDFE 2022). Other key sources of monitoring information are the various reports of SEAG and TRG, supplemented by information from the various community fora, and from other sources such as the Index of Multiple Deprivation (IMD) and local authority data (e.g. Sedgemoor Annual Monitoring Report). Whilst the focus is on publicly available information, we have benefitted from contacts with a number of local authority and EDFE staff.

The Workforce Development Topic Paper (EDFE Feb 2022) sets out some revised objectives and targets for overall peak employment (averaging 8600 over peak period, with c38% HB recruitment), and some revised detailed figures for training, job services, apprenticeships, recruitment from underrepresented groups (e.g. 1 in 5 per outreach intervention), worker retention and others. The Supplemental Agreement to the S106 (NNB Generation Company HPC March 2022) refers to the revised Topic Paper and notes, for example, additional opportunities for local workers and to expand and diversify activity including supporting hard to reach groups to get back to work, plus maximising the benefit of the Hinkley Supply Chain.

However, many of the original indicators/KPIs will continue as the default position where there is no indication of revision of targets. Similarly, the Uplift Topic Paper uses the same CDCZ spatial base which represents the 90-min maximum commuting zone of local Home-Based (HB) workers (See Figure 4.1). Non Home-Based (NHB) workers originate from outside this zone, although they will almost wholly live within this zone during the duration of their time on the project and largely within a 60-min commute zone, during the duration of their time on the project.

Figure 4.1: Hinkley Point C CDCZ



4. 2. Monitoring Findings

Preamble:

A key source of economic development information is the bi-annual Workforce Survey undertaken by an independent market research company. Respondents are encouraged to complete the survey online. The response rate varies; for example, for winter 2022 the sample was low at about 24% of the site workforce with a confidence limit of +/- 2.57%. This was a reduction on previous years, for example for winter 2021 the sample was about 45% with a confidence limit of 1.76%. EDFE provides a short summary of some of the key socio-economic indicators for SEAG and TRG; this approach does exclude some relevant economic development findings – as noted below. Table 4.1 sets out findings and trends in monitoring data on indicators/KPIs.

Table 4.1: Monitoring data on Economic Development indicators/KPIs

Issue	Indicators/KPIs	Findings/trends	Source and comments
<i>Economic Development: Employment/recruitment and skills/training</i>			SEAG from Workforce Survey—except where noted

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Size of construction workforce	8600 at peak (Uplift 1 paper)	2021 (Sum) -- 6199 2021 (Win) -- 6656 2022 (S) -- 7875 2022 (W) -- 8221 2023 (S) -- 9789* 2023 (W) -- 10590* 2024 (S) -- 10262* *Based on a worker 5-day rule: be 'working' at HPC Site; not merely visiting, AND have been at Site on at least 5 separate days in the 30 day monitoring period AND have been at Site for at least 37.5 hours in the 30 day monitoring period ' which gives slightly higher figures.	Plus TRG
% CDCZ HB content	Amended to 38% at peak (CDCZ)	CDCZ 2022 (S) – 36% 2022 (W) – 35% 2023 (S) – 36% 2023 (W) – 34% 2024 (S) – 35%	
% of workforce with families	% and numbers; prediction 9%	2021 (W) - 9% 2022 (W) – 12% 2023 (W) – 12% 2024 (S) -- 11%	
% and numbers of workforce previously unemployed	8% original target	Jan 2019 was only 1.9%; recent data in 2024 (S) indicates 2.8%. A further 3% of the workforce started work at the site straight from FT or PT education. Contextual data: Somerset unemployment rate for 2022 (Jan to Dec) was 2.9%; GB was 3.6%. Approx 15% of those registering with HPC Job Service are unemployed. HPC is helping young people stay and thrive in Somerset. The local area has seen a 25% growth in young people aged 25-39 - three times greater than the national average (2011-2022).	S106 SCC Report for HPC Education, Employment and Skills 2024 EDFE HPC Socio-economic Impact Report
% and numbers of female workforce	8% original target	2021 (W) – 14% 2022 (W) – 13% 2023 (W) – 13% 2024 (S) -- 13%	
Age profile of workforce	Indicator – profile is a factor influencing impact on various services	Recent workforce surveys (S&W 2023 and S 2024) show a construction site age profile of approx: <35 -- 40% 35 -54 -- 45% >54 -- 15%	
Ethnicity of the workforce		2024 (S) Overall, workforce is approx 82% White (64% White British); 9% Asian/Asian British; 3% Black/Black British, 3% of mixed background and 3% other ethnic groups. This distribution is similar to UK population as a whole (but UK is 74% White British).	
Numbers of apprenticeships; including gender mix	Initial target was 400; then revised to 1000	2021 (Q4) -- 922 2022 (Q3) – 1101 2023 (Q3) – 1200 2023 (Q4) – 1300 (18% female) 2024 (Q2) – 1364 (19% female) Approx 65-70% of apprentices are local (in 90 min CDCZ)	
Job categories for home-based workers.	Numbers and % total by category for various skill types	EDFE 13 April 2021 agreed, in an Uplift Monitoring Information Paper, to provide more monitoring information on Workforce from 6-monthly surveys to include:	Data not available -- dependent on EDFE

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<i>% and numbers of total workforce from vulnerable and disadvantaged groups.</i>	<i>EDF and contractors equality policies –to employ diverse workforce with focus on gender, ethnicity and disability</i>	<ul style="list-style-type: none"> Worker type (Civils; MEH; Professional / Management; Operational; Site Services) Ratio of Home-Based to Non-Home-Based by worker type Ethnicity of the workforce Workforce who are reporting that they have a disability <p>Only the following additional data is reported:</p> <ul style="list-style-type: none"> Home Based and Somerset breakdown of the total workforce Age profile of the workforce Gender of the workforce Ethnicity of the workforce 	
Recruitment through Job Brokerage scheme	No specified targets	2019 (Apr) -- 759 2022 (Feb) –1403	
Registrations on Jobs Service system (cumulative)	No specified targets	2019 (Jan) – 15,150 2022 (Nov)—16,014 2023 (Mar) ---16,255 c50% within 90 min CDCZ	
Delivery of local training and skill development programmes	Wide array of programmes	Wide range of programmes: e.g. - Hinkley Support Operative (HSO) Programme (11% female) - Centres of Excellence (e.g Welding). More than 8 000 trained in the various Centres - Young HPC - Occupational traineeships	2022, 2023 and 2024 EDF HPC Socio-economic Impact Reports
Develop new and relevant pipelines from education to employment	<i>Wide array of training and educational initiatives; with financial commitments (e.g. completion of HSO programme)</i>	By end of 2021 £24m invested directly into education, skills and employment initiatives, primarily in Somerset/SW.	2022 and 2023 EDF HPC Socio-economic Impact Reports
Impact on local multiple deprivation Issues (economic)		Now have 2019 IMD to compare local findings with earlier 2015 IMD, but does not overlap HPC peak employment. The % of Somerset Lower- layer Super Output Areas (LSOAs) in 20% most deprived in England in the Employment domain increased from 6.7% to 11.3% between 2015 and 2019.	Somerset Intelligence English Indices of Deprivation (2019 Somerset Summary)
<i>Economic Development: Supply Chain</i>			
Somerset and regional supplier registrations	Not stated	Somerset 2021 (W) - 2208 2022 (W) – 2226 2023 (S) -- 2990	Other SW region 2021 (W) - 1775 2023 (S) – 2358
Number and value of contracts awarded to Somerset and wider SW	£1.5bn for SW region	2021 (Dec)-SW (inc Som) -£3.5bn agg 2022 (Dec)-SW (inc.Som)- £4.1bn agg 2023 (Dec)- SW (inc Som) -£5.3bn agg Estimated £7.3bn by end of construction.	2022 and 2023 EDF HPC Socio-economic Impact Reports; some data

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region companies		2021 – 350 businesses in Sedgemoor and West Somerset in HPC supply chain, with projected £500m spend	from EDFE interactive map
Number and value of contracts awarded to companies in other UK regions and nations	Number of companies building HPC, number of likely supported jobs and projected economic value to the region and UK. Original target 57% value to UK.	By end of 2021, 22000 UK jobs, in 3800 businesses supported (with c1400 in SW region). Value of HPC contracts to UK economy of £18bn with 64% of value going to UK companies.	2022 and 2023 EDF HPC Socio-economic Impact Reports
% tourism business confidence; total digital media hits	35% baseline	Was above baseline at 46% in Dec 2018. Lack of recent confidence data. However, tourist perception data -- Survey of impact of HPC on Somerset tourism (2023) indicated that over 90% of tourists not affected by HPC construction activity. But local micro-economic impact of conversion of former Brean Sands tourist venue to temporary HPC workforce campus.	(Qa Research 2023)
Lift and shift implications of movement of non-unique businesses and workers from HPC to SZC	No specified targets.	Some limited reference to worker (including apprentices) movement from HPC to SZC – although premature as SZC funding not finalised (early 2024). Jobs Service registrations now include SZC, with 663 by Mar 23. Considerable local authority interaction between Somerset and Suffolk on impacts and their management.	

4.3. Auditing of Findings

Preamble:

In addition to comments on each impact issue indicator, we have applied a very simple colour code audit (RAG system) as used in the 2019 report, ranging from Dark Green (very accurate/compliant), through Amber to Dark Red (very inaccurate/non-compliant). A blue colour coding indicates No Information Available (NIA) yet. Table 4.2 provides an audit of actual against predicted economic development impacts.

Table 4.2: Audit of actual against predicted Economic Development impacts.

Impact Issue Indicator	Commentary on actual vs predicted impacts Commentary on performance in relation to objectives and targets (as available)	Summary RAG colour coding
<i>Economic Development: Employment/recruitment and skills/training</i>		
Size of construction workforce	Total site workforce figure in the Winter of 2023 is 25% above the predicted peak of 8600. The 5-day rule data gives a higher figure. Whilst these are the key site figures, there are some additional off site workers including campus accommodation, operational and some management staff. In total, there may be c1000 others located primarily locally.	O
% CDCZ HB content	CDCZ HB figure of 34-36 % is close to prediction; very positive given the substantial growth in the total workforce.	DG

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% of workforce with families	Recently 11-12% of total. Percentage figure rising with MEH stage and buildup of operational workforce. Over 1000 staff with families is significant re impacts on accommodation, education, health services etc.	LG
% and numbers of workforce previously unemployed	Limited information, but in total, recruitment from unemployed plus those straight from education is about 6%.	A
% and numbers of female workforce	Good level of female employment. Well above original default figure.	DG
Numbers of apprenticeships; including gender mix	Excellent performance and already well above aspirational target of 1000. Female 18-19% is above female % employment on the site.	DG
Job categories for HB workers; % and numbers of total workforce from vulnerable and disadvantaged groups	No information available	B
Recruitment through Job Brokerage scheme (cumulative)	Cumulative total has almost doubled in last three years. This is better than the London Olympics job brokerage scheme that placed c1250 people in total over life of that construction project.	DG
Registrations on Jobs Service system (cumulative)	Maintaining a good level of registrations, but little cumulative growth over last three years; but may be due to registration/job churn and tightening labour market.	DG
Delivery of local training and skill development measures	Continuation of wide range of training and skill development initiatives, underpinned by substantial financial commitments by EDFE. Take-up appears to be good. New training places (30,000 to completion) available to meet demands of peak construction. New Centres of Excellence – Mechanical Engineering, Welding and Electrical.	DG
Develop new and relevant pipelines from education to employment	Continuation and development of school engagement initiatives; Bridgwater and Taunton College partnership with the project.	DG
Reduction in local economic deprivation indices	Review of IMD for localities in West Somerset and Sedgemoor near to the HPC site do not show any overall improvement in deprivation rankings nationally between 2015 and 2019. This period only includes early construction so not good indicator for peak construction.	A
<i>Economic Development: Supply chain</i>		
Somerset and regional supplier registrations	Continuing high level of registrations.	DG
Number and value of contracts awarded to Somerset and wider SW region companies	Performance far exceeds, indeed trebles, the original predicted £1.5bn value of contracts for SW region. Could still do with better publicly available information on local contracts.	DG

Number and value of contracts awarded to companies in other UK regions and nations	With 64% of value of HPC contracts likely to go to UK companies, HPC appears to be providing positive economic impacts across the UK economy.	DG
% tourism business confidence; total digital media hits	Survey of impact of HPC on Somerset tourism (Qa Research 2023) indicated that over 90% of tourists not affected by HPC construction activity. However, some specific concern about impacts of project use of Brean Sands accommodation on local tourism in that area.	LG
Lift and shift implications of movement of non-unique businesses and workers from HPC to SZC?	Implications of potential electric car battery factory being located in Bridgwater may provide, in the longer term, local opportunities for ex-HPC construction workers and linked businesses. Re Sizewell shift --- Job Registration Scheme now includes growing number interested in SZC	LG

5. Refresh RAG Indicator Ratings: Accommodation

5. 1. Context: Strategic Issues and Indicator Update

The accommodation of the NHB workforce and the implications for local accommodation markets have constituted some of the most significant socio-economic impact issues in the planning and management of HPC in the local community to date. The original accommodation strategy suggested a distribution of the NHB workforce (then estimated to be 3,700 workers at peak) between five types of accommodation:

- Campuses;
- Private Rented Sector (PRS);
- Owner Occupied;
- Tourist; and
- Latent Accommodation – including spare rooms and previously un-rented properties.

Issues raised in our earlier HPC Study 1 report included, in particular, impacts on the PRS and the location of those impacts, with a much larger impact on the Bridgwater area than predicted in the ES and DCO. Important mitigation measures included the provision of two purpose built workforce campuses, although only the Site Campus was operational at the time of the previous HPC Study 1 report. The Bridgwater Campus has subsequently opened, recently followed by the Brean Sands Campus based in the pre-existing Pontins self-catering tourist venue. There have also been numerous local housing market support initiatives by EDFE as set out in the DCO accommodation strategy and Section 106 agreement.

As with the Economic Development sector, the accommodation sector study draws on a range of sources. Our 2019 HPC Study 1 Report on the impacts of early stage construction sets out the sources of key indicators/KPIs. This new peak construction report updates these with information from topic papers prepared for the 2021-22 Uplift Study (EDFE 2022). Other key sources of monitoring information are the various reports of SEAG and TRG, supplemented by information from the various community fora, and from other sources such as the Index of Multiple Deprivation (IMD) and local

authority/housing market data (e.g. Sedgemoor Annual Monitoring Report and Somerset Intelligence). However, many of the original indicators/KPIs will continue as the default position where there is no indication of revision of targets.

The HPC Workforce Uplift – Updated Accommodation Topic Paper (EDF 2022) sets out the factors considered for a set of revised peak accommodation impacts predictions for an increased peak NHB workforce of 5090. It draws on a NHB spatial distribution analysis (Spatial Distribution Note [SDN] EDF 2022) that influences the potential impacts on the housing market. Relevant factors include the location of the existing workforce, the type of accommodation the workforce is staying in, the availability of accommodation and the likely makeup of the workforce. In summary, the prediction is for the increased workforce to continue to locate closer to the HPC site than was originally anticipated in the ES and DCO.

Table 5.1 sets out the revised predictions for housing tenure types, compared with those in the original DCO, informed by the 2021 Workforce Survey results. The 38% HB peak is the one adopted by EDFE. The distribution includes two important strategic interventions increasing the capacity of campuses and investment in caravan parks used by HPC workers—together totalling about 950 extra bedspaces. The table also sets out the predicted PRS+Latent accommodation distribution for local areas in Somerset. The indicative geographical distribution of the PRS and latent workforce uses the 60-minute commuting zone as used in the previous HPC NHB workforce impact analysis.

Table 5.1: The revised predictions for housing tenure types, compared with those in the original DCO, informed by the 2021 Workforce Survey results (Source: EDFE Uplift Accommodation Topic Paper 2022)

		DCO (Peak)	Latest Survey (May 21)	Revised SDN (Peak) (38% HB)	Revised SDN (Peak) (34% HB)
Total Workforce		5,600	6,200	8,210	8,210
HB		1,900	1,980	3,120	2,790
NHB		3,700	4,220	5,090	5,420
NHB in Project Campus and Caravans		1,450	1,480	2,380	2,380
Residual NHB		2,240	2,740	2,710	3,040
Residual NHB in PRS or Latent		1,150	1,920	1,760	2,020
PRS + Latent	Bridgwater	250	1,410	1,090	1,250
	Burnham & Highbridge	100	60	50	70
	Cannington	50	80	230	260
	Cheddar	20	-	-	-
	Glastonbury	20	-	-	-
	Hinkley Point	10	100	90	90
	Minehead	50	10	-	-
	Somerset South	30	-	10	10
	Somerset West	10	-	-	-
	Taunton	250	250	230	270
	Watchet & Williton	70	10	40	50
	Weston-Super-Mare	290	10	20	20

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Table 5.2: Predicted tenure distribution for NHB workforce at peak (38% HB workforce scenario)
(Source: EDFE Uplift Accommodation Topic Paper 2022)

Accommodation type	Predicted % of total at peak	Numbers
PRS and Latent	38	1780
Campuses	39	1915 ¹
Tourist etc	19	1135 ²
Owner Occupier	4	260
Total	100	5090

¹Includes extra 480 bedspaces at the existing Campuses plus Pontins at Brean Sands (+800?). ² Includes extra 470 Caravan Site bed spaces at Quantock Lakes (Nether Stowey), Moorhouse Farm (Holford) and Mill Farm (Fiddington).

5. 2. Monitoring Findings

Table 5.3: Monitoring data on Accommodation indicators/KPIs

Issues	Indicators/KPIs	Findings/Trends	Sources and Comments		
<i>Workforce accommodation</i>					
Mix of accommodation tenure types in 60 min CDCZ at peak for NHB workers	% predicted distributions		Actual for period 2021 to 2023		
	Accom . type	Predict % of total at peak		Number	
	PRS and Latent	35	1780	Accom. Uplift 1 Paper -- allowing for 479 new campsite plots, plus Brean Sands Campus to take up to 900.	
	Camp	38	1915		
	Tourist etc	22	1135		
	Owner Occup	5	260		
	Total	100	5090		
PRS (incl.Latent) accommodation by District and Ward Clusters	Predicted % distributions		Actual for period 2021 to 2024		
	Previous District	Nos		%	
	Sedgemoor	1320	74	EDFE Uplift 1 Accom. Topic Paper, and SEAG and Workforce reports.	
	W. Somerset	130	7		
	Taunton Deane	250	14		
	Previous District	W/21 Nos	W/22 %	W/23	S/24
	Sedgemoor	71 (1163)	69 (1925)	67 (2121)	66 (1847)
	W. Somerset	6	9	6	5
	Taunton Deane	17	17	22	21

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Implementation of EDF local housing support strategy	<p>Funding drawn down and bedspaces produced against targets, total site preparation s106 contributions (DCO funding) including Housing Contingency Funding) targets: -- Sedgemoor: c£2.7m -- SW&T :c£1.6m</p> <p>New bed spaces delivered in the PRS (Site Prep Funding) --Sedgemoor target: 1249 --West Somerset:250</p> <p>New bed spaces delivered in the PRS (DCO funding including Housing Contingency Funding) -- Sedgemoor target:351</p>	<p>Cumulative total delivered by Q3/23: --Sedgemoor: c£2.6m --SW&T: c£1.3m</p> <p>Cumulative total delivered by Q3/23: --S : 1406 --WS: 360</p> <p>Cumulative total delivered Q3/23: --S: 912 --WS&T: 462</p>	SEAG Accom. Dashboard																																																																								

HPC PEAK CONSTRUCTION IMPACTS STUDY

	-- West Somerset & Taunton: 510 -- N. Somerset:359 Overall additional bedspaces anticipated at peak: now 3900 (1000 estimated at peak in original accommodation strategy)	--NS: 718	
Impacts on local vulnerable groups	Trends in homeless acceptances Households in temporary accommodation	Households assessed as homeless per 1,000 households has grown by 4 households per 1,000 between 2018/19 and 2020/21 in Sedgemoor compared to 2 per 1,000 nationally Sedgemoor: 19/20 – 2433 20/21 – 2731 21/22 – 2227	Accom. Uplift Paper (EDFE 2022) DLUHC
Impacts on local house prices		Based on lower quartile house prices divided by residence-based earnings, the affordability gap has been getting wider, proportionately, at local and national scales, but Sedgemoor and Somerset West and Taunton remain more affordable than the national and regional average. The Sedgemoor ratio has increased from c8 to c9 over the construction period to date.	Accom. Uplift Paper (EDFE 2022)
Growth in number and % share of housing as HMOs		Actual HMOs as % of all dwellings in Sedgemoor DC area increased from 0.03 to 0.25 over 2012 to 2019 period.	Ditto
Impact on local multiple deprivation Issues (Housing)		% of Somerset LSOAs in 20% most deprived in England for <i>Barriers to Housing and Services</i> * increased from 22% to 25.7 % between 2015 and 2019 -- but all of Somerset and before peak. <i>(*measures the physical and financial accessibility of housing and local services)</i>	Somerset Intelligence English Indices of Deprivation (2019 Somerset Summary)

5. 3. Auditing of Findings

Table 5.4: Audit of actual against predicted Accommodation impacts.

