Whole Life (Construction) Carbon Assessment

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| What’s this document about? | This document sets out the Environment Agency approach to carbon assessment and the capital delivery process and how this will support us in achieving our Net Zero targets as an organisation. |

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| Who does this apply to? | This document applies to all capital construction projects where the Environment Agency are the lead organisation, except where the Construction (Design and Management) Regulations 2015 (CDM Regulations) do not apply. |

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| Contact for queries and feedback  Carbon Definition  Guidance | * Cost and Carbon Intelligence Team, Major Projects & Programme Delivery * Please give [anonymous feedback](http://intranet.ea.gov/33345.aspx) for this document.   ‘Carbon’ is referred to throughout this document. For the avoidance of doubt all references to ‘carbon’ in respect of the process means Carbon Dioxide Equivalent (CO2e) expressed in tonnes (t).  Separate guidance is available for each of the tools mentioned in this document that includes links to the latest versions of the tools themselves. These guidance documents are linked in Appendix B. |

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Introduction & Overview

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| Overview  **Supporting business cases**  Low carbon choices  Verification and Assurance  Project level Carbon Budgets | Whole-life carbon assessment ensures low carbon solutions and decision making through the design, construction and operation of the asset and allows projects to benchmark their progress in the form of a carbon budget.  The sections below out-line how carbon assessments and supporting tools are to be used at each stage of delivery to support this, as well as outlining key responsibilities and accountabilities of project team members. These responsibilities are to be incorporated into supply chain contracts where relevant.  EA projects are required to support the HM Treasury Business Case process with supporting Whole-life Carbon Assessments as set out in EN15978 and the Construction Playbook. An assessment requires the following outputs that are delivered through EA provided tools and processes:   * Scoping and calculations using the CMT/CC tools (in ERIC) * Target setting/benchmarking using the CBUD tool (in ERIC) * Reporting using the Carbon Appendix tool * Verification from an EA Carbon Specialist   A list of related tools and documents can be found in [Appendix B](#AppendixB)  A carbon assessment is required to support business cases in their assurance and approval i.e., SOC, OBC, FBC and at completion of the project through an ‘as built’ report. The main ways they support this are:   * Appraisal of options – carbon assessments support the carbon impact analysis of options (see specific carbon impact guidance and tool for FCRM Appraisal Guidance) * Optimisation of proposals – carbon assessments set out proposed emission forecasts compared to a reduction benchmark (carbon budget) as evidence of optimisation * ‘As built’ report – carbon assessments set out the actual emissions from a built solution compared to the agreed emission forecast and carbon budget of the project * Assurance and approval – require a supporting report of the carbon assessment in the form of a Carbon Appendix that has been verified   The carbon assessment tools will help projects make low carbon choices from the earliest stage of a project and throughout its development, design and build, The EA provides the tools and manages the carbon rates and benchmarks used by the tools.  Project teams are responsible for completing the carbon assessment at all stages and completing the Carbon Appendix as the verified report of the results. The following summarises the main carbon data from the assessment and its use.   |  |  | | --- | --- | | Use | Description | | Low carbon | Carbon data will be used by project teams to drive low whole life carbon solutions during the capital delivery process, as outlined above. [The Carbon Modelling Tool (CMT)](#CMT) and [Carbon Calculator (CC)](#CC) use carbon rates updated from industry and from EA project outturns and will provide a latest emission forecast for both the capital stage as well as a future operations/maintenance stage. | | Carbon budgets | The carbon budget sheet (CBUD), on the CMT and CC, uses future decarbonisation curves for EA asset types to set a benchmark for projects. Projects will update this alongside the latest CMT/CC forecast to allow projects to continually compare their progress against the benchmark as their solution develops. | | Carbon models | Carbon data contained within final CC assessments completed at RFS will be used to update the carbon models contained within the CMT. The Carbon Models will be updated periodically and the CMT republished.  For this reason, the latest version of the CMT must always be **downloaded** when a new appraisal is being undertaken. | | Carbon reporting | A wide range of information will be reported with regard to carbon emissions. The structured data contained within the CMT/CC will be reported at the applicable business case stages and ‘as built’ Ready for Service (RFS) as a carbon appendix. |   Carbon assessments on EA projects require verification with an EA Carbon Specialist and must be completed as a supporting requirement to a business case through a verified Carbon Appendix.  Projects should ensure their assessment stages and results align to verification requirements by using the results (forecasts and budgets) in their appraisal of options, reporting how these are progressing to the EA and seeking pre-verification advice from Carbon Specialists where progress towards the budget is limited. Full use of CMT/CC, CBUD, the Carbon Appendix and compliance with the associated processes will be required to ensure that:   * Low carbon solutions are being identified and implemented throughout the delivery process; * Carbon data is being captured and reported effectively; * The tools and methodologies are helping in meeting reduction requirements.   Under BIM requirements the carbon assessment tools should be submitted to the EA as deliverables of a project stage supporting the business case using agreed Common Data Environment tools that is Asite or by email [carbonplanningtool@environment-agency.gov.uk](mailto:carbonplanningtool@environment-agency.gov.uk) where Asite is not in use.  A verified Carbon Appendix and Carbon Budget will be required as part of the Business Case submission. Guidance is available in [Project Carbon Management Reporting and Assurance Process](#Verification)  Specific guidance on carbon valuation for appraisal and assurance of HMT Business Cases is available as a supplement to the Green Book and as a supplement to the FCRM Appraisal Guidance (see Appendix B).  An SOC/OBC/FBC must aim to minimise carbon emissions by:   1. Stating ‘minimised carbon’ as a strategic objective. 2. Appraising and ranking options by their net whole-life carbon impact value (cost-benefit) in tCO2e and monetised as carbon £ NPV. 3. Selecting a most likely/preferred option that best delivers the outcome measures and strategic objectives whilst minimising carbon based on the ranked carbon impact measures. 4. Optimising for lowest carbon in the design of the proposed option and evidencing this through a verified assessment of carbon forecast against a benchmark (EA carbon budget). 5. Ensuring that the carbon assessment is compliant with government standards and is the basis for the carbon impact calculations   Assurance of a completed project must demonstrate minimised carbon emissions by:   1. Agreeing to a target (forecast) of emissions from construction that is set out in a verified carbon assessment with business case approval. 2. Setting out and delivering improvements for carbon reduction during construction against the agreed forecast and through a re-assessment of carbon where actuals exceed forecasts significantly. 3. Reporting the outturn of actual emissions against the agreed forecast in a verified ‘as built’ Carbon Appendix with supporting assessment and budget.   See Appendix A for details of how carbon forecast maturity and uncertainty is managed  Carbon assessments provide both a latest forecast of emissions and a ‘benchmark’ budget based on a calculated level of decarbonisation the solution would be expected to achieve. The capital programme sets an overall target on the level of emissions all EA projects should meet and Area Sponsors are required to allocate an allowance of emissions to projects within this overall target. These authorised carbon budgets by Area sit alongside the assessment forecast and budget on a project. They are informed from the results of the Carbon Appendix and verification processes and the current reported progress of forecast compared to the carbon budget (benchmark) calculated using the Carbon Budget Tool (CBUD).  The EA carbon budget management process is set out in an accompanying guide which explains how carbon budgets are set by National and Area teams on an annual basis for the EA funded programme and managed ‘in year’. |

