



Cabinet Office

Government Soft Landings

Section 1 - Introduction



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1.0. Introduction

1.1 Overview

The Government Construction Strategy of May 2011 <http://www.cabinetoffice.gov.uk/resource-library/government-construction-strategy> identified the need to improve the value offered by public sector construction and within this “*soft landings*” was identified as a way to improve performance of buildings and to meet the requirements of those that use them. Working under the remit of the Government Construction Board, these objectives have been brought together within the Government Soft Landings (GSL) policy which is to be mandated in 2016 alongside Building Information Modelling (BIM) Level 2 and is to be implemented by central government departments.

The on-going maintenance and operational cost of a building during its lifecycle far outweighs the original capital cost of construction, and GSL identifies the need for this to be recognised through early end-user engagement in the design and construction process.

GSL has been developed during 2011/12, by the Government Property Unit, working with a Task Group of industry specialists and in alignment with the BIM Task Group. The policy is supported by this GSL Implementation Guide which provides structure and guidance on how to embed and deliver GSL into central government. The policy is aligned with the principles and work stages recommended by the BIM Task Group digital Plan of Work and industry plans of works, e.g., RIBA, CIC, BSRIA etc.

It is envisaged that these guidance documents will evolve through the ongoing early adopters and implementation of GSL with departments and wider public sector and the oversight of the GSL Stewardship group.

The Government Construction Board (GCB) approved the GSL policy in September 2012. The policy is to be progressively implemented within Central

Government Departments by 2016 in line with the introduction of Building Information Modelling (BIM).

The Guiding Principles of the GSL policy are shown below:

1. GSL will be a key element of the design and construction process maintaining the ‘golden thread’ of the building purpose through to delivery and operation.
2. Early engagement of end user and inclusion of a GSL champion on behalf of the government client to direct this engagement with the project team during the design/construction process.
3. There must be a commitment to aftercare post construction from the design and construction team.
4. Post Occupancy Evaluation (POE) feedback to design/construction team and capture of lessons learnt to inform future projects will become part of standard practice. POE data will be stored on the asset information model.
5. Building Information Modelling (BIM) will provide a fully populated asset data set to feed into Computer Aided Facilities Management (CAFM) system. This data will need to be maintained throughout the building life cycle.

Note: Guidance surrounded with triple lines is mandatory in these documents and must be followed to comply with the policy.

What is Government Soft Landings?

The term “*soft landing*” exists in some parts of the construction industry and reflects the need for a smooth transition from the design and construction phase to the operational phase of a built asset. Combined with the concept of Post Occupancy Evaluation (POE) it seeks to compare the required performance outcomes with actual performance outcomes.

The purpose of GSL and the three years of POE are to:

- Optimise the operating performance within the operational budget as soon as possible; and
- Align the operating performance with the required performance outcomes set at the start of the design and construction period.

The GSL champion as a government client representative and part of the project team should ensure that the following are achieved:

1. Establish required performance outcomes and operational budget.
2. Monitor and manage two process streams;
 - Commissioning, training and handover of systems
 - Facilities & Asset Management
3. Conduct Post Occupancy Evaluation.
 - Measures of actual operating performance compared with required performance outcomes:
 - Functionality and Effectiveness (Social)
 - Environmental (Environment)
 - Cost (Economic)
4. Coordinate the preparation of an advisory report, the taking of corrective actions and the preparation of benchmarking data.

GSL recognises that the on-going business benefits, maintenance and operational cost of a building during its lifecycle far outweigh the original capital cost of construction. The need to optimise in-use performance is recognised and sought through early engagement with the operators and end users in the design process,

and by learning from previous experience.

The operational costs and impacts of a building can be understood and considered in both design and construction by working closely with operators and users; this reduces whole life cost and supports improved operational delivery. Optimal operational performance will also be achieved more quickly through a dialogue and continued engagement between designers and operators. The key to achieving this understanding will be through a Government Soft Landings (GSL) Champion.