Impact Issue Indicator	Commentary on actual vs predicted impacts Commentary on performance in relation to objectives and targets (as available)	Summary RAG colour coding
<i>Workforce accommodation</i>		
Geographical distribution of non-home based workers (NHB)	Original predictions by both EDFE and the Councils for the distribution of the NHB workforce were for a concentration in Sedgemoor, partly reflecting the location of the large Bridgwater Campus in the District. Recent findings reinforce these predictions; indeed the concentration appears greater than anticipated, probably largely because of the reluctance of NHB workers to commute daily from outside the local districts. The current findings for	LG

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	Somerset West and Taunton Deane are very much in line with original predictions.	
Numbers and distribution by Districts of home-based (HB) workers	Peak findings are similar within Somerset to the original default Council predictions, and Uplift Spatial Distribution estimates. However, the growth outside the 90-minute commute area has been noted as a possible result of post Covid working patterns, with those who in the past might have been on site 4-5 days a week may now only be once or twice a week. It may also reflect the shift in skills requirements for the MEH stage of construction. At c20% of the workforce, this is considerably above that anticipated with the original DCO assessment.	LG A
Mix of accommodation tenure type in 60 min CDCZ at peak for NHB workers	The mix of housing tenure for NHB workers in Summer 23 was skewed much more towards PRS (including latent, which is seen as closest in type to PRS) than in latest uplift predictions. The combined campus and tourist (hotels, B&B, camping/caravans etc) accommodation was around 50% rather than the predicted 60% of the total. This may partly reflect the fact that the planned additional bedspace and camping sites provision numbers have not yet all had an impact, although the recent impact of the new Brean Sands Campus has significantly increased the % share of campus accommodation.	A
Trends in accommodation tenure type in 60 min CDCZ at peak	The full opening and occupancy of the Bridgwater Campus increased the % workforce in the then two campuses to almost 50% of NHB workers in Winter 21, but with the continuing growth in workforce and the campuses at capacity this proportion fell back and PRS again dominated the tenure mix by Winter 22. However, the recent addition of the Brean Sands Campus has now reversed this trend.	LG
PRS (incl.Latent) accommodation by District and Ward Clusters	The distribution of the important and sensitive PRS (including latent accommodation) by ward cluster is reasonably close to predictions in the uplift papers for Bridgwater and Taunton. The numbers for Cannington are much lower than predicted.	LG
Numbers and distribution by Districts of NHB workers with families	The numbers and distribution are roughly in line with original predictions, being somewhat less concentrated in Sedgemoor than the workforce as a whole	LG
Local housing market impacts		
Implementation of EDFE local housing support strategy	Data on the drawdown of funding support from the EDFE local housing support strategy, and the resultant delivery of bedspaces, especially in Sedgemoor, West Somerset /Taunton Deane and North Somerset, indicate continuing effective implementation of the strategy in delivering a substantial number of extra bedspaces. Although it is not possible to know whether all the successfully developed bed spaces are still available and utilised.	DG
Impacts on local vulnerable groups and on house prices	There is a range of relative data from national and local authority sources covering impacts on vulnerable groups. For example, there has been a small drop in the number of households on waiting lists in Sedgemoor between 20/21 and 21/22. This partly reflects the success of EDFE housing strategy and local authority partnership initiatives. The housing affordability gap has been getting wider, proportionately, at local and national scales, but Sedgemoor and Somerset West and Taunton remain more affordable than the national and regional average. The Sedgemoor ratio has increased from c8 to c9 over the construction period to date.	LG
Growth in number and % share of housing as HMOs	There has been a substantial increase in the HMO %, especially for Sedgemoor, but figures are still a little below SW and England levels.	A

Impact on local multiple deprivation Issues (housing)	Some small deterioration in relative position of Somerset nationally re incidence of deprivation, including small deterioration in barriers for housing and services. However— data is for whole of Somerset and only up to 2019 (i.e not peak).	A	B
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6. Refresh RAG Indicator Ratings: Social and Community

6. 1. Context: Strategic Issues and Indicator Update

The social and community impacts sector includes peak construction impacts on a range of essential local services, people and communities and on managing those impacts. These impacts include those on health, crime and safety, other emergency services, education and wellbeing. Many of the impacts flow directly from the extent and accommodation distribution of the HPC NHB workforce in the community including their family make-up (e.g. accompanied with partner, children). Key original references to these issues, as set out in detail in the 2019 HPC Study 1 report, include various documents from 2011/12, in particular a Health Action Plan, Community Safety Management Plan and the S106 Agreement. In response to the workforce uplift proposals and also in light of the COVID pandemic, health and community safety issues were reviewed in two uplift topic papers – Health Topic Paper (EDFE 2022) and Community Safety (EDFE 2022).

The Health Topic Paper reviewed the nature of the larger workforce, possible additional impacts and appropriate mitigations. It concluded that Workforce Survey evidence to date showed no particular shift in the make-up of the workforce (i.e largely homogenous, being majority male, 35-49 years of age, and of white ethnic origin), and that any health impacts could be well managed via Hinkley Health, the on-site health facility. Indeed, the response to the impacts of the COVID pandemic showed the ability of Hinkley Health to flex very effectively to manage an extreme situation.

The Community Safety Topic Paper considered potential impacts of the workforce uplift on issues including crime and disorder, the nighttime economy, equality within the community and on existing mitigation measures. Detailed evidence traced impacts through to 2021 and set out the range of mitigation measures, including the Workforce Code of Conduct and various funding support for local services. The most common cause of local complaints, not anticipated in the original ES and DCO, fly parking, is covered here and in the transport sector review. The uplift topic paper concludes with a number of recommendations for enhanced mitigation funding and some amendments to the Community Safety Management Plan.

Monitoring data on health and community safety issues is reported on a regular basis by EDFE to SEAG; the Sedgemoor Annual Monitoring Report and Somerset Intelligence are other valuable sources. Other topic specific sources include Somerset CCG and SW Public Health for local health and hospital services; and Health Task and Finish Group (HTFG), Avon and Somerset Constabulary and local authorities for crime and fear of crime. Contextual baseline information is available from national sources, such as ONS Annual Population Survey for personal wellbeing, and the Index of Multiple Deprivation on trends in relevant domains. Most of the original indicators/KPIs will continue as the default position where there is no indication of revision of targets

6. 2. Monitoring Findings

HPC PEAK CONSTRUCTION IMPACTS STUDY

Table 6.1: Monitoring data on Social and Community indicators/KPIs

Issues	Indicators/KPIs	Findings/Trends	Sources and Comments												
Changing nature of NHB workforce – including family composition – implications for services	DCO predicted number of NHB family members at peak construction as 500 workers with their families, resulting in additional 600 non-worker adults, 300 school age children and 65 pre-school children moving into the area.	<p>Summer 23 data indicates 691 workers with families, and 700 non-workers adults, 427 school age children and 231 pre-school children moving into the area.</p> <p>Winter 23 data indicates 854 workers with families, and 911 non-workers adults, 524 school age children and 268 pre-school children moving into the area.</p>	SEAG – Workforce Survey												
<i>Health and wellbeing</i>															
Pressure on NHS--NHB HPC worker referral to local GPs and hospitals	Numbers referred	<table border="1"> <thead> <tr> <th></th> <th>Q4 /21</th> <th>Q4 /22</th> <th>All 23</th> </tr> </thead> <tbody> <tr> <td>GPs</td> <td>0</td> <td>0</td> <td>0</td> </tr> <tr> <td>Hosp.</td> <td>30</td> <td>59</td> <td>233</td> </tr> </tbody> </table>		Q4 /21	Q4 /22	All 23	GPs	0	0	0	Hosp.	30	59	233	SEAG
	Q4 /21	Q4 /22	All 23												
GPs	0	0	0												
Hosp.	30	59	233												
Mitigation provision--health staff in on-site medical centre	Number of staff and range of skills	About 30 FTE staff during 2022 (c19 FTE in 2018); wide range of skills, (including 15 nurses, and approval to increase to 20). About 35 FTE staff in 2023.	SEAG												
The number of drug and alcohol checks completed across all staff.	Numbers completed In Q/Yr.	<table border="1"> <thead> <tr> <th>Q4 /21</th> <th>Q4 /22</th> <th>Q4/ 23</th> </tr> </thead> <tbody> <tr> <td>3305</td> <td>5249</td> <td>4806</td> </tr> </tbody> </table>	Q4 /21	Q4 /22	Q4/ 23	3305	5249	4806	SEAG						
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The number of call-outs made to the SW Ambulance Service NHS Foundation Trust.	Number of callouts – cumulative for year	<table border="1"> <thead> <tr> <th>2021</th> <th>2202</th> <th>2023</th> </tr> </thead> <tbody> <tr> <td>38</td> <td>73</td> <td>58</td> </tr> </tbody> </table> <p>(c50 in 2018)</p>	2021	2202	2023	38	73	58	SEAG						
2021	2202	2023													
38	73	58													
HTFG –e.g. mental health open referrals; sexual health referrals	Comparison of numbers and trends in Hinkley Zone and in Somerset	<p>Examples of HTFG data –2022</p> <ul style="list-style-type: none"> Hate crime in the Hinkley Zone remains lower than at peaks seen during 2021. Numbers of sexual assaults have stabilised in the Hinkley Zone, although there are declines in the rest of the county. Offences where victims were women and offences where victims were children have declined for the second successive quarter in the Hinkley Zone but have been generally stable over the last two years. 	HTFG Somerset Partnership: Supplementary Data 2023												

HPC PEAK CONSTRUCTION IMPACTS STUDY

<i>Community safety</i>																									
Reported crime linked directly to HPC	Trends in cumulative numbers, and by Quarter (Q)	<table border="1"> <tr> <td></td> <td>Q1/22</td> <td>Q3/22</td> <td>Q4/24</td> </tr> <tr> <td>Q</td> <td>82</td> <td>96</td> <td>100</td> </tr> <tr> <td>Cum</td> <td>908</td> <td>1169</td> <td>1651</td> </tr> </table>				Q1/22	Q3/22	Q4/24	Q	82	96	100	Cum	908	1169	1651	SEAG - Q1 here is April to June; Q3 is Oct to Dec; Q4 is Jan –Mar.								
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Non-reported criminal activity linked directly to HPC	Trends in cumulative numbers	<table border="1"> <tr> <td></td> <td>Q1/2</td> <td>Q3/22</td> <td>Q4/24</td> </tr> <tr> <td>Q</td> <td>95</td> <td>79</td> <td>103</td> </tr> <tr> <td>Cum</td> <td>1056</td> <td>1340</td> <td>1965</td> </tr> </table>				Q1/2	Q3/22	Q4/24	Q	95	79	103	Cum	1056	1340	1965	SEAG								
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Annual fear of crime index – SDC	% SDC residents feeling very safe or safe in own home during the day	2017- 94 2021- 92		SDC Community Safety Report 2021																					
Numbers of criminal offences and abuse	Comparison of data in Hinkley Zone (HZ) and Somerset (S) -- using examples of hate crimes and sexual assaults	<table border="1"> <thead> <tr> <th></th> <th></th> <th>Hate Crimes</th> <th>Sexual Assaults</th> </tr> </thead> <tbody> <tr> <td>HZ</td> <td>Dec 2016</td> <td>30</td> <td>13</td> </tr> <tr> <td>S</td> <td>Ditto</td> <td>102</td> <td>101</td> </tr> <tr> <td>HZ</td> <td>Dec 2022</td> <td>41</td> <td>30</td> </tr> <tr> <td>S</td> <td>Ditto</td> <td>206</td> <td>128</td> </tr> </tbody> </table>					Hate Crimes	Sexual Assaults	HZ	Dec 2016	30	13	S	Ditto	102	101	HZ	Dec 2022	41	30	S	Ditto	206	128	HTFG Somerset Partnership: Supplementary Data 2023
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HZ	Dec 2016	30	13																						
S	Ditto	102	101																						
HZ	Dec 2022	41	30																						
S	Ditto	206	128																						
Location specific –especially re night time economy	Reported crime data for e.g Bridgewater Town Centre	<p>June 22 - 209 Dec 22 – 151 April 23 – 174</p> <p>Percentage of violence and sexual offences (at c35%) and anti-social behaviour offences (at c20%) have remained consistent over last 3 yrs.</p> <p>Bridgwater as a whole has a much higher crime rate than Somerset (2022 –was 131/1000 pop compared with 65/1000 for Somerset).</p>		Police UK data—all reported crimes																					
Location specific –especially re fly parking	Reported complaints to EDF	<p>Q3/22-- 119 Q4/22—159 Q3/23 – 142 Q2/24 -- 266</p> <p>EDFE Parking Patrollers mitigation but continuing problem although many offenders are not HPC.</p>		TRG Quarterly Reports; Stakeholder Relations Reports																					
Impact on other emergency services	Number of incidents of fire directly related to HPC	Nine in 2022 with cumulative 38 by end of that year.																							
<i>Education</i>																									
Impact on local schools capacities –from NHB with families	Spatial distribution of NHB families in Somerset	No data on distribution of NHB workforce families with school age children																							

HPC PEAK CONSTRUCTION IMPACTS STUDY

<i>Community welfare</i>			
Impact on community cohesion and local quality of life; feeling of community wellbeing –from extended construction period, especially for communities close to site.	Wellbeing indicators; Incidence of complaints;	Level of complaints remains low over period 2019 to 2023 –with the exception of fly parking. Very low for worker behaviour. For SDC – a very small dip in reported personal wellbeing from 7.7/10 in 2016/17 to 7.6/10 in 2021/22. Stogursey had 7 reported crimes in March 23, which was very similar to early construction period figures.	EDF Complaints Register ONS Annual Population Survey – personal wellbeing at LA level
Impact on community cohesion and local quality of life –via use of Community Impacts Mitigation (CIM) funding	Use of CIM fund	20/21 open funding of c£500, 000 for 10 larger projects (at c £50000 per project) and c£140,000 for c40 projects at c£3500 per project. New grants totalling £2.6m made to 57 organisations in 22/23.2.Mix of projects across various age groups in the local community. In total, over £15m of the £20m CIM fund is now allocated.	EDF HPC Community Fund – Annual Reports 2021/22, 2022/23.
Changes in local performance in relative deprivation domains of Index of Multiple deprivation (IMD) –e.g. health; education skills and training; crime; living environment	Trends in IMD between 2015 and 2019	Sedgemoor was the worst performing Somerset district with an index of 121 out of 317 nationally. It scores lower than other Somerset districts on all domains, with the exception of <i>Barriers to Housing and Services</i> where it scores better than all local districts with an index of 176. Of 25 Somerset LSOAs that became more deprived between 2015 and 2019, 5 were in Sedgemoor and 8 were in West Somerset and Taunton Deane. All this however is pre-peak construction.	Somerset Intelligence: IMD 2019 Summary

6. 3. Auditing of Findings

Table 6.2: Audit of actual against predicted Social and Community impacts.

Impact Indicator Issue	Commentary on actual vs predicted impacts Commentary on performance in relation to objectives and targets (as available)	Summary RAG colour coding
Changing nature of NHB workforce – including family composition – implications for services	A 70% increase in the new peak workforce has to date been accompanied by an approx. 40% increase above the DCO predicted proportion of those NHB workers with families, bringing with them an approx.10% increase above the DCO predicted proportion of family members. The most significant difference is in the substantially higher number of pre-school children. Overall, the NHB family accompanied workforce is proportionately less for peak construction than that anticipated if the original DCO % rates had prevailed for the uplifted workforce numbers.	A

Health and wellbeing

HPC PEAK CONSTRUCTION IMPACTS STUDY

Pressure on NHS—with potential NHB HPC worker referral to local GPs and hospitals	Impacts of the increasing workforce on the NHS appears very limited, continuing the trends established in early construction. Impacts on local GP services appear negligible and local hospital referrals average about 10-20 per month. As examples of potential particular health issues HTEP data shows no significant rise in mental health open referrals and sexual health referrals in the Hinkley Zone compared with Somerset as a whole.	DG
Mitigation provision--health staff in on-site medical centre (Hinkley Health); Workforce health checks	The provision of the bespoke Hinkley Health (HH) facility continues to be the major asset in minimising workforce impacts on local health facilities. Medical staffing has grown, from approx 20 to 35 FTE (2018-2023) to handle the demands of the larger workforce, although no dental provision. HH facility also used by some HB workforce, thus taking some pressure off local GPs. Other mitigation and health enhancement measures, such as drug and alcohol checks completed across all staff, and health-screening sessions, continue at a good level.	DG
The number of call-outs made to ambulance and fire emergency services.	The number of ambulance callouts has not changed much since 2018 when the workforce was much lower, and is quite low for such a major project. There is a similar continuation of low figures of instances of fires linked to HPC construction.	DG
<i>Community Safety</i>		
Impact on local policing: changes in reported and non-reported level of crime linked directly to HPC	Anticipated impact areas were the behaviour of a predominantly male workforce, with a concern of anti-social behaviour and increased levels of various types of crime. However, data reported to SEAG on crime linked directly to HPC show no major changes, relative to workforce numbers, on the outcomes for early construction.	DG
Numbers and types of criminal offences and abuse	Hate crime in Hinkley Zone is relatively low and has increased less over 2016-2022 period than for Somerset as a whole. Numbers of sexual assaults have stabilised in the Hinkley Zone, although there have been declines in the rest of the county.	LG
Fear of crime	Small decline in SDC safety feeling, but still very positive—even with major increase in project numbers	DG
Location specific – especially re night time economy	Data show no major growth in reported crimes for Bridgwater Town Centre or in percentage types of crime over last three years, although Bridgwater as a whole has a much higher crime rate than Somerset.	LG
Location specific – especially re fly parking	Fly parking is the most significant area of complaint by community. EDFE seek to mitigate in various ways, including system of Parking Patrollers and through Code of Conduct. Complaints are not always easy to validate and do include many related to non-HPC workforce. Overall, HPC related offences are falling a little even with increase to peak workforce.	R
<i>Education</i>		
Impact on local schools capacities –from NHB with families	As for our 2019 report, there is a problem re monitoring data. EDFE has made upfront payments for additional school space capacity in areas of Somerset where there was an expectation of limited pre-school and/or primary school capacity. This includes a new primary school at Northgate in Bridgwater that also provides pre-school places. Schoolchildren numbers are now (2023-24) becoming much higher than the original DCO predictions, at almost double for school age children and four	A

HPC PEAK CONSTRUCTION IMPACTS STUDY

	times higher for pre-school. As such, the EDFE funded/Somerset mitigation provision may not be adequate, depending on family distribution.	
<i>Community welfare</i>		
Impact on community cohesion and local quality of life; feeling of community wellbeing –from extended construction period	Levels of complaints remain low, with the exception of fly –parking (discussed in Transport sector). National wellbeing data are in line with those for early construction, with only a very small shift downwards for Sedgemoor. Stogursey had 7 reported crimes in March 23, which was very similar to early construction period figures.	LG
Impact on community cohesion and local quality of life – Community Impacts Mitigation fund	Community Impacts Mitigation funding is providing initiatives of facilities and services to help to improve the social, economic, and environmental wellbeing of communities affected by the HPC construction. Over £15m of the £20m fund is now committed. Recent allocations on open and small projects are very much in line with earlier funding.	DG
Changes in local performance in relative deprivation domains of Index of Multiple deprivation (IMD) –e.g. health; education skills and training; crime; living environment	There have been some small negative shifts in relative deprivation for parts of Sedgemoor and West Somerset and Taunton Deane between 2015 and 2019, although Sedgemoor has improved in the important domain of <i>Barriers to Housing and Services</i> . However, this period precedes peak construction by several years and it is difficult to draw any firm conclusions on the relative impacts of HPC peak construction.	A B

7. Refresh RAG Indicator Ratings: Transport Sector

7.1 Context: Strategic Issues and Indicator Update

The report draws on a range of sources. The 2019 HPC Study 1 on the impacts of early stage construction sets out the sources of key indicators/KPIs. This new peak construction report updates these with information from papers prepared for the 2021-22 Transport Uplift Study (EDFE Jan 2022). Other key sources of monitoring information are the various reports of SEAG and TRG, supplemented where available by information from the various community fora and from local authority data.