Assessment scoping & objective

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| Scoping  EA Lead Partner  Smaller Projects Below £10,000  Asset Management  Reconditioning, Refurbishment, Minor Works Programmes   |  |  | | --- | --- | | Urgent and Emergency Works |  |   Overall carbon objective | Scoping is how the EA will set requirements for carbon assessments on EA projects.  For FCRM and Water Resources projects where EA are the lead partner, we will account for 100% of the emissions within the EA carbon footprint through a compliant assessment. Where we are a partner, but not the lead partner, we would expect the lead partner to account for the emissions within their carbon footprint and we will work with them to minimise carbon.  For Environment Programme projects we will account for the emissions, and where relevant the net carbon capture, as a percentage of the overall project we are funding. For example, if we are funding 50% of the project we will account for 50% of the project’s net carbon emissions.  For projects below £10,000 in value, the Carbon Modelling Tool (CMT) should be used to estimate carbon associated with the project. For projects over this threshold, the CMT may be used early in the design to compare the carbon associated with different project options, but the Carbon Calculator (CC) should be used for a more detailed assessment as the design progresses (see below for more guidance).  The CC should always be used to capture the projects actuals data following construction. The project actuals data can then feed back into the modelling built into the CMT and improve the accuracy of this tool.  Please note, the CMT should be used for all Environment Agency projects (<£10,000) unless by exception. Bespoke carbon tools or those used by external bodies should be avoided as they may not align to the Environment Agency’s carbon reporting structure, so the carbon data would not be captured alongside other Environment Agency projects.  Asset management projects and programmes should agree their scope with the national Carbon Team. They require carbon rates for maintenance and asset management interventions rather than construction that may be applied using different tools to the current CMT/CC (ERIC) and at a programme rather than individual project level.  Where reconditioning, refurbishment programmes undertake a business case, a carbon assessment needs to be completed. This should be proportionate to the nature and scale of works. Projects and programmes should agree this approach with the national Carbon Team. A Carbon Calculator (CC) should be used to allow an assessment and capital carbon budget to be produced at the start of the programme. The CC allows the assignment of carbon related directly to the works undertaken and materials used on assets rather than wholesale construction of a new or replacement asset. Upon completion of the programme, a carbon assessment and capital carbon budget should be recalculated to understand the outturn position. If a project scope within the programme expands and it is instead delivered as a separate project through POL, then the standard Carbon Assessment process outlined in this Operational Instruction would apply. Please see Appendix E for a decision tree outlining this process.  Urgent and emergency works should agree their scope with the national Carbon Team in order not to hold up works, but to account for emissions at their completion.   |  |  | | --- | --- | |  |  |   All EA projects will maximise opportunities to reduce emissions to meet NZC 2030 within the objectives and scope of their project as follows:   * In their business case, projects will set out the best option and solution to deliver flood outcomes with minimised carbon emissions through an appraisal of carbon impact and evidence of low carbon design optimisation. * In pipeline and design, projects will maximise opportunities to reduce emissions through development of a carbon assessment and outturn forecast that is continually tested against a carbon budget based on a reduction glidepath benchmark. * In construction, projects will aim to meet the verified outturn forecast and regularly report emissions (actuals) and levels of efficiencies that the carbon budget requires.   As projects progress through options and design they are required to minimise their emissions showing how their forecasts (assessment) meets or beats their carbon budget (set by the NZC glidepath). As projects progress through construction, they are required to report their emissions as actuals to show they are on target with the verified FBC forecast (assessment) and carbon budget including required carbon efficiencies.  Project stage requirements |
| Pipeline Initiation Stage  Assessment Stage  Appraisal Stage | During the early (pipeline) stage of a project it is not a requirement to provide a carbon assessment or carbon impact of options, however in line with project data on costs at this stage a carbon forecast and budget is required. The forecast and budget may be calculated from some basic asset type and intervention information where known using ERIC CMT (including Carbon Budget sheet) or other tools for asset management (e.g., AIMS AMP). Otherwise, a single ‘top line’ calculated forecast and budget will be applied by the PMO from estimated capital cost data.  **Responsible**: The Environment Agency Project Proposer is responsible for ensuring that project teams deliver this carbon data from the tools provided and are compliant with this stage of carbon requirements.  During the assessment stage, projects will be developing and appraising options and are required to calculate carbon impacts as part of their appraisal**.** The carbon measure required in a business case appraisal of options is their net whole-life carbon impact including whole-life costs (from a carbon assessment) and whole-life benefits (carbon saved from reduced flooding and sequestration). Guidance on this carbon measure is set out in FCRM Appraisal Guidance along with a carbon impact tool. It includes a requirement to monetise the results as a carbon Net Present Value in the economic appraisal and count this value into the Partnership Funding Calculator as an OM1 benefit.  