GSL is dependent on collaborative working and engagement in a structured process with a common purpose and goals focussed around long-term business benefits and required performance outcomes. By following the GSL approach, business and performance targets should be reviewed throughout project briefing, design and construction. Commissioning should be more effective and transition from construction to operation should be smoother, more structured and effective.

It is the responsibility of each Central Government Department to implement the policy. Successful implementation will be through identification of a Department GSL Department Lead and then further GSL Champions who will be responsible for ensuring that GSL is applied to the departments' projects.

Department Heads of Estate & Heads of Construction have been requested to identify a GSL Department Lead by the end of April 2013.

The GSL Department Leads will help to shape the future of the policy through engagement with the GSL Stewardship Group. They will also identify a GSL Champion for each project.

The GSL Champions will be identified from within existing departmental estate/FM/construction roles and should have knowledge and experience of facilities/asset management and building/asset operations, they will represent the operational needs of the end user within the project team.

Adoption of the approach outlined in these GSL Guidance Documents will help to ensure achievement of the policy.

1.2 Scope

GSL is applicable to all new build projects and major refurbishments. This guidance is written mainly around buildings; however GSL for Infrastructure will be developed further during 2013. There is no lower limit on financial value which triggers implementation, although the level of intensity applied may vary to suit circumstances.

1.3 The Government Construction Strategy

The Government Construction Strategy published in May 2011 <http://www.cabinetoffice.gov.uk/resource-library/government-construction-strategy> identified the need to improve the value offered by public sector construction and within this soft landings was identified as a way to improve performance of buildings and to meet the requirements of those that use them. The relevant extract from the Government Construction Strategy is shown on the next page:

8(i) To aligning interests between those who design and construct an asset and those who subsequently use it

Specific Action: Trial introduction of a period (say 3 to 5 years) of post completion proving of the asset by constructors. Note connection with Building Information Modelling (BIM) www.bimtaskgroup.org and its potential to connect design and construction information to asset management.

Outcome sought: Project designed and delivered to required operational standards; and to allow asset to operate to the required standards for the whole of its life.

Note: Within this document boxes surrounded with one line are a quote, reference or an example.

1.4 The Development of Government Soft Landings (GSL)

GSL has been developed with assistance from the GSL industry task group consisting of suppliers from construction and facilities management, designers, architects, academics, industry bodies, central government departments and public sector representatives.

The following documents, published by the Usable Buildings Trust and Building Services Research and Information Association (BSRIA), are useful for understanding the origins, principles and generic recommendations around the Soft Landings concept:

The Soft Landings Framework BSRIA BG 4/2009
<http://www.bsria.co.uk/news/soft-landings-framework>

The Soft Landings Core Principles BSRIA BG38/2012
<http://www.bsria.co.uk/news/sl-coreprinciples>

GSL is aligned to the BSRIA Soft Landings Framework.

1.5 The Benefits of Government Soft Landings (GSL)

Applying GSL will bring benefits to all stages of 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 GSL supports this front end focus for long-term business benefits.

Some of the key benefits of GSL are listed below:

- The GSL process will help to define the required performance outcomes and support asset design to meet the end users needs and required operational outcomes.
- End user involvement at the early stage and throughout the project is undertaken to deliver improved operational performance.
- Early challenge of design by operators is supported through the use of GSL; this can bring long-term cost savings in the operation and maintenance of an asset.
- Lifecycle operational expenditure rather than just capital expenditure is considered. GSL brings forward the importance of operational costs in the decision making process.
- Data transfer from the Construction Operations Building Information Exchange (COBie) to CAFM, is encouraged to reduce the cost and time of data

input to FM Systems.