The HPC Workforce Uplift – Update Transport Topic Paper (EDFE 2022) sets out some revised objectives and targets for overall peak employment (then averaging 8600 over peak period, with c 38% HB recruitment). To understand the likely transport impacts of the workforce uplift, there is a review and comparison of a revised peak workforce number of 8,600 against the original DCO Environmental Statement (ES) (Volume 2, Chap10 EDF 2011), the 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.

This update of the transport sector identifies any likely adverse or beneficial transport impacts and effects arising from the workforce uplift. It identifies existing mitigation measures implemented in response to the DCO, and, if any there are likely adverse effects resulting from the workforce uplift, which are over and above those identified within the DCO application, additional mitigation are suggested. A range of additional data was agreed as part of Workforce Uplift 1 and is now reported in the TRG quarterly report - e.g. parking accumulation and some bus data. However, many of the original indicators/KPIs will continue as the default position where there is no indication of revision of targets. Similarly, the Transport Uplift Topic Paper uses the same spatial base, distinguishing between the local Construction Development Commuting Zone (CDCZ), which represents the 90-min maximum commuting zone of local HB workers. NHB workers originate from outside this zone, although they will almost wholly live within this zone, and largely within a 60-min commute zone, during the duration of their time on the project. Figure 7.1 shows the national, regional and county freight routes within Somerset.

Figure 7.1: National, regional and county freight routes within Somerset



EDFE committed to the key elements set out in the Somerset Local Transport Plan on freight management that wherever possible HGVs should use the Strategic Road Network (SRN); and possible HGVs will adhere to the National Regional and County Freight Routes set out in Figure 7.1. Two HGV routes (Figure 7.2) were proposed and adopted from J23 and J24 of the M5 motorway to the HPC site during the construction stage.

In order to meet with Workforce Transport Objectives set out in the TA, a strategy was developed for work trips to and from the HPC site. Crucial to the management of the traffic effects of the construction of HPC are a set of mitigation measures developed between EDFE and key local, regional and

national stakeholders, in discussions and consultations leading up to the submission of the developer's draft DCO and accompanying the ES, and in the formal examination of the project. These are set out in Figure 7.3

Figure 7.2: Designated HGV Routes to HPC

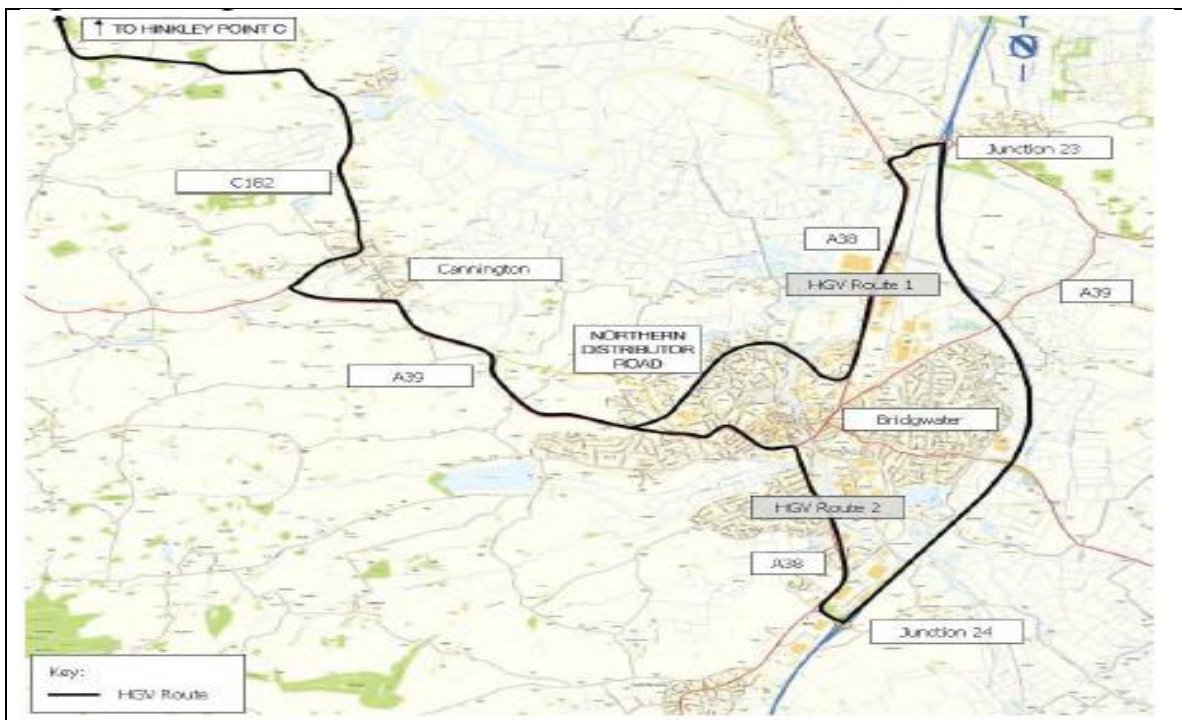
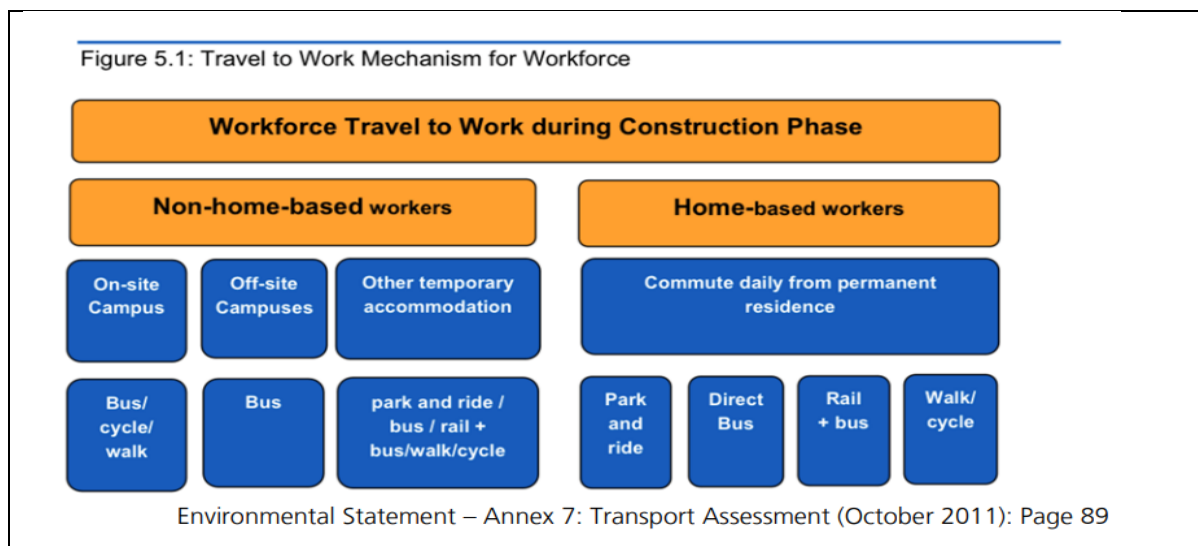


Figure 7.3: Workforce Travel to Work Mechanisms



7.2 Monitoring Findings

Key sources of transport sector monitoring information are the TRG quarterly reports. As part of the DCO, the developer must implement and monitor the implementation of the Construction Workforce Travel Plan (CWTP) and the (CTMP) until the end of construction. These plans include various limits and targets, including for example on mode share targets for worker travel to the site, HGV deliveries to site against maximum daily limits and details of any breaches. Recent performance against targets and limits are set out in Table 7.1.

Table 7.1: Monitoring data on Transport indicators/KPIs

Issue	Indicators/KPIs	Findings/Trends	Sources of data																																																
<i>People movements</i>																																																			
HPC site journey to work	Mode share targets, eg: bus (87%), walk (9%), and car (4%)	<table border="1"> <thead> <tr> <th>For Q2/%</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> <th>2024</th> </tr> </thead> <tbody> <tr> <td>Bus</td> <td>75</td> <td>84</td> <td>86</td> <td>87</td> <td>90</td> </tr> <tr> <td>Walk</td> <td>17</td> <td>10</td> <td>9</td> <td>10</td> <td>5</td> </tr> <tr> <td>Car</td> <td>7</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> <tr> <td>Cycle</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> <td>1</td> </tr> <tr> <td>M/Bike.</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> <td>1</td> </tr> </tbody> </table>	For Q2/%	2020	2021	2022	2023	2024	Bus	75	84	86	87	90	Walk	17	10	9	10	5	Car	7	4	4	3	3	Cycle	1	1	0	0	1	M/Bike.	1	1	1	1	1	All TRG, except where indicated												
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Travel to and from Associated Development (AD) Sites: J23, J24, Cannington, Williton, and Morrison's	Mode share targets, eg for J23 Sustainable – 4% Car driver – 58% Car passenger – 38% eg for J24 Sustainable – 4% Car driver – 60% Car passenger – 36%	<table border="1"> <thead> <tr> <th>For J23 Q2 %</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> <th>2024</th> </tr> </thead> <tbody> <tr> <td>Sus</td> <td>3</td> <td>0</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>Driver</td> <td>75</td> <td>81</td> <td>82</td> <td>80</td> <td>84</td> </tr> <tr> <td>Pass.</td> <td>22</td> <td>19</td> <td>17</td> <td>19</td> <td>15</td> </tr> <tr> <th>For J24 Q2%</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> <th>2024</th> </tr> <tr> <td>Sus</td> <td>5</td> <td>18</td> <td>13</td> <td>23</td> <td>20</td> </tr> <tr> <td>Driver</td> <td>71</td> <td>69</td> <td>73</td> <td>64</td> <td>66</td> </tr> <tr> <td>Pass.</td> <td>24</td> <td>13</td> <td>14</td> <td>13</td> <td>14</td> </tr> </tbody> </table>	For J23 Q2 %	2020	2021	2022	2023	2024	Sus	3	0	1	1	1	Driver	75	81	82	80	84	Pass.	22	19	17	19	15	For J24 Q2%	2020	2021	2022	2023	2024	Sus	5	18	13	23	20	Driver	71	69	73	64	66	Pass.	24	13	14	13	14	
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		NB: the proportion of car drivers and car passengers for J24 is affected by the fact that many local workers now walk to the P&R site because of the introduction of an expanded distance by which workers are expected to walk to collect a bus.																																																					
Number of passengers using bus service to HPC Site	Not specified -- but see mode share target above	Dec 2018 – 1993 Sept 2023 -- 8521 June 2024 – 9809																																																					
Location specific – especially re fly parking	Reported complaints to EDF	<table border="1"> <thead> <tr> <th>Q2 Nos</th> <th>2018</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> <th>2024</th> </tr> </thead> <tbody> <tr> <td></td> <td>165</td> <td>26</td> <td>15</td> <td>247</td> <td>405</td> <td>266</td> </tr> </tbody> </table> <p>EDFE Parking Patrollers mitigation but continuing problem. Covid influenced 2020 and 2021 figures.</p>						Q2 Nos	2018	2020	2021	2022	2023	2024		165	26	15	247	405	266																																		
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Freight movements																																																							
DMS bookings v HPC construction works HGV (Limits)	Target max <ul style="list-style-type: none"> Mon-Fri: 750 Sat: 375 Qrtly Av: 500 <ul style="list-style-type: none"> HGV Route 1: 450 HGV Route 2: 300 	<table border="1"> <thead> <tr> <th>For Q2 targets</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> <th>2024</th> </tr> </thead> <tbody> <tr> <td>750</td> <td>230</td> <td>320</td> <td>294</td> <td>243</td> <td>252</td> </tr> <tr> <td>375</td> <td>23</td> <td>102</td> <td>68</td> <td>34</td> <td>18</td> </tr> <tr> <td>500</td> <td>136</td> <td>201</td> <td>181</td> <td>139</td> <td>154</td> </tr> <tr> <th>For HGV routes</th> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>1—J23</td> <td>188</td> <td>241</td> <td>207</td> <td>187</td> <td>177</td> </tr> <tr> <td>2—J24</td> <td>72</td> <td>120</td> <td>114</td> <td>71</td> <td>84</td> </tr> <tr> <td>300</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>						For Q2 targets	2020	2021	2022	2023	2024	750	230	320	294	243	252	375	23	102	68	34	18	500	136	201	181	139	154	For HGV routes						1—J23	188	241	207	187	177	2—J24	72	120	114	71	84	300					
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Abnormal Indivisible Loads (monthly and quarterly)	No limit specified	<table border="1"> <thead> <tr> <th>Q2 Nos</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> <th>2024</th> </tr> </thead> <tbody> <tr> <td></td> <td>213</td> <td>329</td> <td>255</td> <td>203</td> <td>312</td> </tr> </tbody> </table>						Q2 Nos	2020	2021	2022	2023	2024		213	329	255	203	312																																				
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Temporary Jetty	Operational in Sept 2019. Target to deliver minimum of 80% by weight of materials for on-site concrete.	<table border="1"> <thead> <tr> <th>Materials delivered</th> <th>Sept 19-Aug 20</th> <th>Sept 22-Aug 23</th> <th>Sept 19-Aug 23</th> </tr> </thead> <tbody> <tr> <td>via Road</td> <td>37.3</td> <td>37.4</td> <td>37.2</td> </tr> <tr> <td>via Jetty</td> <td>62.7</td> <td>62.6</td> <td>62.8</td> </tr> </tbody> </table>						Materials delivered	Sept 19-Aug 20	Sept 22-Aug 23	Sept 19-Aug 23	via Road	37.3	37.4	37.2	via Jetty	62.7	62.6	62.8																																				
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7.3. Auditing of Findings

In addition to comments on each impact issue indicator, we have applied a very simple colour code audit (RAG system) as used in the 2019 HPC Study 1 report, ranging from Dark Green (very accurate/compliant), through Amber to Dark Red (very inaccurate/non-compliant). A blue colour coding indicates No Information Available yet.

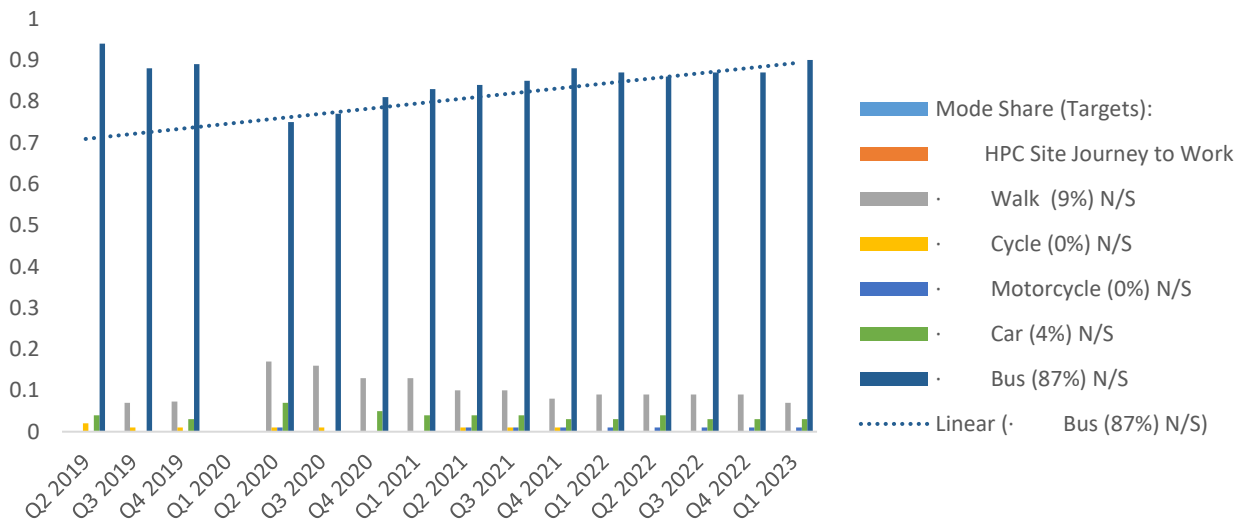
Table 7.2: Audit of actual against predicted Transport impacts.