The Assessment stage requires a carbon assessment that must include:   * Scoping and calculation – at Strategic Outline Business Case (SOC) stage using a top-down modelling tool (ERIC-CMT) * Benchmarking – using the carbon budget tool (ERIC-CMT-CBUD) * Scoping and Reporting – using the Carbon Appendix to complete the SOC section and project initiation tab and for guidance on what carbon reduction measures are expected in the design stages. * Verification – by EA appointed specialists who will advise projects on early options development and appraisal and who will verify the Carbon Appendix and assessment that will support the SOC submission.   A high-level carbon forecast using a ‘top down’ approach is made using the CMT alongside a carbon budget using data taken from the CMT. While there is no requirement at SOC to identify a preferred option, the project must take what is considered the most likely option to proceed selecting the relevant option on the CMT sheet. The SOC Business Case is supported by a verified Carbon Appendix.   * Output: The CMT results are a mandatory input into all SOC’s. Shortlisted project solution options are entered into the CMT, producing an asset-based forecast of whole life carbon for each option. A section of the SOC will present a summary of the output figures. The most likely, selected on the options sheet and highlighted on the summary sheet, will form the basis for the project level carbon budget; * The CMT output for options will be an input to the carbon impact tool required for the appraisal and the SOC economic case. * The carbon budget, as established by the CBUD, is mandatory for all SOC business cases as a requirement in the SOC management case. * Completion and verification of the Carbon Appendix is required for submission of the SOC business case. * Upon completion of the SOC, the Carbon Appendix supported by the CMT will be submitted to Asite or where not using Asite via the email [carbonplanningtool@environment-agency.gov.uk](mailto:carbonplanningtool@environment-agency.gov.uk). * **Accountable**: The Environment Agency Project Executive (PE) is accountable for submission of the SOC with the required completion of the carbon assessment outputs set out above. * **Accountable**: The PE is also accountable for securing an adjusted level of emissions allowance from the Area Sponsor that will be based on the verified Carbon Appendix and confirmed as affordable within the Area carbon budget. This allowance is called the project authorised carbon budget. * **Responsible**: The Environment Agency Project Manager is responsible for ensuring that project teams deliver this carbon data from the tools provided and are compliant with this stage of carbon requirements. * **Responsible**: The project team Design Lead is responsible for producing the assessment and associated carbon documents to support the business case.   The appraisal stage requirement for carbon assessment follows the process and tools requirements for the assessment stage, but with the following changes and focus.  The appraisal stage presents a great opportunity for driving low carbon solutions. This is the point in the delivery process when fundamental decisions are made with regard to solutions selected to address particular project objectives. It is essential that carbon impact is a central consideration in this decision-making process.  The Carbon Calculator (CC), which uses a 'bottom up' approach, must always be used for the appraisal of short-listed options and the preferred option. This ensures the whole-life carbon is assessed at the level of detail as the proposed scope and costs of the Outline Business Case (OBC) options.  The carbon budget is a mandatory requirement for the OBC in order to compare forecasts against the benchmark for the preferred options and/or for short-listing. The carbon budget is provided in the management case of the OBC to show low carbon optimisation of the proposal.  The assessment will highlight the key carbon drivers within the preferred option at OBC, and the team applies this information to consider alternative options that could reduce the carbon impact in appraisal, construction, and operation.   * Output: The CC, Carbon Budget results and verified Carbon Appendix are mandatory inputs into OBC Business Cases. The preferred option should be selected on the basis of net whole life carbon impacts. Initially it is likely that assumptions will need to be made with regard to certain aspects of the design, construction process and operational factors - summary sections within the tool have been applied to support this; * Verification of the Carbon Appendix and supporting carbon budget, carbon assessment, actions taken so far, and future action to minimise carbon will be required for submission of the business case * Upon completion of the OBC, the Carbon Appendix supported by the Carbon Calculator will be submitted to Asite or where not using Asite via the email [carbonplanningtool@environment-agency.gov.uk](mailto:carbonplanningtool@environment-agency.gov.uk). * **Accountable**: The Environment Agency PE is accountable for submission of the OBC with the required completion of the carbon assessment outputs set out above. * **Accountable**: The PE is also accountable for securing an adjusted level of emissions allowance from the Area Sponsor that will be based on the verified Carbon Appendix and confirmed as affordable within the Area carbon budget. This allowance is called the project authorised carbon budget. * **Responsible**: The Environment Agency Project Manager is responsible for ensuring that project teams deliver this carbon data from the tools provided and are compliant with this stage of carbon requirements. * **Responsible**: The project team Design Lead is responsible for producing the assessment and associated carbon documents to support the business case. |

