NHSSCOTLAND SOFT LANDINGS (SL) GUIDANCE

NHSScotland

Executive Summary

Soft Landings [SL] is a key element of the design and construction process maintaining the "golden thread" of the building purpose through to delivery and operation, with early engagement of the end users and inclusion of a SL champion on the project team, and commitment to aftercare post construction.

Essentially soft landings align the interests of those who design and construct an asset with those who subsequently use it. Fundamental to this concept is collaborative working across the supply chain and key stakeholder engagement at all stages of the process.

There are many benefits to a soft landings approach but at a headline level it helps to ensure that any asset created by an NHSScotland Board meets the end users' needs and required operational outcomes plus through post occupancy evaluation, monitors the project outcomes post completion against performance and cost criteria, with lessons learnt captured for future projects.

The NHSScotland soft landings approach offered in this document and supplementary templates should allow a Board to create a project SL strategy and implementation plan.

The content of this document is also aligned with the NHSScotland BIM Strategy and Guidance ensuring that a fully populated asset data set will be developed over the design and construction stages to export into the Board's asset management systems at the point of completion. Further BIM and computer-based simulation will allow performance targets and functionality to be tested from early stages in the design process.

It is important to recognise that many of the principles and processes of soft landings are already being implemented by NHS Boards and should therefore not carry much additional cost but codify best practice.

Figure 1 Core SL Principles

1 Introduction

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Soft Landings [SL] has been identified as a means of improving performance of NHSScotland buildings by *aligning the interests of those who plan, design and construct an asset with those who subsequently operate and use them.*

SL is also aligned with the Scottish Capital Investment Manual [SCIM] which requires a systematic approach to monitoring, evaluating and learning from projects.

The British Standards Institution [BSI] has defined SL as a *"process for the graduated handover of a new or refurbished asset/facility, where a defined period of aftercare by the design and construction team is an owner's requirement that is planned and developed from the outset of the project."* **[from BS 8536-1]**

Essentially soft landings strive for better outcomes for NHSScotland built assets through early engagement of the end user communities and the Board's operational team. Not just to facilitate a better handover process but a commitment from the planning, design team, through construction and into operation providing emphasis on improving operational readiness and performance in use.

SL is a key element of the NHSScotland process for maintaining the "golden thread" of the building's purpose through a smooth transition from planning, delivery and construction into operation. Fundamental to the SL concept is collaborative working across the supply chain and key stakeholder engagement at all stages of the process. Key to this is effective end user engagement and the inclusion of a NHSScotland Board SL champion on the project team, combined with a proactive commitment to aftercare post construction. The SL process is also a key component of the NHSScotland Building Information Modelling [BIM] Level 2 process where data, simulation and a virtualised review processes can support the SL engagement and decision-making process.

This guide and its associated templates will allow Boards to embed and deliver SL on their projects in a structured manner where lessons learned can be fed back to better inform subsequent project methodologies.

The guidance has been developed to help ensure that *"Boards issue a brief that concentrates on required performance and outcome; PSCPs [designers and constructors] work together to develop an integrated solution that best meets the required outcome."*

Then NHSScotland SL approach is supported by BS 8536-1:2015 Briefing for design and construction and Code of practice for facilities management (Buildings infrastructure) which should be read in conjunction with this document.

BS 8536-1 & 2 aims to:

- Involve the operator, the operations team and their supply chain from the outset;
- Extend the involvement of the supply chain for the project's delivery through to operations and defined periods of aftercare;
- Articulate briefing requirements for soft landings, building information modelling (BIM) and post occupancy evaluation (POE).

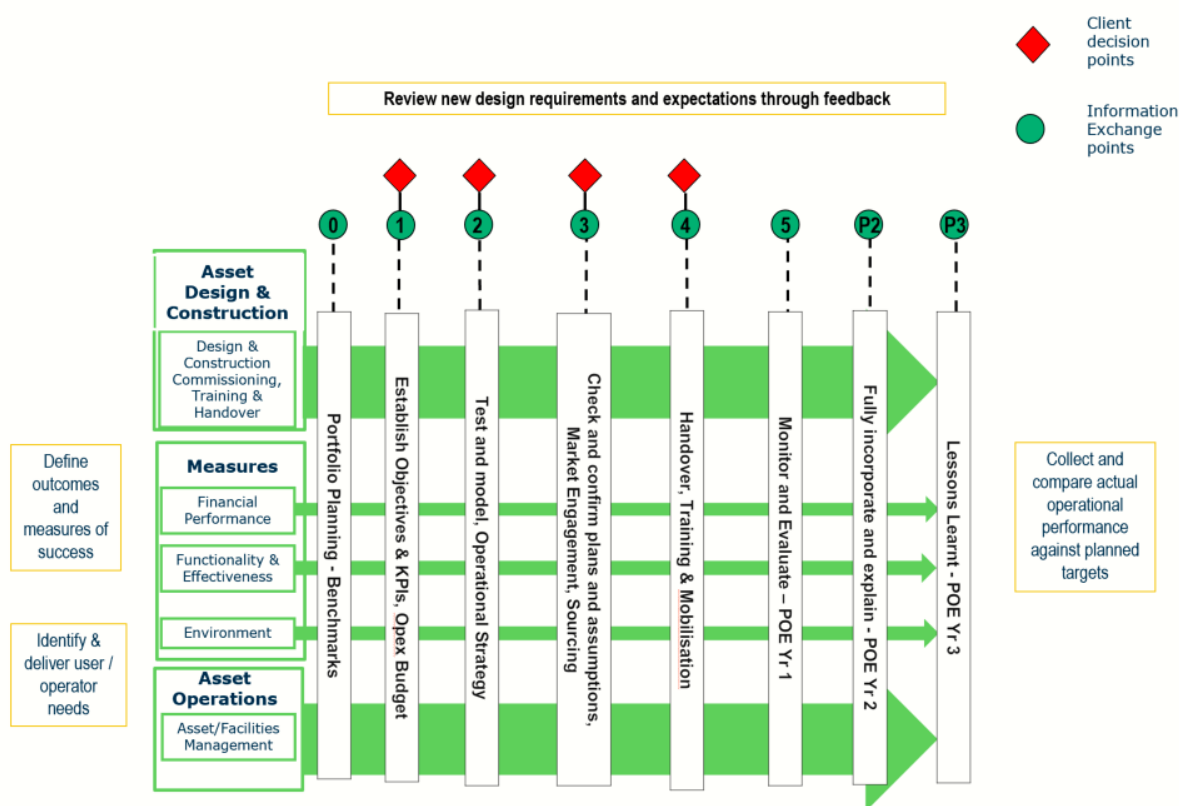The soft landings process promoted by BSI is summarised in the diagram below:

Figure 2 Soft Landings Process

Achievement of these soft landings objectives is through a combination of roles and responsibilities, structured process, collaborative working and engagement. A prime objective is the focus on outcomes throughout all development stages of an NHSScotland project.

This document provides the basic guiding mechanism on how to achieve the objectives. It simply looks at what should be done, when and by whom. It builds in accountability; accountability to deliver the objectives. They are designed to be developed into a detailed working SL plan to support a project.

The processes are aligned with NHSScotland BIM procedures both in terms of having key decision gateways and recording of project data at all stages through BIM enabled information exchanges.

2　Why are Soft Landings important to NHSScotland?
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Applying soft landings will bring benefits to all stages of an NHSScotland asset creation and operation. Effort put in at the front end of construction and design has enormous leverage on the outcomes achieved and long-term cost of running and using an asset.

The use of SL supports this front-end focus for long-term business benefits. Typical benefits by persona are illustrated below:

2.1　NHSScotland Boards

- Provides an asset that meets the end users' needs and required operational outcomes;
- Enables end user involvement at an early stage and throughout the project;
- Enables early challenge of design decisions that may impact upon on-going maintenance and operational cost of the asset, which form the majority of the expenditure during the asset's lifecycle;
- Provides fully populated asset data from BIM reducing the cost of data input to Facilities Management (FM) asset management systems;
- Ensures that full training, commissioning and handover is provided at an early stage, which reduces the cost of protracted handover and means the building will reach optimal performance sooner;
- POE, which monitors the project outcomes three years post completion against performance and cost criteria, with lessons learnt captured for future projects;
- Holistic and tested delivery and operational strategy.