Workforce movements

HPC PEAK CONSTRUCTION IMPACTS STUDY

Impact sector	Commentary on actual vs predicted impacts Commentary on performance in relation to objectives and targets (as available)	Summary RAG colour coding
HPC site journey to work	HPC Site Journey to Work Mode share Bus has a target of 87%. Q2-Q4 2019 easily exceeded 87%. This dipped at the beginning of Covid lockdown, in Q1 2020, but recovered well with a definite rising trajectory (see Figure 7.4). This, coupled with the use of walking, is very positive. It is important to recognise changes to the bus strategy and routing to reflect worker locations and ensure that the direct bus service is maximised to minimise the number of workers travelling to a P&R location. The use of an 800m+ rule and introduction of walk and ride are other significant changes. NB: Recent reduction in walking is due to numerical proportions of main site campus workers v overall increase in worker numbers and resultant increase in actual bus numbers.	G
Travel to and from AD Sites: J23, J24, Cannington, Williton	A continuing issue with high proportion of car drivers. Recent more long distant commuting by HB workforce in the MEH stage places some constraints on the car sharing percentage. There is a continuing and considerable promotion of HPC Car Share to meet the car share targets at project peak. Driver percentage for J24 is affected by increase in walking to P&R.	O
Fly parking complaints	Fly parking by HPC workers is a continuing and locally very significant transport impact issue. Complaints about fly parking far outweigh all HPC transport (including HPC Bus Service, HGV speeds and roadworks) and other complaints. Non-HPC workers are also fly parkers and the distinction with HPC workers may not always be locally recognised. In Q2 2017 a three-step approach to tackling fly parking associated with using the HPC bus service was approved by the HPC Site Director and has been communicated to the Tier 1's. There is a three-step approach following a community complaint or HPC monitoring team identifying a fly-parking vehicle that is on the HPC Transport database. By step 3 NNB expect disciplinary action through Tier 1's (ultimately, if no action, HPC Site Pass withdrawn). There has been a more concerted effort over the last year or so with a refresh of the policy and many more incidences of formal warnings and withdrawal of site passes.	R

Figure 7.4: HPC Site - Journey to Work



Freight movements

<i>Impact sector</i>	<i>Commentary on actual vs predicted impacts</i>	<i>Summary RAG colour coding</i>
Delivery Management Strategy (DMS) actuals v construction works HGV targets – HGV FMF/local	Monitoring and reporting show a consistently good compliance with the three criteria caps: Mon-Fri (750), Saturday (375) and Quarterly Average (500). The DMS is working well using a GPS based model. NB: HGV movements were scoped out of the Transport Uplift Assessment (2022) due to: <ul style="list-style-type: none"> • 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 managed, controlled and reported through the CTMP and TRG in line with the current agreed conditions and practices. • No material change in HGV movements proposed associated with the workforce uplift. 	G
HGV breaches of construction works (monitored but no targets set)	Breaches in terms of HGV limits, timing restrictions, routing violation have increased a little over time from initially very low single figures to figures averaging about 30 per quarter. However, this is still very low and less than 1% (0.23%) of total HGV movements (11,523) during Q2 2024. Low numbers reflect positive action by EDFE on driver induction and training. All HGV drivers who were involved in breaches receive a Driver Strike.	LG
Materials delivered by Jetty	The 80% target has proved challenging -- but the provision of the Jetty in Sept 2019 has helped to take a large proportion of materials off the road. Much is dependent on tides.	A
Abnormal Invisible loads	Has remained consistent in 200-300 range over build up to peak construction period.	LG

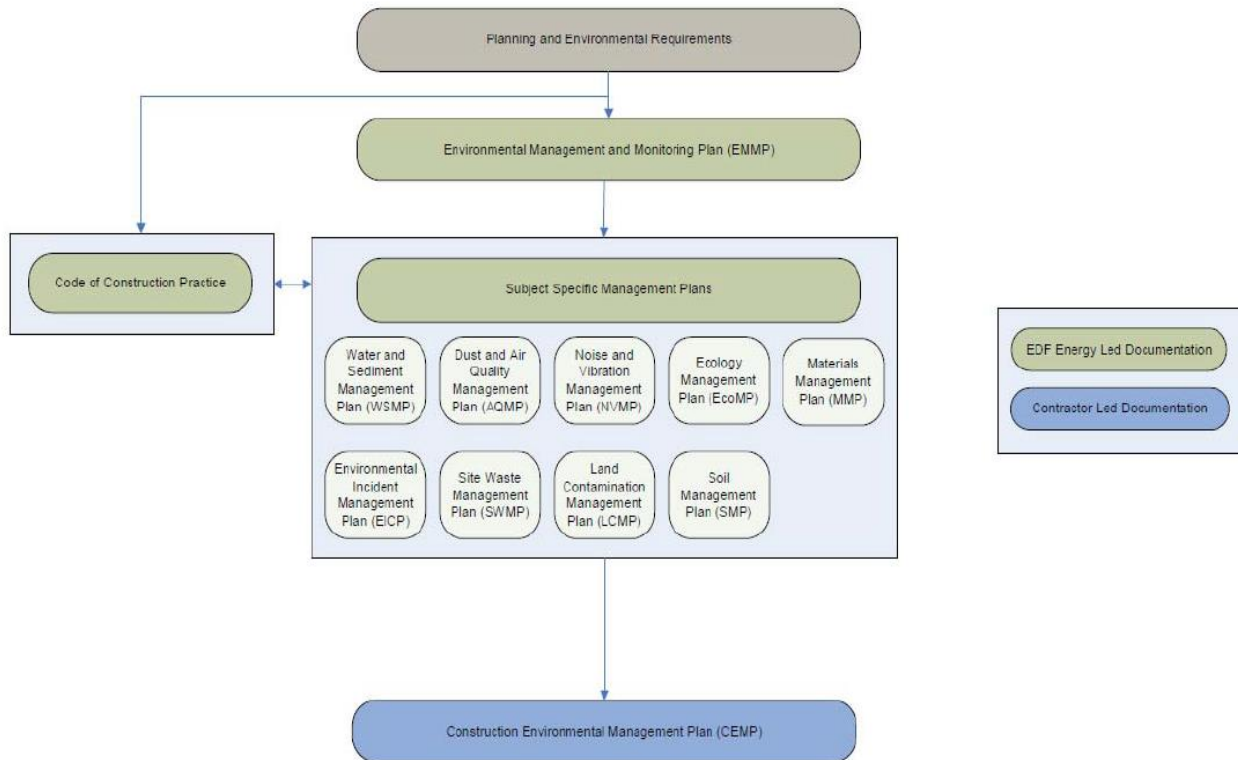
8. Refresh RAG Indicator Ratings: Biophysical and Environmental Health Impacts

8.1 Context: Strategic Issues and Indicator Update

Biophysical and Environmental Health issues are largely addressed by an Environmental Management and Monitoring Plan (EMMP) that was developed to cover the HPC Main Site and Associated Developments (Figure 8.1), including for example impacts of the development on local water quality, air quality, noise, and waste. The EMMP also includes an Ecology Management Plan (EcoMP). In the 2019 HPC Study 1 Report Biophysical and Environmental Health impacts were in separate sections. In this new study, the Biophysical and the Environmental Health impacts of the development on the local area (eg. noise, waste) are taken together. Other Environmental Health impacts, of the workforce on local health services and on the local population, are in the Social and Community section (see Section 6).

Figure 8.1: Environmental Management and Monitoring Plan

Figure 1.1 Environmental Management System Documentation



The report draws on a range of sources. The 2019 HPC Study 1 on the impacts of early stage construction sets out the sources of key indicators/KPIs. This new peak construction report updates these with information from papers prepared for the 2021-22 Biophysical Environment and Environmental Health Uplift Studies (EDFE 2022) and other data. Additional qualitative information comes from reviewing the minutes from HPC Environmental Monitoring quarterly reports 2022-2023, HPC Forum meetings and local parish council meetings. Other key sources of monitoring information are the various reports of SEAG and TRG, supplemented where available by information from various other community fora and local authority data.

The EDF uplift papers considered whether the environmental impact from the change in workforce numbers is significant in comparison to the assessments within the DCO ES. Another key consideration was to determine whether the existing approved mitigation that is in place to reduce impact would be sufficient, and if not, to propose new or revised mitigation, which would ensure that effects were at least the same as those assessed within the DCO. The Environment Health Topic Paper set out the following as the environment foci: Noise & Vibration; Light Pollution; Air Quality; Waste; Waste Water; Sustainability and Ecology. The KPIs in Figure 8.2 are to be reported to the Environment Monitoring Group, then to SEAG, on a quarterly basis, to ensure that impacts are reported, addressed and ultimately impacts reduced as far as possible.

Figure 8.2: Environment KPIs

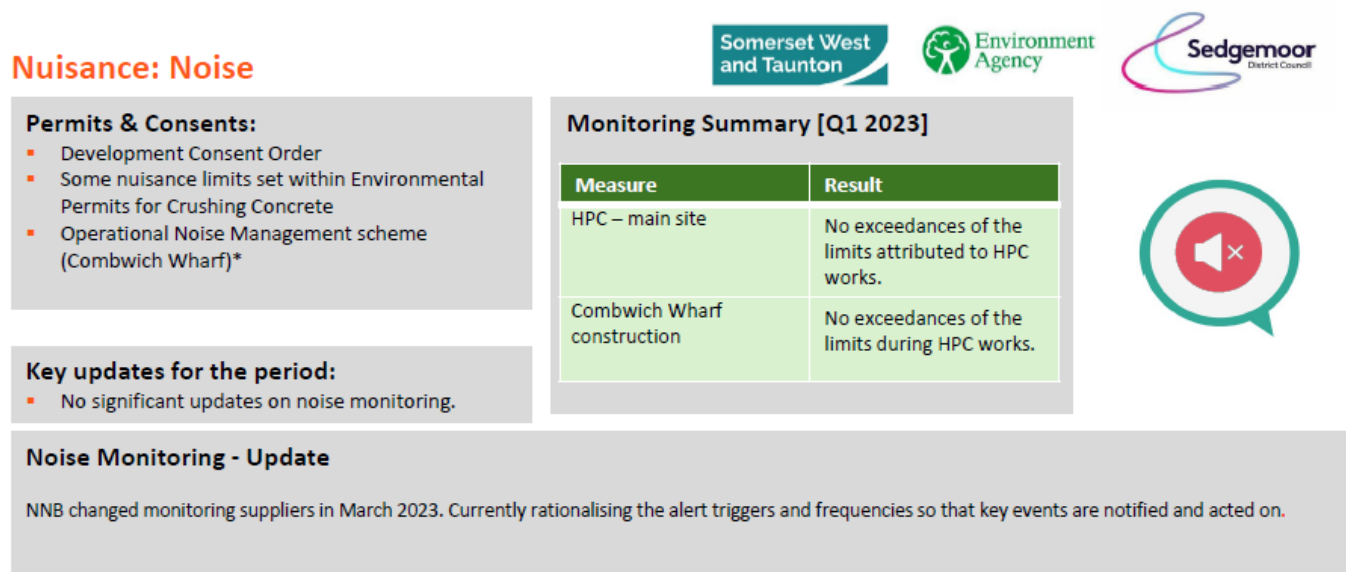
1. Noise - no. of noise level breaches attributable to the HPC project recorded at the HPC site within the quarter
2. Noise - no. of noise notifications attributable to the HPC project recorded at Comwich Wharf within the quarter
3. Air Quality - no. of AQ level breaches attributable to the HPC project recorded at the HPC site within the quarter
4. Lighting - % Actions completed in response to the previous Quarters lighting survey
5. Ecology - % Actions completed in response to the previous Quarters ecology survey at the HPC site
6. Ecology - % Actions completed in response to the previous Quarters ecology survey at AD Sites
7. Sustainability - % of diversion from landfill of inert and non-hazardous waste from construction activities and offices at HPC and AD Sites within the quarter
8. Sustainability/Air Quality - performance against target for Diesel consumption on the HPC Site
9. Reporting - no. of Medium/High/Very Serious Environmental Incidents within the quarter
10. Community - no. of environmental related complaints received within the quarter

8. 2. Monitoring Findings

The key Biophysical and Environmental Health issues identified are Noise & Vibration; Light Pollution; Air Quality; Waste; Waste Water; Sustainability; and Ecology. Management plans exist for these topics; it is assumed that mitigation and monitoring work is in hand. Following from the monitoring reporting gap identified in the 2019 HPC Study 1, an Environmental Monitoring Group was set up to report to SEAG on environmental indicators (see HPC Environmental Monitoring quarterly reports for 2022 and 2023). They report on Nuisance-Noise, Nuisance-Lighting, Air Quality and Emissions, Pollution Prevention and Incidence Response, Waste Management and Ecology. These reports largely describe relevant permits and consents and note key updates for the period, but are light on quantitative measures (See Figure 8.2). There is some data on Community Complaints, with noise being the key issue although at quite a low level.

However, currently, all the biophysical and environmental health impact topics addressed in this section lack the detailed publicly available impact information needed to complete an audit. Most environmental impacts are well regulated, with various standards and thresholds, and monitoring mainly relates to any exceedances of such standards and thresholds. It is assumed that there is appropriate monitoring for such environmental health impacts, such as noise and air for HPC construction, and these are likely within predicted thresholds. However, the IAU found little publicly available detailed information to confirm this, other than the relatively low level of local complaints detailed in the EMQR's. It is unclear how data is collated between the parties involved (Council, EDFE, and EA) and if the sum of these add up to more significant impact on the public.

Figure 8.2: Example from Environmental Monitoring Quarterly Report (EMQR)



For context, the construction activities which were going to cause the most significant environmental effects on receptors have been completed by the time of reporting, including the main civil stage earthworks, the works to the southern landscape area and the construction of the emergency access road. The suite of environmental management plans were principally designed to address impacts during these activities. The one current material change, the proposed removal of the acoustic fish deterrent and addition of compensatory offset measures, will require new monitoring (Environment Agency 2024). Site control measures such as noise monitors and air quality monitors remain in place until the end of construction as well as the best practice methodologies set out in the suite of management plans. EDFE are committed to continuing to report any breach of noise, air quality or other limits and will provide information via the new Environment Monitoring Group. If monitoring reveals that any amendments to the Environmental Management Plans would be appropriate, EDFE will revise them as required.

8. 3. Auditing of Findings

As noted, detailed environmental monitoring information is currently not publicly available or has not been located, although there is fragmented evidence on various outcomes in the Environmental Monitoring quarterly reports (EMQR). Overall, there is a major problem of data analysis and availability in relation to the impacts of HPC construction. This relates to both LAs and EDFE. The RAG audit below draws largely on the partial information in the EMQR documents and a few examples of audited impacts are noted. The split cells (including blue) indicate that auditing is very limited due to the absence of detailed monitoring data.

Table 8.1: Audit of actual against predicted Biophysical and Environmental Health impacts

Impact sector	Commentary on actual vs predicted impacts Commentary on performance in relation to objectives and targets (as available)	Summary RAG colour coding

HPC PEAK CONSTRUCTION IMPACTS STUDY

Noise and vibration impacts	Environmental Monitoring quarterly reports (EMQR) indicate there were no exceedances. A small number of complaints on noise. No complaints highlighted on vibration.	LG	B
Air quality and dust	EMQR notes no breaches of air quality levels attributable to the HPC project recorded at the HPC site within the quarter.	LG	B
Light pollution	EMQR notes actions completed but no publicly available data has been located relating to light pollution and therefore the accuracy cannot be audited	A	B
Water quality	EA permits are in place. No publicly available data has been located relating to water quality and therefore the accuracy cannot be audited	A	B
Waste management	100% diversion of non-hazardous and inert (construction & office) waste from landfill; duty of care audits undertaken on all main civils Tier 1's; focus on waste segregation and waste reduction continues..	LG	B
Ecology	EMQR notes scheduled monitoring and habitat enhancement works undertaken. AD ecology audits: mitigation habitat continuing to establish really well across the AD sites. Water voles have moved into ditches at Junction 23; also recorded increase in signs of badger and otter at some of the AD sites.	LG	B

9. Overview and Implications for HPC Project

9.1 Overview of Refresh of Indicator Ratings for Peak Construction

Auditability of predictions

Auditing of predictions needs clear indicators and good monitoring information for those indicators. The research has shown considerable variation in both the provision of indicators and flows of monitoring data over the peak construction period to date. The various uplift papers have introduced, in some cases, revised targets. Where not, the default position is the original targets/KPIs. However, indicators are still sparse in some sectors. As for the early construction impact study HPC Study 1, publicly available monitoring information is generally better for the employment, transport, and social and community impacts sectors than for accommodation, and especially for biophysical and environmental health. Explanations of variations include the relative efficiency and organisation of the various monitoring groups involved in the HPC project, the relative quantitative nature of some of the sectors (e.g traffic flows, employment numbers), and the ES/DCO/S106/Uplift specificity of indicators and targets as noted. It is important to note that 'peak construction' focus for these findings is a somewhat flexible concept for the HPC project. The report has focused on trends in data over the period from 2021 onwards, with employment numbers of over 7000, and rising to over 11000 in 2024, but the absolute peak may be higher still, partly depending on workforce definitions.

Summary assessment of predictions

Table 9.1 provides a summary of the audited peak construction predictions for the various sectors, gained as far as possible from the publicly available monitoring data. The table also includes summary RAG colour codings for each sector, although these may cover some detailed variations across sector indicators. For comparison, the RAG codings from the early construction study are also included in the table.

Table 9.1: Summary of the audited peak construction predictions for the various sectors

Impact sector	Commentary on actual vs predicted impacts	Summary RAG colour coding – peak construction stage		Comparative Summary RAG colour coding – early construction stage (Study1)	
<i>Economic development</i>	<p>At the current, peak construction stage, the project is performing very well against predictions in many impact areas, including local employment content, training and education, apprenticeships, jobs brokerage, local supply chain inputs and tourism. Mitigation and enhancement measures appear to be working well.</p> <p>However, the actual level of total workforce numbers quickly and greatly exceeded Uplift 1 predictions. Information also continues to be lacking on disaggregated employment impacts (eg skills analysis for HB and NHB workforce and opportunities for various disadvantaged or under-represented groups).</p>	DG	O	LG	A
<i>Accommodation</i>	<p>Recent findings reinforce the predictions of a concentration of the NHB workforce in the former Sedgemoor District, partly reflecting the location of the large Bridgwater Campus. Similarly, peak findings for the distribution of the HB workforce are similar within Somerset to the original default Council predictions, and Uplift Spatial Distribution estimates. The mix of NHB housing type was skewed more to PRS than predicted.</p> <p>The housing support strategy, and the resultant delivery of bedspaces, appears to be working well. It is difficult within the constraints of publicly available data, to identify housing impacts on local vulnerable groups, although there does not seem to have been to date a noticeable impact.</p>	LG	A	A	
<i>Social and community</i>	<p>Overall, there is a continuation of good performance against many of the impact indicators. For health, the staffing growth of the on-site Hinkley Health Medical Campus has provided a high level of medical treatment and advice for the workforce, taking the pressure off the local NHS services. For community safety, there appears to be good management of potential project impacts through a combination of mitigation measures,</p>	DG	A	LG	

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	<p>including the implementation of the Worker’s Code of Conduct. Data reported to SEAG on crime linked directly to HPC show no major changes, relative to workforce numbers, on the outcomes for early construction.</p> <p>Schoolchildren numbers are becoming much higher than the original DCO predictions, and the EDFE funded/Somerset mitigation provision may not be adequate, depending on family distribution.</p> <p>Some construction impacts affect community wellbeing; the Community Impacts Mitigation (CIM) fund provides some examples of compensatory measures although it is difficult to evidence a direct link from these to wellbeing. Levels of complaints remain low, with the exception of fly parking (covered under transport).</p>					
<p><i>Transport</i></p>	<p>There is a continuation into the peak period of good performance against predictions for many transport indicators. These include the key indicators of mode share for workforce journey to the main site, with the bus system working well, and the Delivery Management System (DMS) actuals v HGV limits. However, some breaches in terms of HGV limits, timing restrictions, routing violation have increased over time from initially very low figures.</p> <p>Less positively, the car share system for worker journeys to the P&R sites, continues to be less effective than predicted, and there is the continuing issue of fly parking. However, management responses are in hand for both issues. Key transport infrastructure, including the jetty and P&R sites, are now in place in comparison with early stages of the project.</p>	<p>DG</p>	<p>O</p>		<p>LG</p>	<p>A</p>
<p><i>Biophysical and Environmental Health</i></p>	<p>In contrast to the early stage construction study, the biophysical and the environmental health impacts of the development on the local area (eg. noise, waste) are considered together. Other Environmental Health impacts, of the workforce on local health services and on the local population, are in the Social and Community section.</p> <p>It is good to see a new set of KPIs to be reported to a new Environmental Monitoring Group, However, as for the early study, the topics addressed in this section still lack the detailed publicly available impact information needed to complete an audit.</p> <p>Most environmental impacts are well regulated with various standards and thresholds, and monitoring mainly relates to any exceedances of such standards and thresholds. It is assumed that there is in place appropriate monitoring for such environmental health impacts, such as noise and air</p>	<p>LG</p>	<p>B</p>		<p>A</p>	<p>B</p>

	for HPC construction, and these are likely within predicted thresholds.					
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9.2 Impact Assessment, Monitoring, Adaptive Management and Uplifts 1 and 2

Impact assessment should be an iterative learning process, rather than a one-off linear process. The need for such a process is compelling considering the limitations to predicting complex impacts prior to the beginning of a project. This is particularly so when we are dealing with the assessment of the socio-economic and biophysical impact of major projects where uncertainty and complexity are key features, as for HPC (Glasson 2022). This was noted in the generic recommendations for future new nuclear projects in the earlier HPC Study 1 (IAU/NNLG 2019), as follows:

- *It should be recognised that some construction impact predictions (eg workforce labour demand curve, and accommodation tenure mix) may require a refresh against a timeline to review and update baseline conditions, actions and project evolution (especially moving towards peak construction). This should be part of an effective **adaptive impact assessment process** (plan, monitor and manage).*
- *KPIs need to be clearly set out and consistently monitored. There will be a need for changes to some KPIs, and the need for new ones as the project unfolds; these changes and additions need to be transparent and agreed in a consistent way by monitoring bodies.*

As noted in s3.1, Uplift 1 (EDFE 2022) provided a major review, 2019-2022, of the likely size of the peak construction workforce and associated socio-economic indicators. **This update followed from an EDFE ‘internal review of the project in 2019 that revealed that in order to maintain safety and quality standards and the construction programme, there was a need to increase the peak number of workers on site from 5,600 to 8,600’.** EDFE produced a set of six Uplift Topic Papers, covering the six sectors of this and previous reports, to assess the local impacts of this uplift. 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 DCO application. The review highlighted that there would need to be a greater overlap between the Mechanical Electrical and Heating (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. The various uplift papers have been built into each sector refresh study; in some cases, they introduce revised targets. Where not, the default position is the original targets/KPIs.