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| Design Stage | The design stage requirement for carbon assessment follows the process and tools requirements for the appraisal stage, but with the following changes and focus.  Following the selection of the preferred option, the project should focus on optimising for lowest carbon in the detailed design of the proposal.  The CC, carbon budget and Carbon Appendix tools are used to maximise carbon reduction opportunities and evidence the choices made that will be included as part of the Full Business Case (FBC).   * Output: The CC results, carbon budget and verified Carbon Appendix are a mandatory input into all FBC. The preferred option should be optimised for lowest whole-life emissions based on both designer and contractor expertise in using low carbon materials, products and techniques and in delivering carbon efficiencies from construction services. * Where low carbon materials or techniques are being used to help meet the carbon budget (benchmark) the project should apply changes to the standard carbon factors when applicable, e.g., when changes in materials could be used. Where the information is available a product specific Environmental Product Declaration (EPD) carbon value should be used, failing that a generic EPD and if not available the nearest material product value available in the CC. * Upon completion of the FBC, the Carbon Appendix supported by the Carbon Calculator will be submitted to Asite or where not using Asite via the email [carbonplanningtool@environment-agency.gov.uk](mailto:carbonplanningtool@environment-agency.gov.uk). * Verification of the Carbon Appendix and supporting carbon budget, carbon assessment, actions taken so far, and future action to minimise carbon will be required for submission of the business case * **Accountable**: The Environment Agency PE is accountable for submission of the FBC with the required completion of the carbon assessment outputs set out above. * **Accountable**: The PE is also accountable for securing an adjusted level of emissions allowance from the Area Sponsor that will be based on the verified Carbon Appendix and confirmed as affordable within the Area carbon budget. This allowance is called the project authorised carbon budget. * **Responsible**: The Environment Agency Project Manager is responsible for ensuring that project teams deliver this carbon data from the tools provided and are compliant with this stage of carbon requirements. * **Responsible**: The project team Design Lead is responsible for producing the assessment and associated carbon documents to support the business case. This will require consultation with the contractor as an agreed target for construction. |
| Carbon Appendix | The Carbon Appendix is the reporting stage of the carbon assessment and contains details of:   * The key carbon drivers and choices of the solution. * The outputs from CMT and CC and resulting carbon forecasts. * The outputs from the carbon budget (benchmark) calculated from the same asset breakdown data as the CMT and CC (forecast) for comparison * A checklist of carbon related actions that should be completed. * A narrative if the steps taken to reduce carbon through the design process (including an assessment of the reduction in whole life carbon. * What further improvements in reduction with confidence levels have been identified by the project and what predicted carbon forecast could result at project completion. This will inform an authorised carbon budget for the project by Area Sponsors. * A record of the verification at each business case stage.   For all projects this information is tracked against the national and Area programmes as part of national reporting to evidence likely carbon impacts and performance against carbon budgets. |

