

Competence frameworks for the built environment – Core criteria for sustainability competence - Code of practice

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Foreword

This proposed Standard was developed as a Seed Document by the Edge for the Construction Industry Council's Climate Change Committee (Workstream 10) in discussion with the British Standards Institution (BSI). It's development was supported by the University College of Estate Management (UCEM). The proposed Standard is issued for general use by the built environment sector in the development of sector-specific competence frameworks to help ensure sustainability is fully considered and appropriately incorporated.

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0 Introduction

0.1 Background

States worldwide have asserted and legislated through national and international agreements and laws for the need to address the global climate and biodiversity emergencies and have committed to meeting rigorous carbon emission reduction and environmental targets, for example: the Paris Agreement (2015) and the Kunming-Montreal Global Biodiversity Framework (2022). As the built environment is currently a major source of carbon emissions and environmental damage, those who are responsible for its design, construction and management have an ethical and legal responsibility to ensure that it can become sustainable in all its impacts as rapidly as possible. Society needs to have confidence and trust in the built environment sector that effective levels of environmental performance are a priority. The competence of all who provide services and products throughout the life of a built environment asset is key to achieving this outcome.

This Standard sets core sustainability criteria for built environment competence frameworks. It is intended that the core criteria be contextualized within sector-specific frameworks to reflect the appropriate scope and level of competence required for an individual to undertake a defined role, function, activity, or task. Contextualization can be:

- a) within sector-specific competence frameworks, e.g. to reflect differing seniority or responsibility; and/or
- b) in relation to specific types of facilities or activities, e.g. those associated with high carbon emissions, biodiversity loss or other environmental damage; and/or
- c) linked to other standards for organizational competence, which establish the context necessary for individual competence

Compliance with this Standard can be achieved by mapping new or existing sector specific frameworks against the core competence criteria and scope, and explaining any divergence arising from the context within which the framework will be used.

Sector-specific competence frameworks are defined as being frameworks relevant to a specific role, function, activity, task, trade or discipline. In applying this Standard it may be necessary to modify language to be relevant to the target audience. It is important that this is recorded as part of any mapping process.

This Standard is one part of a broader standards framework for competence of individuals in the built environment. It extends the approach and requirements set out in *BSI 8670-1:2024, Competence frameworks for building safety – Part 1: Core criteria – Code of practice* to deal with competence for sustainability. Substantive text in *BSI 8670-1:2024* is not repeated in this standard and it will be necessary to refer to it for a full understanding of the nature of and approach to competence and competence frameworks and, in particular, behavioural competence.

In this Standard the phrase ‘built environment’ covers the ‘collection of human-made or induced physical objects located in a particular area or region’ and, when ‘treated as a whole, typically is taken to include buildings, external works (landscaped areas), infrastructure, and the products of construction works within the area under consideration’¹.

¹ As defined in *PAS 2080:2023 Carbon management in buildings and infrastructure*

0.2 Objectives

This Standard is intended to support wider sector reform, with the ultimate objective of achieving sustainability targets and goals, including international, national and local targets for environmental performance and reducing or reversing environmental damage, in and about the built environment. There are three overarching objectives, to:

- a) set core criteria for achieving sustainability, including on carbon emissions, pollutants, biodiversity levels, water quality and accessibility, social outcomes, wellbeing and resilience, for all individuals working on the built environment, to achieve defined outcomes throughout their lifecycle;
- b) facilitate consistent and objective development, evaluation or use of sector-specific competence frameworks by certification, licensing, accrediting, qualifying and validating bodies, regulators, clients and employers; and
- c) support progressive development of a more consistent approach in the development and use of competence frameworks across the built environment.