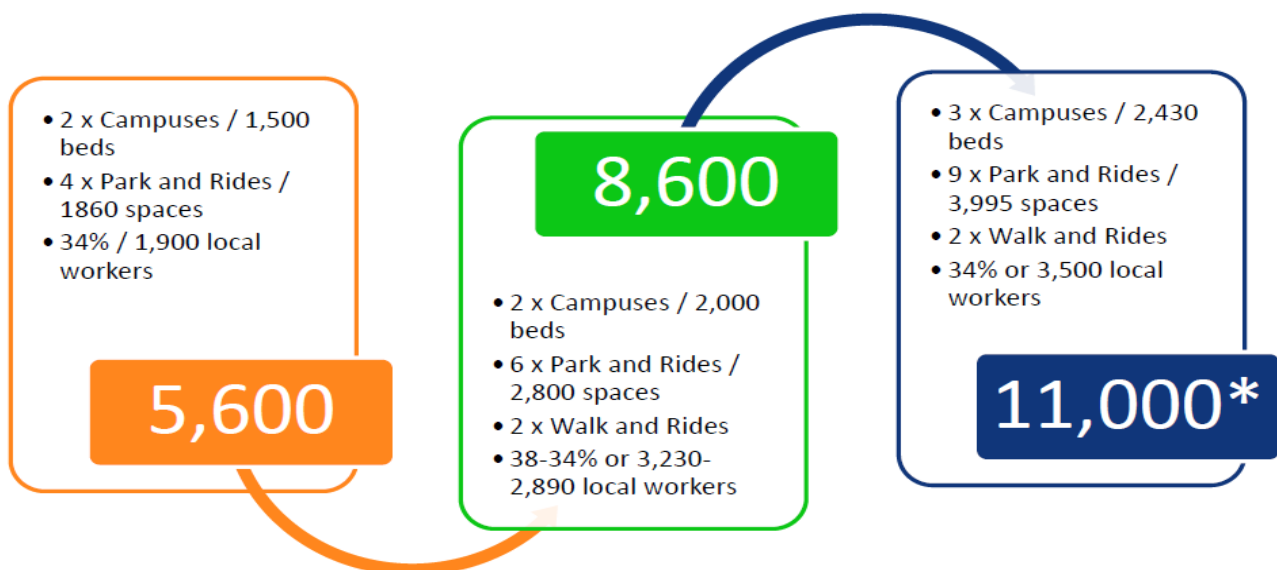
Whilst this report has sought to include predictions and indicators for Uplift 1, which were publicly available during the study period, the review team were aware of a further complexity introduced in 2023-24+ with work by EDFE on a further uplift plan (Uplift 2). This is likely to increase peak employment to over 12,000 (and possibly much higher still), with additional mitigations on the anticipated changes in accommodation, transport, health and other impacts. The detailed papers underpinning Uplift 2 were not publicly available for this study, but some likely assessments of implications are included here drawing primarily on an EDFE public presentation made to the HPC

Community Forum in May 2024. The reasons given for this subsequent uplift, so soon after the first one, were:

- *Organisational: a wider overlap between the Civils and Mechanical and Electrical phases of construction.*
- *Speed: aim to complete HPC around the end of the decade and to commission unit 1 in 2029.*
- *Clarity: following their mobilisation there is a better forecast from the MEH Alliance on the workers they will require in the years ahead.*

A number of scenarios are being tested in Uplift 2, including: understanding that there are limits to workforce expansion both at HPC itself and in the community, and minimising who needs to come to site and how to best utilise modern ways of working at site and at other project locations. Associated with the latter is a scenario considering an 8-day (rather than 5-day) rule being the appropriate means to understand true workforce impact in some of the topic areas. It is noted that all developing scenarios will have the benefit of the real life, practical experience and evidence (i.e adaptive management approach). The Topic Papers are being updated to test the scenarios and agree the package of mitigation measures (EDFE Community Forum May 2024). The presentation to the Community Forum also included some interesting graphics neatly summarising some of the management mitigation responses to the various uplift cycles (see Figures 9.1, 9.2 and 9.3).

Figure 9.1: Changes to manage impacts following from Uplift (2) of peak employment numbers (EDFE 2024)



As noted in the Uplift 2 scenario approach, it is important to draw on practical experience and evidence. The May 2024 presentation also includes an outline of the monitoring and feedback organisational structure, with SEAG and TRG as key units, underpinned by various groups and community fora. This is little changed from that used in early project construction, but with the addition of an Environment Group, as proposed in the early construction report (IAU 2019). Of course, however, monitoring is only as good as the efficiency of the constituent elements. This auditing review suggests that there are still areas for improvement, including for example public access to some

disaggregated Workforce Survey data, detailed Environment data and the frequency and timeliness of publication of some data.

Figure 9.2: Some initial mitigation responses (EDFE 2024)

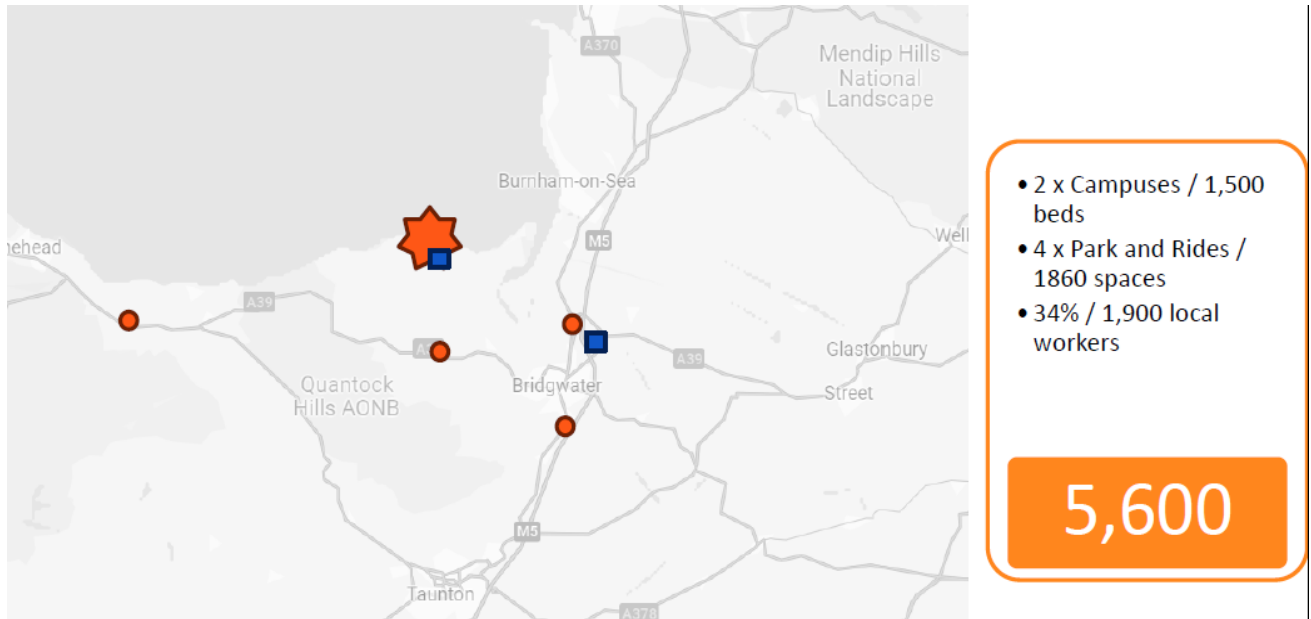


Figure 9.3: Latest mitigation responses (EDFE 2024)

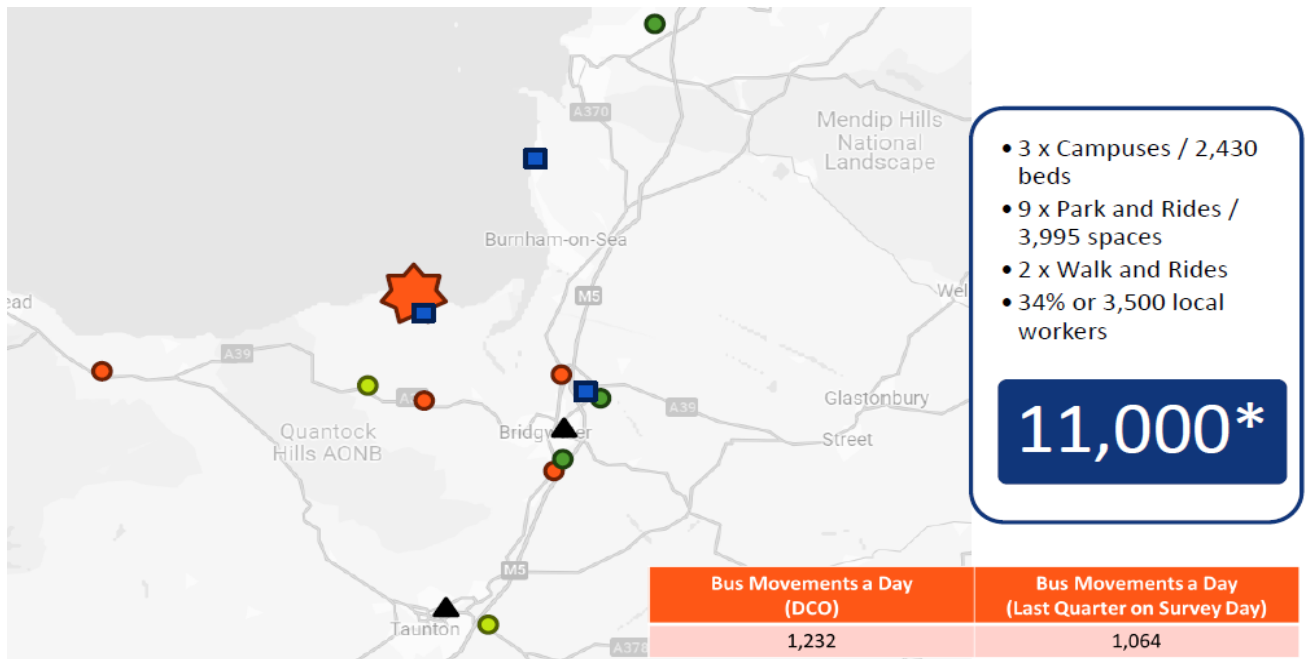
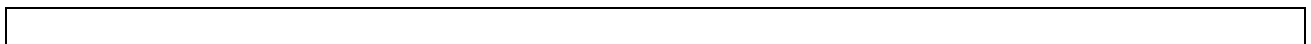
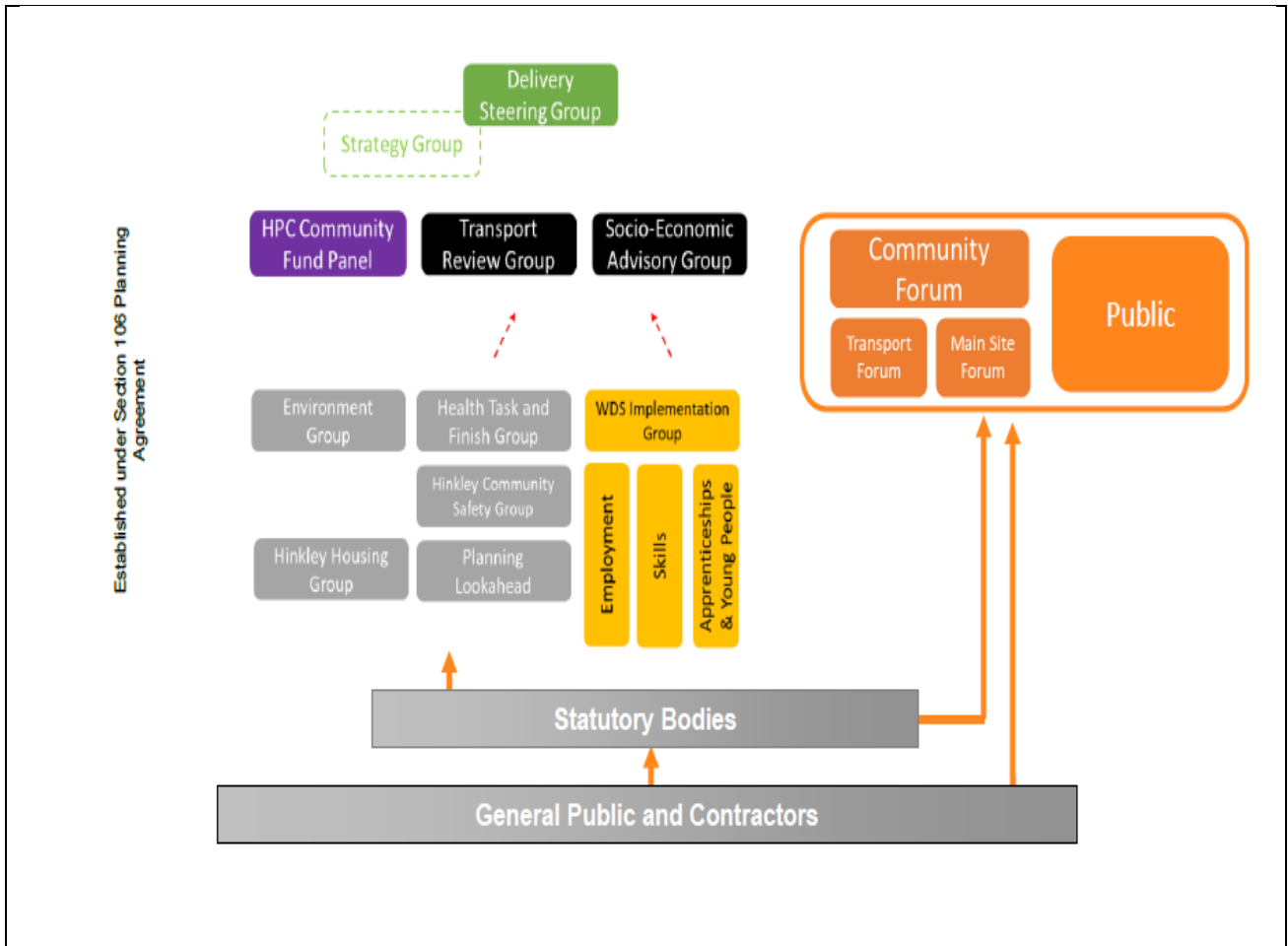


Figure 9.4: Monitoring and Feedback structure



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PART 3: RELEVANCE FOR OTHER STUDIES

10. SZC Proposed NNB

10.1 Brief consideration of HPC experience for SZC construction and operation

This section reviews the coverage of the HPC Study 1 2019 findings and recommendations in the SZC proposals, and conditions and requirements (e.g. in proposed project governance and monitoring). Key SZC sources reviewed, relevant findings and recommendations, and some comments on implications for SZC construction, are set out in Table 10.1. Some overall conclusions and a summary of some considerations for the project governance and monitoring of the SZC construction stage, distilled from the table contents, follow on in s 10.2.

Table 10.1: Sources and some relevant information findings

Key sources	Findings and recommendations	Some comments and potential issues re SZC
EDF Environmental Statement (ES) for SZC (EDF 2020)	There is some limited reference to the 2019 HPC Study 1, for example in the ES Economic Statement (8.9 2020). There is also reference to earlier IAU research (Glasson and Chadwick 1995) on the local socio-economic impacts of the construction of SZB.	Concern that little reference to the HPC Study 1; however, acknowledged that it came out after most SZC ES work completed.
LA Local Impact Report (LIR), East Suffolk Council and Suffolk County Council (May 2021).	<p>There is considerable reference to 2019 HPC Study 1 in the LIR, relating to particular sectors of impacts – e.g. economic, skills and employment, accommodation and housing.</p> <p>The IAU HPC Study 1 identifies (page 62) that</p> <p><i>“the monitoring system is not delivering enough accurate and disaggregated employment information, especially on local content by skill category and by disadvantaged and under-represented groups.</i></p> <p><i>23.34. Similarly, there is a lack of disaggregated data on supply chain impacts in Somerset and districts.</i></p> <p><i>23.35. Improved, full, transparent and publicly available Workforce Survey needed to underpin the better auditing of many socio-economic impacts.”</i></p> <p><i>23.36. These are important observations which need to be addressed when setting up the monitoring framework</i></p>	<p>The LIR was obviously very keen that the lessons from the monitoring of HPC were considered in the SZC examination and built into recommendations and conditions in the SZC DCO (see below section on SZC DCO)</p> <p>From LIR --- <i>directed primarily at the developer, the report recommends (page 63): “It should be recognised that some construction impact predictions (e.g. workforce labour demand curve and accommodation tenure mix) may require a refresh against a timeline to review and update baseline conditions, actions and project evolution (especially moving towards peak construction). This should be part of an effective adaptive impact assessment process (plan, monitor and manage).</i></p> <p>EDFE HPC has indeed used, very substantially, an adaptive impact assessment approach in its major workforce uplift in 2022.</p> <p>However, it is of some concern that only 12 months later there is a further substantial workforce uplift proposal for HPC. This begins to cast doubt on the SZC peak workforce prediction – is it too low?</p>

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	<p>It also refers more generally to implementation and deliverability risks.</p> <p><i>The (IAU) study compares actual impacts with those predicted in the Hinkley Point C DCO, seeks to explain factors for differences, and provides recommendations for future NSIP DCOs.</i></p> <p><i>Many of the factors identified related to implementation and deliverability, including long time delays in commencement of construction project; project modifications; changes in baseline conditions; inadequate resourcing of monitoring; lack of trigger points in DCO/s106 obligations and requirements; lack of clarity in definition of some indicators; over-focus on peak construction impacts; and inadequacies of predictive techniques. Some of these categories overlap; for example, project and baseline changes are more likely with a lengthy authorisation process</i></p>	
<p>Development Consent Order (DCO) Conditions and Requirements (2022)</p>	<p>There is considerable reference in the approved SZC DCO to Requirements and Conditions related to monitoring and mitigation of various project impacts, including to the monitoring methodology, frequency of monitoring and format of monitoring reports. Details of coverage will be in various plans (e.g. Terrestrial Ecology Monitoring and Mitigation Plan). Overall construction must be carried out in accordance with the Code of Construction Practice (CoCP) and subsequent plans under this Code.</p> <p><i>CoCP (2.3.1) Sept 2021 Monitoring, management and mitigation plans then provide ESC (as discharging authority) and the Ecology Working Group, the Environment Review Group and Delivery Steering Group (established by the Deed of Obligation) appropriate oversight of the implementation of the project in order to review the effectiveness of mitigation, and where this is not effective, provide further remedies that would be agreed and implemented by SZC Co</i></p> <p><i>(2.4.10) Monitoring, environmental performance and formal compliance auditing will be conducted throughout the duration of the construction of Sizewell C in order to demonstrate the effectiveness of the measures set out in the CoCP and related construction controls, monitor the impact of construction works and recommend actions that may be necessary to ensure compliance with the CoCP. This approach will ensure that appropriate reporting is provided</i></p>	<p>From Vol 4 of Examining Authority (ExA) report (PINs 2022), the ExA noted the importance of monitoring for the project:</p> <p><i>The monitoring of potential effects of the construction workforce would be needed to identify where and which mitigation measures need to be enacted. The Applicant would continue to agree relevant indicators of effects with local authorities responsible for services that may be affected. From time to time, East Suffolk Council and the Applicant would propose relevant indicators to a Socio-Economic Advisory Group for its approval. The establishment of the Socio-Economic Advisory Group would be secured through an obligation in the DCO.</i></p>

