Please note that this document does not reflect the final presentation of the publication, and comments should please be limited to the content.

Foreword

TM31 is an important document for the industry that supports the drive for efficient operation of buildings. This update has taken into consideration the views of a diverse range of people involved in the industry and we thank them for their valuable input.

With developments around building information modelling going on at the same time of this update the idea of having a single volume of useful information may well get lost if we allow it to. The key point to remember with a building log book is that its aim is to be the one document that you have that can support an operators' desire to run building efficiently.

It’s up to the industry now to implement and deliver information-rich log books that meet the needs of the users.

Jo Harris

1 Introduction

Log books are designed to help those with responsibility for managing buildings by improving their understanding of operation which results in a more sustainable building, with lower running costs. This revision explores further how the building log book is used as a key reference point for information and summaries performance data during the operational phase of a building.

The building log book provides a means to log the building's energy use, water consumption and waste as well as maintenance regime and any physical modifications made. Information is captured that describes how the new, existing or refurbished building is intended to work and be serviced. The log book template provided is to support development of useful information in a generic format that the industry can recognize.

This new edition of the guide incorporates changes including:

- Updated information on international, EU and UK’s energy efficiency legislation, regulation and standards
- A revised template to make the recording of operation and management of buildings easier, provide operators with information to support occupant comfort and productivity, reduce operational costs and ensure compliance with energy legislation
1.1 The purpose of building log books

Ideally, buildings should be designed so that their operation is self-evident. In practice, this is very difficult to achieve and, as with any complex device, an overview of the fundamental principles behind the design will greatly facilitate efficient operation.

It is essential to ensure operators and facilities manager’s (FM) understand of the original design intent. Poor understanding causes mismanagement, leading to a wide range of problems, particularly high energy consumption. This is particularly important where the initial building owner is not the ultimate occupier of the building, e.g. speculative developer or landlord.

Log books aim to solve a number of problems in the built environment industry:

- to improve the FMs understanding of the design intent
- to record the commissioning and handover process
- to identify energy saving opportunities by capturing building’s energy performance data
- to provide a means of recording building alterations and performance during the life of the building
- to provide useful information to letting agents and developers at the point of sale / letting / refurbishment
- to support occupant comfort, occupant satisfaction and productivity

1.2 Statutory requirements

Log books offer significant benefits to all building owners and users whether in the UK or overseas (see section 1.3). However, within the UK, statutory provisions relating to building log books is in place.

Approved Documents L2A\(^{(5)}\) and L2B\(^{(6)}\) of the Building Regulations 2010 in England and Wales\(^{(1)}\) contain a requirement for provision of the summary information contained in a log book for new buildings, major refurbishments and buildings where significant changes have been made to the building services. The Approved Documents regard the information provided in the log book as an essential tool to promote energy efficient operation of buildings.

In Scotland the Building (Scotland) Regulations 2004\(^{(2)}\) and the supporting guidance provided in Section 6 of the Technical Handbooks\(^{(3)}\) apply and in Northern Ireland Part F (Conservation of fuel and power) of the Building Regulations (Northern Ireland)\(^{(4)}\) applies.

The commissioning and handover stages of a construction project are often rushed to meet deadlines and don’t receive the time and attention they need, which means that operators rarely becomes conversant with the building before it is occupied. In England and Wales, Building Regulation L1b requires proper commissioning to be carried out and documented. Including commissioning records in the building log book will enable an improvement in handover documentation and comply with this regulation.

Building log books also supports the introduction of international, EU and UK energy efficiency and environmental legislations, regulations and standards such as:

- Energy Performance of Buildings (England and Wales) Regulations 2012: These regulations set by the UK government to implement the EU legislation from 2002 Energy Performance Building Directive (EPBD). The regulations require:
- 1) any building that is built, rented or sold to have an Energy Performance Certificate (EPC),
- 2) public buildings over 500m² to have a Display Energy Certificate (DEC), and
- 3) any air conditioning equipment with a rated output of more than 12kW to be regularly inspected by an energy assessor at no more than 5 yearly intervals.
- 4) boilers are either regularly inspected or an advice regime is put in place.

The CRC Energy Efficiency Scheme (the CRC, formerly the Carbon Reduction Commitment): is UK legislation which came into force in April 2010 for large businesses and public organisations that have half-hourly metered electricity consumption greater than 6,000 MWh per year. The CRC scheme is to encourage the qualified organisations to reduce their emissions but in 2016 the UK government announced that the CRC energy efficiency scheme will be abolished following the 2018-19 compliance year.