2.2　Capital Planners

- Benefit of structured feedback and lessons learned;
- Decisions based on evidence and real-project experience;
- Building an early and relevant holistic stakeholder community;
- Focus on a robust operational strategy for the project which will become the golden thread.

2.3　Designers

- Better more reliable brief with clear operational strategy and purpose[s];
- Known problem statements at the out-set so they are not repeated;
- Early access to end-users and operational stakeholders.

2.4　Principal Supply Chain Partners (PSCPs)

- Get to know the Boards better – repeat business;
- Better brief with clear performance targets;
- Better understanding of client needs [known(s)];
- Better collaboration;
- Less re-work – early testing against targets [BIM work flows];
- Better programme delivery – especially commissioning and handover better defined.

2.5   Commissioning Teams

- Collaborative and well-defined commissioning schedule with earlier involvement with other specialists e.g. Fixtures, Fittings and equipment (FF&E) partner;
- Ability to analyse commission data v BIM theoretical performance targets / baseline;
- Opportunity for continuous commissioning refinement through an extended aftercare process.

2.6   Operational Teams

- Better transfer to new facility / virtual walkthroughs and training;
- Better information for operational delivery [complete data set at handover];
- No surprises at point of operational entry;
- Revenue implications considered early on;
- Golden thread of operational strategy tested and validated through Capex Delivery;
- Early involvement and better understanding – influence design from operational perspective;
- Benefits of extended aftercare.

2.7   End Users

- Better environment / Optimal asset performance;
- Better functionality [wayfinding, spaces, etc.];
- Board gets delivered what was briefed;
- Responsive aftercare;
- A facility that works well for all stakeholders;
- Better / earlier involvement and engagement.

2.8   Benefits of monitoring and evaluation of projects

SCIM highlights that if properly planned and resourced, monitoring and evaluation can produce significant benefits to an organisation, such as:

Monitoring:
- Gaining a better understanding of whether the project is running smoothly and to programme so that any corrective action can be taken in a timely manner;
- Enabling service plans / changes to progress at a correct pace to align with the project programme;
- Better understanding of the risk contingency status (i.e. has some of it been used or not); and
- Better understanding of the impact of project scope changes on costs, programme, and delivery of the project's outcomes or benefits.

Evaluation:
- Demonstrates that the project was worthwhile by, for example, achieving its investment objectives, realising its expected benefits, and carefully managing its associated risks;
- Promotes organisational learning to improve current and future performance;
- Avoids repeating costly mistakes;

- Improves decision-making and resource allocation (e.g. by adopting more effective project management arrangements; and
- Recognises how the impact of good design can improve stakeholder satisfaction, service performance, and the efficiency and effectiveness of the NHS Board's operations.

3   Delivering Soft Landings
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To successfully implement soft landings at a project level it is vital that the team understand and engage in the following key core principles:

Focus on outcomes

Setting an operational strategy, clear purpose and user needs defined within the brief to meet the required outcomes and ensuring these are delivered.

Roles and Responsibilities

Accountability and responsibility for soft landings, collaborative stakeholder engagement, ensuring feedback and lessons learned informs the brief and design strategy.

Performance Management

Establishing SMART success and performance targets which can be tested during the design stages using BIM coupled with simulations and 3D walkthroughs. Evaluating the success of the finished facility and the performance of the team in delivering it.

Contracts and Procurement

Identify and build in the project specific SL needs into the PSCP procurement process.

Aftercare and Post Occupancy Evaluation [POE]

Supporting the needs of the End Users, evaluating success in project delivery, lessons learnt and knowledge share.

Figure 3 NHSScotland SL Approach

The following section builds on these principles through the typical NHSScotland project stages; this should be read in conjunction with both the NHSScotland: "Soft Landings – Summary Process Map and the "Soft landings delivery plan - template" which should be completed for each project.

3.1 Initial Agreement / Preparation & Brief

The key SL activities at this initial stage are:

- Define high-level outcome-based client requirements;
- Clearly define the soft landings roles and responsibilities;
- Undertake stakeholder analysis, impact and probability matrix;
- Capture, embed and monitor lessons learned for previous projects;
- Development of a FM strategy.

This first stage is arguably the most crucial and seeks to define the high-level outcome-based client requirements, needs and objectives which will become part of the project brief. It is important that the SL process starts with clearly defining the project's operational vision and strategy, one that can be easily communicated to other stakeholders. Based upon the high-level strategy outcome-based success criteria should be established for the project. Project specific objectives should be developed through a combination of internal reviews of key issues appertaining to that project, feedback from similar projects, legislative or NHSScotland Board guidance and design/financial constraints.

It is an important aspect of the SL process that operational lessons are learned from similar project are assimilated including review of project close down meeting notes and visiting similar past projects to meet with FM, Estate Teams and end users. Pre-Occupancy surveys may be commissioned at this stage also.

A BIM and SL strategy for the project should also be created ensuring that these are fully aligned especially in terms of decision points, operational Plain Language Questions [PLQs] to be tested and data exchanges especially those allied to the as-built model which will facilitate a data set to populate the Board's asset management systems.

Fundamental to the concept of SL is collaborative working and key stakeholder engagement at all stages of the process. The Guiding Principles are:

- Leadership –   Accountability and Responsibility at all stages
- Engagement –   Integration of End Users into the design and validation process
- Focus on outcomes –   Evaluate throughout the development process
- Support –   Support to the End Users through a structured Aftercare Plan

Other key activities at this stage include:

3.1.1 Soft Landings Roles and Responsibilities

To support the above NHSScotland has developed a series of key roles and responsibilities to successfully implement SL, the NHSScotland Board as the client must be an active participant and lead the process at the outset to develop the roles and responsibilities. It is important that the people involved in the SL process should be the actual individuals who will work on the project. The Board has an obligation to identify and make key people available for consultation and reporting [an obligation also on the PSCP]. To the extent possible, this should include all technical people, and

personnel with a stake in the management or subsequent operation of the facility, such as facilities and estate managers. The Board should also ask their PSCP to ensure continuity of project personnel as part of their SL commitment.

S roles and responsibilities should therefore be included in all relevant tender documentation. Greater effort should be made to bring in key specialists to advise on operational development earlier than would be the norm, such as the commissioning engineer, and the facilities manager [where practical]. PSCPs whose input is central to building performance should also be involved in early discussions. These should include the controls designer or engineer, medical gases, lighting controls supplier, and catering and IT suppliers.

Where these people are not available or yet to be appointed, proxies in the form of industry specialists should be considered and invited to comment in a [non-contractual] advisory capacity.

NHSScotland wish to implement SL appropriately and the baseline roles and responsibilities below should be cast appropriate to the scale and value of a project.

3.1.1.1 Project Sponsor:

Role:

The Project Sponsor, usually the Senior Responsible Officer [SRO] will play a key role in the soft landings [SL] process and has personal accountability and overall responsibility for the delivery of the successful outcome of the facility setting the operational vision and strategy.

Responsibilities:

- Ultimate accountability into the Board for the success of the project and establishing strategy, purpose and overall project objectives, especially the operational aims which will be fundamental to the success of the SL process and ultimately the performance of the facility;

- Sign-off to all key stages of the development programme, from business case, concept through to post occupancy evaluation using SL to support the decision-making process;

- Establishes the key requirements of the Project Brief as a basis of target setting, especially those allied to operation and performance (functionality and effectiveness), environmental and economic (cost) outcomes;

- Ensures that the operational budget is set early on to allow designs to be reviewed for operational running cost impact;

- Identifies the key stakeholders' communities for engagement in the SL process.

3.1.1.2 Project Director [Board]

Role:

The Project Director ensures that the SL plan for the project is successfully established and managed with specific operational and performance targets determined and tested.

Responsibilities:

- Accountable to the Project Sponsor, ensuring that each stage of the project is managed in accordance with the SL process and closed out with the Project Sponsor approval;

- Engages with the professional team / PSCP to embed SL into briefing, design, construction and operational stages;

- Establishes and promulgates SMART [Specific, Measurable, Agreed Upon and Time Based] operational and performance targets and monitors actual outcomes against them using BIM workflows to support;

- Works with the Board's FM team to ensure that the Facilities Management Plan is developed in time for design proposals and budget setting ensuring that this takes account of the Board's Asset Management Strategy [The Facilities Management Plan should consider the following; operational management strategy, operational budget, service level requirements and sourcing strategy;

- Where appropriate ensures that BIM data feeds into Computer Aided Facilities Management [CAFM] systems to enable a fully populated asset register for 3i Studio;

- Develops and manages an Occupancy / Migration, Aftercare Plan, inclusive of Post Occupancy Evaluation studies to ensure that the building is optimised, all End User needs have been met and the project is satisfactorily closed out;

- Ensures that post occupancy evaluation and monitoring are undertaken to compare intended performance against actual performance and support the assessment of any differences between the two sets of information;

- Delivers feedback reports to ensure lessons learnt are transferred to other projects.

