

Green Overlay

to the RIBA Outline
Plan of Work

Edited by Bill Gething
November 2011



Foreword

Today, one of the greatest challenges facing the construction industry is to deliver low carbon buildings that maximise value to clients and society in general with optimal use of resources. There is increasing urgency to ensure more efficient use of energy, water and other natural resources, and the design of sustainable buildings has a crucial role to play. I am delighted to introduce this new, straightforward guidance for architects, construction professionals and clients which provides clarity about the actions and activities needed to make sure that sustainable design is embedded in the building procurement process.

The first edition of the RIBA Plan of Work in 1963 was an innovative management tool produced at a time of great social, cultural and economic change, when Beatlemania was at its zenith, the space race was driving development in science and computing, and the construction of the Post Office Tower in London symbolised a new era of mass communication technology. Regular revisions and updates have allowed the RIBA Plan of Work to respond to cycles of change in management approaches, construction and business technologies, and procurement methods, while remaining succinct and retaining its core structure and flexibility. The RIBA Plan of Work is the most widely recognised and used framework for building design and construction, and it therefore offers an appropriate and accessible vehicle for mapping the ways in which sustainable design activities can be integrated into the design and construction process.

As well as a simple set of adjustments to each of the RIBA work stage activities, the Green Overlay to the RIBA Outline Plan of Work provides supplementary information on processes and systems which can help achieve these key deliverables, along with references to the relevant standards, guidance and other sources of sustainable design intelligence. The Green Overlay to the RIBA Outline Plan of Work will be an invaluable tool for architects and construction professionals to engage clients in conversation about truly sustainable design that aspires to go beyond the regulatory compliance of the standard service and product. I commend it to you.



Angela Brady
RIBA President
November 2011

Photograph by James Jordan

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Introduction

When it was first produced, the RIBA Plan of Work brought clarity to the construction industry, encapsulating, in a way that was easy to assimilate, the essential processes involved in procuring buildings. Over the years it has been updated to reflect changes in procurement methods and developments in technology, and still remains the clearest summary of those essential processes. More recently, the impact of climate change, as well as broader environmental concerns, has started to have a major impact on design and construction practice, with ever tighter regulation raising the acceptable minimum standard, and with innovative clients, design and construction teams leading the way toward more sustainable construction.

The RIBA felt that the time had come to review the current version to reflect this changing agenda in the RIBA Outline Plan of Work. The result is this 'Green Overlay', which amends the succinct wording of the Outline Plan of Work (2007 edition, amended November 2008) to clarify the issues, and their timing, in response to the growing imperative that sustainability is actively considered in the design and construction of buildings.

This Green Overlay is not intended as a fundamental review of the RIBA Outline Plan of Work. However, it will inform any future review of this and related documentation, such as the Architect's Job Book, RIBA Agreements, RIBA Architect's Handbook of Practice Management, and so on.

The robustness of the current RIBA Outline Plan of Work is demonstrated by how little its wording has had to be changed to expand its scope in this way — just over 30 additional words. These amendments have been highlighted in the Green Overlay text. A column of Sustainability Checkpoints has been added to the descriptions of each Work Stage to illustrate behaviours and activities that will support a more sustainable approach. Concise Supplementary Guidance fleshes out the Checkpoints. Some essential key references are also provided as a focussed source of further reading.

The Green Overlay was produced with the help of a multi-disciplinary panel of architects and engineers with particular expertise in sustainable construction assembled under the direction of the RIBA Practice and Profession Committee.

It incorporates feedback on a preliminary draft received from members of RIBA Practice and Profession Committee, RIBA Sustainable Futures Group, RIBA Conservation Architecture Group, CPIC (Construction Project Information Committee), CIC (Construction Industry Council), the Soft Landings User Group, and WRAP (Waste and Resources Action Programme).

I would like to thank all those who contributed and, in particular, the members of the expert panel:

Carol Costello (Edward Cullinan Architects)
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Prof Alan Short (University of Cambridge)
Marcella Ucci (University College London)

Similarly, I would like to thank the staff of the RIBA Practice department who provided guidance, comment and support throughout the process.