- Training, commissioning and handover are provided in a timely manner reducing the cost of protracted handover and enabling optimal performance to be reached sooner.
- Clear measurements of building performance are conducted for up to 3 years post completion to compare actual performance against required performance.
- Strategic briefing for clients will be informed by previous project experience
- GSL will capture information on performance of assets within the government department and this can be used to support clients, designers, constructors and operators to improve their knowledge and expectations of future performance.
- Information on asset performance will inform future project strategies and portfolio investment and management.
- Optimisation of asset performance is maintained through the continued involvement of designers in the optimisation of operational performance with the client during an aftercare period.
- Designers and constructors get to understand the outcomes of their design and how they can narrow the gap between design intent and actual performance.

Example

Early feedback from the Ministry of Justice (MoJ), an early adopter of GSL, has identified significant capital and operational savings through the use of GSL on its new build and refurbishment projects. Improvements have been identified in future design and operation of their facilities as a result of applying GSL. MoJ will now be implementing GSL into all its future projects.

To achieve GSL the following actions need to be taken:




- Clear targets are to be set for required business outcomes at the start of the project. These targets need to be aligned with the strategic objectives and they should be cascaded through the supply chain. These targets and their measures need to be reviewed during the design, construction and operation. Targets and measures should consider statutory requirements, mandated government policy, previous experience, operational knowledge and end user needs.
- End users / operators should be involved to represent the client during design, construction and handover.
- The transition from construction to operation must be planned throughout the project and should be a smooth process enabling optimum performance to be reached as quickly as possible. The transition needs to consider the transfer of operational data as well as training, commissioning, handover and aftercare.
- Performance reviews will be undertaken post completion for up to 3 years and lessons learnt from this should be recorded and shared for future projects.

1.6 How to use these Guidance Documents

Each section has been written in a format to enable the reader to use them as a stand-alone document. Each section also includes a flowchart following the work stages, identifying the main information exchanges to inform client decisions and what needs to be considered for GSL at each stage.

These Guidance Documents will evolve with knowledge that is obtained from early adopter projects and industry. It is anticipated that these Guidance Documents will be updated by the end of 2013.

Throughout the document there are a series of boxes. There are three types of boxes and these have been explained below:

-  Boxes with three lines are mandatory and must be followed to comply with the policy.
-  Boxes with two lines are good guidance and should be considered when adopting the policy
-  Boxes with one line are there to provide examples of what has been done, references, or quotes.

All these documents and further reading material can be downloaded from the following website www.bimtaskgroup.org/gsl.

The policy and implementation guidance documents are all designed around collaborative working. They are governed through approval and sign off to all key decisions, aligned to the client's Key Decisions Points and Data Drops informed by BIM. There is no need to define capital value as to when to apply the GSL approach; it can be applied to all projects.

The audience for the Guide is primarily Government Departments but also includes all construction professionals from the design, construction, FM and operational side, GSL Champions and Facilities Managers who wish to understand the government client implementation of GSL. The Guide is designed to be generic, applicable to all projects and all Departments engaged in building procurement.

It is designed to be able to be developed by Departments into detailed working plans to support all projects.

The processes are aligned with the recognised design procedures in terms of having key decision points and recording of project data at all stages through BIM Data Drops. More information about these data drops and the BIM stages can be seen on the following GSL Master Process Map.

Although, an overall understanding of the policy and processes is useful; the whole guide should not have to be read to implement GSL. It should be possible to use this guide by referring to key elements through the GSL Master Process Map that can be seen in Section 1.7 of this document.

This Guidance Document provides a description of the process and tools needed to ensure compliance with the GSL policy.

The structure of the guidance documents is based around a series of Process Maps aligned to the BIM digital plan of work stages and the Construction Operations Building Information Exchange (COBie) data drops. GSL has identified focus areas where measurements, key questions and outputs need to be identified and reviewed along the project timeline. These areas often cross over each other and so should not be seen as mutually exclusive. These areas are as follows:

Required Outcomes

(Measured by Post Occupancy Evaluation)

- **Functionality and Effectiveness** (section 3):
Buildings designed to meet the needs of the Government Department Occupiers; comfortable, usable, manageable and maintainable environments conducive to occupant productivity.
- **Cost** (section 4):
Meet Government Department performance targets for capital cost and operational cost.
- **Environmental** (section 5):
Meet Government Department performance targets for energy use, carbon dioxide emissions, water usage and waste reduction.