This Standard also supports and intends the following outcomes to be met as critical means to achieve sustainability goals:

- 1) development of a robust oversight, monitoring and feedback process for sector-specific competence frameworks;
- 2) development of competence frameworks for key roles in delivering a sustainable built environment and equitable and just transitions to such environments;
- 3) identification of core sustainability criteria that are likely to be common to all sector-specific competence frameworks;
- 4) commonality and consistency in built environment sustainability competence across sector-specific frameworks;
- 5) encouragement of greater interdisciplinary awareness, communication and consideration across the built environment;
- 6) individuals and organizations working in the built environment to move towards progressively adopting an approach based on validation and periodic revalidation;
- 7) individuals and organizations providing or monitoring education and training for those working or proposing to work in the built environment to develop curricula, courses, materials and assessments that assist in developing and validating sustainability competence; and
- 8) employers and those commissioning built environment works to assess the areas of competence of individuals, organizations and disciplines to ensure comprehensive coverage.

0.3 Competence and competence frameworks

NOTE Competence and competence frameworks are described in detail in BSI 8670-1:2024 including issues of validation, maintenance and limits of competence; and should be referred to as necessary for a full understanding.

0.3.1 General

It is common for legislation to set requirements for responsible persons to check the competence of individuals undertaking works. This Standard enables this principle to be extended more broadly so that competence assessment also includes those who work on planning for, designing, constructing, maintaining, managing, adapting, re-purposing and ultimately demolishing the built environment

Embedding sustainability competence at all levels and across all roles, functions, tasks and activities

is critical in achieving agreed environmental goals throughout and beyond the lifecycle of projects.

This Standard is intended for use in the development and evaluation of sector-specific competence frameworks for relevant sectors. It is not intended for use as a competence framework against which individuals can be directly assessed.

This Standard sets out core criteria against which sector-specific competence frameworks can be developed or assessed in relation to sustainable practice, including:

- core criteria for the information, structure, and procedural components of sector-specific competence frameworks;
- core behavioural criteria to support the sector in the development and delivery of a sustainable built environment to agreed performance standards; and
- core competence criteria for sustainability in the built environment, which need to be identifiable within sector-specific competence frameworks where relevant to the role, function or task covered by that framework.

The majority of a typical built environment project's life is in occupation and use while being managed, maintained, occasionally refurbished and eventually demolished, which means that managing sustainability during this period is as important as during initial construction. As existing projects significantly outnumber new construction works, issues of sustainable performance are a major concern in the existing built environment. As a result, it is important that sector-specific frameworks are structured to maintain a balance of competence between new and existing facilities, including alterations, extensions, retrofit, renovation, refurbishment, repair and maintenance, change of use or function, demolition and other work where relevant.

0.4 Mapping against this Standard

NOTE The process of mapping against this standard is described in BSI 8670-1:2024 and should be referred to as necessary.

1 Scope

This Standard gives recommendations for core criteria for sustainability in the built environment to promote high standards of performance and low levels of environmental harm in and around built environment projects and as a result of built environment works and operations in the wider world, whether direct or indirect. It is applicable to developments of all types and scales. It is intended to have wide application and relevance in design, construction, facilities management and property markets throughout the UK and beyond.

Built environment sustainability in the context of this Standard relates to both the physical, social, environmental and ecological conditions created by new or existing developments and their surroundings and how these impact on the wider world throughout the building lifecycle. This Standard does not cover other matters, which might affect sustainability, such as out of the ordinary accidents and incidents or warfare.

This Standard is intended for use by persons or organizations with responsibility for the development, maintenance or application of sector-specific competence frameworks for roles, functions, activities or tasks undertaken by individuals where these are critical to and directly influence the sustainability of the built environment. This includes competence frameworks for technical and non-technical roles, and for individuals working under their own authority as well as under the supervision of other

competent individuals.

This Standard is also relevant to commissioning clients' understanding of their expectations of relevant parties that they might appoint or instruct to undertake work on their behalf.

This Standard might also be relevant to roles (some regulated, duty-holding or statutory), including, but not limited to:

- Those commissioning and funding services
- ESG and sustainability professionals;
- Client and technical advisers;
- Principal Designers;
- Principal Contractors;
- Designers;
- Economic and commercial advisors;
- Insurers;
- Planners and development control officers;
- Contractors;
- Installers;
- Product manufacturers and suppliers;
- Procurers;
- Retrofit coordinators;
- Building control professionals;
- Health and safety, environment and quality managers;
- Facility Managers;
- Waste managers; and
- Responsible persons for buildings in occupation.