Bill Gething RIBA
Editor

Green Overlay to the RIBA Outline Plan of Work

RIBA Work Stage		Description of key tasks	Sustainability Checkpoints
Preparation	A Appraisal	Identification of client's needs and objectives, business case, sustainability aspirations and possible constraints on development. Preparation of feasibility studies and assessment of options to enable the client to decide whether to proceed.	Strategic sustainability review of client needs and potential sites, including re-use of existing facilities, building components or materials.
	B Design Brief	Development of initial statement of requirements into the Design Brief by or on behalf of the client confirming key requirements and constraints. Identification of procurement method, project and sustainability procedures, building design lifetime , organisational structure and range of consultants and others to be engaged for the project.	Internal environmental conditions and formal sustainability targets stated. Building lifespan and future climate parameters stated. Early stage consultation, surveys or monitoring undertaken as necessary to meet sustainability criteria or assessment procedures. Involvement of design team after Practical Completion defined. Site Waste Management Plan (SWMP) started.
Design	C Concept	Implementation of Design Brief and preparation of additional data. Preparation of Concept Design including outline proposals for structural and environmental strategies and systems , site landscape and ecology , outline specifications, preliminary cost and energy plans . Review of procurement route.	Key design team members appointed. Formal sustainability pre-assessment and identification of key areas of design focus. Deviation from aspirations reported. Initial Part L assessment. Plain English description of internal environmental conditions, seasonal control strategy and systems prepared. Environmental impact of key materials and construction strategy checked. Resilience to future changes in climate considered.
	D Design Development	Development of concept design to include structural and environmental strategies and services systems , site landscape and ecology , updated outline specifications and cost and energy plans . Completion of Project Brief. <i>Application for detailed planning permission.</i>	Full formal sustainability assessment. Interim Part L assessment and design stage carbon/energy declaration (e.g. Carbon Buzz). Design reviewed to identify opportunities to reduce resource use and waste and recorded in SWMP.
	E Technical Design	Preparation of technical design(s) and specifications, sufficient to co-ordinate components and elements of the project and <i>information for statutory standards, sustainability assessment and construction safety.</i>	Formal sustainability assessment substantially complete – minor technical and contractor items only outstanding. Principles of handover process and post completion service agreed. Details audited for airtightness, continuity of insulation and subcontractor package coordination.
Pre-Construction	F Production Information	F1 Preparation of production information in sufficient detail to enable a tender or tenders to be obtained. <i>Application for statutory approvals.</i> F2 Preparation of further information for construction required under the building contract.	Part L submission, design stage carbon/energy declaration update and future climate impact assessment. Non-technical user guide drafted; format and content of Part L log book agreed. Submission of all outstanding Design Stage sustainability assessment information. Compliance of contributions by specialist consultants and contractors with agreed sustainability criteria demonstrated. Building handover process and monitoring technologies specified.
	G Tender Documentation	<i>Preparation and/or collation of tender documentation in sufficient detail to enable a tender or tenders to be obtained for the project.</i>	Contractor sustainability standards specified.
	H Tender Action	<i>Identification and evaluation of potential contractors and/or specialists for the project.</i> <i>Obtaining and appraising tenders; submission of recommendations to the client.</i>	Contractor sustainability credentials assessed against specified standards. Implications of cost reductions and contractor substitutions reviewed against sustainability targets.
Construction	J Mobilisation	Letting the building contract, appointing the contractor. Issuing of information to the contractor. Arranging site hand over to the contractor.	SWMP passed to contractor. Design Stage sustainability assessment certified. Construction sustainability procedures developed with Contractor. Review of commissioning and handover programme.
	K Construction to Practical Completion	Administration of the building contract to Practical Completion. Provision to the contractor of further Information as and when reasonably required. Review of information provided by contractors and specialists. Assist with preparation for commissioning, training, handover, future monitoring and maintenance.	Contractor's interim testing and monitoring of construction reviewed and observed, particularly airtightness and continuity of insulation. Implications of changes to specification or design reviewed against agreed sustainability criteria. Non-technical user guide completed and aftercare service set up. Assistance with collating as-built information for post-construction sustainability certification.
Use	L Post Practical Completion	L1 Administration of the building contract after Practical Completion and making final inspections. L2 Assisting building user during initial occupation period. L3 Review of project performance in use.	Assistance with collation of post-completion information for final sustainability certification. Observation of building operation in use and assistance with fine tuning and guidance for occupants. Declaration of energy/carbon performance in use (e.g. Carbon Buzz).