3.1.1.3 NHS Board Soft Landings [SL] Champion

Role:

Represents the needs of the End Users [staff and specialist groups e.g. infection control, medical gases, cryogenics]; Occupiers, Visitors and Facilities Managers. The SL Champion should have particular interest in the ongoing operation and use of the asset post completion.

Responsibilities:

- Actively engages with the End User stakeholder groups to ensure their needs are input into all stages of the project;

- Attends the SL review meetings providing a pro-active voice for End Users and where appropriate challenges design criteria and proposals to ensure that the project is maintainable and cost effective in use;

- Actively engages with the Project Team to ensure these needs are considered at all stages of the brief, design, construction, handover and in use support;

- Supports the Project Director in developing and implementing the Occupancy / Migration, Aftercare Plan and Post Occupancy Evaluation studies;

- Supports the ongoing development of soft landings with NHSScotland.

Skills:

- Understanding of the operational aspects of NHSScotland building management e.g. FM and the needs of users;

- Ability to engage with a wide range of project stakeholders so that the end user performance requirements are communicated throughout the entire SL process;

- Understanding of the building operational and asset management systems e.g. EAMS, Board's Computer Assisted Facilities Management [CAFM] and Building Management Systems [BMS systems] and their data needs and use in identifying how the actual building use may differ from the original intended use against which the building was designed;

- Understanding of the NHSScotland processes such as SCIM;

- Understand the basic principles of BIM Level 2;

- Understands and can support the Post Occupancy Evaluation [POE] surveys and lessons learned process.

3.1.1.4   PSCP Soft Landings [SL] Co-ordinator

Role:

The PSCP SL Co-ordinator ensures that the project SL implementation plan and its associated tasks are executed and fosters close alignment with the Boards operational stakeholders to ensure that the operation strategy in aligned with the design, construction, commissioning, handover and aftercare activities.

Responsibilities:

- Facilitates the SL review meetings using BIM as a basis to support decision making [for example: 3D walkthroughs and data exchanges to test operational Plain Language Questions];

- During the construction period arranges for SL site visits to allow users to get early understanding of the facility and raise early any issues not established during the regular SL reality checks.

- Works in conjunction with the Board to test early data exchange to 3i Studio and CAFM system;

- Early preparation of building readiness programme [pre-commissioning];

- Where appropriate prepares user migration plans in conjunction with the client SL team;

- Undertakes early stage pre-handover orientation and training with FM Teams and End User communities;

- Prepares User and Operator guides to compliment digital Operational and Maintenance Manuals (O&Ms);

- Provision of validated information and data at each stage consistent with the projects Master Information Delivery Plan [MIDP];

- Clear communication of After-Care contacts;

- Implements After-Care plan and where relevant fine tuning of systems.

3.1.2   Soft Landings - Stakeholder analysis, impact & probability matrix

During this early stage and as part of the NHSScotland SL process a stakeholder analysis, impact and probability matrix analysis should be prepared. This is a method for evaluating the influence that stakeholders possess in regard to a project and will help facilitate effective communication and engagement planning as part of the SL process.

Stakeholders' interests in the project / asset / facility may be assessed in a number of ways, including the use of an impact/probability matrix. Individual stakeholders and groups of stakeholders are positioned in the matrix according to the level and probability of impact they have on the planning, design and construction of the asset/facility and its subsequent operations. It is a form of risk assessment.

Since stakeholders and their interests could change over time re-assessment is necessary. The overall aim of the matrix is to focus attention on the nature and degree of stakeholder engagement and communication, as indicated by the terms applied to four quadrants, and actions that might then be necessary. The matrix is not intended to provide a complete solution to the assessment of stakeholders.

In the first instance the Board's Project Sponsor should identify the project stakeholders [using Table 1 as a guide] then categorise and place these in the Soft Landings: Stakeholder impact / probability matrix (Figure 1.2). The matrix illustrates the four quadrants on the matrix and the expected communication outcome.

It is important that a balanced, wide-ranging group of multi-disciplinary stakeholders are invited to take part in design assessment workshops which are a requirement for SCIM and submitted via the NHSScotland Design Assessment Process (NDAP).
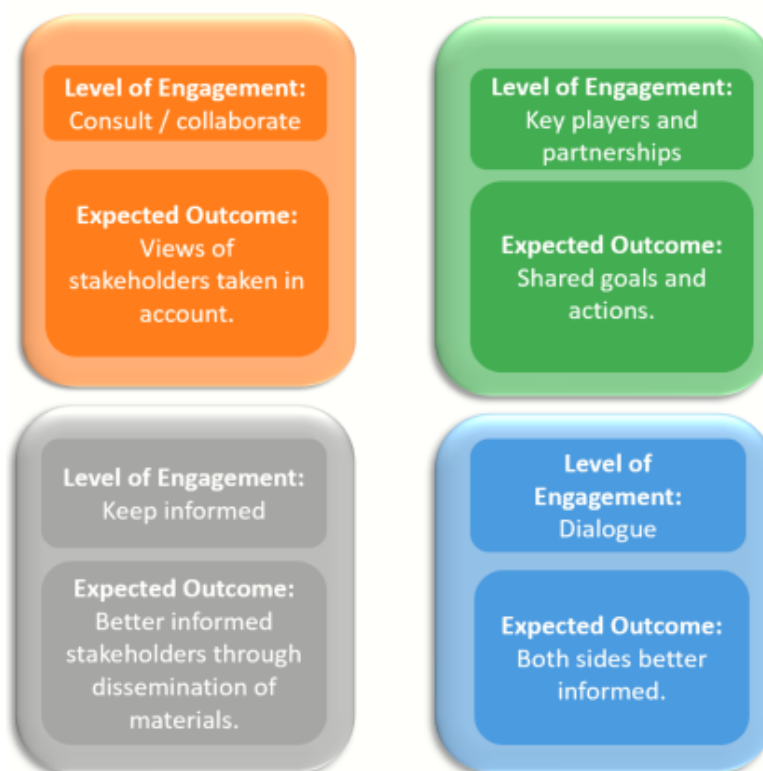
Table 1 Impact / probability matrix

Table 2 project Stakeholders

Internal Stakeholders	
1	Staff user groups
2	Clinicians / Clinical User Groups: Chief Nurse / Director of Nursing / Consultants / Doctors etc.
3	Allied Health Professionals
4	Asset and Property Managers / Soft FM Teams
5	Soft Landings Champion
6	HAI Team
External Stakeholders	
7	Patient representatives and Patient Groups e.g. carer and visitor groups
8	Public / Consultative groups

9	Adjacent neighbours and Community Groups
10	Local Authority [planning]
11	Local Authority [building control]
12	Local Authority [highways]
13	Emergency service representatives
14	Health Facilities Scotland
15	Scottish Futures Trust
16	Architecture & Design Scotland
17	Politicians
18	Media
19	PSCPs
20	Scottish Government
21	Local health partnerships
22	Health promotion groups
23	Arts and Therapeutic environment groups
24	Wider public representative groups

3.1.3   Lessons Learned Approach

The adoption of value improving practices and applying lessons learned is a key principle of the NHSScotland SL approach. The Board's SL Champion should undertake a desktop assessment of case studies, lessons learned from previous "project review meetings" both generally and for relevant themes plus any other reliable, documented sources. These lessons learned should be captured and articulated in the NHSScotland Soft Landings Lessons Learned template, so these can be disseminated to those preparing the brief and monitored throughout the project development to make sure they have been acted upon.

It is recommended that visits be undertaken to similar live or recently completed projects to interview the end-users and facilities management teams to capture any new lessons learned since the POE surveys. Particular attention should be paid to analysis of operational measures and end user feedback.

Additionally, development days or early stakeholder workshops should be undertaken to gather relevant experiences that may influence the brief and or target setting.

3.1.4   Facilities Management Strategy and Plan (Outline)

Projects must be designed to fully incorporate the needs of the management of the facility post completion. The starting point for this is the development of an FM Strategy and Plan for the project. The FM Plan should address the Service Level Requirements and Sourcing strategy.

