BBP | BETTER BUILDINGS PARTNERSHIP

RESPONSIBLE PROPERTY MANAGEMENT TOOLKIT

HOW TO...

COLLATING AND EVALUATING ENVIRONMENTAL RISKS

HOW TO...

Usually, the environmental risk framework adopted for a property or portfolio will be specified by an asset manager, in alignment to a wider corporate risk framework. The process of collating and evaluating environmental risks is often co-ordinated by a property manager, with input from a facilities manager where required.

Collating and evaluating environmental risks generally considers the following steps:

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STEP 1: DEVELOP A METHOD TO RATE ENVIRONMENTAL RISKS

It is important that a method to rate environmental risks is adopted and applied consistently within a property and, where relevant, throughout a property portfolio.

A standard approach to rating environmental risks involves considering, and applying a quantifiable score to two elements:

The severity of consequence and likelihood of occurrence and applying a quantifiable score.

- **Severity**: Relates to the severity of consequence – or impact – associated with the environmental event. This can be rated in terms of legal, financial and reputation impacts.
- **Likelihood:** Relates to the probability of an event taking place. This can be rated in terms of the level of control that exists over the event taking place.

Risk rating is typically undertaken using a risk evaluation matrix. The matrix enables a visual representation of the significance of a risk. More significant risks being positioned in the upper right-hand side of the matrix.

Risk evaluation matrix

Significance Rating Table			1	2	3	4	5
Levels of control and influence	**High degree** of control	5					
	Some level of control	4					
	Moderate degree of influence	3					
	Slight degree of influence	2					
	No control or influence	1					
Severity of consequence descriptors	**Environmental Impact** – change (+ve and -ve) occurring because of aspect						
	£ increased cost to business or increase in revenue		£0	£50,000	£500,000	£5m	£50m
	Legislation						
	Reputational / stakeholder (+ve and -ve)						

Variations in methods for evaluating risks generally involve differences in the approach to scoring or quantifying the rating of a risk.

- Often, ratings are generated using a scale of one to five for each metric and multiplying these to create an aggregate score.
- Alternatively, a scale of one to three can be used, adding scores as opposed to multiplying scores, to produce an aggregate rating.

Some companies may have a preferred corporate risk rating method which could be applied to environmental risks. In other cases, companies may provide flexibility on the use of risk rating method. Whichever method is chosen, the primary focus should be on the outcome, i.e., categorising risks and the identification of those rated as 'significant'.

The choice of method is secondary to the robustness in which the rating is generated. Often, a group of internal stakeholders is convened to collectively consider the risk rating. This may include technical and operational experts, for example, and is often facilitated by an environment or risk manager.

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STEP 2: IDENTIFY AND EVALUATE ENVIRONMENTAL RISKS

As part of Environmental Management Standard ISO14001, the International Organisation for Standardisation (ISO) described three primary sources for the identification of risks:

Compliance registers

Compliance registers collate legal and regulatory requirements, as well as other obligations to which a company has voluntarily committed. Compliance registers are usually developed and held at a company or portfolio level.

Compliance driven risks are usually rated as 'significant'.

Aspects and Impacts register

Aspects and impacts registers consider the environmental interactions and associated effects relating to business activities. Aspect and impact registers are often developed and held at the property level.

The rating of aspect and impacts driven risks will vary based on individual circumstances.

Wider context

Understanding the wider context of an organisation involves scanning the horizon to consider a range of factors that may present risk to a company, both today and in the future. Horizon scanning activities are usually developed and held at a company or portfolio level.

The rating of wider context driven risks will vary based on individual circumstances.

Environmental risk identification sources

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STEP 3: COLLATE ENVIRONMENTAL RISKS

Environmental risks identified through compliance registers, aspects and impacts registers and horizon scanning, and rated as significant, should be collated into a risk register.

A risk register should be developed at company, portfolio and property levels. At each respective level, the risk register should include significant risks that may affect, or be affected by, the respective operations, or fall within managerial control at the respective level.

The risk register should provide a summary description of the risk and well as reference to the control mechanism that has been identified for each risk.

An environmental risk register should ideally be a single list and should be made available to stakeholders who may affect or be affected by the risks or who may have a role to play in managing these.

AN ENVIRONMENTAL COMPLIANCE REGISTER

HOW TO...

Usually, a property or portfolio's environmental compliance framework will be specified by an asset manager, in alignment to a wider corporate risk framework. The process of collating and evaluating environmental legal and other obligations is often co-ordinated by a property manager, with input from a facilities manager where required.

Preparing an environmental compliance register generally considers the following steps:

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STEP 1: UNDERSTAND ENVIRONMENTAL INTERACTIONS AND IMPACTS

Before beginning the process of collating environmental legal and other obligations, it is important to establish a clear understanding of how business activities interact with, and impact on, the environment. This will help to filter a potentially long list of requirements to those that are relevant to the portfolio or property.

The scope of business activities should:

- Align with the scope at which environmental risks are being managed, for example, either at the portfolio or property level.
- Include activities both directly managed by a property manager and, also, that are contracted for management by a third-party supplier.

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STEP 2: IDENTIFY AND MAP REGULATORY REQUIREMENTS

Identifying and mapping regulatory requirements involves an iterative process, undertaken alongside the process of understanding environmental interactions and impacts.

Alongside the emerging outputs from an environmental aspect and impact assessment, a property manager should consult sources of environmental regulations, guidance and codes of practice to identify relevant compliance obligations. These may include, for example:

- The UK Government Legislation Site.
- A number of databases of environmental regulations are commercially available, for example, ENDS and BARBOUR.

A property manager should co-ordinate the process of mapping regulatory requirements and guidance against business activities to determine relevance and understand the associated compliance requirements. This process will evolve over time, so that the list of regulatory requirements and codes of practice becomes more refined and comprehensive.

LIST OF ENVIRONMENT RELATED LEGISLATION (UK)

- The Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020
- The Environmental Protection (Plastic Straws, Cotton Buds and Stirrers) (England) Regulations 2020
- REACH Regulations
- CE Marking/UKCA
- Working Time Regulations 1998
- Equality Act 2010 - Welfare
- The Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) (England and Wales) (Amendment) Regulations 2020 (SI 2020/489)
- Waste Batteries and Accumulators Regulations 2009
- Hazardous Waste (England and Wales) Regulations 2016
- The Packaging (Essential Requirements) Regulations 2015 (with amendments) (SI 2015/1640)
- The Producer Responsibility Obligations (Packaging Waste) Regulations 2007
- Scrap Metal Dealers Act 2013
- European Waste Framework Directive (2008/98/EC)
- The Waste Electrical and Electronic Equipment Regulations 2013 (with amendments)
- The Controlled Waste (England and Wales) Regulations 2012 (with amendments)
- The Waste (England and Wales) Regulations 2011 (with amendments)
- Standard Industrial Classification of Economic Activities (SIC) (2008)
- Environmental Protection Act 1990 Part IV – Litter Etc (with amendments)
- Environmental Protection Act 1990 Part II – Waste on Land (with amendments)
- Ionising Radiations Regulations 2017
- The Eco-design for Energy-Related Products and Energy Information (Amendment) Regulations 2019 (SI 2019/1253)
- REGULATION (EU) 2019/1021 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 June 2019 on persistent organic pollutants (POPs)
- RoHS 3 (EU Directive 2015/863)
- Streamlined Energy and Carbon Reporting (SECR); Companies (Directors' Report) and Limited Liability Partnerships (Energy and Carbon Report) Regulations 2018 (SI 1155/2018)
- Noise and Statutory Nuisance Act 1993
- Road Traffic Regulations 1988
- Supply of Machinery (Safety) Regulations 2008
- Provision and Use of Work Equipment Regulations 1998 (PUWER)
- Manual Handling Operations Regulations 1992
- Health and Safety (Display Screen Equipment) Regulations 1992 (with amendments)
- Wildlife & Countryside Act 1981 (Amended 1985 and 1991)
- Town & Country Planning Act 1990
- Countryside and Rights of Way Act 2000
- Protection of Badgers Act 1992
- Conservation of Habitats and Species Regulations 2010 SI No. 490
- The Control of Asbestos Regulations 2012
- Clean Neighbourhoods and Environment Act 2005
- The Highly Flammable Liquids and Liquefied Petroleum Gases Regulations 1972
- Hazardous Waste (England & Wales) (Amendment) Regulations 2016.
- The Environmental Permitting (England and Wales) Regulations 2007 (with amendments)
- The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 (with amendments)
- Environmental Protection Act 1990 Part IX - General (with amendments)
- Environmental Protection Act Part VIII - Miscellaneous (with amendments)
- Environmental Protection Act 1990 Part VII - Nature Conservation in Great Britain and Countryside Matters in Wales (with amendments)
- Environmental Protection Act 1990 Part VI - Genetically Modified Organisms (with amendments)
- Environmental Protection Act 1990 Part III - Statutory Nuisances and Clean Air (with amendments)
- Environmental Protection Act 1990 Part IIA - Contaminated Land (with amendments)

- Environmental Protection Act 1990 Part I - Integrated Pollution Control and Air Pollution Control by Local Authorities
- ISO 14001 Environmental Management
- Regulation (EU) 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants (with amendments)
- The Control of Major Accident Hazards (Amendment) Regulations 2015 (COMAH)
- Merchant Shipping (Dangerous Goods and Marine Pollutants) Regulations 1997
- Guidance Note on HCDG
- Guidance Note on fire extinguishers
- Carriage of dangerous goods and Use of Transportable Pressure Equipment(Amendment) (EU Exit) Regulations 2020
- Dangerous Substances (Notification and Marking of Sites) Regulations 1990 (NAMOS)
- Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR)
- Control of Substances Hazardous to Health Regulations 2002 (COSHH)
- Classification, Labelling and Packaging of Chemicals Regulations 2015 (CLP)
- The Health Protection (Coronavirus, Restrictions) (No. 2) (England) Regulations 2020
- The Working Time (Coronavirus) (Amendment) Regulations 2020
- The Health Protection (Coronavirus, Public Health Information for Passengers Travelling to England) Regulations 2020
- Health Protection (Coronavirus, Wearing of Face Coverings on Public Transport) (England) Regulations 2020
- Health Protection (Coronavirus, Restrictions) (England) (Amendment) Regulations 2020
- Public Health (Control of Disease) Act 1984
- Coronavirus Act 2020
- Control of Lead at Work Regulations 2002
- L8 Legionnaires' Disease Approved Code of Practice
- Pressure Systems Safety Regulations 2000 (PSSR)
- Workplace (Health, Safety and Welfare) Regulations 1992
- Restriction of Certain Hazardous Substances in electrical and Electronic Equipment Regulations 2012 (RoHS)
- Personal Protective Equipment at Work Regulations 1992 (PPE)
- Explosives Regulations 2014
- Regulatory Reform (Fire Safety) Order 2005
- Acetylene Safety (England and Wales and Scotland) Regulations 2014 (ASR)
- The Energy Efficiency (Private Rented Property) Regulations 2015 (with amendments)
- Building regulations - part L
- The Gas Safety (Installation and Use) (Amendment) Regulations 2018
- Climate Change Act 2008 (with amendments)
- The Heat Network (Metering and Billing) Regulations 2014 (with amendments)
- Energy Efficiency Directive (2012)
- Energy Saving Opportunity Scheme (ESOS Regulations 2014)
- The Energy Performance of Buildings (England and Wales) (Amendment) Regulations 2018 | Energy and Resource Use
- The Climate Change Levy (General) Regulations 2001 (with amendments)
- The Energy Performance of Buildings (England and Wales) (Amendment) Regulations 2018 | Employment
- Modern Slavery Act 2015
- H2 Pollution Incident Response Planning (using multiple pieces of legislation previously listed)
- H1 The Regulatory Reform (Fire Safety) Order 2005
- Water Resources Act 1991 (with amendments)
- Water Industry Act 1991 (with amendments)
- The 'Water Supply (Water Fittings) Regulations 1999' (with amendments)
- Control of Pollution (Oil Storage) (England) Regulations 2001 SI 2954
- Companies Act 2006 (with amendments)
- Data Protection Act 2018 / GDPR Regulations (with amendments)
- London Ultra Low Emission Zone (ULEZ)
- Greater London Low Emission Zone Charging Order 2006 (LEZ)
- Ozone-Depleting Substances Regulations 2015
- The Fluorinated Greenhouse Gases Regulations 2018

STEP 3: IDENTIFY AND MAP VOLUNTARY COMMITMENTS

Voluntary commitments include a range of obligations that are not legally required, but which a company has chosen to adopt and publicly commit to. These may include, for example:

- Industry guidance and codes of practice that set out agreed ways of working.
- Sector specific commitments, such as the Better Building Partnership Climate Commitment.
- Obligations that have been imposed on, or agreed by, a company in relation to, for example, planning conditions associated with a new development.
- Individual commitments that a company or property has signed up to with a local community.

There are a number of sources of voluntary environmental commitments, including, for example:

- Internal subject matter experts, such as ESG and HSE specialists, legal or architectural professionals, regulatory affairs departments.
- Industry organisation, such as the Better Building Partnership, the UK Green Building Council and the Royal Institute of Chartered Surveyors.
- Local property and facilities management teams with knowledge and records of local agreements.

A property manager should co-ordinate the process of mapping voluntary commitments against business activities to determine relevance and understand the associated compliance requirements. This process will evolve over time, so that the list of regulatory requirements and codes of practice becomes more refined and comprehensive.

STEP 4: IDENTIFY AND MAP STAKEHOLDER EXPECTATIONS

There are a range of interested parties, or stakeholders, whose environmental expectations matter due to their influence on either an asset manager or property. It is important to identify these expectations, and, where necessary, include these within the compliance register.

There are a wide range of stakeholders whose expectations may be important to an asset manager, portfolio or property. These include, for example, occupiers, employees, local communities, investors, local authorities and building users.

Prioritising stakeholders often involves a focus group ranking stakeholders' importance in relation to their 'interest in' and 'influence on' an organisation. For those stakeholders who rank as 'high' importance, further insight into potential environmental expectations on the organisation should be undertaken. This may be in the form of desk-based research or direct engagement.

Stakeholder expectations that may be of sufficient importance to include in a compliance obligation register may include, for example:

- Local community expectations on noise outside of normal business hours
- The management of litter in the areas surrounding a take-away restaurant.
- The maintenance of pathways surrounding an office building, for example.

A property manager should co-ordinate the process of mapping stakeholder expectations against business activities to determine relevance and understand the associated obligation. This process will evolve over time, so that the list of regulatory requirements and codes of practice becomes more refined and comprehensive.

STEP 5: DEVELOP AND MAINTAIN AN ENVIRONMENTAL COMPLIANCE REGISTER

In collaboration with a facilities manager, a property manager should design and populate a compliance register with the regulatory, voluntary and stakeholder obligations.

The register should be designed in the form of a simple table, with a list of obligations categorised by source, and a brief one- or two-line summary of the way in which the obligation applies to the organisation and the associated requirement.

Under the co-ordination of a property manager, the obligations register should be formally reviewed on an annual basis. This should involve presenting the register to a senior governance group for awareness and, where necessary, endorsement.

The register should be maintained on an ongoing basis and updated to reflect new obligations as and when they emerge.

ENVIRONMENTAL ASPECTS AND IMPACTS

HOW TO...

Usually, the responsibility for undertaking an aspect and impact assessment will be by an asset manager, in alignment to a wider corporate risk framework. The process of undertaking the assessment is often co-ordinated by a property manager, with input from a facilities manager where required.

Undertaking an environmental aspect and impact assessment generally considers the following steps:

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STEP 1: DESIGN AN ENVIRONMENTAL ASPECT AND IMPACT TEMPLATE

It is important that a set template is used to capture the output from an aspect and impact assessment. The template is also helpful in facilitating discussion as the process moves through its various stages.

While templates vary, it is important that the following information in included in the template:

- Activity.
- Aspect.
- Impact.
- Condition.
- Drivers.
- Level of control.
- Significance (Uncontrolled).
- Risk control.
- Significance (Controlled).

There are a wider range of environmental aspect and impact assessment templates available on-line. An example is provided below:

Sample aspect and impact template

Company									Doc. Title/ Reference:									
Area/ Location:									Date of Issue:									
Reference No.:									Revision No.:									
Code	Activities	Environmental Aspects	Environmental Impact	Condition			Driver(s)	Control or Influence	Significance			Uncontrolled Risk Score			Operational Controls	Controlled Risk Score		
				Normal	Abnormal	Emergency			Legal	Cost	Reputation	Likelihood	Consequence	Total		Likelihood	Consequency	Total
1.00																		
2.00																		
3.00																		

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STEP 2: SCOPE ACTIVITIES AND REVIEW ASPECTS AND IMPACTS

Embarking on an environmental aspect and impact assessment involves determining the organisation scope of the assessment. For real estate, for example, this may be determined as:

- Including the activities that take place within the site boundary.
- Selecting a wider boundary, including transport to and from the building.

A useful step in initiating the aspect and impact process is to convene a working group of individuals who can represent the different departments responsible for managing the property. This may include, for example, facilities, human resources, procurement, security and cleaning.

Through facilitated discussion, the working group should review the range of activities undertaken at the property and consider the way in which these activities interact with the environment, and what the resulting environmental impact is likely to be.

It is unlikely that a definitive list of activities, aspects and impacts will be established through a single discussion. This list will evolve over time as working group participants consider the process, and the characteristics and nature of the activities they are responsible. This information can be captured in 'Activities' Environmental Aspects' and 'Environmental Impacts' columns of the sample aspect and impact template.

There are various methods that can be adopted to support the facilitated discussion. One of these methods is the source-pathway-receptor model. This approach assists an organisation in determining hazards relevant to its activities, services and products and how these hazards can interact with and impact on the environment.

Activity, Service or Product **Hazard**	**Filling diesel storage tanks**
Source / Aspect **Origin of the hazard**	**Diesel spill or leak during process of filling tanks**
Pathway **Medium through which the hazard can travel**	**Surface water drain**
Receptor / Impact **Who or what can be affected by the hazard**	**Contamination of controlled waters**

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STEP 3: UNDERSTAND THE CONTEXT OF EACH ASPECT AND IMPACT

To support the delivery of useful information, some further information about each aspect and impact is necessary. This information falls into the following sections

- Condition: Relating to whether the activity takes place in normal, abnormal or emergency situations.
  - Normal: For example, during normal operations of the property.
  - Abnormal: For example, during a planned refit.
  - Emergency: For example, in the event of a spillage.

- Driver: The reason why the environmental impact is important.
  - Legal: Noting the legal or regulatory requirement associated with the aspect and impact
  - Cost: Noting the scale of financial consequence associated with the aspect and impact
  - Reputation: Noting the stakeholder interest associated with the aspect and impact

- Control: The level of control the property manager has over the aspect and impact
  - Control: The property manager has direct control
  - Influence: The activity is implemented or contracted out to a third party

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STEP 4: EVALUATE THE RISK

The significance risk associated with each aspect and impact should be evaluated by the individuals in the working group. At this stage, the evaluation focuses on 'uncontrolled risk', i.e. the risk associated without any mitigation in place.

The evaluation of risk should consider:

- Severity of the impact

- Likelihood of the impact occurring

There are various methods available to rate significance. It is useful if the method selected for the aspect and impact assessment aligns with the risk evaluation method adopted by the asset manager of the property for other areas of risk management.

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STEP 5: CONSIDER RISK CONTROLS AND THEIR EFFECT ON SIGNIFICANCE

Following the evaluation of uncontrolled risk, individuals in the working group should consider the mitigation that is in place for each aspect and impact.

Risk controls can be wide ranging, for example:

- Operational controls and procedures for undertaking specific tasks, for example segregating hazardous materials from general waste for disposal.

- Management controls, for example, the provision of training to procurement colleagues staff relating to the selection of low-environmental impact materials.

- Physical controls for example a bunding around an oil tank.

Following the identification of the controls accompanying each aspect and impact, the associated risk should be re-evaluated to consider the effectiveness of the mitigation.

The outcome of the re-evaluation is to ascertain whether the control method has reduced the risk to an acceptable level, i.e., a level that is no longer significant. Where the level of controlled risk remains significant, or where no control exists, the aspect and impact should be raised for attention of the property manager for action.

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STEP 6: SUBMIT SIGNIFICANT RISKS TO A RISK REGISTER

On completion of the assessment, aspects and impacts with an uncontrolled risk rating of 'significant'; should be added to a property or portfolio risk register. This should include information about the associated controls and the roles responsible for maintaining these.

The aspect and impact assessment should be reviewed on a regular basis, for example one to two years, and also where there is a significant change to the organisation or operation.

THE WIDER RISK CONTEXT

HOW TO...

Usually, the environmental risk framework adopted for a property or portfolio will be specified by an asset manager, in alignment to a wider corporate risk framework. The process of understanding and defining the wider risk context is often co-ordinated by a property manager, with input from a facilities manager where required.

Understanding and defining the wider risk context generally considers the following steps:

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STEP 1: UNDERSTAND A PESTLE ANALYSIS

The risks associated with a company's wider context is often undertaken through a PESTLE analysis. A PESTLE analysis involves consideration of the following six internal and external factors:

Political: Political related risks may relate to, for example:

- Trade restrictions impacting the movement and price of goods. For example, BREXIT limiting the availability and price of certain construction materials.
- Wider political unrest affecting production and supply. For example, regional instability affecting oil supply.

Economic: Economic related risks may relate to, for example:

- Upturns or downturns in the economic cycle resulting in prices for environmental commodities such as oil or insulation materials increasing or falling.
- Economic pressures influence budget availability, which may, in turn, provide leverage for resource efficiency activities, or may de-prioritise environmental activities which are not legally or financial driven.

Social: Social related risks may relate to, for example:

- Changes in social trends, education or consumer preferences. For example:
  - A reduction in office occupancy during the COVID-19 pandemic impacting utilities consumption.
  - An increase in the number of engineering graduates with an interest in renewable technologies enabling more affordable progress towards low carbon energy take-up.

Technological: Technology related risks may relate to, for example:

- A shift in technology supported by its increased availability through production increase and cost decrease. For example:
  - The reduction in cost associated with LED lighting systems.
  - The transition to elective vehicles.

Legal: Legal related risks may relate to, for example:

- Policy developments at the global, national or local level that may affect a company. For example:
  - Development of government policy positions, globally, relating to net-zero.
  - The emergence of increasingly stringent environmental criteria within building regulations.

Environmental: Environmental related risks may relate to, for example:

- Limitations in the natural environment's ability to assimilate pollution or accommodate demand for natural resources. For example:
  - Ozone depletion resulting in constraints on the use of ozone depleting gases.
  - Restrictions on the use of timber from non-sustainable certified sources.

The six variables of PESTLE analysis

Politics	• **Government type and policy** • **Funding, grants and initiatives**
Economy	• **Inflation and interest rates** • **Labour and energy costs**
Social	• **Population, education, media** • **Lifestyle, fasion, culture**
Technology	• **Emerging technologies, Web** • **Information & communication**
Legal	• **Regulations and standards** • **Employment law**
Environment	• **Weather, green & ethical issues** • **Pollution, waste, recycling**

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STEP 2: FACILITATE A HORIZON SCANNING WORKSHOP

The process to undertake a PESTLE analysis usually involves a facilitated 'horizon-scanning' workshop which can be used to consider the influence of an organisation's wider context.

Tips to consider when preparing a PESTLE workshop include:

1. Investigate previous PESTLE projects.
2. Establish who in your organisation has relevant experience and knowledge.
3. Decide who will facilitate the analysis.
4. Arrange the workshop – who will attend?
5. Decide whether to have one large, single group or to break into smaller groups or pairs.
6. Provide a template – and give examples to get people started.
7. Don't get bogged down in the detail – or the 'so what?'
8. Be comfortable that issues may fit into more than one heading.
9. Review the issues identified – and remove duplication.
10. Plan your risk rating method in advance - keep it simple, and consistent with the rating method used for rating environmental aspects and impacts.

A horizon-scanning workshop would normally involve individuals from a range of functions, who are able to provide an insight into future trends including, for example:

- Human resources.
- Finance.
- Information Technology.
- Operations.
- Risk.
- Health, Safety, Environment and E.S.G.

A horizon scanning workshop would typically involve participants:

- Contributing to a discussion to identify PESTLE issues.
- Considering the risk and opportunities associated with these issues.
- Proposing actions to control associated risks.

A PESTLE workshop should also include the rating of the risks identified by the participants. This rating should follow as established risk rating method.

Examples of the discussion flow in a horizon-scanning workshop include:

ECONOMIC

ISSUE	RISK AND OPPORTUNITIES	ACTION
Increase in long-term energy costs	Onsite energy efficiency and renewables / research and development in low-carbon products	Research renewables R&D low-carbon products

TECHNOLOGICAL

ISSUE	RISK AND OPPORTUNITIES	ACTION
Lack of internal investment in alternative technology and materials	Unable to design new low-carbon / lightweight products to meet environmental objectives	Research potential partnerships or alternative funding mechanisms

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STEP 3: ADD WIDER-CONTEXT OUTPUTS TO ENVIRONMENTAL RISK REGISTERS

The significant risks identified during the PESTLE workshop should be fed into the relevant environmental risk register.

Given the more strategic nature of risks associated with the wider context, the control of these risks is usually at the company or portfolio level.

The ongoing review of PESTLE outputs should be undertaken by individuals with risk responsibility. Outcomes should be considered for inclusion in the wider risk governance framework operated at a company or portfolio level.

ENVIRONMENTAL RISK CONTROL AND ASSURANCE

HOW TO...

Usually, the environmental risk framework adopted for a property or portfolio will be specified by an asset manager, in alignment to a wider corporate risk framework. The process of environmental risk control and assurance is often co-ordinated by a property manager, with input from a facilities manager where required.

Environmental risk control and assurance generally considers the following steps:

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STEP 1: ALLOCATE ENVIRONMENTAL RISK RESPONSIBILITIES

It is important that a senior individual is nominated to be accountable for environmental risk across a company. It is likely that environmental risks are combined with wider accountabilities for non-environmental risk.

The responsibilities for various risk management tasks should be allocated to individuals at the company, portfolio and property levels. These may include, for example:

- Risk identification and assessment.
- Maintaining risk registers.
- Developing risk controls.
- Assessment of risk control effectiveness.

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STEP 2: DEFINE COMPETENCE AND PROVIDE TRAINING

As accountabilities for managing environmental risk vary across a range of roles and seniority, it is important that appropriate training is provided to enable individuals undertaking these roles to undertake their responsibilities competently.

For example:

Senior leaders with overall accountability for environmental and non-environmental risk should have a robust understanding of the way in which environmental risks may affect the company strategy and how to interpret the outcomes from the assessment of risk controls.

This competency can be developed through a combination of formal briefings from qualified risk professionals, for example, and through the provision of concise briefing material.

Risk assessment specialists should have in depth knowledge of risk assessment and auditing.

Individuals undertaking local aspects and impacts assessment should be familiar with the process and associated documentation.

The competencies for risk assessment specialists and practitioners can be developed by undertaking accredited training courses and attaining qualifications, for example, and through in-house classroom style courses or e-learning.

Senior leaders

Risk assessment specialists

Individuals undertaking impacts assessment

Develop competencies for risk assessment specialists and practitioners through accredited training courses and attaining qualifications

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STEP 3: DEVELOP RISK CONTROLS

Risk controls are often developed at managerial and operational levels.

- Managerial controls usually involve strategic interventions to control risks rating as significant. For example, considering the recruitment of suitably qualified resource to manage compliance arrangements environmental risk management, or commissioning climate resilience studies in relation to the risk of climate change.
- Operational controls are developed so that operations and activities can be undertaken in a way that mitigates associated risks. For example, procedures for handling, storage and disposal of hazardous waste or the use of hazardous cleaning chemicals.

  Operational controls are usually prepared:

  - In the form of work instructions, procedures or manuals. They are best prepared in accordance with an existing document control procedure.
  - With input from individuals undertaking the related operational activities, along with suitably experienced individuals with responsibly for risk. The operational control is developed in a way which enables practical and efficient operations while mitigating the associated risk to a level which is acceptable.

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STEP 4: ASSESS THE EFFECTIVENESS OF RISK CONTROLS

The assessment of the effectiveness of risk controls can be undertaken in various ways. For example, audit programmes are:

- Often developed to check that operational controls are being followed.
- Usually undertaken by a suitably trained auditor.
- Often build on other available data which may indicate where risk mitigation is not as effective as intended.

Environmental occurrence trends are also used to help assess the effectiveness of environmental controls. Environmental occurrences indicate where an environmental control has not been effective in controlling risk. Through investigations into the root-cause of the occurrence, remedial action can be undertaken to improve the control, or its deployment.

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STEP 5: PROVIDE GOVERNANCE OVER ENVIRONMENTAL RISK

It is important that the management of environmental risk is undertaken within an appropriate governance framework.

The governance of environmental risk most often includes a series of meetings throughout an organisational hierarchy to review identified risks, their significance and the associated controls. It is important to that the effectiveness of environmental risk control is also reviewed within these frameworks, including:

- The outcome of audit reports.
- Trend information.
- Findings and recommendations from occurrence investigations.

By considering both environmental and non-environmental risks, risk governance frameworks usually aggregate the assurance of risk for the local property level through to portfolio and company levels.

Likewise, risks identified at the corporate level may be cascaded to the most local level of managerial control.

AN ASSET REGISTER

HOW TO...

Asset registers require input from asset, property, and facility managers.

- In the absence of an asset register, an asset manager would establish the foundations of a new one and rely on the property and facility managers to provide further details based on site assessments.
- Where an asset register already exists, updating the document often sits with the property manager. However, asset and property managers should be active participants in ensuring that the register is being updated as required.
- Transitioning an asset register into any form of digitised format should have oversight from each manager. However, this role would be best suited to a property manager, as the process may involve liaising with asset team, facility teams, innovation partners, and other buildings in a property portfolio.

The common approach to creating asset registers in the UK is to follow BS ISO 55000 and PAS 1192-3 standards and to use the CIBSE DE5T template. It is important to expand on the CIBSE template to include information pertinent to managing and creating sustainable buildings.

The DE5T template is made of four sections: facility, space, system, and component. These are described below:

AM PM FM

1: CONSIDER THE FACILITY

The DE5T template includes 28 rows for establishing a complete view of the facility. Of most interest to sustainability are:

Facility Condition (DE5T, 1.12)

This is free text field response, which should include references to professional surveys undertaken in the property's lifecycle. Condition of a facility is important to understand for energy and environmental management purposes as it can inform business cases for improvements. For example, status of roof integrity is critical in determining viability of installing solar panels.

KPIs (DE5T, 1.20)

This is described as 'a list of metrics that demonstrate performance of the asset'. Amongst those referenced by DE5T, performance gap metrics should be included, such as, for example:

- Intended EPC/DEC vs. actual EPC/DEC.
- Measures of air-tightness.
- Links to the systems section of this template to ensure correct operation of systems forms part of facility KPIs.

Sustainability (DE5T, 1.22)

Currently limited to 'sustainability measures achieved, for example, LEED Platinum', this section has capacity to reference several other energy and environmental features that are established at the facility level.

These include:

- Waste management processes (centralised weighing or collections).
- Proportion of LED vs. Non-LED lighting at facility level.
- References to systems of components installed that summarise facility information, for example, BMS, EMS, PMS.
- Specific energy or environmental compliance requirements that the facility would need to interact with, for example, feed-in tariffs, RHI scheme, Heat Network Regulations, UK ETS, Medium Combustion Plant Directive.

Summer and Winter Design Conditions (DE5T, 1.27)

The format of this section is for temperature and relative humidity (oC/%RH). However, as an asset register moves from design into operation, this section should become a repository of updated statistics that indicate how across operational years, the design conditions are being met or missed.

This provides a useful feedback loop for future facility designs in the same area or with the same specifications.

TOPIC	CIBSE DE5T TEMPLATE
Facility Condition	1.12
KPIs	1.20
Sustainability	1.22
Summer and Winter Design Conditions	1.27

AM PM FM

2: CONSIDER SPACE

Extending the detail in DE5T 2.05, clarification of ownership is important, as there are often shared or offset liabilities between the landlord and tenants for energy and environmental management.

For example, compliance with F-gas Regulations (2015) sits with the asset manager until and after an occupier demise area is let. It is important that this is clearly communicated to occupiers to ensure they can fulfil maintenance requirements.

3: CONSIDER SYSTEMS

DE5T provides twelve rows of important information which comprises the system asset register of the CIBSE standard template.

Although this level of asset register is uncommon, sustainability should be integrated to ensure systems in a facility can be managed well or accurately reported where compliance or certifications require it.

While stating the primary component (DE5T 3.08) within a system is paramount, an improved management approach would involve including other components, such as their date of installation, age and serial numbers.

This would provide an overview for a system manager to ensure scheduled maintenance or repairs are in line with requirements, warranties, or expected lifecycles.

For example, if operating a ground source heating and cooling system, it would be beneficial to have a system register that lists not only the system template information, but when each pump, meter, or other components was installed to ensure there is resilience in the site's understanding of the system.

AUTOMATING PROPERTY LEVEL DATA

HOW TO...

Usually, the decision to invest in automated property level data is taken by an asset manager. The process of collecting and using property data is co-ordinated by a property manager within input from a range of property stakeholders.

The following elements should form part of considerations regarding the development of property-level data:

AM PM FM

STEP 1: REVIEW THE ROLE OF PROPERTY MANAGERS IN FACILITATING AUTOMATED DATA

There are a range of important roles that a property manager can undertake in relation to automated property level data. These include, for example:

- Holder. A property manager can be the holder of the property level data, especially the data around the management practices.
- Identifier. A property manager can identify the data flows that are for automisation at the property or where data gaps are present.
- Facilitator. A property manager can facilitate the flow of data, ensuring the necessary stakeholders are engaged and the potential for optimisation and improvement is met.
- Implementor. A property manager can implement the actions that have come from the automisation of data, such as HVAC improvements, maintenance and monitoring regimes.
- Reviewer. A property manager can review the data flows, comparing and contrasting against trends to understand performance and identify areas for future consideration.

AM PM FM

STEP 2: CONSIDER THE APPLICABILITY OF DIFFERENT AUTOMATED DATA TYPES

It is important that asset, property and facilities managers invest time to review the different types of automated data that could be adopted for a property. There are a range of property data types that ca benefit from automation, for example:

Sustainability element	Example data types
Utilities Data.	Energy and water utility supply data, including: • Manual and automatic meter readings. • Billing data. • Tenant on charges.
Environmental Management Systems.	Outcomes and findings from energy, environmental and sustainability audits, including: • Action trackers. • Management action plans. • Sustainable travel plans. • Building user guides. • Health, safety and environmental procedures.

Waste.	Key waste documentation and arrangements, including: • Waste Transfer Notes. • Environmental Permits. • Waste management procedures.
Building Management System (BIM)	Critical BIM documentation, including: • Control strategy. • Temperature set points. • Run times. • Faults.
Maintenance and reporting.	A range of information relating to asset maintenance and reporting faults or incidents, including: • Operational & Maintenance Manuals. • Building Logbook. • Planned Preventative Maintenance Schedules. • Life Cycle Assessments. • Cleaning regimes. • Maintenance procedures and logs. • Contractor guides.
Internal Environmental Quality.	Information relating to emissions and pollutants in the internal environment including: • CO_2. • CO. • NO. • VOC. • Temperature. • Humidity. • PM2.5.
Leases	Contractual requirements, services provisions and performance thresholds, including: • Leasing arrangements. • Clauses. • Letters of Authority.
Acquisition, development and design documentation	Documentation developed for the acquisition, development or refurbishment of the asset, including: • Design briefs. • Design performance standards. • License to Alter.
Building Control & Planning	Documentation used to confirm compliance with national and local Building Regulations and Planning Policy, including: • Energy Performance Certificates. • Display Energy Certificates.
Environmental reporting & certification	Documentation needed for assessments, including: • GRESB. • BREEAM. • WELL. • NABERS.

AM PM FM

STEP 3: UNDERSTAND THE PROCESS FLOW FOR AUTOMATING PROPERTY DATA

It is important that asset, property and facilities managers invest time to understand the process flow for automating property data.

This relates to taking an holistic and strategic approach to the use of data in managing the sustainability performance of a building, and considering how data is, and could potentially become, integrated into the property management operations and supply chain.

The process for automate data within a property, either for the first time or when reviewing existing practices, should consider the following elements:

Identify.
- What data points are available at the property?

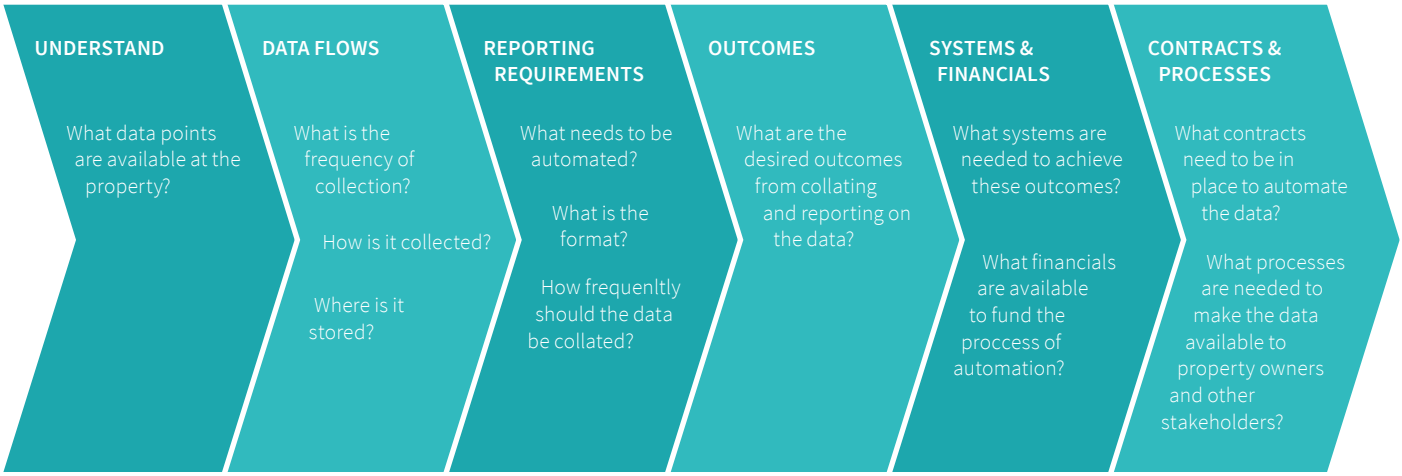
Data flows.
- What is the frequency of data collection?
- How is data collected?
- Where is data stored?

Reporting requirements.
- What data needs to be automated?
- What is the data format?
- How frequently should the data be collated?

Outcomes.
- What are the desired outcomes from collating and reporting on the data?

Systems and financials.
- What systems are needed to achieve these outcomes?
- What financials are available to fund the process of data automation?

Contracts and processes.
- What contracts need to be in place to automate the data?
- What processes are needed to make the data available to property owners and other stakeholders?



SUSTAINABILITY REPORTING INITIATIVES

HOW TO...

A Property manager should have a clear understanding of the requirements of each reporting scheme and what they represent as well as being able to facilitate activities that improve performance.

Usually, the decision to participate in a sustainability reporting initiative instructed by the asset manager and the process of installing and managing advanced meters is coordinated by the property manager with input from the facilities manager.

AM PM FM

1: MANDATORY GREENHOUSE GAS REPORTING

Mandatory Greenhouse Gas Reporting (MGHR) (known as GHG reporting) was introduced in 2013 to allow investors to incorporate emissions, energy and other resource efficiencies into their analyses and provide greater disclosure on quotable organisations environmental performance.

MGHR requires that all UK quoted companies report on their greenhouse gas emissions in the Directors report section of the company annual report. GHG reporting affects all UK incorporated companies listed on the main market of:

- The London Stock Exchange (FTSE).
- European Economic Area Market.
- New York Stock Exchange (NYSE).
- American/Canadian Stock Exchange (NASDAQ).

The yearly reporting of GHG emissions requires an organisation to have accountable data management systems for energy use and other sources of emissions across its property portfolio.

It is important that energy use data is reliably tracked because:

- It helps to judge performance of individual properties and to assess where to take action.
- The GHG emissions will be reported within the companies' annual reports and accounts and will therefore be very visible to investors and other stakeholders.

The use of an intensity ratio, such as per unit of turnover, should allow comparison of a company's performance. The reporting is expected to drive investment in energy efficiency.

Property managers will have a requirement to support asset managers and occupiers in relation to their GHG emission reporting requirements. This may involve collecting and recoding relevant data for the properties they manage on their behalf.

2: STREAMLINED ENERGY AND CARBON REPORTING

The Companies (Directors' Report) and Limited Liability Partnerships (Energy and Carbon Report) Regulations 2018 implement the government's policy on Streamlined Energy and Carbon Reporting (SECR).

SECR was introduced as the Carbon Reduction Commitment (CRC) Energy Efficiency Scheme came to an end. The Regulations build on existing obligations, such as mandatory greenhouse gas (GHG) reporting and the Energy Saving Opportunity Scheme (ESOS), for example.

Organisations in scope of SECR should report all energy use and associated GHG emissions that they are responsible for.

In the case of asset manager-occupier arrangements, the party responsible for the consumption of energy should take the responsibility for reporting of it under this legislation. This should include:

- consumption of energy in rented serviced areaswhere a tenant would report on energy consumption.
- despite not being directly responsible for its purchase.
- if information on energy consumption is available through sub-meters,for example.
- or provide estimates where information is not available..

In turn, asset managers should report on energy purchased for areas of a property they are obligated to manage either directly or via a Property Manager.

SECR extends the reporting requirements for quoted companies and mandates new annual disclosures for large unquoted and limited liability partnerships (LLPs).

The reporting obligations differ between quoted companies and unquoted companies or LLPs summarized are summarized in the table below:

Differing SECR reporting obligations

Quoted companies	Large unquoted companies and LLPs
Annual GHG emissions from activities for which the company is responsible including combustion of fuel and operation of any facility; and the annual emissions from the purchase of electricity, heat, steam or cooling by the company for its own use.	UK energy use (as a minimum gas, electricity and transport, including UK offshore area).
Underlying global energy use.	Associated greenhouse gas emissions.
Previous year's figures for energy use and GHG.	Previous year's figures for energy use and GHG.
At least one intensity ratio.	At least one intensity ratio.
Energy efficiency action taken.	Energy efficiency action taken.
Methodology used.	Methodology used.

3: GLOBAL REAL ESTATE SUSTAINABLE BENCHMARK

Global Real Estate Sustainable Benchmark (GRESB) is an international membership organisation for institutional real estate investors and investment managers. GRESB provides a benchmarking framework for listed and non-listed companies to annually assess the sustainability performance of their property portfolios.

An increasing number of investors are requiring property companies and fund managers to take part in GRESB to demonstrate their sustainability performance.

The GRESB Survey captures almost 50 data points measuring sustainability, including environmental and social factors. The data collected includes environmental performance indicators, such as energy consumption, GHG emissions, water consumption and waste, as well as management processes and practices, such as policies, risk assessments and social indicators, for example, occupier engagement.

The survey is undertaken on an annual basis and all buildings which have been part of the portfolio at some point that year must be reported on.

4: CARBON DISCLOSURE PROJECT

The Carbon Disclosure Project (CDP) is a voluntary global carbon reporting system through which thousands of organisations, including such as banks, pension funds, asset managers, insurance companies and foundations, report their climate, water and forest related risks and performance.

There are specific programmes for which data can be supplied including:

- Investor CDP: A request for companies' greenhouse gas emissions, water usage and strategies for managing climate change and water risks.
- CDP Supply Chain: An annual process that results in consistent information from suppliers on climate and water-related strategy and action.
- CDP Water Program: A questionnaire for the world's largest companies from water-intensive industry sectors or those which may be exposed to water-related risks in their supply chain.
- CDP Cities: Voluntary climate change reporting framework open to any city government, regardless of their size or location.

As participation in the CDP involves considerable data gathering activities, having established data management arrangements is advantageous.

5: EUROPEAN ASSOCIATION FOR INVESTORS IN NON-LISTED REAL ESTATE VEHICLES

The European Association for Investors in Non-Listed Real Estate Vehicles (INREV) have developed a set of specific reporting guidelines aimed at encouraging meaningful dialogue on sustainability between investors and fund managers.

The guidelines are designed to enable the provision of a structured and clear report that:

- Outlines the ESG Strategy at the manager and vehicle level.
- Explain the annual objectives, translated from the strategy, and how they are implemented.
- Provide concrete action plans at the asset level accompanied by an annual report on progress of these plans.
- Report against specific environmental key performance indicators.

Property Managers may be responsible for preparing and maintaining, or contributing to, the production of asset sustainability plans, reporting key environmental data in line with the INREV guidelines, and evidencing the appropriate management of legislative and environmental risks.

6: EUROPEAN PUBLIC REAL ESTATE SUSTAINABLE BEST PRACTICES RECOMMENDATIONS

The European Public Real Estate (EPRA) Sustainable Best Practices Recommendations (sBPR) covers companies' investment activities, its own occupied property, and corporate-level policies and practices. sBPR excludes real estate development activities.

Data must be provided against a range of sustainability performance measures with those relating to investment activities fall under one of two broad categories:

- Environmental Sustainability Performance Measures (covering utilities, waste, and certification).
- Social Performance Measures (covering H&S, community engagement, and social impact assessment).

7: GLOBAL REPORTING INITIATIVE CONSTRUCTION AND REAL-ESTATE SECTOR SUPPLEMENT

The Global Reporting Initiative (GRI) has pioneered and developed a comprehensive Sustainability Reporting Framework that is widely used around the world. The GRI framework enables organisations to measure and report their economic, environmental, social and governance performance in a consistent manner.

It is the most internationally recognised sustainability reporting standard, and many property sector companies choose to report in line with it. GRI has produced a Construction and Real-Estate Sector Supplement (CRESS) which contains guidance on reporting specific to this sector.

CRESS covers a wide range of issues and property managers will need to be aware of common environmental performance indicators used for sustainability reporting and include:

- Energy: Organisational direct and indirect energy use, for example, the amount of energy produced on-site through the burning of gas in kWh's.
- Water: Water withdrawal or percentage and total volume of water recycled or reused, for example, metered utility data or rainwater collected directly and stored on site.
- Biodiversity: Potential impact on land that contains or is adjacent to legally protected areas or areas of high biodiversity value, for example, biological survey results of protected species or habitats found in amenity spaces.
- Emissions, effluents and waste: Direct and indirect greenhouse gas emissions, ozone depleting substances by type and weight and the total weight of waste by type and disposal method, for example, total weight in tonnes of hazardous waste disposed of in landfill.

The CRESS reporting measures are based around an organisation's level of control or influence over its impacts, and as a result, reporting boundaries will vary for each organisation, and also depending on how their building is occupied and managed, for example, multi-let, single let etc.

AM PM FM

8: REAL ESTATE ENVIRONMENTAL BENCHMARK

The Real Estate Environmental Benchmark (REEB) is a publicly available benchmark based on operational environmental performance for commercial properties in the UK.

REEB is one of the only benchmarks based on the performance of buildings 'in-use' and is increasingly becoming the industry standard used by investors, fund managers and property owners to compare the performance of commercial properties across the UK.