Energy Savings Opportunity Scheme (ESOS): is a UK regulation for large organisations in the UK that meet the qualification criteria, i.e. organisations that have 250+ employees on 31st December 2014, or have a turnover of €50m+ and a balance sheet of €43m+ for the financial year ending on qualification date of 31st December 2014. These organisations are required to carry out audits of the energy used by their buildings, industrial processes and transport, every 4 years, to identify cost-effective energy saving measures.

Heat Network (Metering and Billing) Regulations 2014: are UK regulations executing some of the requirements of the EU’s 2012 Energy Efficiency Directive, and apply to anybody who is a ‘heat supplier’.

Minimum Energy efficiency Standard (MEES): is a UK regulation for non-domestic private rented sector in England and Wales that sets a minimum energy efficiency standard at an “E” EPC rating. From 1st April 2018, the regulation will make it illegal for a landlord to let out a property with an EPC rating below “E”, subject to a few exemptions. Primarily the regulation will be enforced to new lettings and some lease renewals. From 1st April 2023, the regulation will also be applied to most existing leases of “F” or “G” EPC-rated non-domestic buildings.

Climate Change Agreements (CCA): is a voluntary UK regulation to reduce energy use and carbon dioxide emissions. In return, the participants receive a discount on the Climate Change Levy (CCL) which is a tax added on energy delivered to non-domestic users in the UK.

Mandatory Greenhouse Gas (GHG) reporting: is a UK legislation which requires companies to measure and report their GHG emissions by setting targets and introduce management initiatives to reduce their emissions.

Enhanced Capital Allowances (ECAs): is a scheme designed to encourage businesses to reduce their carbon emissions. The scheme provides the businesses a tax incentive for their investments in energy saving equipment.
— F-gas regulation: is an EU regulation which aims to reduce emissions of Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs) and Sulphur Hexafluoride (SF6). This regulation requires businesses that carry out installation, maintenance or servicing of equipment that contains or is designed to contain F-gases to hold a certificate to confirm that that technicians understand how to minimise and manage emissions of F-gases during their work. There is also a requirement to hold a register of all systems containing F-Gas, along with regular leak inspections at a set periodicity.

— Green Deal: is an initiative introduced and now withdrawn by the UK government to make energy efficiency affordable. Based on this initiative, the government pay the initial cost needed for energy efficiency improvements and people/businesses can pay back over time, with the repayments set to be less than the savings on their energy bills. The payback period must be no longer than the life of the measure.

— ISO 50001:2011: is an international standard which helps organisations to follow a systematic approach to manage their energy. It enables organisations to continually improve their energy performance, including energy efficiency, energy use and consumption, by reviewing and documenting their energy performance at defined intervals.

— ISO 14001: is an international standard which sets out the criteria for an Environmental Management System (EMS) to help organisations to set up an effective EMS. It can be used by any organisations to improve resource efficiency, reduce waste, and drive down costs.

**Box 1**

Regulation 40 of Building Regulations(1), Information about use of fuel and power, requires that:

1. The person carrying out the work shall not later than five days after the work has been completed provide to the owner sufficient information about the building, the fixed building services and their maintenance requirements so that the building can be operated in such a manner as to use no more fuel and power than is reasonable in the circumstances.
Box 2
From Approved Document L2A(5):

Section 4: Providing information

Criterion 5 — Provisions for energy-efficient operation of the building

4.1 In accordance with regulation 40, the owner of the building should be provided with sufficient information about the building, the fixed building services and their maintenance requirements so that the building can be operated in such a manner as to use no more fuel and power than is reasonable in the circumstances.

Building log-book

4.2 A way of showing compliance with regulation 40 would be to produce information following the guidance in CIBSE TM31: Building Log Book Toolkit. The information should be presented in templates as or similar to those in the TM31. The information could draw on or refer to information available as part of other documentation, such as the Operation and Maintenance Manuals and the Health and Safety file required by the CDM Regulations. Further information is provided in BSRIA BG 26/2011 Building manuals and building user guides.

4.3 The data used to calculate the TER and the BER should be included in the log-book.

It would also be sensible to retain an electronic copy of the TER/BER input file for the energy calculation to facilitate any future analysis that may be required by the owner when altering or improving the building.
Box 3
From Approved Document L2B\(^{(6)}\):  
Section 7: Providing information

7.1  On completion of the work, in accordance with Regulation 40, the owner of the building should be provided with sufficient information about the building, the fixed building services and their maintenance requirements so that the building can be operated in such a manner as to use no more fuel and power than is reasonable in the circumstances.

Building log book

7.2  A way of showing compliance would be to produce the necessary information following the guidance in CIBSE TM31: Building Log Book Toolkit, or to add it to the existing log book where this already exists. If an alternative guidance document is followed in preparing the log book, then the information conveyed and the format of presentation should be equivalent to TM31.