The Board's Portfolio Management Strategy should provide the basis for the FM Plan which at this stage will provide an outline FM briefing. This FM briefing document will be developed by identification and engagement of Key Stakeholders with the SL Champion. Understanding the Functionality and Effectiveness requirements is essential for this.

Projects are to be designed with maintenance needs in mind for operational effectiveness.

The project's FM Strategy should have clear alignment with the operational objectives and operational budget.

3.1.5   Soft Landings – Risk and Opportunity Register

A soft landing's risk and opportunity register should be established and maintained from the outset and is one of the deliverables in the strategy work stage. As a minimum the primary operational and performance risks and opportunities should be incorporated in the overall project risk register.

A specimen SL Risk and Opportunity Register is included in Appendix A.

3.2   Outline Business Case / Concept Design

The key SL activities at this stage are:

- Adoption of an approach that addresses the outcomes required and how targets will be set, delivered and measured;
- Using BIM and associated digital simulation techniques to assess any early design against project key performance indicators and targets;
- Creation of a POE Plan;
- Establishing when SL gateway review meetings are required and their purpose.

3.2.1   Define Success criteria, performance targets and evaluation methods

NHS Boards are mandated by SCIM to monitor, evaluate and learn from all their capital and major investment projects valued above their delegated limit, but it is also recommended as best practice for all other projects.

For projects under £5m, monitoring and evaluation should be carried out and reported through NHS Boards' internal governance arrangements. For projects in excess of £5m, individual reports should be submitted to Scottish Government by the agreed timescales outlined within the project's Full Business Case.

A summary report of the main findings and lessons learnt in respect of all such projects should be submitted to Scottish Government by 30th June annually. Scottish Government is committed to sharing these lessons learnt across NHSScotland.

The process of monitoring and evaluation are also set out in the British Standards which support soft landings:

BS 8536-1:2015 Briefing for design and construction. Code of practice for facilities management (Buildings infrastructure) promotes that clear targets should be set for the expected outcomes at the start of the project which should be aligned with the owner's business objectives, as reflected in their operational strategy and be capable of being cascaded through the supply chain. These targets should be reviewed at defined information exchange points within the capital work stages and, finally, during operation of the asset/facility. As a minimum the following "outcomes" should be set at the Outline Business Case (OBC) work stage of a project and monitored during each subsequent work stage up to Operation and End of life, with POE during a defined period of extended aftercare used as the basis for measuring operational performance:

a) Environmental – the asset/facility should meet performance targets such as those for energy use, CO_2 emissions, water consumption and waste reduction and/or others defined by the owner and operator;

b) Social (i.e. functionality and effectiveness) – the asset/facility should be designed and constructed to meet the functional and operational requirements of the owner such as the overall concept, context, uses, access, visual form, space, internal environment, durability and adaptability, and in operation should meet the operator's and end-user requirements, such as utility, usability, safety, maintainability, security, inclusiveness and comfort;

c) Security – the asset/facility and the creation, use, storage and disposal of asset/facility-related information and data should meet the security requirements of the owner, operator, operations team or facility manager, as appropriate, and end-users;

d) Economic – the asset/facility should meet performance targets for capital cost and operational cost, which should be considered side-by-side to enable whole-life costs to be calculated.

The template overleaf should be used as a basis for determining a project's performance targets and associated POE measures. These should ultimately be incorporated into a Project POE and Monitoring Plan.

3.2.2   Thematic Outcomes and Measures

3.2.2.1   Environmental Outcomes and Measures

Soft landings require the use of a recognised assessment and reporting methods for the asset/facility. These need to be considered against Board's targets and operational objectives, operating budgets and critical project targets. Further these will need to be constantly reviewed and evaluated as the project progresses. Handover and fine tuning should be used to assess progress against these and support their achievement.

Each NHSScotland Board's energy and environmental data is already recorded using the national eSight monitoring and target [M&T] system. This covers all NHS sites. In addition, Boards may have an Environmental Management System and a Sustainability Action Plan for improving energy and environmental performance including:

	Performance Target	Typical POE Measures
1	**Annual Energy Use – consumption including both regulated and unregulated consumption - kWh per annum per m2 [GIFA].** *This is already an eSight requirement.* Boards should aim to develop targets aligned with zero-carbon / low energy buildings in line with Scottish Government policy. **Reference Documents:** NHSScotland eSight M&T The Chartered Institution of Building Services Engineers (CIBSE) Energy Assessment and Reporting Method for the evaluation of energy consumption in use (TM22). This document also supports optimisation of performance against these targets. The CIBSE Building Log Book TM31 provides useful guidance on how to record how a building is used. This information is essential to assess planned performance against actual design. CIBSE Guide A Environmental Design CIBSE TM 39 Building Energy Metering CIBSE TM 46 Energy Benchmarks CIBSE TM59 Overheating guidance Scottish Government Climate Change Plan 2018 and Energy Efficiency Route map.	**Boards require to undertake recognised annual energy assessments and reporting methods [eSight]. This should include energy measurement and calculation of carbon dioxide emissions.** Assessment of annual energy use with regard to all individual energy sources; Analysis of demand profiles [half hourly]; Cross-references to the post-occupancy evaluation survey in regard to internal environment, performance and engineering; Investigation of issues arising (especially where there is unusually good, poor or variable performance); Spot checks and recording measurements as necessary; Technical review of building fabric, component and equipment performance; Review of the performance and usability of controls, the building management system (BMS) and metering; Reliability, maintenance and maintainability of energy-using systems and components; Structured reviews with the operator, operations team or facility manager, as appropriate, and the representative(s) of end-users; Suggestions for improvement; and Comparison with results from other assets/facilities (from within a portfolio programme or from a wider benchmark database).
2	**Carbon Dioxide Emissions** CO2 Tonnes % Emissions **Reference Documents** The Chartered Institution of Building Services Engineers Operational Ratings and Display Energy Certificates (TM47:2009). Scottish Government Climate Change Plan 2018.	Calculated from the total energy use; tonnes per annum using eSight [M&T]

3	**Annual water consumption** Cubic litres per annum [relating to beds, patients, contacts] Base targets on existing benchmark data.	**SL recommends that this evaluation might typically include measurement of water consumption and an advisory report to suggest ways of reducing water consumption and might cover:**
		Assessment of annual water use;
		Analysis of water demand profiles;
		Cross-references to the post-occupancy evaluation survey in regard to the headings of internal environment, engineering and performance;
		Investigation of issues arising (especially where there is variable performance);
		Spot checks and recording measurements as necessary;
		Reliability, maintenance and maintainability of water systems;
		Review of water-saving devices or appliances;
		Structured reviews with the operator, operations team or facility manager, as appropriate, and the representative(s) of end-users;
		Review of how the owner's management strategy and leadership, facilities management and user behaviour impact upon water use;
		Suggestions for improvement; and
		Comparison with results from other asset/facilities (from within a portfolio programme or from a wider benchmark database).
4	**Waste – set targets and waste management strategy based upon past projects.** Tonnes per annum [based upon a patient measurement] **Reference documents:** NHSScotland Waste Management Action Plan Waste (Scotland) Regulations	**This evaluation might typically include measurement of waste and an advisory report to suggest ways of reducing waste and might therefore cover:**
		Assessment of annual solid and fluid waste disposed;
		Analysis of waste disposal profiles;
		Cross-references to the post-occupancy evaluation survey in regard to the headings of internal environment, engineering and performance;
		Investigation of issues arising (especially where there is unusually good, poor or variable performance);
		Spot checks and recording measurements as necessary;

	Structured reviews with the operator, operations team or facility manager, as appropriate, and the representative(s) of end-users;
	Review of how the owner's management strategy and leadership, facilities management and user behaviour impact upon waste reduction and disposal;
	Structured reviews with end-users and the operations team;
	Suggestions for improvement; and
	comparison with results from other asset/facilities (from within a portfolio programme or from a wider benchmark database).

An environmental management plan should be prepared for the project at this stage highlighting performance objectives, e.g. energy consumption, carbon dioxide emissions, water usage and waste production. This plan and its targets will be informed by the Environmental Impact Analysis, Sustainability Statement, Renewable Energy Strategy and external information sources, inclusive of industry best practice standards and departmental feedback from similar projects. For refurbishment and remodelling projects, an assessment should be made of the current Environmental performance.

