Study on the impacts of the early stage construction of the Hinkley Point C (HPC) Nuclear Power Station

Monitoring and Auditing Study Final Report

Commissioned by the New Nuclear Local Authorities Group (NNLAG)

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Contents

Foreword

The New Nuclear Local Authorities Group (NNLAG) is delighted to present this study on the impacts of the early stages of construction of the Hinkley Point C (HPC) Nuclear Power Station.

NNLAG is a Local Government Association (LGA) Special Interest Group, consisting of fifteen Local Authorities from across the UK that already host or are likely to host nuclear new build projects. NNLAG's purpose is for local authorities to share knowledge, information and best practice regarding new nuclear, and to provide a mechanism for local authorities, as elected representatives of local areas, to discuss and make representations direct to Government regarding the development of new nuclear and of nuclear-related connection/transmission projects. NNLAG's member local authorities are: Allerdale Borough Council, Isle of Anglesey County Council, Copeland Borough Council, Cumbria County Council, Essex County Council, Lancashire County Council, Lancaster City Council, Maldon District Council, Sedgemoor District Council, Shepway District Council, Somerset County Council, South Gloucestershire Council, East Suffolk Council, Suffolk County Council, and Somerset West & Taunton Council. We jointly commissioned this independent study to better understand and plan for New Nuclear Build in our areas.

The Hinkley Point C (HPC) development has been under construction since 2012 and is therefore the best opportunity to learn about the scale, nature and extent of the likely impacts of nuclear new builds, and to gather both quantitative and qualitative evidence of the impact in practice.

Learning from Hinkley Point C provides vital information for the new nuclear sites that follow on. This study will help local government and other stakeholders to work with the developers to plan for and implement their projects in a way that benefits are maximised and negative impacts are minimised, to the advantage of all parties. Whilst it cannot be assumed that all the learning points from Hinkley Point C will apply to each future new nuclear project, it provides a useful starting point that should help the parties to develop effective solutions and maximise the opportunities for host communities, the local economy, the environment and for developers.

To support the continued development of best practice, further reviews are proposed as the project progresses.

Although the focus of this important study is related to nuclear new build projects, its results are also likely to be relevant and of interest to host communities and developers of other large scale Nationally Significant Infrastructure Projects.

Cllr Carwyn Jones, Isle of Anglesey County Council, Chair of the New Nuclear Local Authorities Group, September 2019

This study was jointly funded by: Copeland District Council, Cumbria County Council, East Suffolk Council, Essex County Council, Maldon District Council, Suffolk County Council, and South Gloucestershire Council.

Executive Summary

The aims of the study are to*:*

- Understand and document actual impacts of NNB in the community and on the environment, using the early construction years of HPC.
- Focus on how actual impacts compare with predictions as part of the Environmental Statement (ES) and Development Consent Order (DCO) process.
- Explain unforeseen events and how they can be managed, with recommendations on better planning and assessment processes for future projects.

It is important to learn from the actual experience of NNB construction and operation. Resources spent on baseline studies and predictions may be of little value unless there is some way of testing the predictions and determining whether mitigation and enhancement measures are appropriately applied. Such learning involves both *impact monitoring* (the identification and measurement of actual impacts) and *impact auditing* (the comparison of actual with predicted impacts). It is of great value both for the more effective management of current projects, and for future consents and licences.

Timing of the study: the study was undertaken by the Impacts Assessment Unit (IAU) of Oxford Brookes University for the New Nuclear Local Authorities Group (NNLAG) between December 2018 and July 2019. It covers the first two and half years of a ten year construction programme, and is before peak construction.

The research involved a series of stages: setting the research approach, monitoring and auditing impacts across six socio-economic and biophysical sectors, undertaking contextual studies, and drawing overall conclusions, with identification of data and monitoring gaps, and making recommendations for future practice - both for stakeholders involved in NNB generally and, more specifically, for the next phases of the HPC construction programme. The IAU team wish to acknowledge the support of the NNLAG Steering Group, especially in reading and advising on draft Working Papers, and the officers from the Somerset Local Authorities (especially Sedgemoor DC) and from EDFE (Hinkley Point C) who have helped to identify and interpret various data sources.

The sector studies have three main steps:

- *Identifying* - clarifying strategic issues and obligations; indicators and KPIs; and key data sources, drawing in particular on the HPC project ES/DCO, s106 and the local authorities' LIR.
- *Monitoring* - establishing findings, key indicator trends and events over the main construction stage to date, drawing on *publicly available information* (as required in the research brief).
- *Auditing* - assessing degree of accuracy of monitoring findings against predictions; explanations of any differences; gaps in monitoring and future proposals.

Brief contextual studies include:

- A review of the effectiveness of the monitoring structures and procedures put in place for the HPC construction project, and their operation in practice from various stakeholder perspectives.

- Three comparative studies which provide additional intelligence on the organisation of monitoring and auditing of project impacts, and contributions to recommendations for improved practice. The chosen studies are: London 2012 Olympics project – legacy; Crossrail – construction nearing completion; and Wylfa Newydd – examination completed.

The public availability of a flow of accurate monitoring data is the key to the auditability of predictions of the impacts of HPC construction. The research found the most adequate monitoring information for the transport, social and community impacts sectors and for much of the economic development sector. There is more fragmented monitoring information for the accommodation sector, and publicly available information is sparse for many of the impact indicators in the environmental health and biophysical environment sectors. As such, in several cases, the available monitoring data proved inadequate to audit ES predictions and DCO/S106 requirements and obligations.

A summary of the accuracy of predictions for the various sectors, as far as is possible from the publicly available monitoring data, is set out in Table 1. The table compares HPC sectors actual impacts against predicted impact. These are crudely summarised using a very simple colour audit (RAG system) for each indicator, ranging from Dark Green (very accurate/compliant), to Dark Red (very inaccurate/non-compliant). A blue box indicates No Information Available/Auditing Not Possible at the time of the study. In some cases the assessment is split to reflect a mix of outcomes to date.

G	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)

Table 1: Audit summary -- of HPC sectors actual impacts against predicted impacts

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***	
Economic development	At the current, pre-peak phase, the project is performing 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. However, there is some debate about the actual level of total workforce numbers, set against predictions, about disaggregated employment impacts (eg skills analysis for HB and Non Home-based (NHB) workforce, opportunities for various disadvantaged or under-represented groups), and long-term sustainability implications.	LG	A

Transport	There is also current 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, the car share system, in place in relation to worker journeys to the P&R sites, has not been as effective as expected, and there was the unexpected issue of fly parking. However, better management appears to be now in hand for both issues. Delays in the delivery of key transport infrastructure, including the jetty and P&R sites, meant that there were more issues in the early stages of the project.	LG	A
Social and community	Overall, there is good performance against a number of the impact indicators. For health, the early provision of the on-site 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, including the implementation of the Worker's Code of Conduct, and some resourcing has been provided towards community liaison and policing. EDF have also provided resources towards emergency services impacts, and project impacts have been limited. 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.	LG	
Accommodation	Assessment of accommodation actuals against predictions is complicated by differing views of predictions and accommodation type definitions, and especially by most predictions being for peak employment (with all campuses assumed then operating at/near capacity). Actual locations of NHB workers are more concentrated in Sedgemoor (esp. Bridgwater) than predicted, and more in the Private Rented Sector (PRS) tenure category. Where there is data, there does seem to have been some useful housing support initiatives. 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 on homelessness in Somerset.	A	
Environmental health	Unlike the socio-economic impacts, 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 team found little publicly available information to confirm this, other than a relatively low level of local complaints. It is unclear how data is being collated between the parties involved (Councils, EDFE, and EA) and if the sum of these add up to more significant impacts on the public. Routes for public complaints are unclear and not conducive to gain public involvement or trust. Overall, there is a split colour summary between amber (mixed adequacy) and blue (no information).	A	B

Biophysical environment	The key biophysical environmental issues identified are landscape and visual amenity concerns and mitigation measures; archaeological and heritage issues; impacts on local terrestrial, coastal and marine ecology; and flood risk issues. Management plans exist for these topics (eg EcMMP) and it is assumed that mitigation and monitoring work is in hand. However, currently, all the biophysical environmental impact topics addressed in this report have a blue flag, which indicates that information is not publicly available or has not been located to date to complete an audit. As with environmental health, there appears to be a split regarding storage of information and responsibility for monitoring.	B

The explanation of findings and differences between actual and predicted impacts raises a number of positive and negative factors influencing impacts *at this early stage in the ten year construction programme:*

- There are many *positive findings*, often resulting from the effective implementation of mitigation and enhancement measures. They include the transformational skills, training and education provision; the on–site campus with its Medical Centre; the Workers Code of Conduct and community safety initiatives; the provision of Park and Ride facilities, the Cannington Bypass, and the bus to site system; plus a whole array of management plans and, primarily EDFE, funding initiatives.
- *Factors behind some of the more negative findings* include the time delays in commencement of the construction project; project modifications; changes in baseline conditions; 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. Finally, there are also the challenges faced by a major UK NNB project with no recent UK comparators.

The research **identified some gaps** both in organisation and process, and in specific data sets. Examples of the former include: the absence in several sectors of clear KPIs, for consistent monitoring; the lack of a robust approach in the DCO examination process to clarify requirements for monitoring and publicly reporting performance; and failure during the construction stage to make full use of the Construction Workforce Survey as a key resource for monitoring socio-economic impacts. Examples of gaps in data sets include: fragmented monitoring data, with unclear targets, on accommodation impacts; and major absence of publicly available information on environmental health and biophysical environmental impacts.

As a result of the study, generic recommendations for future NNB developments have been developed. These are structured by stage in the assessment and development process, and by stakeholder. Examples for particular stakeholders include:

Primarily for developer (but with local authority involvement as appropriate):

- Include a *Monitoring Chapter* in the ES, referenced as a DCO requirement, which brings together the key indicators/KPIs across all the socio-economic and biophysical topic areas, and which can provide the *Template* for subsequent monitoring and auditing over the project lifecycle, and the basis for a *Central Repository* of monitoring data for the project.
- Produce a publicly available *Annual Impacts Monitoring and Auditing Report.*

- *A*lso have a project *Monitoring Website*, with public access, identifying responsibilities for and frequency of monitoring, commitments to timeframes for publication for each indicator/target, and to which members of the public can report their concerns on project performance back to the developer and LAs.

Examining Authority:

- Adopt a robust approach in the DCO examination process to clarify requirements for monitoring and public reporting of actual performance against a full set of socio-economic and environmental health/ biophysical indicators/KPIs.
- Ensure that there are clear 'trigger points' in the DCO in relation to completion of associated developments, and that predictions contain longitudinal timelines, showing predicted evolution of impacts over key phases of the construction stage, and into full operation.

Other:

- There should be provision in the monitoring and auditing organisation for independent analysis and verification of information, which would enhance the credibility of the monitoring and auditing process.

Specific recommendations for a refresh of the monitoring and auditing of the ongoing HPC construction project include, for example:

- Review the operational effectiveness of the various monitoring groups feeding especially into the SEAG, as recently undertaken for employment impacts.
- Make the full findings of the revised Workforce Survey available to the Socio-Economic Advisory Group (SEAG) to underpin better the auditing of many socio-economic impacts. 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.
- Accommodation impacts 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.
- 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 fund effectively responding to project impacts on local wellbeing?
- Environmental health and biophysical environmental impacts data collected by various stakeholders should be publicly reported as part of the monitoring and auditing process.

Recommendations on next steps in the HPC monitoring and auditing research programme include various proposals on *dissemination of the current findings,* and on *future research* on the HPC and NNB programmes.

Proposals for *dissemination of the longitudinal study* include:

- Specific feedback discussions with key HPC and other NNB project stakeholders, including EDFE HPC and SZC, Somerset and Suffolk Local Authorities, and PINS/National Infrastructure Directorate.
- Wider professional dissemination, including to relevant new nuclear/major project events – such as those of the National Infrastructure Planning Association (NIPA), and the Nuclear Industry Association (NIA) UK.

- Academic dissemination via journal publications and academic conference presentations.

Recommendations for future HPC monitoring and auditing research include:

- Regular snapshot studies every one or two years. Subject to NNLAG consideration, it is recommended that there should be a brief HPC refresh study in one year, followed by a fuller peak impacts study in two years.
- These studies are likely to have a narrower set of indicators, drawing on key ones identified in the current study. The sector studies in this report indicate some of the key indicators.
- Future studies provide the opportunity to introduce some longitudinal tailor-made monitoring activities, to provide additional intelligence/ fill identified gaps.
- The timescale is likely to be shorter - suggested c2-3 months in duration, unless major issues occur requiring more in depth investigation; to be agreed with NNLAG.

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1. Introduction

1.1 Aims of the study

It is important to learn from the actual experience of new nuclear build (NNB) construction and operation. Resources spent on baseline studies and predictions may be of little value unless there is some way of testing the predictions and determining whether mitigation and enhancement measures are appropriately applied. Such learning involves both impact monitoring (the identification and measurement of actual impacts) and impact auditing (the comparison of actual with predicted impacts). It is of great value both for the more effective management of current projects, and for future consents and licences.

The Oxford Brookes University Impacts Assessment Unit (IAU) monitoring study of the construction of Sizewell B showed that of the auditable predictions, 60% were within predicted range (Chadwick and Glasson, 1995 and 1999). Subsequently, the data from the Sizewell B study has provided valuable evidence for NNB, but now more current evidence is needed; hence the importance of this research sponsored by the New Nuclear Local Authorities Group (NNLAG).

The aim of the study is *to understand and document the evolving real impacts (adverse and beneficial)* of NNB in the community and on the biophysical environment. There is a particular focus on the extent to which the reality of impacts compares with predictions as part of the Environmental Statement (ES) and Development Consent Order (DCO) process, and on the strategic effects that are different to those predicted. The study will also *seek to explain unforeseen events, how they can be managed and provide recommendations on better planning and assessment processes for future projects*. Construction work at the Hinkley Point C (HPC) site has been underway for a number of years, and it is important to capture data on that project as soon as possible. This monitoring and auditing study focuses on the first two and a half years of the estimated ten-year construction programme. This is a major civil engineering phase of the project, in advance of the shift to the mechanical and electric phase, and the build-up to peak construction. Whilst HPC is the focus, there will also be some limited reference to impacts experience and monitoring/auditing approaches used in other major UK projects, including Wylfa NNB and the London Olympics.

1.2 Structure of the draft final report

The Final Report provides a concise summary of the research findings. It seeks to set out the main findings by impact sector, explain any differences from predictions, identify resultant issues, and gaps in data. Recommendations for improved NNB assessment, monitoring and auditing practice are set out. The report draws on a comprehensive set of study Working Papers, attached as Appendices. These provide the more detailed evidence underpinning the findings in the Final Report. The NNLAG research brief identified six key impact sectors for study: Economic Development, Transport, Accommodation, Social and Community, Environmental Health and Biophysical Environment.

1.3 Research team

The IAU team comprised Prof. John Glasson (research lead), Dr Bridget Durning (admin lead), Visiting Prof Martin Broderick (specialist inputs) and Kellie Welch (research associate). The team wish to acknowledge the support of the NNLAG Steering Group, especially in reading and advising on the draft Working Papers, and the officers from the Somerset Local Authorities and from EDFE (Hinkley Point C) who have helped to identify and interpret various data sources. The NNLAG Steering Group included Michael Moll (Suffolk CC), Gillian Ellis-King (S. Gloucestershire DC), Andy Coupe (Somerset CC), Guy Kenyon (Cumbria CC), and Tom Day (Essex CC).

2. Research approach

2.1 Stages in the research

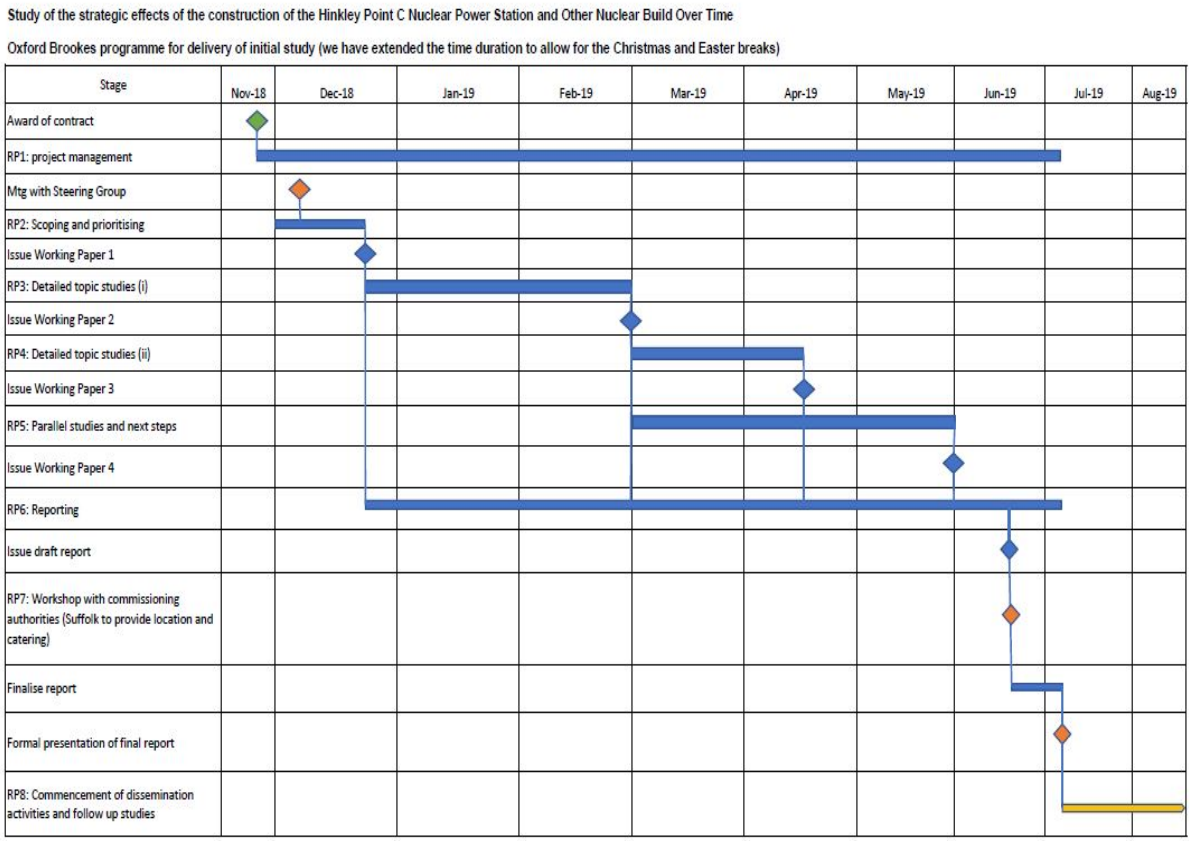
The team structured the research into a number of activities over the 6 months of the study, each leading to the production of a draft Working Paper, for review by the NNLAG Steering Group. Table 2 sets out the stages and activities, and the Gantt chart in Figure 1 sets out the research timetable.