Processes

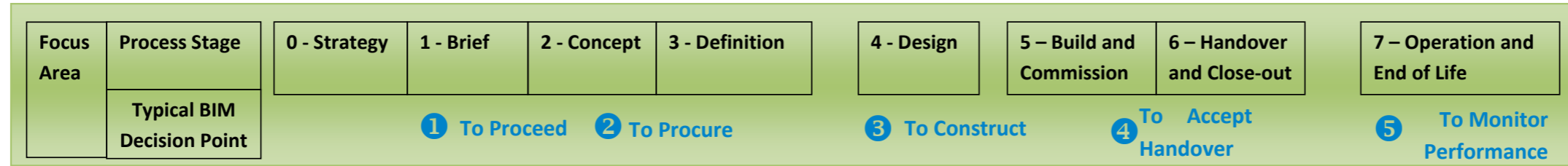
(Measured by Key Performance Indicators)

- **Facilities Management** (section 6):
A clear, cost efficient strategy for managing the operations of the building.
- **Commissioning, Training and Handover** (Section 7):
Projects delivered, handed over and supported to meet the needs of the End Users.

In addition, to reinforce the need to focus on End User requirements, a specific guide on how to Plan for Aftercare (Section 8) has been developed.

A GSL master process map illustrating the focus areas and the data drops can be seen on the following page:

1.7 GSL Master Process Map



FUNCTIONALITY & EFFECTIVENESS
Buildings to meet the needs of the government department occupiers; performance outcomes, comfortable, usable, manageable and maintainable environments conducive to occupant productivity.

ENVIRONMENTAL
Meet government department performance targets for energy use, carbon dioxide emissions, water usage and waste production

COST
Meet government department targets for capital expenditure and operational expenditure

FACILITIES MANAGEMENT
A clear, cost efficient strategy for managing the operations of the building

COMMISSIONING, TRAINING AND HANDOVER
Projects delivered, handed over and supported to meet the needs of the end users

Establish Objectives

Consider feedback from previous projects. Define required departmental outcomes; business outcomes, social outcomes, comfort, facilities, amenity, impression and impact.

Consider previous projects. Establish performance targets that are based on government and departmental policy and project targets. Produce draft Environmental Plan.

Establish department targets for capital CAPEX and operational costs OPEX

Develop Project Operational Brief, Business Case and Core Objectives from Department Operational Management Strategy / Vision.

Identify key aspects of required operational performance. Appoint someone from client team for this (GSL Champion). Identify previous learning. Agree required asset data format.

Test and model

Consolidate brief to develop requirements for design delivery. Provide commentary on design proposals and understand how they are to be assessed during operation.

Objectives are to be translated into measurable targets. Post Occupancy Evaluation (POE) Plan to be developed. Review design predictions against performance targets.

Review CAPEX and OPEX budgets against targets. Review construction team Whole Life Costing.

Identify Operational Management Plan, Operational Model and Operational Expenditure Budget. Functionality should be mapped at this stage.

Develop Strategy for CT&H and embed this into briefing / procurement. Develop a CT&H plan and Aftercare plan.

Monitor and Evaluate

Conduct interim reviews to ensure that the design vision and required performance outcomes are addressed through the construction and operational plan.

Outputs from design are to be translated into construction. Review proposals to check that performance targets can still be met. Review required operational skills and training.

Review CAPEX and OPEX tenders against targets. Plan the recording process for OPEX costs.

Review design and use it to commence supplier engagement and a budget review. Procure and mobilise FM Providers and suppliers. Plan production of the asset register and maintenance plans.

Plan Testing & Commissioning. Plan for Building Operational Handover to FM. Agree roles, responsibilities and attendance. Plan the production of the asset register and operation and maintenance manuals.