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<p>Sizewell C 8.4 Planning Statement Appendix 8.4J Section 106 Heads of Terms</p>	<p>Monitoring requirements figure clearly in this document e.g.</p> <p><i>6.9 Monitoring (Workforce and Socio-economic Impacts)</i> <i>6.9.1 SZC Co. shall undertake monitoring of the impacts of the Sizewell C Project on the local community, including workforce surveys and any other monitoring as may be agreed between SZC Co. and the Socio-economic Advisory Group. A number of sub-groups, such as the Community Safety Working Group and Sizewell C Health Working Group, will be responsible for monitoring effects related to their area of expertise.</i></p> <p><i>6.9.2 SZC Co. will monitor the construction workforce and the accommodation being used by workers. Regular workforce surveys would be undertaken, fixed to a statistically significant sample size, and with consistent survey questions that can provide longitudinal data.</i></p> <p>There is also reference to more specific monitoring activities e.g</p> <p>--workforce and freight traffic movements --impacts on European sites</p> <p>Other contents also build on HPC construction initiatives, and relate to some of the IAU Study findings e.g.</p> <p>-- <i>Sizewell C Community Fund: would be available to be spent on measures which the community consider could enhance the quality of life in the local area or enable people to make the most of the opportunities offered by the Sizewell C Project</i></p> <p>-- <i>Part of the Housing Fund would be set aside to support the supply, capacity and resilience of the tourist accommodation sector and latent accommodation. Another part of the housing fund would be provided as a reactive contingency which ESC could draw upon to mitigate any potential effects of the construction workforce on vulnerability to housing need and homelessness</i></p>	<p>It would still be useful to see an overall construction stage-monitoring plan, bringing together key KPIs/indicators for all socio-economic, traffic and environmental impact sectors, and setting out the organisational framework for collecting and reporting data.</p> <p>There does not seem to be any reference to an independent auditing of the findings from the proposed monitoring studies. As for the HPC project, and especially for the Sizewell B project, such auditing can provide a valuable check on findings and a neutral position between the various agencies involved in the project.</p> <p>All monitoring findings and any auditing activities should be publicly and efficiently available.</p> <p>It is also unclear whether some of the identified limitations of HPC monitoring will be adequately covered at SZC, for example relating to</p> <p>--<i>lack of disaggregated employment information, especially on local content by skill category and by disadvantaged and under-represented groups; and</i></p> <p>-- <i>lack of disaggregated data on supply chain impacts at county and district level</i></p> <p>-- <i>Issue of concern at HPC about wellbeing of older residents. Case for more emphasis on this in the SZC Community Fund?</i></p> <p>Good example of learning from HPC and the particular case of the Suffolk tourism industry.</p>
<p>8.4 Planning Statement Sizewell C Appendix 8.41 Implementation Plan (May 2020)</p>	<p>The Implementation Plan sets out clearly the indicative phasing schedule for key elements of Main Site and Associated Development (AD) construction activities. For example, the Main Site Accommodation Campus will be built in Year 2 and be available from year 3 onwards.</p>	<p>The delayed triggering of some AD projects for HPC (e.g Bridgwater Campus, and Site Jetty) were cause of some impact issues. Hence, it is important to monitor closely the phasing of such key works.</p>

<p>Other documentation:</p> <p>Hinkley Point C Socio-Economic Impact Reports (EDF 2022, 2023)</p>	<p>As noted in IAU 2019 HPC Study 1 and current Study 2 reports, these reports and monitoring data show what is possible in terms socio-economic benefits – including:</p> <ul style="list-style-type: none"> • Apprenticeships: HPC has exceeded targets with over 1300 to date, and SZC aiming for 1500. Key is the percentage of local recruits – c 70% in CDCZ for HPC, and c 20% female at HPC. • Local supply chain benefits: HPC has also exceeded well the target of £1.5bn to SW industries (now over £5bn); which shows what might be possible for SZC. <p>John Dugmore, Chief Executive of Suffolk Chamber of Commerce, said:</p> <p><i>“These latest figures from Hinkley Point C show what we can achieve here in Suffolk and East Anglia regarding supply chain opportunities to support economic growth. Our Supply Chain engagement team are working with almost 2000 businesses, who are eager to get started, to get them fit and ready to seize the huge supply chain opportunities that the Sizewell C project will bring to our region.”</i></p>	<p>Should SZC be aiming higher still on some indicators—e.g. local apprenticeships, and female recruitment?</p> <p>Will the SZC project receive the same levels of education, skill and training initiatives and funding as received by HPC?</p>
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10.2 Some overall conclusions and a summary of some considerations for the project governance and monitoring of the SZC construction stage.

Some overall conclusions

There appears to have been only very limited reference to the IAU 2019 HPC Study 1 in the developer’s Environmental Statement, although not all the wide array of documents have been reviewed here. This contrasts with the content in the local authorities’ Local Impact Report that shows that the Suffolk authorities were very keen for a consideration of the findings from the HPC monitoring and auditing study in the SZC examination and in recommendations and conditions in the SZC DCO. The Examining Authority also noted the importance of impacts monitoring for the SZC project; this is developed in the DCO Requirements and Conditions, in various project construction Management Plans, and in the Planning Statement. These include, for example, referencing to the monitoring organisation, including the establishment of the Socio-Economic Advisory Group and its various sub-groups, and to the key regular Workforce Surveys.

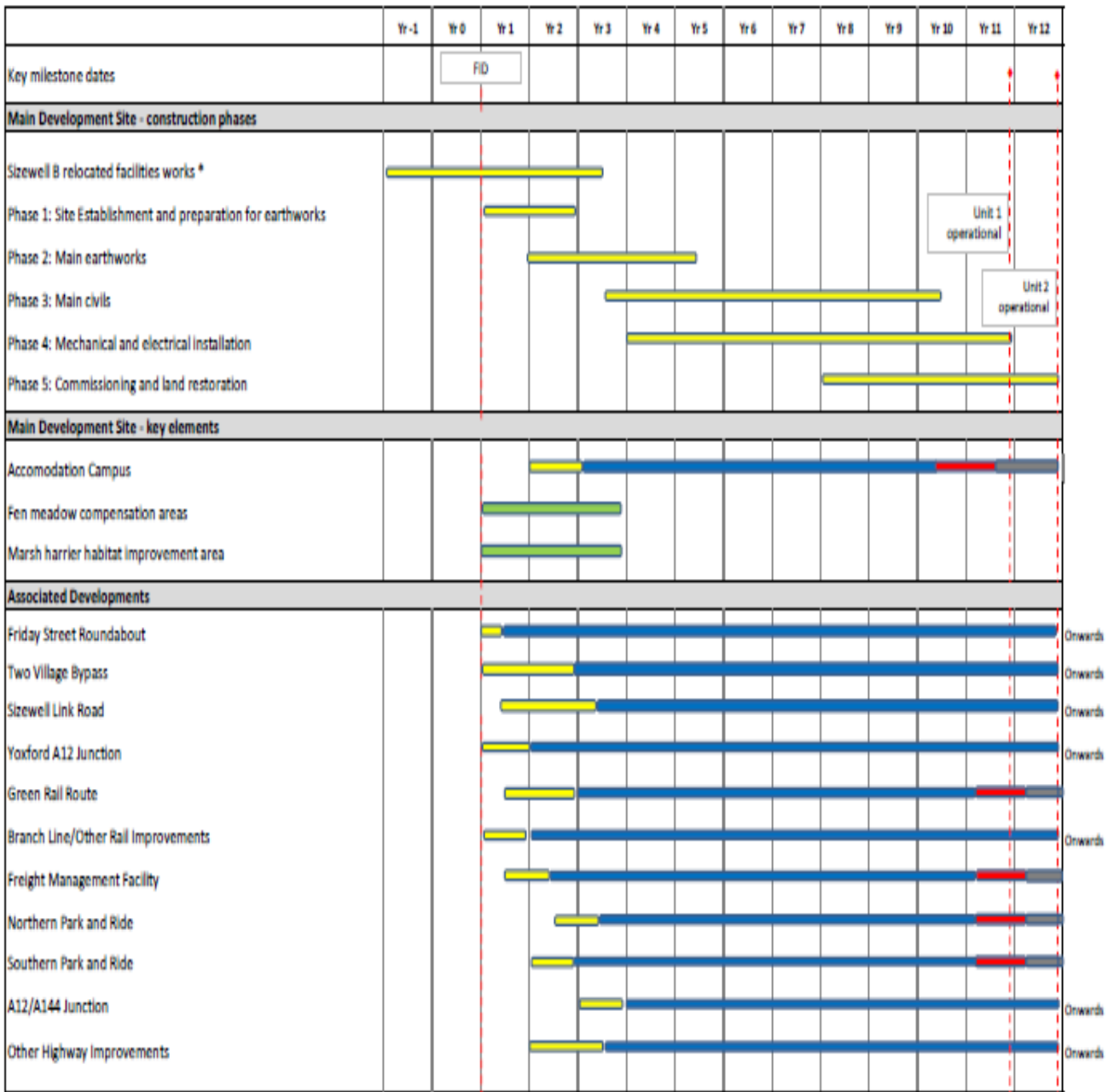
Some considerations for the SZC project

Notwithstanding the valuable learning from the HPC project for Sizewell C, there are a number of recommended considerations for the project governance and monitoring of the SZC construction stage including:

- The further substantial workforce uplift proposal for HPC begins to cast doubt on the SZC peak workforce prediction – is it too low?
- It would still be useful to see an overall construction stage-monitoring plan, bringing together KPIs/indicators for all socio-economic, traffic and environmental impact sectors, and setting out the organisational framework for collecting and reporting data.
- There does not seem to be any reference to an independent auditing of the findings from the proposed monitoring studies. As for the HPC project, and especially for the Sizewell B project, such auditing can provide a valuable check on findings and a neutral position between the various agencies involved in the project.
- All monitoring findings and any auditing activities should be publicly and efficiently available on local authority websites.
- It is also unclear whether some of the identified limitations of HPC monitoring will be adequately covered at SZC, for example relating to lack of disaggregated employment information, especially on local content by skill category and by disadvantaged and under-represented groups, and lack of disaggregated data on supply chain impacts at county and district level.
- The delayed triggering of some Associated Development projects for HPC (e.g. Bridgwater Campus, and Site Jetty) were cause of some impact issues. Hence, it is important to monitor closely the phasing of such key works. Figure 10.1 does helpfully provide an indicative phasing schedule for SZC AD projects.
- Should SZC be aiming higher still on some indicators—e.g. percentages of local apprenticeships, and female recruitment?
- Will the SZC project receive the same levels of education, skill and training initiatives and funding as HPC?

Figure 10.1: Indicative phasing schedule for SZC AD projects

Plate 1.1: Indicative phasing schedule



* It has been assumed that pre-FID works would be undertaken pursuant to planning permission reference DC/19/1637/FUL issued by East Suffolk Council

Construction
 Habitat establishment works
 Removal
 Operational
 Reinstatement

11. New Nuclear Technologies – the potential Local Impacts of Small Modular Reactors (SMRs)

11.1 Introduction and context

The topic of Small Modular Reactors (SMRs) as an important element in the future energy mix is not new and there has been interest for well over a decade. However, interest has accelerated over the last five years, perhaps partly due to some of the perceived problems with large reactors (LRs), including construction complexity, escalating costs, inflexibility to meet more specific needs/locations, long construction periods and local resistance. The approach here is to compare potential local impacts with those with which we are familiar with LR new builds. The study will also consider any implications of 2019 HPC Study 1 and current HPC Study 2 HPC monitoring findings and recommendations for future SMRs impact assessment and management.



*Figure 11.1:
Sketch of
prototype
Rolls Royce
SMR (Source:
Rolls Royce)*

11.2 Nature of SMR projects to consider in impact assessment

What is the MW output size? There is a general view that an SMR is up to 300MW although some are somewhat larger (e.g. current Rolls Royce design at 470 MW). Above that and up to 700MW they are more medium sized reactors. This compares with English new build LRs of 3200MW (2x1600). There is a view that many of the advantages of SMRs reduce when size increases into the medium range.

There are currently two main categories of SMR projects – those based on Gen III+ technologies, which are relatively close to commercial readiness and using a LWR (Light Water Reactor – predominantly a PWR, for example the Rolls Royce SMR PWR). The term advanced modular reactor (AMR) usually refers to a variety of Generation IV reactor technologies that are at an earlier stage of development using different coolants (e.g. sodium-cooled, heavy metal - cooled). The focus here is on the Gen III+ technologies. There are also developments in some parts of the world of marine-based floating and submersible power plants, with multiple reactors relocatable from one potential site to another. *Table 11.1* sets out some of the claimed advantages of SMRs compared with LRs that might affect a planning and assessment process. However, it is also important to note some of the potential disadvantages of SMRs compared with LRs as set out in *Table 11.2*.

Table 11.1: Claimed advantages of SMRs compared with LRs

- Modular off-site construction (RR argues c90% of their SMR power plant will be built or assembled in factory conditions, and around 80% could be delivered by a UK supply chain); also smaller construction infrastructure needed.
- Reduced upfront investment needs, reduced financial risk, more manageable capital costs (the RR-SMR is now targeting a delivery price of £40–60/MWh for its power station, a similar price to offshore wind generation); however, recent US figures suggest much higher rates of c£300 per MWh (BloombergNEF 2023).
- Flexibility for new markets, for example powering data processing hubs, desalination plants, green hydrogen, combined heat and power schemes, remote mining sites; and also old markets -- with the size of SMRs providing a greater opportunity to repower existing coal and natural gas stations as nuclear ones.
- Also more flexible re locations, for example on land and sea, in more remote locations but also closer to urban areas; not as tied to large water resources as LRs.
- Much smaller impact footprint (e.g RR design equivalent to 2 football pitches on a larger site of approx 12 acres) with smaller security zones, reduced offsite emergency planning zones (EPZ) etc; although may wish to include a larger site option to allow for series of connected SMRs.
- Because of smaller output, also fewer emissions (e.g. warm cooling water).
- The enhanced safety features of SMR designs provide assurance that there will not be significant adverse transboundary impacts, especially if situated far enough from the border.
- Possible partial underground construction, with safety advantages.
- Longer refuelling periods compared with LRs; in extremis, possible replacement of whole reactor.

Sources: IAEA (2020), OECD (2021), and AMRC (2022).

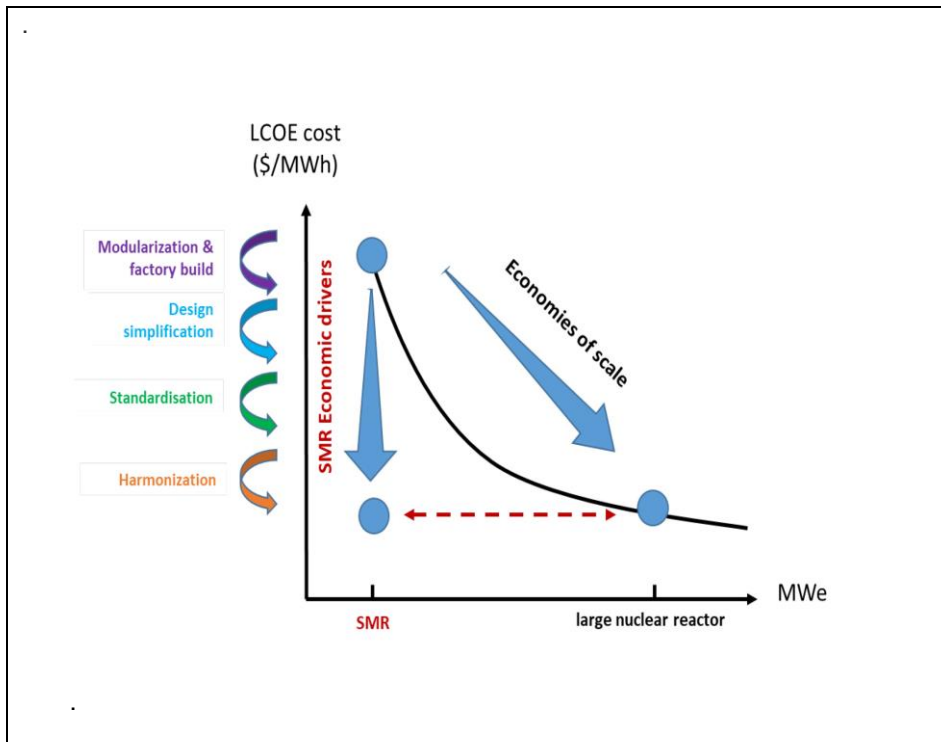
Table 11.2: Some potential disadvantages of SMRs compared with LRs

- Will not benefit from economies of scale of LRs, but might with series of linked SMRs—but then raises cumulative impact issues. Figure 11.2 sets out some of key drivers that may offset diseconomies of scale.
- More spread of waste fuel across more small sites.
- New designs may have teething problems.
- Need programme of several SMRs to reap production efficiencies, highlighting need for some stability of design and a more than national market.
- Need key economic drivers of design simplification, standardisation and modularisation, while maximising factory fabrication and minimising on-site construction, to reap economies of scale (see Fig 1).
- Modular construction likely to have considerable up-front engineering costs for First of a Kind (FOAK) SMR.
- Successful siting of SMR-based plants will require close attention to the preferences of host communities. The need to build on (i) the enhanced safety features of SMRs and (ii) on the opportunities for local and regional job creation such that SMRs are seen as attractive to local communities as large reactors will also be crucial to avoid negative issues.

Sources: as in Table 11.1.

A recent study (Institute for Energy Economics and Financial Analysis 2024) highlights some of these potential disadvantages. Drawing on experience of the only current SMR projects, two operational in Russia, one in China and one under construction in Argentina, the conclusion is they are expensive and slow to build, and overall risky propositions. Cost escalation has been of the order of 300-700% of the original cost estimates for these projects, and similar significant cost increases have occurred at proposed projects in the US. Similarly, three to four years planned construction periods have ballooned out to over thirteen years. Such overruns then increase the risk to the long run financial viability of such projects.