Table 2: Research stages

Stages/Outputs	***Activities***
WP1 - Scoping and prioritising	This stage sets out the scope and prioritises indicators for the key issues, and identifies relevant data sets and contacts for the research. It involves: • online search of data sources • review of contents of the HPC DCO and ES • meetings with relevant contacts at Somerset CC and Bridgwater and West Somerset Districts, and with EDF • meeting with the Steering Group
WP2 - Detailed topic studies (i)	Detailed studies on predicted and actual impacts, explanations of any differences and management responses for the first set of interrelated socio-economic topics: 1. *Economic development*, skills and supply chain, and managing impacts on other economic sectors. This is a vital starting point, including especially local content, training etc. 2. *Transport impacts:* including highways capacity and impact on host communities, road safety, delays, network resilience, and mitigation measures (e.g Park and Ride schemes). 3. *Social and community impacts and benefits*: including impacts on local services (e.g. education, health, police), identifying specific topics such as night- time economy, anti-social behaviour/ community safety, community cohesion, access to health care, and quality of life.
WP3 - Detailed topic studies (ii)	Detailed studies on predicted and actual impacts, explanations of any differences and management responses for the second set of socio-economic and environmental topics: 4 *Accommodation impacts***:** including review of gravity model findings versus the actual split and geographical spread of home-based/non-home based workers; accommodation campus strategy and timing; impacts on the local community including vulnerable sectors.. 5. *Environmental health impacts*: including noise, dust and light pollution, and water quality 6. *Bio-physical environmental impacts* and mitigation strategies: including landscape, archaeology, heritage, ecology, and flood risk management. 7. *Other issues not covered in 1-6.*

WP4 – contextual studies and next steps	These include: • HPC governance arrangements over the project life cycle • Parallel brief study of Wylfa project early stage application content, and overview of auditing of impacts experiences of a select number of other UK major projects. Recommendations on next steps for monitoring and auditing the construction stage of the HPC project.
Draft Final Report - and presentations	This stage draws together the findings from WPs1-4, identifying key issues, common threads, and ways forward. It documents the evolving real impacts (adverse and beneficial) of Hinkley Point C construction in the community and on the environment, *seeks to explain* unforeseen events, how they can be managed and *provides recommendations* on better planning and assessment processes for future projects.

Figure 1: Research timescale



2.2 Research parameters

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), from the start of main site construction in mid-2016 (although there is some limited coverage of the earlier site works stage from 2012, where data is available).

Impacts focus: the research documents and audits key predicted impacts under the identified 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: the brief notes that 'the study will be 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.' 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. "Controls" can help to isolate the project-related impacts.

A snapshot in time: this brief 7 months study seeks to apply these parameters and criteria to a comprehensive set of key impacts for the 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.

2.3 Sources and contacts

The initial study drew on a review of a range of sources and contacts, as outlined below:

- The initial NNLAG project brief, and the IAU interpretation of that brief and presentation of a research approach.
- The requirements and conditions in relation to project impacts for the HPC project as set out in the approved Development Consent Order (DCO).
- Predicted impacts as set out in the ES for the project, mitigation and enhancement measures as set out in various project management plans (eg Workforce, Environment, Traffic Incidents etc), and S106 content.

- The combined authorities (Somerset, Sedgemoor and West Somerset) Local Impacts Report (LIR) (Somerset Councils 2012a), especially the chapter sections on Obligations and Requirements, and local areas.
- Online data sources, including the various 'dashboards' produced by the Socio-Economic Advisory Group (SEAG) and the Transport Review Group (TRG), and the Minutes of the Community fora. There is also a wide range of sources from various national and regional/sub-regional public agencies, such as the Environment Agency, Natural England, English Heritage, the Somerset Clinical Commissioning Group (CCG), and the Avon and Somerset Constabulary.
- Valuable meetings with representatives of the Somerset local authorities, and staff from the EDFE HPC Communications team, in December 2018 in Bridgwater, which provided valuable pointers on additional key sources and contacts. A presentation by the local authorities highlighted some HPC project learnings to date, including a mix of positive and negative impact findings, unforeseen impacts and issues relating to strategy, monitoring and change management for the project (Somerset local councils, 2018) .
- A trawl through the over 1000 first round of questions, draft DCO and s106 in the Wylfa NNB PINS/National Infrastructure examination, to check on comparative issues, indicators and data sources.
- Section 106 agreements, Community Impacts Mitigation fund etc.

These sources were added to during the study, and valuable further advice and information was provided from the main local authority sources (especially via Sedgemoor DC) and from the developer, EDFE. Note that a new authority, Somerset West and Taunton Council, was created in May 2019 being a joining of West Somerset and Taunton Deane Borough Councils.

2.4 Issues, indicators and data

Working Paper 1 provided an initial outline of key issues, indicators and sources for each of the six sectors identified in the study brief. Table 3 below provides an example of the output from this stage for the Economic Development sector. See Table 2 in Appendix 1 for the full Draft HPC Monitoring and Auditing *Impacts Issues-Indicators-Data Sources Framework*. The early meetings in Bridgwater indicated that the framework provided a good starting point for the study. There were some suggestions for additions, and a clarification of key issues, especially in relation to the first three sector areas of economic development, traffic and accommodation.

Table 3: Economic Development example for the Draft HPC Monitoring and Auditing Impacts Issues-Indicators-Data Sources Framework

Sector, Client Brief and Our Proposal Content	***Issues, Conditions, Requirements*** *(with examples of reference to DCO requirements etc)*	***Measurable Indicators*** *(some more measurable than others)*	***Data Sources*** *(for all sources, it is important to identify trends over time, performance against targets, thresholds etc)*
1. Economic Development: skills and supply chain, and managing impacts on other economic sectors. This is a vital starting point, including especially local content, training etc.	**Employment**		
	Local content – home based workers	% of workforce from 90 minutes CDCZ, and from within Somerset; and types/skill level of local content jobs	SEAG Accommodation Dashboard data; EDFE HPC periodic workforce survey; Benefits Realisation Plan; Local job advertising pre and during construction (newspapers and job centres)
	Distribution of local content workforce	% of workforce from 90 minutes CDCZ, and from within Somerset	SEAG Accommodation; EDFE HPC periodic workforce survey
	Origins of non-home based workforce	Mix of nationalities	EDFE HPC periodic workforce survey (every 6 months)
	Workforce characteristics	Grades; M/F; age; BAME; those with disabilities	EDFE HPC periodic workforce survey; Human Resources; worker induction procedure
	Training; apprentices	Number of apprentices; number completing various training courses	EDFE HPC periodic workforce survey; Human Resources; National Nuclear College (Cannington)
	Wage levels	Project wage characteristics	EDFE Human Resources (available publicly?)
	Employment and income deprivation	Changes in employment and income deprivation	Index of Multiple Deprivation for local areas
	Others		
	Supply chain		
	Promotion of local firms	Local firms registered with EFDE	EDFE bi-monthly supply chain update; SEAG Dashboard Supply Chain
	Extent and nature of local supply chain take-up	Number, value and nature of local (in CDCZ) contracts; cumulative CDCZ spend	EDFE bi-monthly supply chain update; SEAG Dashboard Supply Chain; Benefits Realisation Plan; LEP study
	Use of local retail services	Increases in local retail sales	Chamber of Commerce data (available publicly?); LAs
	Negative impact on local firms (eg job displacement; wage inflation)	Eg any evidence on job displacement; wage inflation; trends in local unemployment levels	Chamber of Commerce data (available publicly?); LAs
	Impacts on tourism sector	Trends in numbers and types of Somerset tourism	SEAG Dashboard Tourism; Local Tourism Board data

2.5 Structure of sector studies

Each sector study adopted a broadly consistent framework of analysis, although the nature of the topics and data led to some limited variations in approach. The framework has three main steps (Table 4).

Table 4: Steps in the sector studies

	Main steps	***Sources and content***
1	***Identifying*** – clarifying strategic issues and obligations; indicators and KPIs; and key data sources.	This stage builds from the initial outline of key issues, indicators/KPIs and sources as exemplified in Table 3. Key sources are the project ES/DCO, S106 and the local authorities' LIR.
2	***Monitoring*** – findings, key indicator trends and events over main construction stage to date.	This stage draws on available data streams from the developer, local authorities and other sources, to provide sets of impacts findings, trends and events over the main construction stage – generally from mid-2016.
3	***Auditing*** -- degree of accuracy of monitoring findings against predictions; explanations of any differences; gaps in monitoring and future proposals.	Where adequate data exists, this stage provides an assessment of the accuracy of actual monitored impacts against predicted impacts. It seeks to explain any differences and unforeseen outcomes, notes gaps in information and processes, and makes some recommendations for improved future performance.

3. Concise Summary of Sector Study Findings

3.1 Introduction

The six sector studies are set out in detail in Appendices 2 and 3. A major and lengthy first step in each sector study was the identification of key issues, indicators and KPIs, drawing in particular on the content of the Environmental Statement (ES), Development Consent Order (DCO), Section 106 and Local Impact Report (LIR). In some cases, this was a complicated step, with changing Key Performance Indicators (KPIs) and obligations over time, and important differences between the positions as set out in the DCO and contained in the LIR. There is only brief coverage of this first step in the sector studies below.

For the second, monitoring, step the availability of information also varied between, and within, sector studies. In addition to the provision of monitoring data as available per indicator/KPI, we have applied a very simple colour (RAG system) comment on the adequacy of the monitoring data, ranging from Dark Green (good), Light Green, through Amber to, Light Red and Dark Red (poor/non-existent). Again, there is only limited coverage of this second step in the sector studies in this section 3 of the report - in combination with the first step.

The focus here is on the third, impacts auditing, step comparing the actual impacts with the predicted impacts, as far as is possible from the available monitoring data. The coverage is mainly of the early main construction stage for mid-2016 to early-2019. In addition to brief comments on each issue indicator, we have applied a very simple colour audit (RAG system) for each indicator, ranging from Dark Green (very accurate/compliant), through Amber to Dark Red (very inaccurate/non-compliant). A blue box indicates No Information Available/Auditing Not Possible at the time of the study. In some cases the assessment is split to reflect a mix of outcomes to date.

G	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)

The audit for each sector also seeks to explain any differences between predicted and actual impacts, to identify gaps in monitoring and to make recommendations for improved future practice. Section 5 of this report provides consolidated explanations of findings and differences, and identification of gaps; similarly, Section 6 brings together an initial consolidated set of recommendations. Section 7 sets out some recommendations on next steps in the HPC monitoring and auditing research programme.

3.2 Economic Development sector

The economic development section has two sub-sections: (1) employment, training and skills; and (2) supply chain and sector impacts. Key documents setting out economic development issues, obligations, indicators and KPIs include the Construction Workforce Development Strategy (CWDS) and the Education Strategy Inspire (ESI) set out in the HPC DCO, Economic Strategy, Doc Ref 8.6 (EDFE 2011a), and the Economic Competitiveness and Education, Employment and Skills sections of the Local Impacts Report (LIR) (SCC, WSC and SDC 2012). The CWDS (2018 - 21) and the associated Implementation Plan (2018-19) have recently been updated (EDFE 2018). The Main data sources are EDFE reports to SEAG, made available via the SDC web site, as SEAG Dashboard reports, plus annual monitoring reports from SDC and EDFE, and other agency reports and national data series.

3.2.1 Key Issues; Indicators/KPIs; Monitoring data --- examples and adequacy

Issue	***Indicators/KPIs***	***Examples of data***	***Adequacy of data***
Employment, training and skills			
The size of the construction workforce	5600 at full peak 4600 at civils peak (see Fig 1)	6-monthly data from Site Workforce survey. eg Jan 2019 -- 3787	Missing most Site Prep data. Some gaps in basic reports. A
The % extent of local content in the 90-minute Construction Development Commute Zone (CDCZ)	43% desired benchmark; 55% max benchmark (see Fig 2)	6-monthly data from Site Workforce survey. eg Jan 2019 – 50% (1893)	Missing most Site Prep data. Some gaps in basic reports. A
The % extent of local content in Somerset	25% desired benchmark; 34% max benchmark	6-monthly data from Site Workforce survey. eg Jan 2019 – 46% (1743)	Missing most Site Prep data. Some gaps in basic reports. A
The delivery of a set of local training and skill development measures	2000 training places over programme, max 500pa. Apprenticeships 2% of construction programme, max 400	Dec 2018 -- 378	Good data across various skill and training initiatives (eg Inspire Education Programme: Young HPC) G
Recruitment from unemployed and other under-represented groups	8% recruitment from unemployed; no specification for other groups	Jan 2019 -- 1.9% from unemployed	Unemployed – some missing data A R For other groups—most Workforce Survey findings unavailable.

Recruitment through Brokerage – including Somerset, females, jobs safeguarded	No specified targets, and sub-targets	2019 (Jan) -- 672 (49% local; of which 85% are in the 3 local districts)	Good total data —but not disaggregated A
Supply chain and tourism sector impacts			
Issue	***Indicators/KPIs***	***Examples of data***	***Adequacy of data***
Local (Somerset) supplier registrations	Registrations–no target stated	2019 (Jan) 2381	G
Wider SW regional supplier registrations (excluding local)	Registrations–no target stated	2019 (Jan) 1732	G
Number of contracts awarded to regional companies, of which to Somerset companies	Contracts - no target stated	2019 (Jan) EDFE estimate to date is 117 regional T1 contracts, of which 44 are local, and c660 regional T2 contracts with c250 local	A
Value of contracts awarded to regional companies, of which to Somerset companies	Value – no target stated	2019 (Jan) £982m regional, plus commitments of £700m	A
Potential negative impacts of HPC development on local firms and areas (eg wage inflation; loss of key workers)	Not specified	Only anecdotal information -- some firms finding it difficult to recruit labour, but others responding positively to HPC opportunities	Difficult data to access O
% of visitors recommending Somerset	(Baseline threshold =70%)	2018 (Dec) 72	G
% tourism business confidence	(Baseline threshold = 35%)	2018 (Dec) 46	G

Figure 2: Construction Workforce Labour Demand Curve—Estimated Workforce Numbers (Source: EDFE 2011a) (Month 0 is taken as mid-2016; Month 36 as mid-2019)

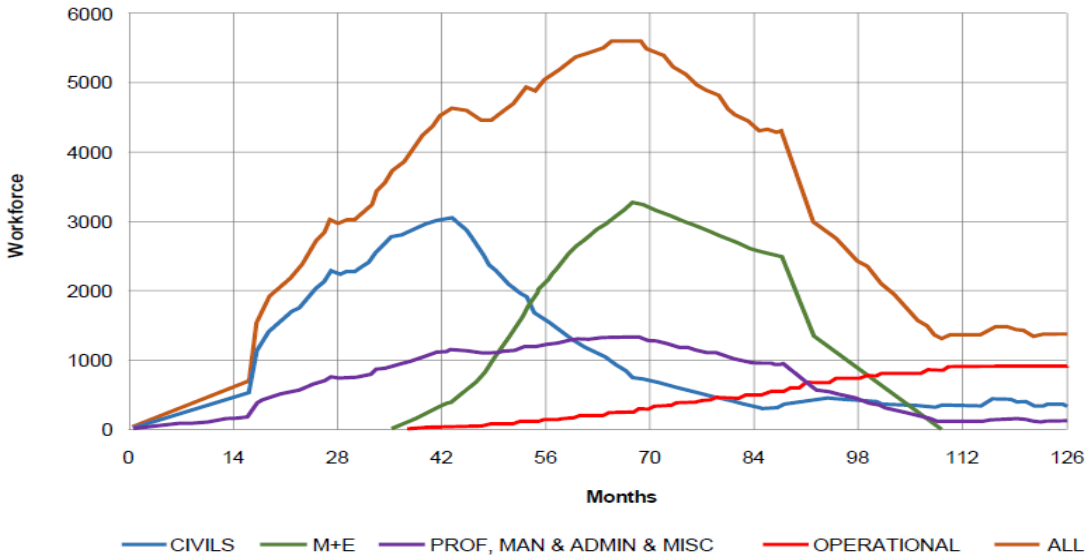
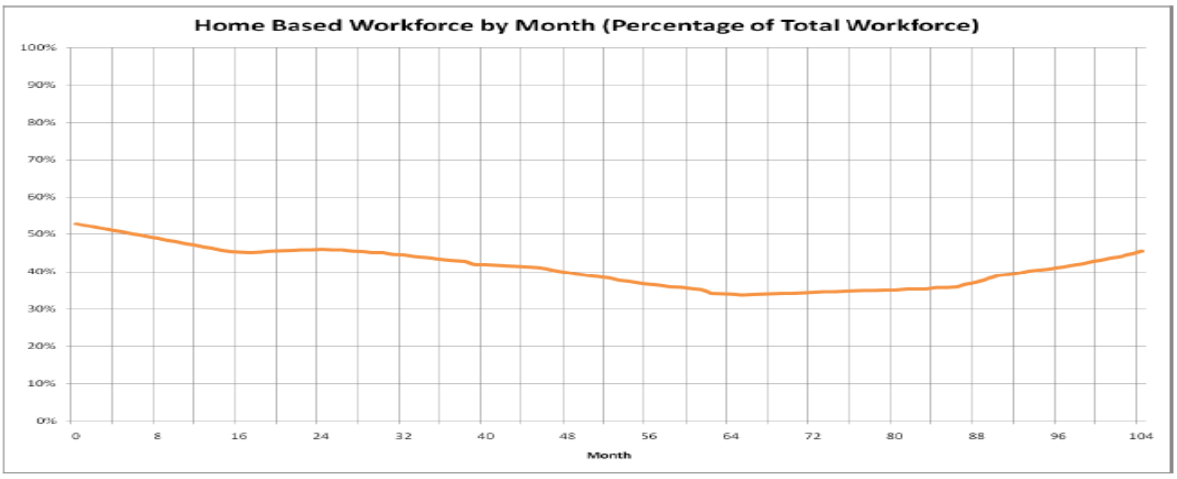


Figure 3: Predicted Percentage Local Content (CDCZ*) —Home-based Workforce by month (Source: DBEIS 2018)



***** CDCZ is the 90 minutes Construction Development Commuting Zone used in the project

3.2.2 Economic Development Impacts Auditing -- degree of accuracy of monitoring findings against predictions

Employment, training and skills

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***	
Overall level of workforce	Actual workforce levels are roughly in line/slightly above 2012 prediction, after about 2.5 years of the main construction project. The annotated Figure 4 below, **with the actual (SEAG) recorded workforce totals as columns**, assumes that Main Site works started in mid-2016. But some caveats – hence the split colour assessment: • no detailed Workforce Survey data • differences of view on what constitutes 'a worker'; EDFE – become worker only after completed at least 5-days working on site in a month; LA --need to test figures over a period • as at Jan 2019, another 316-campus accommodation operational staff not included in the overall site numbers. They are predominantly local (94% from Somerset and mainly from Sedgemoor). Other employees are at the Junction 24 P&R site • also another 600 EDFE R&D, and management staff, are based offsite in Bristol, and in Mallard Court, Bridgwater; these are not counted in total construction numbers.	LG	A
Local content: CDCZ in aggregate; and disaggregated	The CDCZ local content percentages are in line with predictions (see annotated Fig 5 below) at around 53-46% for the Civil Works stage. However, reference to being well above the predicted average local content is a misinterpretation of the DCO 34% predicted figure, *which was for peak construction employment only.* Figure 5 shows that the average predicted weighted employment over construction is more likely to be in the range of 38-40%. CDCZ local content by skill categories is not available—hence the part blue shading.	G	B

Figure 4: Construction Workforce Labour Demand Curve—Estimated (curves) and Actual (blue cols) Workforce Numbers (over early main construction years--Month 0 is taken as mid-2016; Month 36 as mid-2019)

