



SOFT LANDINGS: HOW TO FACILITATE CROSS INDUSTRY COLLABORATION?

*White paper report
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Originally published by CBx

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Overview

This white paper report was put together to summarise the CBx breakfast briefing “A Soft Landings Approach”, held at UCL Energy Institute, London on 03 July 2014.

An open discussion around the benefits of an effective soft landings approach. Real life case studies were explored and how they are being delivered with ambitious targets both from the design consultant and the contractor perspective. This session also investigated the need for culture change at every point in the procurement process so that value engineering, commissioning, training and familiarisation, aftercare budget support and facilities management are all given equal importance in the performance of a building.

With special thanks to our fantastic speakers; Chris Moriarty of BIFM; Rod Bunn of BSRIA; Tamsin Tweddell of Max Fordham and Alasdair Donn of Willmott Dixon.

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CREATING A CLIENT-CENTRIC PRODUCT

Chris Moriarty is Head of Insight and Corporate Affairs at BIFM. As part of their work, the team aims to challenge and discuss the key trends that are impacting on the facilities management world; Soft Landings being high up on their agenda. Having come from the Chartered Institute of Marketing, Chris sees Soft Landings as the construction industry's version of contemporary, client-centric product design and delivery.

'Customers currently receive a disjointed set of processes each delivered by a different 'tribe' using slightly different language'

Chris Moriarty, BIFM

Marketing strategies have evolved over time from a production-focussed activity – economies of scale and profit – followed by a product focus with product features and profit as drivers and then a sales focus – target markets and profit. The most recent shift in attention has been towards a customer-centric approach where the customer sits at the heart of every decision and where research is carried out in understanding the customer; their needs and the services they require. Profit as a driver takes more of a back seat in this approach but is a natural outcome of identifying and providing for the customer's needs. As an example, the Apple iPod is not the best mp3 player on the market, nor is it the most robust or the cheapest. However, the iPod is the bestselling mp3 player and that is due to Apple's consumer-centric business model and the suite of services built around the product to enhance the music buying and listening experience.

In the transfer of this theory to the built environment it gains another level of complexity due to the presence of both customer *and* consumer in many commercial situations. This means that design and delivery teams may be commissioned by a 'middle man' and therefore be obliged to focus on commercial aspects as opposed to satisfying future occupants.

Similarly, customers do not receive one process, but a disjointed set of processes – concept, design, detailed design, services, construction, fit out, commissioning, handover, operation – each delivered by a different 'tribe' using a slightly different language.

Soft Landings (SL) is a process that ensures that building owners and occupants are fully engaged in the design process and that designers and constructors remain involved with a building post practical completion to assist the building occupants in fine-tuning systems during the first months of operation and beyond. Appointed SL Champions evaluate decisions made across the project design and delivery and draw attention to any divergences from agreed operational outcomes. They also provide a single point of contact for the client-side in order to avoid problems caused by having multiple organisations involved.

TIME FOR A CHANGE

The first round of practical research into the performance gap was conducted in the 1990s with the PROBE studies contracted by the Department of the Environment. Since then, the Carbon Trust ran a research project of their own (Low Carbon Building Performance) in the noughties and the Technology Strategy Board are just coming to the end of an £8 million funding stream on Building Performance Evaluation. The findings from all these research efforts have been largely the same;

- Lack of training and customer support after handover

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- Increasing systems complexity and poor commissioning
- Buildings incomplete at handover
- Energy consumption often much higher than benchmarks

More recently, the problems caused by building and systems complexity have become even more consequential:

- BMS systems impenetrable and controls confusing for end-users
- Excessive layering of controls packages, often with bespoke communication protocols
- Huge issues with energy sub-metering strategies and implementation

The number of sub-contractors involved in delivering a building is ever-increasing and many sub-contracted packages involve detailed design and complex control systems which are essential to building operation. This makes it difficult to manage the detail and interfacing of the project which leads to poor specification and / or installation.