7.3  The information should be presented in templates as or similar to those in TM 31. The information should be provided in summary form, suitable for day-to-day use. It could draw on or refer to information available as part of other documentation, such as the Operation and Maintenance Manuals and the Health and Safety file required by the CDM Regulations.

7.4  The new or updated logbook should provide details of:

a.  -Any newly provided, renovated or upgraded thermal elements or controlled fittings;

b.  -any newly provided fixed building services, their method of operation and maintenance;

c.  -any newly installed energy meters; and

d.  -any other details that collectively enable the energy consumption of the building and building services comprising the works to be monitored and controlled;

Section 4: Guidance relating to building work

Controlled services

4.30  In general terms, the aim should be to:

e.  -demonstrate that the relevant information has been recorded in a new log book or incorporated into an update of the existing one as described in section 7.

1.3  Benefits of log books

The O&M manual usually includes large amounts of very detailed technical information on the building. It is often not integrated and seldom gives a clear picture of the overall design philosophy. To run the building effectively and efficiently the FM needs a simple statement of how the building is intended to work, the maintenance requirements, the operation information for building services and associated controls, and benchmarks, targets and data for energy, waste and water via a single document. The building log book seeks to address all these needs so that buildings, which are valuable and complex assets, are managed more effectively and efficiently.
Without a log book, newly appointed staff, consultants and contractors will be dealing with unfamiliar buildings. The lack of a logged history can often lead to decisions that go against the original design intent. Until their introduction in 2002, there was no single document where building alterations could be logged as O&M manuals are often not updated. Equally, there is no single document where building performance can be recorded/linked to, which could highlight excessive energy consumption. The log book could be regarded as the hub document linking many other relevant documents.

A simple, standard log book template has been developed for use in all building sectors. This template set out standard formats for documenting the building services systems in a given building. By promoting a standard approach and format, the whole industry will benefit.

The log book acts as a single record which helps:

(a) the client:
   — to know more about the building they are acquiring
   — to sell/let the building with more confidence
(b) the designer:
   — to ensure that the client’s requirements are laid down throughout the process
   — to ensure that the actual design intent is passed to the FM
(c) the FM:
   — to have a better understanding of the building
   — to develop a historical record of the building
   — to have simple access to key information of the building
(d) the occupants:
   — to understand better how to use their space
   — have improved levels of comfort and energy efficiency.

1.4 Target audience

This document is targeted at those seeking to develop a building log book. This includes building designers working on new buildings and major refurbishments but also includes those replacing or altering building services plant in existing buildings. In particular, this document addresses:

— the client, who briefs the design team to ensure that a good quality log book is produced
— the lead designer, who is most likely to be responsible for developing the log book
— any specialist O&M manual authors who are likely to be carrying out final production of the log book
— FM’s in existing buildings who are responsible for maintaining and improving performance

Section 8 includes advice about how to use building log books.
2 What is a building log book?

The closest analogy to a building log book is the owner’s manual supplied with a car. Drivers need an easily understood overview of the car; FMs need similar guidance for their buildings. Although buildings are complex, there has never been a simple ‘users handbook’ to help operate a building. In fact, the building log book goes much further than the car handbook as it includes performance monitoring and a system to record changes to the building and to the log book itself. However, the underlying principle is the same.

The building log book should be an easily accessible focal point of current information for all those working in the building. It has four main functions:

1. **Building summary**: it is a summary of all the key information about the building including the original design, commissioning and handover details, and information on its management and performance. One of the main things it will provide is a strategic understanding of how the building is meant to work, i.e. the design intent. In being a summary it neither duplicates nor replaces the O&M manuals.

2. **Reference point**: it is the single document in which key building energy information is recorded or linked to. The log book should provide key references to the detail held in less accessible O&M manuals, BMS manuals and commissioning records. It should therefore be kept, preferably electronically, in a readily accessible (designated) location.

3. **Source of information**: it provides a key source of information for new staff and can play a role in their training and induction but also for external contractors/consultants who are going to work on the building.

4. **Dynamic document**: it is a place to log changes to the building and its operation. It is also used to log building performance and actions taken to improve that performance (‘fine-tuning’) in terms of energy, water and waste. It can therefore be used to support a BREEAM In-Use assessment. It is essential that it be kept up-to-date. Alterations should only be made with the approval of the FM and should be signed and dated by that person. The electronic version should be password protected, so only the FM (or the responsible person) can make necessary alterations.