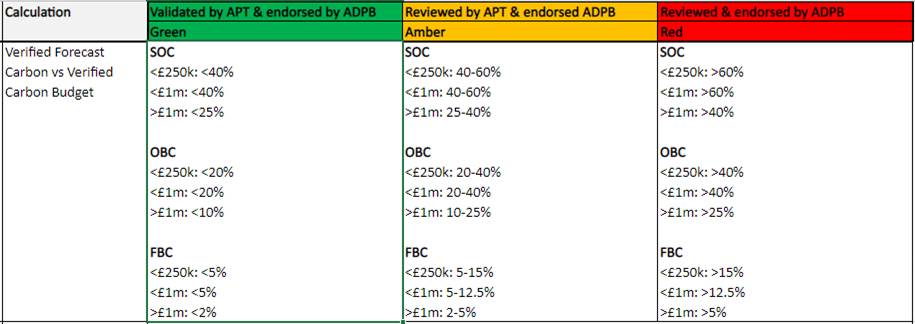
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| Contracts for construction  In construction up to RFS (Readiness for Service) | The FBC and supporting Carbon Appendix, Assessment and Budget (from ERIC), are to be included within the Contract documents for construction. The carbon outputs are also to be listed as a data requirement via the BIM Implementation Plan. Relevant information on the low carbon decisions that have been made during the appraisal and design stage (recorded in the Carbon Appendix) and communicated with the delivery contractor is an essential part of the project lifecycle.  All Projects in construction will have:   * an emission forecast from the FBC assessment with an agreed deviation from the assessment carbon budget. This will form a construction carbon baseline. * an authorised budget from the Area Sponsor based on the FBC verification and supporting appendix. * a requirement to report emissions to date (actuals) as construction progresses against the forecast (construction baseline) and with details aligned to the FBC carbon assessment. * a requirement to complete an ‘as built’ carbon assessment of outturn emissions (actuals) against the forecast (construction baseline) and with details aligned to the FBC carbon assessment. * a requirement for their carbon assessment to be updated and re-verified in agreement with the PE as a change to the construction baseline. This may be a pre-construction or in-construction change due to design modifications or a need to reflect actual emission levels that are unable to meet forecasts.   Projects in construction will report monthly (using FastDraft) on actual emissions to date and an outturn forecast that will be checked against the current carbon assessment and forecast verified for the construction stage. If deviations are ‘out of tolerance’ a review and possible update to the carbon assessment and budget will be required that will require re-submission and re-verification and may further require a recommended change in carbon budgets from the Project Sponsor.  At completion an outturn carbon assessment is required to capture outturn actuals and check these against the current carbon assessment and forecast verified for the construction stage. The Carbon Appendix will be the verified report from this ‘as built’ carbon assessment stage. Confirmation of a change in carbon budget to cover the outturn actuals will require Project Sponsor authorisation.   * Verification of the ‘as built’ Carbon Appendix and supporting carbon budget, carbon assessment will be based on the actual emissions reported at completion. These will be verified by the EA Carbon Specialist and will be required for approval of the construction completion and Readiness For Service gateway. * Verification of an ‘updated’ Carbon Appendix and supporting carbon budget, carbon assessment will be based on a contractor proposed change and revised forecast to completion. These will be verified by the EA Carbon Specialist. * **Accountable**: The Environment Agency PE is accountable for submission of the ‘as built’ completion of the carbon assessment outputs set out above. * **Accountable**: The PE is also accountable for securing an adjusted level of carbon budget from the Area Sponsor that will cover the actual emissions reported from construction against the forecast. * **Responsible**: The Environment Agency Project Manager is responsible for ensuring that project teams deliver this carbon data from the tools provided and are compliant with this stage of carbon requirements. * **Responsible**: The project team Construction Lead is responsible for producing the ‘updated’ and ‘as built’ assessment and associated carbon documents to support construction changes and completion. |
| Final Carbon Appendix | Upon completion of the construction works, a final Carbon Appendix supported by the final Carbon Calculator will be completed and submitted as a construction deliverable to Asite or where not using Asite via the email [carbonplanningtool@environment-agency.gov.uk](mailto:carbonplanningtool@environment-agency.gov.uk). The final Carbon Appendix reports on the actual emissions as completed in the outturn carbon assessment (CC) and updated carbon budget and will include:   * the key carbon drivers of the solution. * steps taken to reduce carbon through the design development (where relevant). * steps taken to reduce carbon through the construction process. * the final performance of the project in terms of carbon actuals against the previous verified forecast (assessment) and carbon budgets. |