The benchmark currently assesses performance against energy and water across a ranges of asset types:

- Office (Non-Air Conditioned).
- Office (Air Conditioned).
- Enclosed Shopping Centre (Non-Air Conditioned).
- Enclosed Shopping Centre (Air Conditioned).
- Unenclosed Shopping Centre/Shopping Village.
- Retail, Leisure and Industrial Park.
- Car Park (Multi Storey).
- Car Park (Open Air).

Property managers must make the required data available for submission to the Better Building Partnership on at least an annual basis for electricity, gas, and water along with up-to-date building characteristics to ensure the intensity metrics developed via the benchmarking process are accurate.

Through the Managing Agents Partnership there has been agreement to expand the data collection beyond Better Building Partnership member portfolios, with an aim at improving the accuracy of the benchmark as a reflection of operational asset performance. Waste data will also be reviewed following the development of the Standardised Waste Reporting Framework aimed at improving this dataset.

ANNUAL ASSET AND PROPERTY MANAGEMENT CYCLE

HOW TO...

Usually, the decision to adopt advanced metering is instructed by the asset manager and the process of installing and managing advanced meters is coordinated by the property manager with input from the facilities manager.

Advanced metering follows four general steps.

AM PM

STEP 1: ACQUISITION OF A PROPERTY OR PORTFOLIO

The Better Building Partnership have produced an Acquisition Sustainability Toolkit which provides a useful reference covering areas to consider on acquisition.

If followed, the principles in the toolkit would ensure all relevant data and information is available to the asset manager and property manager, providing an indication of current performance, and the status of any improvements either completed, underway, or planned/identified.

Provision should, if possible, be made during a handover period to query any received information and seek clarification where necessary to ensure as seamless a transition as possible.

Due Diligence processes that are undertaken as part of development should be requested to enable a review of actions raised that relate to the operational phase of the property lifecycle.

Further, engagement with clients early in the development or refurbishment of assets should be encouraged. This will help to ensure that input into their specification enables effective commissioning and handover.

Property Managers should endeavour to maintain records during their tenure that enable a smooth transition on disposal of the asset to another property manager or buyer.

AM PM

STEP 2: DESIGN AND PLANNING DURING DEVELOPMENT AND CONSTRUCTION

A key consideration in building design, or during refurbishment, must now be on maximising energy efficiency in order to support wider objectives aimed at achieving net zero carbon.

As around two thirds of the energy consumed by an average property is associated with its operational phase, there is an imperative for asset managers and property managers to consider energy during design.

It is important that during design, consideration is also given to building user experience, for example, through prioritising health and wellbeing. This consideration has increased in prominence during the pandemic, both as a means of encouraging people back to the workplace, and also as a response to rising awareness about the built environment's potential impact on public health.

PM FM

STEP 3: OPERATION AND MANAGEMENT

While decisions made during the acquisition planning and development phases have a considerable influence on a property's future sustainability performance, the operational phase remains critical. For example, as the majority of property that will be standing in 2050 already exists, building design alone will not deliver on zero carbon.

The principal concern to a Property Manager relates to the operational phase. Appropriate steps must be taken to consider issues including, for example:

1) Compliance against all applicable legal requirements.

2) Collation of relevant data sets enabling reporting on performance against an agreed range of metrics.

3) Employee engagement activity that ensures building operators understand what is required of them to run a building with a view to improving sustainability performance.

4) Occupier engagement to ensure performance within demised space is understood.

5) Supplier engagement to ensure activities carried out on behalf of the property owner are conducted to improve sustainability performance.

6) Recommendations are made to property owners to drive performance improvement beyond those that might be delivered within agreed budgets.

Steps to consider during the operational phase

COMPLIANCE

Against all applicable legal requirements

COLLATE RELEVANT DATA

Enable reporting on performance

EMPLOYEE ENGAGEMENT ACTIVITY

How can the building operator improve sustainability performance?

OCCUPIER ENGAGEMENT

Is performance within demised space understood?

SUPPLIER ENGAGEMENT ACTIVITY

Ensure activities carried out are conducted to improve sustainability performance.

RECOMMEND

Drive performance improvement beyond those that might be delivered within agreed budgets.

STEP 4: MONITORING AND MAINTENANCE STRATEGIES

The differences between the three key monitoring and maintenance strategies are outlined below:

Preventive maintenance

- **Definition**: Completion of maintenance, measurements, tests, parts and replacement to prevent faults from occurring.
- **Purpose**: Performed while the equipment is still working so that it does not break down unexpectedly.
- **Limitation**: Closer to reactive based maintenance and focused around keeping the equipment operational.
- **Cost impact**: Low

Predictive maintenance

- **Definition**: Adoption of techniques that are designed to help determine the condition of installed equipment.
- **Purpose**: Monitors the performance and condition of equipment during normal operation to reduce the likelihood of failures.
- **Limitation**: Predictive monitoring and alone does not provide continuous based monitoring.
- **Cost impact**: Medium

Condition based maintenance

- **Definition**: Continuous maintenance strategy that monitors the actual condition of an asset to decide what maintenance needs to be done.
- **Purpose**: A maintenance strategy that dictates that maintenance should only be performed when certain indicators show signs of decreasing performance or upcoming failure.
- **Limitation**: Requires focus at initialisation and the continued engagement of a wider team of appointed onsite and offsite specialists, meaning that robust and well-thought-out strategies are needed to ensure the objectives are met. However, upfront costs are likely to reduce over the time of the operation of the equipment.
- **Cost impact**: high

Moving towards condition based monitoring should involve consideration of the following elements:

- Define and establish the definitions and purpose for conditional based monitoring.
- Educate and inform all stakeholders to obtain buy in.
- Evaluate the anticipated resources and assigning personnel roles and responsibilities.

- Complete an equipment inventory.
- Evaluate the existing maintenance strategy.
- Analyse the history and current condition of the installed equipment to identify any equipment defects, losses, potential regulation fines and workplace safety.
- Analyse the operational patterns of the equipment, its downtime, set points etc.
- Review documentation to understand the level of knowledge for installed equipment.
- Select the equipment for the initial implementation.
- Develop the systems and conditions for the monitoring of these systems and/or components.
- Define the critical factors, establish the maintenance frequency and schedule.
- Organise the program and integrate it into the scheduling system.
- Conduct training for all necessary stakeholders.
- Create a computerised maintenance management system (CMMS) to track the condition based maintenance strategy.

RATINGS AND CERTIFICATIONS

HOW TO...

Ratings and certifications involve a number of considerations. Usually, the decision to pursue a particular scheme is instructed by the asset manager and the process is coordinated by the property manager with input from the facilities manager.

Considering rating and certification schemes involves the following steps:

AM PM

STEP 1: IDENTIFY RATING AND CERTIFICATION SCHEMES THAT ARE POTENTIALLY SUITABLE FOR A PROPERTY

Determine the stage of the property life cycle, and check that a selected rating or certification scheme is suitable for the application. For example, i.e. Is the project a new built, refurbishment, or fully occupied /in-use property?

Consider the wider goals for the project. For example, is the goal to achieve recognised performance across the wider sustainability agenda, or is it specific to enhancing occupiers' health and well-being?

AM PM

STEP 2: ENGAGE A COMPETENT INDIVIDUAL TO UNDERTAKE PRE-ASSESSMENT AND HELP PREPARE FOR ASSESSMENT

Understand the scheme's evidence requirements and clarify responsibilities and arrangements for its provision. For example, how much time will be required by site or design teams to collate and prepare evidence to be submitted to the certification body?

PM FM

STEP 3: CONSIDER THE OVERALL COSTS AND RESOURCE COMMITMENT ASSOCIATED WITH THE PREFERRED SCHEME

Take account of the certifications costs that are associated with individual schemes. For example, is there available budget for guidance from a qualified assessor or competent person, and to accommodate assessment and registration costs?

PM FM

STEP 4: PREPARE FOR THE ASSESSMENT WITH PRE-ASSESSMENT CHECKS AND OUTCOME ESTIMATIONS

Estimate the likely rating outcome prior to undergoing a full certification through a pre-assessment exercise. For example, are mandatory credits accommodated, and is the predicted outcome in line with the target?

AM PM FM

STEP 5: REVIEW ASSESSMENT OUTCOME AND MAKE ARRANGEMENTS FOR THE ONGOING CERTIFICATION LIFECYCLE

Take note of the re-certification cycle associated with the scheme, and the associated cost implications. For example, are maintenance and recertification requirements incorporated within property management and occupier contracts?

A SELECTION RATINGS AND CERTIFICATIONS SCHEMES ARE DESCRIBED BELOW:

BREEAM

BREEAM is an assessment method administered by the Building Research Establishment which evaluates sustainability-related impacts for the built environment. Certifications are rated on levels from 'Outstanding' to 'Unclassified'.

Three BREEAM certifications are of particular relevance:

BREEAM New Construction: Relates to the design, construction and intended use of new commercial and non-commercial building developments.

BREEAM Domestic Refurbishment: Relates to the design and works of an existing buildings' refurbishment or fit-out, including new homes.

BREEAM In-use: Relates to the sustainability during the operation of an occupied building.

GRESB

GRESB is the Global Real Estate Benchmark for Real Estate GRESB. GRESB assessments are guided by what investors and the industry consider to be material issues in the sustainability performance of real asset investments.

Following assessment, GRESB participants receive comparative business intelligence on where they stand against their peers, insight into the actions they can take to improve their ESG performance and a communication platform to engage with investors.

SKA

SKA is an assessment method administered by the Royal Institute of Chartered Surveyors which evaluates the sustainability of building fit outs. Certifications are rated on 'Gold', 'Silver' and 'Bronze' levels.

SKA Design and Construction: Relates to the design, planning and delivery of commercial fit outs.

SKA Operation: Relates to the sustainability performance of an occupied area in against the designed sustainability criteria.

Fitwel

Fitwel is a scorecard system administered by the Centre for Active Design which evaluates built environmental impacts on occupier health and wellbeing. Certifications are rated on three-star levels.

Fitwel Design and Construction: Relates to the assessment pathway for new construction and major refurbishment projects and is valid for three years.

Fitwel Build: Relates to the post occupancy assessment pathway for existing and recently completed occupied buildings, valid for three years.

WELL

WELL is an assessment method administered by the International Well Buildings Institute which evaluates the health and wellbeing impacts of the built environment. Certifications are rated on 'Platinum', 'Gold', 'Silver' and 'Bronze' levels.

WELL Building Standard: Relates to the health and wellbeing elements of a building's policy, design and planning interventions, and the ongoing occupational arrangements.

WELL Building Core and Shell: Relates to the health and wellbeing elements of a building's base design and operation, includes all areas controlled by the building owner.

WELL Community: Relates to the health and wellbeing elements of inclusive and integrated communities, and high levels of social engagement.

WELL Health and Safety: Relates to the health and wellbeing elements of new and existing occupied buildings, focusing on polices, stakeholder engagement and emergency planning.

LEED

LEED is an assessment method administered by the U.S. Green Building Council to assess projects for green building strategies across several categories. Certifications are rated on 'Platinum', 'Gold', 'Silver' and 'Bronze' levels.

NABERS

The National Australian Built Environment Rating System (NABERS) is an Australian-devised initiative for assessing the operational environmental performance of commercial buildings. Certifications are rated on levels from one to six stars.

The rating certification is valid for one year. A one-star rating essentially indicates that a building is performing considerably below the expected average, but has made a public commitment to make progress. A six-star rating demonstrates market leading performance.

The NABERS rating system is preparing to launch in the UK, with the introduction of "design for performance" to allow building developers and designers incorporate a similar methodology, based on indicative performance during the design stage.

As of 2021, NABERS report certification has been awarded for 78% percent of Australia's office space with approximately seven million tonnes of CO2 emission saved.

AN ENERGY POLICY

HOW TO...

An Energy Policy is usually established at the company level. While the focus of an Energy Policy may vary between asset managers, property managers and facility managers, the process for developing and maintaining an Energy Policy can be applied consistently.

It is important that an Energy Policy is endorsed by a company's senior management, is documented, and is communicated to employees throughout a company and is available to stakeholders. The Energy Policy should be reviewed at least annually, and updated to reflect to update its suitability for the organisation.

Developing and maintaining an Energy Policy, you should include the following steps:

AM PM FM

STEP 1: DEVELOP SCOPE

An Energy Policy should clearly set out the scope of the organisation within which energy will be managed. The scope of an Energy Policy may be set at either the company, portfolio of individual property level and should describe the location and types of properties covered, as well as energy sources and significant utilization.

It is important to address the operational boundaries of energy use between individual occupiers, as well as reference to shared spaces.

AM PM FM

STEP 2: IDENTIFY LEGAL AND OTHER OBLIGATIONS

It is important that an Energy Policy includes a clear commitment to comply with applicable legal and other obligations relating to energy utilisation.

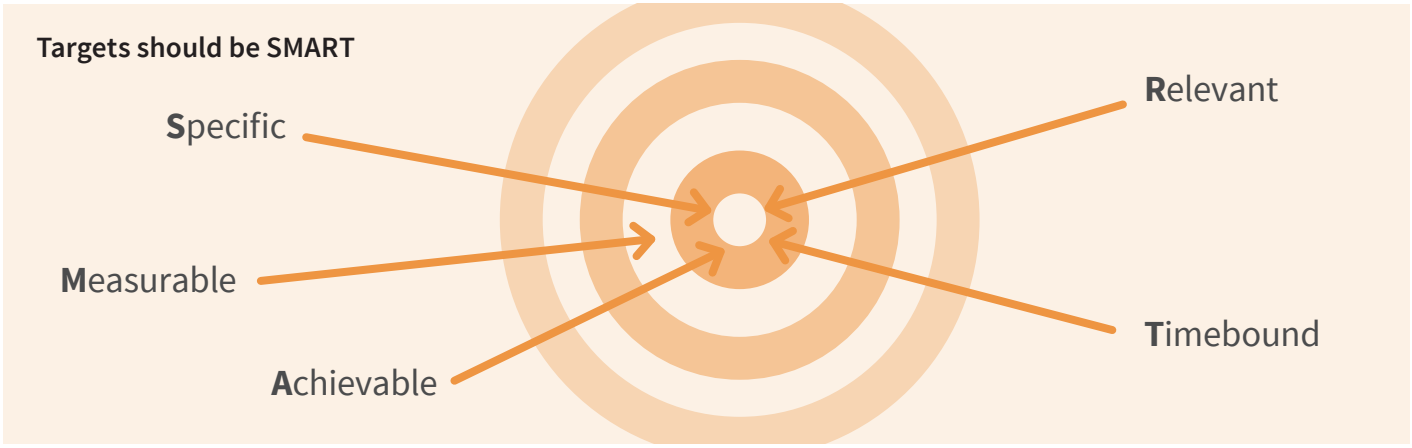
This may include regulatory requirements, for example ESOS. It may also include non-regulatory requirements, for example associated planning conditions, such as the on-site renewable generation, or voluntary commitments, such as the adoption of green tariffs. Legal and other obligations should be collated in a register for reference.

AM PM FM

STEP 3: SET PERFORMANCE OBJECTIVES AND TARGETS

An Energy Policy should make reference to the continual improvement of energy performance. This should be accompanied by a commitment to establish objectives, improvement targets and associated actions.

Objectives could relate to reducing energy consumption, improving energy efficiency or and increasing the proportion of energy from renewable sources. Targets should be Specific, Measurable, Achievable, Relevant and Timebound.



Consideration should be given to the scope of the energy policy, and the way in which objectives, targets and actions relate to consumption that is specific to operators as well as within common or shared areas.

AM PM FM

STEP 4: SECURE RESOURCES AND ESTABLISH RESPONSIBILITIES

The resources available to support the achievement of energy objectives and targets, alongside high-level responsibilities for implementing actions and governing progress, should be clearly described within an Energy Policy.

This may include responsibilities of a dedicated Energy Manager, were relevant. In addition, responsibilities should make reference to managers of key functions, such as facilities management, occupiers and contractors. It is also important to reference the oversight responsibilities of senior management.

AM PM FM

STEP 5: REVIEW ENERGY MANAGEMENT AND PERFORMANCE

An Energy Policy should make reference to the way in which energy performance, and progress towards energy objectives and targets, are reviewed. This may involve establishing a dedicated forum to review energy management, or it could relate to the inclusion of energy within existing environment or health and safety forums.

An Energy Management System

An Energy Policy can provide the foundation for a wider Energy Management System (EnMS). With potential to certify to schemes such as ISO50001. An EnMS enables the systematic management of energy and should involve consideration of the following factors:

- Review historic and current energy use.
- Identify sources of significant energy use.
- Create an energy baseline.
- Establish objectives, targets, and timeframes.
- Develop an energy action plan to achieve objectives and targets.
- Provide training to employees and contractors.
- Raise awareness of energy performance and the EnMS with stakeholders.
- Document related policies and procedures.
- Monitor, measure, and review energy performance.
- Address under-performance and non-conformities and take corrective action.
- Undertake a management review of the Energy Policy and Energy Management System.

ENERGY PERFORMANCE STANDARDS

HOW TO...

Asset managers hold the primary accountability for energy performance standard, but rely on property managers to co-ordinate the range of compliance arrangements, with input from facilities managers where necessary.

Managing EPCs and DECs involves the following considerations:

AM PM

STEP 1: UNDERSTAND WHETHER AN EPC OR A DEC IS REQUIRED

Asset managers should seek competent advice to determine the extent to which EPCs and DECs apply to individual properties.

AM PM

STEP 2: CLARIFY RESPONSIBILITIES FOR EPCS AND DECS

Asset managers should clarify responsibilities for instructing and maintaining EPCs and DECs and formalise the agreement with the property manager. Where relevant, a property manager should contract delegated tasks with facilities managers.

PM

STEP 3: IDENTIFY A REGISTERED EPC OR DEC ASSESSOR

Only registered assessors can be used to produce and register a DEC or EPC and the relevant Advisory or Recommendation Reports.

Property or facilities managers should consult the Register of Commercial Energy Assessors to source and select a registered assessor:

- England and Wales, Northern Ireland: https://www.gov.uk/find-an-energy-assessor
- Scotland: https://www.scottishepcregister.org.uk/assessorsearch

PM FM

STEP 4A: COLLATE THE INFORMATION REQUIRED FOR AN EPC

The information required for an EPC could include:

- Dimensions of the building/relevant space.
- Floor plans if available.
- Age of the building.
- Any available details on the specification of the insulation, lighting and HVAC system.

It is important to provide as much information to the assessor as possible, if they are unable to obtain the information either from the building team or from their site inspection, they will have to rely on assumptions which generally reflect the worst-case scenarios.

STEP 4B: COLLATE THE INFORMATION REQUIRED FOR A DEC

A property or facilities manager should collate information to enable the assessor to calculate the property's carbon dioxide emissions.

Information which may be useful for an assessor:

- Dimensions of the building/relevant space.
- Details of any longer than normal hours of occupation.
- Energy meter readings or consignment.
- Fuels include gas fuels, oil fuels, solid fuels, district heating and cooling, grid electricity and electricity generated on site or obtained by private distribution systems for other sites.

For district heating and cooling and electricity generated on site, or obtained by private distribution systems from other sites, the average carbon factor for the fuel over the accounting period will need to be obtained. This may include, for example, kg of carbon dioxide per kWh delivered.

STEP 5: HOST SITE VISIT BY ASSESSOR

The property or facilities manager should arrange and host a site visit for the assessor to inspect the property or unit.

For a DEC for subsequent years, up to the expiry of the report (usually seven years), the advisory report can be based on previous knowledge of the building provided that:

- They are being produced by the same assessor. and
- A declaration that nothing has changed has been provided by the building occupant.

STEP 6: PREPARATION AND REGISTRATION OF EITHER THE DEC AND ADVISORY REPORT OR THE EPC AND RECOMMENDATION REPORT

The registered assessor will prepare the DEC or EPC and lodge them on the national register. Once registered the assessor will issue a copy of the documents to the property or facilities manager.

STEP 6: DISPLAY AND RETENTION OF DEC AND ADVISORY REPORT

The property or facilities manager should display the DEC in a prominent position within the building, visible to the general public.

The original documentation should be stored safely and securely in accordance with the property or facilities manager's document control arrangements.

MINIMUM ENERGY EFFICIENCY STANDARDS (MEES)

MEES were introduced by the Energy Efficiency (Private Rented Property) (England and Wales) Regulations 2015.

These regulations introduced a minimum required EPC rating of an E for rented property in England and Wales. This minimum standard was introduced in two stages:

- From 1st April 2018: Applied to any new leases. Meaning that landlords could not grant new leases, or renew existing leases, on properties that had an EPC rating of F or G.
- From 1st April 2023: Extended to existing leases. Meaning that landlords must not continue to let buildings with EPC ratings of less than an E.

Certain buildings are outside the scope of MEES:

- Buildings which do not require an EPC.
- Buildings where the EPC is expired, or where there is no EPC.
- Tenancies of less than 6 months.
- Tenancies of over 99 years.

There are a number of exemptions from MEES:

- Seven-Year Payback: all of the improvements that could have been made to a property that have a payback period within seven years have been made, but the property still does not achieve the minimum EPC rating of E.
- All Improvements Made: all relevant recommended improvements have been made and the property still does not achieve a minimum of an E rating.
- Devaluation: An independent surveyor determines that the required energy efficiency improvements are likely to reduce the market value of the property by more than 5%.
- Third Party Consent: Consent is required from a third party (tenants, superior landlord, planning authority, etc.) and that consent has been refused.

Exemptions are valid for 5 years, and are not transferrable to a new landlord. All exemptions must be registered on the PRS Exemptions Register.

Similar regulations in Scotland

Whilst MEES do not apply to Scotland, there are similar regulations concerning EPCs.

The Climate Change Act Scotland 2009 (section 63) from September 2016 introduced increased energy efficiency requirements on buildings in excess of 1,000 sq m.

Section 63 states that if a building of 1,000 sq.m or more is found not to meet or exceed the energy standards of the 2002 Scottish building regulations, then the owner of the building must undertake a further assessment to produce an 'Action Plan'. The building owner then has 42 months to implement the action points so that the building becomes S.63 compliant.

Alternatively, the property owner can defer the Action Plan measures by carrying out a DEC on an annual basis.

The requirements under Section 63 are triggered by the sale of lease of a property

Buildings outside the scope of Section 63:

- Buildings with a floor area of 1,000 sq m or less.
- Properties that have met or exceeded the equivalent energy standards of the 2002 building regulations.
- Short leases of 12 weeks or less.
- The renewal of an existing lease with the same tenant.
- The sale or lease of a building before construction has been completed.
- Temporary buildings- with an intended life of two years or less.
- Workshops and agricultural buildings with a low energy demand.
- Buildings participating in the green deal scheme.
- Prisons and young offender institutions.

If the property owner fails to produce a MEES Action Plan, or to carry out the recommended improvement measures with the 42 months, then the local authority can impose a fine of £1,000 for each breach (as of March 2021).

AIR-CONDITIONING INSPECTIONS

HOW TO...

Air-conditioning inspections require compliance with a number of regulatory requirements. While the asset manager is often the accountable body, the responsibility for managing air-conditioning inspection arrangements at the portfolio or property level usually sits with the property manager, or may be contracted to the facilities manager.

Air-conditioning inspections involve consideration of the following factors:

PM

1. SECURING AN ACCREDITED ENERGY ASSESSOR

An inspection of an air-conditioning system must be carried out by an energy assessor who is a current member of an accreditation scheme.

Responsibilities of an energy assessor:

An energy assessor must make a copy of the air-conditioning inspection report available to the building owner or manager, or to the person who controls the operation of the system.

This must be done as soon as practicable after the inspection date, but only after the air-conditioning inspection report is entered on the register.

Only air-conditioning inspection reports which have been produced and lodged on the register by accredited energy assessors are valid.

AM PM

2. FIRST INSPECTIONS

There are a number of legal requirements relating to the first inspection of air-conditioning systems:

- For all systems first put into service on or after 1 January 2008, the first inspection must have taken place within five years of the date when the system was first put into service.
- For other air-conditioning systems, where the effective rated output is more than 250kW, the first inspection must have taken place by 4 January 2009.
- For other air-conditioning systems, where the effective rated output is more than 12kW, the first inspection must have taken place by 4 January 2011.

3. REFRIGERATION, AIR MOVING PARTS AND CONTROLS

Checking refrigeration equipment and associated heat exchange systems are an important part of air-conditioning inspections. The inspection looks for any indication of damage or lack of maintenance that would significantly reduce their efficiency from their 'as new' state and does not provide high levels of detail.

Where installed as part of the system to provide cooling, air moving systems are an important factor in air-conditioning inspections. The contribution that fans make to the total annual energy consumption of the combined cooling system is likely to be higher than that of the refrigeration plant, and there may therefore be a potential for greater performance improvement.

Air-conditioning inspections require that system controls are assessed in detail. There could be considerable scope to identify inefficiency due to inappropriate control methods and control settings or poorly located sensors.

There may be potential for improvement at low cost. Improving systems might be as simple as adjusting time switches or for cooling or heating thermostats being set correctly. The energy assessor would not reset them, however, but will report to the building owner or manager.

4. DOCUMENTATION AND MAINTENANCE

The quality, extent and accessibility of relevant information provided before an energy assessor inspects the system has important consequences for the effectiveness and cost of an air-conditioning system inspection.

Information about the air-conditioning systems installed and their operation should be provided to the energy assessor in order for them to be able to carry out the most effective assessment of the system.

Incomplete or missing documentation not provided to an energy assessor could reduce the effectiveness of the assessment. It could also increase the cost of the inspection by requiring the energy assessor to locate relevant documentation while on site.

Evidence of any existing planned maintenance schedule or of other recent maintenance activities will be sought as part of an air-conditioning assessment.

Where documentation clearly shows that equipment and systems are already the subject of regular good practice checking and maintenance procedures, a number of aspects of the inspection and provision of advice may be reduced in scale or omitted.

5. REVIEW OF INSPECTION REPORT

An air-conditioning assessment is likely to conclude that the energy efficiency of the system will fall into one of three categories:

- Systems where efficiency is clearly impaired due to faults, neglect or misuse.
- Systems where efficiency is likely to be lower than current accepted minimum provisions due to aspects of design or use.
- Systems that are acceptably efficient.

There are three broad levels of advice that the building owner or manager may receive:

- Advice on the rectification of faults in the system that are impairing its efficiency as designed.
- Improvement advice to bring existing systems broadly to a standard of 'inherent' efficiency consistent with the current minimum provisions of building regulations or standards.
- Best practice improvement advice to raise standards even where systems are fully compliant with the current minimum provisions of building regulations or standards.

Given the need for simplicity and consistency, the inspection report is likely to provide a combination of both aspects. Best practice advice may also be provided on a general basis by referring to other published guidance sources.

Air-conditioning assessment and levels of advice

ADVANCED METERING

HOW TO...

Usually, the decision to adopt advanced metering is instructed by the asset manager and the process of installing and managing advanced meters is coordinated by the property manager with input from the facilities manager.

Advanced metering follows four general steps.

AM PM FM

STEP 1: FORMULATE A METERING PLAN

A metering plan should include a property's metering schedule and strategy.

Metering schedule

A metering schedule involves identifying the main and sub-metering arrangement on-site, and documenting the location and function of each meter in tabular and diagrammatic forms. It is important that meters listed on a metering schedule are also illustrated in the building's low voltage distribution schematic.

One way to do identify meters is to review existing billing arrangements to determine relevant main meters and to document the findings. Where there is no reliable information to identify the level of metering present within a property, a metering survey can be undertaken by a competent individual, for example, an energy specialist.

A metering schedule should provide:

- A list of all the meters in a building.
- Meter names/references.
- The areas served by each meter, and whether they are fed from or feed to other meters.

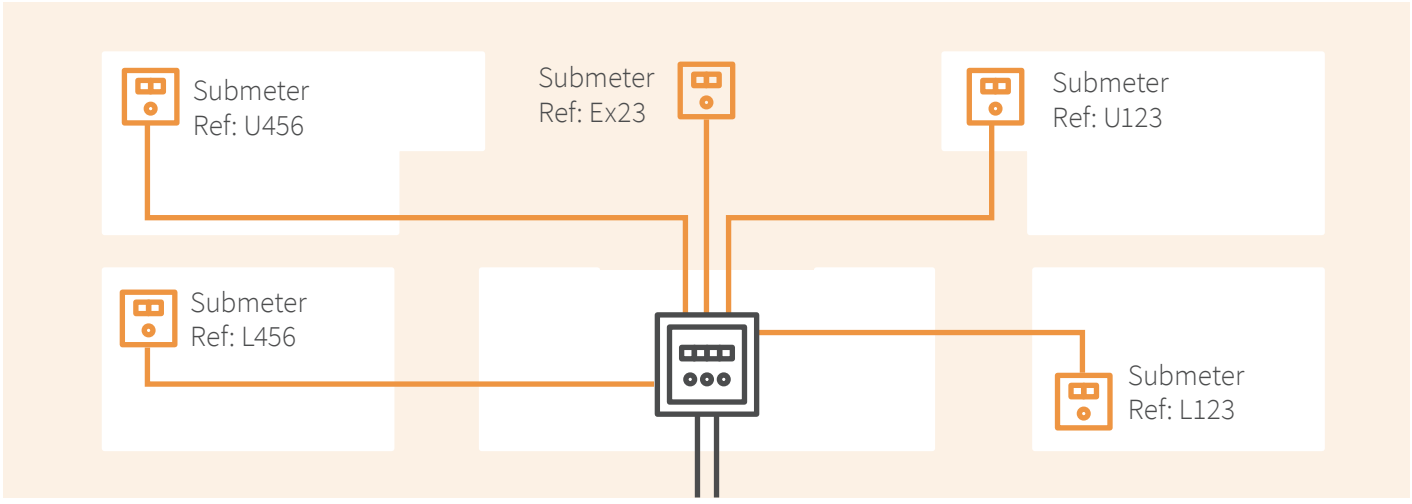
Metering strategy

A metering strategy can help to develop an understand of how to align a property's metering with the utilities goals of the asset manager and, potentially, occupants.

As most properties have meters on the incoming supply for billing purposes, these meters cannot indicate, on their own, the reasons for a property's utilities consumption profile.

A well-considered sub-meter strategy will define where submeters will be installed, what they will monitor and how information from the meters will be captured and used to enable performance improvement through the identification of inefficiency and/or more accurate billing.

A metering strategy should also consider the cost, practicality of installation, and value of the information gained by detailed metering against potential future savings.



AM PM

STEP 2: INSTALL METERS

It is important that the installation of meters reflects the details specified in the metering plan, and that the installation, commissioning and handover stages are carefully considered.

All new meters used for billing purposes must conform with EU Measuring Instruments Directive, and, following the installation of meters, calibration certificates should be retained and renewed every 12 months.

A metering specialist should be engaged to:

- Install and commission meters in line with the manufacturer's instruction, which will ensure accuracy of readings and effective operation.
- Check the installation against the metering schedule and design drawings, with spot checks undertaken to determine if meter readings are in the range of expected values.
- Check that the aggregate of all sub-meters equates to the main meter reading.

PM FM

STEP 3: CONNECT DATA FROM METERS TO A PROPERTY'S DATA ANALYTICS PLATFORM

It is important to be able to visualise and interpret the utilities consumption data captured through advanced metering. This can be done through connecting the data from advanced meters to a building energy management system (BEMS) or web or digital based data analytics platform

Web portals or automatic metering systems provide real-time analysis where consumption data can be downloaded or be built with energy dashboards demonstrating energy operating patterns of the buildings.

A competent energy specialist should be consulted for technical advice regarding the suitability of various data visualisation and analytics platforms which are available in the market.

PM FM

STEP 4: CONTINUOUS MONITORING FOR PERFORMANCE IMPROVEMENT

It is important to establish a continuous monitoring process of the data captured from advanced meters.

This process will allow for specific interventions and initiatives to be identified to drive utilities savings and contribute towards an overall positive performance of a building.

There are numerous benefits of continuous monitoring which include tracking towards utilities targets and aligning building services with actual use requirements.

ENERGY CONSUMPTION PROFILE

HOW TO...

The development of a property's energy consumption profile is normally led by a property manager, with input from the facilities manager. Technical support from an energy manager or other competent individual is usually central to the process.

Developing an energy profile involves establishing how much, when and where energy is being consumed.

AM FM

1. ESTABLISH HOW MUCH ENERGY IS BEING CONSUMED

It is important to maintain good energy consumption records:

- Simple meter readings (recorded in a spreadsheet) or analysis of energy bills can be used to establish annual and monthly energy consumption data.
- Install advanced meters can log consumption data on a half hourly basis, can be remotely read, and have the potential to be transferred to a building energy management system (BEMS) or web portal/platform for interpretation.

In the UK, primary utility electricity meters in most modern or recently refurbished buildings will normally be advanced meters. Half-hourly data can be requested from the utility company.

Other electricity meters, and most gas meters in existing buildings, will normally not be advanced meters and will need to be read manually.

Equipment can be retrofitted to manual meters to enable them to be automatically read, to log data half-hourly, and to communicates data (usually using a mobile phone network) to energy suppliers and/or a building energy management system (BEMS).

AM FM

2. ESTABLISH WHEN ENERGY IS BEING CONSUMED

Energy consumption data is best compared over several periods.

By comparing the energy demand during different periods, it is possible to identify inefficient energy consumption. It may be the case, for example, that there is significant energy demand during unoccupied or out-of-service hours. This may indicate an inefficient use of heating or cooling plant, lighting or other services/equipment.

Through this type of analysis, the following areas should be identified and investigated as part of a regular process:

- Energy usage patterns.
- Peak usage times.
- Overnight baseload.

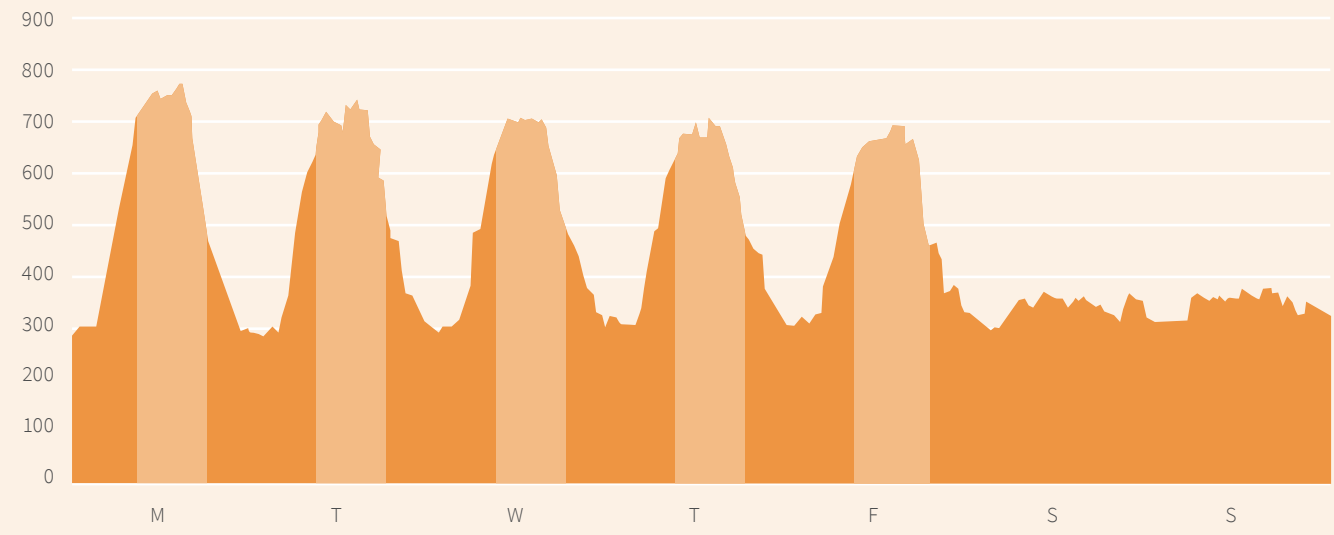
Compare how the demand for energy varies over time

Understanding energy usage patterns, peak load and baseload enables the comparison of how the demand for energy varies over time. From this, it is possible to check whether consumption variability meet expectations and/or whether specific interventions can be taken to prevent unnecessary energy use.

The graph below demonstrates an energy consumption profile over a week for a typical office building. The shades of blue indicate occupied and unoccupied hours.

From this analysis, an energy manager can establish whether considerable energy usage is occurring outside of the occupied hours and determine the extent that this can be reduced.

Example weekly half-hourly profile of electricity consumption of an office building



The troughs in the graph show the baseload of the building i.e. the minimum amount of electricity consumed by the building. This occurs overnight when the building is empty. An optimised standard occupancy building operating during normal working hours should have a baseload of between 10% and 15% of peak consumption, with 24/7 operated buildings having approx. 40% baseloads.

Occupied Unoccupied

Familiarity with the usual demand profiles can also be helpful in identifying unexpected changes in energy use. Any significant change in the profile of energy demand must be caused by a change in the property, either in the way it is used, or how the central plant is operating.

Compare how energy demand varies with the weather

Some aspects of energy demand are also weather dependent, for example heating and cooling systems.

Understanding a property's seasonable energy consumption profile can enable informed decisions regarding setting equipment to align with expected weather changes.

The concept of 'degree-days' enables the analysis of a property's energy-weather dependency, which can contribute towards optimizing a building's energy efficiency.

Degree days:

- Provide a measure of the severity and duration of cold weather.
- Provide a linear measure of heating and cooling requirement relative to external temperature.
- Are a useful way to establish when heating or cooling equipment are active.
- Contribute to the assessment of energy wastage during periods of cold or hot weather.

3. ESTABLISH WHERE ENERGY IS BEING CONSUMED

It is important to establish the range of energy consuming equipment and areas in a property, and to identify the high energy users.

While usage patterns provided by main meters can help users to estimate where energy usage takes place, submeter data can ascertain the exact contribution from specific equipment or areas, for example, server rooms, trading floors, chillers, kitchens.

- Advanced submeters enable the comparison of energy demand for different areas of a building. This can contribute to understand the breakdown of energy and to identifying areas of significant usage and waste.

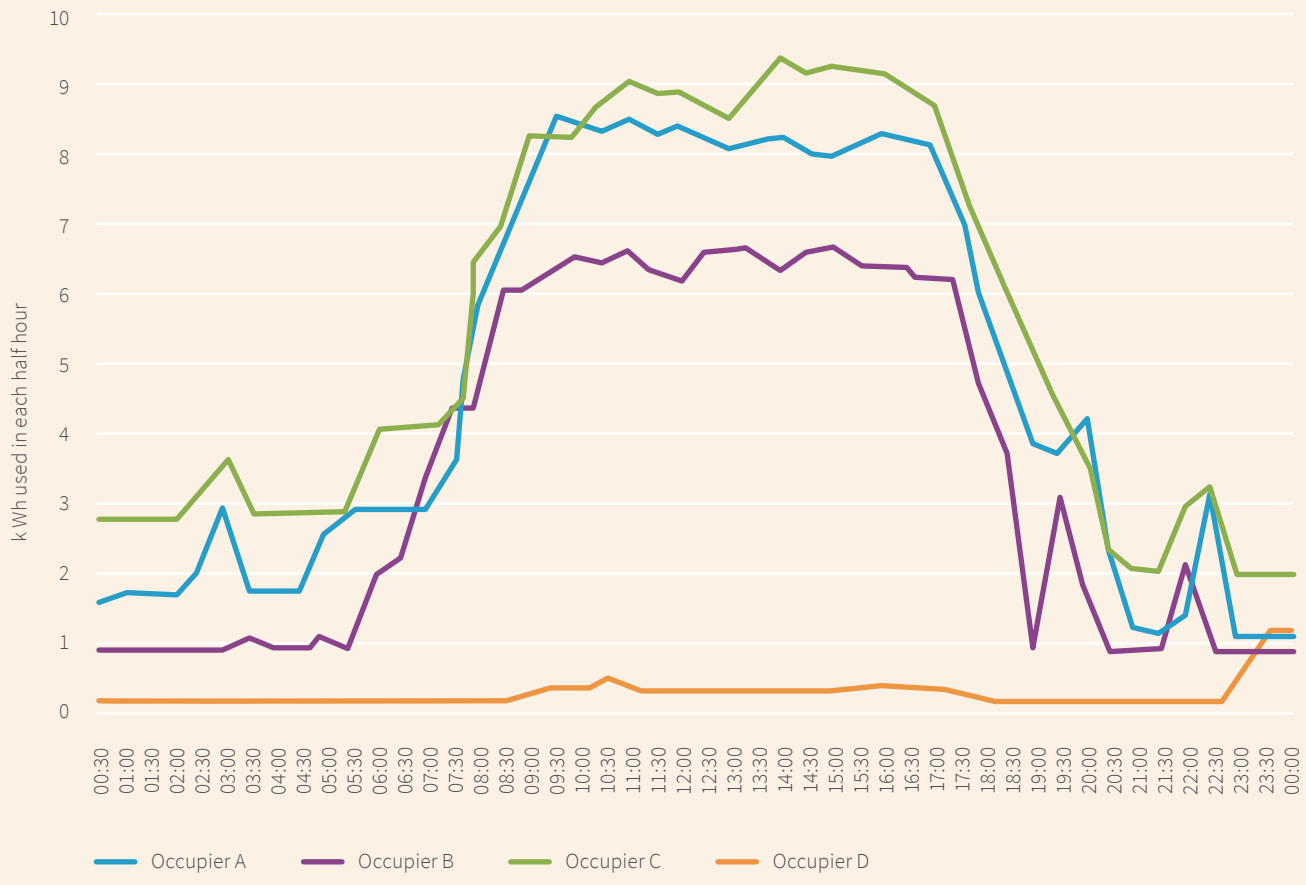
- Sub-metering data is more powerful if recorded on a half-hourly basis, using advanced metering. This will ultimately allow an energy manager to see exactly when and where energy is being consumed and enabling identification of where improvements can be made.

Occupier profiles

Submetering enables energy managers to compare usage by different occupiers. This can be achieved by comparing individual occupier energy consumption over a set period.

The graph below demonstrates an example of usage patterns across for different occupants over a 24-hour period. Undertaking this type of analysis enables occupier engagement on energy efficiency and can contribute to the identification of energy saving opportunities.

Single day comparison of electricity consumption in a multi-tenanted office building



UNDERTAKING AN ENERGY AUDIT

HOW TO...

An energy audit is usually established at the property level, although it is possible to combine an audit across multiple sites, and a program of energy audits is often undertaken at a portfolio level.

The decision to implement an energy audit, either as part of an Energy Management system or independently, is usually taken by an asset manager. A property manager will most often be responsible for coordinating the audit process, with information and support provided by a facilities manager. The audit outcomes will be of interest to all stakeholders.

The process of undertaking an energy audit should take place within a wider framework for the governance of audit and assurance activities, and should include the following steps:

AM PM FM

STEP 1: ESTABLISH AUDIT OVERSIGHT AND SCOPE

It is important that a forum, committee or body is established to provide oversight of the audit process, to validate outcomes, and to check that recommended actions are allocated appropriately.

Determining the audit scope should involve consideration of a number of issues, including:

- Is it beneficial to include occupier leased areas as well as owner-controlled areas?
- Should services and equipment managed by occupiers be included?
- What fuel types will be included, for example, transport fuel, renewable energy systems, CHP installations?

DETERMINING THE AUDIT SCOPE

Include occupier leased areas and owner-controlled areas?

☒ Y ☐ N

Include services and equipment managed by occupiers?

☐ Y ☒ N

What fuel types will be included?

☐ TRANSPORT
☒ RENEWABLE ENERGY
☒ CHP INSTALLATIONS

PM

STEP 2: SECURING A COMPETENT ENERGY AUDITOR

An energy audit should be undertaken by a competent energy assessor. As the qualification and accreditation required by certain regulations, rating and certification schemes and property types vary, it is important to check if there are specific requirements for the planned audit.

As a minimum, an energy auditor should have experience in relation to:

- Energy management.
- The property and equipment type involved.
- The processes and arrangements involved in audit and assurance activities.

PM FM

STEP 3: REVIEW ENERGY CONSUMPTION PROFILE

The preparation of a property's energy consumption profile is a central element of an energy audit. This should include, as a minimum, total energy consumption, broken down by energy type, source, user. Options to include additional variables, for example, seasonal fluctuations and weather days, should also be considered.

The energy consumption profile should be compared against historical trends, with the intention of identifying the areas of greatest consumption and anomalies in expected consumption.

PM FM

STEP 4: REVIEW ENERGY MANAGEMENT ARRANGEMENTS

Performance against historical energy targets should be reviewed to determine the extent that progress towards intended improvements is on track.

Alongside this, an energy audit should consider management arrangements, such as processes to monitor and review energy consumption, or to check that recommended actions from previous energy audits are being deployed. There should be evidence that such arrangements are in place and are being implemented.

PM FM

STEP 5: IDENTIFY ENERGY OPPORTUNITIES

A key component of an energy audit is to identify opportunities to improve energy efficiency. This is partly informed through the analysis of a property's energy consumption profile and is complemented by general observation of equipment and operational practices.

This could include, for example, where plant, equipment and services are in operation outside working hours or where routine maintenance is behind schedule. Specialist knowledge and experience may be required when considering whether building fabric, plant and equipment is in need of renewal.

Alongside energy saving interventions, an energy audit may also consider opportunities to improvement wider energy management activities. For example, the metering arrangements for recording and collating energy data, or how energy efficiency awareness raising is undertaken.

AM PM FM

STEP 6: REVIEW AND CONTINUE TO IMPROVE

The outcomes from an energy audit, including recommended improvement actions, should be documented and reviewed by the oversight body. An action plan should set out improvement opportunities alongside timeframes and responsibilities and should inform the development of energy targets.

Ongoing energy consumption, progress against targets and the implementation of action plans should be periodically reviewed by the oversight body, or an appropriate forum with responsibility for a property's energy or environmental management activities.

ENERGY BENCHMARKING AND TARGET SETTING

HOW TO...

Usually, the decision to participate in a benchmarking scheme, or to set property or portfolio energy targets, is taken by an asset manager. The process of collating information that will inform this decision is coordinated by the property manager with input from the facilities manager.

Key considerations for benchmarking and setting energy targets are described below:

BENCHMARKING

AM PM FM

1. REVIEW MATERIALITY

A materiality review is an exercise that evaluates the impacts of the business across a range of potentially relevant topics and considers the extent to which those impacts are important to the business and its stakeholders.

Knowing what is expected of the business, both internally and externally, will help to decide what benchmarks are appropriate. The outcomes from a review of materiality can inform future benchmarking decisions. For example:

- If an organisation owns a small portfolio of assets which are already equipped with high performance energy saving and renewable generation measures, climate change may be less material to the business than for others,for example, a larger, more energy-hungry portfolio. Hence, the need for benchmarking data to inform further energy investments may be limited.
- Conversely, stakeholder perceptions may be sufficiently important to merit undertaking a benchmarking exercise to provide evidence of the relatively high performance of the portfolio. This can help to demonstrate that the business is one that strongly supports climate change mitigation.

PM

2. NORMALISE BENCHMARKING DATA

Before proceeding with a benchmarking exercise, it is important to normalise energy benchmarking data, where possible. Unlike an absolute benchmark, a normalised energy benchmark facilitates a like-for-like comparison with other properties or portfolios.

Normalisation can be delivered via a range of metrics, including, for example:

- Kilowatt hours per capita (for example employee, footfall).
- Kilowatt hours per unit of occupied space (for example, m2, sq.ft).
- Kilowatt hours per unit of revenue (For example, £).