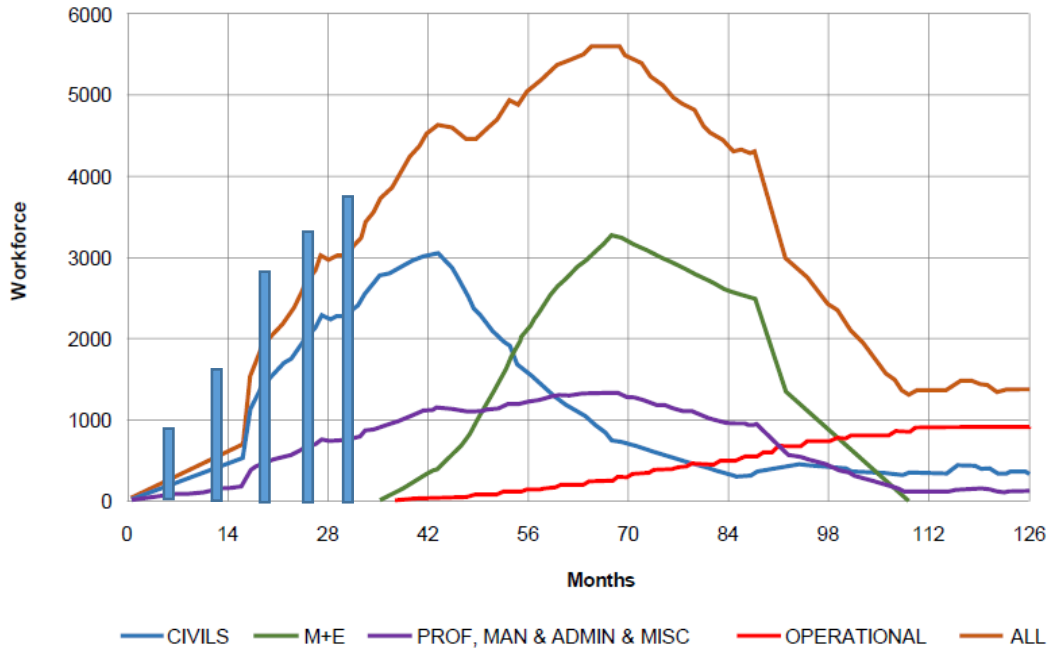
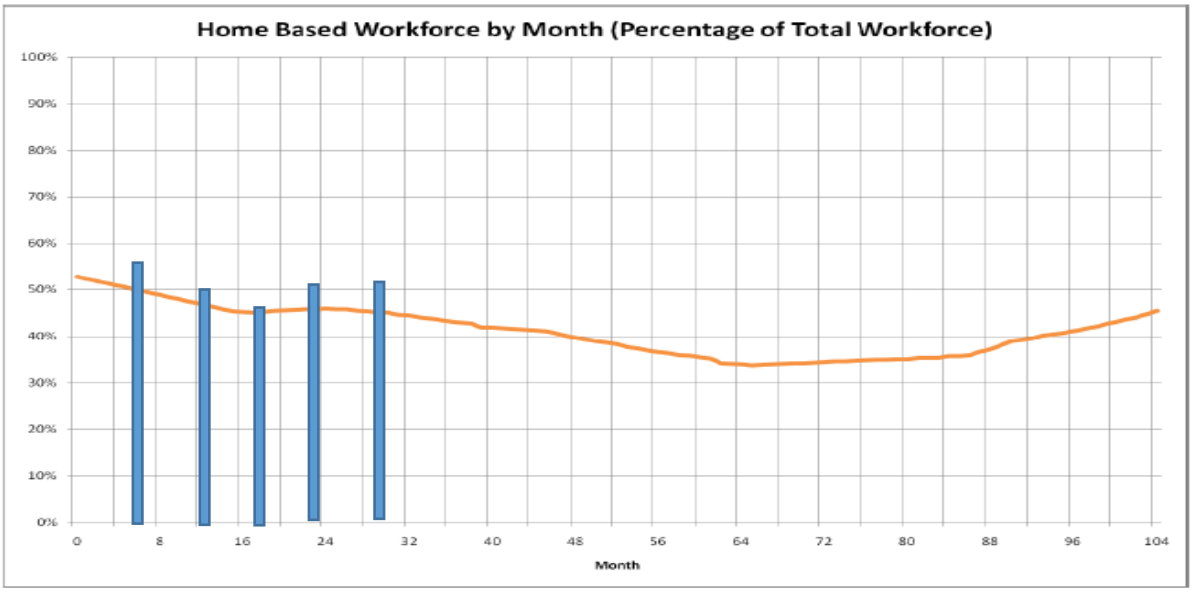


Figure 5: CDCZ actual local content percentage (cols) compared with predicted (curve)



Local content: Somerset in aggregate and disaggregated	The local Somerset content percentages, in the range of 45-35 % of the total HPC workforce, are substantially above predictions for peak employment, as expected for the Civil Works stage. The percentage would be even higher with the inclusion of the campus accommodation workforce. However, for both the CDCZ and Somerset local content figures, detailed HPC 6-monthly Workforce Survey results are not available for the main site and it is not possible to identify the type and level of HPC jobs gained by local people.	G	B

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***
Recruitment from the unemployed	Recruitment from the unemployed looks very low at present, but target revision is in hand to reflect lower the unemployment context compared with that at time of predictions.	R
Recruitment from women	The main site employment is predominantly male at 81%, but the 19% other (predominantly female) is good for the civils work stage of a major project – provisional data (includes site services).	LG
Recruitment from other groups	Data not available for other groups, including those with disabilities, those from BAME populations, and by nationality.	B
Apprentice ships	The project is performing well. The 433 apprenticeships as at April 2019, at less than a quarter into the construction project life, already exceeds the DCO target and is 43% of the more aspirational target. 16% of apprentices are female.	G
Employment Brokerage	The Employment Brokerage is performing well in terms of registrations -- over 15,000 by early 2019. Of these, 672 people entered work through the HPC Job Service, with a 49% local component. At that time, the brokerage accounted for about 18% of the total site workforce.	G
Training, Educational and Other Agency Initiatives and Events	There has been a wide range of training, outreach and agency initiatives, underpinned by substantial financial commitments by EDFE, and others, with good take-up ((eg Inspire Education Programme: Young HPC). In addition, there have also been examples of outreach to help those made redundant from other local firms.	G

Supply chain and tourism sector impacts

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***
Local and regional supplier registrations	Good level of registrations. Particularly good local level--well in advance of 750 initially anticipated for Somerset. Wide range of agency initiatives/ events to promote the Somerset and SW supply chain opportunities of HPC construction.	G
Number and value of contracts awarded to Somerset and wider SW region companies	In aggregate, the £982m for the SW supply chain region, and anticipated another £700m, is well on way to easily exceeding the predicted £1.5bn for total construction stage. Some spatially disaggregated data is available for the local (Somerset and BANES) area, but more would aid monitoring; some examples of significant local firm initiatives. Spend to date is likely to be a *gross underestimate* of the total supply chain impacts.	G
Potential negative impacts on local firms and areas	Difficult to identify as no hard data here (survey needed). From discussions with Somerset Chamber of Commerce, the impact is mixed. Whilst there is anecdotal information about some firms finding it difficult to recruit labour, others are responding positively with upskilling of employees, and offering apprenticeships. Also, see substantial local supply chain benefit as above.	LG / A
Impacts on tourism sector in Somerset	Local tourism industry confidence seems high. Mitigation measures, provided in advance, have helped. There is also the added bonus for some tourism accommodation providers of much fuller occupancy over the calendar year. HPC itself is an added Somerset visitor attraction that is likely to become more popular.	G

3.2.3 Explanations of any differences from predictions; gaps in monitoring and some recommendations

Positive differences

- Local employment percentages are above those predicted for Somerset, and roughly in line for the wider CDCZ. This partly reflects the stage of the project, but may also reflect the success of various training and brokerage initiatives.
- Transformational benefits locally of wide range of educational and training initiatives, resulting from partnership working between EDFE, local authorities, national government, and range of education and training stakeholders. This partly reflects wide commitment to support rebuilding UK nuclear skills infrastructure. Somerset has benefitted in particular as the first in line of NNB projects.
- Good brokerage and promotion of Somerset and wider SW region supply chain opportunities; also effective tourism impact mitigation measures (promotion and funding support).

Negative differences

- Whilst the educational and training initiatives provide a great capital legacy, are the revenue implications sufficient (eg for support for ongoing training)? In addition are appropriate high quality legacy jobs being nurtured via the HPC supply chain to locally utilise the increasingly construction skilled labour?
- Some differences of opinion on various monitoring indicators, including especially *what is a worker*, *which workers should be included in the site profile,* and *what is the predicted average home-based workforce over the project life.* The DCO examination was an opportunity largely missed for clarification of such socio-economic issues.

Gaps in monitoring and some recommendations

As noted above:

- 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. As such, it is not possible to identify the type and level of HPC jobs gained by local people, and the legacy benefit for Somerset and the South West. Publicly available detailed HPC 6-monthly Workforce Survey results are important for effective monitoring and auditing.
- The predictive data on the construction workforce is now dated and requires refresh against a timeline to reflect the advanced stage of the project, moving towards peak.
- Only aggregate, and primarily SW-scale, quantitative data on number and value of contracts, but monitoring improvements are now in hand at EDFE/HPC. Also, need more feedback from various supply chain agencies.
- Some data (eg on impact on other firms) is more qualitative. A survey would help.
- A contractual requirement needed for T1 and T2 contractors to provide details of supply chain contracts (only recently introduced at HPC).

Overall, the EDFE HPC Workforce Survey has not fully delivered the wealth of information that should be available from a rigorous workforce monitoring process for such an important project. EDFE now appreciates the problem; hopefully new workforce survey arrangements will constitute a major improvement, and full survey results will be publicly available on a regular basis. This information is critical, for as noted by EDFE (2011a): *accurate information is seen as important for several reasons, including managing EDFE's workforce development*

strategy, and providing the local authorities with consistent, robust and up-to-date information on the structure of the workforce (EDFE, 2011a).

Plans are in hand, as outlined in the CWDS and Implementation Plan (EDFE 2018), to rationalise the monitoring arrangements by assessing progress in three strategic themes: Employment, Skills, Apprenticeships and Young People. Overall, it remains to be seen whether the revision of the CWDS will be sufficient to reset the strategy and provide the necessary degree of monitoring required by the DCO.

3.3 Transport sector

Key documents setting out HPC construction transport issues, obligations, indicators and KPIs include the Construction Workforce Travel Plan (CWTP), the Construction Traffic Management Plan (CTMP), and the Traffic Incident Management Plan (TIMP).The Transport Review Group (TRG) Quarterly Report (SDC website) is the key source of transport data. Reports include data on mode of transport to HPC site and AD sites, Park and Ride, and bus patronage and HGV movements. Data is produced quarterly spanning from Q2 2016 – present. There are some limits within the CWTP that are not applicable until 6 months after all the Park and Ride sites are operational; this is anticipated to be in summer 2019. Some other issues identified in the LIR were not monitored or reported on.

3.3.1 Key Issues; Indicators/KPIs; Monitoring data --- examples and adequacy

People movements

Issue	***Indicators/KPIs***	***Examples of data***	***Adequacy of data***
HPC site journey to work	Mode share targets, eg: bus (87%), car 4%	Quarterly data for TRG Dec 2018 -- bus 94%; car 4%	G
Travel to and from Associated Development (AD) Sites: J23, J24, Cannington, Williton, and Morrison's	Mode share targets, eg for J24 Sustainable – 4% Car driver – 60% Car passenger – 36%	Quarterly data for TRG Dec 2018 -- for J24 Sustainable – 3% Car driver – 73% Car passenger – 24%	G
Number of passengers using bus service to HPC Site	Not specified -- but see mode share target above	Dec 2018 - 1993	G
Number of parking permits issued	Not specified	Dec 2018 - 3578	G

Issue	***Indicators/KPIs***	***Examples of data***	***Adequacy of data***
Freight movements			
Euro IV emissions compliant	Euro IV standard	June 2016 – 47%. Other dates missing	R
DMS bookings v HPC construction works HGV (Limits)	Target max • Mon-Fri: 750 • Sat: 375 • Qrtly Av: 500 • HGV Route 1: 450 • HGV Route 2: 300	Dec 2018 536 122 356 398 130	G
Hourly performance data	Max Limits (eg) • 0700-0759: 40 • 0800-0859: 30 • 0900-0959: 50	Dec 2018 40 30 50	G
Abnormal Indivisible Loads (monthly and quarterly)	No limit specified	Dec 2018 -- 348	G
HGV delivery forecast: daily av.	No limit specified	Dec 2018 -- 565	G

3.3.2 Transport Impacts Auditing -- degree of accuracy of monitoring findings against predictions

People movements

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***
HPC site journey to work	HPC Site Journey to Work Mode share Bus has a target of 87%. Since Q1 2017, this has been well over 90% for each quarter (see Fig 6 below). This coupled with 1-2% use of cycling is very positive.	G
Travel to and from AD Sites: J23, J24, Cannington, Williton	The travel mode share to and from the AD sites (J23 and J24) is dominated by car drivers with the target of 58/60% being consistently exceeded with up to 80/75% respectively. There has been a recent increase in the car share %, and there is a promotion of HPC Car Share to meet the car share targets at project peak. See Figure 7 for J24 experience.	O
Fly parking complaints	Fly parking by HPC workers has emerged as a significant unexpected transport impact. Cannington, Nether Stowey and Bridgwater (Chilton Trinity / 1610 car park and streets off the Northern Distributor Road and Quantock Road) are particularly affected. Complaints about fly parking far outweigh other transport complaints, including HPC Bus Service, HGV speeds and roadworks. See Fig 8.	R

Figure 6: Journey to work to HP site by bus

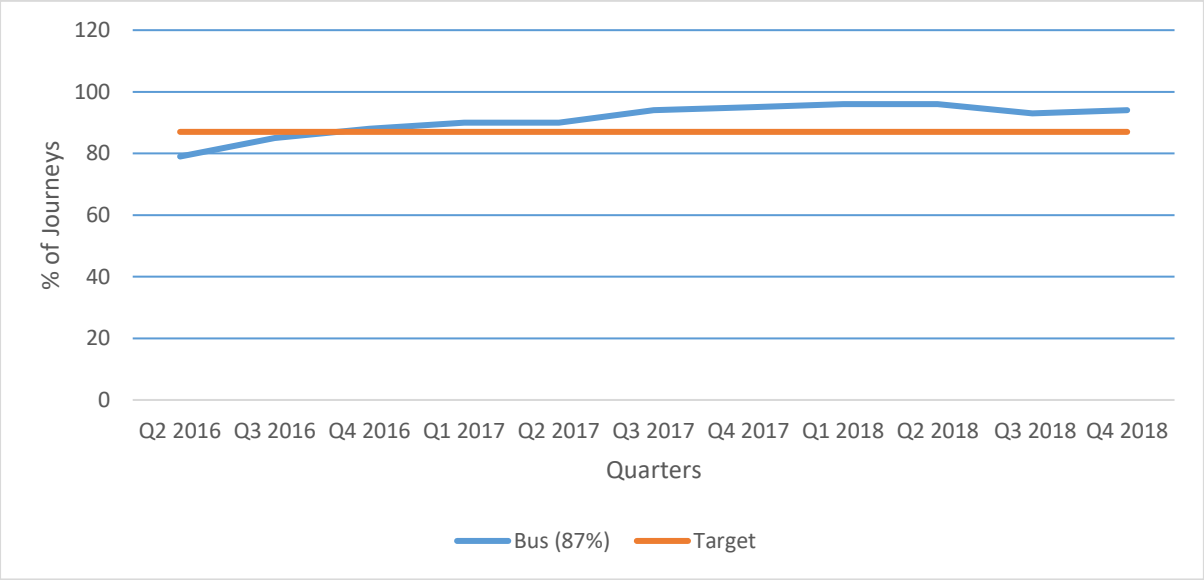


Figure 7: Workforce travel to and from J24 P&R

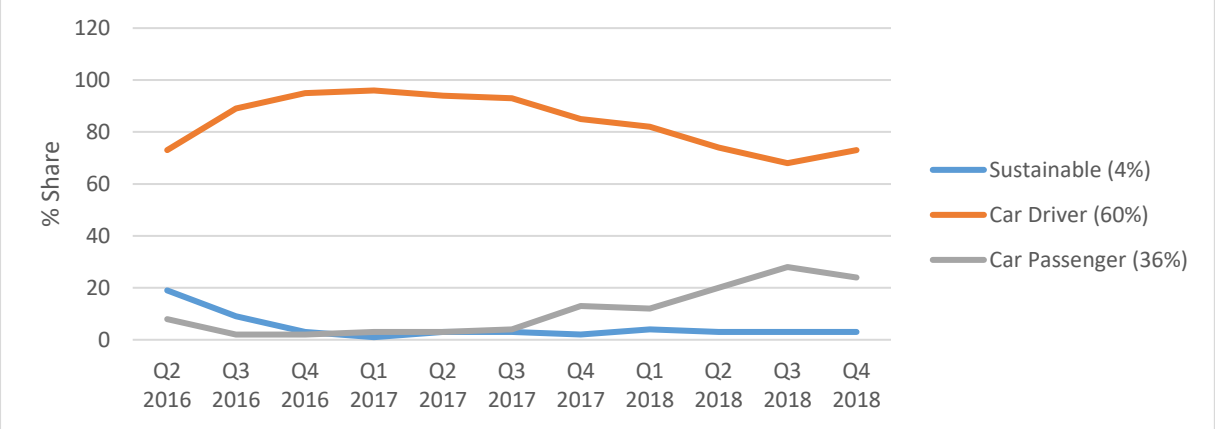
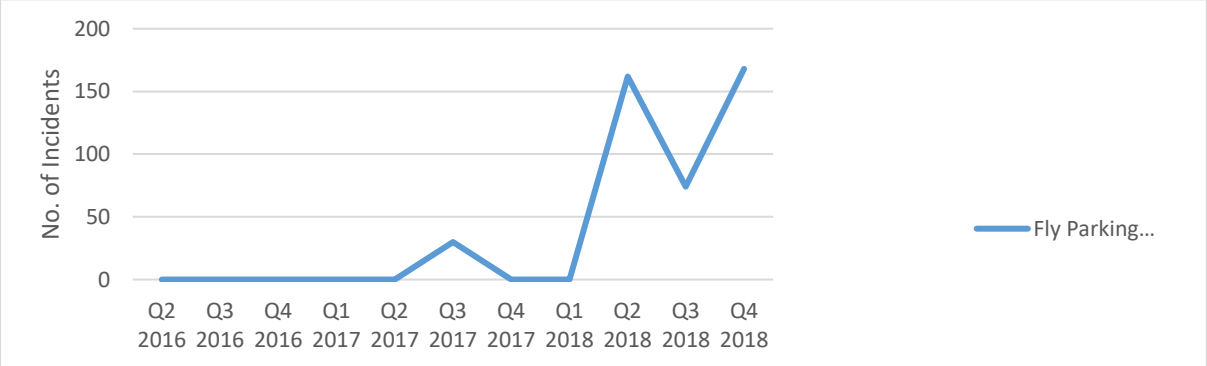


Figure 8: Confirmed fly parking incidents by HPC workforce



Freight movements

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***
Delivery Management Strategy (DMS) actuals v construction works HGV targets – HGV FMF/local	Monitoring and reporting began in full in Q1 2017. Since then there has been a consistent compliance with the three criteria caps (caps are within the brackets): Mon-Fri (750), Saturday (375) and Quarterly Average (500) (Fig 9). In addition, the hourly monitoring and reporting shows total compliance with the caps for each time window (Fig 10). Robust monitoring system shows that the DMS is working well, but need to ensure this continues as EDFE moves to a GPS based model.	G
HGV breaches of construction works	Breaches in terms of HGV limits, timing restrictions, routing violation have all been consistently in the very low single figures.	LG

Figure 9: HGV FMF actuals against local limits (daily)