The log book should provide a concise summary of the principal energy consuming services in the building — it should avoid duplicating detailed material contained in the O&M manual.

The log book has the potential to ensure that FM’s have ready access to information on the design, commissioning and energy consumption of their building. This enables greater active fine tuning of the building with consequent energy savings. The log book also provides explicit information about the metering strategy implemented in the building, energy management system and on the scope for monitoring and benchmarking energy consumption data. Finally, the log book provides access to information related to any energy efficiency regulations or schemes the building is subject to.

3 Relationship with other documents

Clearly, there are direct links between the building log book and O&M manual, record drawings, health and safety file, etc. The best way to view these links is to see the log book as a summary of key information which refers all these documents. It is perfectly acceptable to have overlap between the log book and these documents but it is essential that the content and written style of the log book is simple and summary in nature.
Some building services equipment manufacturers (e.g. boiler manufacturers) include 'equipment' log books when supplying their products. These are for logging maintenance carried out, and efficiency tests related to single items of equipment. In the case of boiler log books, they are located on or near the boiler itself. These equipment log books could be regarded as a sub-set of the overall building log book with clear references/links between them. One function of the building log book is to list the equipment log books that exist and where they are located to enable a single overview.

4 Specifying the log book in the brief

Where there is a statutory requirement to provide a building log book, clients need to include this in their brief to the design team. However, the onus is also on the design team to ensure that it has been included in the client’s brief and that suitable allowance has been made for its preparation in their fee so that sufficient resources are allotted to its development.

Using TM31 and its associated template as a basis, the design brief might simply say: 'Develop a building log book using the CIBSE TM31 template'.

For speculative shell-and-core developments with a subsequent fit-out stage, see section 5.4.

It is recommended that the client make it a contractual requirement that the copyright of the log book is assigned to the client. It is also recommended that the lead designer and the log book author should examine their respective professional indemnity insurance policies to ensure that it provides suitable protection against any future claims.

4.1 Changes during the defects liability period

Where changes are made to the building or its services during the defects liability period, the log book needs to be updated as discussed in section 8.4. Updating the log book during this period would usually be the designer’s responsibility although this will depend on the specific contractual arrangements.

5 Developing a log book

The log book must be a summary document that is written in a style that will be easily understood by FMs and building operators, and non-technical readers. It should not be a heavily ‘technical’ document but a management tool for running the building. In new buildings, prior to handover, the FM should support the development of the log book to increase their understanding of how to use the log book.

5.1 How big should it be?

Completed log books (hard copy) will vary in size depending on the size and complexity of the building. For buildings greater than 200 m², less than 20 pages is unlikely to include all the necessary information, even in a relatively small/simple building. Log books greater than 50 pages are unlikely to function as an easily accessible management summary, even for very large complex buildings. The two example log books included with TM31 show the potential range and size of the log books.
5.2 What should it look like?

Paper based log books should generally be kept in a loose-leaf ring binder to allow those responsible to update the document easily. It is preferable to use a distinctive, well-labelled ring binder to make this stand out in a busy building operations room or in a small business environment.

It is anticipated that in small organisations the FM might retain one paper copy for rapid and easy access. This copy would serve as the day-to-day master for easy reference and recording minor updates. However, all organisations should also maintain an electronic version that can easily be viewed and updated from any location. Electronic systems can also provide password protection to avoid unauthorised persons altering the log book. See section 8.4 for further guidance on keeping the log book up-to-date.

5.3 Who should produce it?

It is ultimately the client’s responsibility to produce the log book, however, while a building is being built or altered, those employed to do so have a duty to ensure that statutory requirements are met. The constructors therefore need to alert the client to the requirement for a log book and determine who will be responsible for developing the log book. The design team hold almost all the relevant information that is required for the log book. As shown in Table 1, the lead designer (or consultant) may therefore be the most appropriate person to take responsibility for overseeing the development of the building log book, even if its final production is sub-contracted to specialist authors. At handover, the FM should take responsibility for the log book.

It is likely that specialist O&M authors working for the lead designer will be given the task of actually producing the document near the end of the process. However, the log book needs to include summary information and explanations about the building that it is anticipated that only the design team can provide. It is therefore recommended that the design team write these simple explanations during the project. The log book system data sheets (see section 9 of the main template), can be collated by the responsible person or specialist author near the end of the project.