SOFT LANDINGS

‘Soft landings is not a tick box procedure. It is a new professional approach that means we need to change the way we do things’

Rod Bunn, BSRIA

Rod Bunn runs the Soft Landings User Group and is developing SL as a professional service for industry around the world to be a generic, open source methodology. Soft Landings cannot be implemented using a tick-box approach but is an endeavour taken on by the whole project team to find a mechanism for greater mutual understanding and reducing tensions that occur during the construction of a building. By

organizing themselves in a collaborative, risk-sharing manner, the team are able to design and deliver a building that meets operational expectations and implement a graduated handover process that recognizes the need for fine-tuning the building systems and the occupants in parallel.

For successful SL implementation, it must be a client requirement; the client must facilitate the process from project inception and for the length of the project. Soft Landings literature generally states an aftercare period of three years in an ideal situation however, the length of this period will be unique to each project based on a number of factors; what the client can afford, what the construction team can resource and the complexity of the project and its systems.

‘Success is judged on operational outcomes as opposed to design specification.’

Rod Bunn, BSRIA

Soft Landings requires a revolution in the way projects are procured which can be ambitious for the UK’s conservative construction industry. The approach calls for an extended handover process which can have knock-on effects for commissioning in terms of warranties and defects liabilities. These risks must be resolved up front in order to effect cross-team buy-in.

Soft Landings can be explained in 5 stages;

During the **inception and briefing** stage the design and construction team should clarify the operational outcomes with the client; what they want the building to do for the occupants, what they want the asset to do for their portfolio and how they want their investment to perform. The outcomes should then be captured in a client requirements document. Success is judged on operational outcomes as opposed to design specification.

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The **design and construct** stage should involve a review of previous SL experience whilst developing performance metrics for the new building to be measured against. Once the metrics are agreed, a process should be devised by which to make regular 'reality checks' against design intentions.

Preparation for occupation happens at the **pre-handover** stage which includes training for facilities managers and staff, demonstrations of the control systems for occupants, and a review of the monitoring strategy of occupants and energy use. A review helps to focus attention on frequent trip-points such as poor commissioning of energy sub-meters.

Aftercare is split into two stages; the first, **initial aftercare**, is focused on the first months post-completion. If a problem isn't caught within the first 8 weeks post-handover, it may not reach the defects list which results in life-long operational issues or expensive remedial work. This stage is also about supporting the occupants and reacting to emerging issues. Having a representative from the constructor team on site to answer questions about lighting settings or room temperature controls is essential to bringing the occupants onside and teaching the users how to best inhabit the building.

The **extended aftercare** stage involves monitoring, reviewing and fine-tuning the building together with the building manager as well as seasonal commissioning. Post Occupancy Evaluation (POE) is included here although periodic feedback studies should be embedded as part of the SL process in order to achieve optimum operational performance; therefore POE as a discrete activity should not be necessary.

Crucially, the final step is to feed the learning outcomes forward into the next SL delivery and disseminate to industry to share knowledge and best practice.

SOFT LANDINGS IN TENDER DOCUMENTS

There is much debate over the issue of who should pay for the SL process. The SL approach to collaboration and aftercare is widely regarded as an activity that should be part of any project and there are those who argue that the team should therefore pick up the tab. However, a combination of the official removal of the aftercare stage from the RIBA Plan of Work in 1972 and a legacy of competitive fee

"Avoid asking for Soft Landings activities to be itemised in tender responses"

Rod Bunn, BSRIA

reduction has eliminated any room for project teams to reinstate these activities without an additional budget.

As with any commercial endeavour, a project team will not remain engaged with a project without remuneration. Soft Landings is now beginning to appear as a requirement in a number of tender documents and the advice from the Soft Landings User Group is to avoid asking for SL activities to be itemized in a tender response but instead to set a SL budget and score respondents on their knowledge and willingness to carry out the process.

Full collaboration is essential, facilitating conversation between any two parties involved in the process. A traditional two-stage Design & Build contract *can* work, however the conventional communication route through the main contractor must be revised to enable effective collaboration. Communication must reach sub-contractors and specialist suppliers particularly for performance-critical elements such as controls and the building management system (BMS).