3.2.2.2 Functionality and Effectiveness [Social Outcomes]

The objective of this focus area is to ensure that NHSScotland provide buildings that have comfortable, manageable and maintainable environments that are conducive to occupant clinical care and user productivity. This requires clarity about the proposed operation of the healthcare facility and requirements of those who use it, work in it; permanent, part-time and visitors.

This will vary significantly between departments and projects. The measures may need to look into the conceptual ideas about work environments; these may stretch beyond the physical boundaries of the building itself e.g. the impact of the surrounding environment. Productivity is influenced not only by the asset created but also by the business management and these factors need to be considered. Information to inform decisions about Functionality & Effectiveness may come from a variety of sources including:

- Pure conceptual brief, developed by the Project Sponsor and the professional team, supported by specialist Consultants as appropriate (generally Architects, Designers and Space Planners).
- Feedback from similar projects/departments.
- Engagement with existing employees, when dealing with refurbishment/remodelling projects.

Under the mandatory NHSScotland Design Assessment Process (NDAP) Guidance, all NHS Project Teams are required to set their AEDET [Refresh] target (and benchmark if the facility is existing) at Initial Agreement stage and submit this part of the IA NDAP submission prior to the Scottish Government Health and Social Care Department (SGHSCD) Capital Investment Group (CIG) meeting. The AEDET guidance layer provides an ideal framework to determine SL functional and effectiveness targets including:

	Performance Target	Typical POE Measures
1	**Social (i.e. functionality and effectiveness) – the asset/facility should be designed and constructed to meet the functional and operational requirements of the owner and their end-users such as:** Use Access Space Performance Engineering Construction Character and innovation Form and material Staff and Patient environment Urban and social integration Operation should meet the operator's and end-user requirements, such as: utility, usability, safety, maintainability, security, inclusiveness comfort Bespoke elements from design statement **Related documents** Scottish Capital Investment Manual (SCIM) SCIM guidance: NHSScotland Design Assessment Process (NDAP) Scottish Government policy for NHSScotland, including, but not limited to, the following NHSScotland Chief Executive Letters (CELs Place Standard Guide Quality Measurement Framework BREEAM In-Use, a scheme to help the owner, operator, operations team or facility	**NHSScotland recommends that a scoring system is used to ascribe a numerical value to a qualitative assessment of aspects of performance, for example:** **Use** – the extent to which the asset/facility catered for the functions it accommodates now and into the future. Use is concerned with the way the design enabled the users to perform their duties and operate the healthcare systems and facilities housed in the design. The solution should measure if it is highly functional and efficient, enabling people to have enough space for their activities and to move around economically and easily in a way that relates well to the policies and objective of the Board. Measures may include: - Functional requirements of brief are satisfied; - The solution expresses and facilitates the healthcare philosophy of the Board; - The solution is capable of handling the projected throughput [including peak time demands]; - Workflow and logistics are optimally arranged to minimize travel distances; - Flexibility; - Facilitates good security and supervision; - Solution is adaptable to future change. **Access** – measuring the ease with which occupants, visitors and other end-users of the asset/facility can gain access to the asset/facility and move around it, including the use of toilets and other amenities. Review of the solution is concerned with the way it enables the users to perform their duties and operate the healthcare systems and facilities. To get a good score under this Section the solution will be highly functional and efficient, enabling people to have enough space for their activities and to move around economically and easily in a way that relates well to the policies and objective of the Board. Measures may include: - Good access from available public transport; - Adequate car parking [visitors, staff and disabled spaces]; - Approach and access for ambulances; - Service vehicle circulation and impact on staff and service user experience; - Pedestrian access routes [are they obvious, pleasant and suitable for wheelchair users and people with other disabilities / impaired

manager, as appropriate, reduce the operational costs and improve the environmental performance of existing assets/facilities. HBN 00-01 Core elements: General design guidance for healthcare buildings Design Quality Indicator (DQI) Construction Industry Council (CIC)	sight]; • Facilitates active travel; • Car park dominance.

Space – the size and inter-relationship of rooms or component spaces. Measure concentrates on the amount of space in the solution in relation to its purpose. It asks if this space is well located and efficient and whether people can move around in it efficiently and with dignity.

Measures may include:

- Appropriateness of space standards;
- Ratio of usable space to total area;
- Circulation distances travelled;
- Isolation and segregation of necessary spaces;
- Maximisation of space to encourage informal social integration and wellbeing;
- Adequacy of storage space;
- Maximisation of ground space for informal and formal therapeutic activities;
- Maximisation of internal and external spaces working together.

Performance – measures the technical performance of the facility across its whole lifetime. It asks whether the physical components of the solution are high quality, fit for purpose and sustainable. Considers how well the design functions for human use.

Measures may include:

- Ease of operation;
- Ease of cleaning and maintenance;
- Durability of finishes and components;
- Weathering and gaining of facility;
- Access to daylight, views of nature and outdoor space;
- Maximisation of sustainable opportunities.

Engineering – measuring the ease of use and the provision of metering to facilitate management of energy, CO_2 emissions, water consumption and waste reduction; are the engineering systems of high quality and fit for purpose, reliable, easy to maintain and operate, and sustainable.

Measures may include:

- Engineering system flexibility and effectiveness;
- Exploitation of standardisation and prefabrication;
- Energy efficiency;

- Emergency backup systems to minimise any potential disruption;
- Minimisation of service disruption during maintenance and replacement activities;
- Zoning and contribution to energy efficiency.

Construction – measures the functionality and durability of building materials and the standard of construction.

Measures may include:

- How the construction process impacted on healthcare services;
- Robustness of construction between joints and material etc;
- Ease of access to engineering systems;
- Minimisation of HAI risks.

Character and innovation – measures what end-users think of the asset/facility and what it means to them. For example, does the solution lift the spirits and be seen as an exemplar of good architecture and place making? Consider the form and aesthetics of materials – the physical composition, scale and configuration within its boundaries.
Measures may include:

- Are the buildings and grounds interesting to look at and move around in? ;
- Is the building and its grounds sensitive to the local environment with places of therapeutic value? ;
- Does the solution appropriately express the values of NHSScotland [strong positive image]? ;
- Does the solution offer clear strategy for future adaption and expansion? ;
- Does the building and its grounds create sustainable and therapeutic spaces?

Form and Materials – measures the nature of the solution in terms of its overall form and materials. It is primarily concerned with how the solution presents itself to the outside world in terms of its appearance and organisation.

Measures may include:

- Does the building have a human scale and feel welcoming? ;
- Does the solution contribute to the local microclimate? Does it maximise sunlight and shelter from prevailing winds?;
- Logic of entrances and entry points ;
- Attractiveness and appropriateness of

external colours and textures;
- Building and landscape solution enhances sense of place and overall setting.

Staff and Patient Environment – examines what it is like to be in the asset/facility in terms of the quality of air and light and overall comfort.

Measures may include:

- How the solution respects the dignity of patients and allows for appropriate levels of privacy and company;
- How the solution maximises opportunities for daylight/views of greenery or natural landscape;
- How the solution maximises opportunities for access to usable outdoor space;
- How the solution provides high levels both of comfort and control of comfort;
- Intuition and understanding of wayfinding;
- Attractiveness of interior appearance;
- Experience of bath / toilet facilities by the patient;
- Staff assessment of facilities, convenient places to work and relax without being on demand;
- Outdoor spaces and the opportunities for staff, patients and visitors to recuperate and relax.

Urban and social integration – the integration and coherence of the asset/facility with the surroundings.

Measures may include:

- How the facility contributes positively to its locality;
- How the hard and soft landscaping solution contributes positively to its locality;
- How the solution is sensitive to neighbours and passers by.

Other considerations as part of the POE survey may include operational performance – what end-users think of the asset/facilities management and how it impacts on the performance of the asset/facility in meeting their needs.

Measures may include:

Operation should meet the operator's and end-user requirements, such as:

- utility,
- usability,
- safety,
- maintainability,
- security,
- inclusiveness
- comfort

3.2.2.3   Security Outcomes

The development of an appropriate security-minded approach using PAS1192-5:2015 is an essential component of SL; outcomes should be set out in both the Built Asset Security Strategy [BASS] and Built Asset Security Management Plan [BASMP]. The project's Built Asset Security Manager [BASM] should monitor and manage against any targets.