<table>
<thead>
<tr>
<th>RIBA Stages</th>
<th>Responsible person(s)</th>
<th>Role(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0- Definition</td>
<td>Lead designer</td>
<td>• To inform the client about the requirement for a log book</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• To start the log book</td>
</tr>
<tr>
<td>1- Preparation and</td>
<td></td>
<td>• To establish responsibilities for log book components</td>
</tr>
<tr>
<td>brief</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2- Concept design</td>
<td>Lead designer</td>
<td></td>
</tr>
<tr>
<td>3- Developed design</td>
<td>Lead designer</td>
<td>• To gather information from the project team (i.e. architect, structural engineer and services engineer) to complete the template sections 1, 6, 7, 8, 9, 10, 12 and 14 as much as possible</td>
</tr>
<tr>
<td>4- Technical design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5- Construction</td>
<td>Lead designer</td>
<td>• To gather information and updates from the project team to complete the template sections 1, 2, 3, 5, 6, 7, 8, 9, 10, 11, 12, 14 and 15</td>
</tr>
</tbody>
</table>

Table 1 Roles and responsibilities for log books

© CIBSE (2016)
### 6- Handover and close out

<table>
<thead>
<tr>
<th>Lead designer</th>
<th>Facilities manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lead designer to finalise information and updates from the project team to complete the template sections 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14 and 15</td>
<td></td>
</tr>
<tr>
<td>• Lead designer to engage with FM to develop and complete the building log book</td>
<td></td>
</tr>
<tr>
<td>• Lead designer to keep the log book updated during the defects liability period</td>
<td></td>
</tr>
<tr>
<td>• FM to sign the log book and take over the responsibility from the lead designer</td>
<td></td>
</tr>
</tbody>
</table>

### 7- In use

<table>
<thead>
<tr>
<th>Facilities manager</th>
</tr>
</thead>
<tbody>
<tr>
<td>• To complete and update the template sections 1, 2, 4, 11, 12, 13, 16, 17 and 18</td>
</tr>
<tr>
<td>• To do an annual review as part of the quality assurance system</td>
</tr>
<tr>
<td>• To keep the log book updated</td>
</tr>
<tr>
<td>• To use the log book to run and manage the building efficiently and effectively</td>
</tr>
</tbody>
</table>

When an existing building in operation has no log book, the FM should be responsible for developing the log book and update it whenever the building or the services in the building are altered.

#### 5.4 When should it be produced?

Development of the log book should be started early in the design process. The lead designer should not release sub-designers until they have summarised their section of the design and it has been submitted to (and accepted by) the log book author. The person responsible for the log book (e.g. lead designer) should build up a draft log book throughout the design process, ready for final production near to handover.

It can be useful to the design process to have a working draft of the log book around RIBA Stage 3-4 (developed design to technical design) to underpin the remainder of the design and to act as a focal point for the design team. This can enhance team working and the integrated design aspects required to produce an energy efficient building. This is particularly necessary when operating under a ‘design and build’ contract.

Although not a requirement of the building regulations, it is suggested that in existing buildings in operation, the FM should develop a log book to keep all the building available key information and useful contacts in one place and also record all alterations.

The main shell-and-core design team should develop the log book as far as they can based on the shell-and-core design. This preliminary log book should then formally be handed over to the fit-out team who should finalise it to reflect the actual space and services handed over to the tenant. The preliminary log book should highlight areas where the initial design team has not been able to provide the necessary information for the fit-out. Once the preliminary log book is handed over, the fit-out team should take responsibility for development of the log book during fit-out, before handover and occupancy. In most cases, it should be possible for the main log book template to be used in this way although minor modifications may be required to meet particular project circumstances. Where there are multiple tenancies, then a number of log books will need to be passed to, or developed by the fit-out team, see section 5.7.
5.5 Where the information comes from?

The lead designer and the M&E contractors provide information such as the building size, structural design, layouts, designed building operation strategy, control strategy, metering and energy monitoring strategy. Energy-related information is gathered using a data collection system such as BMS. Recommendations for improving the building's performance are provided via different schemes and initiatives that the building is subject to/involved in.

Section 5 of the log book should include a summary description of the National Calculation Methodology assessment of carbon emissions used to show compliance. The log book appendix should also include a summary of the inputs and outputs to any software used for this assessment.

5.6 How many copies?

It is anticipated that an electronic copy and one paper copy would be produced and given to the FM at handover. This could act as the day-to-day master copy for easy reference and minor updating etc. The electronic copy should be kept to allow the FM to carry out more permanent updates, e.g. at annual or quarterly reviews. It is essential that an electronic copy is kept in a separate place for recovery in the event of emergencies. Online log books avoid the need for paper documentation and allow easy access/updating from any location.

5.7 Multiple tenancies

Where a building is to be divided into multiple tenancies, it might be appropriate to have one central overall log book for the whole building with subsidiary log books for each tenancy. The landlord would normally be responsible for the overall building and any central plant and would therefore be responsible for the central log book. The tenants would be responsible for their particular subsidiary log book to allow them to manage their operational performance. The management responsibilities of the landlord and tenants need to be clearly set out in both the central and subsidiary log books.