NOTE Responsibility for ensuring that sector-specific frameworks are kept up to date rests with framework owners given that the scope of regulation and duty-holding roles is likely to change over time.

Persons acting as professional regulators and accreditors, trainers, educators and insurers as well as investors and commissioning clients for building work might also find the recommendations of this Standard of use.

This Standard is not intended to replace existing professional, technical or vocational training or competence frameworks, which continue to reflect the full range of competences required for particular disciplines, roles, functions, activities or tasks.

This Standard does not provide recommendations for inclusion of organizational and team competence in competence frameworks.

2 Normative references

BS 8670-1 – Built environment – Core criteria for building safety in competence frameworks – Code of practice

3 Terms and definitions

The terms and definitions that apply to this Standard are included in Annex B: Terms and definitions

4 Core criteria for structure of sector-specific competence frameworks

4.1 General

All sector-specific frameworks should incorporate the core criteria set out in Clause 4.

NOTE An overview of core criteria is available in BSI 8670-1, together with roles and types and scales of developments and environments in scope, aspects of prior learning, competence levels and standards and requirements for checking on competence. This should be referred to as necessary.

4.2 Organizational requirements

Sector-specific competence frameworks should:

- a) identify and provide reasonable and accessible levels of detail on the sustainability knowledge and skills assessed and attained by individuals qualifying from and being accredited by academic and training courses;
- b) identify and explain the sustainability requirements of relevant membership and qualifying organizations relevant to the continuing competence of individuals they accredit and the implications of any different levels of accreditation;
- c) require such organizations to provide accurate, clear and readily accessible information on the implications of any different levels of accreditation; and
- d) require such organizations to be transparent about the actions that will be taken if individuals cease to comply with the requirements of membership and accreditation.

NOTE This relates to the qualification and membership requirements of non-statutory organizations, including educational providers, professional institutions, trade bodies, licensing schemes and voluntary associations, especially those which provide accreditation indicating competence or compliance with codes of conduct.

4.3 Prior learning

Sector-specific competence frameworks should define any prior learning requirement, either as a pre-requisite for, or as part of, validation or revalidation. They should:

- a) set out any requirement for prior learning, including but not limited to:
 - 1) training;
 - 2) formal qualification;
 - 3) certification;
 - 4) academic or vocational education;
 - 5) mentoring or shadowing;
 - 6) self-development; and
 - 7) experience;

4.4 Requirements for maintaining competence

Sector-specific competence frameworks should:

- a) set out the requirements for individuals to maintain and develop the currency of their

competence for the role, function, activity or task they undertake;

- b) define expectations in terms of the activities required to maintain competence, including but not limited to:
 - 1) time periods;
 - 2) learning levels;
 - 3) types of learning (e.g. formal or informal);
 - 4) extent of supervision, guidance or oversight
 - 5) practice and experience; and
- 6) subject area;
- c) set out procedures or requirements for monitoring competence;
- d) set out the requirements (skills, knowledge, experience and behaviours) for those assessing, registering and monitoring competence; and
- e) set out procedures for sanctioning failure to meet requirements to maintain, record or disclose CPD or other activities to maintain competence.

5 Behavioural competence for built environment sustainability

It is important that people possess appropriate behavioural competence to achieve and maintain sustainability outcomes. The core competence criteria in this clause are therefore fundamental in enabling people to act competently in respect of the core competence criteria in Clause 6.

NOTE Further guidance on behavioural competence is available in BSI 8670-1 and should be referred to as necessary.

Table 1 Behavioural Competence

Core competence criteria	Scope
1) Act ethically and contribute to sustainable outcomes	1) Ethical principles to promote sustainable outcomes, including: <ul style="list-style-type: none"> i) responsibility for life, health, environment, natural systems, equity and public good; ii) taking the broader and longer-term view; iii) honesty and integrity; iv) openness and transparency; v) respect for the law vi) accuracy and rigour; vii) collaboration, including sharing of relevant data; viii) responsibility for direction, conduct and communication; and ix) evaluation, reflection and learning. <p><i>NOTE Informative text on these ethical principles is provided in Annex A.</i></p>