Appendix A – Carbon forecast maturity and uncertainty

Progress and performance in carbon reduction based on an assessment

The EA carbon assessment and calculation of a construction emissions forecast is based on single unit rates for asset types that are averaged from project outturns, where the Carbon Modelling Tool is used. Where the Carbon Calculator is used construction emissions forecast is based on designed plant, labour and materials. Alongside the emissions forecast calculation the same asset breakdown data is used to calculate a decarbonisation target or budget as a benchmark for the forecast. For each stage of a business case, the forecast and budget (benchmark) are single resulting values that are compared and reported as progress and performance of projects in meeting the EA carbon reduction requirements for Net Zero Carbon by 2030.

In order to reflect how a carbon forecast matures from SOC to OBC to FBC stages i.e., from less certainty early on to more certainty in final design and construction programmes, there are specific carbon tolerance bands set at each SOC, OBC and FBC stage and reported as progress to Project Managers and Boards – see below. This ensures we reflect uncertainty levels in our project carbon forecast versus budget reporting at these stages.



In construction, the measure of progress is based on actual emissions compared to the forecast from a verified FBC carbon assessment or verified ‘updated’ carbon assessment as a result of an agreed change of baseline. Thus, RAG reports in construction reflect bands of deviation between actuals and forecast (construction baseline) as a measure of progress.