The log book template should be used to develop both the central and sub log books although modifications will be necessary to reflect ‘central’ or ‘subsidiary’ status and to meet particular circumstances. The front of the log book should state whether it is the central log book or a subsidiary log book. The central log book should list details of all the sub-tenancies and the tenancy managers and the subsidiary log books. The subsidiary log books should highlight the landlord’s details and the location of the central log book. It may be beneficial for each tenant to hold a hard copy/pdf version of the central log book but this must be clearly marked ‘COPY’ to distinguish it from the master.

Where significant changes are made to the building, its services or to individual tenancies, the landlord should inform the tenant and vice versa. The annual quality assurance review(s) (see section 8.4) carried out by the landlord and tenants should trigger this exchange of information.

5.8 How long should it take?

Log books will vary significantly in both size and complexity. The larger and more complex the building, the longer it is likely to take to develop the building log book. Rules of thumb for how long it may take are shown in Table 2.

The greatest time will probably be spent on preparing simple floor plans, diagrams of the design philosophy and systems, and a suitable summary of the sub-metering arrangements.
<table>
<thead>
<tr>
<th>Building</th>
<th>Likely development time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very small business, floor area &lt; 200 m²</td>
<td>1–2 days</td>
</tr>
<tr>
<td>(approx. 10–15 occupants)</td>
<td></td>
</tr>
<tr>
<td>Small to medium/simple, floor area 200 to 2000 m²</td>
<td>2–5 days</td>
</tr>
<tr>
<td>Large/complex, floor area &gt; 2000 m²</td>
<td>5–10 days</td>
</tr>
</tbody>
</table>
6 Using the CIBSE log book template

The log book template included on the accompanying CD-ROM provides an easy to use framework for developing log books. The template provided can be easily modified to suit the size and complexity of the building. The template is a simple Excel document that requires the user to enter the appropriate information into blank areas. The whole template should be used in buildings that are subject to any energy-related regulations/legislations including those listed in Section 1.2. For other buildings, irrelevant sections can be deleted from the main template. The template has explanatory notes (printed in orange italic type), in some of the sections to suggest the type of information that should be provided. This can be deleted in a completed log book. Gathering the information beforehand will greatly assist completion of the template.

6.1 Keep a common style

There are significant benefits in making all log books look reasonably similar, throughout the buildings industry. Using the distinctive CIBSE style will ensure that it is easily recognisable amongst the many other manuals likely to be found in building operations rooms. In the same way, it is important to keep the contents list reasonably close to the template so that it retains a common structure recognisable to anyone working in the buildings industry. This is particularly important for new FMs and any external contractors/consultants that need to carry out work in the building. Keeping this common 'look and feel' to the log book will benefit the whole industry as it will provide a familiar focal point in the wealth of information relevant to the operation of buildings.

6.2 Template structure

The overall contents list of the main template (and hence all future log books) is shown below:
1- Building history
2- Main contacts
3- Links to key documents
4- Regulations and Legislations
5- Building summary
6- Overall building design
7- Commissioning, handover and compliance
8- Areas of occupancy
9- Summary of main building services plant
10- Energy metering, monitoring and targeting
11- Building energy performance record
12- Water management
13- Waste Management
14- Overview of controls/BMS
15- Occupant information
16- Summary of plant inspection and maintenance
17- Results of in-use investigation
18- Indoor environmental quality (IEQ) and building characteristics factors

Appendix: Relevant compliance and test certificates

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Following the above guidance and using the template should result in a ‘good practice’ building log book. If any part of the template is omitted then designers/authors will need to ensure that it will still meet the requirements of building control and the recommendations given in the Approved Documents.

6.3 How to use the template and examples

The accompanying CD-ROM contains various files, see Figure 1. In particular, it includes electronic version of the template.

Printed publication

TM31: Building log book toolkit

Files on associated CD-ROM

Main template

Example 1: Data centre

Example 2: Small office building

Meter reading pro-forma
7 Two example log books

Even though the template indicates the type of information to be inserted by the log book developer, it is still difficult to get a good idea of what the finished product should look like. For this reason, two example log books have been included on the accompanying CD-ROM. In order to show the range of log books, the first example is a log book for a complex air conditioned data centre and the second is a log book for a small naturally ventilated office building. These buildings are briefly described below to allow a comparison with the reader’s own building.