Incorporate and Explain

Ensure that corrective actions needed for delivery of performance outcomes are considered.

Compare final predicted performance with required performance. Review the building logbook for completeness and quality.

Analyse and record actual CAPEX out-turn cost (POE). Commence the recording process for OPEX costs.

Plan to measure the building management service performance against KPI's. Ensure an agreed change mechanism in place. Monitor FM services against building asset performance and whole life cost prediction.

Commissioning services and operational teams to work closely to ensure that optimum performance is reached. Ensure change control and performance monitoring methods are understood.

Monitor Review and Learn

Assess (POE) for three years to ensure facility meets performance targets. Assess how well the design and operational approach meet required performance outcomes. Manage Aftercare.

Maintain records and ensure that any operational changes are recorded. Evaluate performance in use for three years (POE). Manage Aftercare.

Record OPEX costs for a period of three years (POE) and optimise performance.

Continued monitoring at agreed periods actual v planned performance and costs considering operation and other impacts. Use KPI's. Consider impact of FM performance on POE measures

Identify areas where performance has required additional work beyond that envisaged and lessons learnt. Undertake KPI's as required.

DATA DROP DESCRIPTIONS

Drop 1
Approximately RIBA 2013 Stage1 Outline Business Case and Massing Model Produced.

Drop 2
Approximately RIBA 2013 Stage2 Data allows contractor selection. Function, carbon and cost can be assessed.

Drop 3
Approximately RIBA 2013 Stage 4
Agreement of guaranteed maximum price should be possible. Co-ordinated drawings and associated schedules should be available for construction.

Drop 4
Approximately RIBA 2013 Stage 6
Operational and functional information to support FM operations should be available at this stage.

Drop 5
Approximately RIBA 2013 Stage 7 The building should be in use and its performance being optimised and measured.

1.8 Project Roles (within the government client)

The roles of the Project Sponsor, Project Manager, and Government Soft Landings Champion (GSL Champion) are fundamental to the delivery of GSL and are identified within the sections of this guide. These roles have been explained further below:

GSL Department Lead: This person is the senior department leader who is tasked with implementing the principles and practice of Government Soft Landings across the department and will join the GSL Stewardship Group.

Project Sponsor / Senior Responsible Officer: This individual should be from the client side; they have personal accountability and overall responsibility for the delivery of the successful outcome; this individual must be able to commit adequate time to the project.

Project Manager: This individual will be employed by the client either directly or from an external organisation. The Project Manager has responsibility to liaise with the various members of the project team to ensure that a clear plan for project delivery is developed and project items such as risk, budgeting and change are managed. They are responsible for ensuring GSL process is embedded into project.

GSL Champion: This individual will usually be from the client side Estates/FM team. The GSL Champion is responsible for ensuring that the implementation guide is delivered by ensuring that briefing and design take account of the business requirements, end users and operators. These need to be translated into targets that are assessed during the project and post completion. More detail on this role can be found in Section 2.0

1.9 Future Development of GSL

GSL is governed by the Government Construction Board and its on-going development will be delivered through the GSL Stewardship Group and the BIM Task Group. This will be made up of GSL Department Lead representatives from each of the central government departments and key stakeholders for the policy. The Stewardship Group will be established to continue to develop and refine the GSL

Implementation Guide, taking on board feedback and lessons learnt from Departments, wider public sector, industry and on-going feedback from early adopter projects.

Further areas of development for GSL in the next year have been identified as follows:

- Standardisation of Post Occupancy Evaluation methods measurement, e.g., measures for energy consumption, and user satisfaction enabling broad benchmarking across departments and improved feedback to the supply chain.
- Development of PAS1192.3
- Exploration of contractual tools to link delivered outcomes to required performance outcomes.
- Explore opportunities to develop a standard approach to enable data movement from COBie to CAFM
- GSL for infrastructure to be developed with support from ICE.

Feedback on these and other aspects of GSL policy should be directed to BIM/GSL Task Group by using the contact form on the Welcome Page of www.bimtaskgroup.org.