3.2.2.4   Economic (cost) performance evaluation

The asset/facility should establish and meet performance targets for capital cost and operational cost, which should be considered side-by-side to enable whole-life costs to be calculated. Performance outcomes and targets should be specific to the project and should be verified in each work stage. As far as possible, a quantitative approach should be taken to measuring performance.

SCIM "Project Monitoring & Evaluation" Appendix B offers a standard Project Cost Monitoring Form.

Capital Costs

Effective cost benchmarking should be employed to help set appropriate capital targets.

Projects should adopt a common summary analysis format e.g. that used by the Building Cost Information Service (BCIS) or similar for infrastructure.

Operating Costs

The project's Operational Budget will be provided as one of the key outputs from the Facilities Management process and should be monitored and benchmarked throughout the Design Development, Construction and In-Use phases. Operating budgets should be compared against the targets set in the original brief to analyse accuracy and reasons for variance. These need to be fed back to the board and the FM team as part of the FM annual data return.

Note: Operating budget is the annualised operating costs set for the facility in use.

The Operational Service Model needs to be used as a point of reference during the design of the building assets. The Operational Budget is to be tracked as the design progresses. Variations that impact on the Operational Budget should be treated as a variation. Gap analysis should be undertaken as part of the POE which analyses:

- Variance of operating budget to project target
- Variance of operating actual to operating budget
- Operating cost projections to reconcile normal operating costs against project target (project maturity factor)
- The operational costs should be monitored and benchmarked at the end of the first three years of use.

Typical operating cost measurements:

- Staff Costs
- Energy
- Water
- Planned Property Maintenance
- Hard / Soft FM Costs [including]
  o Cleaning
  o Catering
  o Portering
  o Waste disposal

3.2.3 Outline Post Occupancy Evaluation [POE] / Monitoring Plan

Based upon the defined targets and evaluations for the project an outline POE / Monitoring Plan will need to be designed and approved by the Project Director / Manager. This should address the following:

- What aspects of the project will be monitored and evaluated?
- When it will be carried out, including milestone dates and report submission dates.
- How it will be done. This might include proposals for a comparative review of the benefits realisation plan, an overview of project risks, stakeholder questionnaires, focussed interviews, comparisons of estimated and actual costs & programme milestones, analysis of performance indicators, confirmation of performance standards reached, findings from professional reports, formal design assessments, etc;
- Type and frequency of POE reports;
- How targets will be measured;
- Units of measurement;
- Procurement of external expertise (if deemed necessary);
- Consultation process throughout the POE period; and
- Continued involvement of consultants and contractors during building occupation and optimisation;
- How POE reports will be feedback to the Board and other Boards.

The need for the above is a requirement of the SCIM "Project Monitoring & Service Benefits Evaluation".

3.2.4   Determining Soft Landings Gateway Reviews

The Soft Landings Champion shall prepare a SL Programme with key milestones and SL review meetings. The NHSScotland Soft Landings Delivery Plan template should be populated to support this activity.

The SL meetings will support decision making and testing of related soft landings plain language questions. For example:

Question: Does the asset as delivered appear to meet the brief (accepting that it is the point of practical completion and, therefore, does not yet demonstrate operational performance)?

Prompt: 3D model, testing and commissioning information, performance simulations, room/other schedules, whole-life carbon assessment and whole-life cost assessment.

Where practical the soft landings review meetings should piggy-back other key-design review meetings.

3.2.5   Testing of concept / developed design

If the project has undertaken any initial concept design, then the designer should prepare high-level simulation models to examine the alignment of the proposed stage design with the required operational performance outcomes and/or targets. Review design predictions against the required operational performance. Prepare an analysis of the fit between the concept design and operational requirements. These requirements should be including in the BIM Employers Information Requirements for any advanced design appointments.

Similarly, any developed design should be modelled to an appropriate level where performance can be simulated to test against the determined performance targets.

3.2.6   Development of the FM Plan - Detailed

The FM Plan should now be developed specifying how the facility is to be managed and maintained during its occupancy; as part of this FM Plan the operating costs need to be developed and evaluated.

The FM Plan using relevant benchmarks should establish the management strategy, operational delivery model and operational budget for the asset.

3.3   Full Business Case [FBC] / Developed & Technical Design

The key SL activities at this initial stage are:

- Update Post Occupancy Evaluation [POE] / Monitoring Plan
- Embed soft landings into the tender process;
- Undertake a soft landings kick-off meeting;

3.3.1 Detailed Post Occupancy Evaluation [POE] / Monitoring Plan

SCIM requires that by this stage that a full monitoring and evaluation plan covering POE be submitted confirming the full details previously outlined at OBC stage, while also expanding on the following information:

• A detailed programme setting out when Project Monitoring events will take place.

• A detailed programme setting out when key Service Benefits Evaluation events will take place, covering information gathering, analysis and reporting stages for each element of the evaluation.

• Identification of all stakeholders who will be involved in both the monitoring and evaluation processes and their expected involvement.

3.3.2 Embed Soft Landings in tender documentation and evaluation criteria

It is important the soft landings process is included as explicit requirements in the tender documentation to allow the PSCPs to make appropriate allowances for same.

SL meetings should be clearly defined along with any post occupancy evaluation requirements, surveys and/ or extended aftercare.

The PSCP should be requested to include proposed methodologies for SL delivery within their proposals.

Depending of the procurement strategy for the project this maybe a two-stage approach with a concept designer being engaged prior to a PSCP. It is again important the soft-landings requirements be embedded in all commissions and appointments,

It is important that bidders have a clear understanding of a projects operational and soft-landings approach and ideally explicit requirements for:

• Facilitation of Soft Landings review meetings using BIM [ideally a "soft landings implementation plan" will be issued as part of the tender documentation illustrating an exact number of meetings and tasks that the PSCP will need to allocate for – normally these are held on a monthly basis.];

• Roles and responsibilities such as those allied to a PSCP Soft Landings Co-ordinator role or similar;

• After-care provision [especially where this is extended beyond a normal baseline].

The NHSScotland Soft Landings approach does not significantly affect standard procurement processes and contract conditions and offer the following practical guidance with regards specimen wording for inclusion within PSCP tender enquiry documentation:

Suggested wording:

[Note: Frameworks Scotland 3: NSS HFS's Frameworks Scotland 3 includes suitable requirements for soft-landings therefore the wording below is suggested for projects out-with the framework.]

NHSScotland [insert Board Name] require that the [insert project name] achieves Building Information Modelling [BIM] Level 2 maturity which necessitates that a "Soft Landings" approach be achieved.

The purpose of Soft Landings within NHS Scotland Boards has been defined as a vehicle *"to improve performance of NHS Scotland buildings by aligning the interests of those who plan, design and construct an asset with those who subsequently operate and use them."*

PSCP's will require within their tender proposal to demonstrate their planned approach of delivering soft landings on this project including explicit details with regards to:

- Delivering Soft Landings using: BS 8536-1:2015 Briefing for design and construction. Code of practice for facilities management (Buildings infrastructure);

- Engaging with End User stakeholder groups to ensure their needs are inputted into the project design and delivery;

- Facilitation of Soft Landings review meetings using BIM as a basis to support client decision making [for example: 3D walkthroughs and data exchanges to test operational Plain Language Questions];

- Procedures and processes to ensure that their design teams and other appointed parties under their control are aligning their delivery methodologies with the client's operational and performance targets;

- Creating Project Information Models [PIM] with validated information and data at each stage consistent with the project's Master Information Delivery Plan [MIDP];

- Working collaboratively in conjunction with clients to test early on BIM data exchanges into asset registry and computer assisted facilities management systems;

- Preparation of building readiness programmes [pre-commissioning];

- Pre-handover orientation and training with FM Teams and End User communities;

- Creation of validated as-built PIMs linked to operator guides and digital O&Ms;

- Implementing After-Care plans and fine tuning of systems;

- Resolution of operational issues in the after-care process working with the clients FM teams.

As a minimum, bidders should allow for facilitating a minimum of [insert number of SL meetings – suggested as a kick off meeting plus one review meeting a month minimum and a final lessons learned session] soft landings review meetings.

Bidders should also make allowance for fulfilling the roles and responsibilities of the PSCP SL Co-ordinator [to be read in conjunction with NHSScotland Roles and responsibilities guidance document.]