7.1 Example 1: large air conditioned data centre

New Garden Data Centre is a 3-storey fully air conditioned building in London. The facade is solid brickwork encasing concrete structural frame, windows are double-glazed and are openable. External doors are glazed and automatic sliding. The building provides a large meeting, conference, communications rooms and open plan office space for approx. 190 workstations over two floors. There is also a large plant room area to house back-up generators, switch room, battery room and UPS. Ancillary accommodation includes facilities management office, delivery loading bay and storage area. The main office HVAC has two AHUs. The kitchen is supplied with conditioned air from a variable volume AHU located in the plantroom that is capable of heating and cooling. There is also a single kitchen hood extract fan.

The server centre is positively pressurised with respect to its surroundings by the two AHUs, one run and the other standby. The office AHU provides treated air to the VAV boxes to maintain office space temperatures. The AHUs can be controlled through the BMS interface and through the Programmable Logic Control (PLC) system. Lighting is provided by fluorescent fittings with electronic ballasts and T8 lamps. Recessed, modular, down lighters and compact fluorescent luminaries are present to suit certain areas. Emergency lighting is self-contained with an hour of autonomy.

7.2 Example 2: small naturally ventilated office

2 Elms House is a small office tenancy (one of the two tenants) within Elms House building in Lancashire. The premises are naturally ventilated with openable windows. Desk fans are used to aid circulation in summer. The windows open at the top by a pulley and cord arrangement. There are internal blinds to prevent glare. Space heating and domestic hot water are provided by a gas fired, balanced flue, condensing boiler located at ground floor. There are 5 radiators, 4 of which are fitted with TRVs. General lighting is by low energy compact fluorescent lamps throughout; all are controlled by manual light switches in the hallway. Desk lamps are used to supplement the general lighting.

8 Using a log book

The objective is to ensure that the log book allows the reader to:

- understand the design intent and prevent any modification later in the buildings life that would compromise energy efficiency
- understand the metering strategy and ensure the readings collected provided the correct information to enable energy performance monitoring
- educate the operations staff, any incoming consultants/contractors and the occupants of the building as to the intended use of the building and any energy efficiency features of the design that may not be understood
8.1 Responsibility for the log book

After handover, the FM should take over responsibility for the log book and sign the log book to record this transfer of responsibility. The key responsibilities of the FM with regard to the log book are as follows:

— to ensure that the log book is correct and up-to-date at handover, or when passing it on to a successor
— to ensure that the log book is kept updated on a regular basis, including capturing all changes to the building fabric, services, operation or management
— to ensure that building maintenance and energy performance are logged annually, or more frequently where appropriate
— to ensure that the building users are made aware of the relevant information contained in the log book
— to ensure that the log book (both the electronic version and the hard copy) is kept in its designated location at all times.

A change of FM should result in a formal handover, the log book being signed by the new incumbent.

In a tenanted building, the landlord should ultimately be responsible for the log book. However, the landlord may decide to include responsibility for maintaining the log book in the leasing agreement. This will depend upon the terms of the lease, e.g. whether or not the landlord is responsible for the operation of central plant. In multi-tenanted buildings, sub-log books will be required for each significant tenancy, see section 5.7. Again, responsibility for keeping the log book up-to-date could be written into the tenancy agreement.

8.2 Who might use the log book?

Clearly, all building operations staff should have reasonably direct access to the log book. There may also be other staff in the building that require access to the information contained in the log book. The FM should be the ultimate authority as to who may have access. The FM should always ensure that they know who is accessing the information, and why it is being accessed.

Only the FM should be allowed formally to maintain, alter and update the log book. Each change should be signed and dated by the FM to ensure a clear historical record of the building. The FM may decide to ask others to provide the information, e.g. develop diagrams or energy figures, but there should be an authorising signature before this information is entered into the log book. Fully electronic and online log books can provide password protection that will help ensure that updates/alterations are only carried out by appropriate staff.

8.3 Where should it be kept?

Paper copies should be kept in a designated location in the main building operations room identified by means of a clear sign. This should indicate that the log book is not to be removed without the authority of the FM. Electronic copies should be kept on the FM’s PC or server with a back-up copy kept in a separate place. URLs for online log books should kept as simple and obvious as possible and should be recorded in a separate place. The log book should clearly state:

‘This log book is to be kept at all times in [room name/number and designated location in that room]. An electronic master is to be kept at: [server/PC reference, directory name and file name].’
8.4 Keeping it up-to-date

The log book should be reviewed annually by the FM as part of the organisation’s quality assurance (QA) procedures.

The QA manual might say:

‘Review the building log book annually (or more often) to ensure that all the information is up-to-date and correct. The review date and any updates should be recorded in the log book. This review should record significant alteration to the building and engineering services or changes in occupancy/use. It should also include an assessment of the energy performance and maintenance of the building.’