Figure 11.2: Key drivers to offset diseconomies of scale



11.3 Nature of possible localities

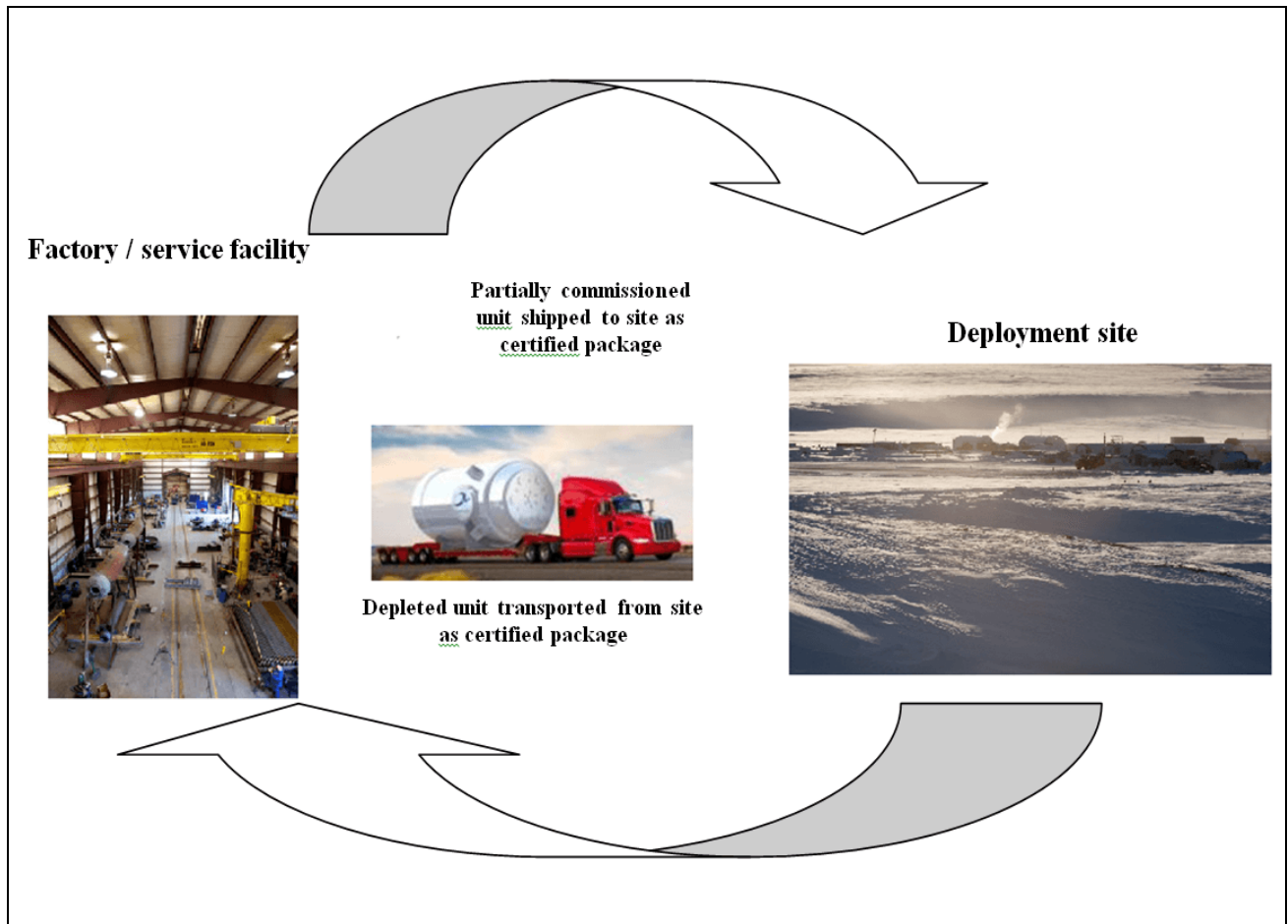
As noted above, SMRs are likely to be more flexible re locations, for example on land and sea, in more remote locations, but also closer to urban areas; not as tied to large water resources as LRs. There will also be links to fabrication facilities – as in Figure 11.3 below. Key elements in the SMR process include:

Deployment site: This is where the facility would be ultimately assembled and come into service. The site would likely have civil structures and supporting systems constructed in advance to support safe operation of the facility. The licensee then would procure reactor modules from the factory / service facility for installation at the site, and then oversee/perform commissioning activities before assuming operation of the facility. There would be regular refuelling of the reactor, or in some cases once the fuel in a reactor module is spent, a new reactor module would be delivered and placed into service. The spent reactor module may remain on the site for a period to cool before there is shipment back to the factory / service facility in a certified transport package.

Factory/service facility: The facility would receive reactor module sub-components from suppliers and assemble them, in a controlled environment, into a reactor module. In some cases of SMRs fresh fuel would then be loaded into the core, with limited commissioning and system integration testing done to confirm the module meets specifications and is ready for shipment.

Transport: This will likely involve the transport of substantial modular components. In some cases, it could include the physical movement of a pre-configured and fuelled reactor core and transport of a core's inventory of irradiated fuel.

Figure 11.3: Elements in SMR lifecycle



11.4 Comparative impact by type

Most impact literature has focused to date on risk and safety issues. There seems to have been little work on impacts, social acceptance, and community capacity issues (e.g. staffing and availability of qualified personnel), location challenges for operating a complex technology, and the potential for automation. Materials and manufacturing implications of SMRs appear more advanced than impact assessment and acceptability issues. The nature of environmental impacts originating from SMRs or LRs may not differ greatly, but it is likely that there will be differences in magnitude (Hanna et al, 2019, IAEA 2020).

- *Atmospheric and aquatic emissions:* the modularity of some SMR designs may result in lesser impacts to air and water quality during the construction phase. For the operational phase, the amount of environmental releases are expected to be roughly proportional to the generated power and size of the footprint and hence less than for LRs – unless there is a series of linked SMRs. Partial underground designs may have more implications for ground water layers.
- *Geology, hydrology and soil:* there are no key issues due to characteristics of an SMR that is based either on land or at sea that would differentiate it from a LR during the construction, operation or decommissioning project phase.

- *Terrestrial and aquatic wildlife and habitats*: includes impacts to wildlife through changes in air and water quality, physical disturbance etc. Likely to be largely related to project size in relation to comparisons with LRs. Terrestrial impacts are obviously less regarding sea based SMRs and vice versa.
- *Human health*: radiological and non-radiological issues are related to the nature of SMR designs and will be subject to the same level of regulation and monitoring as LRs. With more modular construction, there may be lower risk of construction site injuries.
- *Landscape and culture*: visual impacts may be proportionately lower than for LRs, and will vary if some undergrounding, or at sea. However, there will still be impacts of transmission lines.
- *Transport and traffic*: will vary between transport of loads and workers. For loads, modular deliveries may need some special infrastructure, especially if the site is remote. For workers, numbers are likely to be proportionately less for both construction because of off-site fabrication, and operation because of potential for more off-site maintenance.
- *Socio-economics*: following from previous transport point, there is likely to be proportionately less employment than for LRs during construction (because of modularity) and for operation (because of more off-site maintenance facilities). In addition, whilst there will still be a need for a range of construction jobs for local people, the scope for local employment may be proportionately less as some of the civil engineering construction employment, which normally provides more local job opportunities, may be internalised in off-site fabrication tasks. All this will have lower knock-on effects for other socio-economic impacts such as on workforce accommodation, health and other facilities. On the one hand, lesser impacts might be welcome locally; on the other hand lower local employment benefits may be less welcome. An exception to all this would be where SMR development was located in remote sites. Then any socio-economic impact could be locally very significant bringing not only the project and jobs, but also associated infrastructure to access the area – eg improved transport access.

11.5 EIA/regulatory regime

In the UK, there has been considerable recent activity on government funding support for SMR design initiatives, and on the regulatory (policy and project) impact assessment regime.

A FOAK SMR is likely to need public sector funding support, and there have been several UK initiatives. For example, in July 2019, the UK government committed £18m as part of the Industrial Strategy Challenge Fund to support the development of the UK SMR proposed by a Rolls-Royce-led consortium. In its 10-Point Plan for a Green Industrial Revolution released in November 2020, the UK government announced an additional £215m for the development of this domestic SMR design (S&P Global Platts, 2020). Already completed under Phase 1 are feasibility studies of 8 Generation IV (Gen IV) SMRs, and there are 3 designs selected for Phase 2, each will receive up to an additional £10m. Another possible £5m was available to regulators to support this initiative.

In March 2023, the UK budget announced funding for competition for SMR designs. By October 2023, the UK Dept for Energy Security and Net Zero had identified six companies to advance to the next phase of the SMR competition for innovative nuclear technologies (EDF, GE-Hitachi Nuclear Energy, International LLC, Holtec Britain Limited, NuScale Power, Rolls Royce SMR and Westinghouse Electric Company UK Limited). Five companies submitted bids in July 2024 and decisions on which designs to take forward are due by the new government by the end of summer 2024. The government's objective is to select technologies that offer the greatest confidence in being able to make a final investment decision in 2029 and be operational in the mid-2030s.

The UK government is also committed to streamline planning, environmental permitting and regulation to speed up new power stations, while maintaining its excellent regulatory framework. There is planning for a new nuclear NPS (EN7) in 2025. The government issued an initial consultation document in Jan 2024 -- A National Policy Statement for new nuclear power generation: Consultation on the new approach to siting beyond 2025 (UK Dept for Energy Security and Net Zero, 2024). This might provide the opportunity to include a more streamlined regulatory process and tests (e.g EN-6 lite) that could apply to SMRs and other advanced nuclear projects that are smaller in scale and impacts compared to the large Hinkley Point and Sizewell type LR projects. It may also lead to some opening up of more potential nuclear power locations. At present, new nuclear plants are limited to eight named sites. An opening up of locational criteria, with only population density and proximity to military activities absolutely ruling out development, would lead to a wider range of possible sites. However, this may also lead to locational challenges if key areas of, for example, natural beauty, ecological importance or cultural heritage, are potentially compromised by SMR development.

*Elsewhere in the world, for example in Canada in early 2021, the Canadian Nuclear Safety Commission began reviewing a company called Global First Power to build a nuclear reactor at the Chalk River Laboratories site about 200 kilometres NW of Ottawa. This project is an example of a small modular reactor. The Canadian government has exempted such small modular reactors from full federal environmental assessment under the *Impact Assessment Act*. Many civil society groups have condemned this decision because it allows SMRs to escape the public scrutiny of environmental, health and social impacts. The proposed new SMR in Chalk River, like the existing nuclear facilities, would be located on First Nation territory, which is raising major issues about lack of consultation.*

In the EU, a Press Release from the European Commission in Nov 23 announced the creation of an industrial alliance dedicated to accelerating the deployment of SMR technologies and ensuring a strong EU supply chain, including a skilled workforce. Earlier, in Aug 2023, Romania's nuclear regulatory commission issued an approval for a US NuScale Power SMR with a gross installed capacity of 462 MW.

11.6 Conclusions and cautions

SMRs do seem to have many advantages over LRs, and potentially there may be fewer local impacts. The UK government is putting considerable faith in their development over the next decade, partly as an alternative to the expensive LR projects. This involves funding support to reach an agreed design, plus ways to speed up the regulatory regime. However, as FOAK new projects, SMRs also face many challenges, indeed challenges similar to those of LRs in terms of escalating construction costs and timescales. At this stage, the future is uncertain. Hopefully, a standardised design outcome might soon help, but this is unlikely to be a quick fix to net zero, and renewables (especially on-and especially off - shore wind, and solar) will be very much needed to help deliver a timely energy transition.

12. New Nuclear Technologies – Fusion Projects

12.1 Introduction

What is fusion? Fusion is the process that takes place in the heart of stars and provides the power that drives the universe. When light nuclei fuse to form a heavier nucleus, they release bursts of energy. This is the opposite of nuclear fission – the reaction that is used in nuclear power stations today – in which energy is released when a nucleus splits apart to form smaller nuclei. To produce energy from fusion here on Earth, a combination of hydrogen gases – deuterium and tritium – are heated to very high temperatures (over 100 million degrees Celsius). The gas becomes a plasma, the nuclei combine to form a helium nucleus, and a neutron, with a tiny fraction of the mass converted into ‘fusion’ energy. A plasma with millions of these reactions every second can provide a huge amount of energy from very small amounts of fuel. One way to control the intensely hot plasma is to use powerful magnets. The most advanced device for this is the ‘tokamak’, a Russian word for a ring-shaped magnetic chamber.

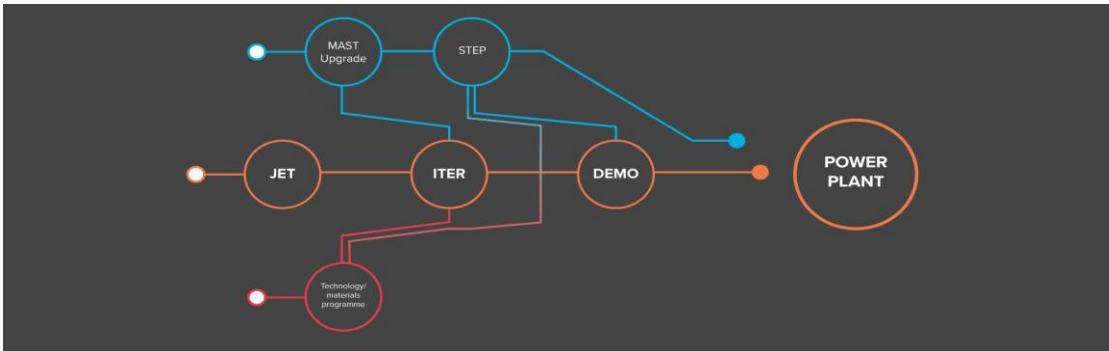
Advantages of fusion power. With increasing concerns over climate change and finite supplies of fossil fuels, we need new, better ways to meet our growing demand for energy. The benefits of fusion power make it an extremely attractive option:

1. *No carbon emissions.* The only by-products of fusion reactions are small amounts of helium, an inert gas that can be safely released without harming the environment.
2. *Abundant fuels.* Deuterium can be extracted from water and tritium will be produced inside the power station from lithium, an element abundant in the earth’s crust and seawater. Even with widespread adoption of fusion power stations, these fuel supplies would last for many thousands of years.
3. *Energy efficiency.* One kilogram of fusion fuel could provide the same amount of energy as 10 million kilograms of fossil fuel. A one Gigawatt fusion power station will need less than one tonne of fuel during a year’s operation.
4. *Less radioactive waste than fission.* There is no radioactive waste by-product from the fusion reaction. Only reactor components become radioactive; the level of activity depends on the structural materials used. Research is being carried out on suitable materials to minimise decay times as much as possible.
5. *Safety.* A large-scale nuclear accident is not possible in a fusion reactor. The amounts of fuel used in fusion devices are very small (about the weight of a postage stamp at any one time). Furthermore, as the fusion process is difficult to start and keep going, there is no risk of a runaway reaction which could lead to a meltdown.
6. *Reliable power.* Fusion power plants will be designed to produce a continuous supply of large amounts of electricity. Once established in the market, costs are predicted to be broadly similar to other energy sources.

12.2 Fusion in the UK and EU

The United Kingdom’s fusion research programme is based at the Culham Centre for Fusion Energy (CCFE) in Oxfordshire, the fusion research arm of the UK Atomic Energy Authority (UKAEA). The Joint European Torus (JET) research projects is funded by the Engineering and Physical Sciences Research Council (EPSRC) and by the European Union under the Euratom treaty. European fusion research is following a roadmap to achieve power generation around the middle of this century (Figure 12.1).

Figure 12.1: European fusion road map



Beyond JET, the programme focusses on four main projects:

- **ITER** – a large multinational tokamak being built in the south of France. ITER aims to produce 500 megawatts of fusion power and to be an important step towards demonstrating the viability of fusion on a commercial scale, but has suffered many delays and not likely to be fully operational until at least 2035.
- **A parallel technology programme** to develop and test robust materials that can withstand the harsh environment expected inside a fusion power plant.
- **DEMO** – the EU's demonstration power station design – that aims to supply fusion electricity to the grid around 2050.
- **STEP** – a new UK power plant design activity based on the compact 'spherical tokamak' reactor concept, which aims to deliver net electric power output on a timescale of 2040s.

Nuclear fusion has produced more energy than ever before in an experiment, bringing the world a step closer to the dream of limitless, clean power. The new world record was set at the UK-based JET laboratory. The experiments produced 69 mega joules of energy over five seconds. That is only enough energy for four to five hot baths - so not a lot. The JET facility was constructed in Culham in Oxford in the late 1970s and until the end of last year was the world's most advanced experimental fusion reactor. All experiments ceased in December 2023, and the future role of the UK in European fusion research has been unclear. Since Brexit, the UK has been locked out of the Euratom programme and last year the government made the decision not to re-join. Instead it said it would commit £650m to a national research programmes

12.3 Towards Fusion Energy October 2023: the next stage of the UK's fusion energy strategy – Department of Energy Security and Net Zero

In 2021, the UK published its first fusion energy strategy. This set out a vision for UK fusion that focussed not just on the UK's unique scientific and technical expertise, but also on commercialising that technology by developing a thriving UK fusion sector and collaborating internationally. The updated 2023 strategy gives details of the new programmes that will be put in place to secure the future of the UK fusion sector as part of Fusion Futures, the UK's alternative programme to Euratom R&T. It includes new capabilities, such as a new fusion fuel-cycle facility, enhanced support for fusion R&D and engineering firms, and dedicated funding to grow engineering and science skills. The three core areas of the Fusion Futures programme are:

Infrastructure

- Funding to develop further the UK's fusion cluster, providing infrastructure and facilities for fusion companies that want to be part of that growing community.
- Development of a new facility to support research and innovation in fusion fuels generation, to be used by public and private sector alike.

Skills

- Creation of a new Fusion Skills Centre that will work with universities, colleges and employers, to provide a pipeline of highly skilled scientists, engineers and technicians at all career levels, from apprentice to postdoctoral fellow.

Industrial and commercial opportunities

- An expansion of the Fusion Industry Programme providing a wider range of challenges across multiple technological approaches to fusion.
- The UK is open to finding new ways to collaborate and share expertise with ITER. Exploring the development of a UK fusion investment fund, working with potential investors to provide patient capital to the growing number of UK fusion firms and suppliers.

The Fusion Futures programme represents up to £650m of new investment, subject to business case approval, between now and 2027 on top of the existing fusion programmes. It sets out the evolution of the UK's approach to fusion energy. Having invested in creating a uniquely strong foundation in fusion R&D the government is now hoping to build the world's first fusion power plant in Nottinghamshire with operations beginning in the 2040s. A new nuclear body, the UK Industrial Fusion Solutions, will deliver the Spherical Tokamak for Energy Production (STEP) project.

The government shortlisted five sites for a prototype commercial nuclear fusion reactor plant and in late 2022 confirmed that it would be West Burton in Nottinghamshire. The site will replace West Burton A coal-fired station. The plant should be operational by the early 2040s, according to the UK Atomic Energy Authority (UKAEA), although there are still major technical and regulatory hurdles to overcome. It is difficult to speculate on likely local impacts. Compared to SMRs there may be more onsite construction and less scope initially for a modular approach, which could mean more opportunities for local and non-local employment impacts, but with associated impacts on transport, accommodation and other services. The location of the new national Fusion Skills Centre will also be significant. The lower radioactivity risk will have implications for site management. Nottinghamshire County Council see great potential for the future at West Burton: *“STEP will bring incredible benefits to the county and wider region, including millions, if not billions worth of investment, putting it at the heart of the government's plans to revolutionise the way we generate energy in the UK. The site will be the international hub for carbon-neutral, fusion development, attracting the brightest minds locally and from across the world, creating thousands of highly skilled jobs.”* (NCC Newsroom 20/10/23).

In May 2024, the Government issued a Consultation draft on a Fusion Energy National Planning Policy Statement (“FENPS”) (DESNEZ, 2024), to provide a policy framework for the subsequent assessment of an actual fusion power station proposal as an NSIP under the 2008 Planning Act. This will be a new bespoke FENPS for the sector alongside the existing suite of energy NPSs. The draft FENPS promotes an open site policy which allow developers to identify, shortlist, assess, select and promote those sites which are best placed to meet the technical requirements of the specific fusion technology selected and potential cluster, and co-location. The draft NPS sets out a whole host of factors for consideration when siting a fusion station including, for example: flood risk, population densities, transport infrastructure, grid connection, biodiversity net gain, climate change, groundwater, proximity to civil aircraft movements, military activities and hazardous waste, and sites of ecological importance, cultural heritage and landscape value. **However – a considerable weakness in the**

draft is the failure to consider socio-economic impacts in their many dimensions. As our research has shown, the consideration of such impacts is crucial for major energy projects. New fusion will be no exception; indeed, such impacts and public perceptions are likely to have a very high profile for such a new technology.

Figure 12.2: A draft illustration of a fusion prototype power station



© UK Government Atomic Energy Authority

13. Other Major Projects

13.1 Assessing and advising on the pipeline of major projects

Infrastructure and Planning Authority (IPA)

The IPA is part of the UK Cabinet Office and HM Treasury. It provides expertise in infrastructure financing, delivery and assurance of major projects to support more effective management and delivery across government. The IPA produces the National Infrastructure Delivery Plan (NIDP); this includes major infrastructure and construction schemes funded by the public and private sectors that exceed certain capital thresholds. It collates data from multiple sources to form the pipeline including the public sector, private sector and regulators. The pipeline is mainly for England and does not include devolved spending in Scotland, Wales and Northern Ireland and by Local Authorities. The 2023 pipeline included £379bn of planned investment, £164bn of which is scheduled to occur by 2024/25. Future government Spending Reviews will determine longer-term public investment, where it is not already committed. To enable the construction industry to have confidence in longer term strategic planning, the IPA uses data from previous years and its own assessment of current trends to provide a 10-year pipeline projection including planned and forecast spend. For the 2023 pipeline, this amounted to an estimated £700-775 bn. Despite the apparent strength of the planned pipeline, there is a challenging environment for infrastructure projects with a major growth in construction material prices of over 40% between 2020 and 2023, driven primarily by Russia's invasion of Ukraine and the COVID pandemic.