After-care provision, [this should be edited to suit appropriate project needs] should include for:

- An after-care team to be in place for duration of [12 months];

- Regular after-care meetings with Board FM and Estate teams post-handover to ensure clear operational understanding especially of building systems;
- Regular walk arounds and meetings with users, Board's Soft-landing Champion to identify any initial operational issues;
- Working with the Board's FM teams to establish a resolution plan and where instructed support the amelioration of any issues [following agreement of cost per activity based on an agreed framework].

Bidders should include within their proposals details of where they have adopted a soft-landing approach on similar projects, how BIM supported this and experience, and CV of their proposed PSCP SL Co-ordinator.

3.3.3   Assessing tenders for Soft Landings

Tenders should be assessed to determine if the PSCP has demonstrated:

- an understanding of soft landings and its value proposition for healthcare clients;

- experience of delivering soft landings;

- allowance for soft-landings meetings and delivery within their tender price;

- embedment of soft-landings processes such as BS8536 or the BSRIA soft-landings framework principles within their standard delivery methodology;

- understanding of how soft-landings juxtaposes with BIM Level 2;

- ability to facilitate Soft Landings review meetings using BIM;

- experience of creating project information models to allow transfer to a client's asset management systems;

- after-care proposals that meets with the project's operational objectives;

- experience of their proposed PSCP Soft Landings Co-ordinator [if applicable].

3.3.4   Soft-Landings Kick-Off Meeting

Following PSCP appointment the Soft Landings Champion [SLC] shall chair a SL Kick off meeting to ensure that a detailed SL plan is in place by those delivering the project and that project Purpose, Targets, Milestones and Review Meetings are in place.

All information requirements for handover and operational delivery should be established in the Master Information Delivery Plan [MIDP].

The SLC shall ensure that all lessons learned have been disseminated to the PSCP especially those that might influence design.

3.4   Construction & Commissioning Stage

The key soft landings activities at this initial stage are:

- Undertake BIM enabled soft landings review meetings;
- Site visits to support the soft landings process;
- Undertake pre-handover soft landings activities;

3.4.1   Soft Landings Review Meetings [BIM enabled]

It is recommended that as a minimum, Soft Landings Review meetings are taken at least monthly, typically piggy backing other meetings such as design reviews. A typical agenda for these meetings is illustrated below. It is important that those with soft landing responsibilities attend these meetings to ensure consistency. The meetings are an opportunity to ensure that the design and the construction are developing in concert with the operational strategy, brief and end-user requirements.   Monitoring of the Lessons Learned Register and the latest Master Information Development Plan are key aspects of the meeting.

A sample Soft Landing Review Meeting Agenda is enclosed within Appendix A.

The majority of the meeting is usually given to BIM enabled soft landings reality checks. There is a real mutualism between [BIM] and soft landings, whilst they can be done separately and without each other there is a real value when the two are married together.

Note: This document should be read in conjunction with the NHSScotland BIM Guidance document.

Firstly, the adoption of "Level 2 BIM" should be considered as a means to provide a fully populated asset data set to support a Board's asset register [3i Studio] / computer assisted facilities management system through the use of the owner's defined enterprise system during the operational life of the asset/facility. It is therefore vitally important that from a BIM perspective an approach of beginning with the end in mind be taken especially with regards to the data and information exchange at the point of handover and how it will support the Board's asset information model [AIM]. Particular attention should be given to clearly defining the employer's information requirements [EIR] including associated OIRs / AIRs and ultimately a master information delivery plan [MIDP].

BIM and the ability that it brings to visualise an asset and understand how it will work in use, provides benefits far beyond that of the two-dimensional drawings of the past. The visualisation capability of BIM and the understanding that it can provide to users and operators should be exploited to the fullest extent in the pursuit of SL. This rich 3D environment, associated data attributes can help with the storytelling but also combined with simulation techniques and the inherent data drops within BIM are to be used as points to test the predicted and actual performance of an asset. This asset performance is to be tested using the data from BIM; it will in future be possible to collect this data automatically from the project.

Each reality check meeting should have very clear characterisation of what is to be reviewed at the meeting and/or tested as the PSCP and their BIM team will need appropriate time to prepare. For example, there may be a desire to review maintainability of a plant-room area and the PSCP and their design team to run soft clash analysis around key plant / equipment to ensure there is a sufficient maintenance zone. Any check should be articulated as a plain language question [PLQ]:

PLQ: Is there sufficient space in the plantroom for maintenance staff to safely undertake inspections, PPM and or repair activities?

Information required to test: PSCP to provide a 3D soft clash model review of plant room spaces to determine suitability of maintenance zones for safe workforce access.
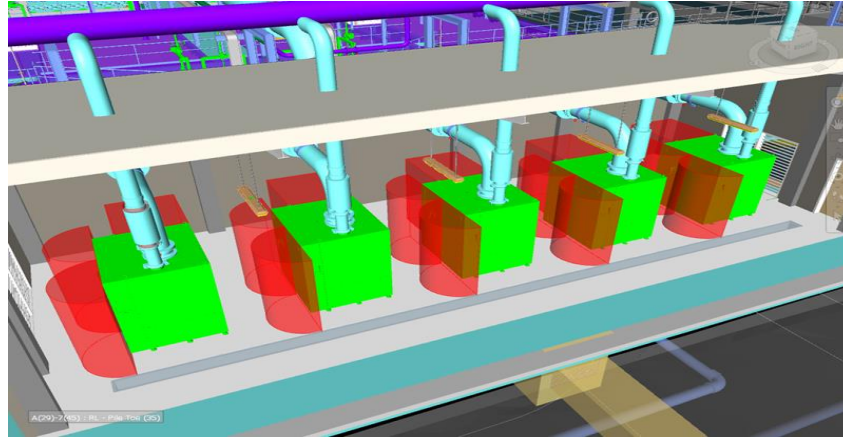
In most cases the Project Soft Landings Champion will represent the voice of the end-user at these meetings however at key project stages it may be appropriate to bring in key stakeholder or groups to review a model. On larger projects using virtual reality [VR] technologies should be considered for example the pictures below illustrate how High Speed 2 brought together a physical mock-up on their rolling stock with VR for stakeholders to review and assess design in the context of functionality and experience.

Thought should also be given to ensure that there is adequate space to undertake these review meetings with suitably sized screens. These requirements may be built into the EIR as a requirement for the PSCP to provide and facilitate. These can vary from mobile 360-degree immersive solutions to having two or three interactive smart boards as illustrated below. The choice will largely be determined by both the size of the project and the extent of stakeholder engagement required.

3.4.2.2 Soft Landings Site Visits

During the construction period soft landings site visits should be undertaken to allow end users especially the FM team to get early understanding of the facility and raise early on any issues not established during the regular SL reality checks. Key spaces such as plant-rooms should be formally visited, reviewed and signed off from an SL perspective.

3.4.3 Pre-handover Soft Landings Activities

This is a key stage in the soft landings process, the BSRIA Soft Landings Framework notes that this where the project team should focus in preparing and co-ordinating the physical completion and start of operating the building. This is an important transition period where knowledge should transfer from the PSCP delivery team to the Board's FM Team and end users. It is especially important that sufficient time has been given to the commissioning process and the FM team are fully trained with all information in place to allow effective operation of the building.

Key activities to be undertaken at this stage include:

3.4.2.1   Review logging of performance targets

Responsibilities for data recording should be defined and mapped to measurable performance targets.

Related guidance: *BSRIA guide BG 63 provides guidance and practical examples of how to collect quantitative data.*

3.4.2.2 Preparation of a building readiness programme

The building readiness programme should be prepared well in advance of any commissioning activities to ensure that all activities leading up to the operation of the building are planned and ownership of roles and responsibilities allocated.

The programme should include all site completion and commissioning activities which need co-ordinated including training activities. It is also important that the completion of the project information model [PIM], building owner's manual and guidance, building log book and health and safety file be considered.

Related guidance: *BSRIA guide BG27 Appendix E provides an example handover plan and calendar of events.*

3.4.2.3 Check commissioning records

It is important that commissioning records be checked as they become available and should include all data allied to performance targets such as energy data. There should also be a programme in place for post-completion commissioning and fine-tuning of the building.

The project's SL Champion should liaise regularly with the PSCP's Commissioning Manager to ensure that plan is in place for the delivery of the commissioning information.

3.4.2.4 Train the Board's Operational Team

A key component of the NHSScotland SL process is ensuring that the Board's FM team have sufficient training and understanding of the buildings technical and operational systems and their user interfaces. Demonstrations of the systems especially the BMS should happen well in advance of the point of handover along with guidance as to how they can be fine-tuned.