Authorisation of Area carbon budgets

Over and above the RAG measures of progress to date on a project at each stage (see above), projects are required to report a forward view of likely carbon reductions by project completion against confidence levels. This is captured in the carbon appendix as part of SOC, OBC and FBC verification and will indicate to a Project Executive and Project Sponsor that an allowance of emissions should take into account this further confidence in carbon reduction by project completion. This will be considered in the request to Area Sponsors for an authorised budget reflecting what is required by the project and what is able to be allocated by an Area from its emission allowances to cover EA projects in their Area programme.

Appendix B – Carbon Assessment and Appendix tool guidance links

[Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal - GOV.UK (www.gov.uk)](https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal)

[Carbon in Appraisal Guidance](https://www.gov.uk/government/publications/fcerm-carbon-impacts-tool)

[Project Carbon Management Reporting and Assurance Process](https://defra.sharepoint.com/:w:/r/sites/Communication1/_layouts/15/Doc.aspx?sourcedoc=%7B4CC6E05E-BFFA-4819-9381-334170F30DDB%7D&file=Project%20Carbon%20Assessment%20Reporting%20and%20Verification%20Process.docx&_DSL=1&action=default&mobileredirect=true&CID=7FF7F91A-EE6D-4440-BE6A-B9E20565ED77&wdLOR=cBC61E66B-AAB1-445B-996A-F3976FE33E20)

[Whole life Carbon Assessment Tools (ERIC) Guidance](https://defra.sharepoint.com/:w:/r/sites/Communication1/_layouts/15/Doc.aspx?sourcedoc=%7B41FB2A9B-75E5-4114-9AED-C85FD1A7051B%7D&file=Whole%20Life%20Carbon%20Planning%20Tools%20(ERIC)%20User%20Guide.docx&_DSL=1&action=default&mobileredirect=true&CID=5F3ACCBB-A028-4182-ABA0-0F83FB39219C&wdLOR=c7CB04294-A982-4DC1-8777-A5A64188C0E0)

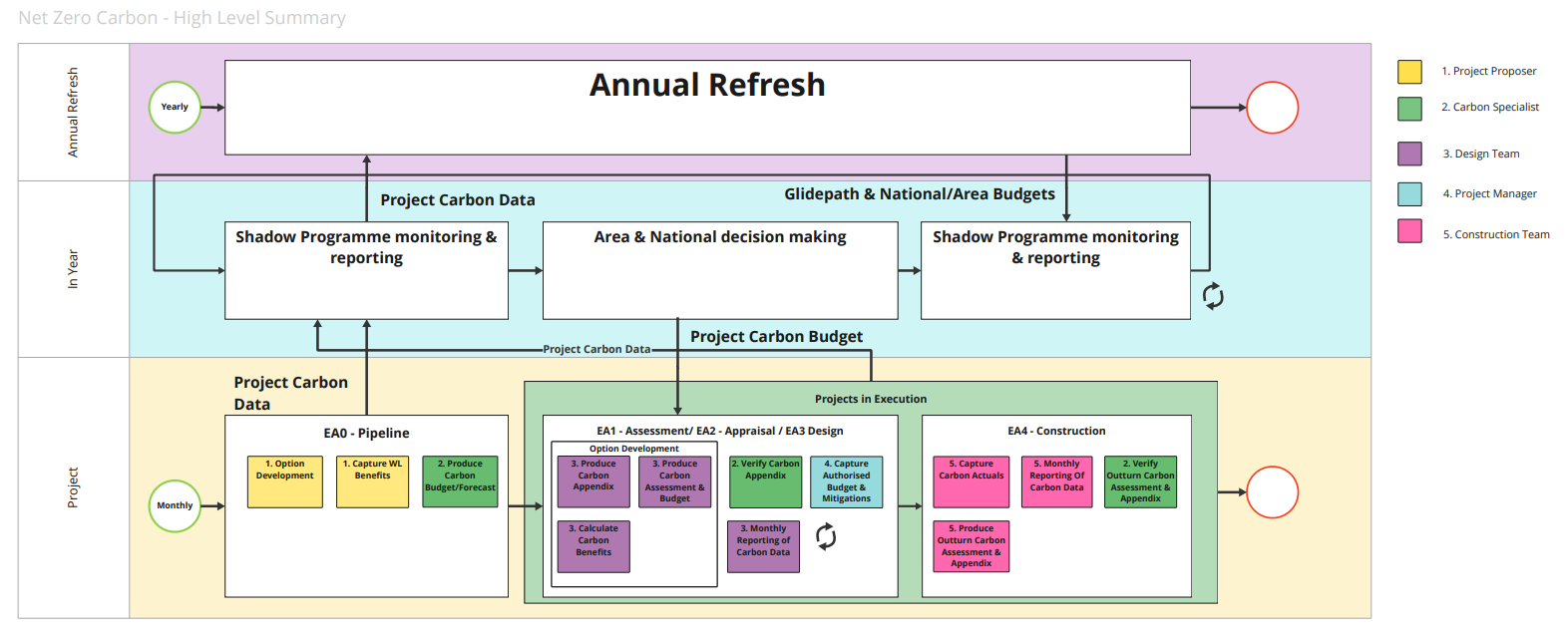
[ERIC Carbon Calculator](https://defra.sharepoint.com/:x:/r/sites/def-contentcloud/_layouts/15/Doc.aspx?sourcedoc=%7B4BD3495F-5411-4372-996D-23FA28268BCC%7D&file=LIT%2014604%20-%20Internal%20Carbon%20Calculator.xlsm&action=default&mobileredirect=true&DefaultItemOpen=1) (CC)