3. CONSIDER AN APPROPRIATE BENCHMARK

It is important that a benchmark aligns with a property or portfolio's business strategy. This involves considering whether the benchmark should be inward or outward looking.

For example, if an organisation is new to energy and carbon management, choosing to benchmark performance against a peer that is well established is likely to yield results that illustrate organisational underperformance against the benchmark.

This has the potential to disengage key stakeholders, who may see the process as a futile exercise, and could also harm the brand if the benchmarks are made public. Equally, choosing an internal benchmark, i.e., comparing against other properties within a portfolio, may be perceived as conservative or unambitious.

The following are all useful benchmarking options that could be considered:

Vision	Benchmark	What and Why?
Internal	Best performing building in a portfolio	Readily accessible information and relatable to key stakeholders in the business. Potential to generate friendly competition in energy and carbon reduction activity.
External	Energy Performance Certificates (EPCs)	A free to use registry consolidating certificates from thousands of properties, which demonstrate the expected performance from buildings based on plant and fixtures (not actual performance). Useful as all commercial buildings currently require an EPC rating of E or above in the event of a lease or sale event.
External	Real Estate Environmental Benchmark	A free to use resource with typical and good practice intensity metrics for energy, water and waste, plus a benchmark calculator, based on data from over 1,000 commercial properties across the UK. Useful to understand an organisation's performance as compared to the wider industry.
External	NABERS	A subscription-based association hosting intensity metrics for energy, water and waste benchmarking based on actual data from commercial properties. Useful to understand an organisation's performance as compared to the wider industry.
External	Building Services Research and Information Association (BSRIA)	A subscription-based association promoting knowledge in the real estate sector. Publications include benchmarks for specific systems, such as heat networks and heat pumps. Useful to assess particular elements of the energy performance against an industry average.
External	Peer performance	Large organisations are now mandated to publish their emissions under the Streamlined Energy and Carbon Reporting requirements of the Companies (Directors' Report) and Limited Liability Partnerships (Energy and Carbon Report) Regulations 2018. Many also submit their performance to voluntary disclosure schemes. If there are peers that organisations aspire to emulate, or would like to differentiate against, this may be a useful option.

AM PM

1. CONSIDER EXTERNAL AND INTERNAL DRIVERS AM, PM

As with benchmarking, the outcomes from a materiality review will inform energy target decisions. Alongside this, it is important to consider legislative and scientific requirements that influence a property or portfolio's energy target.

For example, the UK Government and World Green Building Council are advocating net zero carbon by 2050, with interim targets for 2030 and 2035. While there are a number of ways to achieve this without relying entirely on energy reduction, this provides useful context to help frame energy targets.

Organisations can, of course, decide to choose other targets which could demonstrate ambition beyond operational and scientific boundaries, such as net negative.

The Science Based Targets Initiative helps organisations develop targets that are "in line with what the latest climate science deems necessary to meet the goals of the Paris Agreement – limiting global warming to well-below 2°C above pre-industrial levels and pursuing efforts to limit warming to 1.5°C."

It is also important to consider how an energy target is set based on what is possible within strategic, budgetary and infrastructural constraints. This includes understanding what action, and investment, would be required to achieve the target, and considering the extent to which this resource, and the required actions, are is achievable.

Understanding the energy consumption profile of a property or portfolio, and the potential contribution that may be available through different energy saving opportunities, can inform a decarbonisation pathway and incremental targets within it.

Ideally, a target should combine both external and internal drivers.

- Short to medium-term targets based on known opportunities.
- Long-term targets recognising the potential for product and service innovation that may yet involve unknown quantities, or wholesale strategic change that offer energy and carbon reduction opportunities which are not immediately available.

PM

2. CONSIDER BOUNDARIES AND NORMALISATION PM

Energy targets should always be applied within a defined boundary. For example, organisations may decide to take:

- A whole portfolio approach, but should recognise that acquisitions and divestments may impact on performance and hence the ability to meet those targets.
- A like-for-like approach, where performance is normalised to account for acquisitions and divestments, by adding or removing associated consumption to a baseline.
- A steady state buildings approach, so that vacant buildings and those where building controls aren't fully understood or employed, represent a more consistent approach to energy performance and target setting.

Normalisation doesn't only apply to an organisational boundary, but also to the reported energy consumption. For example, extreme weather events can cause consumption to rise and fall disproportionately in comparison to weather remaining consistent year-to -ear.

AM PM

3. UNDERSTAND THE RELATIONSHIP BETWEEN ENERGY AND CARBON

When setting an energy or carbon target, it is important to recognise that there is not a one-to-one relationship between energy and carbon reduction performance.

Decarbonisation is, of course, impacted by energy reduction. However, the carbon factor of the UK's electricity mix is decreasing, as more renewable generation comes on stream and displaces fossil fuels, such as coal and gas.

As a result, the carbon content of a kWh of electricity has dropped by 49% in the last 10 years. Organisation may therefore decide their carbon targets should be more stringent than their energy targets, to account for grid decarbonisation.

The following are all useful target setting options that could be considered:

Type	Portfolio	Normalisation	Emissions Basis (Carbon Only)	Approach
Absolute Total energy consumption and/or carbon reduction.	**Absolute** Whole Portfolio.	**Weather Correction** Applying regression analysis to account for extreme weather events.	**Location Based** Utilising the UK average grid mix and associated carbon content to calculate emissions.	**Operational** Utilising known and quantifiable energy reduction opportunities to ascertain achievable targets.
Intensity Normalised for comparison purposes using a common denominator (for example, kWh/m2).	**Like-for-Like** Assets operational for two years or more (steady state), and baseline correction for acquisitions and sales.	**Electricity Equivalence** A reduction in gas consumption of 0.4 to account for its higher coefficient of production than electricity.	**Market Based** Utilising the carbon content of the agreed tariffs with chosen utilities providers.	**Science-Based** Required reductions to meet a 1.5°C global warming cap.
	Constrained Defined portfolio based on user preferences.			**Aspirational** Signalling intent to exceed both operational constraints and 1.5°C scenarios.

TEMPLATE ACTION PLAN

HOW TO...

Usually, the development of an energy action plan is co-ordinated by the property manager, with input from the facilities manager, and shared with an asset manager for input and awareness.

The Better Buildings Partnership has published a template environmental plan within the Green Building Management Toolkit. The key elements that should be considered are listed below:

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STEP 1: BUILD THE OUTLINE PLAN

An energy action plan can be structured in a way that meets the users' needs and preferred style. The following elements should be included:

Action: The action is a description of the initiative to be undertaken, usually transposed from the recommendations within an organisation's energy audits or other source of improvement opportunity.

Organisations may choose to categorise actions into four separate work streams:

- Energy efficiency or generation installations, both retrofit and new.
- Optimisation, for example through settings controls and procedures
- Behaviour change.
- Utility tariffs and contract structure.

Owner: The owner is the individual or team responsible for the delivery of the actions, and for ensuring that actions are not overlooked or unintentionally deprioritised.

When an organisation employs work streams, an owner can be assigned to at the workstream level to provide a tiered reporting and management structure that may aid delivery.

It may also be helpful to assign ultimate accountability for actions to members of an Oversight Committee, or collection of senior staff, who are accountable for the overall delivery of the Action Plan.

Completion and review dates: The completion date should be differentiated from the delivery date to help ensure that an organisation appraises the successes of their actions. This, in turn, can inform the viability of, or the approach to, other actions within the plan.

- Delivery date: The date by which the action is delivered.
- Completion date: The date from which the impact of the initiative has been reviewed.

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STEP 2: PRIORITISE ACTIONS

It is important to prioritise actions within an energy plan based on key factors such as cost and the expected contribution of actions to the delivery of energy and carbon reduction targets.

Cost: The anticipated financial costs of the actions set out with the plan.

Including reference to cost can help to identify where there is flexibility in budgets, or where there will be a requirement to take into consideration in future years' budgets.

Cost can be stated in:

- Absolute terms, i.e., the cost of equipment, human resources or consultancy services, for example.
- Relative terms, i.e., the cost per tonne of CO2 saved over the lifetime of the action. This is particularly pertinent for plant replacement and energy efficiency/generation installations.

Contribution: The anticipated reduction against the organisational baseline, or quota against a defined target.

Including reference to contribution can help to structure delivery in a way that best meets the organisational roadmap for energy reduction and decarbonisation.

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STEP 3: CONSIDER FUNDING SOURCES AND STAKEHOLDERS

It is important to undertake adequate preparation for the development of an energy action plan. This should include consideration of appropriate sources of funding for the delivery of actions. This can help to ensure that:

- Costed opportunities are afforded the necessary investment.
- Stakeholders (particularly those deemed critical to the implementation of opportunities) are engaged, responsibilities are clarified and communicated, and permission is sought from line managers to release them to the delivery of required actions.

Funding sources:

Funding can potentially be derived from a variety of sources, including, for example:

Service Charges: The use of the Service Charge to deliver energy efficiency opportunities can be appropriate where the installation of new equipment, or the replacement of existing plant prior to the end of its natural life, would be classed as an improvement, rather than a replacement to existing infrastructure.

Service charges should not generally include the cost of improvement above the cost of normal maintenance, repair and replacement. However, where asset manager and occupiers will both clearly benefit from the introduction of new innovations or additional improvement or enhancements of the building fabric, plant, or equipment:

"the service charge may include such costs where the expenditure can be justified following analysis of reasonable options and alternatives, and having regard to a cost-benefit analysis over the term of the occupiers' leases."[1]

1 https://www.rics.org/globalassets/rics-website/media/upholding-professional-standards/sector-standards/real-estate/service-charges-in-commercial-property-1st-edition.pdf

Managers should communicate any proposals clearly to occupiers, including providing the facts and figures to support and justify such a proposal."

Revolving Investment Funds: These are cost neutral loan schemes, where an asset owner provides funding to deliver energy efficiency opportunities within the asset and recovers a share of the savings from the service charge until such time as the fund is replenished.

The costs to the service charge, and hence tenants, remain (at worst) neutral until such time as the loan is repaid, after which the full benefit of the energy efficiency opportunity is passed through to the service charge.

Profit and Loss Accounts: This involves the asset manager covering the cost of energy efficiency improvements from their own funds, and the Service Charge is unaffected.

While this may not be considered a commercially attractive option, the ability to deploy funds quickly and efficiently can yield faster results, which in turn can be leveraged for commercial gain. This can include a lower service charge, or the promotion of a green building in securing longer, or better value lease arrangements with prospective tenants.

Grants: Occasionally, grants will be made available to organisations for the delivery of energy efficiency opportunities, particularly in the advancement of innovation. In these instances, the asset manager recoups their investment by meeting stringent conditions in the deployment of funds.

Stakeholders

Often, the delivery of energy saving opportunities within a plan will be contingent on the availability of specialist resource, such as an Asset Technical Manager, or a particular consultancy.

In addition, as preferred partners for the delivery of opportunities may already have project pipelines in place, it is important that relevant parties are contacted, and availability is confirmed as part of prioritising opportunities.

The application of funding and stakeholder consideration can inform the prioritisation of actions in a way that can lead to efficient delivery and management, and help to ensure that targets are met. For example:

Opportunity	Resource	Funding	Contribution to Target	Delivery Order
A	Not available until next Service Charge year	Available, Service Charge	10%	3
B	Available	Available, Service Charge	15%	2
C	Available	Available, Grant (Time Limited)	5%	1
D	Available	Budget committed, next Service Charge year	5%	4

STEP 4: MONITOR AND REPORT PROGRESS

An energy action plan should be treated as a live document, which should be updated and edited in line with progress and restrictions in its delivery.

Regular reviews should be held by an Oversight Committee to appraise progress and assist in the alleviation of bottlenecks and barriers where required.

Progress in delivering the action plan can be illustrated in a number of ways, for example:

Dashboard: An action plan could be linked to a dashboard, with summary charts and tables which represent progress through, for example:

- The number of actions delivered.
- The percentage of energy or carbon reduction target achieved.
- The most impactful projects delivered.

Change Log: An action plan should include a Change Log which contains records of any changes made during the action plan life cycle.

The Change Log tracks the progress of each change based on its:

- Review.
- Approval (or rejection).
- Implementation.
- Closure.

The change log also contains the date of the change. This is useful for tracking any changes in prioritisation, and indeed might help identify ongoing issues in delivery, as well as the completion of actions over time.

RAG Status: RAG is an abbreviation for Red, Amber, Green – a simple, visual 'traffic light' system for rating progress against each action.

Comments: A comments section can help contextualise RAG performance, as well as provide an overview of the success of each action once complete.

ENERGY EFFICIENCY OPPORTNITIES

HOW TO...

Energy efficiency opportunities vary considerably, ranging from behaviour change to procedures to optimise settings and controls, to significant capital investment projects. Different energy saving opportunity type will be of interest to, and the responsibility of, asset, property and facilities managers, and occupiers.

Energy efficiency opportunities involve the consideration of a number of elements:

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STAGE 1: IDENTIFY OPPORTUNITIES FOR IMPROVEMENT IN EFFICIENCY

There are different ways to approach the identification of energy opportunities. Determining the preferred approach will depend on multiple factors including the asset type, the availability of data, the technology installed and the budget available for investigation works.

If the budget for identifying energy efficiency opportunities is limited, the following should be considered:

- Reviewing the existing PPM to identify any recommendations.
- Benchmarking the energy use of the building (REEB could be used to do this).
- Asking the M&E contractor to conduct a simply review of the operation of the plant in the building.
- Considering the recommendations with the EPC Recommendation Report.

If there is budget available for a more comprehensive review of energy efficiency opportunities, the following should be considered:

- Instructing a Building Management System review.
- Undertaking a sustainability audit.
- Instructing an M&E consultant.
- Conducting a thermal survey of the building.

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STAGE 2: PRIORITISE THE RECOMMENDATIONS

It is likely that a review of potential energy efficiency opportunities will provide multiple recommendations, some of which will be more practical than others.

An exercise to evaluate and prioritise opportunities should be undertaken. This should consider factors such as ease of implementation, cost, payback period and anticipated savings.

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STAGE 3: DETERMINE HOW THE RECOMMENDED INITIATIVES ARE TO BE FUNDED

It is important to determine whether the asset manager is willing to fund or forward fund any of the recommendations identified by the review of potential energy efficiency opportunities which require capital investment. This is likely to depend on a range of factors, including payback period and alignment with corporate sustainability targets.

Other funding options may include the service charge (depending on the recommendation and the provisions within the service charge clause), or government grants for certain initiatives (for example there is limited government funding available for electric vehicle charger installations).

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STAGE 4: INSTRUCT THE IMPLEMENTATION OF APPROPRIATE ENERGY EFFICIENCY IMPROVEMENTS

It is important that the parties who will carry out the energy efficiency improvements are identified and instructed.

For capital works, this will involve the procurement of suitable contractors. For behaviour change opportunities, engagement with communications and human resource teams within both property and facilities managers, and occupiers, will be important.

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STAGE 5: MONITOR AND REPORT ON THE IMPACT OF THE IMPROVEMENTS

It is important that the energy data available for the property is reviewed before an improvement project is implemented to create a baseline, and also after the project. This will enable the impact of the improvement to be assessed and shared with relevant stakeholders.

Energy efficiency improvement opportunities: Examples

There are a number of general areas that support energy efficiency. These include:

Plant

- Review existing settings:
  - Review the plant run times to ensure that meet the occupational requirements of the building.
  - Review the deadbands on the air handling units.
  - Adjust chilled water to run at 7°C flow and 13°C return (an increase of 1°C).
- Increase the zoning capabilities of the building services.
- Replace fans with direct drive (no belts).
- Increase the frequency at which the air filters are changed.
- Install CO2 sensors to the air handling units so that they can run on demand when required (room mounted sensors are often recommended over duct mounted sensors).
- Install a smart building system the building operation can be monitored remotely – some systems also allow for settings to be changed remotely.

Equipment

- Replace existing lighting with LED or energy efficient lighting.
- Consider using using lower overall ambient light levels, along with task lighting at individual desks.
- Install PIR sensors to control the lighting.
- Install daylight sensors to control external lighting.
- When replacing existing equipment consider energy efficient alternatives.
- Utilise energy saving features on existing equipment- such as allowing the lights within lifts to turn off when not in use, and for them to run slightly slower.

Monitoring

- Install AMRs to ensure the data collected is accurate.
- Ensure there is sufficient sub-metering in place to identify where there are high loads.
- Install AMR sub-meters where possible.

Fabric

- Replace single glazed windows with double or triple glazed windows.
- Where it is not feasible to replace single glazed windows consider installing secondary glazing.
- Apply solar control film to windows to reduce solar gain and winter heat loss.
- If you are carrying out refurbishment works determine whether additional insulation can be installed.
- Install draught proofing doors between conditioned and un-conditioned spaces.

Behaviour Change

- Make the energy consumption of the building visible to building occupiers and users- this could be done via a screen display, energy reports, or operational performance certificates.
- Introduce signage to promote efficient use of the building such as using the stairs rather than the lifts, turning equipment off when not in use and efficient use of space.
- Trial a gamification project to incentivise occupiers to be energy efficient with their use of the building.

MAINTAINING SUSTAINABLE ENERGY AND WATER ASSETS

HOW TO...

Asset managers have an interest in the management of low carbon energy systems and water efficiency infrastructure due to their position as part of a property's asset base and contribution to a property's overall performance and commercial value. Property managers co-ordinate an agreed programme of management activities associated with these assets, with input from facilities manager.

LOW CARBON ENERGY INFRASTRUCTURE

1. PHOTOVOLTAIC (PV)

Description:

Photovoltaic (PV) devices convert sunlight into electricity via an electronic process that occurs naturally in specific materials called semiconductors. Single PV devices, known as cells, are connected together to form a panel or module.

Modules can be used on their own where the electricity demand is low or grouped to form an array where electricity demand is greater. A panel or array is located in a position and orientation which maximises the exposure to sunlight such as building roofs, above car park canopies or open spaces such as fields.

The electricity can either be consumed directly on site or fed back to the grid and consumed off site.

Benefits:

- Provide a building with a clean source of energy and play a role in how a building achieves net zero carbon
- Reduce a building's demand for electricity from the grid
- The flexible size of the panels means that PV is suitable for all building types
- Maintenance requirements and costs are low
- Surplus electricity can be sold back to the grid and provide an additional income stream

Maintenance

Alongside general maintenance activities for all assets, maintenance considerations specific to PV include:

- Clean panels two to four times per year with water to make sure dirt and debris aren't impacting the performance of panels. Avoid using abrasive materials to prevent damage.
- Check PV performance on a regular basis through meter reads or sensors to monitor the efficiency of panels.
- Contract a suitably qualified person, on an annual basis, to inspect for:
  - Module fracture and moisture penetration.
  - Damage to the direct current cables.
  - Status of the surge protection devices.
  - Inverter functionality.
  - Low-voltage system connection.

It is also important to plan for modular replacement and appropriate disposal methods. Modules should not be disposed of with normal waste because burning or landfilling may release toxic compounds. Modules should be returned to the manufacturer or a safe disposal agent if damaged.

Regulatory compliance

There are no regulations which PV systems must comply with during operation. However, if you are installing PV then you may be required to comply with building regulations and obtain planning permission.

Health and safety

The primary health and safety concerns associated with PV relate to fire and electric shock.

- Fire: There is no evidence that PV systems pose additional fire risks than other electrical equipment. However, appropriate steps should be taken to mitigate any risk of fire by a suitably qualified person regularly inspecting the system.

  Common fire related faults include:
  - Installation of AC (alternating current) isolator switches in DC (direct current), which causes heat to build up.
  - Faulty inverters or lack of isolator switches.

- Electrical shock: As PV systems use DC supply, in the event of a failure of the AC supply to the building, the PV system will still be live and may need to be manually isolated.

Billing options

There are a number of contractual models for the delivery and operation of PV:

- Building owner purchases PV up front or through finance agreement:
  - Equipment purchased by building owner who owns the infrastructure.
  - A fee is charged by an operator who manages and maintains the system.
  - The building owner receives the full income from selling the electricity to occupiers or back to the grid (see Small Export Guarantee below).

- Space is leased to a 3rd party:
  - Building owner has no upfront costs or operational costs to maintain the system. They do not own the system.
  - Building owner can receive income through a rent for leasing space, this can be structured as a percentage of the profits from the operator selling the electricity or receiving free electricity for example.

- Through the Small Export Guarantee (SEG) small-scale electricity generators with capacity of up to 5MW can apply for a license and get paid for any surplus electricity that is generated which can be exported to the grid.

- Power Purchase Agreements is a long-term contract which can be set up whereby a consumer of electricity, such as an occupier, can be supplied with electricity directly from the installation on site at a pre-agreed price per unit of electricity.

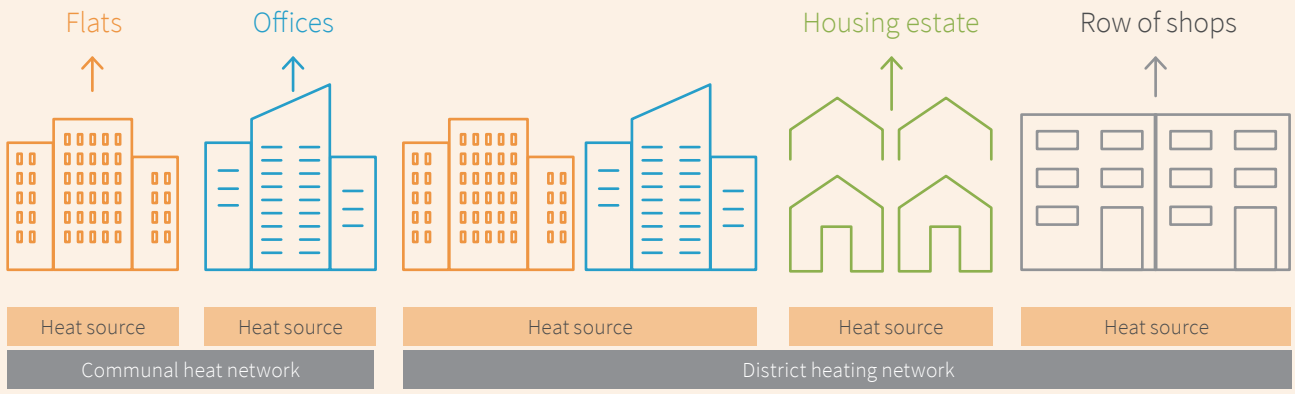
2. HEAT NETWORKS

Description

A heat network is a central system which provides heating, cooling and hot water to occupiers who are re-charged for the service.

Heat networks can involve a single building with a minimum of two occupiers, a communal heat network, or multiple buildings which make up a district heating network.

Communal heat network vs district heat network



Source: https://www.anthesisgroup.com/heat-network-regulations-hnmbr-compliance-guide/

A heat network can be supplied from various energy sources such as combined heat and power, energy from waste, fuel cells and heat pumps which all require specific maintenance regimes.

Benefits

- Provides a low carbon option for heating a building.
- Heat that is being created through industrial or commercial processes that would otherwise be wasted is utilised.
- As there is no heat generation equipment in the building this results in less space required for plant, less requirement for maintenance and avoided costs for safety checks and inspections for boilers or CHP, for example.
- Improve local air quality by avoiding combustion of fossil fuels in urban locations.
- The price of heat is competitive if not less than gas and usually remains stable over the longer term.

Maintenance

If a property is heated via a district heating network with a 3rd party operator, there is little to no maintenance required above normal system and infrastructure checks. However, as heat networks often use water to transport heat, measures should be taken to prevent the risk of leaks within the property.

Specific consideration should be given to the maintenance of pipework and to pumps and values within heat networks

Pipework

- Undertake regular inspections to ensure insulation is not damaged, leading to heat losses in the system and also to ensure there are no water leaks.
- Establish a water treatment regime to ensure good water quality to prevent damage to pipe work and other components through deposits of scale.

Pumps and valves

- Ensure all pumps and valves are checked and cleared regularly to ensure efficiency and to prevent interruptions to the service.

Regulatory compliance

Heat network operators in the UK must comply with the Heat Networks (Metering and Billing) Regulations (2014 and 2020).

The regulations require the heat network operator to:

- Notify the Office for Product Safety and Standards (OPSS) on or before the day the network becomes operational. The operator must submit a renotification within every four-year period from then on and inform the OPSS if the network is shut down.
- Fit heat meters, where appropriate, and maintain these to ensure continuous operation in measuring each occupier's consumption.
- Bill occupiers fairly, transparently and based on actual consumption where cost effective to do so.

The template for submitting notifications, along with information to identify whether a property falls within the regulations and is required to install heat meters, is available here: government guidance on heat networks.

Health and safety

The primary health and safety concern associated with heat networks relates to legionella. Heat network operators that use water to transport heat should consider measures to avoid the growth of legionella.

Billing options

There are a number of contractual models for the delivery and operation of heat networks. The Greater London Authority describe four options alongside the associated contract requirements:

Commonly used contracts for heat network schemes

Type	Description	Contracts required
Energy supply (ESCo)	An energy service company undertakes to supply heat to customers, and for that purpose, to build and operate the heat network. This could be set up with a defined set of customer buildings to be connected, or to provide the service developments within a defined area.	• Master agreement • Connection contract • Heat service supply contract • Service level agreement (SLA) • Property lease
Wholesale supply of energy	A sponsor appoints a single contractor to design, build, operate and supply wholesale heat and electricity. The sponsor sells the energy retail to consumers, and may be a consumer itself. ESCos often prefer wholesale supply to multi-occupant buildings	• Master agreement or design, build, operate (DBO) Contract • Wholesale heat supply contract with SLA • Connection contract • Property leases
Network delivery and operation (DBO)	A sponsor (such as an owner of tenanted properties) appoints one of more contractors to design, build, operate and maintain a heat network, but the sponsor remains the asset owner and contracts to supply heat and electricity to the consumer. The sponsor may purchase the fuel required.	• DBO contract or a combination of D&B contract and O&M contract with SLA • Metering or billing contract • Connection contract
Network operation (O&M)	An operator is contracted to run a heat network that has already been construct, for example under a man building contract. The operator may also be contracted to undertake metering and billing and customer services, if the landlord wishes to outsource these activities.	• O&M contract with SLA • Metering and billing contract

Source: https://www.london.gov.uk/sites/default/files/london_heat_map_manual_2014.pdf

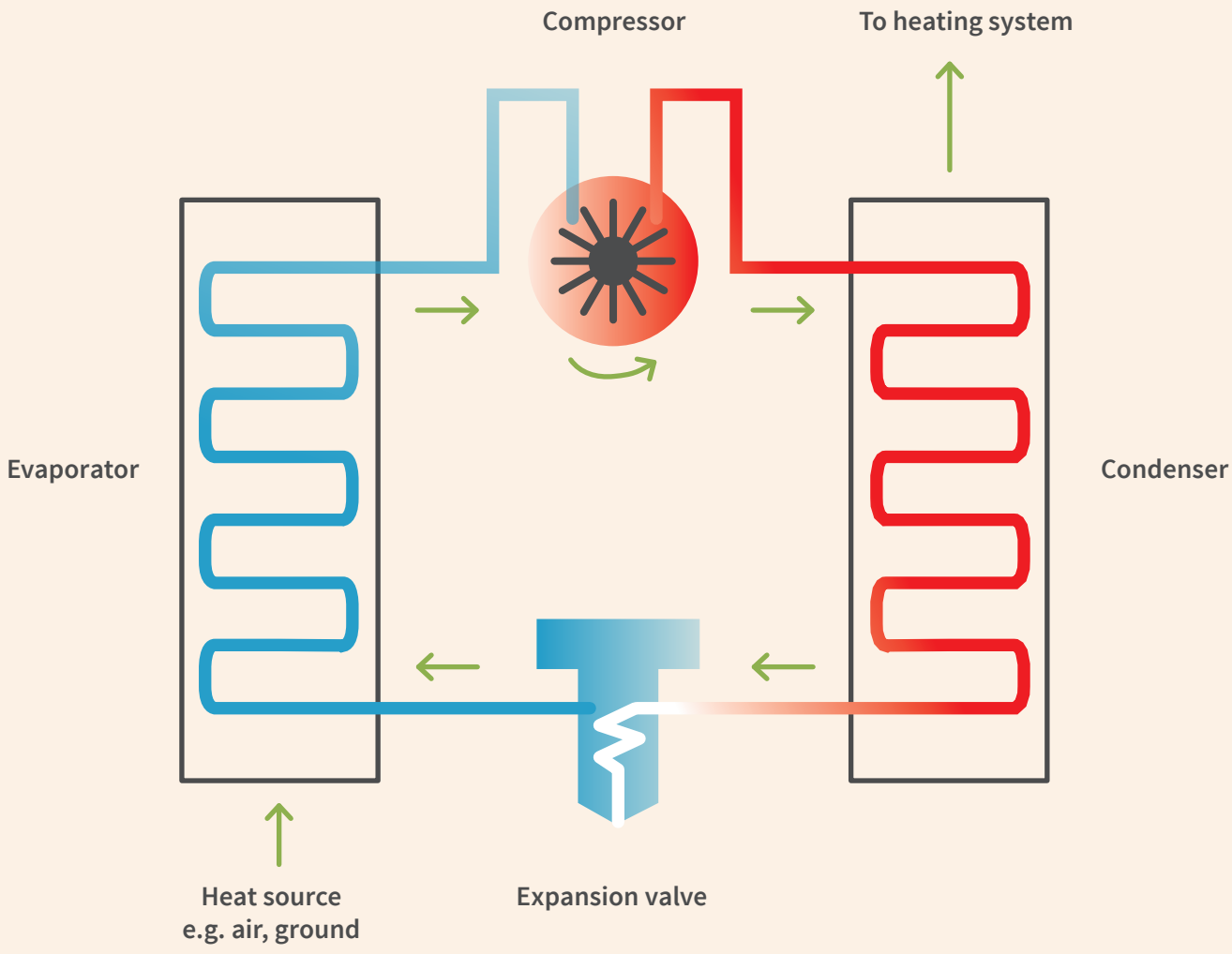
3. HEAT PUMPS

Description

A heat pump is a device used to heat and, in some cases, cool a building using air, ground or water heat. It does this by transferring thermal energy from a cooler space to a warmer space (or the reverse if cooling is required). A heat pump is typically made up of a condenser, evaporator, compressor and expansion valve and they are an efficient alternative to conventional fossil fuel heating systems.

In an open loop system fluid flows through the system and is not recirculated. For example, groundwater can be pumped through the system and discharged back into the ground or at the surface.

In a closed loop system a mixture of water and antifreeze circulates within a system and is constantly recirculated.



Benefits

- Reduces carbon emissions for heating and cooling buildings when compared with conventional solutions.
- One system provides both heating and cooling.
- While the capital investment in heat pumps is usually higher than conventional heat systems, as heat pumps are more efficient the running cost are lower once in operation.
- Heat pumps are safer and require less maintenance than combustion systems.
- Government schemes may be available to support with the initial investment in a heat pump.

Maintenance

Alongside general maintenance activities for all assets, maintenance considerations specific to heat pumps include:

- On a monthly basis check the air filters, cleaning or replacing as appropriate, check for ice, corrosion or leaks.
- Debris may collect in open loop systems and lead to potentially costly repairs. Every two or three months the heat exchangers, pipework and pumps should be checked for corrosion, bacterial growth or mineral deposit and cleaned as appropriate to prevent build up.
- On an annual basis a specialist contractor should service the heat pump whilst also undertaking electrical safety and control system checks.
- For closed loop systems the specialist contractor should also check for biological contamination and undertake a refrigerant gas leak test. They should inspect the level of antifreeze, biological growth inhibitor and corrosion inhibitor.
- A log should be kept of any maintenance, improvements, changes or issues such as refrigerant gas leakages.
- It is mandatory for systems equivalent to 500 tonnes or more of carbon dioxide to be fitted with an automatic leak detection system. Ideally, this should be considered for all systems.

Regulatory compliance

- If the heat pump system uses refrigerant gases, then compliance with the European Union F-Gas regulations or UK equivalent regulations is required. This includes the following:
  - Service and maintenance bans – there are limits on the use of gases with high Global Warming Potential (such as R404A and R507A) in existing equipment from 2020.
  - Leakage controls – there is an increased requirement for leak checks, leak detection systems and associated record-keeping.
  - Responsible supply – a requirement that gases are sold, managed and used by trained individuals. The individual undertaking maintenance must be suitably qualified and have the appropriate level of certificate to carry out maintenance activities. Full details can be found on the government's website.

- Leak checking under the F-Gas Regulations is a requirement and there are different frequencies of checks depending on the size of the system. UK Government guidance states that you must repair a leak as soon as possible and test the system within a month. If you do not have a leak checking system in place or do not fix leaks there is a risk of receiving a penalty from the Environment Agency.

Leak Checking Frequencies under the current F-gas Regulations

Quantity of gas ($t CO_2$ eq)	F- gas Leak Checking Frequency	
	No quipment fitted	Leak detection equipment fitted
≤ 5	None	None
5 - 50	12 monthly	24 monthly
50 - 500	6 monthly	12 monthly
≥ 500	3 monthly	6 monthly

- Additionally, if you are installing new heat pumps then you will be required to comply with building regulations.

Health and safety

There are a number of health and safety risks:

- Electrical safety: Any electrical installation, maintenance or repair of the heat pump system should be undertaken by a suitably qualified electrician.
- Refrigerant leakage: Refrigerants present a number of risks such as explosion, toxicity, air displacement and cold burns. It is important that a suitably qualified specialist maintains the system and that a leak detection system is in place.
- Water: Heat pump systems that use water should be maintained in line with other water systems to prevent bacterial growth such as Legionella.

Billing options

The billing system can be exactly the same as a building providing heating or cooling via conventional systems.

There is a government Renewable Heat Incentive (RHI) which is a scheme that would provide financial support for the installation of heat pumps. There are separate schemes for domestic and non-domestic buildings.

1. RAINWATER HARVESTING

Description

A rainwater harvesting system collects, stores and allows the reuse of rainwater running off surfaces upon which it has fallen. The water is typically used for non-potable uses such as toilet flushing or landscape watering.

Benefits

- Reducing costs associated with purchasing supplies from a water company.
- Reducing the energy consumption and carbon emissions associated with a building's water use.
- Rainwater harvesting reduces flash-flood risk associated with heavy rainfall.
- Reuse of water reduces the amount of sewerage discharge and the associated financial costs.

Maintenance

Specific consideration should be given to the following maintenance aspects in relation to rainwater harvesting infrastructure:

- Every two-three months, clear debris from pre-tank filters and clean gutters to maintain efficiency and reduce having to top the tank up from mains water.
- Every year, service the system, including visually and electrically checking pumps and electrically, check the condition of flexible hoses, seals and fixings of lids, cables and connectors.
- Regularly checking the solenoid valve needs with a mains water top up to prevent leakages or the tank not filling up properly.

Regulatory compliance

There are no regulations that must be complied with for rainwater harvesting in operation. However, in most cases, before work starts on installing rainwater harvesting, consent must be obtained from the water supplier by giving notification of the details of the proposed infrastructure as part of compliance with The Water Supply (Water Fittings) Regulations (1999).

Health and safety

There are low health and safety risks when using rainwater for non-potable uses such as toilet flushes.

Billing options

Billing considerations for rainwater harvesting should consider:

- Inclusion of maintenance costs as part of the wider contract.
- Recognition of the reduced cost of potable water as part of a property's water bill.

2. LOW FLOW APPLIANCES

Description
Low flow appliances include systems such as low flow toilets and taps, tap and shower aerators and flow controllers.

Benefits
- Reduce the amount of potable water a building consumes and as a result also reduce expenditure on water bills.

- The initial cost of installing or retrofitting low flow appliances are slightly higher, if not comparable with regular appliances but have a lower whole life cost due to their efficiency.

Maintenance
Specific consideration should be given to the following maintenance aspects in relation to rainwater harvesting infrastructure:

- Every two-three months, clear debris from pre-tank filters and clean gutters to maintain efficiency and reduce having to top the tank up from mains water.

- Every year, service the system, including visually and electrically checking pumps and electrically, check the condition of flexible hoses, seals and fixings of lids, cables and connectors.

- Regularly checking the solenoid valve needs with a mains water top up to prevent leakages or the tank not filling up properly.

The following elements should be considered as part of a maintenance regime for low flow appliances:

- Make periodic adjustments to flow-control devices, check automatic valves are functioning properly.

- Replace automatic control batteries regularly.

- Avoid using harsh chemicals and pouring water down waterless urinals as this will damage the trap/cartridge system which acts as the urinal's flush.
  - When the cartridge is removed for replacement (usually every fourth year), water can be flushed down the system before installing a new cartridge.

- Check aerators regularly, removing and cleaning any debris or dirt and look to replace annually to avoid limescale build up

Regulatory compliance
There are no specific regulations that must be complied with for low flow appliances in operation.

Health and safety
Typically, there are no greater health and safety risks to low flow appliances than regular appliances. Regular cleaning regimes will eliminate and reduce the risk of bacterial growth and viruses.

Billing options
Billing considerations for low flow appliances should consider:

- Inclusion of maintenance costs as part of the wider contract.

- Recognition of the reduced cost of potable water as part of a property's water bill.

3 SUSTAINABLE URBAN DRAINAGE (SUDS)

Description

SuDS are a natural approach to managing draining in and around a building or development. They are a collection of water systems that mimic the natural water cycle and reduce the risk of flooding by slowing and holding surface water drainage from running off a site too quickly.

Benefits

- SuDS are a natural method for managing flood risk and reduce the risk of flooding in the vicinity of the building.
- By imitating the natural water cycle, SuDS reduce the transportation of pollutants to the watercourses as they are removed whilst the water travels through the ground.
- Groundwater sources are under pressure in the UK and SuDS can be used to recharge these vital sources of water.
- SuDS are often combined with green infrastructure and therefore create an opportunity to provide new habitats for wildlife and support local biodiversity.

Maintenance

Specific consideration should be given to the following maintenance aspects in relation to SUDs:

- Monthly:
  - Remove debris, litter and cut surrounding grass.
  - Inspect inlets, outlets and flow control systems.
  - Sweep permeable paving.
  - Inspect for damage and undertake remedial work if required.
- Annually:
  - Remove silt from that has built up in the system.
  - After leaves have fallen, sweep permeable paving and remove debris.
- Avoid using weedkillers and pesticides to prevent chemical pollution.

Regulatory compliance

There are no regulations that must be complied with for SUDS in operation. However, there are non-statutory technical standards, which have been developed by DEFRA for England and Wales.

In addition, some local authorities have their own policy and guidance which the design and installation must comply with.

Health and safety

The primary health and safety concern associated with SUDs relate to flood risk, deep water and slips/trips/falls. Consideration should be given to:

- Undertaking a site evaluation to identify flood risks which pose a threat to safety and put plans in place to mitigate. These will typically be blocked pipes, failure of pumps, unexpected impediments across planned flood or exceedance routes.
- Mitigation measures relating to deep water, such as, for example, fencing, signs and life-saving equipment.

Mitigation measure relating to slips or falls as a result of wet conditions, such as, for example, regular cleaning to prevent algae build up, closure of paths in wet or icy conditions and signage.

Billing options

Unless there is a separate agreement, the asset manager is usually the default party responsible for maintaining the SuDS components. However, through contractual agreement and payment, this responsibility can be given to a specialist organisation who 'adopt' the system.

RENEWABLE ENERGY

HOW TO...

Asset managers are primarily responsible for the procurement of renewable electricity for a property, or portfolio. However, it is important that asset managers engage with occupiers to understand how commercial real estate can contribute towards their renewable energy needs.

The ability to procure verifiable 100% renewable energy should be considered against other commercial outcomes. If a supplier is able to offer this tariff, but cannot, for example, consolidate billing, then there is a potential resource and environmental impact of handling and storing large quantities of both paper and data. If the commercial and operational terms do not justify the solution, then carbon offsetting may be considered as a more preferable solution.

Procuring renewable energy involves two primary areas of consideration:

1. DECIDE ON THE PROCUREMENT ROUTE

There are two primary routes to securing a robust renewable energy tariff:

A Corporate Power Purchase Agreement (CPPA)

A CPPA gives the end-user control over the source of their power. Unless the physical infrastructure supports a private wire arrangement (whereby a cable or pipe connects the generator with the end-user), the contractual structure will be tripartite.

This will require an agreement between the generator and the end-user (to purchase the power), one between the generator and supplier (allowing the supplier to bill on behalf of the generator and pricing in third-party charges and balancing risks), and one between the supplier and the end-user to confirm the supply and payment of the power consumption.

100% Renewable Energy Guarantee of Origin Certificate (REGO) backed supplier tariff

A REGO is a UK specific type of Energy Attribute Certificate which removes end-user choice over generation source but is simpler than a CPPA.

Only a contract between the supplier and end-user is required, as the supplier will have made contractual provisions for the generation source themselves. REGOs are allocated in arrears by the supplier based on end-user consumption.

Note that the green gas equivalent tools are CGPAs (Corporate Gas Purchase Agreement) and RGGOs (Renewable Gas Guarantee of Origin Certificates).

There are pros and cons to each solution, which are listed below:

CPPAs		100% REGO Backed Tariffs	
Pros	**Cons**	**Pros**	**Cons**
Choice of Generator	Complex Contract Structure	Simple Contract Structure	Generators selected by Supplier
Budget Stability	Price Inflexibility	Price Flexibility	Price Volatility
Additionality	Long-term contract length	Contract flexibility	Unbundling and Audit Failures

2. PROCURE THE CHOSEN SOLUTION

CPPAs

A CPPA requires a wholesale supplier contract structure, which involves an end-user having capacity for in-house, or outsourced, commodities trading.

This is because you will need to be able to 'sleeve' the energy offtake from a generator into your supply contract, i.e., handle the transfer of money and energy to and from a renewable energy project on behalf of the end-user

When tendering a supply contract, it is important that the end-user includes sleeving provisions within the specification, such as example contract terms or written acceptance of sleeving solutions.

Once the framework is laid out within a supply contract that facilitates the inclusion of CPPAs, it will be up to the end-user to source a preferred generator.

Options to source preferred CPPA generator:

- Reverse auction – wherein a generator will invite bids from prospective end-users for volumes and offtake prices for existing and new schemes;
- Direct engagement – wherein an end-user tenders the available portfolio to generators; and
- Dedicated platforms – wherein end-user requirements are added to a collective demand which is bid for by generators.

CPPAs typically run for a period of 5-15 years, with the shorter agreements reserved for low investment, swift payback solutions such as solar photo-voltaic. Prices are usually set for the duration of the contract term and are often index linked.

In order to better adjust to market conditions, it is recommended that negotiations with generators take place to explore opportunities for price reopeners (in the event, for example, that the commodities market crashes and the agreed CPPA price represents poor value) and supplier guarantees (should the portfolio not be able to honour the contract in future).

REGO-backed tariffs

A 100% REGO-backed tariff provides greater flexibility in the choice of supplier and supply contract structure than a CPPA. This is because REGOs can be offered through both wholesale and retail contracts. That is., whether energy is procured independently of the supply contract, or whether through an all-inclusive solution.

As only a few suppliers offer exclusively green tariffs, other supplier's tariffs can be compromised by the inclusion of brown energy in an overall supplier mix, and the utilisation of unbundled REGOs. That is, where the REGOs are procured independently of the utility. Rather than restricting competition to those few suppliers that offer only renewable energy tariffs.

Rather than restricting competition to those few suppliers that offer only renewable energy tariffs, there are questions that should be asked of all suppliers concerning their REGO-backed tariffs when tendering:

- Are REGOs (in whole, or in part) bundled, either due to power purchase agreements with generators, or due to self-generation?
- Can bundled REGO certificates be directly attributed to end-user supply?
- Is the bundled REGO chain-of-custody process accredited by a third party, to a recognised international standard such as ISAE 3000?

Combined approach

It may be that a blended solution provides the most pragmatic approach, with the CPPA covering a percentage of the portfolio or asset baseload, and the renewable tariff covering the remaining consumption.

This is particularly important to consider if there is concern about portfolio turnover, and it is important to remember that a significant asset sale could result in an inability to consume agreed volumes. Whilst CPPAs can support volume tolerance clauses, energy suppliers have greater flexibility than generators.

Additionality

'Additionality' requires that the procurement of a renewable energy credit must contribute to additional, rather than existing decarbonization.

The requirement for additionality is designed to maximise renewable generation in the UK through prioritisation of CPPAs and/or Supplier Tariffs predicated solely on consented (but unbuilt) schemes.

However, additionality doesn't account for partial financing options, where a scheme has been built utilising short term Power Purchase Agreements as collateral, with the understanding that these will be displaced by future CPPAs once they come to an end.

Equally the use of REGOs as an income stream is considered by investors. REGOs unclaimed from existing schemes, if additionality is pursued, could result in more unbundled REGOs finding their way into supplier offerings.

Critically, end-users should consider whether optimising existing generation has a role to play in their decarbonisation strategy, and tailor their specifications appropriately.

ENERGY PERFORMANCE MONITORING

HOW TO...

Continued monitoring for energy performance is normally led by a property manager, with input from the facilities manager. Technical support from an energy manager or other competent individual is usually central to the process.

Continued monitoring for energy performance involves consideration of the following four steps:

AM PM

STEP 1: ENERGY MEASUREMENT AND DATA COLLECTION FROM ADVANCED SUB-METERING

It is important to be able to measure a property's energy consumption profile frequently, regularly and accurately. Reliable advanced metering and sub-metering enables detailed and effective energy monitoring and analysis.

AM PM FM

STEP 2: KEY PERFORMANCE INDICATORS

Key performance indicators (KPI) support a property's continuous improvement in energy performance. KPIs provide visibility of the fulfilment of energy objectives and drives improvement by encouraging energy efficiency measures to be delivered

Good energy KPIs will be visible to stakeholders. The meaning of KPIs should be clear, including the extent to which a property is making progress in relation to the performance being measured through the KPIs.

There are two types of KPIs that an energy manager should consider:

STRATEGIC KPIS:
High-level or industry-level measures.

A strategic KPI that is commonly used to track and benchmark a building's performance is the energy usage intensity (EUI).

The EUI expresses a building's energy use as a function of its size. EUI is typically expressed as energy per square meter per year. This calculated by dividing the total energy consumed by a building in a year by the building's total gross floor area. EUI can be defined as a building's energy performance indicator.

As a building's energy usage intensity is related to the building's total energy usage, it is important that accurate data from the main utility meters can be obtained.

By using EUI, a building's energy performance can be benchmarked against comparable and/or average buildings.

By using data from advanced sub-meters, it is possible to review how system components, such as lighting and HVAC systems, for example, compare to industry standards.

For example, comparing a property's EUI against CIBSE's Guide F: Energy Efficiency in Buildings, which includes industry benchmarks for different building types and system components.

To benchmark buildings, The Real Estate Environmental Benchmark (REEB), a publicly available operational benchmark of environmental performance for commercial property in the UK, is also beneficial.

CONTROL-SPECIFIC KPI:
This focuses on specific plant and equipment.

For example, a KPI could be set for optimal setpoints for HVAC systems, so that deviations from optimal parameters can be reviewed. Deviating from optimal parameters can be due to fault equipment or control settings which would increase a property's energy usage unnecessarily.

PM FM

STEP 3: WHEN AND WHERE ENERGY IS USED

Monitoring and analysing collected energy consumption data, profiles and patterns and comparing these to KPIs benchmark helps to identify areas of energy wastage. In turn, this enables opportunities for energy performance improvement to be identified and evaluated, and progress towards energy targets to be assessed.