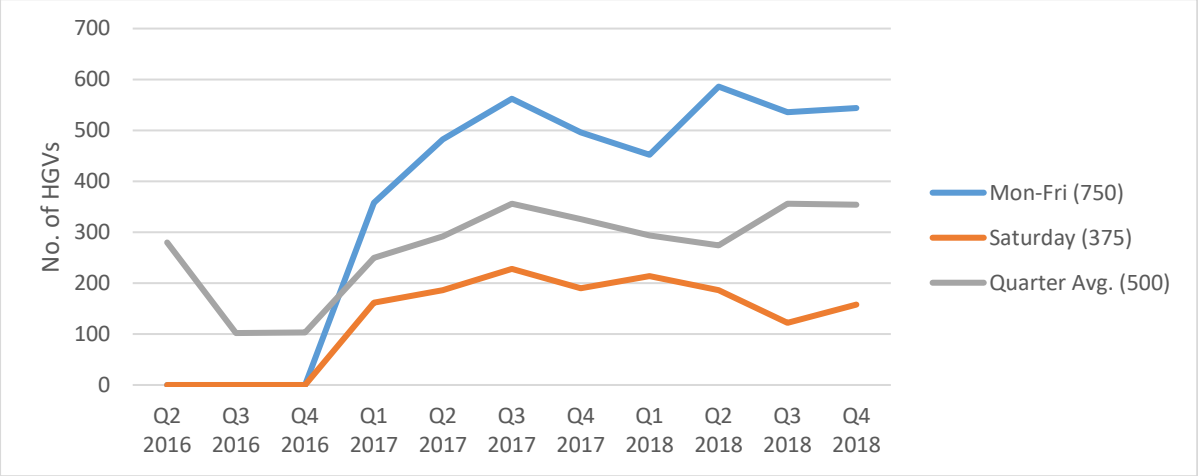
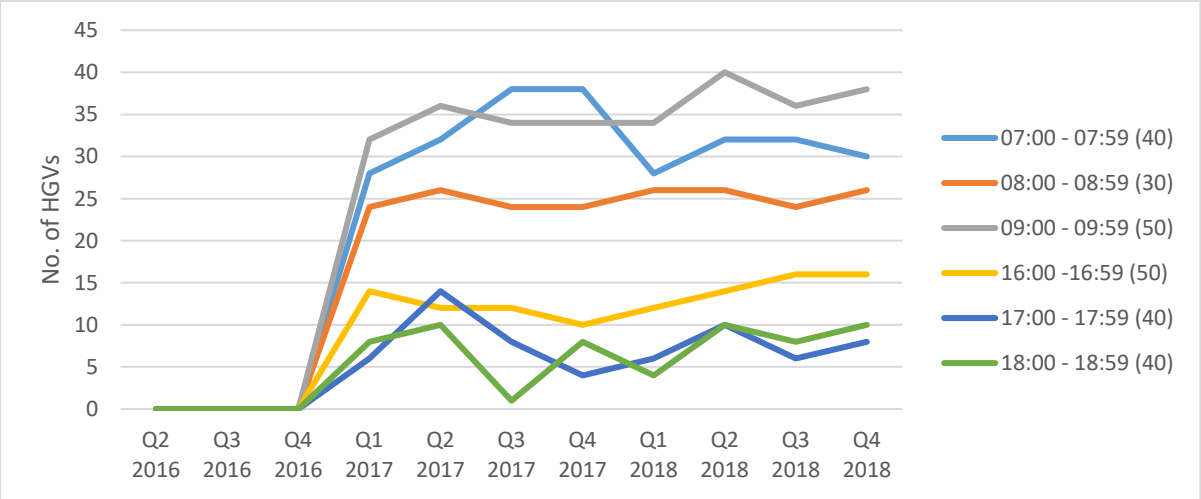


Figure 10: HGV FMF actuals against local limits (hourly)



3.3.3 Explanations of any differences from predictions; gaps in monitoring and some recommendations

Positive differences

- The bus system (Somerset Passenger Solutions) taking workers to the main site is working well.
- Similarly, the HGV DMS is achieving good results, most times very clearly within limits.

Negative differences

- There were delays in delivering the "official" Park and Ride sites from the DCO proposals, and the emergence of other, informal and initially temporary, Park and Ride sites which had not been planned for as part of the DCO.
- The total workforce mode share numbers in the TRG Quarterly Reports are often different from the total workforce numbers recorded on site. Ideally, the numbers should reflect the number of workers that access the site through the security turnstiles. It is important that there is transparency of the number of people surveyed through the 5-day rule metric. EDFE have explained that the difference in numbers is due to the TRG figures not reflecting the full 24hr time-period. EDFE have promised that direct bus, Park and Ride bus and Bridgwater Campus Bus will separate the mode share data for the HPC bus service, when the Permission to Travel smart card technology is in place on the HPC bus service. More granular data will also be available regarding the number of workforce boarding at different locations that will help to plug gaps in accommodation data.
- Paragraph 8.2.53 of the Transport Assessment stated that the predicted car share trip numbers were considered to be a robust assumption citing that car sharing during construction of Sizewell B was above two per car. However, the car share system, in place in relation to delivering workers to the P&R sites, has not been as effective as expected. HPC Car Share is being introduced and promoted to be able to meet the car share targets when the project is at peak; this will require ongoing proactive management to reduce the overall demand for parking spaces.
- The fly-parking problem was not anticipated, and may reflect delay in delivering the Park and Ride sites, the full HPC bus service -- with all its feeder routes, plus delays in the allocation of passes, the technology of access badges and the policing of staff. 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. The approach is to be used following a community complaint or HPC monitoring team identifying a fly-parking vehicle, which is on the HPC Transport database. The final step, after three offences, may result in the withdrawal of the HPC site pass.
- Similarly, the delay in the completion of the temporary jetty has led to more HGV deliveries (especially gravel) and AILs on the road network, mainly via the M5.
- Similarly, the delay in the delivery of highway improvements (eg A38 Bristol Road/Wylds Road junction) appear to be particularly contentious locally.
- Numbers of AILs and buses are not capped so they are therefore uncontrolled.

Gaps in monitoring and recommendations

- Fly Parking requires a consistent format for the reporting of monitoring to the TRG.
- EURO IV: EDFE requires that all HPC construction works HGVs will be EURO IV (exhaust emissions) compliant. Yet, this was reported only in Q1 2016 and not since. There should be spot checks to confirm ongoing compliance, and reporting to TRG re-instigated.
- Bulk delivery materials plan**:** on or before the temporary jetty operational date NNB GenCo shall submit the Bulk Materials Delivery Plan to the LAs.
- Deflectograph road condition surveys need to be completed at appropriate intervals for HV routes 1 and 2. The TRG should be informed about the results of these surveys.
- Bus Surveys: analysis of buses. No controls exist on the movement of buses, but it would be useful if EDFE could provide information about bus movements and passenger numbers on the network. The data collected from the new Permission to Travel Cards (via HPC Site Pass) will provide valuable information to allow Somerset Passenger Solutions (SPS) to review the utilisation of the bus services, bus stops and P and R sites and ensure measures are taken that limit the number of car journeys necessary to P&R sites.
- Traffic Noise Insulation Scheme (TNIS): the take-up and efficacy of this scheme should be reported to the TRG.
- LGVs**:** LGVs were assessed in the ES and TA with predictions being made. LGV movements should be monitored and reported to the TRG.
- LIR issues identified, but not reported to TRG, include increased delay to drivers, reduced highway capacity and road safety. Data collected from the HPC funded travel demand programme should be consolidated in an annual report for TRG.

3.4 Social and Community Impacts and Benefits sector

The social and community impacts sector focuses on HPC construction impacts on local services, people and communities, and on managing those impacts. The services include education, health, recreation, police and other emergency services, and wellbeing. Key documents setting out HPC construction social and community issues, obligations, indicators and KPIs include: the Community Safety Management Plan (S106 Annex 6 EDFE 2012; ES DCO Application Doc Ref 4.18, EDFE 2011c), and the Health Action Plan (part of HIA -- ES DCO Application Doc Ref 8.15, EDFE 2011d). Local authority positions are set out in sections of the Local Impacts Report (LIR) (SCC, WSC and SDC 2012). Reports of the SEAG are a valuable source of summary health and community safety information. Other topic specific sources include:

- Health: Health Task and Finish Group (HTFG); Somerset CCG, and SW Public Health Observatory
- Crime: HTFG; Avon and Somerset Constabulary; Local Authorities
- Emergency services : DSFRS, SW ambulance service NHS trust

Contextual baseline information is available from national sources, such as ONS Annual Population Survey – personal wellbeing; and the Index of Multiple Deprivation, on trends in relevant domains.

3.4.1 Key Issues; Indicators/KPIs; Monitoring data --- examples and adequacy

Issue	***Indicators/KPIs***	***Examples of data***	***Adequacy of data***	
Health (examples from SEAG and HTFG reports)				
SEAG - Non-home based HPC worker local GP referrals, and hospital referrals	Numbers referred	Dec 2018 to • GP – 6 • Hospital -- 193	GP G	Hosp. LG
SEAG - Health staff in on-site medical centre	Staff complement/range of skills	Dec 2018 –19; wide range of skills	G	
SEAG - Completed health screening sessions for the HPC workforce	Cumulative numbers completed	Dec 2018 –11,526	G	
SEAG - Completed drug and alcohol checks for the HPC workforce	Cumulative numbers completed	Dec 2018 –8,684	G	
HTFG – eg mental health open referrals; sexual health referrals	Comparison of numbers and trends in Hinkley Zone and in Somerset	No significant increases in proportions of open referrals originating from within the Hinkley Zone.	G	
Somerset CCG – size of GP practices	Number of patients per local GP practice. Currently not recorded (?)	Mainly internalised through Hinkley Health on-site provision. If some significant use of NHS services identified, there is a mechanism for funding.	A	
Community safety - crime, fear of crime (examples from SEAG and HTFG reports)				
SEAG-- instances of reported crime linked directly to HPC project	Cumulative numbers	Dec 2018 -- 202	G	
SEAG - instances of reported non-criminal activity linked directly to HPC project (cumulative)	Cumulative numbers	Dec 2018 -- 122	G	
SEAG - annual fear of crime index provided from SDC fear of crime survey. Eg: %	% residents	2015 95 2017 94	Biennial data	

Sedgemoor residents feeling very/fairly safe at home during the day			A
Issue	***Indicators/KPIs***	***Examples of data***	***Adequacy of data***
HTFG – eg: criminal offences (hate crimes, sexual offences), and abuse	Comparison of numbers and trends in Hinkley Zone and in Somerset	No exceptions to report. Offences where victims were women or children increased in latest quarter, in Hinkley Zone and countywide. Hate crime in Hinkley Zone declined in the latest quarter, contrary to a countywide increase	G
Police UK data--all reported crimes	Number of reported crimes eg: a. Bridgwater Town Centre b. Stogursey and Kilve	Dec (2016) Dec 2018 a. 216 131 b. 9 8	Very useful and detailed data. Can break down more. G
Others			
Education—impact on local schools capacities	No target specified. Somerset CC indicates little or no available data for several reasons: GDPR, school responses and HPC family positions on collecting such data. SCC has used data on workforce accommodation locations to direct the use of the education places capital secured.		R
Instances of fire and road safety incidents linked directly to HPC	Cumulative numbers	Dec 2018 -- 14	LG
Number of callouts made to SW Ambulance service NHS Trust	Cumulative numbers	Dec 2018 -- 58	DCO HAP forecast c50 call-outs by end of construction year 3). LG
HPC workforce, and local community, use of local recreational facilities	No data as yet	.	R
Impacts of project construction on PROWS	Little relevant data as yet – eg complaints from walkers, length of time paths closed, positive progress	Work continues on delivery by SCC of Rights of Way Restoration and Enhancement Plan (RoWREP) in Stogursey and parishes - secured by virtue of Site Preparatory Works consent.	O

3.4.2 Social and Community Impacts and Benefits Auditing -- degree of accuracy of monitoring findings against predictions

Impact sector	*Commentary on actual vs predicted impacts*	*Summary RAG colour coding*
Health		
Impact on local health	The provision of a bespoke and well-staffed on-site Medical Centre has been very successful in minimising the impacts of construction workforce on the local NHS (GP and hospital) service. The useful monitoring data from the Health Task and Finish Group (HTFG) shows no significant rise, for example in mental health open referrals, and hate crimes, from the local population at large in the Hinkley Point C zone over the period 2015-2018, when HPC construction was fast building up Impacts on local GP services appear limited to date. Referrals to local NHS services have been very limited to GPs with only six by mid-2018.There have been more hospital referrals	G
Impact on local GP and hospital services		LG
Provision and use of local campus health facilities		G
Crime		
Impact on local policing; changes in level and type of crimes	Anticipated impact areas were the behaviour of a predominantly male workforce and unpredictable events (such as protests). Community fears were of anti-social behaviour and increased levels of various types of crime; there were also concerns about the nighttime economy in locations such as Bridgwater. Avon and Somerset Constabulary (ASC) data, via HPC HTFG, shows the trends in the Hinkley Zone are not exceptional to the trends in Somerset as a whole; indeed hate crime in the Hinkley Zone declined in the latest quarter, contrary to a countywide increase. Reported crimes (from Home Office stats) for sensitive locations such as Bridgwater Town Centre, and Stogursey Parish, have shown crime falls or little change rather than an increase over the 2016-2018 period. However, there has been a significant anti-social behaviour issue with fly parking in 2018, causing major public concern and high levels of complaints in several locations (see Transport sector report 3.3.2/3).	**G**
Fear of crime		**G**
Location specific issues: night-time economy		**G**
Location specific issues: fly-parking		R
Others		
Impact on other emergency services – ambulance	The Devon and Somerset Fire and Rescue Service (DSFRS) raised initial concerns about the anticipated impact on services from such a major project. To date the number of callouts made to the SW Ambulance service NHS Trust is quite low for such a major project and roughly in line with mitigated predictions.	LG

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***
Impact on other emergency services – fire	Instances of fire and road safety incidents linked directly to HPC have been low to date. By mid-2018, there had been over 350 home fire visits and safety checks made by DSFRS.	G
Impact on community cohesion and local quality of life; feeling of wellbeing – esp. for communities within Stogursey parish	Stogursey Parish Council Minutes (2015-2018) indicate a main and positive interest in accessing, and the use of, the resources for local initiatives from the Community Impacts Mitigation (CIM) fund. Whilst CIM provides some examples of compensatory measures, it is difficult to evidence a direct link from these to wellbeing. Over time there is also some evidence of increasing negative impacts on local wellbeing from, inter alia, noise, traffic, caravan sites and site spoil-dump issues. The cumulative impacts on mental health and quality of life are unclear.	A / B
Impact on local recreational facilities, behaviour and PROWs	Anticipated concerns include worries about the pressure of non-home-based workers on local recreation facilities, such as leisure centres and cinemas, and dining and drinking outlets. The provision of some of these facilities in-house to the HPC accommodation campuses on site and in Bridgwater is one mitigation measure. No data available at time of survey. There is also concern about disruption to some public rights of way (PROW) near the site during construction, and implications for dog walkers, ramblers, joggers etc. Limited data—but there are some emerging positive pathways' enhancement initiatives.	B / A
Changes in local performance in relative deprivation domains: eg --- health deprivation; education skills and training; crime; living environment.	The development may have a cumulative effect on relative levels of deprivation in the county, and in its constituent districts/boroughs, as reflected for example in trends in the UK Index of Multiple Deprivation (IMD). These effects may be positive and negative, depending on the deprivation domain (health, crime, access to services etc) and locality in question.	B Awaiting 2019 IMD findings to compare with 2015.

3.4.3 Explanations of any differences from predictions; gaps in monitoring and some recommendations

Positive

- For health, the early provision of the on-site Medical Campus has proved very successful in providing a high level of medical treatment and advice to the construction workforce. This has internalised most of the health impacts, taking the pressure off the local NHS services.
- For crime and community safety, potential project impacts have been managed through a combination of mitigation measures, including the implementation of the Worker's Code of Conduct, and via additional resourcing towards community liaison and additional policing.

- Similarly, emergency services have received some resources towards their additional costs, and project impacts have been limited.
- There are many positive outcomes to date, but the workforce is still to build up to peak, and the Bridgwater campus accommodation has only just opened.

Negative

- The monitoring system is not delivering enough disaggregated information on characteristics of the workforce, such as family composition, nationality, gender, disability etc that would allow better estimation and management of project impacts on local services.
- Some local issues affect community wellbeing. Such issues can escalate quickly, for example with regard to fly parking. The speedy resolution of these is vital not only for the affected places, but also for the community confidence in the management of the project.

Gaps in monitoring and recommendations

There is good data on several services topics, especially on health and crime and community safety, but as noted above:

- It will be important to pick up the evolution of issues as the site workforce builds up to peak, and the Bridgwater campus accommodation is fully used.
- Detailed HPC 6-monthly Workforce Survey results are not available, and the workforce findings are in aggregate only.
- No data on possible social care issues, noted as potential issue in the LIR.
- Opportunity to monitor recreational impacts, linked with publication of RoWREP.
- Some of the data in these topic areas is not only difficult to monitor, it is also difficult to ascertain whether any incidents or data trends can be related back to the HPC workforce.
- Some relevant local authority and national government data (eg latest Index of Multiple Deprivation [IMD]) is not available until mid-2019, and other information is difficult to obtain, as noted in the blue boxes above.

3.5 Accommodation sector

The accommodation sector focuses on two elements: (i) distribution of workforce accommodation (non-home based and home based), tenure type for non-home based and use of the Hinkley Point C accommodation campuses and (ii) local housing market impacts. The report draws on a range of sources, including reviews of the HPC Development Consent Order (DCO) and accompanying Accommodation Strategy, s106 Agreements (site preparation and DCO), the Local Impacts Report (LIR) and associated evidence base documents, online data sources including SEAG Dashboard and EDFE accommodation reports and Somerset Intelligence. Predictions and assessments are complicated by there being two sets of peak construction predictions - EDFE and the Councils, plus some amendments to contents of the S106 introducing new thresholds. Contextual baseline

information is available from regional and national sources, such as ONS Annual Population Survey – personal wellbeing; and the Index of Multiple Deprivation (IMD), on trends in relevant domains (when updated in mid-2019).