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The New Engineering Contract 3 (NEC) is best suited as a platform for Soft Landings integration. NEC3 is a suite of contracts that covers the whole project lifecycle from inception to post-completion management. It has been developed for global application and for multidisciplinary projects. The documents promote a fundamentally different approach to contract procurement, endorsing partnering and collaborative working.

GOVERNMENT SOFT LANDINGS

Government Soft Landings (GSL) is one of the responses developed by task groups on implementation approaches for the Government Construction Strategy (2011). It is being executed by the BIM Task Group and will be mandated alongside the BIM Level 2 strategy for all Government projects from 2016. For more information on the Government Construction Strategy and BIM Level 2, see the CBx White Paper, [‘Benefiting from BIM’](#). Rob Manning, GSL Implementation Lead, sees Soft Landings as the human component to BIM or information management in that it captures the intelligence that the architects and other consultants bring to projects.

Government Soft Landings uses the SL process developed by BSRIA and the Usable Buildings Trust as its foundation, having also identified the need for a shift in focus or a ‘revolution’ in the way projects are procured. It is tailored to be a more client-facing methodology, prompting them to begin by defining necessary business outcomes as a way of identifying where value is to be added by a new asset. In this way, it is promoted as an approach that shifts the focus from output (building) to (business) outcome. Additionally, GSL includes an explicit set of measures to address the triad of sustainability; ‘Functionality and Effectiveness (social)’, ‘Environment’ and ‘Cost’ (economic). A matrix has been developed for guidance on how to address these at each project stage and KPIs are being drawn up for post-occupancy

verification. Standard procurement clauses are being discussed although, as highlighted in the following section, these will need to be handled with care in order to retain the collaborative ethos of BSRIA Soft Landings and avoid resources being spent wholly on mitigating commercial risk.

The strategy has been well received by a number of Government procurement bodies including the Environment Agency, Ministry of Defence, Ministry of Justice and ProCure21+ with the Education Funding Agency already piloting GSL. Some Local Authorities have already begun working with the methodology and it is beginning to appear in issued tender documents.

SOFT LANDINGS CHAMPION

Tamsin Tweddell is a senior sustainability engineer at Max Fordham and is acting Soft Landings champion on a number of projects including Keynsham Town Hall, the Southbank Centre, the Hayward Gallery and Heston Leisure Centre. A main focus for these projects has been the creation of multiple feedback loops throughout the project timeline.

“An operational performance rating as a design target is a key motivator for effective collaboration”

Tamsin Tweddell, Max Fordham

During the briefing stage, a series of workshops is set up to establish what can be learned from previous experience of the facilities management team and the client body as well as the combined experience of the design team. A major challenge of this activity is to create an environment in which people feel they can be honest without any repercussions; in situations where returning pairs of clients and consultants are

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present, consultants may feel nervous about voicing anything less than positive about the client.

Subsequently, the expectations and outcomes must be defined. When a client is asked for their definition of a successful project, often the response is 'on time and on budget'. It is the responsibility of the design team to resolve the brief with more clarity and establish what a successful outcome would look like after 2 or 3 years of operation; this might include future-proofing, flexibility and adaptability. These ambitions must be explored in detail to ascertain how flexible, how future-proofed and where they sit in order of priority. In the case of Heston Leisure Centre, the priorities were for robust, reliable infrastructure and building fabric as well as creating a place that would be comfortable for the diverse ethnic and faith make-up of the Hounslow community. Workshops were set up with each of these groups in order to arrive at a design that met everyone's needs.

This engagement must also be developed with the people who will be running the building in operation; where a project is for a one-off client this can be difficult as these staff members are not often appointed before project completion. In these cases, they must be represented by some other means during the process.

The Keynsham Town Hall client was very clear from the outset about the ambition for a DEC A operational rating as a design target. As operational design performance cannot be controlled by any one party, this target was the key motivator for effective collaboration across the design and constructor team. The team developed an energy risk register as part of the design review which examined potential risks to expected outcomes. Headline topics included procurement route, occupant behaviour and mitigation actions were drawn up across the project stages from briefing to operation. Over the course of further projects, the energy risk register has evolved into a broader operational risk management strategy and

has proven to be a helpful tool in the 'reality-checking' process.