As part of this, it is important that energy usage patterns are reviewed though consideration of annual, monthly and seasonal changes in demand. By using accurate data from advanced meters, energy managers can investigate data at a granular level to support understanding changes in peak load times and baseload.

AM PM FM

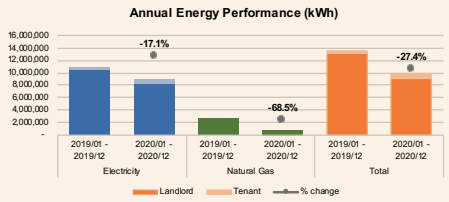
STEP 4: ENERGY REPORTING

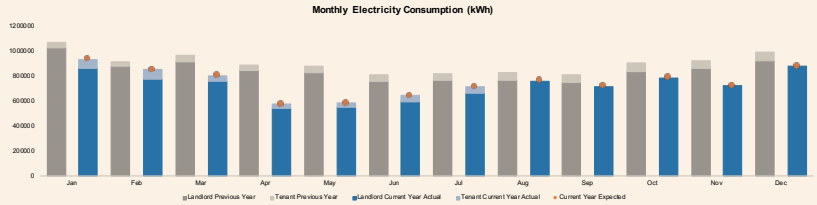
Energy reports are important for keeping track of a property's energy performance and the extent to which progress is being made against targets. Compiling an energy report can also encourage on-going energy monitoring by a range of property stakeholders.

Energy reports may be in the form of dashboards that can be used to engage with stakeholders, including property managers, employees and occupiers, who can use the information contained within the reports to act on energy saving recommendations.

Dashboards should be shared with stakeholders on a regular basis (typically monthly), and should present information in an understandable and engaging way. An example of an energy dashboard which demonstrates how monthly consumption changes over time and how a building is performing against a target can be seen below.

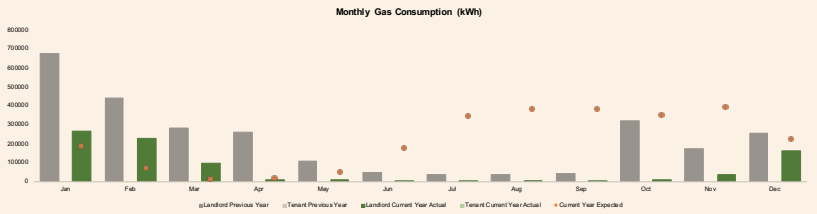
Example energy performance dashboard of a shopping centre





Energy target: Reduce energy intensity by 40% by 2030 (kWh/m^2)

	Baseline	Current	Target
	2016/17	2020/12	2030
Total energy consumption (kWh)	15,189,684	9,853,540	9,113,811
Intensity (kWh/m^2)	74	48	44
Floor area (m^2)	205,623		
% reduction		-35%	-40%



On the above charts, orange dots indicate expected consumption based on external temperature. If the column is below the orange dot then the system is operating efficiently but if the column is above the orange dot then the system is less efficient vs the previous year.

Raw data

Utility	Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Electricity	Previous year	1,075,318	921,159	970,386	890,468	881,702	815,037	822,602	832,916	815,898	904,992	930,222	999,662	10,860,362
	Current Year Actual	938,558	852,585	807,589	576,171	585,152	646,922	717,324	762,199	717,716	789,950	724,745	881,599	9,000,509
	YoY % change	**-12.7%**	**-7.4%**	**-16.8%**	**-35.3%**	**-33.6%**	**-20.6%**	**-12.8%**	**-8.5%**	**-12.0%**	**-12.7%**	**-22.1%**	**-11.8%**	**-17.1%**
	Current year Expected	938,558	852,585	807,589	576,171	585,152	646,922	717,324	762,199	717,716	789,950	724,745	881,599	9,000,509
	Actual vs Expected	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**	**0.0%**
Natural Gas	Previous year	682,359	442,157	286,262	261,453	109,563	50,951	40,093	39,098	44,044	320,614	174,099	257,520	2,708,213
	Current Year Actual	266,093	232,326	97,359	12,852	9,161	5,906	5,607	5,454	6,978	11,286	36,687	163,322	853,031
	YoY % change	**-61.0%**	**-47.5%**	**-66.0%**	**-95.1%**	**-91.6%**	**-88.4%**	**-86.0%**	**-86.1%**	**-84.2%**	**-96.5%**	**-78.9%**	**-36.6%**	**-68.5%**
	Current year Expected	185,794	68,829	8,153	14,440	47,044	176,145	347,206	384,343	385,951	350,131	393,846	222,931	2,584,815
	Actual vs Expected	**43.2%**	**237.5%**	**1094.1%**	**-11.0%**	**-80.5%**	**-96.6%**	**-98.4%**	**-98.6%**	**-98.2%**	**-96.8%**	**-90.7%**	**-26.7%**	**-67.0%**

LEAK DETECTION

HOW TO...

Usually, leak prevention is coordinated by the property manager with input from the facilities manager. There is also an opportunity to engage with occupiers who manage their own water consumption and infrastructure by supporting them with their leak prevention measures.

Leak prevention should consider the following elements:

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1. LEAK MITIGATION

It is important to implement measures that will reduce the likelihood of a leak event. These can include, for example:

- Undertake a property review to understand the condition of building systems which use, supply or remove water and identify where water leaks are likely to occur.

- Set out a programme for regular inspections which can be undertaken by a facilities manager, specialist maintenance team or other property staff, such as security as part of patrols, and should check:
  - The condition of overflows and pipework. Valves should be tested to ensure they can be switched off, and should be lubricated at least once a year.
  - Roofs for damaged surfaces, the condition of flashing around the perimeter and insulation under the roof.
  - Blockages in gutters and drains.
  - Signs of water damage: bad smells from the floor or near a drain possibly indicating stagnant water, damp or dark patches on walls and ceilings, paintwork peeling or bubbling.
  - Void units, empty floors and spaces that are not frequently occupied.

- In the lead up to winter, undertake cold weather prevention measures:
  - Insulate pipes and seal cracks and openings around exposed pipes to prevent them bursting in freezing weather.
  - Servicing HVAC equipment, ensuring the excess water from the condensation reservoirs is removed.
  - Ensure dry pipes and low point valves are drained to prevent water accumulating in low points without drainage.

- Install shut off valves if they not already present.

- Upgrade old building systems, pipes, faucets and fittings.

- Consider investing in a leak detection system. Choosing the right system for a property is important as there is a range of systems from single zone water leak detection systems for domestic properties through to multizone ones for commercial. Additionally, there are different types of detectors:
  - Flow-based monitors the volume and length of time that water is passing through a pipe and uses pre-set thresholds to alert the system and automatically shut valves. Recommended for existing residential and smaller commercial properties.
  - Sensor-based systems, which are connected to a central control panel and the building management system using cables and spot probes to detect leaks. When alerted, the system can send alerts via email or text. These are recommended for specific location within large commercial properties such as server rooms, plant room, kitchens and bathrooms.

PM FM

2. WATER SYSTEM MONITORING

Remote and automated tracking of water usage is an easy way to identify unusual consumption patterns and spot a leak quickly. There are a number of ways of approaching this, for example:

- Consider installing automated meter readers (AMRs) for the incoming water supply pipe. These can be purchased up front, but can be expensive. Consider requesting that AMRs are installed and included when a property's water contract is up for renewal.
- A cost-effective alternative to AMRs is sensor technology to enable remote monitoring. There are various types from probes, spot sensors and cables. It is important to ensure they the selection of sensor technology is compatible with existing building management platforms and that sensors are accessible and can be maintained or replaced if necessary.
- Consider installing AMRs or sub-meters and sensors on specific building systems which have been identified as posing a leak risk such as cooling towers, HVAC systems or areas such as toilets and showers.
- As a minimum, monthly readings of the water meter should be taken, recorded and tracked against the previous months' consumption and same time last year to account for any seasonal changes.

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3. WATER DAMAGE AND COST ALLEVIATION

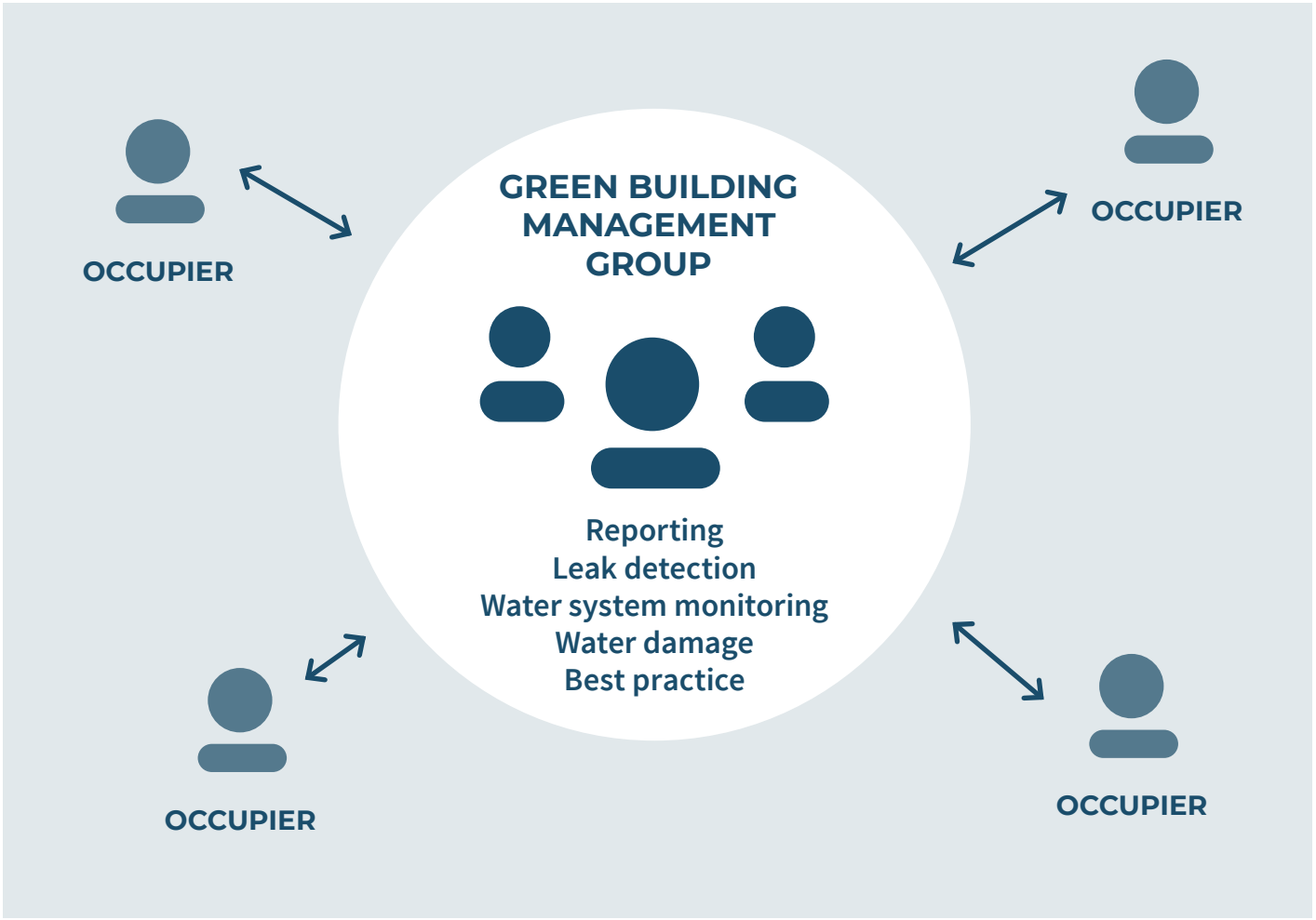
In the event that there is a leak, if the following activities have been considered in advance, as part of preparedness arrangements, it may be possible to mitigate the risk of damage, wasted water and financial cost.

- Establish procedures for reporting leaks and faults to ensure action is taken quickly to mitigate the impacts.
- Make sure that all site staff and occupiers know how to report a leak, blocked drain or other water incident, and what action they should take.
- Create an emergency contact sheet for all property users with details for plumbers, water damage mitigation services and other relevant parties.
- Ensure all site staff and occupiers know where the supply pipes run and where the shut-off valves are and know how to switch them off.
- Valves should be clearly labelled with a visible tag for easy identification and if they are behind doors, the door should also be labelled and keys should be kept onsite. Labelling should differentiate between the types of valves:
  - Main – shut off to the facility or an entire building.
  - Primary – water shut off to floors, wings or large areas.
  - Critical – water shut off over critical equipment such as computer rooms.
- Consider having an onsite leak response kit with mops, squeegees, wet vacuums and wet floor signs.
- If a leak is suspected but cannot be identified, check the water meters at the start and end of the period when the building is unoccupied, which is usually overnight. If the meter readings are not similar, then this indicates a possible leak, overflow or uncontrolled water use for further investigation.
- Understand what is covered within the property insurance policy as some events will not be included such as backed up sewers or drains or as a result of poor maintenance.

4. OCCUPIER ENGAGEMENT

Consider establishing a Green Building Management Group as part of wider arrangements to engage occupiers.

A Green Building Management Group can be an ideal forum to communicate leak detection procedures and reporting, whilst also supporting occupiers with best practice and helping them to manage any risks within their own responsibilities.



UNDERTAKING A WATER AUDIT

HOW TO...

A water audit is usually established at the property level, although it is possible to combine an audit across multiple sites, and a program of water audits is often undertaken at a portfolio level.

The decision to implement a water audit is usually taken by an asset manager. However, a property manager will often be responsible for coordinating the audit process, with information and support provided by a facilities manager. The audit outcomes will be of interest to all stakeholders.

The process of undertaking a water audit should take place within a wider framework for the governance of audit and assurance activities, and should include the following steps:

AM PM

STEP 1: ESTABLISH AUDIT OVERSIGHT AND SCOPE

It is important that a forum, committee or body is established to provide oversight of the audit process, to validate outcomes, and to check that recommended actions are allocated appropriately.

The scope of a water audit should be agreed by the oversight body before it is undertaken.

Determining the audit scope should involve consideration of a number of issues:

- What are physical boundaries of the property or portfolio to be included in the audit?
- What is the quality of the established water meter inventory at these locations?
- What is the quality of baseline water consumption data?
  - Is there high granularity data via local metering by user or zone, or low granularity data by building?
  - Is there reliable and up-to-date data via actual meter readings, or a reliance on estimated billing data?
- Is it beneficial and practical to include occupier leased areas as well as owner-controlled areas?
- Will the scope include infrastructure improvements such as plant replacement, leak detection and rain/greywater recovery?
- Will the scope include supply arrangement optimisation, such as tariff evaluation, sewerage abatement and water abstraction?

Property managers should triage meters within an asset, or assets within a portfolio, in preparation for intervention.

Rateable value supplies should generally be excluded from the scope of a water audit, as these supplies are typically low consuming. This is also the case for low consuming metered supplies, as the cost of interventions will likely outweigh the benefits.

PM

STEP 2: SECURING A COMPETENT WATER AUDITOR

While there are no mandated qualifications or accreditations to undertake a water audit, the individual undertaking the assessment should have knowledge and experience appropriate to the audit's scope.

As a minimum, a water auditor should have experience in relation to energy management, the property and equipment type involved, and the processes and arrangements involved in audit and assurance activities.

Free guidance is available online on how to undertake a water audit. However, if water related infrastructure, plant and supply optimization are included in the scope, specialist industry equipment and knowledge will be necessary.

Considerations when contracting a third party to undertake a water audit:

- Specialist auditors offer fee structures based on either a fixed up-front fee, or a share of savings basis.
  - If the fixed fee structure is used, it is feasible that no opportunities will be identified, and the costs will not yield savings.
  - If the share of savings structure is used, if substantial savings are identified, you may end up paying more than under a fixed fee structure.
  - Clients will need to be engaged to confirm where the payment of these services will come from. Clients may, for example, accept a fixed fee structure to be paid out of non-recoverable funds in the event that the service yields no benefit, but that it is paid out of service charge if the savings exceed the outlay.
- Some water retailers offer water audits, and some may also offer a personalised water management package, in order to achieve the best water efficiency for the building.

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STEP 3: REVIEW WATER CONSUMPTION PROFILE

The review of a property's water consumption profile is a central element of a water audit. The energy consumption profile should be compared against historical trends, with the intention of identifying the areas of greatest consumption and anomalies in expected consumption.

PM FM

STEP 4: REVIEW WATER MANAGEMENT ARRANGEMENTS

Performance against historical water targets should be reviewed to determine the extent that progress towards intended improvements is on track.

Alongside this, a water audit should consider management arrangements, such as metering arrangements, processes review water consumption and arrangements to check that recommended actions from previous water audits are being deployed. There should be evidence that such arrangements are in place and are being implemented.

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STEP 5: IDENTIFY WATER OPPORTUNITIES

A key component of a water audit is to identify opportunities to improve water efficiency. This is partly informed through the analysis of a property's water consumption profile, and is complemented by observation of equipment, operational practices and billing arrangements.

Consideration should be given to the following:

- Opportunities for water efficiency measures to reduce consumption, including water saving devices and behaviour change programmes.
- Opportunities to reduce consumption through infrastructure improvements, such as plant replacement, leak detection and rain/greywater recovery.
- Opportunities to reduce costs through supply arrangement optimisation, such as tariff evaluation, sewerage abatement and water abstraction.

Opportunities to reduce water consumption

Water saving devices and behaviour

Opportunities to reduce water consumption

Infrastructure improvements

Opportunities to reduce water cost

Supply arrangement optimisation

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STEP 6: REVIEW AND CONTINUE TO IMPROVE

The outcomes from a water audit, including recommended improvement actions, should be documented and reviewed by the oversight body. An action plan should set out improvement opportunities alongside timeframes and responsibilities, and should inform the development of water targets.

Ongoing water consumption, progress against targets and the implementation of action plans should be periodically reviewed by the oversight body, or an appropriate forum with responsibility for a property's water or environmental management activities.

CREATING A WATER METER INVENTORY AND CONSUMPTION BASELINE

Establishing a water meter inventory for a property, and the consumption through those meters, enables a consumption baseline to be established, against which improvement targets can be set.

The following steps should be followed in order to establish a building's baseline water usage:

STEP 1: OBTAIN THE BILLS AND METER READINGS FOR THE BUILDING AS SUPPLIED BY THE WATER COMPANY

Rateable value supplies will not have meter readings but estimated annual consumption figures.

Some metered supplies will include both a main and a bypass meter, with the latter recording water at low flow rates. You will need consumption from both of these meters.

STEP 2: IF THE SUPPLY IS METERED, LOCATE THE WATER METER

It is usually located by the boundary of the property, often near a road. Your water retailer will be able to advise of the location details as held in CMOS, should identification prove challenging.

STEP 3: CHECK THE METER SERIAL NUMBER ON THE BILL MATCHES THE BUILDING'S WATER METER

The serial number can be found on the face of the meter, or etched in the metal meter casing.

If the serial number does not match that on the bill, or you are still unable to identify the meter, ask your water retailer to raise a C/01 form, which compels the water wholesaler to undertake a meter verification visit and will help to identify the meter, or update the meter details should they differ from the invoices.

STEP 4: READ AND RECORD THE ACTUAL READINGS FROM THE BUILDING'S WATER METER(S).

It is important to take regular recording of meter readings to enable the identification of trends in water consumption.

In most buildings, meters will need to be manually read.

How to manually read a water meter:

- Ensure that you only read the register to the decimal place, or to figures in a relief colour.
- Some newer meters are digital, and may require the display to be cycled to the consumption register (denoted by m3).

- Some meters may include a multiplier, either with 'x10' stated on the meter, or with '10' printed under the last digit on the register. In these instances, add a zero to the end of the reading.

- Some older meters may record in gallons or cubic feet.

Automatic Meter Reading (AMR) equipment can be added to meters. AMRs take a reading, log the data and communicate it to utility companies and/or property managers.

There are also prism-lensed cameras that can be affixed to meters set to take photos on a period basis and transfer the data electronically to a central database.

STEP 5: VERIFY THE WATER BILL READINGS AGAINST THE ACTUAL METER READINGS

It is usual for only large users of water, who are predominantly in the manufacturing sector, to receive regular bills based on meter readings. The water bills for most buildings will be based on estimated readings.

Submitting the readings you take to the supplier will ensure invoice consumption data tallies with the readings you take on site, and provide a host of ancillary benefits such as better budget management and minimising supplier queries.

STEP 6: CALCULATE A PROPERTY'S WATER CONSUMPTIONS

As a minimum, a property's water consumptions should be calculated annually. Ideally, more frequent usage levels should be calculated, such as monthly or weekly.

Sub-metering can provide detailed consumption data but is typically only installed in buildings with large water consuming items of equipment or areas, for example, swimming pool. However, the cost of installing sub-metering is now reducing increasing the opportunities for installation.

BENCHMARKING WATER USE AND SETTING TARGETS

HOW TO...

Usually, the decision to participate in a benchmarking scheme, or to set property or portfolio water targets, is taken by an asset manager. The process of collating information that will inform this decision is coordinated by the property manager with input from the facilities manager.

Key considerations for benchmarking and setting energy targets are described below:

BENCHMARKING

PM FM

1. COLLATE WATER CONSUMPTION DATA

Water consumption data can be collected from invoices, incoming water meters, or submeters connected to data collecting platforms.

- Smaller properties may receive invoices on a quarterly basis with estimated reads, which means these might not be the most reliable when starting the data collection processes.
- Larger properties may receive invoices on a monthly basis, but readings might still be estimated.

Obtaining the most reliant water consumption data involves taking regular readings from the incoming meters or reviewing output from automated data collection platform.

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2. NORMALISE BENCHMARKING DATA

Before proceeding with a benchmarking exercise, it is important to normalise water benchmarking data, where possible. Unlike an absolute benchmark, a normalised water benchmark facilitates a like-for-like comparison with other properties or portfolios.

Normalisation can be delivered via a range of metrics, including, for example:

Annual water use in cubic meters (m^3):

- Per employee.
- Per m^2 of occupied space.
- Per tonne/litre of product.
- Per m^3 of product.

3. CONSIDER AN APPROPRIATE BENCHMARK

It is important that a benchmark aligns with a property or portfolio's business strategy. There are a number of benchmarks which cover water consumption. These include, for example:

The following are all useful benchmarking options that could be considered:

Vision	Benchmark	What and Why?
Internal	Best performing building in a portfolio	Readily accessible information and relatable to key stakeholders in the business. Potential to generate friendly competition in water conservation activity.
External	Real Estate Environmental Benchmark	A free to use resource with typical and good practice intensity metrics for energy, water and waste, plus a benchmark calculator, based on data from over 1,000 commercial properties across the UK. Useful to understand an organisation's performance as compared to the wider industry.
External	NABERS	A subscription-based association hosting intensity metrics for energy, water and waste benchmarking based on actual data from commercial properties. Useful to understand an organisation's performance as compared to the wider industry.
External	The Environment Agency	An on-line resource providing typical and best practice water consumption benchmarks for different types of properties, facilities and institutions.
External	Peer performance	Many organisations submit their water consumption performance to voluntary disclosure schemes, such as: • The Carbon Disclosure Project. • Global Real Estate Sustainability Benchmark. • European Public Real Estate Association's Sustainability Best Practice Recommendations. • The Global Reporting Initiative.

AM PM

1. CONSIDER EXTERNAL AND INTERNAL DRIVERS

It is also important to consider how a water target is set based on what is possible within strategic, budgetary and infrastructural constraints. This includes understanding what action and investment would be required to achieve the target, and considering the extent to which this resource, and the required actions, are achievable.

Understanding the water consumption profile of a property or portfolio, and the potential contribution that may be available through different energy saving opportunities, can inform a decarbonisation pathway and incremental targets within it.

Ideally, a target should combine both external and internal drivers.

- Short to medium-term targets based on known opportunities.
- Long-term targets recognising the potential for product and service innovation that may yet involve unknown quantities, or wholesale strategic change that offer energy and carbon reduction opportunities which are not immediately available.

AM PM

2. CONSIDER BOUNDARIES AND NORMALISATION

Water consumption targets should always be applied within a defined boundary. For example, organisations may decide to take:

- A whole portfolio approach, but should recognise that acquisitions and divestments may impact on performance and hence the ability to meet those targets.
- A like-for-like approach, where performance is normalised to account for acquisitions and divestments, by adding or removing associated consumption to a baseline.
- A steady state buildings approach, so that vacant buildings and those where building controls aren't fully understood or employed, represent a more consistent approach to water consumption performance and target setting.

PM FM

3. COLLABORATE WITH OCCUPIERS

Collaboration between property managers and occupiers will increase the likelihood that water consumption targets will be achieved. This may include, for example:

- Early engagement with occupiers as part of the target setting process. This can provide a useful way to secure buy-in to participate in water conservation initiatives.
- Agreement with occupiers on the governance arrangements. This may involve, for example, sharing water consumption data and monitoring and reviewing the impact of projects.

WATER EFFICIENCY OPPORTUNITIES

HOW TO...

There are a range of water efficiency opportunity types, that include:

- Water efficient fixtures.
- Water usage controls.
- Use of rain, grey and blackwater.
- Metering.
- Occupier engagement.

Different water saving opportunity types will be of interest to, and the responsibility of, asset, property and facilities managers, and occupiers.

Water efficiency opportunities involve the consideration of a number of elements:

PM FM

STAGE 1: IDENTIFY WATER EFFICIENCY OPPORTUNITIES

There are different ways to approach the identification of water opportunities. Determining the preferred approach will depend on multiple factors including the asset type, the availability of data, the technology installed and the budget available for investigation works.

If the budget for identifying water efficiency opportunities is limited, the following should be considered:

- Reviewing the existing PPM to identify any recommendations.
- Benchmarking the energy use of the building – review the Better Building Partnership Real Estate Environment Benchmark
- Asking the M&E contractor to conduct a simply review of the operation of the plant in the building.

PM

STAGE 2: PRIORITISE THE RECOMMENDATIONS

It is likely that a review of potential water efficiency opportunities will provide multiple recommendations, some of which will be more practicable than others.

An exercise to evaluate and prioritise opportunities should be undertaken. This should consider factors such as ease of implementation, cost, payback period and anticipated savings.

AM PM

STAGE 3: DETERMINE HOW THE RECOMMENDED INITIATIVES ARE TO BE FUNDED

It is important to determine whether the whether the asset manager is willing to fund or forward fund any of the recommendations identified by the review of potential water efficiency opportunities which require capital investment. This is likely to depend on a range of factors, including payback period and alignment with corporate sustainability targets.

Another funding option may include the service charge, depending on the recommendation and the provisions within the service charge clause.

PM FM

STAGE 4: INSTRUCT THE IMPLEMENTATION OF APPROPRIATE ENERGY EFFICIENCY IMPROVEMENTS

A property manager is likely to have a responsibility for identifying and instructing the parties who will carry out the water efficiency improvements.

- For capital works, this will involve the procurement of suitable contractors.
- For behaviour change opportunities, engagement with communications and human resource teams within both property and facilities managers, and occupiers, will be important.

PM

STAGE 5: MONITOR AND REPORT ON THE IMPACT OF THE IMPROVEMENTS

It is important that the water data available for the property is reviewed before an improvement project is implemented. This will enable the creation of a baseline which can be referenced the project has been implemented to assess the extent of water efficiency improvement.

Water efficiency improvement opportunities: examples

There are a number of general areas that support water efficiency. These include:

Water efficiency fixtures

- Water efficient toilets, taps and showers. For example, cistern displacement devices and aerated taps.
- Urinals: For example, hydraulic valve installations, passive infrared sensors, manual quarter- turn ball valves, timers, cistern volume adjusters and waterless urinals.
- Toilets: For example, leak detection, drop valve mechanisms, cistern valve mechanisms, cistern volume adjusters, dual flushing, adjusting position of the ball float, siphon mechanisms, cistern dam partitions, delayed action inlet valves.
- Flow controllers. Water is often delivered to taps at a much higher pressure than necessary, which leads to a higher rate of usage. Pressure-reducing valves can be used to control the pressure in the incoming mains or the distribution system.
- Washroom taps: For example, isolating ball valves, flow restrictors, spray taps, tap aerators, push taps, electronic taps/infrared sensors, eco taps or eco brake cartridges, thermostatic mixer valves.

Metering

- Meters and monitoring systems. For example, sub-meters and/or flow-meters can be purchased or hired in order to calculate consumption or flow data for key equipment or process lines.

Rain, grey and blackwater

Water that is supplied by water companies is required by law to be of a potable standard, which means it is suitable for drinking purposes. However, it is estimated that around 80% of water supplied to commercial premises is used for purposes for which a potable standard is not required. Hence, the treatment applied to achieve potable water standards is, in effect, unnecessary.

In order to reduce the demand for purchased potable water to a site or building, the following sustainable water systems could be considered for installation:

- **Rainwater harvesting:** Capturing rainwater at the point it falls, storing it and then using it for non-potable sources. Many roofs of commercial buildings have a high water harvesting potential.

- **Greywater:** Water from showers, basins and laundries directed to a water harvesting tank and then fed to the cistern. This water is usually only used for toilet flushing, as it is not as clean as rainwater

- **Blackwater:** Water from sewage and wastewater treatment plants. This is treated on site rather than going into the mains drainage system.

Benefits relating to the use of rainwater, grey or black water include:

- Reducing costs associated with purchasing supplies from a water company.
- Reducing the energy consumption and CO2 emissions associated with a building's water use.
- Rainwater harvesting reduces flash-flood risk associated with heavy rainfall.
- Use of grey and black water reduces the amount of sewerage discharge and the associated financial costs.

Behaviour change

Encouraging a property's occupiers to adopt basic good practice procedures can also help to reduce use and should be encouraged. Examples include:

- Using soap 'foam' to speed up rinsing hands.
- Ensuring taps are not left running unnecessarily.
- Ensuring dishwashers are full before operating.

DUTY OF CARE

HOW TO...

Although the duty of care is common across all parts of the UK there are some differences which must be observed with additional actions being required and differing documentation requirements. These are summarised in the table below:

Key elements, and variations, of duty of care across UK constituent countries

	England	Scotland	Wales	Northern Ireland
Prevent escape of waste	X	X	X	X
Ensure safe and secure containment	X	X	X	X
Document all waste transfers	X	X	X	X
Keep documents for minimum two years	X	X	X	X
Register sites if hazardous waste produced (more than 500kg p.a.)			X	
Separate collection of glass, metal, plastic, paper, card, food		X		
Prohibit used food macerators in non-rural areas		X		
Document percentage of waste segregation				X

A property manager will most often be responsible for coordinating Duty of Care responsibilities, with information and support provided by a facilities manager. The process of considering duty of care responsibilities should take place within a wider waste management framework.

PM FM

1. DETERMINE A PROPERTY'S WASTE PROFILE

It is important to have a clear understand of the type of waste generated at a property, and any requirements relating to how this is to be managed. Certain waste types, for example, hazardous waste, will be subject to specific handling arrangements.

Undertaking a waste audit is a useful way to create a property's waste profile, and to map out the requirements associated with different waste streams.

PM FM

2. ENSURE THAT WASTE IS REMOVED BY A LICENSED OPERATOR

It is important that waste is transferred from a property to an authorised operator. The operator must be able to provide evidence of their authorisation, such as a copy of their waste carriers' licence. As a further check it is sensible to ask the operator to provide a copy of the Environmental Permit (or proof of its exemption) where they will be taking the waste to.

It is also useful to check the public register to check any evidence they provide. The Environment Register contains information on:

- Waste carrier, broker and dealer registrations.
- Environmental permits for waste operations.
- Waste exemptions.

PM FM

3. ENSURE THE SAFE AND SECURE CONTAINMENT OF WASTE

It is important to put arrangements in place to prevent waste from escaping to the environment. This can include, for example:

- Using containers that labelled clearly and correctly and are suitable for the storage and transportation of the relating waste type. Containers should prevent waste leaking or spoiling, i.e., preventing its intended treatment.
- Limiting access to the waste to only those that are authorised to handle it, including both accidental or intended unauthorised access. For example, rough sleepers may occasionally try to access wheeled bins and it is important to keep them secure to avoid serious injury.
- Making sure that vehicles leaving the property are sheeted, and that waste is secured appropriately for transport purposes.

PM FM

4. DOCUMENT THE MOVEMENT OF NON-HAZARDOUS WASTE

Waste Transfer Notes the recording of waste collected from a property to be taken to an onward destination for storage, processing or disposal. They must include the following information:

- Nature of the business creating the waste SIC (Statutory Industry Code 2007).
- Waste type (using the List of Waste six digit code).
- The amount of waste collected.
- How the waste is contained.
- Name address and license number of the business collecting the waste.
- The date and place where the collection occurred.
- Final destination of the waste.
- Details of any waste broker used to facilitate the transfer.
- These WTNs must be kept for a minimum of two years.

There is no standard format for a waste transfer note, although various example templates exist online. It is possible to generate Electronic WTNs through the online edoc portal.

Season Tickets can be used where the same waste type will be taken by the same waste carrier, and to the same destination, for a period of up to twelve months. The ticket must contain the same information as a Waste Transfer Note and be stored for two years.

PM FM

5. UNDERSTAND THE JOURNEY OF A PROPERTY'S WASTE

Duty of care requires that steps are taken to ensure that, when waste transferred from one party to another, the waste will be managed correctly throughout its journey to disposal or recovery.

Alongside having evidence that the operator taking waste from a property has appropriate licenses, further checks may be necessary to ascertain that the operator is managing waste generated at the property appropriately. These checks may include, for example:

- Requesting information from the operator about the next destination for the waste, and checking that the subsequent destination is licensed to receive waste.
- Undertaking more detailed review of whether waste generated at a property has arrived at the intended next destination as expected.

6. ACCOMPANY HAZARDOUS WASTE MOVEMENT WITH CONSIGNMENT NOTES

Any movement of hazardous waste, referred to as Special Waste in Scotland, must be accompanied by a documented Consignment Note, which must be stored for three years. This should be provided by the waste management contractor on collection. Consignment Notes must include the following information on the materials being collected.

- Nature of the business creating the waste Statutory Industry Code 2007.
- Nature of process giving rise to the waste.
- Waste type (using the List of waste - six digit code).
- The amount of waste, the carrier's details and the final destination of the waste.
- The components and concentrations of the waste.
- The physical form of the waste.
- The wastes hazard code.
- How the waste is contained.

Additionally, where relevant:

- The UN Identification number.
- Proper shipping name.
- UN Class.
- Packing group.
- Any special handling requirements.

Common hazardous materials produced in a building include::

- Fluorescent tubes.
- Lead acid batteries (in Uninterruptible Power Supplies).
- Waste electrical and electronic equipment (WEEE).
- Solvent based paints.
- Building chemicals, degreasers, water treatment chemicals.

Hazardous wastes must not be disposed of in the General Waste stream, or in skips used for bulky items or fit-out waste.

Specific requirements and penalties associated the transfer of hazardous waste in Scotland, Wales and Northern Ireland include:

- In Scotland, Consignment Note numbers must be purchased from the Scottish Environment Protection Agency before waste is transferred.

- In Wales, sites producing hazardous waste must register with Natural Resources Wales.

- In Northern Ireland, prenotification of Hazardous waste transfers must be given and a fee paid for either a Consignment Note (consisting of 6 coloured pages) with a unique pre-printed number or a unique number for entry into their own Consignment Note stationary.

UNDERTAKING A WASTE AUDIT

HOW TO...

A waste audit is usually established at the property level, although it is possible to combine an audit across multiple sites, and a program of waste audits is often undertaken at a portfolio level.

A property manager will most often be responsible for coordinating the audit process, with information and support provided by a facilities manager. The various audit outcomes will be of interest to all stakeholders, including asset managers.

The process of undertaking a waste audit should take place within a wider framework for the governance of audit and assurance activities, and should include the following steps:

AM PM FM

STEP 1: ESTABLISH AUDIT OVERSIGHT AND SCOPE

It is important that a forum, committee or body is established to provide oversight of the audit process, to validate outcomes, and to check that recommended actions are allocated appropriately.

Determining the audit scope should involve consideration of a number of issues, including:

- Is it beneficial to include waste generated and managed by occupiers. For example, stores within a shopping centre, as well as the property managed services?
- What waste types will be included. For example, will hazardous waste and food waste be included alongside general waste?

The frequency of waste audits is also relevant. In determining frequency, it may be useful to consider the annual waste disposal spend, as well as current waste management performance, based on reported recycling rates and tonnage of residual waste produced. As a rule of thumb, sites can be broken down by annual spend as follows:

- <£5,000 per year: Low priority; to be considered once Medium and High priority sites have been assessed.
- £5,000-£20,000 per year: Medium priority; recommend an annual on-site audit.
- +£20,000 per year: High priority; recommend a quarterly on-site audit.

PM

STEP 2: SECURING A COMPETENT WASTE AUDITOR

While there are no mandated qualifications or accreditations to undertake a waste audit, the individual undertaking the assessment should have knowledge and experience appropriate to the audit's scope.

As a minimum, a waste auditor should have experience in relation to waste management, the property and equipment type involved, and the processes and arrangements involved in audit and assurance activities.

If waste related infrastructure, plant and supply contracts are included in the scope, specialist industry equipment and knowledge may be necessary.

When considering contracting a third party to undertake the audit on their behalf, a property manager should consider:

- Specialist auditors offer fee structures based on either a fixed up-front fee, or a share of savings basis.
  - If the fixed fee structure is used, it is feasible that no opportunities will be identified, and the costs will not yield savings.

- If the share of savings structure is used, if substantial savings are identified, you may end up paying more than under a fixed fix structure.

- Clients will need to be engaged to confirm where the payment of these services will come from. Clients may, for example, accept a fixed fee structure to be paid out of non-recoverable funds in the event that the service yields no benefit, but that it is paid out of service charge if the savings exceed the outlay.

- Some waste service providers offer waste audits, and some may also offer a personalised waste management package.

PM FM

STEP 3: REVIEW WASTE PROFILE

The preparation of a property's waste profile is a central output of a waste audit. This should include, as a minimum, total waste consumption by weight, broken down by waste type and source.

The waste profile should be compared against historical trends, with the intention of identifying the areas of greatest consumption and anomalies in expected waste generation.

PM FM

STEP 4: REVIEW WASTE MANAGEMENT ARRANGEMENTS

Performance against historical waste targets should be reviewed to determine the extent that progress towards intended improvements is on track.

Alongside this, a waste audit should check that management arrangements, such as processes to monitor and review waste consumption, or to check that recommended actions from previous waste audits are being deployed. There should be evidence that such arrangements are in place and are being implemented.

Waste processing equipment and signage

A review of the availability and type of waste processing equipment should include:

- Compactors or bailers which can used to increase efficiency of waste removal and reduce transportation costs.

- Appropriate number of bins for the volume of waste.

- Access control to waste areas (restricted to personnel trained in site waste management or lockable skips to prevent fly tipping).

Signage is of specific importance where streams have been identified as having a high percentage of contamination rate, for example greater than 15%. should be reviewed to ensure:

- It clearly identifies waste streams and corresponds with signage at point of disposal within demised areas.

- Identify whether the signage is fit for purpose, if illustrations are used, check they represent the types of waste you would expect to see from the buildings.

- Give consideration that English may not be the first language of those using waste facilities and translations maybe required for labeling of waste areas.

PM FM

STEP 5: IDENTIFY WASTE OPPORTUNITIES

A key component of a waste audit is to identify opportunities to improve waste management. This is partly informed through the analysis of a property's waste profile and is complemented by general observation of equipment and operational practices.

Alongside opportunities to reduce waste, a waste audit may also consider opportunities to improvement wider waste management activities. For example, the metering arrangements for recording and collating waste data, or how waste minimisation awareness raising is undertaken.

Data arrangements

- ✓ **Are we recording waste data?**
- ✓ **What are we doing with the collated data?**

Waste minimisation

- ✓ **How can we increase awareness?**
- ✓ **How do we monitor change?**

AM PM FM

STEP 6: REVIEW AND CONTINUE TO IMPROVE

The outcomes from a waste audit, including recommended improvement actions, should be documented and reviewed by the oversight body. An action plan should set out improvement opportunities alongside timeframes and responsibilities and should inform the development of waste targets.

Ongoing waste generation, progress against targets and the implementation of action plans should be periodically reviewed by the oversight body, or an appropriate forum with responsibility for a property's waste or environmental management activities.

STEP 7: DATA COLLECTION AND ACCURACY

Measuring the success of improvements undertaken as part of a waste audit relies on having accurate data. To enable this, the scope of a waste audit should look at the availability and accuracy of a site's waste data. This includes:

- Consistency of volume to weight conversions where estimates are used.
- Standardisation in the way waste data is collected and reported by waste management service providers, and in turn how a property or facilities manager reports data to an asset manager.
- That the data reflects general assumptions or expectations of the weight norms. For example, food waste and glass should be the heaviest stream, and cardboard should be the lightest.

WASTE MANAGEMENT PLAN

HOW TO...

Usually, the decision to prepare a Site Waste Management Plan is taken by the property manager, and instructed to the contractor either directly or via the stakeholder responsible for the construction project.

A SITE WASTE MANAGEMENT PLAN MUST CONTAIN THE FOLLOWING CORE REQUIREMENTS:

- The client name.
- The principle contractor name.
- The person who drafted the plan (this can be either the client, the principle contractor or a third party).
- The location details of the site.
- The estimate of the cost of the project.
- Details of decisions taken which will reduce the amount of waste generated.
- A description of each waste type expected to be generated.
- An estimate of the weight for each waste type.
- The waste management action for each of the waste streams.
  - Reuse (either on-site or off- site).
  - Recycling (through single waste stream or comingled and sorted off-site).
  - Recovery (where the materials energy is recovered through thermal recovery or biological recovery).
  - Disposal (either through landfill, incineration or other means).

Successfully undertaking a Site Waste Management Plan involves considering the following ten steps:

PM FM

STEP 1: PLANNING

A Site Waste Management Plan relies on good planning before construction work is carried out, from the very start of the concept and design stage of the project.

The outcome from the following areas of consideration should be documented and included within the Site Waste Management Plan:

- The packaging of materials being used.
- Materials purchased to specification of the job with no on-site modification required.
- Storage space for segregated waste ensuring that good quality is maintained.
- The extent to which re-use on site possible.

PM FM

STEP 2: RESPONSIBILITIES

The overall responsibility for a Site Waste Management Plan must be allocated to a single individual involved in the project, although as the project develops, the allocation of this responsibility may change. For example, from the client during the concept and design stage to the principle contractor at the delivery stage.

The responsible person must understand the purpose of the Site Waste Management Plan and be empowered to compel others to cooperate with the Site Waste Management Plan process.

PM FM

STEP 3: WASTE PROFILE

A Site Waste Management Plan must include an estimation of the types and quantity of waste, and the disposal options.

This estimation should quantify expected waste generated as well as providing targets for waste to be re-used, recycled, recovered or disposed. Both on-site and off-site options for waste processing should be considered, as well as special arrangements for hazardous wastes.

PM FM

STEP 4: WASTE MANAGEMENT ARRANGEMENTS

It is important that waste management arrangements are considered at all stages of the project and documented within the Site Waste Management Plan. This should include methods for removing waste from site in a manner that may contribute towards achieving targets, as well as the location, timing and way in which waste removal will take place.

A system to document waste removals through waste transfer notes and consignment notes must be established. A Site Waste Management Plan should document a storage and retrieval system which enables these documents to be stored for the prescribed legal storage time limits, i.e.:

- Waste transfer notes – two years.
- Consignment notes – three years.

PM FM

STEP 5: LICENSES AND PERMITS

A Site Waste Management Plan should document the licenses and permits required for waste disposal.

This should include the legal registration of waste carriers as well as the final location where waste is to be processed, along with evidence that the location is appropriately permitted for the activities which will be undertaken at the site.

PM FM

STEP 6: ORGANISATION OF WASTE

It is important that the way in which waste is organized, from the planning stage through to project completion, is documented within a Site Waste Management Plan. This can include the following considerations:

- The design process, for example, 'build-off site' and modular construction to minimize waste generation.
- The procurement process, for example, the quantities of material required, phasing of delivery and specification of packaging.
- Site logistics, for waste storage and segregation activities.

PM FM

STEP 7: TRAINING AND COMMUNICATION

A Site Waste Management Plan must be kept up-to-date and be stored in a location which is accessible to all project stakeholders. It is important that training, instruction and communication is provided in a way that is relevant to project stakeholders' roles and their responsibilities in delivering the project.

A site orientation for contractors and sub-contractors should include the arrangements set out within the Site Waste Management Plan and the on-site infrastructure and equipment used to managed waste.

PM FM

STEP 8: MEASUREMENT, MONITORING

It is important that a system is developed to evaluate the extent to which a Site Waste Management Plan is being implemented as intended. This may include, for example, audits, spot checks, monitoring waste receptacles and observing operating procedures.

All waste removed from site must be documented in-line with the legal requirements using both waste transfer notes and consignment notes where required. These documents can be referenced to calculate the weight and volume of waste generated and to monitor its destination.

Regular reporting against waste targets should be established to monitor the performance of the project, to develop associated improvement actions, and to inform future works.

PM FM

STEP 9: UPDATE

A Site Waste Management Plan should be updated regularly throughout the project lifecycle, and in the event of a significant change in the project plan.

Updates are usually co-ordinated by the principle contractor, due to their close proximity to the project and stakeholders.

PM FM

STEP 10: REVIEW

When a project is completed a Site Waste Management Plan should be reviewed, including an evaluation of the generation of waste and extent to which targets have been achieved. The principle contractor should provide the following information as part of this review:

- Confirmation that the Site Waste Management Plan has been monitored and updated throughout the project.
- An explanation of any changes made to the Site Waste Management Plan throughout its operation.
- A comparison between the estimates (made initially in the identification of waste) and the actual quantities of waste (monitored and reported throughout the project).
- An estimate of any cost savings realised through waste management.

Following completion of the review, A Site Waste Management Plan can be circulated to stakeholders as evidence of the projects' waste outcomes and to inform the waste plans of future.

Site Waste Management Plans should be kept for at least two years after completion either on site and/or by the principle contractor.

WASTE OPPORTUNITIES

HOW TO...

Usually, waste management opportunities are co-ordinated by both property managers and facilities managers. Opportunities that require investment will be raised with asset managers for consideration.

Example of waste management opportunities have been categorised within the following clusters:

PM FM

1. REDUCE

Reducing the amount of waste generated on site is the most sustainable way of addressing waste, reducing waste management costs and improving site conditions, such as freeing available space otherwise used for waste storage and processing, for example.

Auditing waste streams and reviewing waste data can contribute towards a detailed understanding of a property's waste profile. This can enable property and facilities managers, alongside occupiers, to focus on identifying opportunities to reduce waste generation.

Waste reduction opportunities are wide ranging, and could include, for example:

- Return in packaging. For example, through specification of contracts with suppliers of certain construction materials.
- Designing out waste. For example, adoption of efficient construction methods, such as 'build-off-site' within re-fit projects.
- Reduction in materials use. For example policies to print double sided as standard or encouraging occupiers to reduce unnecessary printing through a pay as you print scheme.