3.5.1 Key Issues; Indicators/KPIs; Monitoring data --- examples and adequacy

Issue	***Indicators/KPIs***	***Examples of data***	***Adequacy of data***
Workforce accommodation			
Average Private Rented Sector (PRS) take up for each administrative area non- home based (NHB) workers	EDF predicted 20% of peak accommodation in 60 min zone; substantially revised to 72% under DCO S106 revised PRS thresholds	EDFE SEAG and Accommodation reports --- Mar 2019, 59% including PRS *and* Latent Accommodation	A
Average PRS take-up for any Ward Cluster if within 10% or exceeds PRS Threshold	Exceedances >10%	9.10.17 Exceedance at Cannington discussed and Sedgemoor preparing request for contingency funding. Hinkley/Stogursey and Bridgwater to be closely reviewed	A
Number of non-home based workers commuting from relevant areas.	NHB daily commuters to site. Data intermittent. Peak targets: Sedgemoor (51%), WSTD (31%).	Jan 2019 – from Sedgemoor c1500 (c80% of total); from WSTD c 390 (20%)	A
Proportion of NHB workers in following accommodation types	Targets set out , for peak construction, in DCO	Jan 2019 –EDFE data.	A
• House/Flat Let • Room rental • House/flat share with other	Merged PRS *and* latent 31%	59%, but trend down	A
• Purchased accommodation (Owner occupation?)	13%	1%	A
• Caravan/Campsite • Holiday Let • Hotel	16%	18%	A
• Campuses	40%	21%, but trend up, with new Bridgwater campus	A
Number of workers in permanent housing in the local area	Presumed that these are HB workers. No target	Jan 2018 -- 811	A
Information on take up/cost/turnover in campuses	No specific target	However, at Dec 2018, Hinkley Site Campus about 90% occupancy. New Bridgwater Campus opened Jan 2019.	A

Issue	***Indicators/KPIs***	***Examples of data***	***Adequacy of data***
Local housing market impacts			
Hinkley housing initiative (some key examples)			
• Number of new bed spaces delivered in the PRS Site Prep funding	Eg Sedgemoor target set in s106 – 329 (978) (unclear)	Jan 2019—Sedgemoor total achieved: 859	LG
• Number of 'other' initiatives (training, assistance to access tenancies) Site Prep funding	Eg Sedgemoor target – (200)	Jan 2019—Sedgemoor total achieved: 146	LG
• Number of new bed spaces delivering in the PRS. DCO funding (including Housing Contingency funding)	Eg Sedgemoor – 140(210)	Jan 2019 – Sedgemoor total achieved: 0	LG
• Total site prep s106 contributions	Eg Sedgemoor -- £2.7m for initiatives plus £127K for staff	Jan 2019 – Sedgemoor: £1.4m on initiatives and £127k on staff	LG
Trends in homelessness In Somerset	MHCLG data on acceptances, and priority need	See Fig 11	LG
Housing affordability	SCC/ Somerset Intelligence	Dated information	A
Housing Register applicants	SCC/ Somerset Intelligence	2017 snapshot only	A

Figure 11: Somerset and Districts – trends in homelessness acceptances

Figure 3: Trends in Homelessness Acceptances (per 1,000 households) by Area

	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Mendip	2.74	2.32	1.74	1.20	0.56	0.60	0.35
Sedgemoor	1.52	1.08	0.64	0.89	1.25	1.40	1.27
South Somerset	3.59	3.96	2.76	2.39	2.08	2.48	2.10
Taunton Deane	3.70	2.79	2.12	2.73	1.89	2.37	2.64
West Somerset	1.94	1.75	1.66	2.35	2.16	1.34	1.65
Somerset	2.88	2.62	1.89	1.89	1.56	1.76	1.65
England	2.31	2.41	2.32	2.40	2.52	2.54	2.41

Source: MHCLG

3.5.2 Accommodation Sector Auditing -- degree of accuracy of monitoring findings against predictions

Auditing the accommodation data raises a number of issues, additional to the adequacy or otherwise of that data. These include fragmented sets of accommodation data; unclear provenance or evolving status of some of the thresholds/benchmarks used in the SEAG Dashboard; lack of monitoring against thresholds for the majority of the KPIs; and lack of availability of some data specific to the CDCZ. As noted in s 3.5.1 above, most of the accommodation predictions of the geographical distribution and tenure of the construction workforce relate to peak construction employment; the project is not at that stage yet—and there are no intermediate predictions. In addition there are two sets of peak construction predictions—EDFE and the Councils, plus some amendments to contents of the S106 introducing new thresholds. As far as possible, this audit seeks to cover a range of relevant predictions.

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***
Workforce accommodation—needs final review to be in-line with revised WP3		
Geographical distribution of non-home based workers (NHB)	Both the EDFE and the Councils' gravity model predictions indicate at peak the accommodation of the greatest number of NHB workers in Sedgemoor. The monitoring data indicates that this is likely to be the case. Indeed, numbers/% are well in excess of predictions, *although this is not yet peak, and the Bridgwater Campus has only recently come on line*. Both gravity models predict at peak significantly more NHB workers based in West Somerset than Taunton Deane. However, data currently shows similar numbers in both districts. The West Somerset figure seems to underestimate the impact of the Hinkley Campus.	O
Tenure type of NHB workforce: PRS	The original EDFE prediction was for 20% of peak workforce (750 workers) in PRS distributed across the districts. The Councils disagreed and predicted that the take up of PRS accommodation would be concentrated in Sedgemoor and West Somerset districts. There was KPI amendment through the post DCO s106 agreement, which took into account the additional bedspaces created through the Site Preparation Works s106. This resulted in a revised metric being monitored in the SEAG Dashboard reports. The most recent data (Jan 2019) gives a further revised threshold which takes into account the s106 threshold and the Hinkley Housing Initiative (not agreed by Councils?). Auditing the PRS take-up figures in the EDFE January (2019) report against the original EDFE peak workforce predictions shows that current figures exceed the original predicted peak thresholds for the PRS in Bridgwater and Cannington (Sedgemoor) and Hinkley Point/Stogursey (West Somerset). Whilst this should give a 'red' flag for this metric, due to the *peak target*, and initiatives in place to increase the capacity in the PRS, assessment is 'orange'.	O
Tenure type of NHB workforce: Latent	The EDFE (2011c) definition of latent accommodation was 'property which had not previously been offered for rent and primarily comprising rooms within people's houses'. It predicted 11% (400 workers) at peak in the latent sector.	R

	The Councils expressed concern at the limitation of this type of accommodation. Data in the SEAG Dashboard originally gave data for accommodation in: house/flat let; room rental; house/flat share with other without clarifying which, if any, of the three categories relate to 'latent' accommodation. This metric appears to be changing with the most recent report providing data for a new metric of 'private rented accommodation' only; but this is not agreed by the LAs.		
Tenure type of NHB workforce: Tourist, B&B, Camping	EDFE and the Councils' gravity models both assume that, at peak, the accommodation of 597 workers (16% of the workforce) in tourist accommodation, although the two models disagree on the geographical distribution. The most recent data (Jan 2019) indicates 15% of workforce (282) are accommodated in caravan/campsites. The predictions for those in tourist accommodation are therefore fairly accurate at this point in time in relation to that target. However, it should be noted that SDC positive support of the use of marginal caravan parks for HPC workers use as second homes has contributed much to this outcome.	LG	
Tenure type of NHB workforce: OO	EDFE predictions are for 500 families (14% of workforce) at peak construction to live in owner occupied (OO) accommodation. The EDFE monitoring data for January 2019 gives a figure of only 1% of NHB workers living in property owned by the worker. However, premature, as peak prediction includes build-up of operational staff.	R	B Likely to grow fast towards peak and beyond.
Tenure type of NHB workforce: Campuses	The EDFE Accommodation Strategy proposed the campuses to be online by month 36, although there was no binding requirement in the DCO to achieve this. There is only one piece of monitoring data (EDFE 2019) which indicates the campuses are used. Qualitative comments state that new NHB workers are 'almost exclusively staying in the campuses'. It would be useful to see extrapolated predictions of the rate of take up for the Bridgwater Campus.	LG Site	A Bridg
Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***	
Local housing market impacts			
Implementation of EDFE local housing support strategy, housing delivery fund	Dashboard data available is of amount of funding drawn down with summative qualitative comments indicating that initiatives are being successful. With the support of proactive LA housing activity, overall bed space delivery is good and well on track (Phase 1 has produced 697 bed spaces against a target of 329; Phase 2 has produced 465 against a target of 320), but there are some concerns about continuing staff funding.	LG	
Local housing market impacts; impacts on local vulnerable groups, house prices.	There is no specific monitoring data relating to this KPI. However, some partial data is available. For example, there has been a notable drop in homeless acceptances from 2012/13. This is acknowledged as being due to the success of partnership working across the authorities and partnership initiatives, which could be influenced by the	A	B

	impact of the housing contributions derived from the HPC development. House prices in Somerset have in general followed national trends over the period from 2016. However, a more micro area market analysis may reveal different scales of change.		

3.5.3 Explanations of any differences; gaps in monitoring and recommendations

Observations on cause of differences:

- Failures of DCO examination to assess the robustness of the accommodation strategy/s106, and ensure effective monitoring arrangements.
- Significant time between planning analysis was completed prior to 2012 and project implementation, with no provision for review of the baseline and updating the strategy and management arrangements.
- No contingency testing for increases in the construction workforce from the consented 5600 people per day, and the potential impacts on the accommodation management strategy.
- Lack of alignment between the accommodation management strategy and the survey of accommodation; changing assumptions e.g. regarding latent, resulting in poor quality monitoring.
- Different interpretations of important elements of accommodation prediction between EDFE and Somerset Councils, including daily commute distance for NHB workers, and definition of latent accommodation. Councils clearly dispute the current definition and changing assumptions on latent accommodation.
- Lack of evidence of accountability, compliance and monitoring on EDFE web site as a core part of implementation.
- Lack of clarity, at least from information in the public domain, of what is being monitored.
- Lack of consistency in governance of monitoring arrangements and in placing monitoring data in public domain. It appears from LA response, that accommodation has been taken out of SEAG into an informal working group for discussion. Working papers are therefore not in the SEAG domain and 'difficult' issues / priorities are not addressed through SEAG.
- Lack of information on complaints as part of the formal monitoring and reporting.
- Location of the Sedgemoor campus on a permanent housing site – potential missed opportunities to enable future permanent homes. DCOs and temporary housing implications have not been taken into account as part of the new MHCLG Housing Delivery Test.

Recommendations:

- *Need for major refresh of the organisation of the monitoring and auditing of accommodation impacts*. KPIs need to be clearly set out and consistently monitored against. Changes need to be clear and agreed by appropriate bodies.
- *The Accommodation Monitoring Strategy (AMS) needs to be urgently updated, with new baseline, and targets/ thresholds, and to be reviewed annually, with any change to construction workforce predictions, particularly if there is any proposed increase from the consented 5600 workers per day.*

- Where predictions are based on a 'point in time' (i.e. peak construction), monitoring reports should also include reflections on whether the predictions are on track to be achieved.
- Need to recognise, and plan for, potential housing legacy benefits in major project DCOs (possible now that legislation allows for housing to be included in DCO applications). For HPC -- note Sedgemoor DC not wishing to be prejudiced by MHCLG for non-delivery of permanent homes due to the temporary Bridgwater DCO campus currently occupying a strategic urban extension site. Priority to scope the legacy opportunities from the Bridgwater Campus, to re-plan what may be possible, to save costs and retain investment, to enable the accelerated delivery of permanent homes.
- Timings of/triggers for delivery of housing infrastructure (e.g. accommodation campuses) need to be clearly stipulated in the DCO to enable key mitigation measures to be delivered in a timely way.
- Distinct monitoring per campus required to consider occupancy.

3.6 Environmental Health sector

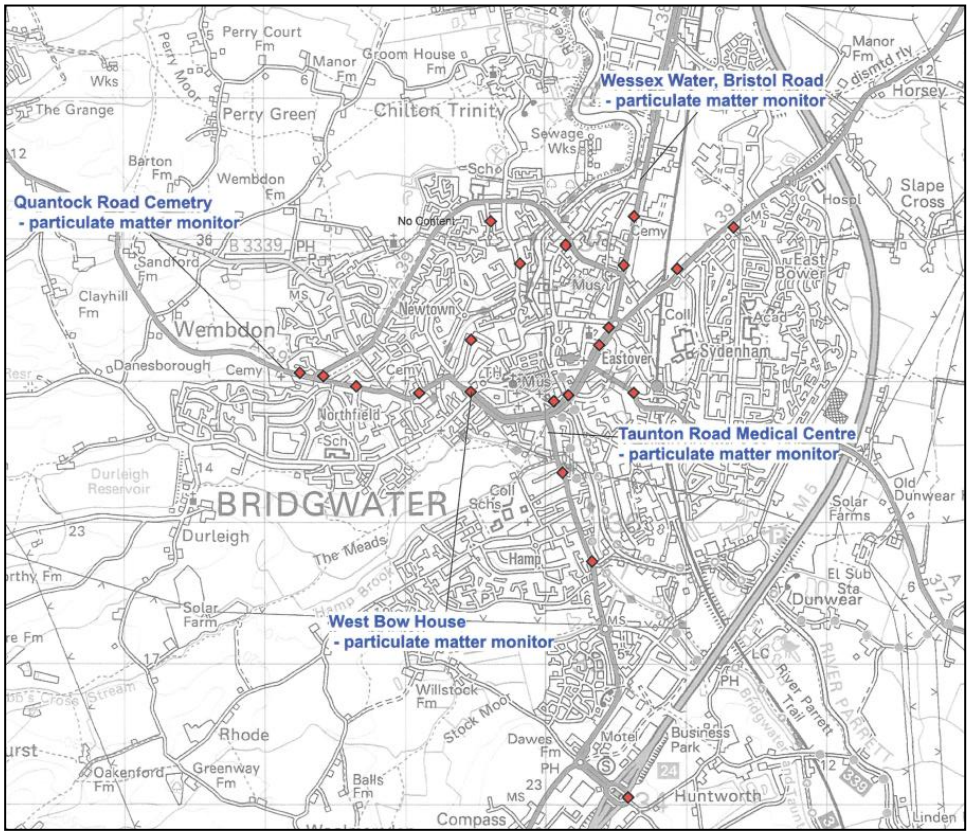
Environmental Health issues are largely addressed by an Environmental Management and Monitoring Plan (EMMP) that was developed to cover the HPC Main Site and Associated Developments. The EMMP covers a number of Subject Specific Management Plans (SSMPs). The key environmental health issues identified are noise and vibration, air quality and dust, light pollution, water quality, waste management, and radionuclides. Key sources reviewed include the Local Impact Report (LIR) (Somerset Councils 2012), EMMP and SSMPs, Code of Construction Practice and various LA, EDFE and agency websites. Unlike the socio-economic impacts of major projects, most environmental impact topics are well regulated, with various standards and thresholds, and monitoring mainly relates to any exceedances of such standards and thresholds.

3.6.1 Key Issues; Indicators/KPIs; Monitoring data -- examples and adequacy

Issue	***Indicators/KPIs***	***Examples of data***	***Adequacy of data***
Noise and vibration impacts on local communities from construction of the HPC Main Site and ADs), and construction related traffic such as HGVs and buses for movement of materials and people.	Noise thresholds exceedances (Eg >65dB LAeq day-time limits) and reported incidents	10 noise complaints were recorded by WSC (2012-2019). SDC received email alerts (number not supplied) relating to noise triggers-- all turned out to be within set limit.	A

Issue	***Indicators/KPIs***	***Examples of data***	***Adequacy of data***
Impact of site *dust and air quality* on local communities	Air quality and dust threshold exceedances, and reported incidents.	Air quality is monitored routinely across the Districts and the outcomes are reported in Air Quality Monitoring Reports and Air Quality Annual Status Reports. See Figure 12 for SDC Air Quality monitoring points; no exceedances reported in SDC Jan 2019 report to Defra.	LG
Impact of site *light pollution* on local communities	Reported light pollution incidents.	Limited information. Eg 4 complaints of light pollution were received by WSC (2012-2019).	R
Water quality issues	Water quality incidents and pollution emissions	EA permit based. Access to permits can be gained through the Freedom of Information Act 2000 (FOIA) / Environmental Information Regulations 2004 (EIR). The Water Management Plan (WMP) states that regular checking and reporting will be carried out by the NNB site Environmental Engineer. Overview available on the EA public register.	O
Waste management	Waste management issues and pollution emissions	The Waste Management Implementation Strategy (WMIS) (ES - Annex 5, EDFE 2011) requires quarterly monitoring reports to the EA and SCC, but no evidence of this action. NNB have applied for 9 waste exemptions.	R
Radionuclide concerns: perceived and tangible	Radionuclide concerns and concentrations	EA permit-based requirements are in place for monitoring during construction. (2017 monitoring data available for the levels of radionuclides -- required for sediment dredging).	LG
Overall Amenity and Quality of Life	Addressed in the 'Social and Community Impacts and Benefits' sector report (s3.4, and Appendix 2).		

Figure 12: Air Quality Monitoring Sites Sedgemoor (2018) (diffusion tubes indicated, unless otherwise stated)



3.6.2 Environmental Health Sector Auditing -- degree of accuracy of monitoring findings against predictions

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***
Noise and vibration impacts	SDC had email alerts relating to trigger values but investigation showed there were not any exceedances. Some complaints on noise from WSC. No complaints highlighted on vibration.	A
Air quality and dust	The WSC Air Quality Annual Status Report (2018) states that *'no incidents/notifications were made to the Council in period of review'.* Air quality monitoring is comprehensive it just doesn't currently separate out increases in pollution due to HPC. HPC run 4 air quality monitoring stations– the data might not result in a trigger for exceedance (and notification of the LA) but may still be raising levels of nitrogen oxides, PM etc.	A

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***
Light pollution	As noted, no publicly available data has been located relating to light pollution and therefore the accuracy cannot be audited.	B
Water quality	EA permits are in place. As noted, no publicly available data has been located relating to water quality and therefore the accuracy cannot be audited.	B
Waste management	As noted, no publicly available data has been located relating to waste management and therefore the accuracy cannot be audited.	B
Radionuclide concerns	Current levels of radionuclides are within the limits set by the Environment Agency and permits are in place.	LG

3.6.3 Explanations of any differences; gaps in monitoring and recommendations

Explanations of issues and differences

Although the various environmental health topics reviewed in s5.6 may be well regulated, and within accepted standards and thresholds, 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.

LA data: The Councils have statutory duties regarding environmental health and if complaints are received from members of the public they must be investigated. It is noted that SDC Customer Access Services reports all complaints received by the council and these are monitored and reported to the Hinkley programme board at SDC. SDC officers also meet regularly to discuss issues and complaints across the project.

However, it has been difficult to locate the monitoring information/data for key environmental health issues. With regard to some topics (e.g. radionuclide monitoring and water quality) permits stipulate information/data that has to go to the EA but not necessarily to the Local Councils. If these permits have any compliance issues the EA produce a Compliance Assessment Report, these are available on the Public Register. EA permit compliance activities do no routinely get shared with the local authorities. WSC and SDC authority monitoring reports are not inclusive of HPC, and the specific HPC AMR 2016-2017 and 2018 produced by SDC does not supply data or analysis. Using air quality as an example, there appears to be a gap where no one is addressing the meaning behind additional data being gathered for HPC and the underlying air monitoring programme data already available.

A key problem has been determining what the requirements are within Environmental Plans for monthly reports/monitoring data to be sent to the councils; and if there is a stated requirement, which council and who (job title) is the central contact? How efficient have the District Councils been with ensuring that data/reports reach them regularly and are they independently analysing them? Has there been enough resource to allow this to happen? If EDFE data cannot be shared this is difficult to determine.

In some instances e.g. light pollution, complaints are the trigger for review and possible change in limits; lack of guidance for the public on the District Council web pages regarding routes for complaints may result in an impression of low impact. Using noise as an example

complaints are spread out between WSC, EDFE and email notifications to SDC; it is not clear how all this is being pulled together?

EDFE Data: when contacted to provide an overview of the monitoring data they hold for key environmental health topics EDFE replied that this was '*too large an undertaking'* for them to be able to help. It is not clear from the Construction Monitoring Organisational Framework (see Fig 12 in s4) where monitoring of Environmental Health issues fit into this system and this is a major gap in the project governance. From the CoCP Document: 'Environmental Events Categories (ENV) and reporting requirements' the Environment Agency appear to be the key recipient for breaches and it is possible that data is being exchanged but not via the public bodies or being placed in the public domain.

Gaps in monitoring and recommendations

- What, if any, are the implications of the change of emphasis in the DCO to the CoCP?
- Which plans were signed off by WSC?
- What are the governance arrangements for monitoring? For example, in relation to waste management:
  -- are quarterly monitoring reports being sent to LAs?
  -- have the SWMPs been viewed outside the EDFE project team?
  -- are the KPIs in the Waste Management Strategy being referred to?
- How is data being shared between relevant bodies and how are any issues arising from monitoring being addressed?
- Monitoring and placing information in the public domain needs to be a regulatory requirement.
- A more robust focus is needed in the DCO examination process on requirements for monitoring and which management plans are to be signed off by which body. This is an area for framing clear Requirements in the DCO. Why do you wish to monitor? Is there relevant expertise in the LPA to interpret data? If not does the s106 provide for buying in this expertise? Where will it be reported? if thresholds are breached what are the consequences?