An energy budget was devised from the outset and operational energy assumptions were declared for all possible end uses; for example, instead of using benchmark operating hours, the team worked with the client to understand how they really used their existing building and how they might use the new one. These assumptions could be 'reality checked' at various stages and referred to should the operational energy diverge from expectations. Project team members with influence over an assumption were recorded against it in order to gain a clear understanding of shared responsibilities. Once completed, the energy budget was consulted when making any decisions about energy hungry appliances or changes that might affect the assumptions. The process divided the onus among the project team and the client team and enhanced understanding of the need for collaborative working.

Keynsham town hall was the first project where Max Fordham drew up the employer's requirements for the contract; in this case, these were heavily focused on energy performance. The biggest challenge was to manage the transfer of responsibility of delivering the low energy design to the contractor at the construction stage whilst maintaining an ethos of collaboration and shared responsibility. Energy performance contracting is becoming more widespread however, when a risk is shouldered by one party, the danger is that the common goal will be lost and that the responsible party will use their resources on mitigating their commercial risk instead. This risk was overcome in the Keynsham Town Hall project by focussing the contractual nature on the collaborative evaluation process as opposed to energy performance.

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SOFT LANDINGS AS CONTRACTOR

As contractor on the Keynsham Town Hall project, Willmott Dixon developed a number of processes and tools with the project team during the construction phase to facilitate the agreed operational outcomes. Procurement was by conventional NEC contract with Willmott Dixon as main contractor joined by the engineers, designers and other packages. Although traditionally specialist commissioning agents are appointed by the client, Core Group worked as part of the delivery team according to the contractual requirements of Soft Landings drawn up by Max Fordham. Willmott Dixon is positive about their involvement and anticipates many more beneficial outcomes from having them on board.

The building and fabric were future-proofed by employing thermal mass for passive cooling and integrating the ability to install chilled beams at a later stage if active cooling becomes necessary. A lot of attention has been paid to occupant tools and controls in order to increase user understanding and engagement with features. A detailed metering strategy was tailored to measure and monitor the operational assumptions made in the energy budget so as to reconcile any discrepancies in the in-use energy consumption. A sophisticated monitoring system was also put in place for the photovoltaic systems to ensure that they work optimally at all times.

"The process has been enhanced by the appointment of a constructor-side specialist commissioning agent"

Alasdair Donn, Willmott Dixon

A large portion of work was carried out on the accessibility of the BMS. The BMS supplier was brought in early-on to work with the representatives to

develop a single, user-friendly interface for the 3 client side users who had very different knowledge and experience. An energy management software package takes the information from the 60+ meters in the building and presents the information to the client team in a form that facilitates useful insights.

At the pre-handover stage, a series of one-page, simple descriptions of kit and building features were put together from a non-technical standpoint for the wider occupants of the building. At a secondary technical level, facilities manager versions are being planned which will act as sign-posts to the relevant O&M documents, a set of information that is notoriously unwieldy.

CARBONBUZZ

CarbonBuzz functionality can provide useful support to the Soft Landings process. The interface can record information for multiple records on the same project and illustrate the energy consumption in successive energy bars for easy comparison. This facilitates the management of the energy budget at various stages presents the information in an accessible manner for clients teams as well as project teams. It has the capability of tracking contributing factors alongside the energy data for each record and the 'sharing' functionality promotes single file working to enable the whole project team to work collaboratively on one set of data.

RESOURCES

1. GSL Department Guidance Documents
Available from:
<http://www.bimtaskgroup.org/gsl-department-guidance-documents/>
2. Soft Landings Core Principles
<https://www.bsria.co.uk/services/design/soft-landings/free-guidance/>

****All following Soft Landings documents are available from the above BSRIA website**

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3. Soft Landings Framework
4. Soft Landings for Schools
5. Soft Landings worksheets stages 1-5
6. BREEAM New Construction & Soft Landings
7. Introduction to Soft Landings
8. Soft Landings in detail
9. How to Procure Soft Landings
10. Pitstopping – BSRIA's reality checking process for Soft Landings