Occupiers in multi let buildings are often unaware of the amount of waste they generate. Property managers can focus attention on waste generation and reduction opportunities by creating profiles of individual occupiers' waste streams. This can be supported by, for example:

- Undertaking waste audits of occupiers waste.
- Incorporating technology, such as digital scales, into waste management practices.
- Normalising waste data relating to different occupiers, creating metrics such as tons per square ft, for example, to identify comparatively large waste generators.

PM FM

2. REUSE

Re-using materials waste generated on site is a preferred way to reduce waste generation and associated waste management costs.

Auditing waste streams and reviewing waste data can contribute towards a detailed understanding of a property's waste profile. Similarly, in the context of re-fit projects, Site Waste Management Plans & pre-demolition surveys can help to identify opportunities to re-use materials.

Materials re-use opportunities are wide ranging, and could include, for example:

- Elimination of single use products. For example, replacement of disposable cutlery and plates in canteens with re-usable alternatives.
- Schemes to repair and repurpose office furniture or kitchen appliances.
- Initiatives to repair and donate office furniture, M&E or IT equipment, and external lighting and advertising equipment.
- Arrangements to donate unwanted building or landscaping materials to local charities.

Consideration should always be given to the condition of any items identified for donation and reuse. Signoff should be sought from appropriate subject matter experts and/or asset owners before items are reused, especially if given to a third party. This is especially important for IT equipment in relation to cyber security.

Materials re-use opportunities

Elimination of single use products
e.g. disposable cutlery and plates

Schemes to repair and repurpose
e.g. office furniture or kitchen appliances

Initiatives to repair and donate
e.g. furniture, M&E, IT equipment

Donate unwanted materials
e.g. building or landscaping materials

PM FM

3. RECYCLE

Separating waste materials for recycling is an effective way to divert waste from landfill and incineration, and is particularly relevant for organisation operating with the built environment. Segregation involves storing recyclable material within containers for different material types, or 'co-mingled' into a single container.

Once collected, recyclable material will often be sent to a Materials Recycling Facility (MRF) for processing. A MRF is a specialised facility for processing large quantities of recyclable material ready for end-user manufacturing.

There are two different types of MRF:

- Clean MRFs: Accept recyclable co-mingled material that has already been separated from solid waste.
- Dirty MRFs: Accept a mixed waste stream.

Both MRF types separate designated recyclable material through a combination of manual and mechanical sorting. As a clean MRF achieves better quality recyclable material and uses less energy during processing than a dirty MRF, it is the preferred destination for a building's recyclable material.

Segregation and the law:

UK waste management regulations in place since January 2015 require that organisations collecting paper, metal, plastic or glass for recycling take practical measures to ensure separation of these waste streams.

In Scotland the Waste (Scotland) Regulations (2016) require that organisations separate their plastic, metal, glass, paper and card or risk a fine. Businesses producing food must also recycle their food waste subject to the total amount of food waste produced. These regulations can also apply to staff canteens and food halls as well as traditional food & Beverage outlets.

AM PM FM

4. OCCUPIER ENGAGEMENT

The active engagement of occupiers when considering a property's design and fit-out contributes towards effective waste management. Likewise, regular engagement with occupiers' is helpful regarding planned changes in operational processes or new business activities which will result in an increase in waste material or new waste streams.

- Providing appropriate waste facilities involves understanding the waste streams which will be generated, as well as where to locate facilities so that they are convenient and most likely to be used.
- Using standardised signage and colours will ensure both cleaning staff and occupiers dispose of waste in the correct manner.

AM PM FM

5. ON SITE PROCESSING OF WASTE

In some larger property contexts, there may be opportunities to process waste on-site. These opportunities may include:

- Opportunities for on-site use (composting, chipping, manufacture process).
- Onsite sorting and handling (onsite MRF) to increase recycling output and identification of further waste streams.
- Aerobic digesters technology.

When considering on-site processing of waste, it is important to receive specialist advice from a competent individual to ensure that permitting regulations are understood and adequately provided for before committing. Even small-scale operations are likely to require an exemption note from the environment regulator.

AM PM FM

6. DATA AND ASSURANCE

Waste data

Identifying waste management opportunities should involve the review of reliable and accurate waste data and the outcomes from waste audits.

Waste data, especially when considered across multiple sites or across a portfolio of properties, can help to identify common waste streams, as well as anomalies in preferred waste disposal options.

Waste audits

Quality waste data can also support in the preparation of business cases for investment in waste infrastructure through the validation of waste profiles and the associated financial costs and benefits of managing these.

Waste audits can contribute towards the detailed understanding of waste streams within a property, and subsequently the identification of opportunities to better manage these.

Likewise, waste audits can evaluate the extent to which waste management arrangements are being implemented as intended, and where enhanced focus on communications and training ay be advantageous.

HOW TO MANAGE WASTE DURING FIT OUT

HOW TO...

While the management of waste during a refurbishment or fit-out project is the responsibility of project's main contractor, asset, property and facilities managers are likely to have interest in the associated Waste Management Plan, and ensuring that this plan is aligned with the property's wider waste management arrangements.

Property and facilities managers also have a role in coordinating activities at a property that may have the potential to influence a refurbishment or fit-out project, and the effective management of associated waste.

AM PM FM

1. WASTE ARISING

A Waste Management Plan should be prepared for the refurbishment and fit-out project. This plan should set out the expected waste profile relating to the project, along with the arrangements for managing waste to achieve targets relating to waste generation and disposal methods.

The Waste Management Plan should ensure that waste arising from the activities is managed in accordance with the waste hierarchy and either minimised through well managed procurement, managed separately to the wider building waste management system, segregated to recover as much material as possible for reuse or recycling, and collected at a frequency that allows the process to work smoothly.

While the preparation and maintenance of a Waste Management Plan for a refurbishment or fit-out project is the responsibility of the main contractor, it is important that property and facilities managers, and where relevant, asset managers, are consulted and agree with the plan.

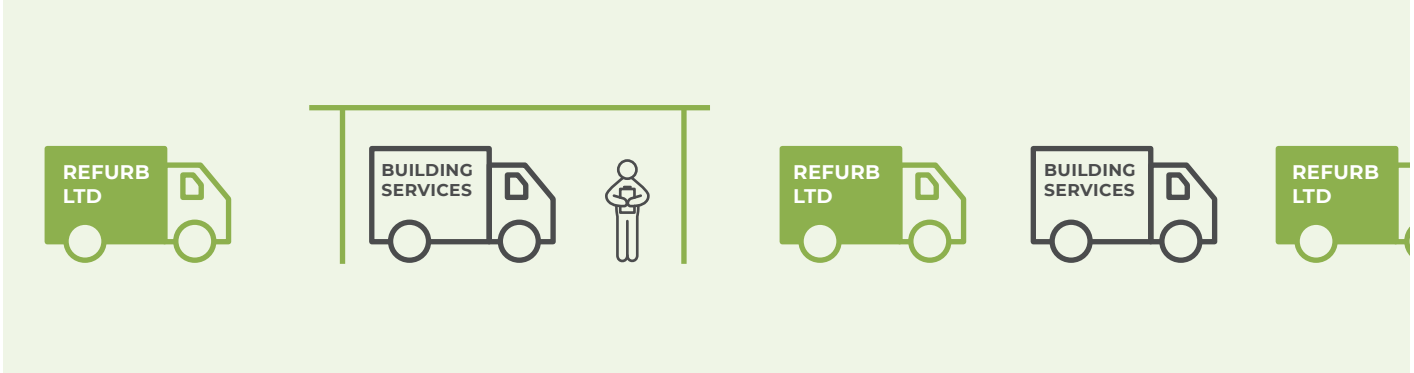
It is also possible that facilities managers agree to undertaken specific waste management tasks in relation to the refurbishment or fit-out project.

PM

2. VEHICLE MOVEMENTS TO AND FROM SITE

A refurbishment or fit-out project may involve an increase in vehicles requiring access to and movement within the property site. This can include both vehicles delivering materials and those providing waste services to the project.

It is important that the property manager, or main contractor in co-ordination with the property manager, make resource available to check vehicles in and differentiate between whether they are servicing the building as a whole, or the refurbishment or fit out activity.



PM

3. CONTRACTORS ON SITE

A refurbishment or fit-out project will involve an increase in the number of contractors on site. It is important that both new contractors are aware of waste management arrangements for the project they are engaged to work on, as well as that contractors on existing projects are aware of the rules relating to engagement with the refurbishment or fit-out project.

It is important that the property manager engages the main contractor for the refurbishment or fit-out project and other projects on site to consider necessary waste related briefings at agreed intervals to all contractors attending site to ensure all fully understand the waste management arrangements and conditions of permits/permissions.

PM

4. SPACE IN LOADING BAYS, SERVICE YARDS AND/OR CAR PARKS

A refurbishment or fit-out project is likely to place temporary pressure on space for materials storage, waste management provision, parking, and welfare facilities which are fully segregated from the rest of the property.

It is important that the property manager engages the main contractor for the refurbishment or fit-out project to understand the likely requirements for space as part of project planning. These arrangements should be reviewed at regular intervals, including any feedback from occupiers regarding the extent to which arrangements for managing space are effective.

SUSTAINABLE TRANSPORT OPPORTUNITIES

HOW TO...

Property managers plays a central role in identifying appropriate sustainable transport opportunities and facilitating their implementation. This involves understanding occupiers' needs and engaging asset managers and facilities managers to prioritise and deliver solutions that meet these as part of a building's infrastructure and service facilities.

Sustainable transport opportunities can be categorized into a number of areas.

AM PM FM

1. GREEN TRAVEL PLANS

Green Travel Plans enable the collation, prioritisation and co-ordinated delivery and evaluation of a range of sustainable transport opportunities. While the requirements for a Green Travel Plan may sometimes be formalised as part of planning conditions associated with a development, Green Travel Plans are usually developed on a voluntary basis.

Green Travel Plan Development

Property managers often initiate the process of preparing a Green Travel Plan by gathering baseline information about the travel characteristics of occupiers and other building users, and their future sustainable transport needs.

While the content may vary based on local circumstances, the approach to developing a Green Travel Plan involves considering how to:

- Conduct a staff travel survey.
- Develop initiatives to raise awareness of the plan.
- Design incentives to encourage a change in travel habits.
- Create better cycling and walking facilities.
- Provide on-site bike maintenance services.
- Establish a car share register or buddy system.
- Negotiate enhancements to public transport with operators and local authorities.
- Design and enforce efficient car park management.
- Monitor progress against transport related targets.

Funding improvements

Property managers will engage asset managers regarding potential alterations to the physical infrastructure and options for funding these improvements:

- Where sustainable transport improvements involve major facilities upgrades, asset managers may be willing to invest in return for an enhancement in the longer-term value of the property.

- The installation and maintenance of new facilities, for example cycle repair workshops, may be funded through lease variations or user service charges.

- Local authorities and private transport operators may be approached in respect of funding or partnership agreements for the expansion or improvement of local transport networks.

EXAMPLE: CYCLING FACILITIES

A common occupier need involves the provision of facilities to encourage cycling to work as an alternative to car journeys. This may include:

- Secure bicycle storage.
- Showers.
- Changing rooms.
- Locker storage.
- Drying areas for clothes.

If these facilities are not already available or adequate, a property manager should work with the asset manager and occupiers to review existing provision and potential improvements.

Considerations may include:

- Cycle racks often require significant space and access. However, vertical and two-tier racking systems can be space efficient.
- Showers and changing facilities are typically provided close to cycle racks. They can, however, be situated anywhere convenient within the building.
- New facilities should support a building's sustainability strategy. For example, installing equipment and amenities that are energy and water efficient.

Engagement and evaluation

In multi-occupier buildings, establishing a Green Building Management Group can enable a range of sustainable transport needs to be considered. Such collaboration can enable improvements to be prioritised objectively and associated benefits to be evaluated consistently.

The ongoing evaluation of occupiers' needs, and the assessment of the effectiveness of sustainable transport activities in meeting these needs, and in contributing towards associated sustainability targets, is an important component of a Green Travel Plan.

This can be approached through periodic employee surveys. Increasingly, mobile apps, including CityAir and Walkit, for example, are being used to raise awareness of sustainable transport opportunities, and can be utilised to gain feedback and monitor participation at the initiative-level.

AM PM

2. INFRASTRUCTURE AND LOCAL SERVICES

Infrastructure obstacles such as poor lighting on walking paths or inadequate cycle lane signage, for example, can sometimes discourage people from switching their transport mode.

Property managers can play an important role in raising the awareness of asset managers and local authorities about the need for improvement. By seeking regular feedback from occupiers about the quality of local infrastructure and services, property managers can prompt action from a range of local organisations and public transport operators, who often share similar sustainability goals with a property's immediate stakeholders.

Local authorities can help to secure discounts on public transport services, for example, and may be able to facilitate access to grants to assist with travel plan measures or provide practical travel planning advice in developing Green Travel Plans.

Public transport operators will usually want to align their services with peak demand, and may schedule timetables to fit with staff journeys and shift patterns, particularly if a property represents a large employee base.

Shared services offer an opportunity to move towards more sustainable transport options. For example:

- Public transport operators may be willing to provide additional services to and from local transport hubs.

- A commercial "shuttle service" could be established exclusively for a building's occupiers.
- A subsidised shuttle service could be established in collaboration with other properties local and businesses.

If a shuttle service is unavailable, property managers can provide real-time public transport information and timetables via either tenant apps or information displays:

- The Highways Agency has developed a detailed traffic information service specifically designed for businesses called DATEX II.
- Transport for London, the AA and RAC all offer live travel news updates on their web pages.

AM PM FM

3. PARKING AND CAR-SHARE

When managed effectively, parking and car-share schemes can encourage a shift away from car-use.

Parking schemes

Parking schemes may include parking restrictions, permit parking and parking charges, for example. As these can be emotive issues for existing car users, careful consideration and communication is necessary in gaining the support of the range of building users.

Consideration should be given to certain priority groups, generally including:

- Disabled/limited mobility users.
- Car-share users.
- Out-of-hours work responsibilities.
- Electric Vehicle Users.

Priority parking can be enforced by smart card operated barriers, other forms of controlled entrances or regular spot checks.

Where the majority of car park users are visitors rather than employees, such as at a shopping centre, for example, the most effective means of control is through flexible pricing mechanisms and priority space allocation. The income generated from parking charges generated could be re-invested to finance other travel plan measures.

Car-share schemes

Car-share schemes are generally most efficient when operated through a specialist third party such as Liftshare or through more informal arrangements such as GoCarShare. As participation is most effective when coordinated through large groups of potential users in a local cluster, property managers are well placed to assist.

Consideration should be given to certain priority groups

Disabled/limited mobility users | **Car-share users** | **Out-of-hours work responsibilities** | **Electric Vehicle Users**

ELECTRIC VEHICLE CHARGING FACILITIES

HOW TO...

Usually, the decision to adopt electric vehicle charging provision is instructed by the asset manager and the process is coordinated by the property manager with input from the facilities manager.

Electric vehicle charging provision involves three primary steps.

STEP 1: SITE ASSESSMENT

It is important that a site's characteristics, along with the associated opportunities and constraints, are clearly understood when planning electric vehicle charging provision. This should involve an initial review of a site, followed by a more detailed site survey and proposal.

AM PM

Site Review

The following elements should be considered to determine the appropriate scale and capacity of electric vehicle charging provision for a property in the short and longer term:

- The current density of electric vehicle vehicles registered in the local area using the DVLA's region and postcode district datasets.
- The typical dwell time on site to determine which sizes of chargers are required.
- Other chargers and charging speeds that are available in the area. For example, Zapmap lists all chargers across the country.
- The amount and location of spare power capacity on site which will determine the number of charges that can be accommodated and where they can be positioned.
- The local power network capacity to accommodate additional power provision to the site should the onsite power capacity be insufficient to meet the requirement.

PM FM

Site survey and proposal

Technical advice from a competent practitioner, for example a specialist consultant or electric vehicle charge point provider, will be required as part of a detailed site survey. The site survey should inform the development of a proposal to install electric vehicle charging facility, and may include the following:

- Proposed site redevelopment/refurbishment plans.
- Service drawings.
- Access to all power supplies on-site with up-to-date circuit schedules.
- Any power shutdown requirements that will lead to out of hours work.
- Number and type of parking spaces on site.
- Planned or potential installation of on-site renewable facilities.

Asset type considerations

Asset Type	Car Park	Dwell time	Chargers	Other considerations
Office (inner-city)	Minimal	Long	Low capacity	
Office (urban)	Large	Long	Low capacity	Multi-storey options
Residential		Long	Low capacity	
Shopping or retail centre	Large	Long (occupants) Short to medium (visitors)	Low capacity - employees Rapid and high capacity – visitors	Visitor charging potential Multi-storey options
Industrial sites	Smaller	Long	Low capacity	
Warehouse	Smaller	Long	Low capacity	
Distribution centres	Smaller	Long (occupants) Short (logistic vehicles)	Mix Low capacity - employees Rapid and High - logistic vehicles	

What is dwell time Perhaps as a box

Dwell time is the amount of time a building user spends on site, and is a key actor for assessing the right capacity of individual charging points:

- Sites with a longer dwell time that need to cater for multiple drivers: 7kW - 22kW capacity fast charging facilities are likely to be most appropriate. For example, residential, workplace, shopping centres, retail parks.

- Sites with a short dwell time that need to cater for a high turnover and fewer drivers: 50kW+ rapid charging are likely to be most appropriate. For example, industrial distribution sites, en-route sites and motorway sites.

Dwell time considerations

Dwell Time	Charger	Capacity	Consideration
Short	Rapid	50kW+	May require sub-station
Medium	High	22kW	
Long	Low	7kW	

AM PM

STEP 2: REVIEW ELECTRIC VEHICLE CHARGING PROVISION PROPOSAL AND SELECT COMMERCIAL PARTNERS

During the review of a proposal for electric vehicle charging provision, and the selection of a preferred supplier, it may be helpful to consider the following questions relating to charging units, management and monitoring, and maintenance and warranty.

Charging unit

- Does the supplier offer charging options and speeds (i.e., fast charging, rapid charging, media charging) appropriate to the needs of different sites in the portfolio?
- Has the supplier included sufficient scope for future expansion (i.e. additional trenching)?
- What types of electric vehicles can the charging units accommodate?
- Are the charge points accessible to all electric vehicles drivers - allowing for quick and simple access via an app or card payment? Can access be restricted if necessary?
- Are the charging units modular and smart enabled, to remain up-to-date with technology advancements?
- Are the charging units agnostic or specific to a certain supplier, enabling the client to switch operator in the future?
- Does the provider have Independent Connection Providers and Independent Distribution Network Operator partners that will help to engage with the relevant Distribution Network Operators to bring in new connections?
- Which party is responsible for requesting new connections and owning associated supply?
- Can charging units be load managed with an Array Charging System, which will enable the site to scale cost effectively with future demand and optimize available power on site?

Management and Monitoring

- Does this system allow portfolio power usage to be reviewed?
- Can the charging units be managed centrally through one system?
- Can faults be detected remotely and proactively fixed?
- Does the client have visibility of all charging units and charge cycles?
- Can the charging units be integrated with on-site systems?
- Can the client track how electric charging is making the site(s) more sustainable (CO_2 saved)?
- Can data be used to better understand unit utilization and when it is time to scale?
- Can the client apply a charging tariff through the management system?
- Can the client apply dynamic and complex pricing models across separate units and sites?
- What physical and software security features does the infrastructure and system have?
- Which party owns the data?

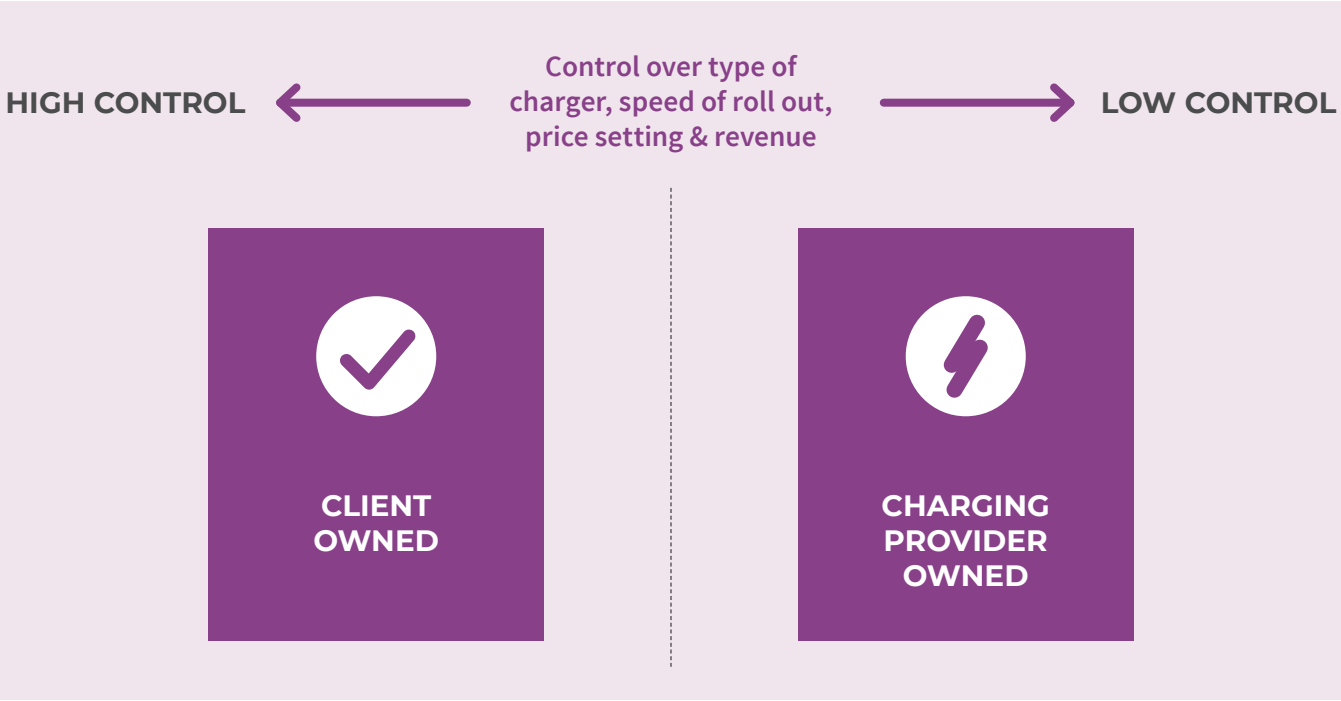
Warranty and Maintenance

- How many months/years does the unit(s) warranty cover?
- Is there an associated cost with this warranty?
- What are the supplier's Service Level Agreements?
- What is the supplier's terming once the warranty is finished?
- Can most maintenance issues be fixed remotely by the provider?

AM PM

STEP 3: FUNDING MODEL

It is important to evaluate alternative funding models for equipment purchase, installation and operation. Most service providers offer outright purchase and/or fully funded models which have associated varying degrees of control.



Client-owned

The option to directly purchase charging units and cover the operational costs associated with electric charging provision provides greater control for the client. However, an agreement or partnership can still be formed with an electric vehicle charge point operator to provide supporting services during the scheme's operation.

Pros and cons client owned charging units

Pros	Cons
• Full control of customer experience and tariffs. • Receive full share of revenue stream. • Any new power connections applied for to increase site capacity remains within the control of the applicant and in this case the client, not the electric vehicle charge point provider. • Opportunity to brand the charge points and create client's own network.	• Full responsibility for capex and opex costs. • Careful consideration required to right size the type and number of chargers.

Charge provider-owned

The option for electric vehicle charge point providers to provide a fully funded options, which usually covers surveys, installation, unit costs, maintenance and any future upgrades for the duration of the agreement, provides limited control for the client. However, visibility of utilisation and ability to receive a share of information can still be retained as part of the scheme.

Pros and cons of provider-owned charging units

Pros	Cons
• No upfront investment required. • Little to no opex costs. • A potentially faster route for installing chargers before there is a saturation of chargers in the local area. • Visibility within the chosen electric vehicle charge point provider's existing subscriber and user network to drive footfall. • Opportunity to receive income through profit sharing or a rental agreement with the electric vehicle charge point provider.	• Limited share of the revenue stream. • Little to no control of the type and size of chargers.

Government Funding

The Workplace Charging Scheme (WCS) provides a subsidy towards the purchase and installation cost of a new workplace charging station by up to 75% (capped at £350per socket). Businesses can claim for up to 40 charging stations (40 single socket or 20 double socket) under the scheme, which is managed by the Office for Low Emission Vehicles (OLEV).

Service Charge

The way in which occupier service charges take account of shared services may impact the extent to which electric vehicle charging provision can be charged to the individual user. This should be considered at the leasing stage, see the BBP Green Lease Toolkit.

Benefit in Kind

The provision of electricity for employees to charge private cars is classed as a Benefit-in-Kind, i.e., a non-financial benefit which employees receive from their employer in addition to wage or salary.

Benefits in kind are considered as income by HMRC and should be included within an individual's annual tax return. While at present, charging private electric vehicle charging at work is tax exempt, this may change in the future as electric vehicles become more common-place.

OTHER CONSIDERATIONS

The following factors should also be taken into account when considering electric charging provisions.

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Net zero carbon

Installing electric vehicles charging is likely to increase a site's electricity consumption. Procuring electricity via a high-quality green tariff or renewable source offers the potential to reduce operational greenhouse gas emissions.

Greenhouse gas emission scopes

Emission category	Stakeholder relevance	Details
Scope 2	Asset Manager	Electric vehicle charging provision will increase electricity demand and associated greenhouse gas emissions.
Scope 3	Asset Manager	Asset managers should consider the embodied carbon associated with electric vehicle charging equipment, infrastructure and installation. Asset managers should consider the greenhouse gas emissions associated with an occupier's employee commuting to work as part of a net zero carbon framework.
Scope 3	Occupier	Occupiers should take account of the the greenhouse gas emissions associated with their employees' commuting emissions as part of a net zero carbon framework.

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User experience

It is important to consider the all-round experience of those using electric vehicle charging facilities. This may include:

- Checking that charge points are operating safely and are tested and inspected regularly.
- Considering how the design features, for example, the height of the charge point and the parking space size, allow users with all accessibility requirements to operate the charger.
- Locating charge points in a visibility area and providing signage for easy wayfinding.

WHAT IS SOCIAL VALUE?

HOW TO...

Property and facilities managers play a vital role in increasing, maintaining or decreasing the social value created by a building through the way that it is managed and operated, and by engaging occupiers to understand their needs and help to shape their social value priorities.

Asset managers have an interest in strategic social value issues, either at a property level or, more likely, across a portfolio.

Property managers also often provide early-stage advice to asset managers on new developments. For example, social issues relating to the location, design and construction of a building.

To ensure continued social value generation over the long-term, and to help to focus occupiers social value activities towards relevant issues of greatest need, the following steps should be implemented simultaneously and be reviewed regularly:

PM FM

STEP 1: IDENTIFY STAKEHOLDER REQUIREMENTS

It is important that the social value strategy for a property is relevant to the circumstances in the property's setting. Developing an understanding of local needs and context can involve fousing on a number of stakeholder groups. These groups may include:

- Service providers and suppliers.
- Building users, for example, occupiers, management, employees.
- Building visitors, for example, shoppers for retail buildings, commuters travelling through a site or people using spaces such as public squares and gardens.
- Building owners.
- The local community, for example, local residents, local businesses, the local authorities, police, charities, community groups, business improvement districts.
- Surrounding buildings and their owners and occupiers.

There are a number of techniques that can be deployed to identify stakeholder's social value needs. Examples include:

Identify occupier priorities

Review occupier corporate sustainability and/or social impact strategies at a corporate level to understand focus areas.

Review building user interests

Occupier's employees may have locally specific interests which can be feedback through building occupier meetings or surveys. These may include, for example, charity affiliation, nature/wildlife or volunteering.

Review corporate skills and experience

Consider if there are any core competencies of employees that could be used to deliver social impact in the local community, for example, a marketing agency may be able to offer pro-bono advertising advice and support to a local charity.

Understand local community needs

Local stakeholder needs can be identified through desktop research including Local Authority priorities and Government data such as local demographic profile.

Engage local community groups to understand their needs

Consider how stakeholder needs may have changed as a result of the COVID-19 pandemic, for example mental health, digital inclusion and job opportunities and skills.

PM

STEP 2: PRIORITISE STAKEHOLDER REQUIREMENTS

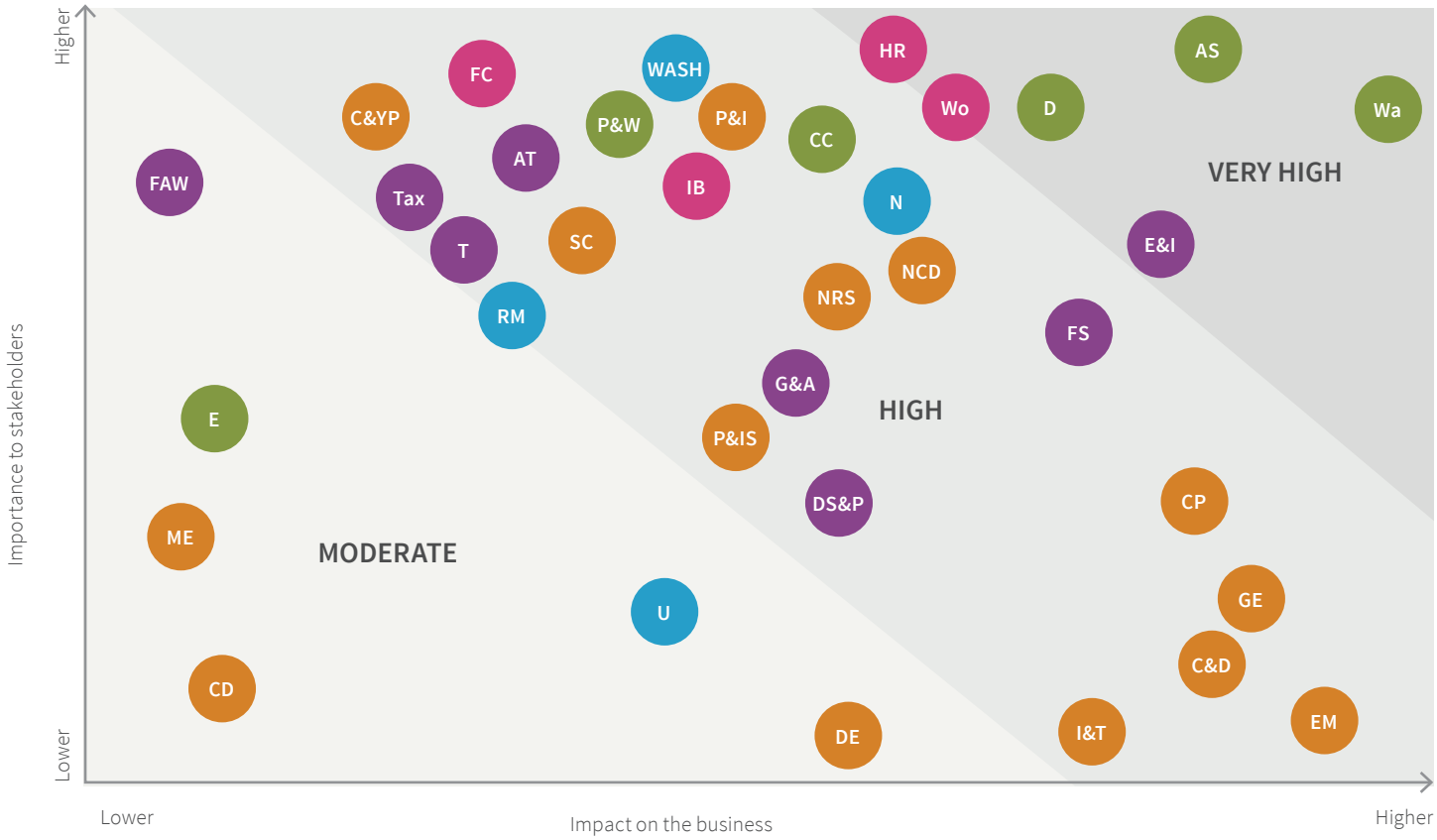
The process of identifying stakeholder requirements, is likely to generate a long list of potential social value opportunities. It is important to prioritise these to ensure resources, i.e., time and money, are focused on the areas that can add most value.

This Prioritisation can be completed using a 'materiality matrix' whereby the lists of potential opportunities are grouped into themes and then ranked based on their importance to stakeholders and also to the occupier's business.

Undertaking a materiality assessment is most effective when engaging representatives of a property's stakeholders in a workshop. With facilitation by a property manager, the workshop could include, for example:

- Employees from a property's occupiers.
- Local community groups.
- Local authority
- Local school or college.

Example social value materiality matrix



STEP 3: CREATE AND IMPLEMENT A SOCIAL VALUE PLAN

A social value plan is an important tool in shaping, collating and reviewing progress in the delivery of a property's social value activities. A number of factors should be considered when developing and implement a social value plan:

- Select a social value definition and communicate this to a property's stakeholders.
- Agree which social value outcomes are going to be prioritised and how implementation will take place. Prioritisation should depend on the needs of the local community and on what the property can influence. Through engagement with the local community, check that interventions proposed are going to be useful to the community.
- The plan should set out short, medium and long-term objectives. Having a long-term vision helps create lasting legacy. The social value vision should be embedded in the way the building is managed on a day-to-day basis.
- Select a measurement framework can help define what social value means for building stakeholders and support social value maximization.
- Engage with other building stakeholders, for example, occupiers and service providers, to develop alignment towards the social value vision.
- Decide how success will be measured and ensure data (quantitative and qualitative) is being collected to monitor progress.
- Regularly review progress towards the social value vision, along with the action plan. The plan is likely to need to change as the community's issues and priorities shift.

SOCIAL VALUE OPPORTUNITIES

HOW TO...

Across the range of social value opportunities, the responsibilities and interest of asset, property and facilities managers are likely to have differ deepening on local circumstances.

The kinds of social value themes that a materiality exercise is likely to identify are generally covered within the opensource TOMs framework (Themes Outcomes and Measures) which groups social value outcomes under the five headings below:

TOMs FRAMEWORK (THEMES OUTCOMES AND MEASURES)

Jobs and skills

Supporting growth of responsible business

Healthier safer and more resilient communities

Decarbonising our world and protecting our habitats

Measuring the progress of a social value programme

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1. JOBS AND SKILLS

Mentoring programmes

There various ways to organise successful mentoring programmes. These include, for example:

- Working with local schools and colleges to understand what benefit young people would derive from a mentoring programme.
- Setting up a mentoring programme within your building for less experienced members of your occupiers' and facilities teams to be mentored by those with more or different experience.

Skills based volunteering

The people within a property likely possess many varied skills, from those they use as part of their day job, to those they use outside of work.

Many voluntary sector organisations operate with limited resources and don't always have the formal business skills they would ideally like. Conversely, individuals working within these sectors often have well developed attributes such as, for example, team building, motivation and partnership working.

Developing relationships with charities and community organisations that are relevant to the social issues identified as important to the local area presents an opportunity to work together for mutual benefit.

Creating a skills matrix by surveying people to highlight what skills they have that they would be willing to share can be a good place to start. Alternatively, opening conversations with community groups to find out what they need followed by a call-out to people in the building to see if they hold these skills.

Examples are as broad as marketing support for charities to more functional advice on accountancy to foreign language translation.

Work experience

Many schools and colleges have more students seeking work experience than businesses or organisations who can accommodate them. Work experience provides a valuable way to build a relationship with a local school and to provide a positive experience for both young people and employees, who can gain skills in communication and coaching.

There is guidance around work experience in that the person carrying out the placement should be observing or carrying out tasks to try them out rather than fulfil a role within the organisation that would otherwise be completed by a paid member of staff.

Speaking with the local Department for Work and Pensions is usually a good place to start to understand the need and opportunity in a local area.

Internships

Organising internships within the building can be an impactful way of building local relationships, bringing in fresh talent and perspective and opening up opportunity to people who otherwise may not get first-hand experience of the workplace.

Internships are usually longer placements than work experience and costs are at least covered, with some receiving a small payment too. Given the cost associated with such placements they can be trickier to organise, but they are almost always valuable for all involved.

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2. SUPPORTING GROWTH OF RESPONSIBLE BUSINESS

Local and/or socially led procurement

As the procurement spend from a property building is likely to be significant, there are numerous ways to deliver value through the supply chain.

Sourcing locally is a great way to support economic resilience, and looking for impact led businesses, such as social enterprise, can also extend the impact.

Springboard for start-ups, young enterprise and cultural groups

Creative use of space to give profile to socially-led projects in the local area can be a great way of supporting the community and enriching a property's space.

For example, as many schools and colleges run young enterprise projects, there are likely to be opportunities to invite them in to promote and sell their goods in your shared areas.

It is worth considering:

- Is there space to display art from local groups giving them exposure and profile?
- Are there any small local businesses that would benefit from agreed access to a property and its people?

Wellbeing

A building has the potential to have huge impact on the wellbeing of people in and around it. By actively promoting and enhancing wellbeing, value can be added to the space. This can be through:

- The building itself, for example, ensuring there are spaces for reflection, adding in biophilia, making sure there is access to natural light, encouraging use of stairs over lifts, adding bike racks.
- Activities within the building, for example, mindfulness and yoga classes, or opportunities to connect socially.

Mental health provision

It is useful to think about how a property can support the mental health of people using it.

There are a range of initiatives that specifically support mental health, for example, introducing Mental Health First Aiders, or running events with expert speakers on mental health.

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3. HEALTHIER SAFER AND MORE RESILIENT COMMUNITIES

Support for local charities

There are numerous ways to support local charities and local communities.

The most appropriate type of support will depend on what's required in a particular local area. Examples include:

- Literacy initiatives involving volunteers to read to children (safeguarding checks will generally be undertaken via the charity).
- Befriending older people.
- Skills based volunteering to help support digital skills.

When setting up partnerships with local charities it is important to:

- Have an open conversation at the outset about what support a property's occupiers are, and are not, able to provide.
- Be clear about the terms of the relationship, for example, a one-off activity or ongoing engagement, financial or non-financial contribution, what information should be provided to track and measure engagement.

Celebrate and support local diversity

Every community is different and the people within a property will come from a range of diverse backgrounds.

Celebrating diversity and local nuance is a great way of bringing people together, both virtually, or in person. This can be done to celebrate a variety of cultural events, or events of significance to the local community, while promoting a culture of tolerance and inclusivity.

Youth panels

There is often value to be gained from inviting new voices to join discussions/debates that might be taking place within a property. There are numerous ways this can be done. One example is through working with a dedicated organisation, such as Debate Mate, which seek companies to present real life problems to young teams of debaters who come and 'battle it out' with an audience.

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4. DECARBONISING OUR WORLD AND PROTECTING OUR HABITATS

Community planting projects

The act of planting trees and plants can provide health benefits while also supporting the necessary drive to promote and protect biodiversity in our communities. Bringing people together to do this in or around a property, or the local area, can help improve the surroundings as well as support social connections.

Wildlife protection programmes and engagement

Many charities are involved in the protection of the environment. Group activities, such as Keep Britain Tidy's Big Litter Pick, and Surfers Against Sewerage beach cleans can be great ways to engage teams, meet new people and make a positive difference to the local environment.

Green transport schemes

Introducing green transport schemes is a great way for people to contribute to the environmental effort while improving their health and wellbeing.

Whether this involves car sharing that promotes social connection, or encouraging walking and cycling through provision of lockers or showers, these activities can provide an important source of social value.

AM PM FM

5. MEASURING THE PROGRESS OF A SOCIAL VALUE PROGRAMME

Tracking and measurement is an important part of any social value programme, and should be considered as part of the planning social value activities.

Setting up processes to capture the kind of data that will be beneficial to a property's stakeholders involves taking a proportionate approach and starting with data that is already available.

This may involve capturing quantifiable numbers around, for example:

- number of volunteers.
- hours volunteered.
- results of wellbeing surveys.

Alongside this, qualitative insights from those involved may also provide valuable feedback as well as supporting the development of case studies for communications purposes.

At a more advanced level, to begin to evaluate the socio-economic value of a social value programme, there are numerous specialists that can provide support.

The TOMS opensource framework provides a good starting point to understand the principles and methodology regardless of the supplier. As part of TOMS, proxy values derived from national data sources can enable socio-economic measurement of certain activities.

INCORPORATING SOCIAL VALUE IN THE SUPPLY CHAIN

HOW TO...

Incorporating social value in the supply chain can be a key part of any company's approach to responsible supply chain management. In relation to property management, property and facilities managers are responsible for the general approach to procurement, set within frameworks established by asset managers.

The key considerations for incorporating social value in the supply chain are set out in the four steps below:

PM FM

1: ALIGN SOCIAL VALUE OPPORTUNITIES WITH PROCUREMENT ACTIVITIES

Different social value issues and opportunities can be aligned with, and tailored to, different service providers and different types of contracts. Alignment should be considered at the tender stage, and also during the contract term.

Service providers' existing social value activities

Service providers often have their own social value or corporate social responsibility programmes.

By engaging with service provides, property managers can help to identify potential collaboration opportunities on social value issues of mutual interest. This may provide synergy and additional benefits from the service partner's implementation knowledge and the property manager's co-ordination.

Alignment to procurement category

Different procurement categories may align well to specific areas of social value. For example:

- The provision of apprenticeships may be well-suited to mechanical and electrical services.
- Local employment opportunities may be well suited to cleaning services.
- Employing from marginalised groups may be well suited to landscaping services.
- Local procurement opportunities may be well suited to catering services.

This is particular important if the property manager is at the early stages of implementing a social value measure.

Alignment to contract duration

The duration of a contract may influence the choice of alignment social value issues. For example:

- A longer contract may be appropriate for expanded partnerships with a local school for the provision of end-of-term placement.

- A shorter contract may be appropriate for a fixed-term partnership with a local school for the provisions of employment taster days.

This is important to ensure that delivery is appropriate for the contract period and that interventions don't end abruptly.

PM FM

2: INTEGRATE SOCIAL VALUE WITHIN THE TENDER PROCESS

Opportunities to embed social value principles exists at all stages of the procurement process. Incorporating social from the beginning of the process enables prospective suppliers to develop a clear understanding of expectations and to review their own policies and practices in preparation for successful outcomes at each stage.

Pre-qualification

The pre-qualification (or pre-tender) stage provides an opportunity to assess the capacity, capability and experience of prospective suppliers. This can include their ability and commitment to delivering social value.

At this stage, social value questions should, ideally, remain quite general, and set the foundation for more detailed assessment at a later stage.

Pre-qualification is a helpful way to set out the expectation and to outline that commitment in this area is a minimum requirement.

Examples of simple social value questions that could be included during pre-qualification include:

- Does your company run a corporate responsibility or social value programme? Examples or prompts could include, but are not limited to, apprenticeships, volunteering, work experience, school engagement.

- Is your company committed to supporting diversity and inclusion in the workforce? Examples or prompts could include, but are not limited to, gender, race, ethnicity, LGBT).

Invitation To Tender

The Invitation To Tender (ITT) (or contract specification) stage provides an opportunity to flesh out the expectation in relation to delivering social value and allows companies to share key principles that would be required as part of the contract fulfilment.

At this stage, both direct and enabled activities can be accounted for. There is a decision to be made as to whether direct social value will be required to be created through the contract being tendered. This could include, for example:

- Number of apprentices required on site.

- Number of hours volunteering in the local community.

- Number of work experience placements to be supported per year.

This stage also provides an opportunity to review the suppliers social value credentials by asking for examples of relevant social value initiatives they undertake. This can help to:

- Ascertain the extent to which the organisation aligns to the social value aspirations of the property's stakeholders.

- Identify examples of work that's being undertaken elsewhere and provide inspiration and learning for future activities.

At this stage it could be pertinent to request prospective suppliers to include links to any social impact reports and/or case studies they have within their submission to support their position in this area.

It is important to make it clear in the evaluation criteria that some weighting will be associated to their commitment to social value, and to share the scale you propose to use. For example:

1 – Little evidence of commitment to social value.
2 – Some evidence of commitment to social value.
3 – Strong evidence of commitment to social value.
4 – Appear to be leaders/pioneers/innovators in the field of social value.

Evaluation of the tender and/or interview stage

While there is likely to be a wide range of assessment criteria during the evaluation stage, it is important to maintain sight of the social value requirements. This will help to ensure that they remain consistently positioned throughout the process, and a key part of the future deliverables expected by the supplier.

The evaluation criteria, and an accompanying weighting system, should be included within the evaluation documentation. The assessors should be briefed on the importance of the social value criteria and, if necessary, trained on the method of attributing social value scores.

Awarding of contract

It is important that the successful bidder's social value commitments are documented and agreed in the contract document. This should include, for example:

- The social value deliverables agreed as part of the tender submission/evaluation.
- The way in which the social value outputs will be measured and incorporated within the systems and processes set up to manage the contract more broadly.

It can be helpful to agree a measurement or tracking dashboard to capture social value data throughout the duration of the contract delivery. This should be accompanied by an agreement on the governance or management review arrangements that will be for reporting and morning social value deliverables as a regular feature of status review meetings

PM FM

3: INCLUDE SOCIAL VALUE WITHIN SUPPLIER PERFORMANCE MANAGEMENT

Performance management arrangements

Where social value outputs are included as part of a contract deliverables, performance management should be integrated into the formal contract management process.

Performance management may include:

- The provision of social value performance data of scorecards and/or reporting at regular monthly meetings.
- Non-conformances and/or failure to deliver required social value deliverables being managed through the standard contract process.

Where social value reporting from the supplier is ad hoc, it is recommended that information is collected six-monthly as a minimum.

Key performance indicators (KPIs)

As social value measurement remains an emerging field, the measurement of certain social value activities, specifically where the social value created is more intangible, can be difficult to measure.

The selection of KPIs will be influenced by the social value maturity level of the client and the type of services provided. For example, the presence of a policy commitment to support eradicating modern slavery is an easier deliverable than providing job opportunities targeted at survivors of modern slavery.

A selection of key performance indicators which may be appropriate for including within supplier contracts are listed below.

- Skills and employability
  - Number or percentage of people employed from a local community.
  - Number of apprentices or work placements.
  - Breakdown of workforce including jobs created for underrepresented groups, for example, people with disabilities, from disadvantaged backgrounds or BAME backgrounds.
  - Percentage of workforce paid the National or London Living Wage.
  - Hours of training provided per employee.

- Responsible Business
  - Policy commitment to support Diversity and Inclusion.
  - Percentage of invoices paid within 30 days.
  - Total amount of time or money spent with local enterprises.
  - Percentage of contracts within supply chain which include on social value commitments.
  - Percentage of suppliers with responsible sourcing requirements.

- Healthier, safer communities
  - Number of hours volunteered to support local community projects.
  - Donations or in-kind contributions to local community projects.
  - Investment in initiatives aimed at reducing crime or tackling homelessness.

AM PM FM

4: BUILD SUPPLY CHAIN CAPABILITY

Contractors within the supply chain are often viewed as an extension of the central organisation and share in the value of the business, helping deliver tangible outcomes at both a property and a portfolio level.

A range of interventions can be helpful in effectively guiding, managing and measuring the social value outcomes of activities implemented by the supply chain. This can help to build the capability of the supply chain to:

- Deliver the social value commitments agreed within a contract.

- Continue to build and develop these, over time, for future contracts.

Examples of initiatives that can help to build the social value capability of the supply chain include:

Guidance documents

Social value guidance documents can be used as a reference by contractors to be aware of, and understand, programmes that encourage the desired outcomes for the property and its stakeholders.

