Sustainability Plan of Work for the Civil Engineering Surveyor (CES) This plan of work document outlines a comprehensive seven-phase approach to delivering sustainable projects, from developing an initial strategy through to final completion.	
Strategy: Establishes the project's strategic objectives, including goals, feasibility, and initial planning	• Review whether development is necessary to deliver the Client Requirements. • Identify CES members with relevant expertise and non-traditional perspectives to inform strategy development. • Define strategic objectives - short, medium and long term. • Clarify the desired outcomes of the project. • Establish project management system, if not already in place. So, data is shared appropriately and will eventually become a digital twin or asset record. This will allow reduction in mistakes that need to be rectified particularly at build stage. Or waste of materials, poor costing etc. • Bring CES on board at the project's start to define sustainability outcomes and shape the survey strategy. At completion, package the results as a "Data Asset" and embed it within the broader strategy. The CES must have appropriate knowledge and awareness of sustainability. • Identify relevant current and emerging global, European, national and local Sustainability-related policy and legislation. • A Site Appraisal of sustainability opportunities and constraints of potential sites and assets.
Brief: Develops the project brief, outlining requirements, constraints, and key deliverables.	• Consideration of the documentation provided. • The CES needs to be involved in the brief to maximise efficiency of project outcomes. i.e. clients often aren't aware of what is available. • Engage with project team members. • Ensure greater understanding of tools available across different disciplines including new technology to ensure utilized at design stage. • Support the development of the brief that is clear and measurable, ideally not aspirational or weak. • Use Feasibility Studies to verify that the Sustainability Outcomes can be achieved on the site within the Project Budget. • Help identify sustainability expertise required, include it within the Responsibility Matrix and appoint consultants. • Engage with other organisations related to the project to brainstorm ideas. • Verify local authority sustainability requirements (e.g. enhanced regulatory requirements or assessment methods to be used).

	• Proactively pursue and aim to achieve recognised Sustainability Awards or formal Accreditations.
Concept: Generates initial design concepts and explores different options to meet the project brief.	• **Team collaboration:** Actively engage with all project team members throughout the process. • **Concept optimisation:** Utilise digital tools and CSS resources to test and refine design concepts through scenario testing in an inclusive environment. Measure project sustainability both during development and after construction is complete. • **Stakeholder co-ordination:** Facilitate stakeholder analysis and align project goals across all parties. • **Documentation:** Maintain comprehensive records of key design decisions that contribute to achieving sustainable outcomes. • **Sustainability integration:** Document the entire sustainability journey, from initial strategy and concept development through to final delivery, including a detailed cost-benefit analysis. • **Learn from experience:** Draw insights from previous successful projects. Avoid starting from scratch when proven approaches exist. **Quality framework:** Incorporate benchmarking standards and quality assurance requirements from the earliest design stages to ensure consistency and excellence throughout the project.
Definition: Refines the chosen concept, defining detailed requirements and preparing for the design phase.	• The CES should highlight real-time sensor opportunities to embed in the design to monitor the success of the sustainability of the project. • When using PAS 2080:2016 for measuring carbon, the team should make sure everyone understands the process, and the output is priced. Therefore, if expected performance not achieved then the pre valued price need to not be paid. • The design needs parameters that govern the design development, a baseline to achieve rather than a calculation at the end. For example, if the target was to reduce carbon by 20% then this needs evidence of meeting targets as the design develops. • The format of reporting deliverables must be agreed. • Lessons learned and case studies from other sources to be consulted in defining sustainability goals. • Identify and update record of performance risks to inform other stages and deliverables, and mitigate any deviation from the Sustainability Outcomes. • Include a record of key design decisions to deliver the sustainable outcomes in the stage report.

Design: Produces detailed designs, specifications, and plans for construction.	• The designer needs to programme in for the evaluation and quantification of different materials and methods with regards to its impact (incl. Whole Life / Life Cycle costing) and record this. This must be priced for and allowed for. It must be a topic on the agenda for design integration reviews (where it is multidiscipline). • The design survey strategy needs to capture the right data to support sustainability goals. • The design aspirations and constructability plans need to be achievable; ensure that both the logistics and client sign-off are successfully completed; otherwise, this could result in unfulfilled promises. Therefore, for each noted decision there needs to be enough evidence that sustainable materials or machinery, are actually in supply. This needs to relate directly to the original survey so it can be converted into a Digital Twin. • Update any target commitments (e.g. to reduce carbon, energy or water use, and improve health and wellbeing) • Include the sustainability strategy in tender information or Employer's Requirements and review tender returns or Contractors Proposals – including any alternatives – against sustainability outcomes. • Mitigate or control as many building performance and climate change impact project risks as possible and identify strategies for managing those that remain. • The requirements around sustainability need to be clear in the tender document but must allow the flexibility for suppliers to go about it in their own way. • Leverage the use of technology to achieve the sustainability objectives where possible. • Engage with all project stakeholders. • Include reference to the pillars of sustainability.
Construct & Commission: Executes the construction work and commissions the project, ensuring it meets the design specifications.	• Project monitoring and scanning on a regular basis to verify the embodied carbon of the building fabric and record non-visual features before completion. All feeding into the Digital Twin. • Ensure that a clear record of expectations is signed off at different stages, ideally in the central project system accessible by all key parties/ individuals. With the aim to cumulate in a working asset/ digital twin. • Review any construction stage changes, and report and mitigate any deviation from the sustainability outcomes. • Compile construction stage information required for certification and demonstrate compliance with the sustainability outcomes. • Review and update the record of performance risks on site and use it to identify and avoid any defects. • Track the performance against the measured and priced sustainability objectives throughout the project right from the beginning and ensure the evidence and data

	gathered are robust and accurately demonstrate outputs (e.g. noise or air quality monitoring).
Handover & Closeout: Completes final inspections, hands over the project to the client, and closes out any remaining tasks.	• Assist the handover of a fully functional digital twin. • Hold a Project Performance session with the project team to gather their views on the process of embedding the sustainability outcomes in briefing, design and construction and handover for the benefit of future projects. • When assessing the final account make adjustments to account for any failed objectives (this should also be done throughout the interim payment process). • Compile a 'lessons learnt' document for future reference - knowledge management
Operation & End of Life: Manages the project's operation, maintenance, and eventual decommissioning or repurposing	• **Use the Digital Twin for project tracking:** Have CES manage and maintain the Digital Twin to monitor project performance throughout its entire lifecycle. Focus on three key sustainability areas, and deploy AI technology strategically throughout the project to improve efficiency where it adds value. • **Monitor and address sustainability gaps:** Regularly report on progress and take corrective action when the project deviates from its sustainability targets. • **Document lessons learned:** Record key insights and experiences for application in future projects.

The scope of the CES covers a wide spectrum of job roles. This includes, but is not limited to:

- Land and engineering surveying
- Hydrographic surveying
- Photogrammetry and remote sensing
- Geographic information system
- Utilities and subsurface mapping
- Quantity surveying
- Estimating
- Planning
- Cost engineering
- Procurement engineering
- Project management and construction law.

The scope of work outlined in the table aims to encompass the broader scope of the CES. Consequently, individuals may find themselves significantly involved in one or more stages, depending on their specific roles.