The activities in italics may be moved to suit project requirements.

Supplementary Guidance

This guidance should be read in conjunction with the Green Overlay to the RIBA Outline Plan of Work.

RIBA Work Stage	Sustainability Checkpoints	Supplementary Guidance
Preparation	A Appraisal	<p>Strategic sustainability review of client needs and potential sites, including re-use of existing facilities, building components or materials.</p> <p>'Awareness' stage and setting the sustainability context for the project.</p> <p>Review client requirements to distil their sustainability aspirations and the expected building lifespan against which capital costs should be balanced against costs in use. Identify potential for cost effective enhancement of client aspirations.</p> <p>Review options for formal assessment of aspects of sustainability and/or energy performance (e.g. BREEAM, LEED, Passivhaus). If the project is a component of a larger scheme, ensure that targets support and are consistent with any overarching sustainability assessment methodologies. Establish timetable for associated assessor appointment and early stage actions.</p> <p>Client to consider appointing or identifying a client sustainability advocate (in senior management position) and/or appointing a sustainability champion in the design team.</p> <p>Assess environmental opportunities and constraints of potential sites and building assets including sufficient iterative modelling to support conclusions of feasibility studies.</p> <p>Initial consultation with stakeholders, identification of local planning sustainability requirements and appraisal of existing building, social, transportation, water, energy, ecological and renewable resources, including the need for pre-construction or seasonal monitoring or surveys.</p> <p>Commission surveys of existing buildings to be retained (including condition, historic/ townscape significance, materials and components for recycling), services, noise, vibration, renewable energy resources, ecology, geology, etc. as required) to inform the brief.</p> <p>Identify potential funding sources and their eligibility criteria.</p> <p>Review relevant current and emerging EU, national and local sustainability policy and legislation and analyse implications on build, environmental and performance targets.</p> <p>Identify and understand final occupants' needs to help to establish user patterns, energy profile and performance standards required.</p> <p>Client to consider the formal adoption of a Soft Landings approach to the project (www.bsria.co.uk/services/design/soft-landings/).</p> <p>Client to consider appointing a Soft Landings champion.</p> <p>Client to consider merits and protocols of using a building information model (BIM) to help deliver sustainability aims.</p>
	B Design Brief	<p>Internal environmental conditions and formal sustainability targets stated.</p> <p>Building lifespan and future climate parameters stated.</p> <p>Early stage consultation, surveys or monitoring undertaken as necessary to meet sustainability criteria or assessment procedures.</p> <p>Involvement of design team after Practical Completion defined.</p> <p>Site Waste Management Plan (SWMP) started.</p> <p>Obtain screening letter from planning authority to verify sustainability requirements.</p> <p>Include a simple description in the brief of the internal environmental conditions the client requires.</p> <p>Involve the client's facilities management team and review past experience (good and bad) in a spirit of openness in order to set environmental and performance targets that are useful, measurable, challenging but achievable and unambiguous. Targets should include both regulated and unregulated energy.</p> <p>Develop water efficiency strategies to establish similarly robust performance targets.</p> <p>Agree how to measure performance in use, what incentives there will be to achieve performance objectives and what action is appropriate if anything falls short.</p> <p>Develop potential energy strategies for the site including iterative estimated energy demand calculations, options for renewables and implications on building/site design (e.g. sufficient plant space).</p> <p>Set out SUDS and surface water retention requirements.</p> <p>Develop a brief for specialist environmental sub-consultants (e.g. wind monitoring consultant, ecologist).</p> <p>Consider Climate Change Adaptation criteria and future performance standards.</p> <p>Set out any future uses or reconfiguration to be accommodated.</p> <p>Ensure that competence of potential design team members matches the client's sustainability aspirations. The team should be balanced, with members of similar competence and commitment and with complementary contracts of engagement.</p> <p>Client to start the Site Waste Management Plan (SWMP) to enable designers to record decisions made to reduce waste as the project progresses.</p>

Table continues overleaf...

Useful Sources

Green Guide to the Architect's Job Book, Sandy Halliday, RIBA Publishing, 2007.

NBS Sustainability website (www.thenbs.com/topics/Environment/index.asp).

Resource efficiency tools and guidance (www.wrap.org.uk/construction).

RIBA Climate Change Toolkits (www.architecture.com/FindOutAbout/Sustainabilityandclimatechange/ClimateChange/Toolkits.aspx).