Guidance documents provide resources and tools to help educate the wider supply chain and extend social value priorities beyond direct contactors, to multiple tiers of the supply chain.

Social value charters

Developing a social value charter for a property can provide contractors with a clear understanding of the material social value topics that need to be addressed throughout the supply chain. This can include activities conducted by sub-contractors beyond tier one suppliers.

Including specific social value objectives within the charter can enable contractors to:

- Track performance against KPIs.
- Make decisions that with align to a property's social value priorities.
- Encourage practices that promote social value outcomes beyond the initial tier one activities.

Training and knowledge share

To enhance social value outcomes throughout the supply chain, the organisation should support contractors by providing training and knowledge sharing resources. This can help to develop a clear and consistent approach to social value through the supply chain hierarchy.

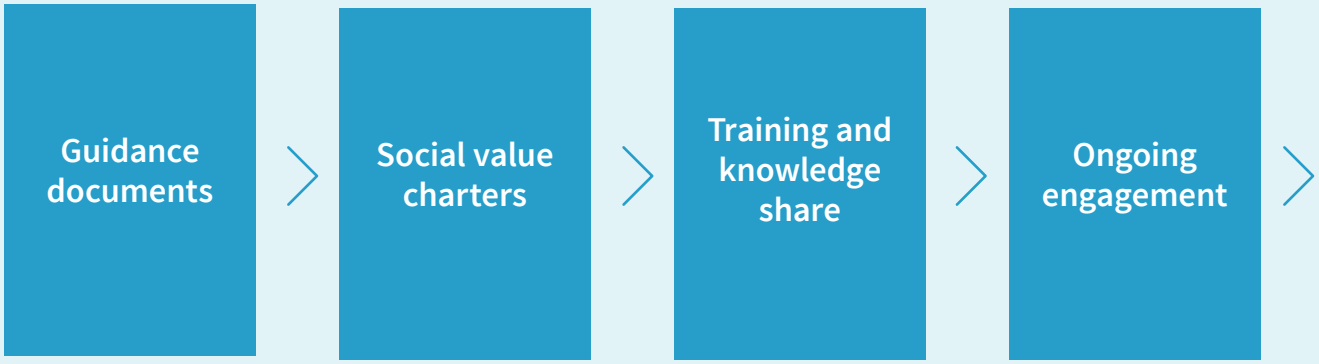
Alongside raising awareness on the specific social value issues of most relevance to a property of portfolio, training can be provided on how these issues can be approached, and how impact can be measured. Over time, this will build the capacity of contractors and enable them to deliver robust programme to enhance social value after contract award.

Ongoing engagement

Engaging actively with contractors through regular meetings will enable a sustained transition in terms of how social value is managed and measured across the supply chain. Exchanging experience and providing feedback will enable more innovative practices to be adopted and encourage contractors to take ownership of the delivery of social value initiatives.

Throughout the contract length, social value should be regularly reviewed. Supportive management from the central procurement team and social value/ESG teams should be offered in order to establish and review social value programmes.

Interventions for guiding, managing and measuring the social value outcomes of activities implemented by the supply chain



MODERN SLAVERY

HOW TO...

Asset, property and facilities managers are all likely to be required to produce and publish an annual statement of their own to be fully compliant in meeting the requirements set out in the Modern Slavery Act (2015) (MSA).

As asset, property and facilities managers all have a formal responsibility for managing their direct procurement processes and the procurement processes within their supply chains, it is important that each party has a clear understanding of its modern slavery obligations, and how to meet them.

Property managers also have an additional role in ensuring the effective management of the procurement and supply chain that they undertake on behalf of asset managers.

Complying with modern slavery obligations should involve the following considering the following steps:

AM PM FM

STEP 1: UNDERSTAND RESPONSIBILITIES

Supply chain definition

'Supply chain' can be defined as: "a system of organisations, people, activities, information, and resources involved in supplying a product or service to a consumer" .

MSA responsibilities extend beyond any suppliers and contractors directly procured by a property manager, to suppliers and contractors procured by those organisations in turn, extending in a chain from the original state of a good or service to the end buyer.

Asset managers

An asset manager has an overarching responsibility to ensure that there is no breach of human rights associated with their properties, including those relating to Modern Slavery and human trafficking.

Compliance with the MSA should be managed through a strategy and policies for addressing human rights at the business level. This should be assigned to the CEO and a board-level director responsible for supply chain. Functional responsibility should be allocated to appropriate senior leaders to ensure effective oversight and monitoring, and to ensure clarity across a business.

Part of this strategy should include the identification of the products and services within a property portfolio that will be delegates to a property manager.

Property managers

Through Property Management Agreements, procurement procedures and contracts, responsibility for the day-to-day management of MSA compliance associated with a property generally falls to the property manager.

A property manager has responsibility for scrutinising the procedures that suppliers and contractors have in place to minimise risk. Property managers should have sufficient knowledge and understanding of the underlying risks and issues associated with modern slavery, so that they are able to pick up on potential significant issues.

Facilities manager

Similar to a property manager, a facilities manager has responsibility for scrutinising the procedures that suppliers and contractors have in place to control modern slavery risk in relation to facilities management services contracted to them for a property.

Suppliers

A supplier is responsible for ensuring modern slavery risk is managed for activities falling within their scope of works, in accordance with their contracts and terms and conditions.

AM PM

STEP 2: ESTABLISH A POLICY FRAMEWORK

A range of polices can provide a framework to govern modern slavery and associated issues. There should be clear ownership and responsibility for these policies, and all employees and sub-contractors should have knowledge of them and access to them.

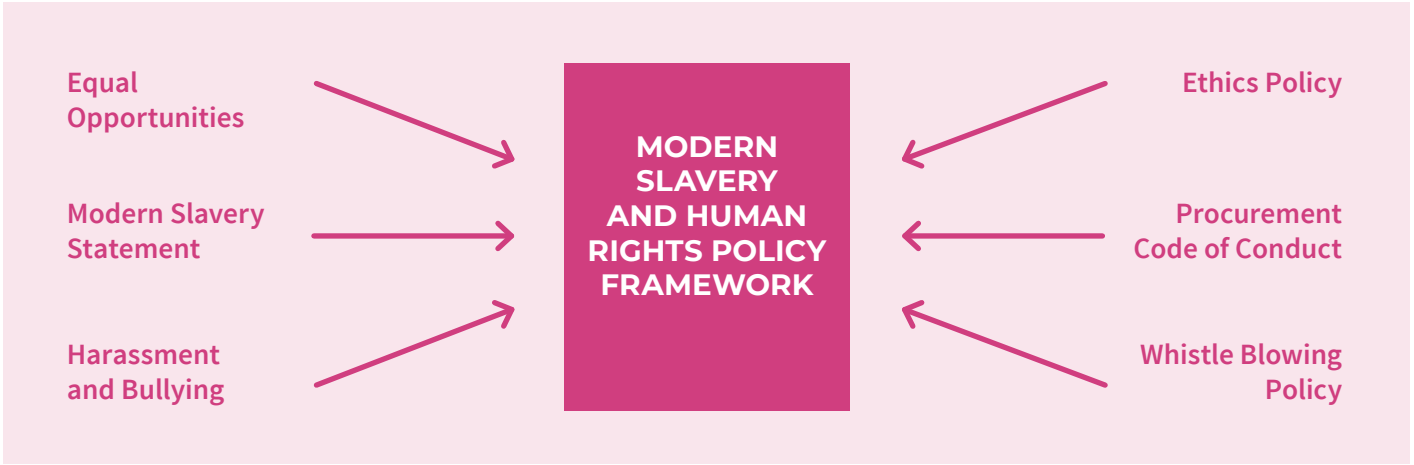
Where possible, these policies should be available in the range of languages used at a property, as well as relating to the organisation within its supply chain. This can help to achieve clarity, so that all parties are aware of their roles and rights.

A Modern Slavery Statement can help to create transparency and reduce risk throughout the supply chain.

A Procurement Code of Conduct should ensure that suppliers' practices and controls are aligned to an asset manager's ethics and human rights expectations for a property. These may be set out directly by an asset manager for a portfolio, or collated and designed for a specific property and set out by a property manager.

Other relevant policies that may shape a modern slavery and human rights policy framework include, for example:

- Equal Opportunities.
- Harassment and Bullying.
- Ethics Policy.
- Whistle Blowing Policy.



AM PM

STEP 3: CHECK DOCUMENTATION AND SCREENING

Property managers should develop formal procedures to check the credentials of suppliers and contractors, including sub-contractors. This will include, but is not limited to:

- Requests for documentation on placing or renewing contracts.
- Use of a vetting scheme such as SafeContractor.

During the early stages of contractor selection, property managers should undertake a risk assessment to identify activities and supply chains where modern slavery risks could be anticipated.

Using a risk-based approach, a property manager can evaluate contextual risk factors. This can help to map the activities in relevant sectors or geographies that may benefit from further assessment.

The International Finance Corporation's "Managing Risks Associated with Modern Slavery" Good Practice Note sets out the following contextual questions that should be considered when prioritising elements of the supply chain where modern slavery risk should be prioritised:

Is there a high risk of modern slavery in the sector?

- Sector has high modern slavery risk.
- Specific groups that may lack basic protection under law and that face discrimination and persecution.

What type of workers are likely to be present in the contract - will the following groups be present, especially in large numbers?

- Females.
- Internal/foreign migrant workers.
- Refugees.
- Low skilled workers.
- Informal workers.
- Temporary/agency/contract/seasonal workers.

Are there characteristics of a sector or individual supplier's management systems or sites that may lead to risks?

- Allegations of poor practices against a business partner.
- Early stages of work on a site, or of production in a supply chain, where there is less oversight of workplace practices.
- Inadequate or poor management systems.
- Lack of transparency.
- Complex subcontracting and supply chains.
- Abnormally low tender or contract cost with third party.

PM

STEP 4: UNDERSTAND THE SUPPLY CHAIN

It is likely that many organisations will already have a robust understanding of their first-tier suppliers and contractors, i.e., those that are directly instructed.

As modern slavery risk often lies at lower levels within the chain, property managers should map each area of a property's supply chain that has been assessed as a priority. Due to the complexity of some supply chains, engagement with first tier suppliers to cascade information requests will be necessary to enable full disclosure throughout the lower tiers.

PM

STEP 5: UNDERTAKE WORKPLACE ASSESSMENTS

Workplace assessments can supplement auditing documentation and policies where a higher risk of modern slavery has been identified.

Property and facilities management teams should undertake routine monitoring of contractors. However, allegations and reports of modern slavery which have been identified through pre-screening or other mechanisms should trigger a more focused assessment, usually to be carried out by expert assessors.

Industry groups such as the Responsible Business Alliance (formerly the Electronic Industry Citizenship Coalition) or the implementation of the Supplemental Validated Audit Process – a specialised programme aiming to identify forced labour risks - can ensure that such assessments are carried out by specialist auditors.

PM

STEP 6: RECORD EVIDENCE

Records of modern slavery information enables the ongoing analysis of contractors and suppliers in order to inform decisions on procurement on a rolling basis.

Detailed documentation, questionnaires, notes from site visits and correspondence should be retained in a central platform as part of a detailed modern slavery audit trail.

All new supplier information, for example, checklists, questions responses, policies and procedures should be stored and retained for future reference as a robust evidence base.

It is important that all information, in whatever form, is recorded and stored in accordance with data protection regulations.

AM PM

STEP 7: TRAINING

Training of key personnel at every level within property management organisations is necessary to ensure that modern slavery risk is managed and mitigated.

It is also important to be confident in the training processes adopted by tier one contractors and suppliers, including the collation of evidenced of training being cascaded through the supply chain tiers.

For higher risk suppliers, including suppliers in higher risk sectors, asset managers may consider delivering training directly.

Training will differ for different roles, but should be specific to the function being undertaken. The primary focus areas for training should include:

- Procurement. The ability to ensure detailed assessments are undertaken and recorded in contract selection and management.
- Operations: An understanding of risk indicators in the workplace.
- Auditing: An understanding of the tools and on-going monitoring required to mitigate risk.

AM PM

STEP 8: ONGOING MONITORING

Asset, property and facilities managers should consider establishing cross-functional working groups to focus on, and continuously monitor, human rights risks, including modern slavery, in both direct operations and supply chains.

Key Performance Indicators (KPIs) can be adopted to monitor ongoing performance and the effectiveness of mitigation measures. KPIs could include:

- Number of employees with awareness training in modern slavery.
- Evidence of risk assessments.
- Supply chain verification checks.
- Property managers are encouraged to explore and set relevant KPI targets to monitor their own and supplier progress.
- Evidence of effective communication processes for on-site labour.
- Evidence of Staff surveys.

LIVING WAGE

HOW TO...

Asset, property and facilities managers are all likely to have an interest in the Living Wage, and how this can be adopted directly, and within their supply chains. Property managers may consider whether the Living Wage could be adopted at a particular property, or across a portfolio, as part of an asset managers approach to generating social value.

Adopting the Living Wage should involve considering the following elements:

AM PM FM

1. ASSESSING THE VIABILITY OF PAYING A LIVING WAGE

Securing the commitment to adopt the Living Wage should be based on an assessment of the business case and consideration of the associated benefits and costs. A property manager should consider:

- Is there an instruction from an asset manager to adopt a Living Wage, or has an asset manager indicated a preference for this within its own policies or corporate literature?
- Is there a commitment within the property manager's company to promote the Living Wage?
- Have the financial implications been assessed, including the impact on service charges and other costs, and reviewed with asset managers and occupiers?
- Is there scope to support the wage increase without compromising other elements of the services provided?

When considering the business case, short and long-term goals associated with the property should be considered. For example, whether the asset manager or occupiers have social value objectives, such as tackling poverty and supporting human rights. This may be indicated through public support of the United Nations Sustainable Development Goals, particularly Goal 1 'No poverty'.

Reviewing the Living Wage Foundation's evidence of UK Business Case will provide information to support the case for the introduction of the Living Wage.

2. PROCURING LIVING WAGE-CERTIFIED SERVICES

Purchasing organisations can play an important role in addressing social inequalities and helping to create a more equitable and inclusive society. Promoting living wage positively impacts the economy and stimulates responsible economic growth by promoting consumer spending, aiding job creation, reducing employee turnover, enhancing productivity and supporting SMEs.

In procuring onsite services, property and facilities Managers should focus on those areas most impacted by low wage issues. These often include cleaning, security, catering and landscaping sectors. Individuals working in these sectors will often be employed via an agency.

Property and facilities managers should determine whether the Living Wage will apply to new tenders only, or whether there is scope to also incorporate the Living Wage into existing contracts, which may be the case for construction and portfolio tenders. If retrospective inclusion is not agreeable, existing partners should still be informed of the broader intention.

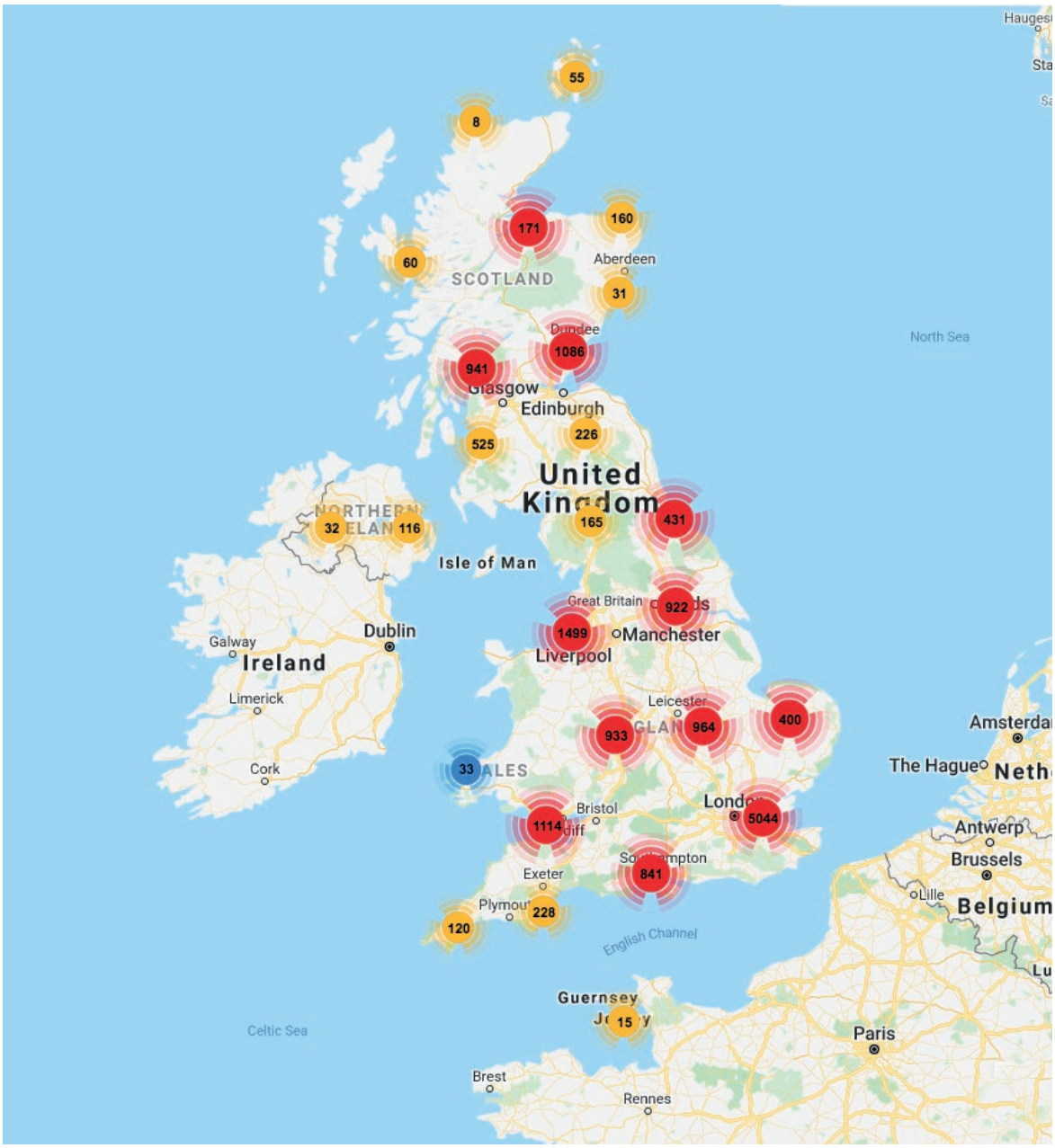
A Living Wage contract clause should be drafted, with input through consultations with main contractors and relevant trade unions or representative bodies.

When procuring new or revised contracts associated with a building, property and facilities managers should ask for bids which are compliant with the Living Wage in addition to their normal bid price.

When sourcing this information, it is imperative that the two bid prices are comparable under the same scope of works and terms of contract. The only variation should be the financial cost associated with the work to enable an objective and balanced comparison.

When procuring a new service, property and facilities managers should review:

- The Living Wage Map to locate suppliers who are committed to paying the Real Living Wage. This is a quick tool for not only finding committed companies but also local suppliers.
- The Living Wage Employer Search to check whether a supplier that is advertising themselves as paying the Living Wage is accredited as doing so.



Property and facilities managers should check that companies within their supply chain that are advertising themselves as adopting the Living Wage can demonstrate this through having appropriate procedures in place themselves. These may include, for example:

- How contractors pay rates are recorded.
- Ability to produce authentic and in-date certification documentation.

Challenges and Considerations

There are challenges associated with making a commitment to pay the Living Wage. A range of factors should be considered as part of the decision-making process. Examples of these include:

- What is the impact of a Living Wage on maintaining pay differentials and grades throughout the organisation?
- How can affordable employment opportunities for lower skilled employees be maintained?
- What safeguards could be introduced in case of future transfer of contracts or businesses activities to other suppliers or companies?
- Is there a risk that increased wages for some employees, in line with the living wage, could leading to others either losing their jobs or not being recruited in the first place?

3. ONGOING MONITORING

It is important to monitor the ongoing implementation of the Living Wage within the supply chain.

The approach to monitoring can include annual assurances, which can be requested by a property or facilities manager to ensure that the supplier is keeping up-to-date with the current Living Wage, if they have committed to doing so.

Property and facilities managers can also ensure that there is internal site signage and communications highlighting the Living Wage status to encourage awareness, openness and transparency. Any concerns regarding these commitments not being upheld can be shared with main contractors, via union site representatives where appropriate, or site whistleblowing mechanisms.

EMBEDDING SUSTAINABILITY INTO WASTE MANAGEMENT SERVICES

HOW TO...

Property managers play a key role in embedding sustainability requirements within waste management contracts, and, alongside facilities managers, checking that contractors are operating as intended. Asset managers have an ongoing interest in ensuring that waste management services comply with regulations alongside any additional requirements they may specify.

The way in which sustainability is incorporated within waste management contracts must be stringent, fair and comprehensive to enable the intended interpreted by waste management contractors and service providers. However, there must also be flexibility for a property manager to take into account any additional requirements, guidance or best practice specified by asset managers.

Embedding sustainability requirements within waste management services involves the consideration of the following elements:

AM PM FM

1: PROCUREMENT PRACTICE

The procurement stage provides the primary opportunity to influence the sustainability impacts of waste management contracts.

When agreeing the lease, sustainability issues and priority areas should have been documented between the asset manager and its occupiers. Relevant sustainability requirements can then cascade within waste management services contracts to define and confirm acceptance of responsibilities, alongside lines of reporting and accountability.

Due diligence and pre-screening questionnaires should include consideration of the requirements of the Modern Slavery Act. As this Act acknowledges waste management as a high-risk service in relation to modern slavery, it is important that full checks have been undertaken in all contractor selection processes prior to instruction.

A waste management contractor should also support the right to collective bargaining and freedom of association and encourage ways of maintaining open dialogue with employees, for example, through employee forum meetings, employee ombudsmen, and channels for reporting concerns, with the option to do so anonymously. Appropriate whistleblowing channels should be available for waste management personnel to report and ensure any issues raised are dealt with fairly, clearly, efficiently and appropriately, without fear of retaliation.

Pre-screening should include a check whether waste contractors have been convicted or had a notice served upon them for infringement of environmental legislation, with further investigation into the circumstances, accompanied by subsequent action, where necessary.

Ideally, waste management sub-contractors should be required to operate a certified Environmental Management System, or at least have a documented process for identifying and managing significant environmental and/or social sustainability aspects and impacts.

It is important that property managers consider the inclusion of specific clauses relating to sustainability for inclusion within waste management contracts. The Better Building Partnership's Improving Waste Management Practices Procurement Specifications Guide provides a series of sample contract clauses for improving environmental performance through waste management contracts.

PM

2: GENERAL APPROACH TO WASTE MANAGEMENT

General provisions

In the context of building-related waste, there are a number of areas that a property manager should consider in relation to contracts for waste management services. Examples include:

- Ensuring that waste transfer notes for all non-hazardous waste streams are held and counter signed.
- Ensuring that hazardous waste onsite, for example, fluorescent tubes and some Waste Electrical and Electronic Equipment, are segregated, dealt with appropriately and in a timely manner and are accompanied by waste consignment note records.
- Acquiring exemptions or permits to cover waste treatment on site.
- Providing reasonable and appropriate facilities for waste collection and segregation, with accompanying clear and up-to-date signage. Consideration should be given as to whether other languages, in addition to English, are necessary to align with user demographics)
- Ensuring that waste management contractors have knowledge of the property's waste collection and segregation mechanisms.

Best practice – zero waste to landfill

Best practice involves an emphasis on circular economy principles, aiming for no waste to be sent to landfill and setting ambitious targets for prevention, reuse and recycling.

Asset and property managers should consider including zero to landfill as a standard requirement across waste management contracts.

Appropriate provision for such a strategy and corresponding targets should be made available on site, considering each waste stream and appropriate training.

PM FM

3: TRAINING

Waste management provides a meaningful contribution to a property's overall sustainability performance.

It is important that early and ongoing engagement with waste management contractors is undertaken to raise awareness sustainability objectives and targets, and to confirm that employees receive appropriate training.

Key aspects of awareness raising and training for waste management personnel relates to:

- Understanding industry-specific waste management requirements, as well as asset and property managers' waste management objectives and targets.
- Safe and appropriate onsite waste handling procedures, particularly relating to COVID-19 protocols.
- The efficient and effective use of waste management equipment.
- Keeping of appropriate records, for example relating to waste transfer or waste consignment notes.

Training and sustainability performance targets should be reviewed periodically to support maintenance of high standards. Property and facilities managers should consider providing training material in languages other than English to align with the demographics of the waste contractor's personnel.

PM FM

4: WASTE AND ENVIRONMENTAL PERFORMANCE

General arrangements

It is important that property managers engage waste contractors on an ongoing basis to ensure that:

- The Building User Guide includes accurate and up-to-date information about waste management arrangements.
- Waste management schedules can be arranged to accommodate periods when the building, carpark and access routes are likely to be busiest (NB: where possible unused materials and packaging will have already been returned to manufacturers for re-use or recycling by the returning delivery vehicles)
- The contractor is aware of and adheres to any Site Waste Management Plan

COVID-19

As part of arrangements to control COVID-19, more frequent cleaning along with increased use of single-use face coverings and personal protective equipment (PPE) will generate extra non-recyclable waste. This waste type must be disposed of promptly and appropriately, and in line with the latest government guidelines. Cloth face coverings can be washed and re-used to prevent and reduce waste.

AM PM FM

5: ONGOING MONITORING

It is important that waste management contracts include a requirement to provide data that can support the monitoring and review of a property's waste management plan and the achievement of its waste objectives and targets.

This could involve, for example, the provision of information relating to the types and quantities of waste generated and how this waste has been managed.

Performance standards

In order to ensure that high sustainability performance standards are achieved and maintained, it is important to review both the services provided and products used on a regular basis. This review should be against a clear set of output-based KPIs, and undertaken as part of annual contract reviews.

For waste, this could include, for example, targeted increases in re-use and recycling rates for recyclable items and a reduction in total landfill waste and non-recyclable items, particularly in relation to construction and fit-out waste.

Where standards are found to be lacking, property managers should work collaboratively with the service provider to establish the reason for under-performance. This may relate to, for example, insufficient resourcing, training or communication. Following the review, an improvement plan should be mutually agreed.

Regulatory requirements

Facilities Management should ensure there is a formal process in place to review changes in legislation and to ensure any applicable changes in legislations are included in contract renewals.

6: SUPPLY CHAIN MANAGEMENT

As waste management falls into a high-risk service category in respect of employment processes, checks should be undertaken routinely on the service provider.

This should include ensuring that directly employed staff and, as far as possible, any other staff in the supply chain are offered a safe place to work where there is no bullying, harassment, discrimination or unreasonable working conditions of any kind, for example, unpaid work, excessive working hours. The Property Manager has responsibility for ensuring that there are demonstrable policies and processes in place to ensure this.

EMBEDDING SUSTAINABILITY INTO MECHANICAL AND ELECTRICAL SERVICES

HOW TO...

Property managers play a key role in embedding sustainability requirements within mechanical and electrical (M&E) services, and, alongside facilities managers, checking that contractors are operating as intended. Asset managers have an ongoing interest in ensuring that M&E services comply with regulations alongside any additional requirements they may specify.

The way in which sustainability is incorporated within M&E contracts must be stringent, fair and comprehensive to enable the intended interpreted by M&E contractors and service providers. However, there must also be flexibility for a property manager to take into account any additional requirements guidance or best practice specified by asset managers.

Embedding sustainability requirements within M&E services involves the consideration of the following elements:

AM PM FM

1: PROCUREMENT PRACTICE

The procurement stage provides the primary opportunity to influence the sustainability impacts of M&E contracts.

When agreeing the lease, sustainability issues should have been documented between the asset manager and its occupiers. Relevant sustainability requirements can then cascade within M&E contracts to define and confirm acceptance of responsibilities.

Due diligence and pre-screening questionnaires should include consideration of the requirements of the Modern Slavery Act. As this Act acknowledges M&E as a high-risk service in relation to modern slavery, it is important that full checks have been undertaken in contractor selection processes prior to instruction.

Pre-screening should include a check whether M&E sub-contractors have been convicted or had a notice served upon them for infringement of environmental legislation, with further investigation into the circumstances, with subsequent action, where necessary.

Ideally, M&E sub-contractors should be required to operate a certified Environmental Management System, or at least have a documented process for identifying and managing significant environmental and/or social sustainability aspects and impacts.

It is important that property managers consider the development of specific clauses relating to sustainability for inclusion within M&E contracts. The information set out within this guidance note may be helpful in guiding the development of these clauses.

While there are currently no set, standard sustainability clauses relating to M&E contracts, property managers should consult a range of sources to develop relevant clauses that will drive continual improvement, and that are likely to be consistent with requirements set for M&E contractors across the real estate sector. These sectors may include:

- Engaging facilities managers within a property or asset managers wider supply chain.
- Reviewing experience with existing contractors.
- Peer-to-peer discussions with other property managers in open forums.

PM FM

2: SCOPE OF SERVICES

It is important that M&E contractors are able to demonstrate competency in a broad range of services that have the potential to influence the sustainability performance of a property. Key focus areas may include, for example:

- Routine alignment of control and timer settings.
- Maximising the use of smart technology, such as a Building Management System, and proactively managing plant performance.
- Use of remote data to support performance evaluation.
- Product and plant specification to optimise efficiencies and in preparing planned preventative maintenance regimes.
- Monitoring and targeting proactively and in real time.
- Engagement with stakeholders and supply chains to align objectives and targets for each property.

PM FM

3: TRAINING

An M&E contractor has the potential to influence a property's sustainability performance, in particular in relation to energy and water consumption.

It is important that early and ongoing engagement with M&E contractors is undertaken to raise awareness sustainability objectives and targets, and to confirm that confirmation that employees receive appropriate training.

Key aspects of awareness raising and training for M&E teams relate to:

- Understanding a property's consumption profile to assist property managers in meeting property energy and water targets.
- The appropriate use of controls and timers on a property's lighting, heating and air-conditioning resources to minimise use but also provide the required ambient conditions.
- Balancing multiple desired M&E outcomes, for example, relating to increased air circulation requirements in line with emerging COVID-19 protocols while continuing to pursue energy efficiency targets.

If there is any equipment containing F-gas onsite, it is best practice to ensure competency records for managing F-gas equipment (such as ACRIB cards) are held onsite for all M&E contractors who visit to conduct F-gas maintenance.

Training and sustainability performance targets should be reviewed periodically to support maintenance of high standards. Property and facilities managers should consider providing training material in languages other than English, to align with the demographics of the M&E contractors' personnel.

UNDERSTANDING A PROPERTY'S CONSUMPTION PROFILE

APPROPRIATE USE OF CONTROLS AND TIMERS

BALANCING MULTIPLE DESIRED M&E OUTCOMES

PM FM

4: M&E AND ENVIRONMENTAL PERFORMANCE

The activities of M&E contractors can have a significant impact on a building's sustainability performance.

In many properties, M&E staff directly control the running times of plant, programme settings and the strategy around electricity and gas and, consequently, associated greenhouse gas emissions.

A Property Manager should liaise with both the asset manager and occupiers to agree how M&E schedules can be aligned to energy strategies, and, particularly, to Net Zero aspirations.

M&E contractors should be fully engaged in carbon reduction programmes, including the design of planned, preventative maintenance programmes and the identification of energy saving opportunities.

Whilst it is important that heating, ventilation and cooling (HVAC) systems in a building operate at hours that match the times when they are required, these need constant review as occupier requirements change and seasonal temperatures vary.

In response to this, it is important that M&E contracts include the need for contractors to demonstrate active engagement with an adaptable approach to HVAC services.

For example, it may not be necessary to heat or ventilate a whole building if it is not fully occupied. In many properties, lighting and heating often remain on much longer than necessary and M&E teams should be empowered, and receive training and access to technology and data, to vary the provision of M&E services accordingly.

AM PM FM

5: ONGOING MONITORING

Performance standards

In order to ensure that high sustainability performance standards are achieved and maintained, it is important to review both the services provided and products used on a regular basis. This review should be against a clear set of output-based KPIs and undertaken as part of annual contract reviews.

For M&E, this could include, for example, records of F-gas usage or trends in energy consumption compared across equivalent degree days.

Where standards are found to be lacking, property managers should work collaboratively with the service provider to establish the reason for under-performance. This may relate to, for example, insufficient resourcing, training or communication. Following the review, an improvement plan should be mutually agreed.

Regulatory requirements

Facilities Management should ensure there is a formal process in place to review changes in legislation and to ensure any applicable changes in legislations are included in contract renewals.

6: SUPPLY CHAIN MANAGEMENT

As M&E falls into a high risk service category in respect of employment processes, checks should be undertaken routinely on the service provider.

This should include checking that directly employed staff and, as far as possible, any other staff in the supply chain are offered a safe place to work where there is no bullying, harassment, discrimination or unreasonable working conditions of any kind (e.g. unpaid work excessive working hours). The Property Manager has responsibility for ensuring that there are demonstrable policies and processes in place to ensure this.

EMBEDDING SUSTAINABILITY INTO CLEANING SERVICES

HOW TO...

Property managers play a key role in embedding sustainability requirements within cleaning services, and, alongside facilities managers, checking that contractors are operating as intended. Asset managers have an interest in ensuring that cleaning services comply with regulations alongside any additional requirements they may specify.

The way in which sustainability is incorporated within cleaning contracts must be stringent, fair and comprehensive to enable the intended interpreted by cleaning contractors and service providers. However, there must also be flexibility for a property manager to take into account any additional requirements guidance or best practice specified by asset managers.

The UK Cleaning Products Industry Association (UKCPI) have published a sustainable cleaning user guide, 'How to Clean Green - UKCPI' which describes best environmental practice with regard to sustainable cleaning.

Embedding sustainability requirements within cleaning services involves the consideration of the following elements:

AM PM FM

1: PROCUREMENT PRACTICE

The procurement stage provides the primary opportunity to influence the sustainability impacts of cleaning contracts.

When agreeing the lease, sustainability issues should have been documented between the asset manager and its occupiers. Relevant sustainability requirements can then be cascaded within cleaning services contracts to define and confirm acceptance of responsibilities.

Due diligence and pre-screening questionnaires should include consideration of the requirements of the Modern Slavery Act. As this Act acknowledges cleaning as a high-risk service in relation to modern slavery, it is important that full checks have been undertaken in contractor selection processes prior to instruction.

A cleaning contractor should also support the right to collective bargaining and freedom of association and encourage ways of maintaining open dialogue with employees, for example, through employee forum meetings, employee ombudsmen, and channels for reporting concerns, with the option to do so anonymously. Appropriate whistleblowing channels should be available for cleaning personnel to report and ensure any issues raised are dealt with fairly, clearly, efficiently and appropriately, without fear of retaliation.

Pre-screening should include checking whether cleaning sub-contractors have been convicted or had a notice served upon them for infringement of environmental legislation, with further investigation into the circumstances, accompanied by subsequent action, where necessary.

Ideally, cleaning sub-contractors should be required to operate a certified Environmental Management System, or at least have a documented process for identifying and managing significant environmental and/or social sustainability aspects and impacts.

It is important that property managers consider the development of specific clauses relating to sustainability for inclusion within cleaning contracts. The information set out within this guidance note may be helpful in guiding the development of these clauses.

While there are currently no set, standard sustainability clauses relating to cleaning contracts, property managers should consult a range of sources to develop relevant clauses that will drive continual improvement, and that are likely to be consistent with requirements set for cleaning contractors across the real estate sector. This process may include:

- Engaging facilities managers within a property or asset manager's wider supply chain.
- Reviewing experience with existing contractors.
- Peer-to-peer discussions with other property managers in open forums.

PM FM

2: PRODUCTS

Property managers should require and check that cleaning products comply with relevant third-party sustainability certification standards.

The International Council of Chemical Associations' (ICCA) Responsible Care Initiative demonstrates a chemical company's commitment to sustainability which is also supported by the European Chemical Industry Council (CEFIC).

Where possible and safe, cleaning service contracts should require that cleaning products should be diluted on site to reduce associated transport emissions and promote reuse of cleaning product containers.

The International Association for Soaps, Detergents and Maintenance Products (A.I.S.E.) has developed a 'Charter for Sustainable Cleaning' across Europe and its logo can be found on all member organisations' products.

PM FM

3: TRAINING

A cleaning contractor has the potential to influence a property's sustainability performance, in particular in relation to energy and water consumption and waste generation.

It is important that early and ongoing engagement with cleaning contractors is undertaken to raise awareness sustainability objectives and targets, and to confirm that employees receive appropriate training.

Key aspects of awareness raising and training for cleaners relates to:

- The use of cleaning products to meet asset and property managers' requirements, including spill kit training.
- The efficient and effective use of cleaning equipment
- The appropriate use of a property's lighting, heating and air-conditioning resources.
- Appropriate cleaning procedures, particularly relating to COVID-19 protocols.
- Streamlined and prompt reporting of environmental incidents, for example, oil spills, fly-tipping, noise, odour and smoke.
- Appropriate use of pesticide and rodenticide, where necessary.

Training and sustainability performance targets should be reviewed periodically to support maintenance of high standards. Property and facilities managers should consider providing training material in other languages in addition English, to align with the demographics of the cleaning contractor's personnel.

- **USE OF CLEANING PRODUCTS TO MEET ASSET AND PROPERTY MANAGERS**
- **EFFICIENT AND EFFECTIVE USE OF CLEANING EQUIPMENT**
- **APPROPRIATE USE OF A PROPERTY'S LIGHTING, HEATING AND AIR-CONDITIONING**
- **APPROPRIATE CLEANING PROCEDURES**
- **STREAMLINED AND PROMPT REPORTING OF ENVIRONMENTAL INCIDENTS**
- **APPROPRIATE USE OF PESTICIDE AND RODENTICIDE**

PM FM

4: CLEANING AND ENVIRONMENTAL PERFORMANCE

The activities of cleaning contractors can have a significant impact on a building's sustainability performance.

Lighting, heating and air-conditioning (HVAC)

In many properties, cleaning staff operate outside of normal office hours and consideration should be given to minimising the use of lighting and HVAC resources used by cleaning staff while they undertake their duties at these times.

A property manager should liaise with both the asset manager and occupiers to discuss how cleaning schedules can be best managed and examine how they can be aligned to any sustainable waste, water or energy strategy.

If cleaning staff operate outside of the main office hours, HVAC system controls should be adjusted to reflect the change in HVAC demand. It may not be necessary to heat or ventilate a whole building if cleaning is isolated to certain areas and staff are cleaning in rooms for a limited period of time.

In many buildings, lighting and HVAC often remain on much longer than is necessary. A good first step is to use inexpensive time controls to automatically switch off the heating at the end of a normal working day and ensure cleaning staff are trained to minimise their energy usage when working outside these hours.

It may also be necessary to observe the working patterns of the cleaning staff and align their cleaning schedules to certain times of the day where energy savings can be made.

COVID-19

As part of arrangements to control COVID-19, more frequent cleaning along with increased use of single-use face coverings and personal protective equipment (PPE) will generate extra non-recyclable waste. This waste type must be disposed of promptly and appropriately, and in line with the latest government guidelines.

Cloth face coverings can be washed and re-used to prevent and reduce waste, and further opportunities to avoid waste and promote circularity in relation to cleaning products should be sought out and implemented where safe.

AM PM FM

5: ONGOING MONITORING

Performance standards

In order to ensure that high sustainability performance standards are achieved and maintained, it is important to review both the services provided and products used on a regular basis. This review should be against a clear set of output-based KPIs, and undertaken as part of annual contract reviews.

For cleaning, this could include, for example, number of spills of chemicals used in cleaning or the outcome of environmental audits relating to the labelling and storage of cleaning materials.

Where standards are found to be lacking, property managers should work collaboratively with the service provider to establish the reason for under-performance. This may relate to, for example, insufficient resourcing, training or communication. Following the review, an improvement plan should be mutually agreed and implemented.

Regulatory requirements

Facilities Management should ensure there is a formal process in place to review changes in legislation and to ensure any applicable changes in legislations are included in contract renewals.

AM PM FM

6: SUPPLY CHAIN MANAGEMENT

As cleaning falls into a high-risk service category in respect of employment processes, checks should be undertaken routinely on the service provider.

This should include checking that directly employed staff and, as far as possible, any other staff in the supply chain are offered a safe place to work where there is no bullying, harassment, discrimination or unreasonable working conditions of any kind, fro example, unpaid work, excessive working hours. The Property Manager has responsibility for ensuring that there are demonstrable policies and processes in place to ensure this.

EMBEDDING SUSTAINABILITY INTO SECURITY SERVICES

HOW TO...

Property managers play a key role in embedding sustainability requirements within security contracts, and, alongside facilities managers, checking that contractors are operating as intended. Asset managers have an ongoing interest in ensuring that security services comply with regulations alongside any additional requirements they may specify.

The way in which sustainability is incorporated within security contracts must be stringent, fair and comprehensive to enable the intended interpreted by security contractors and service providers. However, there must also be flexibility for a property manager to take into account any additional requirements, guidance or best practice specified by asset managers.

Information flow in security is particularly critical – especially in times of crisis - and yet also very challenging. Property managers should therefore ensure security personnel have ready access to clear and timely information and situation analysis, and thereby feel empowered to make the right decisions, as well as implementing any relevant plans and procedures in a timely and effective manner.

Embedding sustainability requirements within security services involves the consideration of the following elements:

AM PM FM

1: PROCUREMENT PRACTICE

The procurement stage provides the primary opportunity to influence the sustainability impacts of security contracts.

When selecting a security contractor, property and facilities managers should be aware that security service will set the tone for the ethical standards of their building. It is important that the integrity both of the company and the personnel who come to work on site is considered when tendering security contracts.

When agreeing the lease, sustainability issues and priority areas should have been documented between the asset manager and its occupiers. Relevant sustainability requirements can then cascade within security services contracts to define and confirm acceptance of responsibilities, alongside lines of reporting and accountability.

Due diligence and pre-screening questionnaires should include consideration of the requirements of the Modern Slavery Act. As this Act acknowledges security as a high-risk service in relation to modern slavery, it is important that full checks have been undertaken in all contractor selection processes prior to instruction.

Furthermore, security contractors should pay at least the Living Wage, and have in place reasonable measures to ensure good working conditions. Given that importance of improving the gender balance within the security sector, security contractors should be actively encouraged to disclose and improve gender representation, and report periodically on their progress. There should be evidence to show that a security contractor encourages and fosters an inclusive working culture and behavioural norms.

A security contractor should also support the right to collective bargaining and freedom of association and encourage ways of maintaining open dialogue with employees, for example through employee forum meetings, employee ombudsmen, and channels for reporting concerns, with the option to do so anonymously. Appropriate whistleblowing channels should be available for security personnel to report and ensure any issues raised are dealt with fairly, clearly, efficiently and appropriately, without fear of retaliation.

Pre-screening should include checking whether security sub-contractors have been convicted or had a notice served upon them for infringement of environmental legislation, with further investigation into the circumstances, accompanied by subsequent action, where necessary.

Ideally, security sub-contractors should be required to operate a certified Environmental Management System, or at least have a documented process for identifying and managing significant environmental and/or social sustainability aspects and impacts.

It is important that property managers consider the development of specific clauses relating to sustainability for inclusion within security contracts. The information set out within this guidance note may be helpful in guiding the development of these clauses.

While there are currently no set, standard sustainability clauses relating to security contracts, property managers should consult a range of sources to develop relevant clauses that will drive continual improvement, and that are likely to be consistent with requirements set for security contractors across the real estate sector. This process may include:

- Engaging facilities managers within a property or asset managers wider supply chain.
- Reviewing experience with existing contractors.
- Peer-to-peer discussions with other property managers in open forums.

SECURITY SERVICE PROCUREMENT PRACTICE CHECKLIST

- ☐ Consideration of the requirements of the Modern Slavery Act?
- ☐ Do they pay at least the Living Wage?
- ☐ Do they have in place reasonable measures to ensure good working conditions?
- ☐ Do they actively encouraged to disclose and improve gender representation?
- ☐ Can they show that they encourage and foster an inclusive working culture and behavioural norms?
- ☐ Do they have appropriate whistleblowing channels in place?
- ☐ Have they been convicted or had a notice served upon them for infringement of environmental legislation?
- ☐ Do they operate a certified Environmental Management System?
- ☐ Do you have in place relevant clauses that will drive continual improvement?

PM FM

2: PRODUCTS

Property managers should any ensure security products sourced have obtained relevant third-party sustainability certification standards where relevant.

In relation to the use of vehicles, property managers should consider including a requirement for an electrified fleet, especially if already supported by the adequate provision of onsite charging facilities.

PM FM

3: TRAINING

As security contractors influence the tone of ethical behaviour in a property, early and ongoing engagement on the communication of ethical standards and behaviours, as well as confirmation that relevant training is in place, are important focus areas.

Key aspects of awareness raising and training for security staff could relate to, for example:

- Understanding industry-specific sustainability requirements, to meet asset and property managers' sustainability objectives and targets.
- The appropriate use of the property's lighting, heating and air-conditioning facilities.
- Managing health and safety risk, for example fire safety and first aid. This should include supporting a robust reporting system.
- Appropriate security procedures, particularly relating to increased security checks to follow COVID-19 protocols, and in-depth knowledge of local security plans.
- The use of technology and data, for example automated alert methods for emerging threats (new local clusters, second waves, and changing security risks) and building technology to make sites safer.
- Bribery and anti-corruption protocols.
- Combatting unconscious bias, including those relating to racism.

Security personnel should have qualifications in place before coming to site. However, ongoing training is also essential. Training and targets should be reviewed periodically to ensure high standards are fully comprehended and met. In relation to COVID-19, organisations should also ensure they conduct regular reviews of response actions carried out in earlier phases of the crisis, as well as of their plans' relevance to dealing with the next phases.

Training and sustainability performance targets should be reviewed periodically to support the maintenance of high standards. Property and facilities managers should consider providing training material in other languages in addition to English to align with the demographics of the security contractor's personnel.

4A: SECURITY AND SOCIAL PERFORMANCE

The security sector has a pivotal role to play in the protection of people, businesses and assets, particularly in light of COVID-19.

Security services should be cognisant of continually reviewing and updating their procedures in line with the latest government guidelines. They should also be aware of emerging social threats relating to the pandemic, for example petty crime or increased xenophobia, and be able to deal with these issues in a confidently, fair and appropriate manner.

PM FM

4B: SECURITY AND ENVIRONMENTAL PERFORMANCE

The activities of security contractors can have a significant impact on a building's sustainability performance.

Lighting, heating and air-conditioning (HVAC)

It is important that HVAC systems in a building operate at hours that match the times when they are required. These needs will vary throughout the day and in different seasons.

If security staff operate outside of the main odaffice hours, the system controls should be adjusted to reflect the change in demand for these essential services. It may not be necessary to heat or ventilate a whole building if security is isolated to certain areas and staff are security in rooms for a limited period of time.

In many buildings, lighting and heating often remain on much longer than is necessary. A good first step is to use inexpensive time controls to automatically switch off the heating at the end of a normal working day and ensure security staff are trained to minimise their energy usage when working outside these hours.

COVID-19

In response to COVID-19, it may be possible for security personnel to assist cleaning staff to ensure that appropriate signage e.g. relating to masks and PPE, are clearly visible.