	<ol style="list-style-type: none"> 2) Respect for planetary boundaries and avoidance of actions that might impact negatively on them. 3) Respect for social diversity and principles of inclusivity. 4) Relevant codes or standards of conduct. 5) Application of care and control on behalf of and for workers in and users of the built environment, including those in the wider supply chain, 6) Application of sound judgement including anticipating, identifying, analysing and solving problems to support effective outcomes that minimise or reverse environmental or social harm. 7) Provision, as standard, of solutions for optimum sustainability outcomes 8) Monitoring outcomes and providing feedback
<ol style="list-style-type: none"> 2) Demonstrate effective leadership, teamwork and communication as an individual or as a member of a team: <ul style="list-style-type: none"> • demonstrate commitment to strong sustainability culture; • collaborate effectively; and • collectively, as part of a team; • learn actively and develop knowledge; and • communicate effectively. 	<ol style="list-style-type: none"> 1) Visible commitment at all levels to a strong sustainability culture. 2) Application of an interdisciplinary and whole team approach to analysis and the development of solutions 3) Collaboration with others and effective team working skills, including the ability to influence and support others. 4) Checking, encouraging and requiring sustainability competence across teams 5) Collecting and sharing relevant data and information 6) Applying systems thinking to ensure that consideration is given beyond the immediate parameters of projects 7) Effective communication within and between teams, organizations and individuals. 8) Active listening and feeding back effectively 9) Ability to communicate and adapt communication styles to be appropriate for different groups including non-technical audiences. 10) Communicating effectively through use of oral, written, drawn, digital or graphic information and in accessible formats.
<ol style="list-style-type: none"> 3) Manage individual and contribute to organizational competence: <ul style="list-style-type: none"> • manage own competence; • manage competence of others where appropriate; and 	<ol style="list-style-type: none"> 1) Acting within limits of own competence and seeking further appropriate advice where necessary. See Table 3: Education, training and literacy 2) Managing competence of others including

<ul style="list-style-type: none"> • maintain and extend competence and • contribute to learning culture. 	<p>fulfilling duty holder obligations when making appointments or allocating tasks within teams.</p> <ol style="list-style-type: none"> 3) Recording, monitoring, analysing and acting to improve outcomes as part of a learning culture. 4) Encouraging active learning including consolidation and purposeful dissemination of knowledge
<p>4) Demonstrate personal responsibility and accountability:</p> <ul style="list-style-type: none"> • understand personal role and responsibilities with particular reference to sustainability; • accept and manage accountability for individual actions; and • understand responsibility and accountability for collective actions. 	<ol style="list-style-type: none"> 1) Responsibility for own actions and for the actions of those under their supervision or direction. 2) Managing boundaries/interfaces of responsibility and communicating these effectively to others. 3) Anticipating, identifying and challenging damaging or inappropriate behaviours and escalating concerns through reporting or whistleblowing mechanisms. 4) Identifying and providing feedback on harmful process, equipment, procedures, construction products, building systems, standards or quality. 5) Identifying and providing feedback on omitted elements of the process that have the potential for improved outcomes
<p>5) Understand, promote and prioritize care of and support for the environment</p> <ul style="list-style-type: none"> • show a duty of care to the immediate and wider environment; • account for and audit impacts of projects on the environment; • stand one’s ground; and • provide feedback on sustainable outcomes. 	<ol style="list-style-type: none"> 1) Duties and obligations to prioritize and to act in protecting and enhancing the environment, now and into the future, and whilst undertaking work and after 2) The duty to act as a spokesperson and advocate for the long-term health of the wider environment 3) The need to take into account the limited availability of natural and human resources 4) The obligation to allow for the needs of future generations taking into account any reasonably predictable circumstances including the effects of climate change and the availability of natural systems 5) The need to work to pre-determined environmental standards and the preparedness to act in their defence if required 6) Demonstration for all projects that all reasonable steps have been taken to protect and enhance the environment 7) Evaluation and reflection upon the performance in-use of projects and ensuring feedback and sharing of the findings.