RIBA Sustainability Hub (www.architecture.com/SustainabilityHub/SustainabilityHub.aspx).

Soft Landings Framework (www.bsria.co.uk/services/design/soft-landings/).

Sustainable Buildings: The Client's Role, Joanna Ely, RIBA Publishing, 2011.

Sustainability, CIBSE Guide L, 2007.

Supplementary Guidance (Continued)

	RIBA Work Stage	Sustainability Checkpoints	Supplementary Guidance
Design	C	<p>Key design team members appointed.</p> <p>Formal sustainability pre-assessment and identification of key areas of design focus. Deviation from aspirations reported.</p> <p>Initial Part L assessment.</p> <p>Plain English description of internal environmental conditions, seasonal control strategy and systems prepared.</p> <p>Environmental impact of key materials and construction strategy checked.</p> <p>Resilience to future changes in climate considered.</p>	<p>Set out site scale environmental design criteria (e.g. solar orientation, overshadowing, SUDS, waste).</p> <p>Consider the design of the space between buildings as well as the buildings themselves. Consider the need for and scale of private, semi-private and public external space.</p> <p>Establish maximum plan depths to achieve desired levels of natural ventilation, daylight and view.</p> <p>Design for buildability, usability and manageability.</p> <p>Consider the impact of complexity of form on thermal performance, airtightness, and inefficient/wasteful use of materials.</p> <p>Establish an appropriate glazing proportion and shading strategy for each orientation to provide good levels of daylight while avoiding excessive glare, solar gain or heat loss.</p> <p>Establish appropriate element thicknesses to achieve U-values required by energy strategy.</p> <p>Check that materials and construction approach will provide a level of thermal mass that is appropriate to the environmental design strategy.</p> <p>Refine and review design decisions to minimise quantity of materials used and to minimise construction waste (for guidance, see www.wrap.org.uk/designingoutwaste).</p> <p>Review the embodied impacts of materials and construction approach in the context of the building's lifespan.</p> <p>Avoid design solutions that inhibit adaptation and alternative use of the building or its components and materials.</p> <p>Take particular care to avoid short- and long-term damage to retained traditional building fabric from ill-considered upgrade interventions.</p> <p>Ensure that design implications of any components essential to the success of a sustainability strategy are understood across the design team (e.g. space for fuel deliveries and waste handling, roof collector area and orientation, location and size of rainwater harvesting tanks, SUDS attenuation, etc.).</p> <p>Refine energy and servicing strategy, incorporating energy efficient services design and design techniques.</p> <p>Carry out sufficient compliance or advanced modelling to prove the design concept before freezing the design (e.g. SBEM/SAP/PHPP (Passivhaus Planning Package) or dynamic modelling).</p> <p>Audit the emerging design against project's sustainability agenda and targets.</p> <p>Set up a programme of intermediate evaluations and reality checks involving stakeholders and key users as well as the design team.</p>
	D	<p>Full formal sustainability assessment.</p> <p>Interim Part L assessment and design stage carbon/energy declaration (e.g. Carbon Buzz).</p> <p>Design reviewed to identify opportunities to reduce resource use and waste and recorded in the SWMP.</p>	<p>Refine and distil the project's sustainability strategy, checking against brief and targets.</p> <p>Update energy modelling as design develops and check against targets.</p> <p>Refine climate adaptation strategy and make provision for future adaptation interventions.</p> <p>Incorporate environmental and sustainability issues in the Planning Application Design and Access Statement, including a development of the Stage C plain-English description of internal environmental conditions, seasonal control strategy and systems. Provide a supplementary detailed report if appropriate.</p> <p>Consider peer reviews of environmental control strategies and also involve stakeholders and users.</p> <p>Involve contractors and specialist sub-contractors where specialist products or systems are proposed.</p>
	E	<p>Formal sustainability assessment substantially complete – only minor technical and contractor items outstanding.</p> <p>Principles of handover process and post completion service agreed.</p> <p>Details audited for airtightness, continuity of insulation and subcontractor package coordination.</p>	<p>Audit technical design to ensure integration and compliance with project's sustainability targets.</p> <p>Agree technical requirements to support monitoring strategy.</p> <p>Ensure artificial lighting and daylighting strategy and controls are mutually supportive in delivering low energy consumption.</p> <p>Involve facilities management and users in reviewing environmental control systems and manual and automatic controls to ensure they are appropriately simple and intuitive, and that there is a match between expectations and the design.</p>

Table continues...