Related guidance: *BSRIA guide BG26 can be used as basis to support the production of the guidance document.*

3.4.2.5 Planning of end user migration

Logistical planning of end user migration should be properly planned and a strategy in place by this stage. Any advanced access to the building should be properly planned with the PSCP.

3.4.2.6 Adequate space for the aftercare team

Often forgotten, but where a PSCP is providing an aftercare presence on site there should be planning of a visible space for their team during the duration of this period.

3.4.2.7 Guidance documentation

Guidance documentation development will be monitored in the Building Readiness programme and it is a critical element of operational success and should complement the O&M manuals and logbook.

The guides should help operational teams understand how to use the building there may also be a more hands-on guide for the Board's FM team covering routine planned preventive maintenance activities especially around critical equipment.

3.4.2.8   BIM and the digital O&M

Having a structured project information model [PIM] to facilitate a digital O&M manual is a key deliverable on any NHSScotland BIM Level 2 project the development of this should be carefully monitored through the Model Information Delivery Plan [MIDP].

By this stage early testing of data transfer to the Board's asset management and CAFM systems should have been undertaken and a model curation strategy developed for the operational stages.

It is also important that an operational Common Data Environment for the Asset Information Model have been considered to ensure that the models[s] and associated information can be accessed and is fully searchable.

Any training with regards to navigating and updating the PIM should have been undertaken by this stage by the PSCP.

3.5   Project Monitoring & Evaluation

The main objective of this stage is to: *assess the building's performance against the defined success criteria and performance targets, to identify any issues and determine solutions to optimise the operational performance and to capture and disseminate lessons learned.*

3.5.1   Handover and Close Out

Where an aftercare solution has been agreed the team should now be visibly in place with a clear delivery plan. It is important that the aftercare team have a kick-off meeting with the project's FM team and end-user representatives at handover to ensure that operational understanding has been achieved and clear communication of contacts established e.g. telephone numbers etc.

Interaction and regular walk arounds with users are key at this stage, facilitated by the project's SLC and after care team to identify any initial operational issues which should be recorded with an issue's resolution plan established. It is important that end-users are effectively communicated with on plans to resolve any initial operational issues. Any emerging or fine-tuning issues should also be carefully planned to ensure that there is a plan to solve.

The aftercare team should at this stage be making spot-checks on key systems and instruments and talking to end-users about their experience of the building and its environment.

Any initial lessons learned should be captured. Data should now be fully transferred from the project information model to the Board's asset management systems such as 3i Studio and their CAFM systems. The digital O&M place should also now be in place to support the operational activities.

There should be clear roles and responsibilities for the operation and provision and initial review of routine information [such as BMS lots and meter readings).

3.5.2   In Use

Typically, soft landings have an extended after-care period of three years with the key principles as illustrated below:

- Year 1 – Primarily used as a 'settling down' period to ensure the design concepts are fully understood and being implemented
- Years 2-3 – used to fine tune building systems to address operational and performance feedback
- Maintain relationships with key stakeholders to capture and evaluate the performance of the building against the set performance targets
- Document intelligence gained within a 'lessons learnt' summary that can be adopted by all parties

The Project's SL Champion has the responsibility to instigate and manage a Post Occupancy Evaluation Review; timing and format to have been established as part of the FM Plan. Additionally, SCIM requires that a Service Benefits Evaluation be undertaken to determine if the project was a success and that all benefits within the project's benefits realisation plan be assessed as part of the Service Benefits Evaluation process. Depending on timing the POE and Service Benefits Evaluation Report maybe incorporated.

A formal post-occupancy evaluation (POE) of the building's performance should be conducted at the end of Years 1, 2 and 3. In Years 2 and 3, the reviews become less frequent, concentrating on monitoring the operation of the buildings, POE and fine-tuning. By then, the Board's facilities management team should be able to deal with any problems, if any. This soft landing approach should help by this point to overcome any initial difficulties.

The evaluation should include an end-user satisfaction survey, an energy-use survey and an assessment of the overall performance of the asset/facility against the agreed outcomes and/or targets and applicable benchmarks. The first round on POE interviews and reviews should be undertaken between 12 and 18 months after occupancy.

Note: *The Board should decide of the POE surveys are undertaken internally or carried out by a neutral and independent assessor.*

The Board's representative should compare actual performance with the required performance and comment on potential improvements, where appropriate, for the end-of-year review [including the NHSScotland assets and facilities Report SAFR] for each year of aftercare. When this annual analysis report has been completed, the Board's facility manager, as appropriate, should request the attendance of a senior representative of each of the main disciplines within the design and PSCP at a workshop with the Board's operational representative and the representative(s) of end-users.

The annual analysis report should be considered against the Board's business objectives, project objectives and operational requirements and performance outcomes and/or targets as set in the Strategy and Brief work stages. The purpose of the workshop should be to consider recommendations on how the operational performance of the asset/facility can be optimised. The workshop should conclude with agreed actions necessary to achieve alignment with the objectives, outcomes and targets as closely and as quickly as possible.

Operating Budgets should be compared against the budgets set in the original brief to analyse accuracy and reasons for variance. These should be used as essential components around Departmental budgets and feedback loops. Whilst it is possible to report on all Service Lines, it may prove more useful to concentrate on the high value elements.

Appendices

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NHSScotland Soft Landings Templates

Soft Landings Risk and Opportunities Register

The risks and opportunities that could affect the realisation of the performance of the asset/facility should be systematically assessed and managed in each work stage. A soft landing's risk and opportunity register should be established and maintained from the outset and is one of the deliverables in the strategy work stage. As a minimum the primary operational and performance risks and opportunities should be incorporated in the overall project risk register.

In developing the SL risk register an assessment should be undertaken periodically to identify any condition or event that could impact negatively or positively on the operation of the asset/facility and the actions needed to manage them. Account should be taken of the operator's and end-users' interests in the asset/facility when identifying and assessing risk and opportunity.

The risk and opportunity register should be kept up to date throughout all work stages so that it reflects the current situation and should be used as part of the process of gathering lessons learned.

Each risk item is held in the risk register, where closer scrutiny and further evaluation of the risk is recorded. Scores can be assigned

(high=3, medium=2 and low=1) to each item for both impact and probability.

Summation of impact and probability for each item allows the risks to be ranked, enabling attention to be directed towards those having the greatest potential impact and probability of occurrence.

The matrix below illustrates example risk and opportunity headings only and these should be edited to meet individual project needs.

Soft Landings Risk and Opportunity Register				
Identified Risk / opportunity	**Risk (-)**		**Opportunity (+)**	
	Impact	**Probability**	**Impact**	**Probability**
End-User Requirements:				
xxxx				
xxxx				
Technical:				
Programme				
Energy use targets				
Carbon dioxide emission targets				
Annual water consumption targets				
Waste targets				
Operational performance				
xxxx				
xxxx				
Social Outcomes:				
Utility				
Usability				
Safety				
Staff and patient environment				
Maintainability				
Security				
Inclusiveness				
Comfort				

Storage				
Durability and adaptability				
Urban and social integration				
HAI				
Sufficient car parking				
Access and transportation links				
xxxx				
xxxx				
Economic:				
Capital cost budget				
Operating budget				
Income generation				
xxxx				

Note:

H =   High

M =   Medium

L =   Low

Soft Landings Meeting [Exemplar] *Agenda*

Purpose of meeting: [insert meeting purpose e.g. agree completion criteria]

Project Name: [insert project name]

Date and time: [insert date and time of meeting]

Location of meeting: [insert meeting location]

Note: *the agenda below is a specimen document and should be edited to suit explicit project needs.*

Ref	Meeting Item
1.0	Apologies
2.0	Minutes of last soft landings meeting on [insert date]
3.0	Soft landings: action planner / tracker / checklist review [insert version number]
4.0	Soft Landings Champion – updates / matters arising from "end user" and general stakeholder engagement
5.0	Soft landings reality check: [where appropriate] BIM based maintainability review of key areas and systems and operational PLQ assessment
6.0	Master Information Delivery Plan [MIDP] development review
7.0	Pre-handover [including completion criteria] / aftercare planning activities
8.0	Sub-group activities e.g. estates and maintenance
9.0	Lessons learned
10.0	Any other business
11.0	Date of next meeting [insert date]