<p>6) Consider and act in the public interest</p> <ul style="list-style-type: none"> • A proper concern for the impact of projects on individuals, local communities and wider society. 	<ol style="list-style-type: none"> 1) Duty of care to society as whole and to consider the broader impact of projects 2) Duty to take all reasonable steps to protect the health, safety and wellbeing of the human population considered as a whole including future generations 3) Duty to give full consideration to the impact that projects may have on people beyond the confines of the project, including through harm to their living and working environments 4) Provision of timely information and warnings of matters that can reasonably be predicted to affect the environment, even before they become apparent
<p>7) Understand, respect and provide a duty of care to others including project users and others in the vicinity as well as further afield:</p> <ul style="list-style-type: none"> • duty of care to public and building occupants; • duty of care to co-workers; • duty of care to workers in the supply chain; and • duty to communicate with persons outside the project team and respond to reported risks or concerns 	<ol style="list-style-type: none"> 1) Duty of care to occupants including residents and people in and around buildings in use, especially in anticipating, mitigating and ameliorating harmful environmental conditions. 2) Duty of care to workers including employees and visitors to buildings and their surroundings, in both construction, use, modification and demolition, especially by anticipating, mitigating and ameliorating harmful environmental conditions. 3) Duty of care to those producing and transporting building materials, throughout the supply chain 4) Consultation, listening and engagement with occupants or others who are or could be affected by works (including vulnerable, older and disabled people) and responding appropriately.
<p>8) Act and provide services with due skill and care for and on behalf of those commissioning the services:</p> <ul style="list-style-type: none"> • duty of care to those commissioning services; • duty to suggest appropriate solutions to environmental issues; • duty to communicate effectively; • duty to warn; • duty to carry out post-project evaluation • duty to provide long-term stewardship and aftercare. 	<ol style="list-style-type: none"> 1) Duty of care to those commissioning services to act in a reliable and trustworthy manner with fidelity and probity 2) Duty to apply high standards of skill, knowledge, competence and care in all work undertaken 3) Duty to be competent to carry out work undertaken and to help ensure others are also competent 4) Duty to maintain proper records and collect appropriate project data 5) Duty to keep commissioning parties informed of project progress, including against agreed sustainability measures 6) Duty to have systems in place to ensure that

	<p>projects are run competently and are regularly monitored and reviewed</p> <p>7) Duty to have in place effective and rapid procedures for addressing perceived shortfalls in service standards</p> <p>8) Duty to provide effective solutions to environmental and sustainability challenges, even when not requested.</p> <p>9) Duty to provide appropriate project commissioning, aftercare and long-term stewardship as required. ‘Do not walk away’.</p> <p>10) Duty to carry out post-project evaluation, to learn from the evidence gathered and project experience, to share understanding gained and to admit mistakes.</p>
<p>9) Share information, knowledge, experience and guidance with others:</p> <ul style="list-style-type: none"> • Contribute to the overall body of knowledge on sustainability issues • Share experience and lessons learnt • Report issues that may lead to potential harm • Advocate for appropriate sustainable solutions 	<p>1) Duty to share appropriate information, data and knowledge on both effective and ineffective approaches to sustainability with the wider sector and public</p> <p>2) Engagement and collaboration in and with sector research and evidence gathering on the outcomes of varied approaches to sustainability</p> <p>3) Use of experience to inform guidance and assistance to others tackling the same or similar challenges</p> <p>4) Reporting, or whistleblowing if required, on potential harms in order to avoid repetition and replication by others.</p> <p>5) Use of knowledge, learning, experience and judgement to advocate for solutions and changes that deliver sustainable outcomes</p>
<p>10) Maintain personal skills and competence:</p> <p>11) Duty to maintain expertise, skill and competence</p> <p>12) Duty to obtain appropriate practice and experience</p> <p>13) Duty to stay up to date</p> <p>14) Duty to reflect and learn</p>	<p>15) A commitment to developing skills and capability for addressing evolving sustainability requirements</p> <p>16) Regular and effective training (and retraining) as necessary to maintain and extend competence and to keep up to date across a range of relevant subject areas</p> <p>17) Maintenance of appropriate practice and experience to keep skills in effective condition including personal development activities.</p> <p>18) Reflection and self-assessment of level and degree of competence in relation to external requirements</p> <p>19) Regular and consistent horizon scanning to understand new and emerging sustainability issues</p>