AM PM FM

5: ONGOING MONITORING

Performance standards

In order to ensure that high sustainability performance standards are achieved and maintained, it is important to review both the services provided and products used on a regular basis. This review should be against a clear set of output-based KPIs and undertaken as part of annual contract reviews.

For security, this could include, for example, regularly reviewing data relating to health and safety incidents or the incidence of whistleblowing, including how these are responded to.

Where standards are found to be lacking, property managers should work collaboratively with the service provider to establish the reason for under-performance. This may relate to, for example, insufficient resourcing, training or communication. Following the review, an improvement plan with clear timelines should be mutually agreed and implemented.

Regulatory requirements

Facilities Management should ensure there is a formal process in place to review changes in legislation and to ensure any applicable changes in legislations are included in contract renewals.

AM PM FM

6: SUPPLY CHAIN MANAGEMENT

As security falls into a high-risk service category in respect of employment processes, checks should be undertaken routinely on the service provider.

This should include ensuring that directly employed staff and, as far as possible, any other staff in the supply chain are offered a safe place to work where there is no bullying, harassment, discrimination or unreasonable working conditions of any kind (e.g. unpaid work, excessive working hours). The Property Manager has responsibility for ensuring that there are demonstrable policies and processes in place to ensure this.

EMBEDDING SUSTAINABLITY INTO LANDSCAPING CONTRACTS

HOW TO...

Property managers play a key role in embedding sustainability requirements within landscaping contracts, and, alongside facilities managers, checking that contractors are operating as intended. Asset managers have an ongoing interest in ensuring that landscaping services comply with regulations alongside any additional requirements they may specify.

The way in which sustainability is incorporated within landscaping contracts must be stringent, fair and comprehensive to enable the intended interpreted by landscaping contractors and service providers. However, there must also be flexibility for a property manager to take into account any additional requirements guidance or best practice specified by asset managers.

The following considerations are paramount in ensuring best practice:

1. Choosing landscaping maintenance products that are designed for sustainability.

2. Working with suppliers so that they responsibly manage their impacts.

3. Minimising the environmental impacts that arise during landscaping operations.

Embedding sustainability requirements within landscaping services involves the consideration of the following elements:

AM PM FM

1: PROCUREMENT PRACTICE

The procurement stage provides the primary opportunity to influence the sustainability impacts of landscaping contracts.

When agreeing the lease, sustainability issues should have been documented between the asset manager and its occupiers. Relevant sustainability requirements can then be cascaded within landscaping services contracts to define and confirm acceptance of responsibilities.

Due diligence and pre-screening questionnaires should include consideration of the requirements of the Modern Slavery Act. As this Act acknowledges landscaping as a high-risk service in relation to modern slavery, it is important that full checks have been undertaken in contractor selection processes prior to instruction.

Furthermore, landscaping contractors should pay at least the Living Wage, and have in place reasonable measures to ensure good working conditions. Given that importance of improving the gender balance within the landscaping sector, landscaping contractors should be actively encouraged to disclose and improve gender representation, and report periodically on their progress. There should be evidence to show that a landscaping contractor encourages and fosters an inclusive working culture and behavioural norms.

Ideally, landscaping sub-contractors should be required to operate a certified Environmental Management System, or at least have a documented process for identifying and managing significant environmental and/or social sustainability aspects and impacts.

Pre-screening should include a check whether landscaping sub-contractors have been convicted or had a notice served upon them for infringement of environmental legislation, with further investigation into the circumstances, with subsequent action, where necessary.

Contractors must also be aware of nuisance arising from their work, such as dust, noise, vibration and odours, and should work to mitigate and reduce these. Where complaints are made, property and facilities managers must ensure that these are clearly logged, and any relevant actions closed.

Importantly, if listed buildings or protected structures are present, property managers must ensure adequate protection measures are in place and adhered to.

It is important that property managers consider the development of specific clauses relating to sustainability for inclusion within landscaping contracts. The information set out within this guidance note may be helpful in guiding the development of these clauses.

While there are currently no set, standard sustainability clauses relating to landscaping contracts, property managers should consult a range of sources to develop relevant clauses that will drive continual improvement, and that are likely to be consistent with requirements set for landscaping contractors across the real estate sector. This process may include:

- Engaging facilities managers within a property or asset managers wider supply chain.
- Reviewing experience with existing contractors.
- Peer-to-peer discussions with other property managers in open forums.

PM FM

2: PRODUCTS

Many pesticides used on landscaped areas can impact natural habitats. The use of pesticides and other chemicals should be understood and their impacts fully risk assessed to consider any effects on the environment and human health.

If the use of chemicals is deemed to be necessary, property managers must ensure that contractors possess relevant competency certificate(s), for example, LANTRA/BASIS for pesticides or RSPH/BPCA Level 2 Award in Pest Management for rodenticides.

Control of Substances Hazardous to Health (COSHH) sheets are required and should be retained. The use of pesticides should be minimized, and can be avoided all together in some areas of landscaping. Formal agreements should be made with landscapers to document exactly what is acceptable.

Property Managers should any ensure landscaping products sourced have obtained relevant third-party sustainability certification standards where relevant.

In relation to the use of vehicles, property managers should consider including a requirement for an electrified fleet, especially if already supported by the adequate provision of onsite charging facilities.

PM FM

3: TRAINING

Landscaping contractors have the potential to influence a property's sustainability performance, particularly in relation to energy and water consumption, biodiversity and waste generation.

It is important that early and ongoing engagement with landscaping contractors is undertaken to raise awareness sustainability objectives and targets, and to confirm that employees receive appropriate training.

Key aspects of awareness raising and training for landscaping contractors relates to, for example:

- Understanding industry-specific sustainability requirements, to meet asset and property managers' sustainably objectives and targets.
- Maintenance and improvement biodiversity in line with Property Manager's or Landlord's targets.
- The use of pesticides, chemicals and pesticide and rodenticide to align with asset managers' environmental objectives and targets.
- The efficient and effective use of energy-consuming equipment.
- Their use of water resources, including discharge of into waste water drains.

Landscaping personnel should have qualifications in place before coming to site. However, ongoing training is also essential. Training and targets should be reviewed periodically to ensure high standards are fully comprehended and met.

Training and sustainability performance targets should be reviewed periodically to support maintenance of high standards. Property and facilities managers should consider providing training material in languages other than English, to align with the demographics of the landscaping contractor's personnel.

PM FM

4: LANDSCAPING AND ENVIRONMENTAL AND BIODIVERSITY PERFORMANCE

The activities of landscaping contractors can have a significant impact on a building's sustainability performance, particularly in relation to biodiversity.

Improving biodiversity through landscaping at any property involves working with a variety of stakeholders who influence environmental impacts, with the landscapers having perhaps the largest influence.

A property manager should liaise with both the asset manager and occupiers to discuss how landscaped and planted areas, including internal planting, can be best managed, and should examine how they can be aligned to key objectives and targets.

Associated biodiversity objectives relate to:

- Improving aesthetics and general environment for the benefit of occupiers while aligning with health and wellbeing requirements.
- Contributing towards good air quality.

- Increasing the ability to absorb carbon and potentially insulate a property, for example, through a green roof.
- Creating natural barriers and covering certain areas, particularly in the context of car parks and retail parks
- Improving and increasing natural habitats

AM PM FM

5: ONGOING MONITORING

Performance standards

In order to ensure that high sustainability performance standards are achieved and maintained, it is important to review both the services provided and products used on a regular basis. This review should be against a clear set of output-based KPIs, and undertaken as part of annual contract reviews.

For landscaping, this could include, for example, data relating to landscaping waste generated and composted or health and safety incidents.

Where standards are found to be lacking, property managers should work collaboratively with the service provider to establish the reason for under-performance. This may relate to, for example, insufficient resourcing, training or communication. Following the review, an improvement plan should be mutually agreed and implemented.

Regulatory requirements

Facilities Management should ensure there is a formal process in place to review changes in legislation and to ensure any applicable changes in legislations are included in contract renewals.

AM PM FM

6: SUPPLY CHAIN MANAGEMENT

As landscaping falls into a high-risk service category in respect of employment processes, checks should be undertaken routinely on the service provider.

This should include checking that directly employed staff and, as far as possible, any other staff in the supply chain are offered a safe place to work where there is no harassment, bullying, discrimination or unreasonable working conditions of any kind (e.g. unpaid work, excessive working hours). The Property Manager has responsibility for ensuring that there are demonstrable policies and processes in place to ensure this.

THE FIT-OUT PROCESS

HOW TO...

The approach to property's fit-out is collaborative, involving consideration of the goals of both asset managers and occupiers. Property managers provide an important role in coordinating the process, with input from facilities managers.

The following elements should form part of property managers' consideration of sustainability within fit-out.

AM

1. MARKETING THE SPACE

Finding the right space for their business is important for any occupier. Including sustainability characteristics when seeking space can help inform the selection of space that maximises occupier benefits.

The marketing of a property is generally the responsibility of an asset manager. It is, however, useful for a property manager to be aware of the way in which sustainability principles may have been incorporated in an asset manager's approach. This may include:

- Where a tenant has vacated, review what equipment can be retained or may be useful for an incoming tenant. The property manager may have been able to support this activity by undertaking a review of the outgoing occupier's equipment.
- If Cat A works are required to showcase the space, ensure only equipment that is of low replacement risk is installed. This will also have the benefit of increasing the speed in which a tenancy can enter the space. Where possible, equipment should be selected with net-zero carbon targets in mind.
- For new builds and major refurbishments, the use of a marketing suite to illustrate the look and feel of sustainability features avoids the need of fully specifying the whole building. Innovative technology, such as virtual reality, can avoid speculative fit-out, enabling agreement of a specification with an occupier, and implementing this, to avoid waste.

AM

2. ENGAGEMENT AND AGREEMENT

The arrangements for agreeing a lease are generally the responsibility of an asset manager. Property managers should be aware of the way in which sustainability was highlighted early in discussions between asset managers and occupiers, and the outcomes and decisions, so that they are able to consistently build on the approach during the later stages.

Asset manager and occupier discussions on sustainability are likely to have:

- Started during initial engagement where the occupier was making enquiries.
- Been followed by setting requirements once the decision was been made to take the space.
- Included how those requirements will be set out within legal agreements.

Asset manager and occupier discussions on sustainability are likely to have:

Started during initial engagement where the occupier was making enquiries.	Been followed by setting requirements once the decision was been made to take the space.	Included how those requirements will be set out within legal agreements.

AM PM

3. A REQUIREMENTS BRIEF

A Requirements Brief is key document that captures an occupier's desired sustainability requirements for a fit-out.

An asset manager plays a central role in the development of a Requirements Brief by supporting occupiers via the provision of advice regarding the overall performance and features of a property, including those relating to sustainability.

While, in many instances, the asset manager may engage occupiers directly, a property manager is often involved in the process through consulting and facilitating discussions. A property manager may, for example:

- Highlighting the potential opportunity for occupiers to pursue various ratings and certifications schemes, such as BREEAM, WELL and Fitwel, to be taken forward in collaboration with sustainability specialists.
- Support an occupier in the review of an asset managers' portfolio-wide Building Fit-Out Guide, advising on the appropriate selection of materials, technology or equipment.
- Do property managers have this level of detailed understanding or are they highlighting the potential and redirecting to ESG specialists?

The Requirements Brief should cover the whole project life-cycle and be developed as early as possible. It serves as reference document at key project stages and will evolve to become more refined and detailed through the course of the fit-out project.

A clear, concise Requirements Brief, that develops over time can:

- Provide a simple set of requirements to inform an occupier's agreement with owners and letting agents.
- Be used as a primer to support project team procurement and set-up, before being used as a core document in the briefing of the selected team.
- Help build a foundation for design and specification documents.
- Ensure that design review and construction delivery meet the occupier's and asset managers' requirements.
- Support a smooth commissioning and handover by allocating appropriate resource to those phases.

AM PM

4. DESIGN AND DELIVERY

Design review and sign-off

The processes linked to setting, agreeing and monitoring the design and specification are pivotal to the delivery of sustainable fit-outs.

Asset managers play a key role in design and delivery by ensuring that there is a review and sign-off process in place at each stage. While in some instances, a building surveyor, with M&E support, may be contracted to undertake the review, this responsibility can also be delegated to a property manager.

This review involves checking the lease arrangements and confirming that the design confirms to these requirements and how the building operates. Sustainability should run as a thread throughout this process. This will help to:

- Reduce the risk of the fit-out failing to meet any project sustainability requirements.
- Reduce the risk of conflicts between the fit-out and the base-build elements.
- Leverage asset and property managers' knowledge of the base-building to guide beneficial and realistic design solutions.
- Ensure design solutions and specification decisions are optimised via ongoing review against the Requirements Brief.
- Ensure any value engineering process genuinely adds value rather than simply cuts costs.

AM PM FM

5. WORKS

It is important that the requirements agreed within design and delivery are embedded during the various phases of works.

An asset manager continues to play a key role during this stage, by ensuring there is a review process in place at each stage. In instances where an asset manager decides to engage a property manager to undertake these reviews, the property manager will establish and implement arrangements to check that sustainably is been incorporated, as intended, within the following phases:

Construction

Following Design Sign-off, the fit-out can enter the next major project phase where construction works commence on-site. Key objectives at this stage are to:

- Identify a competent contractor through Project Team Selection.
- Embed sustainability requirements as part of the agreed scope of works – both in terms of the design solutions and the methods of construction.
- Monitor project progress and gather associated data to assures the delivery of requirements.

Commissioning

A commissioning process will typically involve the testing of key systems, for example, HVAC, controls, lighting, security, fire and water distribution systems. Successful commissioning ensures that these systems operate in an efficient and integrated way, providing a comfortable, safe and secure indoor environment. This is a particularly important for fit-out projects where there is integration required between systems belonging to the asset manager and the occupier respectively.

Part L of the Building Regulations also requires that all controlled services that falling within the scope of the regulations are commissioned. Systems that are not commissioned properly can operate inefficiently, and the desired Occupier Benefits will be at risk. This can have a direct impact on occupant satisfaction and productivity.

Completion and handover

Confirming the works as complete and fit for occupation should involve all key stakeholders. It is important that this includes confirmation that sustainability requirements have been met, for example, features included and commissioned, and construction measures evidenced, will be part of the wider review of completed quality against the scope of works.

The handover stage is also critical in ensuring that property and facilities managers and occupiers, fully understand the sustainability features of the space, and receive training to ensure they are sufficiently equipped to manage and operate the space effectively.

ALTERATIONS AND DILAPIDATION

HOW TO...

The license for alterations and dilapidations processes are often coordinated by the property manager in collaboration with asset managers and occupiers.

1. THE LICENSE FOR ALTERATIONS PROCESS

The license for alterations process involves the definition and review of an occupier's proposals for alteration. Approval instructions should be sought from an asset manager, based on a recommendation of the approach from third party specialists, for example building surveyors.

Throughout the approval process, a property manager should liaise with all parties, and manage the overall timeline through to documenting the Licence to Alter.

Technical review

Where third party specialists are involved, a building surveyor may be instructed to coordinate the review of technical elements as part of delivering a single technical review. This will lead to a recommendation or approval of the proposal for appending to the Licence to Alter.

As part of the technical review, the building surveyor will engage with the occupier's technical team to seek additional information setting out the proposals in sufficient detail to enable a full assessment.

It is important to understand the wider sustainability impacts on the property as a result of the alterations. For example, an assessment of any changes in the property's energy performance, such as from alteration to heating, ventilations and air-conditioning systems, will be needed to enable an assessment of whether the current Energy Performance Certificate rating will be negatively affected.

Wider environmental, social and governance aspects should also be considered. For example, changes to shared occupancy areas may affect the well-being of other occupiers. Similarly, the installation of electric vehicle charging facilities may affect transport arrangements for property users.

Re-instatement

As part of the technical review, it may be necessary to agree how a property will be reinstated on termination of the lease.

While the lease and Licence to Alter will generally contain clauses covering this, a more detailed technical understanding may be needed to understand how this will take place in practice, ensuring the existing and proposed drawings clearly show the scope of the works and that sustainability considerations are factored in.

Approval recommendations and inspections

When the technical review process is complete, the building surveyor will prepare an approval recommendation and collate the agreed information to pass on to solicitors for incorporation within the Licence to Alter. A solicitor will then finalise the documentation and ensure fees are settled.

Subject to the scale of the alterations, interim inspections may be appropriate to monitor the works, ensuring compliance with the approved documentation however there will generally be a single final inspection on completion to ensure the completed works are in line with the approved documents.

A package of information should also be sought to ensure an accurate record of information is held for health & safety reasons along with all relevant commissioning and statutory certification.

2. THE DILAPIDATIONS PROCESS

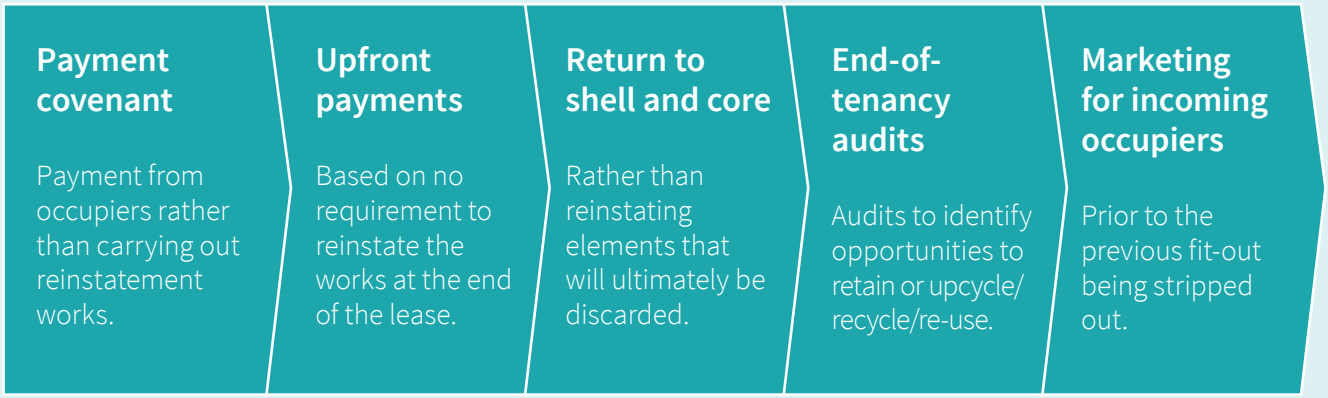
In terms of fit-out works, and any subsequent alterations undertaken during the tenancy, an asset manager will likely require that, at the end of the lease, an occupier restores the property to its original state, or pays the cost of doing so.

The process of removing previous tenant's fit-out and alterations, refurbishing the space for marketing, and the subsequent fit-out by the new incoming tenants can have significant sustainability impacts, in terms of waste, material use, disruption and cost.

Owners and occupiers can proactively take a more responsible approach, and seek opportunities to reduce these negative impacts for both parties by decreasing the need to carry out unnecessary strip-out and refurbishment works.

The way in which reinstatement and dilapidations provisions within lease agreements are drafted could help support such an approach. For example:

Drafting reinstatement and dilapidations provisions within lease agreements



Payment covenant

To avoid the disruptive and resource intense process of strip-out and refurbishment, asset managers may wish to consider a covenant providing an option to require a payment from occupiers rather than requiring the occupier to carry out reinstatement works.

Upfront payments

Occupiers could make an upfront payment as part of the licensing of alterations if this was accompanied by an agreement that there would be no requirement to reinstate the works at the end of the lease. The asset manager could address these costs as part of refurbishment, as long as suitable lease provisions were made in relation to re-instatement resulting from damage.

Return to shell and core

Most leases require occupiers to return to 'Category A' arrangements. This typically includes, for example, raised floors and suspended ceilings, distribution of mechanical and electrical services, internal surface finishes and blinds.

An alternative could involve options for occupiers to reinstate the space to shell and core. In this case it would be relatively easy to define the obligations and would prevent occupiers reinstating elements that will ultimately be discarded.

End-of-tenancy audits

End-of-tenancy audits could be undertaken to identify opportunities to retain or upcycle/recycle/re-use fit-out elements off-site.

- The audit cost could be met by the occupier and carried out by a suitably qualified independent surveyor.
- Owners and occupiers could agree on opportunities to be taken, which could result in reduced costs, waste and minimise disruption.
- Backstop provisions in the lease could allow for more typical reinstatement arrangements should agreement not be reached.

Marketing for incoming occupiers

Asset managers and their letting agents should consider marketing space prior to the previous fit-out being stripped out. Incoming occupiers may prefer reusing or adapting elements of the previous fit-out on grounds of cost reduction, expediency and corporate sustainability commitments.

BUILDING USER GUIDE

HOW TO...

Usually, the preparation of a Building User Guide is coordinated by the property manager with input from the asset manager and facilities manager. The development of a Building User Guide should be informed by the following steps:

AM PM

STEP 1: HOLD A KICK-OFF MEETING

It is important that an asset manager and property manager hold an initial meeting to discuss how a Building user Guide should look and to set the parameters for what it should contain. This will help to ensure that the Building User Guide meets the asset manager's requirements, for example:

- Highlighting key property attributes.
- Agreeing high level content.
- Setting the document format style.
- Scoping final design preferences.

PM FM

STEP 2: SCOPE THE SECTIONS OF THE BUILDING USER GUIDE

Based on the high-level content preferences agreed with an asset manager, a property manager and facilities manager should work together to scope the detailed sections. These may include:

Introduction/Welcome

An introductory statement to welcome occupiers to the building, the asset manager, property manager and facilities managers, and including appropriate contact details.

Philosophy/Mission Statement:

A description of the sustainability ambition for the property or portfolio. This may not be relevant for every property, however certain properties or asset managers may have a particular vision that it would be useful to communicate to occupiers.

Overview of the Building and its Environmental Strategy:

This should highlight points including, for example:

- The measures in place to reduce the environmental impact of the property.
- The processes used to monitor and report the performance of the building.
- Particular design features aimed at improving the performance of the building.
- Any environmental certifications that the building has achieved.
- Whether there are any performance targets that are required to be met.

For new or recently refurbished properties, it may also be useful to provide an overview of the design criteria and specification.

Overview of the Building Services

This should include a list of the building services and facilities that are provided and maintained as part of the service charge. The areas covered by the service charge and basis of calculation, along with a definition of occupier demised areas, should also be described.

It would also be beneficial to also include contact for occupiers to use should they need to report any issues with the facilities or services.

Occupier Engagement

This should include information about how the property and facilities managers would like to engage with occupiers on a regular and reactive basis. This could include, for example, information about:

- Regular occupier meetings.
- Digital occupier portals.
- Apps.
- How to arrange one-to-one meetings.

If there is an occupier sustainability forum for the building, these should be included within this section, including how occupiers can get involved.

If relevant, this section could also include an outline of occupier responsibilities and expectations, such as, for example:

- Tenant contacts for facilities management.
- Accounts and building contacts.

Fit-Out, re-fit and refurbishment arrangements

This section should include reference to the relevant fit-out guide in relation to any tenant alterations or fit out works.

The information:

- Should not be too technical and should refer readers to the fit-out guide, and the operation and maintenance manuals.

- Should provide an overview of the maintenance programme for the building, as well as considerations for re-fitting/refurbishment, such as location of services, load bearing walls and access arrangement.

Location and Access

This section should identify the main access points, transport connections and car/cycle parking arrangements. Facilities to promote low carbon transport, such as electric vehicle chargers, car share schemes, local walking, running and cycling routes, and cycle amenities, for example, should also be described.

Health and Safety

This section should include information on the health, safety and environment procedures for the building. This should highlight key documents, such as fire strategy, fire risk assessment, asbestos management plan, and water managements. Tenant contractor arrangements, access regulations, and restrictions should also be referenced.

The statutory documentation which property managers require to updated regularly by occupiers, such as their own fire risk assessments and air conditioning certificates should also be highlighted.

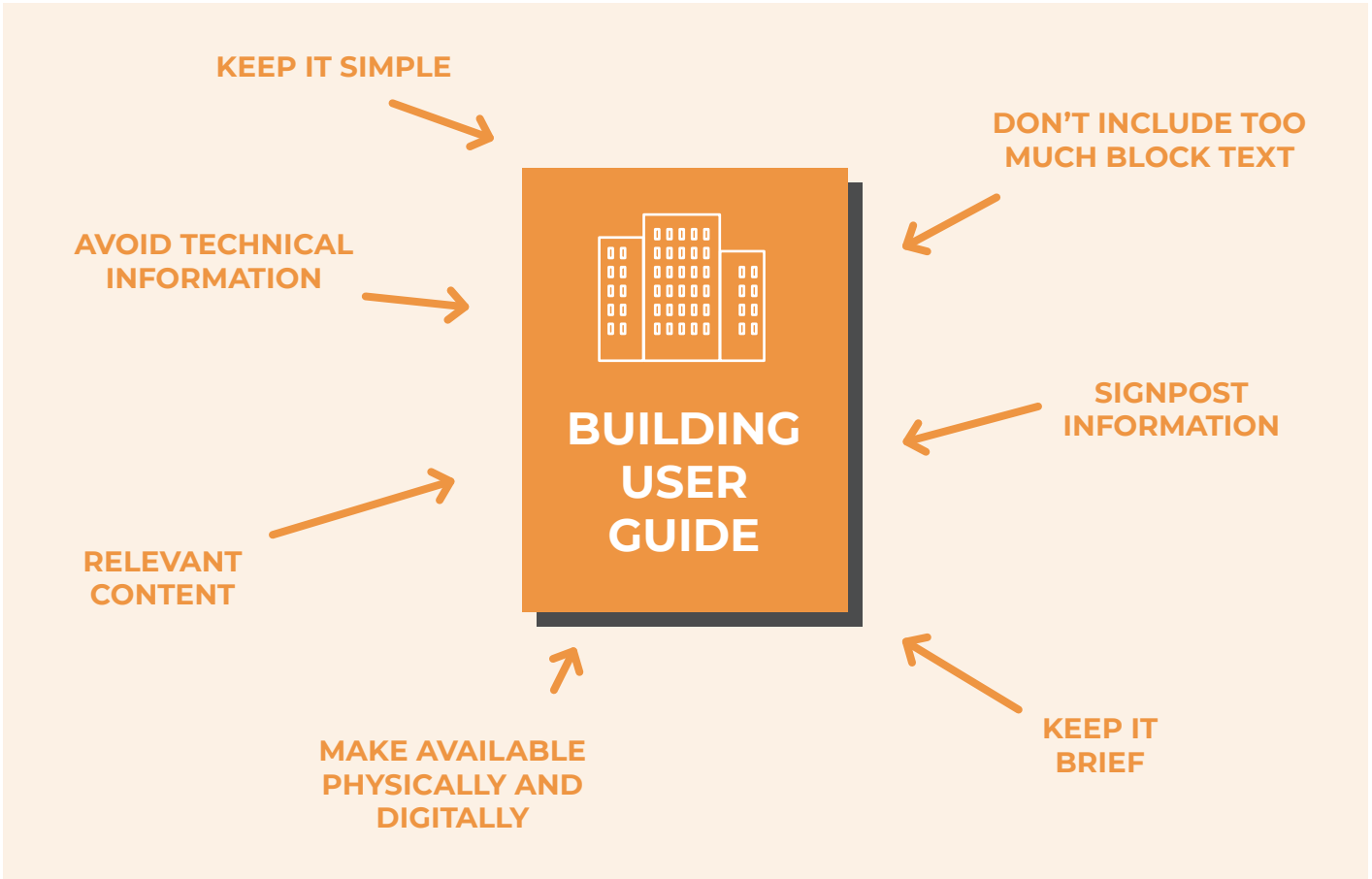
PM FM

STEP 3: DRAFT, AGREE AND DESIGN THE CONTENT

A property manager should co-ordinate the process of preparing content for each section of the Building User Guide. Considerations should include:

- Keep the document simple, easy to read and navigate.
- Avoid including technical information that is better suited to a building manual.
- Ensure that the content is relevant, easy to read, and succinct.
- Don't include too much block text as it can deter people from engaging with the content.
- Signpost information throughout the document using section headings.
- Keep the document brief but ensure all required topics are covered.
- Make the document available both physically and digitally, and make sure it is stored somewhere that is easily locatable, for example, building reception, tenant portal.

It is important that a property manager provides an asset manager with the opportunity to review the draft content of a Building User Guide. The final draft of the document should be designed in line with the preferred style in advance of distribution to occupiers and other building users.



ENGAGING OCCUPIERS

HOW TO...

Usually, occupier engagement is coordinated by the property manager with input from the asset manager and facilities manager when required.

As the level of engagement in a large multi-tenanted building will be different to that of a single let building, it is important that the approach is tailored to this. In the case of multi-let properties, it is important to consider the collective view of all occupiers and that a fair and balanced approach is taken to decisions.

Engagement can be broken down into the following steps, which will generally be coordinated by a property manager with input from an asset manager and facilities manager, as required.

AM PM FM

STEP 1: ASSESS OCCUPIERS' REQUIREMENTS

Some of the key elements involved in assessing occupiers' requirements are listed below:

Lease requirements

It is important to understand an occupier's lease terms relating to sustainability. This can help to ensure that occupier's sustainability expectations and plans are in line with the terms of their lease, and to facilitate occupiers' ongoing adherence to the lease and in line with service charges

This can be either done by reviewing a lease when an occupier first joins a property, and engaging occupiers at any stage when plans for alterations are developed. It is important that occupier requirements continue to be reviewed and understood, and that services and charges are adapted accordingly.

Sustainability service requirements

It is important to understand the extent to which sustainability facilities and services provided onsite are aligned to the occupier's requirements, and to work with the occupier and the asset manager to renew or update these, if necessary.

Gaining an understanding of an occupier's main business and operational activities is a useful way to gain an insight into their sustainability service and facility requirements. For example:

- Occupiers with business activities that incur significant waste generation or energy consumption may have a requirement for on-site waste segregation or renewable energy provision.
- Occupiers with large numbers of on-site employees, or employees who travel meaningful distances to work, may have a requirement for health and wellbeing initiatives or sustainable travel options.

In multi let properties, a property manager will be able to pool the views of all occupiers to make appropriate decisions based on collective requirements.

Sustainability reporting requirements

The sustainability reporting requirements of an occupier may include, for example, waste generation, recycling and energy consumption.

It is important to understand an occupier's on-going or future sustainably reporting needs, so that data collation arrangements can be established to provide information in a timely manner.

Depending on an occupier's needs, this may involve the provision of an annual statement for annual sustainability reporting, or a more detailed and frequent scorecard of key performance indicators to facilitate regular performance management.

Sustainability information and training requirements
It is important to assess whether education or awareness support could be provided to help occupiers to make use of the sustainability services onsite and to understand the important role an occupier can provide in enabling the sustainability performance of a property.

Information or training may include, for example:

- Basic information relating to the utilisation of core services, such as heating, ventilation and air conditioning systems.
- Specific information relating to sustainability services, for example electric vehicle charging points, local transport or on-site gyms.
- Enhanced information relating to specific sustainably features, for example biophilic design or green roofs.
- General awareness training on sustainability good practice, for example energy efficiency and waste minimization.
- Specific training on bespoke services, such as first aid or the use of on-site defibrillators.

Bespoke engagement may also be beneficial. For example, an asset or property manager to provide occupiers with a workshop where information regarding a new sustainability strategy or the intention to pursue a sustainability rating scheme could be communicated.

PM FM

STEP 2: PLAN THE APPROACH TO ONGOING OCCUPIER ENGAGEMENT

It is important to be clear about the intended outcome from occupier engagement and have the communication methods and audience in mind. For example, when planning the approach to ongoing occupier engagement, it is important to understand:

- An occupier's sustainability objectives relating to a property. For example, whether the occupier's focus is to achieve efficient business operations, enhance employee wellbeing.
- An occupier's working arrangements to enable maintenance and improvement work to be planned in a way that minimizes disruption.

It may be helpful to consider the following questions when planning the approach to occupier engagement:

- Do occupiers have any expectations or required outcomes, for example, waste recycling rates or the coordination of donations for a charity?
- Which relationship elements with an occupier work well and which could be further developed in terms of, for example, formality, level of seniority or willingness to engage in sustainability?
- Is budget required to help meet occupiers' sustainability needs? And, if so, it is service charge recoverable?
- What communication method(s) are likely to be most appropriate to the level of occupier engagement, for example, to inform, consult, or collaborate. And what is the appropriate timing and duration of communication?

When selecting the communication method, it is important to consider the time and resource required to deliver it so that it aligns with resources available. Example methods of engagement include:

- Letters and e-mail. Useful to inform occupiers, or may be appropriate where formal recognition is required, for example, consent to access utility data.
- Tailored reports and website posts. A passive form of communication that can be useful to share sustainability report or strategy updates.
- Posters or stickers. Signage is effective in high footfall areas, for example, tea points, break out spaces and toilets, to highlight initiatives that could be of interest to occupiers. This is particularly relevant in time limited campaigns, for example, Recycle Week or World Environment Day, to encourage action and participation.
- Occupier engagement survey. Encourages feedback direct from building users which can be used to understand priorities and further shape engagement.
- Building User Guide. An information pack for building occupants and visitors which offer a brief and simple way to locate general information regarding the operation of the building, for example, details around cycle parking, shower provision and communal break-out spaces.
- Building occupier meetings. Regular building meetings are useful to share information with occupiers, for example, energy, water and waste performance. They are also a forum to encourage feedback from occupiers on their priorities and success of initiatives, and for multi-tenanted buildings they help create a sense of community amongst different occupiers.
- Smartphone apps or building intranet or web-based portals. Integrated building apps can be used to provide real time data to occupiers for example building energy consumption or calendar of activities. They can also provide a library of additional relevant sustainability information, for example, Building Sustainability Policy and Building User Guide.
- Competitions or internal sustainability award. Can be effective in multi-tenanted buildings to encourage competitive behaviour aimed at improving building performance, for example, which floor or department can recycle the most waste.
- Events. Activities in communal building areas can raise awareness of key dates, for example, Earth Hour and/or local charitable causes.

Communication methods for occupier engagement

PM FM

STEP 3: MAKE PREPARATIONS FOR ONGOING OCCUPIER ENGAGEMENT

It is important to prepare for occupier engagement by putting in place arrangements that will contribute towards a successful outcome. It may be helpful to consider the following aspects when preparing for to occupier engagement:

- Gain approval for an occupier communication and engagement plan, including costs and other resources, for example, time if necessary.
- Consider all outcomes associated with the plan, including any risks. For example:
  - Is there any potential for challenging feedback for which communications can be prepared in advance?
  - Has data privacy been considered to ensure confidentiality of all individuals involved?
- Depending on the purpose and desired outcome from the communication, it may be beneficial to check if any 'green lease' clauses exist within the lease agreement with target occupiers. For example:
  - This could include requirements for the asset manager and occupier to work together to improve the energy intensity or recycling performance of the building.

PM FM

STEP 4: IMPLEMENT, REVIEW AND IMPROVE OCCUPIER ENGAGEMENT

It is important to implement any planned occupier engagement and communication activities within an agreed timetable. Similarly, resisting the temptation to extend the scope of engagement and communication activities can help to prevent 'scope creep' with associated budget increase and potential impact dilution.

Following implementation, it is important that the output and impact of engagement is reviewed. This will help to ascertain whether the results were as expected, for example, or whether the required response rate was achieved.

Ongoing feedback from occupiers on the effectiveness of communication can contribute towards and inform the development of, a two-way sustainability communication plan.

SERVICE CHARGE CONSIDERATIONS

HOW TO...

Usually, the consideration of service charges is a collaboration between asset, property and facilities managers. The following steps should be considered in relation to reflecting sustainability, and other cost elements, within service charges:

AM PM

STEP 1: PREPARE THE BUDGET

Budget preparation enables the consideration of environmental activities over a 12-month period, and also, for longer-term strategies, over several years.

For example:

A Net Zero pathway

- The payback period for environmental or energy saving works planned to reduce costs in the long term should be taken into account.
- Occupier engagement through building user meetings and engagement groups, such as those suggested in the Better Building Partnership Green Lease Toolkit, should be used to discuss proposals.

Responding to COVID-19

- COVID-19 has resulted in some asset managers and occupiers looking at ways to reduce costs.
- It remains important to ensure that buildings' mechanical services continue to operate properlyand specialist advice should be sought before reducing service levels.
- Common parts cleaning levels may need to be increased depending on building occupancy levels, so a balanced approach needs to be taken to ensure the building is operated safely.

Energy Performance Certificates (EPC)

The cost of obtaining an EPC is not normally considered to be a recoverable cost within service charges. EPC's are only required when a building is sold or rented and is, therefore, of no relevance to, or a requirement for, the provision and management of common building services.

AM PM

STEP 2: PRESENT THE BUDGET TO OCCUPIERS

The RICS Code states that budgets must be presented to occupiers no later than one month before the start of the service charge year and provides guidance on how to layout the budget.

Whichever presentation format is used for the budget, it is important to identify environmental related costs and anticipated savings and energy consumption estimations.

New facilities, which may have been installed at the asset managers expense, such as electric vehicle charging points or cycle facilities and showers, will have running costs which could be recovered in the service charge. The methodology used to apportion these costs should be clearly explained.

PM

STEP 3: MONITOR EXPENDITURE DURING THE YEAR

Regular monitoring of expenditure enables services to be reviewed and adjusted and makes the year end reconciliation easier and quicker to complete.

Green lease or Memorandum of Understanding commitments to share data on energy, water and waste consumption should be used to make informed decisions on adjusting levels. Building occupier groups should be used as a means of communication and for debating ideas, for example, cleaning during normal working hours rather than out of hours to reduce lighting and heating costs.

AM PM

STEP 4: RECONCILE EXPENDITURE

The RICS Code states that reconciliations must be issued within four months of the service charge year end. Undertaking regular reviews of expenditure throughout the year and issuing interim statements of expenditure will make this an easier target to achieve.

Asset and property managers should consider when to use external auditors to certify the service charge accounts, normally for higher value service charges and/or where the lease provides for external audit.

Such an audit will bring greater credibility to the figures particularly for larger buildings, shopping centres or mixed-use developments with more complex service charges.

The RICS Code provides examples of templates for expenditure reports, apportionment schedules and variance reports.

AM PM

STEP 5: ISSUE THE STATEMENT OF RECONCILIATION TO OCCUPIERS

The Green Lease toolkit highlights the need to separately identify environmental initiative costs and savings and provide a detailed analysis of energy consumption.

In the event that a dispute arises over the service charge, the RICS Code contains a section with guidance on dispute resolution and offers a mediation service using service charge specialists.

DIRECT COST RECHARGING

From the sustainability perspective the most relevant area of direct cost recharging relates to energy costs for the area which has been leased to an occupier for their sole use. Electric car charging points are also becoming more common and give rise to several different recharging situations.

Energy costs

The BBP Better Metering Toolkit describes:

- What energy metering opportunities exist.
- Why improving metering and energy measurement is important.
- How to choose which meter to use and use the data effectively.

The benefits of stimulating changes in behaviour and reducing consumption and cost should develop from more accurate energy measurement and installing sub meters for occupier space will add further impetus to this.

The Heat Networks (Metering & Billing) Regulations, came into effect in December 2014. These stipulate that those operating central systems that provide heating, cooling or hot water to users, for example in a multi occupied office building, must install meters and use readings taken from them as a basis of billing customers.

Electric vehicle charging points

In relation to installing electric charging points at multi occupied commercial buildings, estates and retail sites, the costs of installation are usually borne by either the building owner or operator. If occupier demand is strong, then consideration of the service charge funding all or some of the cost can be discussed with occupiers.

Income from charging points can be treated in different ways normally dependent on who has funded initial installation and the guide considers different measurement options to assist billing strategies.

The provisions of the lease should always be taken as the initial basis for assessing the alternatives here.

BIODIVERSITY BASELINE

HOW TO...

Establishing a biodiversity baseline at a property involves input from a range of specialists during the process of undertaking an ecological survey.

Usually, the decision to establish a baseline will be instructed by an asset manager and coordinated by a property manager with support and input from a facilities manager.

Establishing a biodiversity baseline involves consideration of the following elements as part of undertaking an ecological survey:

AM PM

1. UNDERSTANDING THE PURPOSE OF AN ECOLOGICAL SURVEY

Ecology surveys can help to inform asset and property managers about potential green space opportunities as well as provide information regarding the habitats and species that currently exist within an area.

Undertaking an ecological survey can contribute towards:

- Identifying existing habitats and species at the site.
- Identifying biodiversity risks.
- Providing asset managers with a map of existing green space assets and awareness of any constraints or enhancement opportunities.
- The design and incorporation of biodiversity risk management and enhancement measures.
- The design of future development or refurbishment works in a way that can control impacts on biodiversity or improve ecological conditions.
- Providing guidance on opportunities to protect and enhance ecological value within the site.

Where an asset does not have any existing green space, it is still important to carry out an ecology survey which may identify hidden risks, such as roosting bats, for example.

PM

2. COMMISSIONING A SURVEY

Ecological surveys should be undertaken by an appropriately experienced and suitably qualified ecologist. Surveyors should meet the competencies set out by the Chartered Institute of Ecology and Environmental Management and should hold the relevant species licence, where applicable, relating to the survey being carried out.

Ecology surveys are commonly valid for a period of twelve to twenty-four months depending on the type of survey and associated conditions. An ecologist can provide guidance in relation to the validity of each survey on a project specific basis.

When procuring ecological surveys, it is important that a property manager considers timings and access limitations. A suitably qualified ecologist will be able to advice on these.

- Timing: Surveys are timed according to seasonal variation, location and species being surveyed. For example, surveying for bat roosts can only take place from May to September.
- Access: Different survey types will require access to areas of the property or site. For example, existing trees, building facades or roofs that could provide opportunities for nesting and roosting.

AM PM

3. IDENTIFYING THE REQUIRED SURVEY TYPE

When procuring ecological surveys, it is important to be aware of the different survey types that are available. A suitably qualified ecologist will be able to advice on these.

Example of ecological survey types include:

- Extended Phase 1 Habitat Survey. This includes a baseline assessment which determines the broad habitat types and existing green infrastructure within a site, and the potential protected/ notable species present. This will inform which further surveys should also be carried out, for example:
  - Botanical surveys, including National Vegetation Classification (NVC).
  - Species specific surveys, such as those relating to bat, badger, dormouse, water vole, otter or other notable specific of reptile, bird, or invertebrate.
  - Invasive species assessments to determine the presence, distribution and any required mitigation measures or removal strategies.

PM

4. REVIEWING RISK

Undertaking an ecological survey as part of establishing a biodiversity baseline can help to identify biodiversity risks, such as, for example, protected species or habitats already established on site. It is important that these risks are prepared for and managed.

To identify risk a property manager should:

- Review an ecology survey.
- Review a Biodiversity Action Plan (BAP) and existing environmental risk register.

Where a risk has been identified, a suitably qualified ecologist can help to plan required actions that will mitigate this risk. For example, this may involve planning demolition or tree removal works outside of birds nesting season.

PM

5. MAPPING GREEN SPACE NEEDS

Once an ecology survey has been carried out, it is important to consider the green space needs. This should include consideration of how a property can support local biodiversity as well as various users.

Mapping stakeholders' needs is a useful exercise for property managers during the process of considering the installation and enhancement of green space. This can help to define the objectives of a green space project and ensure that benefits are optimised.

Mapping stakeholders' green space needs can inform initial design ideas and support the development of a business case for installation and on-going maintenance. A mapping exercise typically involves:

- Understanding the local needs and context.
- Understanding desires and needs of both property owner and the users of the site.
- Identifying whether collaboration opportunities exist with local stakeholders and initiatives beyond the site.

VALUABLE GREEN SPACES

HOW TO...

Adding value to a property through green space involves input from a range of specialists. Asset managers have an interest in the outcomes from green space development, and often retain final decision on strategic green space issues. The development of green spaces is usually coordinated by a property manager with support and input from a facilities manager.

Establishing green space involves consideration of the following elements:

AM PM

1. TARGETING VALUE

General questions when considering the development of green spaces

The development of green space will be based on a project brief. When defining the brief, a property manager may find consideration of the following questions useful:

What functions should the green space provide?
Consider how the functionality requirements of the proposed green space can help to inform the type. For example, a green space that provides a social function for people will need to be accessible. Alternatively, a green space that provides ecological value may benefit from particular habitat types to support local or target species.

Who are the future users of the green space?
Consider how the green space may be used in the future to ensure the longevity of the installation. Through the provision of a flexible or multi-functional installation, the requirements of different users can be met over a longer time period.

Will the green space support BREEAM credits or planning requirements?
Where a green space is installed to meet specific requirements, consider how these objectives can be clearly set out at the project inception. This will enable the early design phases to consider related constraints or opportunities. For example, a green roof may have implications for the structural design in relation to loading.

How can green spaces consider multiple value opportunities?
Consider how combining a range of features may provide a variety of complementary benefits. For example, incorporating biodiverse roofs with photo-voltaic cells and publicly accessible green space, may enable health and wellbeing benefits alongside micro-climate management and renewable energy generation.

The concept of biophilic design

The benefits of biophilic design
Biophilic design is a very visible way of demonstrating that a building is designed to support wellbeing, whilst also contributing to the overall design aesthetic and supporting the brand of an organisation.

The concept of biophilia manifests in a desire for humans to seek connections with nature which, in turn, can have a positive impact on health and wellbeing.

With an estimated 90% of our lives spent indoors[1], biophilic design can enable the positive benefits of exposure to nature. Many elements of the positive impact that buildings can have on health and wellbeing are reflected in the WELL Building Standard.

Incorporating direct or indirect elements of nature into the built environment has been demonstrated to reduce stress, blood pressure levels and heart rates, whilst increasing productivity, creativity and self-reported rates of well-being[2].

1 https://www.bretrust.org.uk/knowledgehub/biophilic-design/

3 https://www.oliverheath.com/biophilic-design-connecting-nature-improve-health-well/

Biophilic design in the workplace has shown to increase creativity and boost employee well-being[3]. It can contribute towards improved patient recovery times in hospitals, reduced crime rates in residential areas, and increased learning ability and test results in schoolsin additional to boosting mood and overall wellbeing.

3 https://www.ansgroupglobal.com/news/principles-and-benefits-biophilic-design

Biophilic considerations in planning the brief

Considerations of biophilic design should be given from the earliest stages of design to maximise benefit and reduce costs.

Incorporating biophilic design can range in scale and aspiration from the installation of simple green features such as planters or the use of natural patterns and colours, to more complex installations such as green walls or the creation of spaces that can immerse people in nature.

A specialist biophilic designer should be engaged to understand the potential of the project and help to set the brief for more ambitious designs.

AM PM

3. FEASIBILITY AND DESIGN RISK

When integrating green space into buildings and developments, a property manager may find the following questions useful when considering the feasibility and associated risks.

What are the space constraints?
For example, if a green roof is being planned, consider if this has an implication on the location or size of the window cleaning equipment.

Is the location suitable for selected planting and habitat features?
For example, consider the amount of natural light required for plants or whether the location of a habitat feature is suitable for the target species.

What are the maintenance requirements?
As green spaces are living, it is important to consider the future maintenance requirements for different types of installation at the outset of the project. If maintenance is not thoroughly planned, the installation will not provide consistent value throughout its lifetime.

Is the building structurally suitable for a new installation?
For example, consider the structural loading capacity of an existing building. Advice from a suitably qualified structural engineer should be sought before proceeding with any retrofitted installations.