This annual review should act as a trigger to ensure that the log book is fully up-to-date and that the annual energy assessment has been carried out. The review should consider all aspects of the building including:

— architectural
— building services (including controls)
— energy performance
— occupancy and use
— building management
— maintenance.

Where necessary, the log book should be updated (or added to) and the FM should record these changes in the building history in section 1 of the log book.

Sections that have been updated should be retained in order to maintain a historical record of the building, but should be marked ‘SUPERSEDED’. It is important to ensure that if annotations and amendments inserted to the paper ‘master’ copy, they are also transferred to the electronic copy. Each new version of the electronic copy of the log book should be clearly dated and kept in a designated folder on the FM’s personal computer (PC) or server.

In multi-tenanted buildings, information should be exchanged between the tenants and landlord about any significant changes to the building, its services or to individual tenancies. The annual quality assurance review(s) carried out by the landlord and tenants should trigger this exchange of information.

Where staff movement (‘churn’) has a significant effect on the operation and management of the building, this might be recorded as a change to the building in the building history in section 1 of the log book.

6.4 Setting up energy logging procedures

Monitoring building energy performance is a key part of the building log book and is underpinned by setting up an easy to use meter reading pro-forma. Once the metering strategy and schedule have been determined, the designer can set up a tailored meter reading pro-forma, a simple example is provided on the accompanying CD. Further guidance on producing metering strategies and schedules is given in CIBSE TM39: Building energy metering(8). All the meters in the metering strategy should be included, with the meter name and code at the top of the ‘meter reading’ and ‘consumption’ columns. Where meters do not read in kilowatt-hours (kW-h), the designer/log book author should provide appropriate conversion factors in the log book and on the tailored meter reading pro-forma.
In particular, where oil, LPG or other fuels are used, values for their energy content should be provided. See CIBSE Guide F: Energy efficiency in buildings (9) for appropriate values.

The pro-forma allows regular main and sub-meter readings to be recorded and kept in a separate file (i.e. preferably not in the log book as this will become too bulky). Energy consumption in kW·h can then be calculated and totalled to obtain the main end-use energy consumption.

The pro-forma is suited for small businesses. In a large business that already has a data collection system in place should just provide a link to the relevant documents in the log book to avoid duplication.

8.5 Logging energy performance

As part of the annual review, the FM should ensure that energy performance is recorded and compared with appropriate benchmarks and the designer’s estimates of what the building should consume. This could be done either by inserting a summary of the building’s energy performance directly into the log book, or by providing a link in the log book pointing to the relevant documents.

Overall performance and end-use performance can then be observed over time and compared to good practice benchmarks and design estimates. CIBSE TM22: Energy assessment and reporting method (10) provides software to help assess building energy performance, using either a simple or a detailed approach. TM46 includes benchmarks for a range of buildings. Benchmarks for a wider range of buildings are available in CIBSE Guide F (9).

9 Log books for existing buildings

There are distinct benefits to owners and operators of existing buildings to prepare, and put into use, a building log book. Preparing the log book will often provide a better understanding of the design intent and hence improve building management. Ongoing use of the log book provides a means of recording building performance. In this way, the log book facilitates improved energy consumption and reduced emissions. Preparation of log books for existing buildings may be linked to refurbishment work, or to replacement and renovation of specific services or elements.

In England and Wales, Building Regulations Approved Document L2B (10) covers works in existing buildings, in particular the replacement of controlled services or fittings. This could include the replacement or upgrading of systems and the installation of new systems.

On completion of the work, the building logbook should be brought up to date (or a new one prepared if it does not already exist). The new or updated logbook should provide details of:

(a) Any newly provided, renovated or upgraded thermal elements*
(b) any newly provided fixed building services, their method of operation and maintenance,
(c) any newly installed energy meters
(d) and any other details that collectively enable energy consumption to be monitored and controlled.

For example, where boiler replacement is undertaken, a log book would need to be prepared covering that new boiler plant and, preferably, the whole heating system. Where a log book already exists then it would need to be updated.
Approved Document L2B® also suggests that where the work involves the provision of a controlled service, reasonable provision would be to:

'd. Demonstrate that reasonable provision of energy meters has been made for effective monitoring of the performance of newly installed plant (see paragraphs 4.33 to 4.35); and

e. Demonstrate that the relevant information has been recorded in a new log book or incorporated into an update of the existing one as described in Section 7.'

The example of replacement boilers would therefore need appropriate metering and a new/updated metering strategy would need to be included in the new log book.

References