3.7 Biophysical Environment sector

Biophysical Environmental issues are largely addressed by an Environmental Management and Monitoring Plan (EMMP) that was developed to cover the HPC Main Site and Associated Developments, and its various SSMPs. The key biophysical environmental issues identified are landscape and visual amenity concerns and effectiveness of screening measures/ effects on designated sites; archaeological issues and heritage issues; Impacts on local terrestrial ecology, local coastal and marine ecology; and flood risk issues. Key sources reviewed include the Local Impact Report (LIR) (Somerset Councils 2012), EMMP and SSMPs, Landscape Management Plan, and various LA, EDFE and agency websites.

3.7.1 Key Issues; Indicators/KPIs; Monitoring data --- examples and adequacy

Issue	***Indicators/KPIs***	***Examples of data***	***Adequacy of data***
Landscape and visual amenity	The HPC Landscape Strategy (October 2011), does not specify how the impacts and mitigation measures are to be monitored.	Quantock ANOB manage plans. Compliance is a LA matter. Unable to track any monitoring of impacts.	R
Archaeological issues; heritage issues	It is apparent that a great deal of work has gone into preserving the archaeological finds, and documentation is located on a large database.	SCC note archaeological monitoring and evaluation has been undertaken. An overview of current documentation recently received from Somerset Heritage Centre, but main HPC site data hasn't been published yet. Currently within the legal timeframe for compliance.	A
Ecological impacts	The EcMMP states that a monitoring plan would be implemented for the HPC construction phase and an Ecological Clerk of Works (ECoW), appointed by EDFE, would carry out inspections of the implementation of the control measures and check compliance with the requirements of the EcMMP and statutory legislation. It has not been possible to retrieve monitoring information and it is unclear if the findings of ECoW are being communicated outside EDFE.	There have been 27 complaints regarding environment/ecology (excluding Q1 2017) to EDFE in the last two years. These are summarised in Table 4. No further detail regarding specific issues is publicly available.	R
Flood Risk	Indicators--flood risk incidents and effectiveness of mitigation measures. The Site Drainage Strategy (SDS) states that the EA is the primary regulator responsible for managing flood risk and pollution with regard to the water environment. The SDS also details the actions taken to prevent flooding; monitoring details are not included.	The EA do not actively monitor this area as the responsibility is with EDFE to monitor and review the appropriateness of their flood response plans for the various phases of work on the main site. However, SDC have informed the research team that EDFE have paid their s106 contributions / obligations, and these in turn have enabled the EA to expedite an excellent flood risk management scheme in Cannington.	R

Table 5: Summary of environmental/ecological complaints or enquires to EDFE 2017-2018 (EDFE-Community Relations Reports)

Quarter:Year	Complaints: environment/ecology	Enquiries:environment/ecology
Q1 2017	4*	
Q2 2017	2	5
Q32017	1	3
Q42017	4	9
Q1 2018	7	8
Q2 2018	9	9
Q3 2018	2	7
Q4 2018	2	8

*The Report does not state whether the contact was a complaint or enquiry

3.7.2 Biophysical Environment Sector Auditing -- degree of accuracy of monitoring findings against predictions

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***
All Biophysical Environmental impact topics	All the biophysical environmental impact topics addressed in this report have a blue audit. This indicates that information is currently not publicly available or has not been located, although there is fragmented evidence on various outcomes (see for example the note in s3.7.1 on managing the Cannington flood risk). EDFE may hold more information, however, when contacted (9th April 2019) the HPC Site Team replied '*unfortunately the collation of this amount of information is a gigantic task, and we are under pressure to remain focused on our current construction programme'*. Using ecological impacts as an example, it is not clear if there is a requirement for EDFE to pass information to the local council (now WSTDC). The Final DCO (2013) states that an Ecological Mitigation and Monitoring Plan, and a Habitat Plan had to be submitted to and approved by WSC but it is not clear if monitoring information is required to go beyond EDFE.	B

3.7.3 Explanations of any differences; gaps in monitoring and recommendations

Gaps in monitoring and recommendations

- Clarify governance arrangements for biophysical environmental monitoring.
- Need clarification on the processes for sharing data between relevant bodies and for addressing any issues arising from monitoring.
- Monitoring and placing information in the public domain needs to be a regulatory requirement.
- There is need for a more robust focus in the DCO examination process on requirements for monitoring and on which management plans are to be signed off by which competent body.

4. Contextual studies: governance and comparative projects

4.1 Governance

4.1.1 Introduction

Of key importance for the management of the local impacts of the construction of Hinkley Point C are the effectiveness of the monitoring structures and procedures put in place for the project, and their operation in practice from various stakeholder perspectives. WP4 (see Appendix 3) provides a summary review of the structures and procedures and their operation, before commenting on some perceived issues, and on possible alternatives/recommendations—both for the HPC project and for future NNB projects.

This section of the Final Report reports on some of the findings of that review, set against some best practice considerations for monitoring and auditing, as covered in WP1. These include, for example, the importance of a clear monitoring and auditing programme, including open and regular reporting, and a partnership between the various stakeholders involved (eg developer, local authority and local community), with information openly shared, and independently verified. Some draft recommendations for improved practice are set out in s6 of the report.

4.1.2 Organisation of HPC construction stage monitoring and auditing

Project monitoring and decision-making structures are set out in the s106 for the DCO 2012. These include socio-economic issues, with reports to the Socio-Economic Advisory Group (SEAG). These reports provide monitoring data in relation to Accommodation, Supply Chain Engagement, Health, Community Safety, Tourism, Education, and Job Service. For example, the Health Task and Finish Group (HTFG) monitors the impacts of the project on local health and crime indicators. The s106 also contains provision for monitoring and decision making on other impact areas. For example, the section on Transport sets out the roles of the developer in monitoring various travel plans, and those of the Transport Review Group (TRG) in reviewing the monitoring information and the scope of its decision making.

There is provision for other monitoring in various DCO documents. For example, an Environmental Management and Monitoring Plan (EMMP) that was developed to cover the HPC Main Site and Associated Developments, largely addresses environmental health and biophysical impacts issues. The EMMP covers a number of Subject Specific Management Plans (SSMPs), such as dust and air quality, noise and vibration, and ecology.

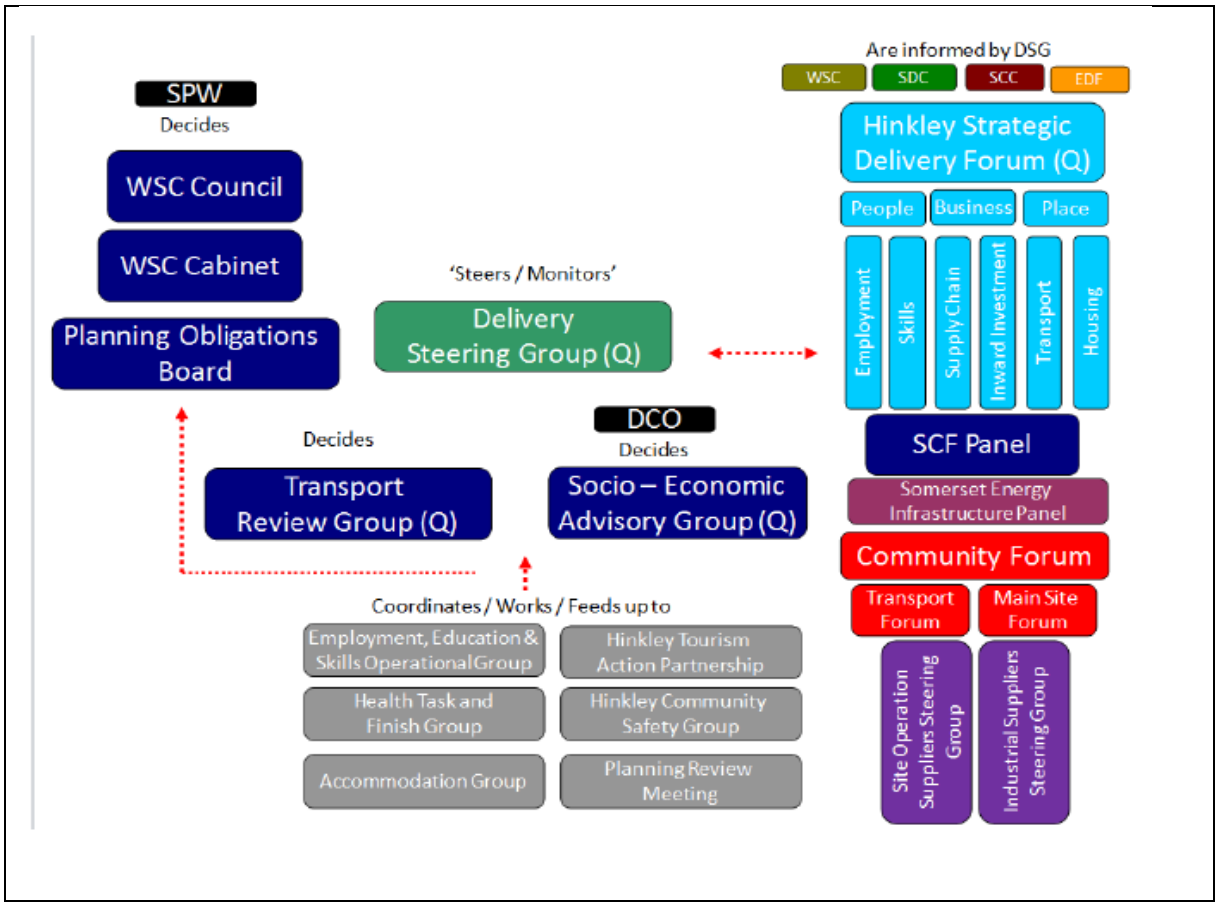
In addition, there are a number of more informal fora that meet on a quarterly basis and which feed into the more formal decision making processes. These include the Community Forum, Transport Forum, and Main Site Neighbourhood Forum; they have an independent chair. They include officers of the various local councils, the developer, and other stakeholders; they are open to the members of the public, and their minutes are available. There are other meetings attended by officers only to discuss any issues that arise, for example, the Delivery Steering Group. See Figure 13 for an outline of the range and linkages of these and other associated groups.

Another significant element in the organisation of monitoring is the Annual Monitoring Report, produced by Sedgemoor District Council, which goes some way to pulling together a comprehensive picture of the construction stage impacts on a systematic annual basis – although with a focus on the socio-economic impacts. SDC outline the importance of the role of this report as set out in Table 6. In a similar vein, EDFE produces an annual booklet, Hinkley Point C: Realising the Socio-economic Benefits, which sets out in detail how EDFE is delivering the Hinkley Point C promise.

Table 6: Role of SDC Annual Monitoring Report in relation to the Construction of HPC (SDC 2017)

This section of the report monitors and evaluates the construction of Hinkley Point C (HPC) and the implementation of the Development Consent Order (DCO), and any other associated Town and Country Planning Applications (TCPA) that are linked to the project. The monitoring of the HPC project is key to ensuring the proper planning of the area as it feeds into the wider planning for the area. *The success of the management strategies deployed, together with the planning obligations and requirements/conditions, and change resulting from supply chain development and wider project implementation, may in due course lead to new or different impacts. It is essential that Sedgemoor as the local planning authority where a significant number of impacts may arise, monitors change, considers variance, and establishes the nature of impacts that are positive, negative or neutral. The changing nature of the project during implementation will inform Council responses and specifically mitigation planning.*

Figure 13: Somerset Local Authorities' HPC Construction Monitoring Organisational Framework



4.1.3 Operation in practice of HPC construction stage monitoring and auditing

The following contents briefly set out a few examples of how various elements of the organisational structure appear to be operating in practice during the first two and a half years of the main site construction process, drawing on both monitoring evidence and some stakeholder feedback. Most of these groups have existed since Site Preparation.

Transport Review Group (TRG)	The TRG is a formal group, required under the S106. It comprises representatives from the Somerset LAs, Highways England and EDFE, and meets quarterly. Its purpose is to review the various Workforce Travel and Construction Traffic Management Reports produced by EDFE, and to make recommendations to improve implementation, where appropriate, including approval to amendments to the Management Plans. It has a clear role and there is clear monitoring information (SDC website) on mode of transport to HPC site and AD sites, Park and Ride, and bus patronage and HGV movements. Data is produced quarterly spanning from Q2 2016 – present.
Socio-Economic Advisory Group (SEAG)	This is another formal decision making group, required under the s106. SEAG also meets quarterly, with a similar membership to TRG plus various service providers, including Avon and Somerset Constabulary, Devon and Somerset Fire and Rescue, and the Somerset CCG. It has a wide (perhaps too wide) remit, including employment, education and skills, accommodation, tourism, community safety and health. EDFE collect and assemble most of the data and supply it to SEAG, via SDC, on a quarterly basis for some key performance indicators, six-monthly for some, and on a more inconsistent basis for others. The information is also publicly available on the SDC website. Some of the data is available from 2016. A key source is the 6-monthly sample workforce survey carried out by external consultants for EDFE. There was an important revision of the survey for Jan 2019 results.
SEAG support groups	Figure 13 shows the various groups which feed into SEAG. Performance varies, for example: • The Health Task and Finish Group is a good example of a monitoring/ advisory group, which engages with EDFE to monitor key health and crime performance indicators. Members include the Somerset LAs and relevant police, health and ambulance authorities. It produces detailed health and crime data on a quarterly basis for the Hinkley Zone and the wider Somerset context. • The operation of the Accommodation Group appears less satisfactory. Whilst conflicting perspectives on the potential accommodation impacts of the HPC NHB workforce, and changes to S106 requirements, complicate review, there is inconsistent and intermittent monitoring, which does not appear to be set up on a consistent basis to monitor the implementation of requirements.
More informal community fora	The various informal fora appear to provide a satisfactory framework for more local community participation and for information sharing, with discussions transparent via publicly available minutes; for example: • EDFE produce Community Forum Meeting Minutes quarterly. They are currently available from 2014 – present (although not all meetings are available to view). The minutes provide feedback on a number of issues – for example, on accommodation and employment issues, and the Community Impacts Mitigation Fund. The feedback is largely from local council representatives. There is a wide range of LA, local agency and EDFE participants, including representation from local parish councils, but few participants from members of the public. • EDFE produce quarterly Transport Forum meeting minutes (EDFE), available for this study from Q1 2016 – present. • There is also a Main Site Neighbourhood Forum.

Delivery Steering Group	A high-level steering group for discussion about strategic HPC implementation issues LA officers attend the Delivery Steering Group, to discuss any HPC issues that arise.

4.1.4 Issues of structure and operation

S 4.1.4 considers Issues with the current structure and operation of HPC monitoring and auditing in relation to best practice considerations.

(i) Structure

- The monitoring structure in Figure 13 focuses largely on the socio-economic and transport elements (important though they are). A clear overall monitoring framework that sets out the key environmental health and biophysical elements is missing from the project ES (as far as can be checked). Instead, there are fragmented monitoring considerations in various sections of the ES/DCO documentation.
- The relationships for monitoring and auditing, in particular between the developer (EDFE) and the local authorities, and other agencies are not always clear.
- There is a need for clarification and consistency as much as possible, on the spatial zones and time-periods used in monitoring. There is some confusion over the use of peak construction indicators before peak construction. The lack of intermediate milestones for some (many?) indicators may account for much of this.
- The framework coverage for auditing is much more partial than that for monitoring.
- Not all the useful information collected is openly available (eg some of the Workforce Survey data, and most of the physical environmental data), and some is only available at very aggregate levels.
- There is not always a clear 'read across' from e.g. requirements / commitments through to monitoring, making it difficult to establish performance for some targets.
- It is not always clear who is responsible for collecting some of the information in relation to some indicators/KPIs (eg for environmental health and biophysical impacts), and where this information should be placed in the public domain.
- A much wider governance issue is whether monitoring and auditing of project impacts should be a planning and implementation activity rather than a communications activity.

(ii) Operation

- Whilst there are some good examples of regular good quality monitoring of some key indicators, for others the reporting is intermittent, with temporal gaps; for example, some of the socio-economic reports to SEAG are missing for various dates since 2016; and there are data gaps within the available reports.
- Some data for several important indicators is missing altogether, is not publicly available, and not shared with key stakeholders --- such as some of the accommodation data, and most of the biophysical impacts data.
- There is little evidence of independent analysis and verification of information, which would enhance the credibility of the monitoring and auditing process. There is no central repository of monitoring information openly available for stakeholders to easily access.
- Whilst the various community fora have good membership from local agencies (and local issues are raised for example via parish councils), there should also be an effective channel of communication for members of the public.
- There are significant different interpretations of important elements of predictions, and key indicators, between EDFE and the LAs, for example including daily commute distance for NHB workers, and definition of latent accommodation.

- KPIs need to be clearly set out and consistently monitored against. 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 agreed in the appropriate boards.
- Some relevant local authority and national government data (eg IMD) is not available until mid-2019, and other information is difficult to obtain.
- Only aggregate, and primarily CDCZ or SW regional-scale, data is available for some indicators.

4.1.5 For draft recommendations, see s 6.2

4.2 Comparative studies

4.2.1 Introduction

Three studies have been chosen for brief parallel study to provide some additional intelligence on the organisation of the monitoring, auditing and reporting of project impacts, and to provide contributions towards recommendations for improved practice. The three chosen studies are:

1. **London 2012 Olympics project -** legacy
2. **Crossrail –** construction nearing completion and
3. **Wylfa Newydd –** examination completed.

Each project is introduced briefly, followed by a highlighting of some monitoring, auditing and reporting features which may be useful to consider for future NNB projects. This is a very brief summary of the more detailed studies set out in WP4.

4.2.2 London 2012 Olympics project

One of the key objectives of this project was to maximise the economic, social, health and environmental benefits of the Olympic Games for the UK, particularly through regeneration and sustainable development in East London. The Olympic Delivery Authority (ODA) was the public body charged with building the venues and the infrastructure for the Games (divided into the Olympic Park and the Athletes' Village). Under special legislation, the ODA had the advantage of being the LPA, and the development control authority for the Olympic Park Area. In 2012 the London Legacy Development Corporation (LLDC) became the local planning authority for the area with responsibility for both planning decisions and the preparation of a Local Plan, with the aim of promoting and delivering physical, social, economic and environmental regeneration of the Olympic Park and its surrounding area.

Some notable features of monitoring and auditing of the construction of the London Olympics project of relevance to the future monitoring and auditing of HPC construction and to further NNB activity include:

- a detailed and disaggregated assessment of a wide range of both socio-economic and bio-physical environmental impacts; see for example the employment monitoring and auditing in Table 7, showing good outcomes for employment of local people; previously unemployed and those of BAME ethnicity. Also successful were a job brokerage scheme which placed over 1250 people (primarily local residents) into employment on the project,

and a training programme which exceeded targets by training (up to 2011) 3,250 (against a target of 2,250), including 400 apprentices (against a target of 350).

- an independent verification facility, via the Commission for Sustainable London (CSL). CSL reported to the Olympic Board (jointly chaired by the Mayor of London and the Secretary of State for Culture, Media and Sport). It was hosted by the Greater London Authority (GLA) but operated as an independent commission, within an agreed assurance framework and a set of protocols. CSL clearly set quantitative employment targets for LLDC; however, most other targets were qualitative or semi quantitative. It produced five annual reviews and a range of topic thematic reviews. An external audit of its activities concluded that CSL added significant value to the London 2012 programme. Could its particular blend of assurance and critical friend approach be replicated to provide independent sustainability assurance over key infrastructure and regeneration decisions made by governments at the national and regional levels?
- a commitment to delivering a long term legacy for the local area, to transform this part of East London to a destination where people will choose to live, work and visit.