Is there suitable access to water and electricity?
For example, water will be required for the establishment of any planting on the installation and may be required for ongoing irrigation.

Is the space safely accessible?
For example, it is important that the space can be safely accessed for construction and long-term maintenance purposes.

How can biophilic design be considered?
It is important to consider how space is used to maximise the benefits of biophilic design. For example

- Consideration should be given to where people spend most of their time and ensure there is good access to natural light and views.
- How biophilic design elements can be incorporated within areas where the innovative or collaborate behavior are to be promoted.

Many designers will be able to advise on the integration of simple biophilic elements. However, for more complex or aspirational designs, a specialist should be considered.

To maximise the impact, consider the integration of multiple aspects of biophilic design, including planting, textures, colours, lighting and air quality. The layout of space should emphasise biophilic elements that are already available, for example, if there are views over green spaces or areas with excellent natural light.

PM

4. CONTRACTOR SELECTION

To ensure successful installation and establishment of green space installations. A property manager may find the following questions useful when selecting a landscape contractor or designer:

All projects

Is the landscape contractor or designer BALI (British Association of Landscape Industries) registered?
BALI members pledge to carry out their business to the highest industry standards. This involves investing in staff training and skills development, adhering to health and safety regulations, considering the environmental and ethical implications of what they do.

Can the contractor demonstrate a track record of previous experience?
Ask the contractor to provide evidence of completed similar schemes. This is an opportunity to see examples of their finished work and to request feedback from previous clients.

Biophilic design

Are there specific requirements for the design or maintenance of biophilic elements?
Through the concept of biophilic design, the built environment seeks to replicate natural elements through the incorporation of vegetation, natural colours, patterns and textures in the physical design of the space. It can also seek to maximise connections with nature outside the building by increasing light quality and promoting views of nature.

Green roofs

Does the landscape contractor or designer adhere to the Green Roof Organisation (GRO) Code of Practice?
The GRO Code has been developed for the UK to ensure the green roof market delivers quality green roofs for the built environment. Unlike most other building product systems, green roofs rely on both a construction and a landscape element in their planning, installation and maintenance.

Do they adhere to the German Code of Practice known as the FLL?
FLL is the default Code of Practice for most countries in the world. It gives guidance on green roof specifications, installation and maintenance.

AM PM FM

5. COMPLETION, HANDOVER AND MANAGEMENT

Once a green space installation is complete, it is important to that an appropriate handover is undertaken, and that the building management team is aware of information and maintenance requirements relevant to the green space.

A property manager should be aware that the following information should be recorded, as a minimum, for the Health & Safety file:

- As built drawings.
- Specification.
- Landscape Habitat Management Plan.
- Certification and warranties, where relevant.

A Landscape Habitat Management Plan should be established for the ongoing monitoring and maintenance of greenspace installations. This should cover a period of five years from installation completion. It is recommended that the landscape contractor is retained for a minimum of one year, preferably three for more significant projects, post completion to carry out maintenance works. This will help to ensure the successful establishment of planting.

Communication and working practices
While occupiers and other building uses often have an innate appreciation of nature, it also is beneficial to communicate the design intent and how the space can support wellbeing and boost creativity.

For example, it is important to consider how working practices can be changed to encourage people to spend time in areas when they can benefit from the biophilic design elements.

6. GREEN SPACE TYPES AND HABITAT FEATURES

The decision of the type of green space to install at a property should involve consideration of the aims of the project, the budget and spatial requirements, the requirements of occupiers, and the aspirations of the asset manager.

It is important that asset, property and facilities managers all have an understanding of different green space types and habitat features.

GREEN SPACE TYPES


Green, blue and biodiverse roofs


Green walls


Modular planters


Street trees


Window boxes and planters


Allotments and food growing


Water features


Sustainable drainage

Green, blue and biodiverse roofs

Green roofs are created when planting is established on top of a roof structure. Green roofs can be designed as accessible spaces for people, areas to provide visual aesthetic, spaces to support wildlife and ecology or a combination of these.

Green roofs also provide numerous other benefits, such as reduction in water run-off, reduction in the surface temperature of roofs, provision of building insulation, and reduction in the impact of external and internal noise.

While green roofs will require specific maintenance, the level of maintenance activity will depend on the type of green roof installed.

There are numerous types of green roof which should be considered depending on the needs and planned future uses of the installation.

If the roof will be accessible consider an intensive green roof.
These green roof systems often include features similar to those in parks and gardens, such as trees, shrubs, paving and furniture. They require a thick substrate and supporting structure suitable for heavy loading.

The deep substrate allows the planting of a wide range of rooting species, including trees and can offer excellent benefits for biodiversity and amenity. When planning an intensive roof, consider including a variety of habitats (such as meadow, hedgerow, pond or native shrub planting) to improve opportunities for wildlife colonisation.

It is also important to consider the health and wellbeing values of the space through the provision of spaces for social interaction, exercise and contemplation such as play areas, workspaces, sports facilities or seating.

These types of roof usually require a higher level of maintenance, often equivalent to a garden or park.

If the roof is not accessible but visible, consider an extensive green roof.
These green roofs require a thinner layer of substrate, needing only lightweight layers of free-draining materials to be functional. Extensive green roofs should be planted with a variety of hardy, drought tolerant species such as wildflower, herbs, grasses and sedums.

Where possible, different depths and types of lightweight substrate should be integrated to provide a wider variety of habitats for invertebrates and enable the plug planting of larger plants and shrubs. This will also provide greater aesthetic value to those overlooking the space.

Extensive green roofs require some limited maintenance following establishment.

If the roof is not accessible or visible, consider a biodiverse roof.
Biodiverse roofs are created primarily for ecological purposes and often to recreate habitat lost when development occurs or even to enhance existing value. A biodiverse roof is similar to a green roof in its functionalities and benefits it provides to a building but is specifically designed to provide habitat value for a variety of urban species.

The roof can be created using local soils or excavated topsoil from nearby development projects, and can be planted with locally relevant plants, or can be left to colonise naturally. Areas of rubble, gravels, sands, branches and logs can be used to create more diverse habitats for invertebrates and birds.

If left to colonise naturally, biodiverse roofs require very little maintenance.

When water management is an important aim, consider integrating a blue roof system designed to attenuate or store rainfall.
A blue roof allows for the build-up of water above the waterproof membrane for a defined period to enable the attenuation of stormwater and control discharge of runoff at a designed flow rate.

Captured water may be reused within the building to flush toilets, water plants or other uses. Blue roofs can also be designed to have a thin layer of substrate and planting above the water storage system to provide ecological value.

For further guidance, refer to the GRO Green Roof Code of Best Practice for the UK.

Green walls

Green walls, also known as living walls, can have a dramatic impact on an environment due to their potentially impressive aesthetic, and wide-ranging biodiversity benefits.

Green walls can range in type from walls simply planted with climbing plants and wall shrubs, to more complex systems including specific, contoured designs for the façades of buildings. The planting scheme can be tailored to suit the light conditions of the surface upon which they are installed, with shade and drought tolerant species available.

Green walls are likely to host a range of invertebrates, can be planted with berry-bearing plants to provide birds with food, and can be used as a nesting place for breeding birds. Other benefits, including graffiti deterrence, protection of façades from heavy rain and UV light, air quality improvements and noise reduction should also be considered in the design.

Modular planters

For short-term or easy to install green spaces, modular systems such as the pocket habitat or the sedum tray can be considered.

Modular planters are designed to be retro-fitted onto any area of open space to provide quick-win opportunities for planting and habitat creation. These types of installation are of value where a short term or more cost-effective solution for greening is sought.

The modular planters assist with run-off reduction, noise and heat reduction and can be planted with several species of benefit to local wildlife such as seeding grasses and native flowering plants or filled with a variety of substrates to provide valuable habitats for invertebrates.

Modular systems provide a cost effective and impressive visual amenity, and require little in the way of maintenance, but are likely to require watering during the warmest periods of the year. These systems may be used for temporary or long-term establishment, however, in the case of temporary installations a plan should be made for their relocation at the end of their provisional placement.

Street trees

Street trees have multiple benefits, including visual aesthetic, microclimate improvements, carbon sequestration, nesting sites for birds and pollen production for insects.

Selection of tree species should be site specific and consider size, canopy density, shape, characteristics and biodiversity potential. Where possible larger tree species should be selected and planted in the ground.

For smaller or more constrained sites trees can be grown in surface mounted planters. A landscape specialist should be consulted to ensure that street trees are suitably positioned to coordinate with other public realm demands, such as underground services.

Site context should be considered in relation to heritage (such as listed façades) and tree species selection.

Window boxes and planters

Window boxes and planters provide the opportunity to add biodiversity, seasonal interest and ecological value for a small cost.

Maintenance requirements are low and mainly consist of regular watering, particularly throughout the summer, and damaged plants can easily be replaced. Plant species can be selected in accordance with light and moisture conditions for each location. Colour, texture, scent and seasonal variety should be considered for aesthetic value.

Planters can also be used creatively to provide localised shade and shelter, areas for play or to create a sense of place and improve local identity.

Allotments and food growing

The WELL Building Standard encourages opportunities for 'gardening or cultivation' to enable people to become more engaged with food production processes which can lead to better eating habits and a healthier lifestyle.

Opportunities for food growing can be explored on roof gardens and balconies, in streets, on green walls and in window boxes. Whilst lack of space often renders larger scale food production unviable, value can be generated from food growing as an educational resource, for testing new technologies, local restaurant provision or to engage with building tenants and neighbouring communities.

Water features

Integrating water features within or adjacent to an ecological installation has numerous benefits including providing a water source for insects and birds.

Access to the water for a range of species should be considered, such as overhanging planting to allow insects access to the water's surface.

The integration of moving water can also provide wellbeing benefits to building occupiers. WELL Building Standard sets requirements for the inclusion of water features in larger scale projects.

Sustainable drainage

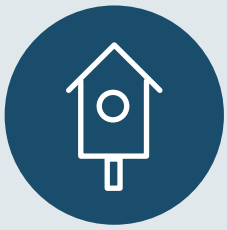
Sustainable drainage should also be considered where appropriate, with an aim to replicate natural systems and enable localised detention and management of storm water. This helps reduce the amount of water runoff entering combined sewers and lessens the risk of flooding.

While the introduction of soft landscape, green roofs, street trees and green walls all have an effective impact in stormwater detention, it may be necessary to incorporate additional sustainable drainage methods such as urban swales and water collection to successfully manage rainfall.

In retrofitting sustainable drainage to existing streets, above ground methods are preferable so not to blur the lines between the new system and existing below ground infrastructure.

Detaining surface water above ground has further values including biodiversity benefits passive cooling, reuse of water through irrigation, pollutant filtration and opportunities for incorporating water into public art or play.

HABITAT FEATURES



Bird boxes

Invertebrate features

Bird feeders

Bat Boxes

Bird boxes

As natural roosting and nesting space for birds declines in urban areas, artificial bird boxes can re-create nesting spaces where human activities such as habitat removal have reduced them. Bird boxes should generally be placed away from direct sunlight, and all should be in locations where they can be accessed for maintenance, but where there is minimal likelihood of humans causing a disturbance to them.

Bird boxes can be affixed to the external surfaces of buildings wherever space allows, or, through the use of specially designed hollow bricks or units, nesting space can be built directly into structures or their façades.

A suitably qualified ecologist should be consulted to advise on the box type, quantity and installation. Bird boxes may be generic or species specific, an ecologist shall advise on the type depending upon the species likely to be present.

Generic bird boxes can provide nesting space for robins, blackbirds, blue and great tits, thrushes and more. However, some species of bird require specific nesting conditions to be able to successfully rear their young, including the house sparrow, black redstart and peregrine falcon. For these species, specific nesting boxes can be purchased or built.

Invertebrate features

Invertebrate features should be designed to provide additional habitat value for a range of invertebrates.

The planting of native vegetation will attract insects, but further features will attract insects with specialist requirements, such as burrowing bees and wasp. These features may include rubble mounds, log piles or insect houses.

A suitably qualified ecologist should be consulted to advise on the type, quantity and installation of the features, depending on the situation presented at each site.

Bird feeders

Urbanisation of many cities has reduced the availability of food sources for many urban dwelling bird species. The installation and maintenance of bird feeders will provide a rich food source for birds when their need is at its greatest.

Feeders can be filled with seeds, nuts and fruit, or balls of fat can be hung to attract birds to specific locations. Bird feeders can be purchased and put up straight away, or they can be created from recyclable materials, providing opportunities for local engagement and education.

Bat Boxes

The provision of artificial bat roosts will encourage bats to colonise in urban areas and should be placed in areas which are likely to remain undisturbed by human actions for the foreseeable future.

Bat boxes either come in the form of attachable boxes which can be retrofitted to the external façade of a building, or hollowed bricks/units which can form part of the structure of a building, with holes facing out to allow bats to enter and exit the roosts.

The roosts can be designed for a few bats, or for entire colonies, with a range of specifications to suit the different situations presented at each building.

A suitably qualified ecologist should be consulted to advise on the box type, quantity, location, and the aspect of installation depending on the situation presented for each site.

MAINTAINING AND MONITORING GREEN INFRASTRUCTURE

HOW TO...

Establishing a Landscape Habitat Management Plans for a property involves input from a range of specialists during the process of undertaking an ecological survey. The process will usually be coordinated by a property manager with support and input from a facilities manager.

Establishing a Landscape Habitat Management Plans involves consideration of the following elements as part of undertaking an ecological survey:

AM PM

1. LANDSCAPE HABITAT MANAGEMENT PLAN SCOPE

It is recommended that a LHMP is provided for newly installed green spaces, any retrofitted green spaces, and existing spaces which have undergone significant redesign.

For newly installed spaces, a LHMP should be prepared as part of the detailed design stage, ahead of the construction stage, to accommodate the arrangements for the long-term management of the green space. The LHMP should be updated post-completion to ensure alignment with the delivered installation.

For newly installed green spaces, a Landscape Habitat Management Plan (LHMP) should cover a minimum five-year period following the completion of installation.

As many green space installations, for example planting schemes, can be susceptible to failure in the first five years of the installation, a LHMP can respond to any defects from the installation or poor species selection during this initial period.

LHMPs should be prepared in accordance with section 11.1 of British Standard BS 42020:2013 Biodiversity Code of Practice for Planning and Development and should include the following information, some of which will be produced during the ecological surveys:

- A description and evaluation of the features to be managed.
- Ecological trends and constraints on site that could influence management.
- Aims and objectives of management.
- Appropriate management options for achieving aims and objectives.
- Prescriptions for management actions.
- Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five-year period).
- Body or organisation personnel responsible for implementation of the plan.
- Monitoring and remedial measures.
- Funding resources and mechanisms to ensure sustainable long-term delivery of the proposed management.

PM FM

2. IDENTIFY POTENTIAL MAINTENANCE RISKS

It is important to consider any risks associated with the maintenance of green space. The following questions may be useful when considering maintenance risks:

- Has sufficient budget been planned for the long-term maintenance of the green space?
- Do maintenance activities include any unusual risks? These may include, for example, health and safety risks for maintenance of green space at roof level.
- How can invasive species be identified, and what should the response to positive identification include?
- How should maintenance operations be undertaken around wildlife, and who is suitably qualified to undertake such maintenance?
- Who has responsibility for the maintenance of green space installations?

PM FM

3. ENABLING A CONSISTENT APPROACH TO MONITORING AND MAINTENANCE

It is important to deliver continuity of maintenance so that green spaces provide continual value throughout their lifespan.

For new installations, it is recommended that the landscape contractor who installed the space is retained for a minimum of one year, preferably three to five years for more significant projects, to maintain the scheme. This will help to ensure successful establishment of the planting.

When any change in maintenance contractor occurs, it is important to ensure that an appropriate handover period is arranged, and that the new contractor has access to the relevant information, including access to an up-to-date version of the LHMP.

Where multiple green spaces are maintained as part of a larger development or wider portfolio, a strategic management plan could be developed to enable consistency in maintenance across all features.

A strategic management plan can support the strategic objectives of the portfolio or property by:

- Creating a consistent approach towards monitoring, maintenance and management across multiple assets. This can facilitate cost efficiencies, as well as enabling the sharing of lessons learned and preparation of best practice guidance as shared resources.
- Providing templates and guidance for reporting processes to enable a coordinated approach across properties and projects.
- Streamlining monitoring and maintenance activities to ensure efficiency in scheduling and management.

4. MONITORING

Monitoring and reporting provide opportunities to assess the ongoing state of green space installations, and to and present findings to management for action.

Daily monitoring

Day-to-day checks on green space installations should be encouraged. Regular checks on condition and functionality of the space can help to identify any potential issues early, and before they become a greater problem.

Monthly monitoring

Other checks should be carried out on a monthly basis, for example:

- General condition of planting, hard landscape and equipment.
- Records of wildlife sightings including species using nesting boxes or other habitat features. Wildlife should be observed from a safe distance, and nesting boxes and other habitat features should not be disturbed.
- Use of the space by people, for example, frequency, activities or purpose for the visit, specific locations.
- Any unexpected activities or events.

Any concerns noted during these visits should be raised with the landscape maintenance contractor or ecologist.

Specialist monitoring

Specialist monitoring can be undertaken to provide further information and expert guidance or recommendations. This may include more detailed species monitoring, for example:

- Bird and bat box checks, undertaken by a suitably qualified ecologist.
- Green space audits to determine the existing value and provide recommendations for improvement.

General maintenance

General maintenance activities, such as checking and cleaning drainage outlets for green roofs, should be undertaken by the landscape maintenance contractor on a regular basis to the timings set out in the LHMP.

User feedback

Feedback from users of a green space can be valuable to ensuring the success of the installation. This could be done in the format of user questionnaires or by providing a named contact for users to provide any informal suggestions.

Reporting and review

Information collected through monitoring a property's biodiversity or green spaces should be fed back to the property manager as part of the overall maintenance plan for a property. Findings relating to biodiversity risk should be captured within the environmental risk register.

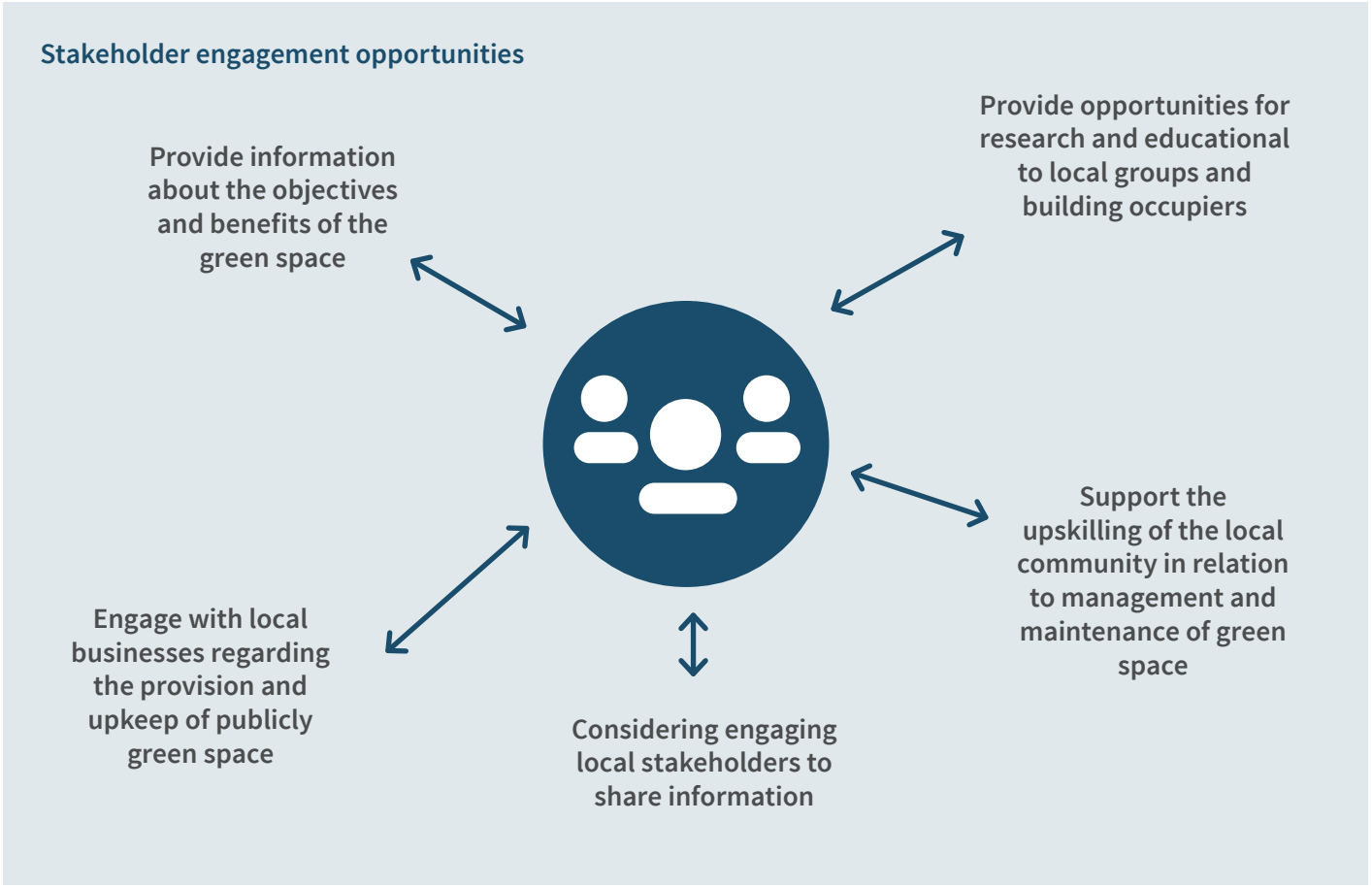
PM

5. STAKEHOLDER ENGAGEMENT

Sharing management and maintenance responsibilities with stakeholders and users of the green space can be a good way to engage on the long-term objectives and to review the continued value of the installation.

Some examples of engagement opportunities include:

- Provide information to building users about the objectives and benefits of the green space and how they can expect the space to grow and develop. By engaging with users on the management of green space installations they will be properly informed and know what to expect throughout the seasons.
- Engage with local businesses in a mutually beneficial agreement regarding the provision and upkeep of publicly accessible green space.
- Provide opportunities for research and educational opportunities to local groups and building occupiers, including data sharing.
- Support the upskilling of the local community through engagement in relation to management and maintenance of green space for both public and private spaces.
- Considering engaging local stakeholders, for example local authority environment teams, to share information which may inform the ecological baseline of the surrounding area.



ASSESSING STAKEHOLDER REQUIREMENTS

HOW TO...

Asset managers have an interest in the on-going health and wellbeing performance of a property, including making decisions regarding investments in response to occupiers' changing health and wellbeing needs. Property managers play a central role in co-ordinating the process of assessing stakeholders' health and wellbeing requirements, with input and support from facilities managers.

Assessing stakeholders' requirements involves consideration of the following general steps.

PM

STEP 1: IDENTIFY AND ENGAGE STAKEHOLDERS

It is important to identify the range of stakeholders with a potential interest in a property's approach to health and wellbeing. This can be undertaken through a basic scoping study, involving mapping a property's different stakeholder groups and rating their likely interest in health and wellbeing.

Stakeholders with a health and wellbeing interest will include the asset manager, property's occupants and employees, visitors, contractors and members of the local community.

A number of different approaches can be adopted when assessing stakeholder requirements from a health and wellbeing perspective. This includes both informal and more structured assessment methods.

Informal assessment methods may include, for example:

- Occupier engagement meetings.
- A high-level review of the asset.

Structured assessment methods may include, for example:

- Dedicated health and wellbeing questionnaires.
- As part of more general occupier satisfaction surveys.
- Single issue questionnaires, for example, questions on commuter infrastructure.

Post Occupancy Evaluations provide a further source of information, relating to occupiers' feedback on a property's health and wellbeing features and initiatives.

AM PM

STEP 2: REVIEW STAKEHOLDER INPUT

Reviewing the outcomes from stakeholder engagement is a key part of developing a clear understanding of occupiers' health and wellbeing requirements. This review should consider the current and predicted occupier mix and should be undertaken in the context of the long-term goals for the asset.

A property manager should work closely with the asset manager to prioritise the implementation of health and wellbeing improvements identified through a review. This will be influenced by:

- Available budget.
- Number of onsite team members and their roles.
- Asset location.
- Asset design features.
- Occupier makeup.

AM PM FM

STEP 3: STAKEHOLDER FEEDBACK AND CONTINUOUS IMPROVEMENT

Following the implementation and installation of health and wellbeing initiatives and infrastructure, occupier feedback should be collated. This can be undertaken through a combination of techniques, for example:

- Informal discussion in occupier engagement forums.
- Questionnaires and surveys.
- Uptake figures for specific health and wellbeing initiatives.

Occupier feedback should be accompanied by an assessment of the impact of any health and wellbeing initiatives, for example, improvements in ambient air quality or reductions in absence levels.

Feedback should be sought in an appropriate timeframe, which will depend on the nature of the health and wellbeing initiative.

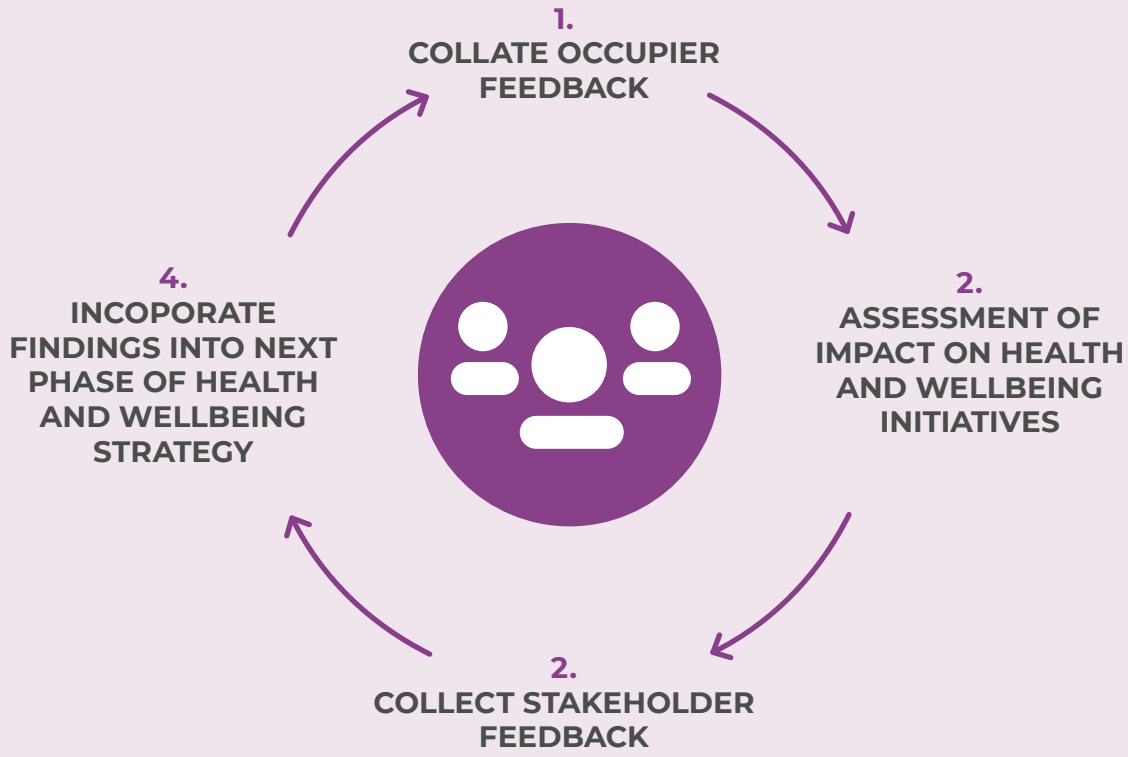
This timeframe may range from:

- Short term, for example, requesting feedback on a healthy eating campaign as soon as the initiative has concluded.
- Longer term, for example, a year into an ongoing sustainable travel initiative.

The findings from stakeholder feedback should be incorporated into the next phase of the development of a property's health and wellbeing strategy and can be and used to update and drive new and existing plans.

The assessment of stakeholder requirements is an ongoing process and should be undertaken on a regular, cyclical basis.

Stakeholder feedback and continuous improvement



HEALTH AND WELLBEING OPPORTUNITIES

HOW TO...

While an asset manager will maintain a general interest in the health and wellbeing performance of a property, and will be directly involved in investment decisions, and the process of co-ordinating health and wellbeing improvements is coordinated by the property manager, with input from the facilities manager.

Developing and implementing a strategy to improve health and wellbeing involves the following steps:

AM PM

STEP 1: GAP ANALYSIS AND REVIEW

If a property is already operational, it may be beneficial to undertake a health and well-being audit. This will establish existing health and wellbeing credentials, the benefit they provide and whether they will form part of a revised strategy. It is also important to undertake an occupier survey, and potentially a wider building user survey, to establish the health and wellbeing requirements and aspiration of different stakeholder groups.

It is important to engage with the asset manager and occupiers to consider potential certification of the property across the range of health and wellbeing rating and certification schemes, or, as is often the case, wellbeing 'ready' rather than going down the route of full certification.

Relevant certification schemes include:

- WELL.
- Fitwel.
- Reset.

There are a number of frameworks available which provide guidelines for project teams if they wish to embed the principles of wellbeing, including:

- BCO Wellness Matters.
- UKGBC and WGBC frameworks.
- BRE and BREEAM requirements.

Covid-19 related frameworks and certification include:

- Strategies from the Well Building Standard to support in the fight against Covid-19.
- Research on action building health for all in the face of Covid-19.
- BCO Thoughts on office design and operation after Covid-19.

AM PM

STEP 2: SELECT HEALTH AND WELLBEING IMPROVEMENTS

There are a range of ways to improve the health and wellbeing performance of a property. This may involve altering a property's base build structure, its ongoing operations or how the property manager interacts with the building occupiers and its local community.

Some examples include:

- Base build design: Biophilic design to improve air quality, increasing productivity and reducing stress.
- Ongoing operations. Continuous air quality monitoring and reporting to ensure optimum air quality for health and productivity.
- Occupier engagement: Social events or fitness clubs for occupiers to increase social interactions and create a sense of belonging whilst also improving physical and mental health.
- Local community: Supporting local businesses or charities to give back to the areas in which they work and operate to contribute towards a fulfilling sense of community.

The shape of a health and well-being strategy should be informed by the outcomes from health and wellbeing audits and surveys. This may be complemented by technical consultants who can:

- Advise on the selection of initiatives and their implementation.
- Carry our remediation works.
- Produce policy and guidelines for building operations.
- Gather and submit the evidence and the assessment for certification, if required.

AM PM

STEP 3: CONSIDER FUNDING OPTIONS

As health and well-being strategies can take many forms and incur a range of costs, it is important to establish how a health and well-being strategy will be funded. This is likely to involves be a mix of funding sources, for example part-asset manager, part-service charge, if leases allow.

Funding options will change depending on the stage in the building life cycle. For example, if the building is under construction or being refurbished then initiatives are more likely to be directly funded by the asset manager.

AM PM FM

STEP 4: ENGAGE AND MONITOR

Engaging occupiers is central in achieving the benefits relating to health and wellbeing. It is important that occupiers and their employees are aware of the health and wellbeing features and workplace initiatives available at a property. This will enable them to:

- Participate and make is of these health and wellbeing resources.
- Recognise the health and wellbeing commitment made by their employer and the asset manager.

There are a range of methods that can be used to engage occupiers. This may include occupier engagement forums as well as various communication channels such as posters, screens and, where relevant, pop-up booths and awareness seminars or case study publications.

It is also important to provide occupiers with training on health and wellbeing features and workplace initiatives. For example, the use of defibrillators or the safe and effective use of fitness equipment.

Regular monitoring, including the development of metrics to measure the take up and impact of health and wellbeing initiatives, enables asset and property managers, and occupiers, to evaluate the ongoing suitability. This should include a post-occupancy evaluation as part of securing feedback over the longer term.

OCCUPIER SATISFACTION SURVEYS

HOW TO...

Asset managers have an interest in the outcomes of occupier surveys, which can inform future health and wellbeing investment decisions. Usually, property managers are responsible for co-ordinating the survey process, with input and support from facilities managers.

Incorporating health and wellbeing into occupier satisfaction surveys involves consideration of the following steps.

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STEP 1: DESIGNING THE SURVEY

When designing an occupier satisfaction survey, it is important to decide how it will be framed:

- Frame as a general survey, covering range of topics.
- Frame as a dedicated health and wellbeing survey.

While both options can be useful, property managers should consider which approach will best align with the survey objectives. For example, a dedicated health and wellbeing survey may be a pre-cursor to a planned health and wellbeing campaign.

Questions included in an occupier satisfaction survey can include:

- Binary 'yes/no' questions – providing quantitative data.
- Open, exploratory questions - providing qualitative data based on the respondent's free-hand information

In reality, most surveys will be a mixture of quantitative and qualitative questions, with the balance being influenced by considerations which may include, for example:

- The number of occupiers expected to complete the survey.
- The occupier profile, for example single tenant or multiple tenant property.
- Whether the survey is property specific or portfolio-wide.
- The familiarity of occupiers with the survey process and the subject of health and wellbeing.
- The granularity of detail of information required.
- The method for collating results.
- The available resources.

There are a wide range of health and wellbeing issues that could be included within an occupier satisfaction survey. Some of the component parts of health and wellbeing are set out below, alongside examples of survey questions that could be considered within an occupier satisfaction survey.

Assessment area	Question area
Building location, pedestrian access and commuting	How easily accessible is the building? How can accessibility be improved?
Active opportunities, use of stairs	Would occupiers be willing to use the stairs more if incentivised to do so? Are there any barriers to this?
Internal air quality	How do occupiers view the importance of internal air quality in terms? Do they have any views on this in the context of the specific building?
Access to natural daylight and views of nature	How important is this to occupiers? How do they feel the building performs on this?
Health and wellbeing rating and certifications	Are occupiers aware of certification schemes such as Fitwel, The Well Standard, BREEAM In-Use, GRESB? To what extent have occupiers previously actively engaged in these schemes?

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STEP 2: ISSUING THE SURVEY AND COLLATING RESPONSES

Survey timing

Surveys should be run at least once a year. Traditionally, surveys are conducted at the start of the calendar year. However, each property's individual context and circumstance should be considered.

For example, it may be beneficial to align a survey with an occupiers' financial year, or alternatively with that of the asset manager. Likewise, it may be important to consider or how the workload commitments for particular sectors, at specific times in the annual cycle, may affect the response rate.

Engaging new occupiers

It is important to provide new occupiers with sufficient time to settle into a building and become familiar with the facilities and workplace initiatives. Ideally, a six to twelve months occupation period will enable an occupier to experience the full cycle of health and wellbeing activities available at a property.

Incentivising participation

Property managers should encourage incentivising participation to encourage responses. This could involve, for example, making a donation to a health and wellbeing charity for each response received, or entering participants into draw for health and wellbeing related prizes.

Collecting and collating responses

The design of a survey should consider the preferred method for collecting and collating responses. This can involve either quantitative or qualitative assessment.

Quantitative. This could involve issuing the survey via installed or mobile monitoring devices for self-completion. Automated data collection software could be used to collate responses and present data accordingly.

Qualitative. This could involve supporting participants to complete questionnaires, or interviews. Free-hand responses could be manually reviewed and collated into similar types with summarised outcomes presented accordingly.

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STEP 3: REVIEWING THE SURVEY FINDINGS

It is important that property managers engage with both asset and facilities managers to review survey findings and consider appropriate responses.

Asset managers will have an interest in the overall health and wellbeing performance of the building, and how occupiers view the support and quality of service provided by property and facilities managers. Asset managers will also have an interest in occupier feedback relating to a property's health and wellbeing features which may require investment.

Facilities managers will have an interest in how their performance in delivering health and wellbeing services and initiatives is viewed by occupiers, and where there may be opportunity for improvement.

Following the initial review of survey responses, a property manager should put in place mechanisms to engage occupiers to feedback survey outcomes and discuss intended actions. This engagement may involve occupier engagement forums, for example.

The output of the review of survey findings should be the development of a set of health and wellbeing improvement actions which can be included in a health and wellbeing improvement plan. This plan should include budgeted actions, responsibilities and timeframes.

Undertaking an assessment against a specific health & wellbeing certification tool is another good way of identifying current performance and where improvement measures are required.

REVIEWING HEALTH AND WELLBEING

HOW TO...

Asset managers have an interest in the outcome of a health and wellbeing review, which will inform their view of a property's health and wellbeing performance and decisions regarding future health and wellbeing investment. Property managers plays a central role in co-ordinating the arrangements for a health and wellbeing review, with input and support from facilities managers.

There are a range of ways in which health and wellbeing can be reviewed at a property. A number of examples are described below:

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1: ASSESSMENT OF HEALTH AND WELLBEING FOCUS AREAS

Building Location Assessment: WalkScore

Assessing a property based on its proximity to local amenities, and how accessible these are without the use of a car, can be an important factor in determining one aspect of the property's health and wellbeing credentials. One way to achieve a quantitative assessment of this factor is by using Walk Score. This tool attributes a property with a 'Walk Score' out of 100 based on its postcode.

Not all elements of a property's health and wellbeing performance are due to actions, infrastructure or interventions initiated by the building or property management teams. Knowing the context of the local area in which an asset sits can help to inform which health and wellbeing initiatives that are provided at a building.

For example, if a property sits in an area where local amenities are not located within walking distance, then this may guide the property's strategy towards providing useful features such as on-site catering amenities with healthy eating options. Auditing the building's location is an important first step in this.

Building Access Assessment: Commuter Survey

Carrying out a qualitative study of commuter infrastructure and habits through interviews and questionnaires with stakeholders is an important method through which to assess current and future requirements relating to building users getting to and from the office.

Outcomes from commuter surveys and discussions can result in major infrastructure changes and additions such as cycle facilities, for example, or the addition of shower and locker facilities. They can also result in 'softer' improvements, such as the provision of the Cycle to Work Scheme, for example, employees or interest free travel cards.

A commuter survey will ask questions which focus on finding out what the current commuting habits of building occupants are and considering these against their expectations and aspirations.

There are also more quantitative approaches to assessing commuter infrastructure at a property. For example, in order to assess the effectiveness of cycle storage provision at specific property companies often us commercial schemes such as Cycling Score and Five at Heart, which offer an assessment with supplementary advice from a specialist cycling facility consultants. Cycling Score will produce a certification while Five at Heart's feedback provides guidance on how to improve cycling facilities.

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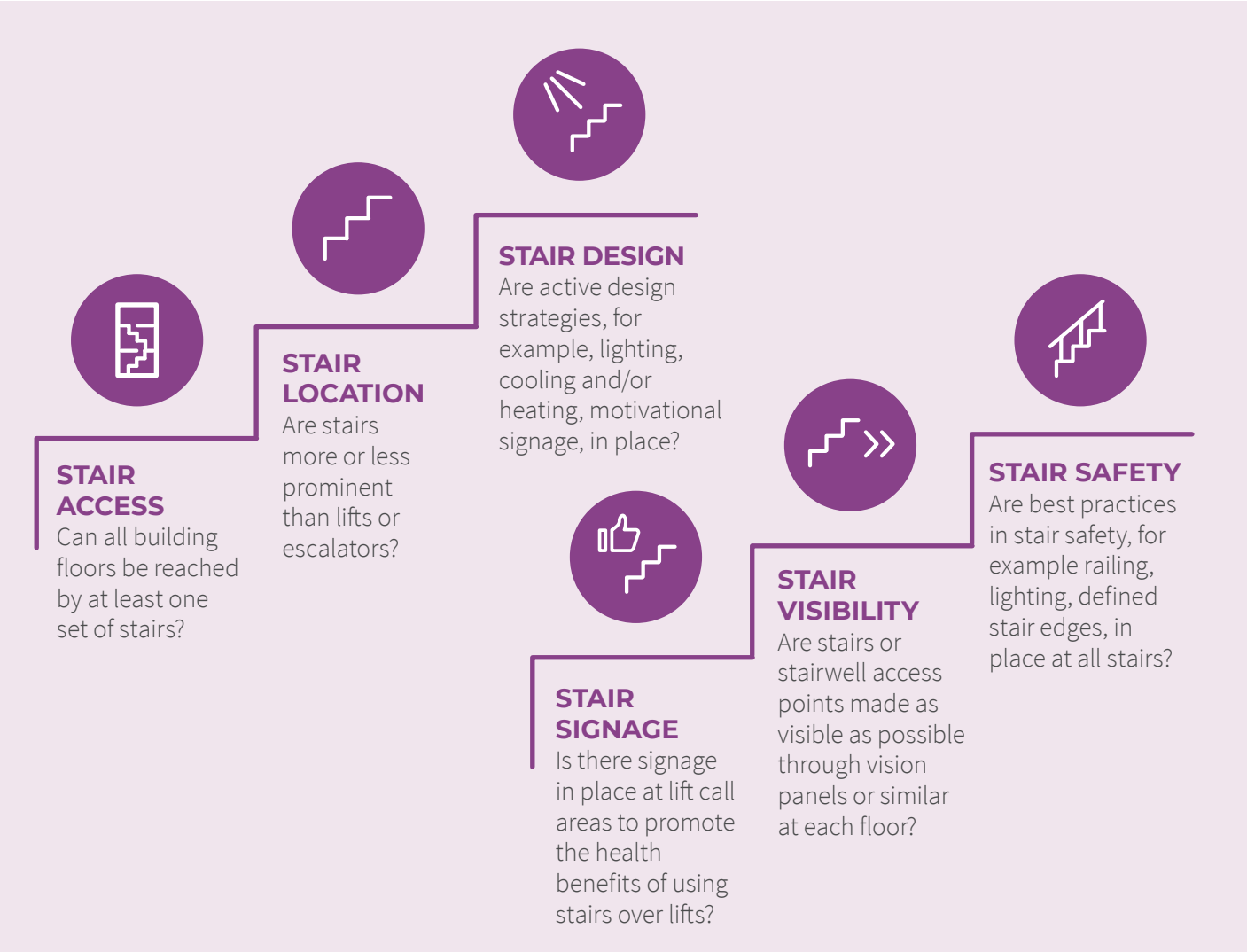
Active Opportunities Assessment: Stairs

Stairs and stairwells are often an under-used features in many buildings. Increasingly. the benefits of stair use as a health and wellbeing resource has highlighted by their inclusion in standards and certifications, such as the Well Building Standard and the Fitwel Certification Tool, for example.

These standards both broadly assess stair provision at buildings by asking the following questions:

- Stair Access: Can all building floors be reached by at least one set of stairs?
- Stair Location: Are stairs more or less prominent than lifts or escalators?
- Stair Design: Are active design strategies, for example, lighting, cooling and/or heating, motivational signage, in place?
- Stair Signage: Is there signage in place at lift call areas to promote the health benefits of using stairs over lifts?
- Stair Visibility: Are stairs or stairwell access points made as visible as possible through vision panels or similar at each floor?
- Stair Safety: Are best practices in stair safety, for example railing, lighting, defined stair edges, in place at all stairs?

The importance of access to stairs has been further brought into focus by the COVID-19 Pandemic and as such this facet of health and wellbeing is of increased importance to both asset and property managers, as well as building occupants.



Internal Air Quality (IAQ) Assessment
Conducting regular indoor air quality testing helps to ensure that a property is safeguarding the health and wellbeing of its occupants and is also acting to promote health and wellbeing through the provision of clean air. There are generally two ways of assessing internal air quality:

1. On an ongoing basis using sensor-based technology.
2. On a periodic basis by sampling and analysing the internal air quality of a building.

Even before the COVID-19 Pandemic the importance of internal air quality in buildings was growing rapidly: Coronavirus has only served to catalyse this.

A number of assessment tools have grown in tandem with this increased demand for knowledge and peace of mind that buildings are doing enough to maintain good internal air quality.

The Reset Standard and AirRated are useful certification tools. These schemes:

Test internal air quality (using sensors) against a number of benchmarks.

Enable certified buildings to signal that they fulfil their health and wellbeing obligations to their occupants and market this through an independent and stringently tested certification:

Assessing Access to Natural Daylight and Views of Nature
Although access to natural light can be assessed using sensor-based technology or basic calculations available through the Fitwel and Well certification tools.

Likewise, when assessing access to views of nature, technological is not required as the assessment can be calculated through equations.

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2: DOCUMENT REVIEW

Ensuring that a property has the correct health and wellbeing policies and processes in place, and that these are recorded correctly and are readily available to relevant building users, is important. Some of these documents will be considered core to building operations and some will be optional extras.

The following health and wellbeing documents are highlighted as being of importance as part of Fitwel:

- A Smoke Free Policy for All Indoor and Outdoor Areas within the Building Boundary.
- Asbestos Control and Abatement Documentation.
- An Indoor Air Quality Policy.
- A Green / Sustainable Purchasing Policy.
- An Integrated Pest Management Plan.
- Bathroom Cleaning Protocol / Schedule.
- Break Area(s) Cleaning Protocol / Schedule.
- A Water Management Plan.
- A Healthy Food and Beverage Policy.
- An Emergency Preparedness Plan, for example, fire.

Conducting a review whether the above documentation is in place and the relevance of each document to a particular property is an important process to undertake.

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3: OCCUPIER SATISFACTION SURVEYS

Carrying out a qualitative assessment of occupiers' perceptions of the health and wellbeing performance of a building through interviews and questionnaires is an important method to assess current and future health and wellbeing requirements at an asset.

Occupant satisfaction surveys are important to identify where health and wellbeing actions, infrastructure and initiatives are working well, and also to identify opportunities for improvements in health and wellbeing performance.

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4: POST-OCCUPANCY EVALUATIONS

Post-occupancy evaluations (POE) provide a useful tool to enable asset managers to understand how a property's performance in operation compares to the original design intent. This enables informed decisions regarding where there is potential to invest in improvements, as well as lessons learned for the design of future projects.

The UK Green Building Council's 'How to execute high-impact post-occupancy evaluations' sets out the process for implementing a POE, and highlights the following benefits from doing so:

- Long term improvements in building performance Evolution of your project
- Added value to clients
- BREEAM credits
- LEED credits
- Improvement in design quality

Explicitly referencing health and wellbeing as a core component of a POE emphasises the importance of the issue and ensures that the general benefits noted above are applied to health and wellbeing alongside other priority topics.

Health and wellbeing elements that could be included in a POE include, for example:

Health and well-being features: The extent to which features within a property that have been designed specifically with health and wellbeing in mind are operating an intended. This may include, for example, cycling facilities and shower areas, biophilic design elements or break-out spaces with ambient lighting design.

General features influencing health and wellbeing: The extent to which general features within a property, that have potential to influence health and wellbeing performance, are operating an intended. This may include, for example, infusion of natural light to internal offices spaces away, effectiveness of air conditioning units in maintaining air quality or perceptions of occupiers relating to pedestrian access routes to public transport or cycleways.

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5: RATINGS AND CERTIFICATIONS

Often, the wider health and wellbeing credentials of a property are assessed using a recognised rating and certification tool. Two established health and wellbeing certifications are the Fitwel Certification Tool and the Well Building Standard.

While retaining a US focus, both standards have recently made big steps to broaden their geographical approach and are now emerging as key certification tools for the UK and European Markets.

Alongside covering a property's wider sustainability performance, BREEAM certifications also look at health and wellbeing within their assessment as a meaningful part of the overall certification.