Supplementary Guidance (Continued)

	RIBA Work Stage	Sustainability Checkpoints	Supplementary Guidance
Pre-Construction	F	<p>Part L submission, design stage carbon/energy declaration update and future climate impact assessment.</p> <p>Non-technical user guide drafted; format and content of Part L log book agreed.</p> <p>Submission of all outstanding Design Stage sustainability assessment information.</p> <p>Compliance of contributions by specialist consultants and contractors with agreed sustainability criteria demonstrated.</p> <p>Building handover process and monitoring technologies specified.</p>	<p>Make sure design team are aware of technical consequences of strategic sustainability decisions.</p> <p>Specify sustainable materials and products, balancing lifecycle assessment, maintenance regime, durability and cost.</p> <p>Complete consultation with sub-contractors and suppliers. Review information packages to check they are coordinated, complimentary, and support all components of the sustainability strategy.</p> <p>Review information required to demonstrate compliance with sustainability requirements, e.g. materials certification.</p> <p>Review final details, including subcontractors' packages, for airtightness and continuity of insulation.</p> <p>Agree responsibilities and routines for data recording to monitor performance and assist in fine tuning.</p>
	G	<p>Contractor sustainability standards specified.</p>	<p>Incorporate agreed procedures to support sustainable construction practice into contract documentation, including:</p> <ul style="list-style-type: none"> • Soft Landings procedures. • Requirements for the contractor to use materials efficiently and to minimise waste, energy and water use on site (www.wrap.org.uk/procurement).
	H	<p>Contractor sustainability credentials assessed against specified standards.</p> <p>Implications of cost reductions and contractor substitutions reviewed against sustainability targets.</p>	<p>Assess specifically the understanding and acceptance of procedures to support sustainable construction practice when evaluating submissions from the lead contractor, key sub-contractors and suppliers.</p>
Construction	J	<p>SWMP passed to contractor.</p> <p>Design Stage sustainability assessment certified.</p> <p>Construction sustainability procedures developed with Contractor.</p> <p>Review of commissioning and handover programme.</p>	<p>Review potential knock-on implications of value engineering on performance and sustainability targets.</p> <p>Collaborate with the contractor to maximise construction phase potential to meet sustainability criteria as economically as possible.</p>
	K	<p>Contractor's interim testing and monitoring of construction reviewed and observed, particularly airtightness and continuity of insulation.</p> <p>Implications of changes to specification or design reviewed against agreed sustainability criteria.</p> <p>Non-technical user guide completed and aftercare service set up.</p> <p>Assistance with collating as-built information for post-construction sustainability certification.</p>	<p>Submit final information for statutory approval and certification including Part L and EPC.</p> <p>Visit site to check that quality, installation, etc. is in line with sustainability targets.</p> <p>Review the content of the O&M manual with the facilities manager, who should sign it off when it is complete and acceptable. Reiterate the relevance of design elements that are essential to meeting sustainability targets and how to monitor that they are operating correctly.</p> <p>Work with client's facilities managers to ensure a smooth handover, with all records finalised and coordinated and with adequately trained operation and maintenance staff in place in advance of completion.</p> <p>Check that adequate maintenance contracts are in place and commence immediately after handover.</p> <p>Confirm responsibilities and routines for data recording to monitor performance and assist in fine tuning.</p> <p>Identify aftercare representative(s) and when they will be available on site.</p> <p>For detailed guidance on preparation for handover and post-completion activities, see the Soft Landings Framework (www.bsria.co.uk/services/design/soft-landings/).</p>
Use	L	<p>Assistance with collation of post-completion information for final sustainability certification.</p> <p>Observation of building operation in use and assistance with fine tuning and guidance for occupants.</p> <p>Declaration of energy/carbon performance in use (e.g. Carbon Buzz).</p>	<p>If necessary, raise awareness of project sustainability features and operation methods to client, facilities managers and occupants.</p> <p>Assist with fine tuning building services and operational systems to check that they meet user requirements.</p> <p>Review controls and performance in each season and update manuals and records to reflect any changes.</p> <p>Feed back lessons learnt from post occupancy review to client and design team.</p>



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