Table 7: Workforce/employment monitoring for the London 2012 Olympics site (Dec 2010)

	Olympic Park		**Athletes' Village**	
Workforce on site	6500	(benchmark)	5400	(benchmark)
% resident in host boroughs	21	--	27	--
% resident elsewhere in London	34	--	40	--
% resident elsewhere in UK	42	--	30	--
% residing outside UK/ or no information	3	--	3	--
% previously unemployed	12	7	10	7
% women	4	11	3	11
% disabled	1	3	0.5	3
% BAME (Black, Asian or Minority Ethnic)	19	15	13	15

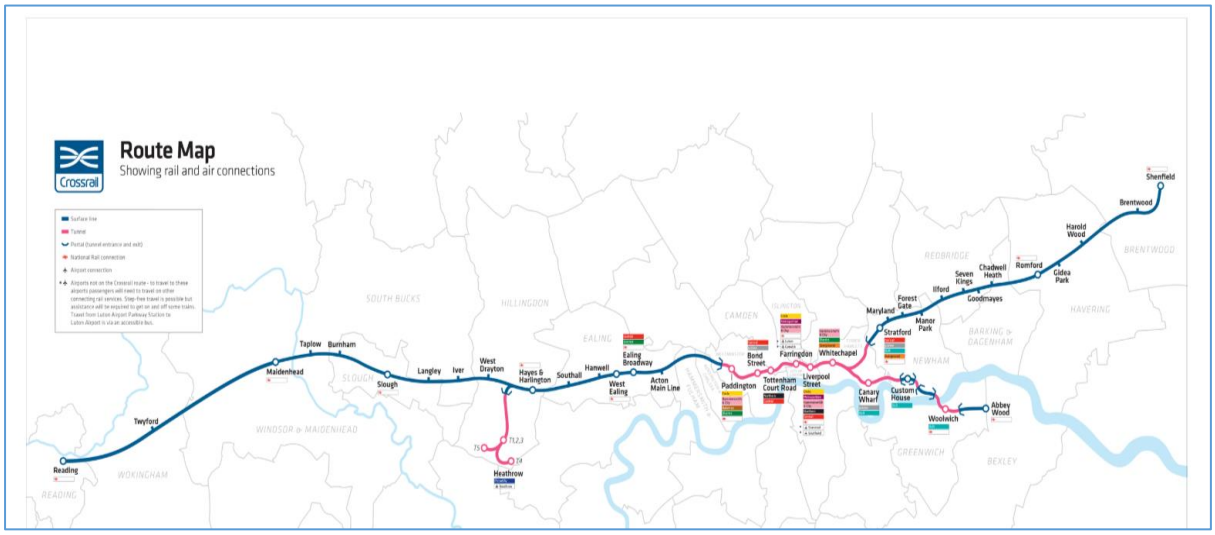
Source: Glasson and Therivel (2019), Adapted from *Employment and Skills Update*, Olympics Delivery Authority, Jan 2011

4.2.3 Crossrail project

Crossrail is a rail project linking west and east London – from Heathrow and Reading in the west across London to Shenfield and Abbey Wood in the east. It consists of 42 kilometres of new tunnels, 10 new stations, over 50 kilometres of new track, integration of three signalling systems and upgrades across existing infrastructure. Once constructed the route will form the 'Elizabeth Line' run by Transport for London (TfL) as part of London's integrated transport network. It is being constructed by Crossrail Limited which is a wholly owned subsidiary of

TfL and jointly sponsored by TfL and the Department for Transport. Consent for the project was through the Crossrail Act 2008 (hybrid bill). Construction of the project commenced in 2009 and was due to be completed in 2018 with phased opening from 2017 (Figure 14). However, the project has been delayed and phased opening is due to begin from December 2019 (Paddington to Reading) and the central section to be delivered end of 2020. ERM were the leading environmental consultants for the Environmental Statement; there were four Supplementary ES submitted and a number of Amendments of Provisions.

Figure 14: Route map. Sourced: http://www.crossrail.co.uk/route/maps/regional-map

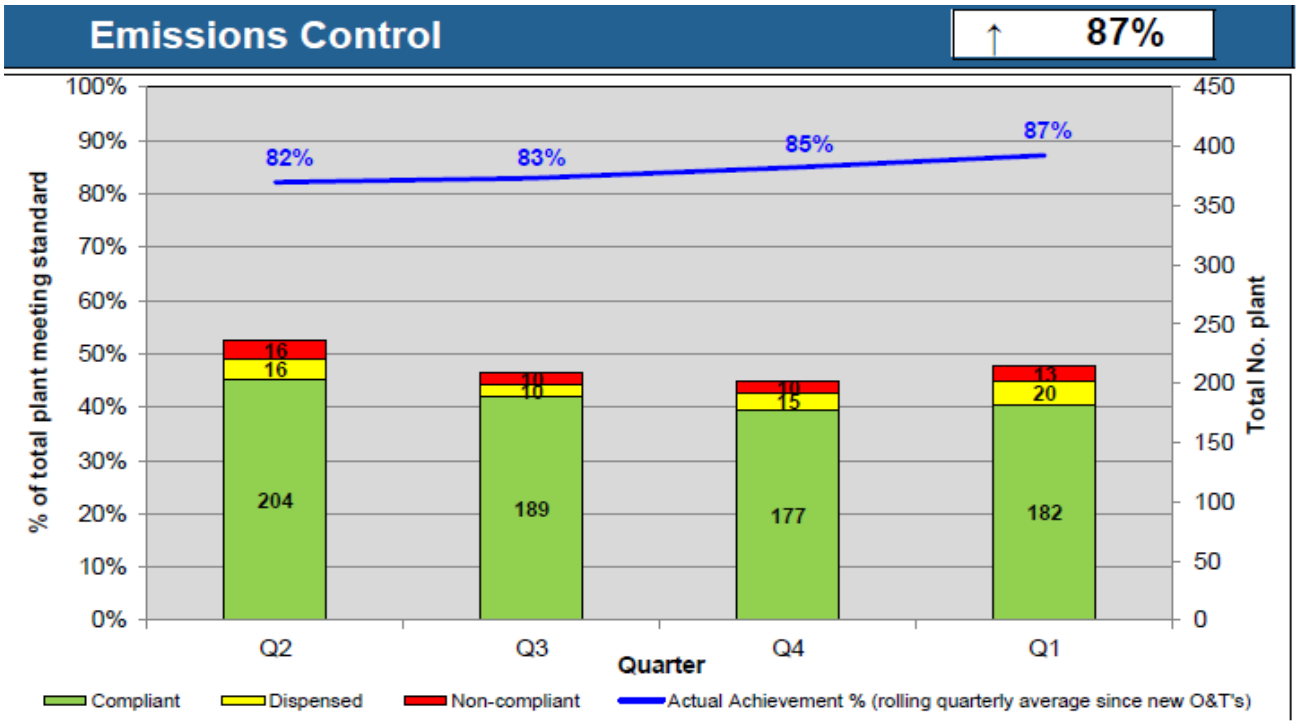


The project is not yet complete, and there are ongoing examples of how the project is being monitored and audited. Some examples of relevance to the monitoring and auditing of HPC construction and further NNB activity include:

- a 'Register of Undertakings and Assurances' (2011) that captures '*all the individual undertakings and assurances given to petitioners and to Parliament into a single document to 'ensure that the "nominated undertaker" (any person appointed to construct Crossrail), as well as the Secretary of State for Transport or any other organisation exercising the Act's powers, complies with them.'* This runs to 81 pages and provides a very useful consolidation of undertakings and assurances for the project;
- detailed monitoring information across the range of socio-economic and biophysical environmental impacts. Some of these are presented in dashboard format (see Figure 15). For socio-economic data, there are details of contracts greater than £10,000, plus a UK supplier map;
- following the successful precedents of the Channel Tunnel and the Channel Tunnel Rail Link, there is a requirement in the Crossrail Act for an independent person to advise members of the public who do not know who to complain to and act as mediator in cases where complainants believe they have received an unsatisfactory response. The Crossrail Complaints Commissioner was appointed in 2009.
- the Crossrail website reports summary information under the umbrella term 'sustainability' which comprises sections on: archaelogy; economic sustainability; environmental sustainability; Crossrail innovation programme; Crossrail learning legacy; health and safety; and

- there is a legacy site containing over 470 documents including technical papers, good practice documents, data sets and micro-reports.

Figure 15: Crossrail -- example of environmental monitoring and auditing dashboard



4.2.4 Wylfa Newydd

Wylfa Newydd was one of two nuclear power stations projects proposed by Horizon Nuclear Power, owned by Hitachi plc. Situated on the Isle of Anglesey, beside the former Magnox Wylfa Power Station, Wylfa Newydd was to include two nuclear reactors with a minimum generating capacity of 3000 MW. It is anticipated that the project would create up to 850 permanent jobs, with a construction workforce of around 9,000 workers. Horizon submitted the DCO for Wylfa Newydd in June 2018. In January 2019 it was announced that work was being suspended due to the inability to reach an agreement on the financing and associated commercial arrangements. The examination was completed, but the project remains suspended at the time of writing this report. As such, there is no construction monitoring and auditing, but there are some interesting plans and proposals for if and when the project ever moves forward into construction, including:

- a key Code of Construction Practice (CoCP) document, Figure 16, which sets out the Engagement Framework under which the monitoring would be carried out. The Programme Board, with developer, local and Welsh government, and other agency members, would review monitoring reports produced by the subject Engagement sub-groups and determine whether additional mitigation or further action was necessary. The purpose of the Community Liaison Group is to ensure that an efficient communication mechanism is in place to exchange information between the developer, stakeholders and

local communities, and that the those communities can bring any concerns or impacts to the attention of the developer and that actions can be put in place to deal with concerns and effects;

- the s.106 ensures that there is internal capacity within the County Council to feed into the monitoring activities;
- the proposed establishment of a Programme Office within the IACC to undertake and support the delivery of the Council's statutory consenting responsibilities;
- a consolidated listing of Horizon's environmental and sustainability corporate policies for the project (Figure 17); and
- a comprehensive set of monitoring and reporting information outlined in Schedule 16 of the s106 (April 2019) with, for example, quite specific monitoring requirements for project supply chain and workforce accommodation data.

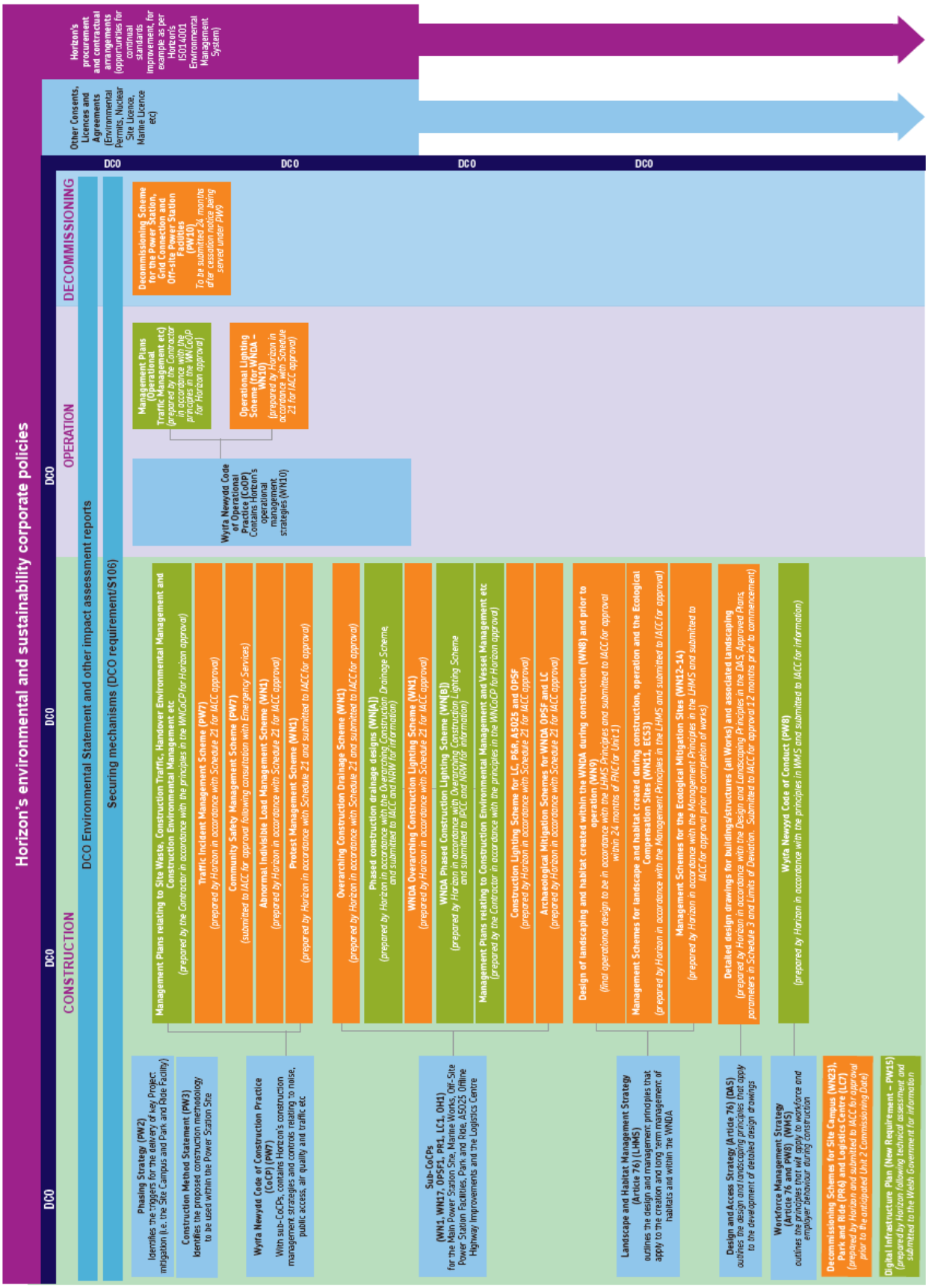
Figure 16: Wylfa Newydd Engagement Framework CoCP (June, 2018)

3.2.2 Horizon will provide regular reports on monitoring of air quality, noise and water management to the Environment and Built Heritage sub-group; and on traffic to the Transport sub-group.

3.2.3 Horizon will provide monitoring in relation to socio-economic impacts through the relevant engagement sub-group identified above, for example, monitoring data from the Workforce Accommodation Management Service (WAMS) will be provided to the Accommodation and Tourism Services sub-group.

3.2.4 The engagement sub-groups above will provide information in relation to decisions and actions taken in relation to monitoring activity to the Community Liaison Group (CLG).

Figure 17: Horizon's Environmental and Sustainability Corporate Policies for Wylfa Newydd; CoCP, 2019



5. Composite explanation of findings and differences, and identification of gaps

5.1 Auditability of predictions

The public availability of a flow of accurate monitoring data is the key to the auditability of predictions of the impacts of HPC construction. As the monitoring sections for the various sectors in s3 show, there are considerable variations in the adequacy of monitoring information. The research found the most adequate monitoring information for the transport, and social and community impacts (especially health and community services) sectors. There is also some good information for much of the economic development sector, although there are some gaps. There is more fragmented monitoring information for the accommodation sector, and publicly available information is very patchy, and in several cases completely absent, for many of the impact indicators in the environmental health and biophysical environment sectors. **As such, in several cases, the available monitoring data proved inadequate to audit ES predictions and DCO/S106 requirements and obligations.**

There may be a variety of reasons for the variations in adequacy of the monitoring data. There are well-developed monitoring systems for some indicators, such as traffic flows and, for this project, for health and community safety impacts. As noted in s4.1, other part explanations may be the degree of specificity of DCO/S106 requirements and obligations, and the relative efficiency and organisation of the various monitoring groups involved in the HPC project. It should also be recognised that some of the more indirect impacts may be more difficult to monitor accurately.

5.2 Summary assessment of predictions

A summary of the accuracy of predictions for the various sectors, as far as is possible from the publicly available monitoring data, is set out in Table 8.

Table 8: Audit summary -- of HPC sectors actual impacts against predicted impacts

Impact sector	***Commentary on actual vs predicted impacts***	***Summary RAG colour coding***	
Economic development	At the current, pre-peak phase, the project is performing 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. However, there is some debate about the actual level of total workforce numbers, set against predictions, about disaggregated employment impacts (eg skills analysis for HB and Non Home-based (NHB) workforce, opportunities for various disadvantaged or under-represented groups), and long-term sustainability implications.	LG	A
Transport	There is also current 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, the car share system, in	LG	A

	place in relation to worker journeys to the P&R sites, has not been as effective as expected, and there was the unexpected issue of fly parking. However, better management appears to be now in hand for both issues. Delays in the delivery of key transport infrastructure, including the jetty and P&R sites, meant that there were more issues in the early stages of the project.	
Social and community	Overall, there is good performance against a number of the impact indicators. For health, the early provision of the on-site 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, including the implementation of the Worker's Code of Conduct, and some resourcing has been provided towards community liaison and policing. EDF have also provided resources towards emergency services impacts, and project impacts have been limited. 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.	LG
Accommodation	Assessment of accommodation actuals against predictions is complicated by differing views of predictions and accommodation type definitions, and especially by most predictions being for peak employment (with all campuses assumed then operating at/near capacity). Actual locations of NHB workers do seem to be more concentrated in Sedgemoor (esp. Bridgwater) than predicted, and more in the Private Rented Sector (PRS) tenure category. Where there is data, there does seem to have been some useful housing support initiatives. 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 on homelessness in Somerset.	A
Environmental health	Unlike the socio-economic impacts, 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 team found little publicly available information to confirm this, other than a relatively low level of local complaints. It is unclear how data is being collated between the parties involved (Councils, EDFE, and EA) and if the sum of these add up to more significant impact on the public. Routes for public complaints are unclear and not conducive to gain public involvement or trust. Overall, there is a split colour summary between amber (mixed adequacy) and blue (no information).	A / B
Biophysical environment	The key biophysical environmental issues identified are landscape and visual amenity concerns and mitigation measures; archaeological and heritage issues; impacts on local terrestrial, coastal and marine ecology; and flood risk issues. Management plans exist for these topics (eg EcMMP) and it is assumed that mitigation and monitoring work in hand.	B

	However, currently, all the biophysical environmental impact topics addressed in this report have a blue flag, which indicates that information is not publicly available or has not been located to date to complete an audit. As with environmental health, there appears to be a split regarding storage of information and responsibility for monitoring.	

5.3 Explanation of findings and differences

The explanation of findings and differences between actual and predicted impacts raises a number of positive and negative factors influencing impacts *at this early stage in the ten year construction programme.* There are many *positive findings*, often resulting from the effective implementation of mitigation and enhancement measures. These for example include the transformational skills, training and education provision; the on–site campus with its Medical Centre; the Workers Code of Conduct and community safety initiatives; the provision of transport initiatives including the Park and Ride facilities, the Cannington Bypass, and the bus to site system; plus a whole array of management plans and, primarily EDFE, funding initiatives.

Factors behind some of the more negative findings, and differences between actual and predicted impacts, raise a number of categories, 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. Finally, there are also the challenges faced by a major UK NNB project with no recent UK comparators. These are set out further below.

Time delays in commencement of construction project	• Major delay in commencement of main construction stage, with predictions dated by at least 5 years. • The predictive data on the construction workforce requires a refresh against a timeline to reflect a more adaptive impact assessment, moving towards peak
Project modifications	• For example, for HPC this includes delay in delivering the temporary jetty; provision of only one Bridgwater Accommodation Campus; and revised s106 re level of PRS accommodation; changes to various buildings and structures, and to delivery of highway improvement schemes; and construction programme changes in timing between two reactor units.
Changes in baseline conditions	• For example, includes: significant changes in local and regional unemployment levels from the higher levels predicted in baseline studies to lower levels in 2018/19, and in the accommodation baseline.
Inadequate resourcing of the monitoring and auditing activities	• Needs to be a priority for both developer and LAs, the latter with service agreement with the developer. • The Councils did seek funding to monitor the HPC project in implementation and this was not supported by EDFE or examined/ challenged by the Examining Authority.