The development of GSL will continue to evolve as part of the GSL implementation phase during 2013.

1.10 Other Reference Documents that support GSL

Below we have listed some documents that may be reviewed in support of GSL:

1. Collaborative Business Relationship Management Systems: BS 11000. This was created in association with the Institute for Collaborative Working (ICW) - the World's first national standard for Collaborative Business relationships. <http://www.bs11000.com>
2. Value management, value analysis, functional analysis vocabulary: BS EN 1325. This is to support the use of value management, value and functional analysis. <http://shop.bsigroup.com/en/ProductDetail/?pid=000000000000937061>.

3. Value Management: BS EN 12973:2000. A practical guide to the use and intent for using value management. <http://shop.bsigroup.com/en/ProductDetail/?pid=000000000030012919>
4. The SCI Network Post Occupancy Evaluation (POE) Report highlighting examples of good practice and research into POE. http://www.sci-network.eu/fileadmin/templates/sci-network/files/Resource_Centre/Reports/SCIN_POE_final_report_-_June_2012.pdf
5. British Standards Institution BSI 8544: Guide for life-cycle costing of maintenance during the in-use phases of buildings <http://shop.bsigroup.com/en/ProductDetail/?pid=000000000030218913>
6. British Standards Institution Publicly Available Specification (PAS) PAS1192:2 : Building Information Management – Information requirements for the capital delivery phase of construction projects <http://www.bimtaskgroup.org/pas-1192-22012>
7. British Standards Institution BSI 8536: Facility management briefing. Code of practice <http://shop.bsigroup.com/ProductDetail/?pid=000000000030212807>
8. Chartered Institution of Building Services Engineers (CIBSE) TM 22: Energy Assessment and Reporting Methodology https://www.cibseknowledgeportal.co.uk/component/dynamicdatabase/?layout=publication&revision_id=103&st=TM22
9. Chartered Institution of Building Services Engineers (CIBSE) TM 39: Building Energy Metering https://www.cibseknowledgeportal.co.uk/component/dynamicdatabase/?layout=publication&revision_id=1513&st=TM39
10. Chartered Institution of Building Services Engineers (CIBSE) TM31: Building Log Book https://www.cibseknowledgeportal.co.uk/component/dynamicdatabase/?layout=publication&revision_id=113&st=Building+Log+Book
11. European FM Standards BS EN 15221 Series: Facilities Management <http://shop.bsigroup.com/en/ProductDetail/?pid=000000000030152341>
12. BIFM: BIM & FM – Bridging the gap for success <http://www.bifm.org.uk/bifm/knowledge/FMLeadersForum>

13. BIM Strategy <http://www.bimtaskgroup.org>

14. FM Service Standards; these can be found through the following contact at the Government Property Unit: Belinda.Mather-Derrick@Cabinet-Office.gsi.gov.uk

15. Building Services Information and Research Information Association (BSRIA) guide to Soft Landings: <http://www.bsria.co.uk/news/soft-landings-framework>

16. British Standards Institution BS EN 15643-1 : 2010 Sustainability of Construction Works – Sustainability assessment of buildings Part 1 General framework.

1.11 Glossary

ALB: Arms Length Body

BIM: Building Information Modelling

BIFM: British Institute of Facilities Management

BS: British Standards

BSRIA: The Building Services Research and Information Association

CGD: Central Government Departments

CAFM: Computer Aided Facilities Management

Commissioning, Training and Handover (CT&H). Projects should be delivered, handed over and supported to meet the needs of the End Users.

COBie. Construction Operations Building Information Exchange

DQI: Design Quality Indicator

FM: Facilities Management

GCB: Government Construction Board

GSL: Government Soft Landings

POE: Post Occupancy Evaluation

SRO: Senior Reporting Officer

UBT: Usable Buildings Trust

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This document is available for download at <http://www.bimtaskgroup.org/reports>