[ERIC Carbon Modelling Tool](https://defra.sharepoint.com/:x:/r/sites/def-contentcloud/_layouts/15/Doc.aspx?sourcedoc=%7B19B41822-9D0B-4DB6-99E4-3F9D5E378A6F%7D&file=LIT%2014605%20-%20Carbon%20modelling%20tool.xlsm&action=default&mobileredirect=true&DefaultItemOpen=1) (CMT)

[Carbon Appendix](https://defra.sharepoint.com/:x:/r/sites/Communication1/_layouts/15/Doc.aspx?sourcedoc=%7B4B049ADF-CE9A-4B29-A048-AF42E8C2446D%7D&file=BC%20Carbon%20Appendix_Final_v9.xlsm&action=default&mobileredirect=true&CID=F9F21C5A-3E0A-436B-A1C6-6A3EDFD13347&wdLOR=cD410C10B-2006-4554-ACE1-9BCBECABF37F)

[Net Zero Carbon - Terminology Guide.docx (sharepoint.com)](https://defra.sharepoint.com/:w:/r/sites/Communication1/_layouts/15/Doc.aspx?sourcedoc=%7BF4C6E62B-7886-44D5-8A27-83064CCF9B49%7D&file=Net%20Zero%20Carbon%20-%20Terminology%20Guide.docx&action=default&mobileredirect=true)

Appendix C – High Level process overview



Appendix D – Matrix of roles covering Responsibility, Accountability, Consulted and Informed (RACI)

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| Stage & versions of OI deliverables against RACI roles | Project  Executive (supported by Project Manager) | Project Team (SOC/OBC/ FBC) | Project Team (Construction) | EA Appointed Carbon Specialist | Project Sponsor |
| SOC/OBC/FBC ‘work in progress’ versions of Carbon Assessment, Budget, Appendix | Accountable | Responsible | Informed | Consulted (for advice) | NA |
| SOC/OBC/FBC ‘work in progress’ project carbon f/cast monthly reporting on FastDraft | Accountable | Responsible | NA | Informed (via dashboard) | Informed (via dashboard) |
| SOC/OBC ‘submitted’ version of Carbon Assessment, Budget, Appendix | Accountable | Responsible | Consulted (for opportunities) | Consulted (for verification) | Consulted (for authorisation) |
| FBC ‘submitted’ version of Carbon Assessment, Budget, Appendix | Accountable | Responsible | Consulted (for agreement) | Consulted (for verification) | Consulted (for authorisation) |
| Construction ‘work in progress’ project carbon actuals monthly reporting on FastDraft | Accountable | Informed (via dashboard) | Responsible | Informed (via dashboard) | Informed (via dashboard) |
| Construction ‘updated’ version of Carbon Assessment, Budget, Appendix | Accountable | Consulted (for agreement) | Responsible | Consulted (for verification) | Consulted (for authorisation) |
| Construction ‘outturn’ version of Carbon Assessment, Budget, Appendix | Accountable | Consulted (for agreement) | Responsible | Consulted (for verification) | Consulted (for authorisation) |

Appendix E – Refurbishment, Reconditioning, Minor Works Programmes Carbon Assessment Decision Tree