Lack of clarity on definition of some indicators	• For example, for employment -- *what is a worker*, *which workers should be included in the site profile,* and *what is the predicted average home-based workforce over the project life?* The DCO examination was an opportunity missed for clarification of such socio-economic issues. • For example, accommodation–*what is latent accommodation*? • Lack of targets for some indicators – for example, for several accommodation indicators.
Lack of trigger points in DCO/s106 obligations and requirements	• For example, lack of including, or delay in meeting, DCO trigger points in relation to completion of temporary jetty, Bridgwater Campus accommodation, and P&R sites. • Failures of DCO examination to assess the robustness of the accommodation strategy/s106. • Poor wording in DCO requirements. • Need for more congruence between DCO and s106
Over-focus on peak construction impacts	• Whilst some sector predictions include evolution of impacts over the construction stage (eg-- for employment local content), longitudinal timelines are missing for other sectors (especially accommodation), leading to mismatch between actual current civils stage and predicted peak impacts.
Degree of accuracy of some predictive techniques.	• For example -- concerns about effectiveness of gravity model approach in forecasting local geographical distribution of NHB workforce.

5.4 Identification of gaps

Gaps in organisation and process	• Lack of clear monitoring framework, with a comprehensive set of socio-economic and environmental sub-groups responsible for collecting, monitoring and auditing specific sector impacts data. (Nb: plans are in hand, as outlined in the CWDS and Implementation Plan (EDFE 2018), to rationalise the workforce monitoring arrangements by assessing progress in three strategic themes: Employment, Skills, Apprenticeships and Young People). • Not always a clear relationships between developer and LAs in terms of monitoring and auditing roles. • Not always a clear '*read across'* from DCO/S106 requirements and commitments to the monitoring and auditing of indicators/KPIs. • Not always clear who is responsible for collecting information. In particular, for environmental information, there is a need for clarity on the project monitoring framework, in relation to both site and off-site issues. • KPIs need to be clearly set out and consistently monitored against; changes need to be agreed by monitoring boards. • 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 is fully used. • There is a need for a more robust approach in the DCO process to clarify requirements for monitoring and publicly reporting performance against environmental health and biophysical indicators/KPIs. • There is little evidence of independent analysis and verification of Information.

Gaps in data	• 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. • Similarly, there is a lack of *disaggregated data on supply chain impacts* in Somerset and districts. • Improved, full, transparent and publicly available Workforce Survey needed to underpin the better auditing of many socio-economic impacts. • A contractual requirement needed for T1 and T2 contractors to provide details of supply chain contracts (only recently introduced at HPC). • 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, and road safety. A bulk delivery materials plan should be submitted to LAs by the developer before temporary jetty operational • Some relevant contextual LA and central government indicators: eg IMD; fear of crime, housing affordability etc are not available until mid-2019 onwards. • Lack of consistent data on accommodation impacts from both EDFE and LA (who are required to report on s106 Housing Initiative spending). • Major absence of *publicly available* information on environmental health and biophysical environmental impacts. • Some ED data (eg on impact of HPC construction on employment in local firms) is more qualitative. A bespoke survey would help.

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6. Key recommendations for improving future monitoring and auditing practice for main stakeholders

As noted in s5.3, there are many *positive findings* from the auditing of the first two and a half years of the HPC main construction stage, often resulting from the effective implementation of mitigation and enhancement measures. However, the findings also raise a number of issues, and this section of the report sets out some recommendations for improving future monitoring and auditing practice for main stakeholders. These are divided into (1) generic recommendations for future NNB developments, and (2) more specific recommendations for a refresh for the monitoring and auditing of the next phases of the HPC construction project. The recommendations draw partly on the comparative practice in s4.2, and the reader is referred to these for some relevant examples of good practice.

6.1 Generic recommendations for future NNB developments

Stakeholder	**Pre-construction stage (planning, assessment and examination)** See also Figure 18		**Construction stage (monitoring and auditing)** See also Figure 19
Primarily for developer (but with local authority involvement as appropriate)	Include a *monitoring chapter* in the ES, referenced as DCO requirement, which brings together the key indicators/KPIs across all the socio-economic and biophysical topic areas, and which can provide the *template* for subsequent monitoring and auditing over the project lifecycle, and the basis for a *central repository* of monitoring data for the project. There should be adequate service level agreements for local authorities to adequately monitor and report the wide ranging impacts of the construction of major projects.		For both the developer, and the LAs, monitoring and auditing should be a planning and implementation activity rather than a communications activity. 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 far as possible adopt a consistent set of spatial zones,

			and time-periods, for reporting impacts data.
	As part of the monitoring chapter (see above), clarify in advance of development, and as fully as possible in the DCO, monitoring responsibilities between the developer, LAs and other stakeholders, with a *commitment to working in partnership* and to regular reporting of data, which is shared openly (via the central repository) between relevant participants in the planning and development process. LIR should be up front/centre at the examination, and needs adequate resourcing.		Produce a publicly available *annual Impacts Monitoring and Auditing Report.*
			Use a three stage 'event-action-plan' approach to manage audited impacts; (1) trigger level to provide an early warning of problems; (2) action level, at which action is taken before an upper limit of impacts is reached; and (3) target level, beyond which a pre-determined plan response is initiated to avoid or rectify any problems.
			As for current HPC system, include provision for Community Fora – but also require projects to have a *Monitoring Website*, with public access, and to which members of the public can report their concerns on project performance back to the developer and LAs.
Examining Authority	Adopt a robust approach in the DCO process to clarify requirements for monitoring and public reporting of actual performance against a full set of socio-economic and environmental health/ biophysical indicators/KPIs. Why do you wish to monitor? Is there relevant expertise in the LPA to interpret data? If not does the s106 provide for buying in this expertise? Where will it be reported? if thresholds are breached what are the consequences?		
	Ensure that there are clear 'trigger points' in the DCO in relation to completion of associated developments – such as temporary jetty, campus accommodation, and P&R sites.		
	Ensure that predictions contain longitudinal timelines, showing predicted evolution of impacts over key phases of the construction stage, and into full operation, for example for topics such as HB and NHB workforce numbers,		

	accommodation tenure and distribution.		
	The DCO examination should seek clarification and agreement on key socio-economic issues, such as *what is a worker, what is latent accommodation?*		
	There is a need to recognise opportunities, and plan for, potential legacy benefits in examining major project DCOs, including housing legacy benefits (possible now that legislation allows for housing can be included in DCO applications).		
Others	Legislative context -- EIA IP Regulations 2017 Schedule 4 Section 7 now explicitly mention "post project analysis"		There should be provision in the monitoring and auditing organisation for independent analysis and verification of information, which would enhance the credibility of the monitoring and auditing process.

Figure 18: Some interim recommendations -- *Generic for future NNB projects* -- Pre-construction planning and assessment – primarily for developer (with LA involvement as appropriate)

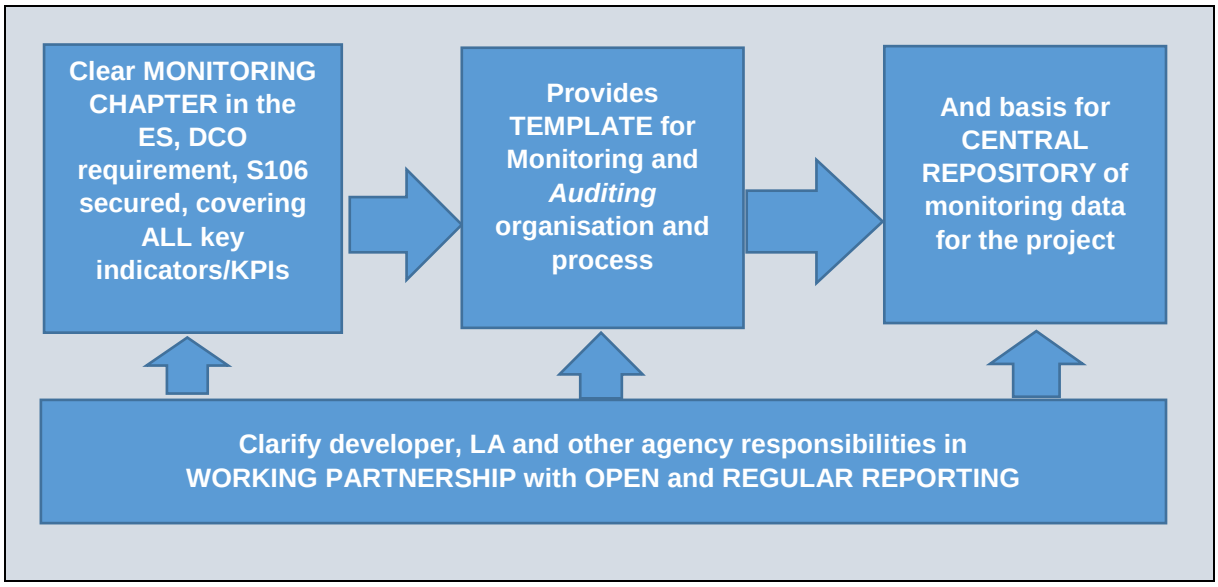
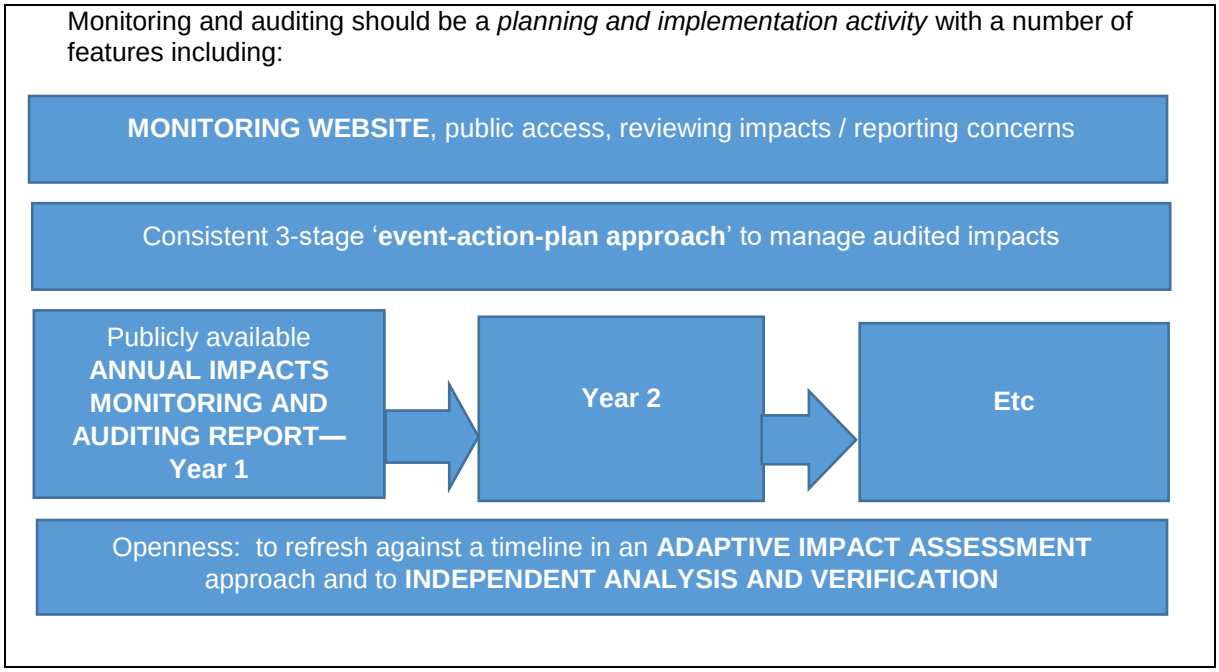


Figure 19: Some interim recommendations -- *Generic for future NNB projects* - Construction stage – primarily for developer (but with LA involvement as appropriate)



6.2 Specific recommendations for a refresh for HPC construction stage

The recommendations follow very directly from the gaps identified in s5.4. They relate primarily, but not exclusively, to the activities of EDFE as the developer. It is noted where other stakeholders should be involved.

Gaps in organisation and process	• 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 CWDS and Implementation Plan (EDFE 2018), with plans to rationalise the 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 an urgent need for an environment monitoring group, and an improvement in the operation of the accommodation monitoring group to optimise data opportunities. • Some ED 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.

	• For both the developer, and the LAs, monitoring and auditing should be a planning and implementation activity rather than a communications activity.
Gaps in data	• 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 (see organisational recommendation above). There is also a need to revisit what constitutes daily workforce numbers at the construction site. • Similarly, there is a lack of *disaggregated data on supply chain impacts* in Somerset and districts (see organisational recommendation above). • A contractual requirement is needed for T1 and T2 contractors to provide details of supply chain contracts (only recently introduced at HPC). • 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 and not always clear, limiting effective auditing and monitoring. Targets need to be clarified and data reporting needs to be full and regular. The interpretation of latent accommodation and its relationship with other tenure types needs to be revisited. Monitoring the use and users of the accommodation campuses provides a straightforward data opportunity. • 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 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-2010 onwards (also LA issue). • There is a major absence of *publicly available* 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).

7. Recommendations on next steps in the HPC monitoring and auditing research programme

7.1 Dissemination of current findings

Subject to discussion and agreement with the NNLAG project Steering Group, and to time and resources, some of the following types of dissemination activities are proposed:

- Specific HPC/NNB feedback discussions with key HPC and other NNB project stakeholders, including EDFE HPC, Somerset Local Authorities, PINS/National Infrastructure Directorate, and Suffolk Local Authorities.
- Wider professional dissemination, including conference presentations to relevant new nuclear/major project events – such as those of National Infrastructure Planning Association (NIPA), and the Nuclear Industry Association (NIA) UK.
- Academic dissemination via journal publications (eg *EIA Review*, *Impact Assessment and Project Appraisal*) and academic conference presentations (eg International Association for Impact Assessment Annual conference, UK Planning Research conference).

7.2 Future HPC construction monitoring and auditing research

- It seems logical to focus follow-up studies on key steps in the project construction programme (e.g. civil works peak; overall peak; Unit 1 completion; full operation) (see Figure 20), although these are 'lumpy' over time. An alternative, and perhaps better, approach may be to take regular snapshots every one or two years; this would give a 'smoother' longtitudinal study. *This latter approach is recommended by the research team. Subject to NNLAG agreement, it is recommended that there should be a brief HPC refresh study in one year, followed by a fuller peak impacts study in two years.*

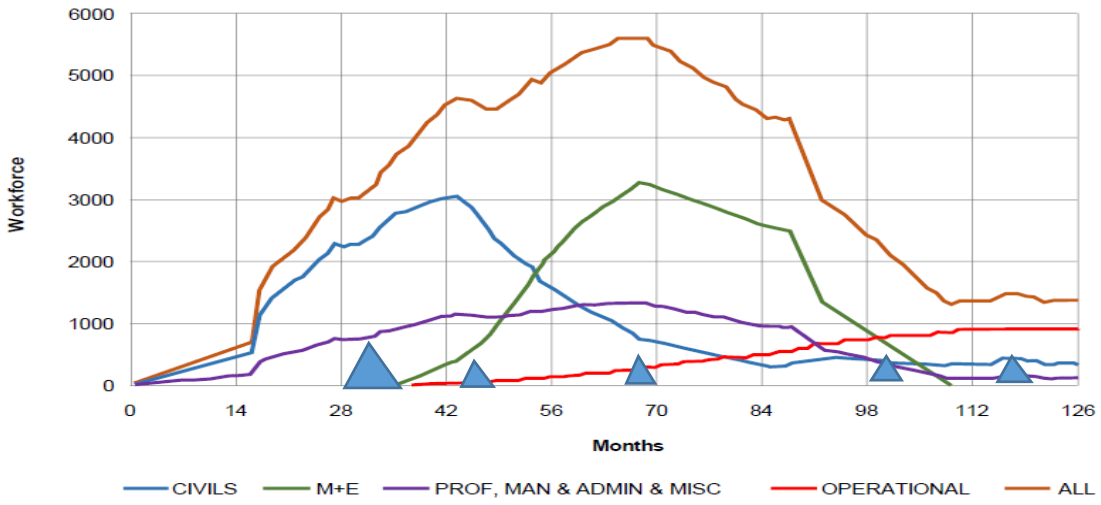


Figure 20: Possible survey points related to key stages in the HPC construction process *(larger point is current study; smaller ones are possible future shorter studies).*

- The studies are likely to include a narrower set of indicators, drawing on the key ones identified in the main study. The sector studies in s3 of this report indicate some of the key indicators. However, it is also important to fill in the gaps from this study, and require missing data to be put into the public domain.

- The studies provide the opportunity to introduce some longitudinal tailor-made monitoring activities, to provide additional intelligence/ fill identified gaps, as long as results are publicly available. See some of the suggestions in s6.2 of this report.
- The timescale is likely to be shorter – suggested c2-3 months in duration, unless major issues occur requiring more in depth investigation.

Some key references (detailed references are in the various Working Papers)

Chadwick, A. & J. Glasson 1999. Auditing the Socio-Economic Impacts of a Major Construction Project: The Case of Sizewell B Nuclear Power Station. *Journal of Environmental Planning and Management* 42(6), 811–36.

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EDFE (2011a) *Construction Workforce Development Strategy (CWDS*), in the HPC Doc Ref 8.6, London: EDFE (The evidence base for the CWDS was set out in the Socio-economic Chapter (9) of the HPC ES (EDF 2011b).

EDFE (2011b) *Hinkley Point C Environmental Statement,* London: EDFE.

EDFE (2011c) *Community Safety Management Plan*. ES DCO Application Doc Ref 4.18, London: EDFE.

EDFE (2011d) *Health Action Plan* (part of HIA ---ES DCO Application Doc Ref 8.15), London: EDFE.

EDFE (2011f) Hinkley Point C Development Consent Order Application: Accommodation Strategy. Doc Ref 8.13

EDFE (2011g) Accommodation Datasets Volume 2 Hinkley Point C – Chapter 9 Socio-Economics. Appendix 9D: Technical Note 2: October.

EDFE (2012) *Community Safety Management Plan* (S106 Annex 6)

Glasson, J and A, Chadwick (1995) *The Local Socio-Economic Impacts of the Sizewell B PWR Power Station Construction Project, 1987-1995.* Oxford: IAU, Oxford Brookes University.

Glasson and Therivel (2019), Chapter 7 in *Introduction to EIA: 5th Edition*, Routledge --- adapted from *Employment and Skills Update*, Olympics Delivery Authority, Jan 2011

Lister, T (2016) *State of the Market Assessment for the HPC Housing Zone*. Somerset Councils and HCA.

SDC (2017) *Hinkley Point C Annual Monitoring Report.* Bridgwater: Sedgemoor DC.

Somerset Councils (2012a) *Local Impacts Report (LIR).* Somerset: SCC, WSC and SDC.

Somerset Councils (2012b) Local Impacts Report (LIR) Appendix B2 Accommodation and Housing. Somerset: SCC, WSC and SDC.

Somerset Local Councils, Dec 2018. Presentation PPT— *Hinkley Point C Learnings*

2013 No. 648 INFRASTRUCTURE PLANNING, The Hinkley Point C (Nuclear Generating Station) Order 2013 *Made - - 18th March 2013; Coming into force - - 9th April 2013;* plus s106 DCO documentation (Aug 2012)

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