Delivery of the pipeline requires a significant workforce with the right skills and experience and IPA's assessment is that availability of labour, especially in relation to specific skills, is essential. Improving

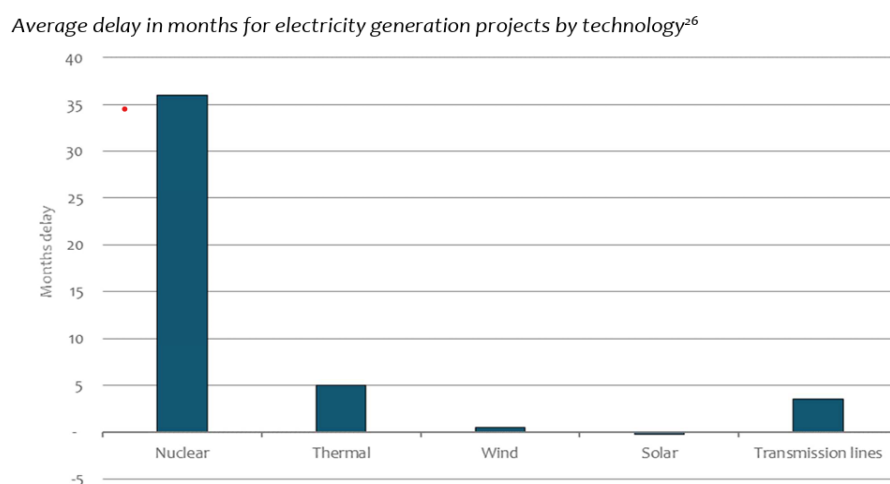
productivity will be an important factor to help manage delivery. The focus on sustainability, innovation and productivity is more important than ever given the highly challenging economic and delivery environment, impacts of climate change and the drive to Net Zero. IPA's flagship programme *Transforming Infrastructure Performance (TIP)* is reforming the design and delivery of government's infrastructure projects -- drawing a direct line between citizen benefits and impact on the built and natural environments. This step change in performance will be supported through application of the *Construction Playbook* (HMG 2022) provisions, project data analytics, modern construction methods including platform delivery, and other approaches that deliver greater sustainability and efficiency. IPA intends to embed TIP practices as Business as Usual by 2025.

National Infrastructure Commission (NIC)

The NIC provides the UK government with impartial, expert advice on major long-term infrastructure challenges, with the aims of supporting sustainable economic growth across all regions of the UK; improving competitiveness; and improving quality of life. The NIC produces a National Infrastructure Assessment once in every Parliament, setting out its assessment of long-term infrastructure needs with recommendations to the government. It also provides In-depth studies into the UK's most pressing infrastructure challenges, making recommendations to the government and monitors the government's progress in delivering infrastructure projects and programmes recommended by the NIC.

In July 2021, the government asked NIC for advice on whether an additional new nuclear plant, beyond Sizewell C project, was needed to deliver the sixth Carbon Budget. The NIC concluded that such a new plant was not necessary to achieve the rapid deployment of new low carbon capacity over the next 15 years. As noted in this report on HPC, nuclear projects are megaprojects; they take a long time to build and are highly complex. Moreover, because of the correlation between size of project and cost and delivery overruns nuclear projects often face the greatest challenges of all megaprojects. The median overrun for a PWR is 40%. Nuclear projects also face longer delays than other power projects globally. Having highly technical project needs, stringent regulatory requirements and public opposition are key contributors to nuclear time and cost overruns (Figure 13.1).

Figure 13.1: Average delays in types of energy projects



Note: Data for the chart is based on 401 electricity projects from around the world installed between 1936 and 2014.

Most electricity projects deliver more reliably than nuclear and the likelihood of a nuclear project delivery on time is not increasing. Since 1990, nuclear projects have faced significant delays all around the world. Even just in Europe, around half of all plants have faced at least a 50% delay in construction, and 1 in 4 plants have faced at least a 90% delay in construction. Notwithstanding such trends, the last and current UK governments are planning to build more nuclear reactors than comparable countries and committing to a third new large scale plant would make the UK a notable outlier. This raises the issue as to whether reform of the planning and assessment regulatory regime could help.

13.2 Potential reforms to the Nationally Significant Infrastructure Projects (NSIPs) regime

The NSIP process, introduced under the 2008 Planning Act, has been very successful, in many respects, in delivering decisions on a wide range of major projects, with energy projects being the largest group. However, over time there has been growing concern that the regime is in need of reform. Environmental Statements (ESs) have become voluminous, as have the number of issues examined in the process. Pre-application consultation has grown in length, government reviews of recommendations have also taken longer and there are more challenges to decisions. In addition, there has been increasing concern that the various sector policy frameworks set out in the National Planning Policy Statements (NPPs) are out of date. The government is taking steps to address wider systemic issues by updating and simplifying National Policy Statements, improving pre-application advice, building greater capability in planning authorities and the Planning Inspectorate and simplifying processes, including through introducing a “fast track” planning route for some infrastructure projects. More projects may also be included in the NSIPs regime under possible reforms by the new Labour Government, including perhaps major housing developments and onshore wind.

Additionally to such reforms, we should be learning from experience of what causes delays in project construction, and mismatches between project construction predictions and outcomes in practice. This has been the focus of this HPC research. The delivery of a decision on a project is only one-step on the road. In the spirit of adaptive assessment and management, monitoring and auditing of impacts are essential, and can lead to management responses that can speed up infrastructure delivery. This is relevant to all major projects and is discussed further in the final section of this report.

14. Overall Conclusions – Findings and Recommendations

14.1 Review of implementation of HPC Study 1 recommendations

The review of follow-up on the 2019 HPC Study 1 recommendations covers both gaps in the HPC monitoring organisation and in data sources. In summary, there is continuing good availability and continuity of data on many key impacts of the HPC project primarily through EDFE reporting via SEAG and TRG, and through the various community fora. However, on some 2019 recommendations progress appears more mixed. For example whilst there appears to be some progress on the organisation of the monitoring of accommodation and environmental monitoring, there is still little publicly available environmental data. There are also continuing limitations on the availability of disaggregated employment information from the six-monthly Workforce Surveys. Administrative

issues, including the reorganisation of the Somerset authorities, initially delayed the public availability of data, but these now appear to be largely resolved.

14.2 Refresh of HPC Sector Impacts for HPC Peak Construction

This is the main section of the report. The refresh of the HPC Sector Impact Indicators uses the same three- step approach as in the early construction impacts HPC Study 1: impact identification, assembly of monitoring information for key indicators/KPIs and auditing of findings against targets. As for the initial 2019 HPC Study 1, this new peak construction study is also based on information and data that is already or can be made publicly available, to maximise its credibility and to allow NNLAG to make the study publicly available and utilise it as evidence in support of consultation responses/ evidence at examination for other projects. The main sources of such data for the refresh are again the quarterly reports of SEAG and TRG, plus the Minutes of the various community fora (Community, Site and Transport). The peak construction period to date, as defined by workforce numbers was the 2023-2024 period, although the peak is likely to run for longer, and probably even higher, for several more years. As for the first study, the main spatial scope of the local impacts assessment is the 90 minutes commuting time CDCZ (Construction Development Commuting Zone), and various local authority areas – although the various Somerset districts merged in the April 2023 reorganisation into Somerset Council.

An additional complexity to this study has been a major review, 2019-2022, by EDFE of the likely size of the peak construction workforce and associated socio-economic indicators (Uplift 1). This revealed that in order to maintain safety and quality standards and the construction programme, there was a need to increase the peak number of workers on site from 5,600 to 8,600. EDFE produced a set of six Uplift Topic Papers, covering the various sectors, to assess the local impacts of this uplift. The various uplift papers are built into each of the report's sector refresh study; in some cases, there are revised indicator targets. There was a further complexity in 2024 with work by EDF on another uplift plan (Uplift 2) that is likely to increase peak employment to over 12,000, with additional mitigations on the anticipated changes in accommodation, transport, health and other impacts. The detailed papers underpinning Uplift 2 were not publicly available at the time of this report and there is only limited coverage of possible impact implications.

The audited findings of the 2023-2024 peak period impacts have a similar overall pattern to those of the early construction stage, but with some changes of note as follows:

- *Economic Development:* good performance against many indicators including local employment content, training and education, apprenticeships, jobs brokerage, local supply chain inputs and tourism. Mitigation and enhancement measures also appear to be working well, including the very significant maintaining of the local content percentage as total numbers rise fast. Yet, on the other hand, the Uplift 1 construction totals are badly out after only a very short period after the new predictions.
- *Accommodation:* findings on the spatial distribution of both NHB and HB workforce appear improved against predictions, compared with the early construction stage. There is still some skew in the tenure mix towards PRS, but the increase in campus provision has been significant. The housing support strategy, and the resultant delivery of bedspaces, appear to be working well.
- *Social and Community:* continuation of good performance against many of the impact indicators. For health, the staffing growth of the on-site Medical Campus has supported well the growth in workforce. For community safety, mitigation measures, including the Worker's Code of Conduct appear to be working well in controlling crime, relative to workforce numbers. There are some possible issues with schoolchildren numbers becoming much higher than the original predictions.

- *Transport*: There is a continuation into the peak period of good performance against predictions for many transport indicators, including workforce journey by bus to the main site, and the freight Delivery Management System. More mitigation measures, including the jetty and more P&R sites, are also now in place. Less positively, the car share system to P&R sites continues to be less effective than predicted, and there is the continuing issue of fly parking.
- *Biophysical and Environmental Health*: It is good to see a new set of KPIs to be reported to a new Environmental Monitoring Group. However, as for the earlier study, the topics addressed in this section still lack the detailed publicly available impact data to complete an audit. It must be assumed that HPC environmental impacts are well regulated with monitoring mainly related to any exceedances of standards and thresholds. However, there may be a need for additional monitoring in relation to potential impacts of a currently proposed material change.

A number of factors influence such findings, some positively, others less so, as briefly noted here:

- *Positive factors* include the implementation of the transformational array of skill training measures, accommodation campus developments (including the Medical Centre), P&R and the site bus service, Workers Code of Conduct and community safety initiatives, and the implementation of many management plans and EDFE funding initiatives (including for housing and community impact mitigation).
- *Factors that are more negative* include the failure of Uplift 1 to anticipate the scale of the overlap between the Civils and Mechanical and Electrical phases of construction and the MEH worker requirements for future years. Monitoring and reporting of some impacts, especially some disaggregated workforce details and environmental impacts are sparse. The definitions of some indicators, especially ‘*what is a worker*’, has been under debate.

14.3 Relevance for Other Studies

Sizewell C and other NNB

The Suffolk local authorities’ Local Impact Report made particularly good use of the findings of the 2019 HPC Study 1 as a basis for supporting arguments in the SZC examination and in recommendations and conditions in the SZC DCO. The Examining Authority also noted the importance of impacts monitoring for the SZC project, as developed in the DCO Requirements and Conditions, in various project construction Management Plans, and in the Planning Statement. These include, for example, referencing to the monitoring organisation, including the establishment of the SEAG and its various sub-groups, and to the key regular Workforce Surveys. Both the early study and this current study raise further considerations for the project governance and monitoring of the SZC construction stage, such as: the need to revisit the SZC peak workforce predictions and to clarify the nature of an overall construction stage-monitoring plan. Others for example include the scope for independent auditing of project impacts; and the level of target for some indicators (e.g aiming higher still on local apprenticeships, female employment and skill training provision). Such findings are also relevant for other NNB, which may initially be for Wylfa on Anglesey.

Small Modular Reactors (SMRs)

There is considerable interest in SMRs as part of the future UK energy mix, and as a possible complement and/or substitute for large nuclear reactors (LRs) such as HPC and SZC. They have many claimed advantages, but also potential disadvantages compared with LR. A standardised design outcome will help progress, and offset some cost/time and risk concerns, although this is

unlikely to be a quick fix to net zero. Renewables (especially on - and off - shore wind, and solar) will be very much needed to help deliver a timely energy transition. Most impact literature on SMRs has focused to date on risk and safety issues. There seems to have been little work on other impacts, social acceptance, and community capacity issues. Whilst the nature of environmental impacts originating from SMRs or LR projects may not differ greatly, and our findings are relevant, it is likely that there will be differences in magnitude. UK government consultation on new nuclear NPSs beyond 2025 might provide the opportunity to include a more streamlined regulatory process and tests (e.g EN-6 lite) that could apply to SMRs and other advanced nuclear projects that are smaller in scale and impacts compared to the LR projects. It may also lead to some opening up of more potential nuclear power locations from the present eight named sites, but this should not weaken the consideration of essential biophysical and socio-economic impacts considerations.

Nuclear Fusion Projects

Operational nuclear fusion power station projects are much further in the distance in terms of contributing to the UK energy mix. However, the UK government is committed to building on the pioneering JET project research and in its latest 2023 strategy has set out a vision for UK fusion that is focussed not just on the UK's unique scientific and technical expertise, but also on commercialising that technology by developing a thriving UK fusion sector. The government has chosen West Burton in Nottinghamshire as the initial fusion power site. The government is also consulting on an NPS for fusion energy. The draft FENPS promotes an open site policy that allows developers to identify, shortlist, assess, select and promote those sites which are best placed to meet the technical requirements of the specific fusion technology selected. It sets out a whole host of factors for consideration when siting a fusion station including, for example: flood risk, population densities, transport infrastructure and grid connection, but it currently fails to consider socio-economic impacts. As our research has shown, the consideration of such impacts is crucial for major energy projects, and new fusion will not be an exception.

14.4 Generic recommendations

These generic recommendations focus on the theme of this research -- that for an effective and efficient adaptive approach to impact assessment, good monitoring of actual impacts and auditing of these against predicted impacts are essential. Flowing from this, the research report recommends:

Preliminaries

- A monitoring and auditing framework covering key socio-economic and biophysical indicators should be an integral, clear and easily identifiable element in each of the project Environmental Statement, Development Consent Order and in S106 agreements (as appropriate).
- In addition to covering socio-economic and biophysical impacts, it should cover key stages in the lifecycle of the project, and not just focus on peak construction.
- A clear set of KPIs agreed pre-application (primarily between the developer and local authorities) and easily located in the documentation, provide the essential first step to monitoring and auditing. It is important that key definitional questions, such as 'what is a worker,' are addressed at an early stage.

Responsibilities

- Monitoring is a prime responsibility of the developer, in association with the local authorities, the community, and other relevant agencies and formal data sharing agreements are recommended.

- Quantitative data should be collected on a consistent basis; there is a need to avoid potential bias in content from proponent–led data, and use should be made of community stakeholder knowledge and opinions, which may be qualitative in content.
- An independent body preferably provides the auditing of the monitoring information against predictions. Such auditing can provide a valuable check on findings and a neutral position between the various agencies involved in the project.

Managing and resourcing

- All monitoring and auditing information should be publicly available, and ‘published’ on a regular basis in an agreed online format based on the initial monitoring and auditing framework. Annual Monitoring and Auditing reports are recommended.
- A rigorous approach to monitoring and auditing, involving primary information collection, can be resource intensive. A monitoring light and proportionate approach, using publicly available data and focusing on significant impacts, as in this latest HPC study, can provide a useful way forward, given developer and local authority co-operation.
- Findings from monitoring and auditing can provide the building blocks for any additional impact mitigation and enhancement measures, and updating of predictions in an adaptive assessment and management approach.
- Monitoring and auditing reports provide a vital resource for future major project developments in all their various sectors. There should be a repository for such reports (PINs re NSIPs—although recent activity not encouraging?)

References

- Canadian Nuclear Safety Commission (2016). *SMRs: Regulatory Strategy Approaches and Challenges* DIS 16-04. Ottawa: CNSC.
- DESNEZ, 2024. *Consultation draft on a Fusion Energy National Planning Policy Statement ("FENPS")*. London: HMG DESNEZ.
- EDF (2011). *Hinkley Point C Environmental Statement (ES)*. EDF.
- EDF (2020). *The Sizewell C Environmental Statement (ES)*. EDF.
- EDF (2022). *HPC Socio-economic Impact Report 2021*. London: NNB Generation Company (HPC) Ltd.
- EDF (2023.) *HPC Socio-economic Impact Report 2022*. London: NNB Generation Company (HPC) Ltd.
- EDF (2024) *HPC Socio-economic Impact Report 2023*. London: NNB Generation Company (HPC) Ltd.
- EDF HPC Community Fund (2022; 20223). *Annual Reports 2021/22, 2022/23*.
- EDFE (2022). *Hinkley Point C: Uplift 1 Papers: Workforce Uplift Topic Papers—Workforce Development; Spatial Distribution Note; Accommodation; Transport; Health; Community Safety; and Environment*. EDF.
- EDFE (2024). *Presentation to Community Forum*. EDFE.
- Environment Agency (2024). *Environment Agency response to Hinkley Point C Development Consent Order Material Change consultation*. Bristol: EA.
- Glasson, J (2005). 'Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station'. *Impact Assessment and Project Appraisal (IAPA)*, 23, 3, 215-226.
- Glasson. J and A, Chadwick (1995). *The Local Socio-Economic Impacts of the Sizewell B PWR Power Station Construction Project (1987-1995)*. IAU Oxford Brookes University.
- Hanna et al (2019). An analysis of the state of impact assessment research for low carbon power production: Building a better understanding of information and knowledge gaps. *Energy Research and Social Science*, (50), 116-128.
- Health Task and Finish Group (HTFG) Somerset Partnership (2023). *Supplementary Data 2023*.
- HMG (2022) *Construction Playbook: Government Guidance on sourcing and contracting public works projects and programmes*. London: HMG
- IAU/NNLAG (2019). *Study on the impacts of the early stage construction of the Hinkley Point C (HPC) Nuclear Power Station: Monitoring and Auditing Study Final Report*. Oxford Brookes University: Impact Assessment Unit.
- Institute for Energy Economics and Financial Analysis (2024). *SMRs: Still Too Expensive, Too Slow and Too Risky*.
- International Atomic Energy Agency (IAEA) (20200, *Considerations for EIA for SMRs*. Vienna: IAEA.

IPA (2024). Analysis of the National Infrastructure and Construction Pipeline 2023.

NIC (2021). National Infrastructure Commission advice to HMG on nuclear power plant deployment.

National Infrastructure Projects Association (NIPA) (2019). *Towards a Flexibility Toolkit: Supporting the Delivery of Better National Infrastructure Projects*. London: NIPA Insights Project Board

NNB Generation Company HPC (March 2022). *The Supplemental Agreement to the HPC s106*.

Nuclear AMRC (2022). *Small Modular Reactors*. Catapult/ Univ. of Sheffield.

OECD (2021), *Small Modular Reactors: Challenges and Opportunities*. Paris: Nuclear Development, OECD Publishing.

ONS Annual Population Survey (2022). *Personal wellbeing at LA level*.

Planning Inspectorate (PINS) (2022). *Sizewell C: Development Consent Order (DCO) Conditions and Requirements*.

Policy Options (2022). *Decolonising energy and the nuclear narrative of SMRs*, Feb 7 2022.

Qa Research (2023). *Survey of impact of HPC on Somerset tourism (2023)*.

Sedgemoor District Council (SDC). *Community Safety Report 2021*. Bridgwater: SDC.

Somerset Intelligence (2021). *English Indices of Deprivation 2019 Somerset Summary*. Taunton: Somerset Council.

Suffolk Councils (2020). *Sizewell C Local Impact Report (LIR)*. Ipswich: East Suffolk Council and Suffolk County Council.

UK Dept for Energy Security and Net Zero (DESNEZ) (2023). *Towards Fusion Energy 2023 -- the next stage of the UK's fusion energy strategy*.

UK Dept for Energy Security and Net Zero (DESNEZ) (2024). *A National Policy Statement for new nuclear power generation: Consultation on the new approach to siting beyond*. London: HMG DESNEZ.

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