<p>20) Looking after one’s own person</p> <ul style="list-style-type: none"> • Duty to maintain one’s own health and acuity • Commitment to obligations entered into • Commitment to agreed standards of behaviour 	<ol style="list-style-type: none"> 1) Maintenance of standards, including commitment to doing the right thing, integrity, honesty and accountability 2) Maintenance of an appropriate and reasonable work-life balance 3) Care and consideration for personal wellbeing, physical and mental health and fitness 4) Maintenance of mental acuity and communication skills
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6 Core categories and criteria for built environment sustainability

COMMENTARY ON CLAUSE 6 The core competence categories taken together are intended to represent a full picture of the issues concerning sustainability in the built environment, a broad and shared understanding of which is necessary for individuals to work together and contribute to sustainable outcomes throughout projects’ lifecycles.

Taken both as a whole and individually these core competence categories and the criteria within them will be relevant to all sector-specific frameworks and should be used to define the selected competences required in those sector-specific frameworks. The categories are grouped under five key headings:

- **Potential** – core elements of systems for and sources of sustainability performance and environmental impairment, together with recognized solutions and matters relating to their deployment and governance;
- **People** – core aspects of education and training, understanding and literacy, effective behaviours and managing and providing team leadership;
- **Process** – approaches, systems, products, tools, technologies and techniques for planning and designing for and managing sustainable outcomes, including statutory guidance, risk and knowledge management and communication;
- **Projects** – the principal sectors of built environment systems and settings, together with relevant regulatory standards, best practice targets and recognized areas of concern; and
- **Performance** – systems, protocols and metrics for monitoring and reporting on project performance; for delivering a resilient built environment and adaptation to potential environmental change; and for being able to respond urgently to emergencies affecting the built environment.

6.1 General

Sector-specific competence frameworks should:

- a) address relevant areas of concern in each of the core competence categories set out in Table 2 to Table 6;
- b) demonstrate how scope has been contextualized to reflect the understanding, roles, functions, activities and tasks covered by the framework; and
- c) establish the appropriate level of competence required for validation or revalidation against each of the core competence criteria in the context of the roles, functions, activities and tasks covered by the framework.

NOTE 1 *The scope in each table comprises non- exhaustive examples, some or all of which might be relevant to the context of any given sector-specific framework. It is important that frameworks evaluate and address this scope in relation to the scope of their own framework where this is relevant. Otherwise, it is intended that sector-specific frameworks add, subtract or amend items in the scope in order to address the core competence criteria, taking into account the context, roles, functions, tasks or activities covered by that framework.*

NOTE 2 *Core competence criteria are descriptors of capability at a role or function level. It is for sector-specific frameworks to set out more specific requirements at an activity or task level (referred to as “competency” or “competencies”) where appropriate. For example, these requirements might follow the three levels of ability set out in the Construction Leadership Council’s (CLC) Roadmap of Skills for Net Zero report (2024) of ‘Aware’, ‘Proficient’ and ‘Expert’² or membership grades of specific organisations.*

NOTE 3 *Core competence criteria are given for five stages of role and/or function. Two of these stages have 3 internal ‘rungs’:*

- 1) *Recognise:*
 - a. *Awareness*
 - b. *Appreciation*
 - c. *Understanding*
- 2) *Analyse;*
- 3) *Apply:*
 - a. *Synthesis*
 - b. *Adaptation*
 - c. *Evaluation;*
- 4) *Achieve; and*
- 5) *Develop and advance.*

This is for clarity and consistency and it is anticipated that those setting out sector-specific frameworks will need to select, edit and expand on the stages that are required and appropriate to be attained in each of the core competence categories outlined in Section 6 for the roles and task levels within their own scope of activities.

² *Roadmap for Skills for Net Zero: Competencies for Domestic Retrofit, CLC (2024).*

https://www.constructionleadershipcouncil.co.uk/wp-content/uploads/2024/05/CLC-Roadmap-of-Skills-for-Net-Zero-Report_07-May-2024.pdf

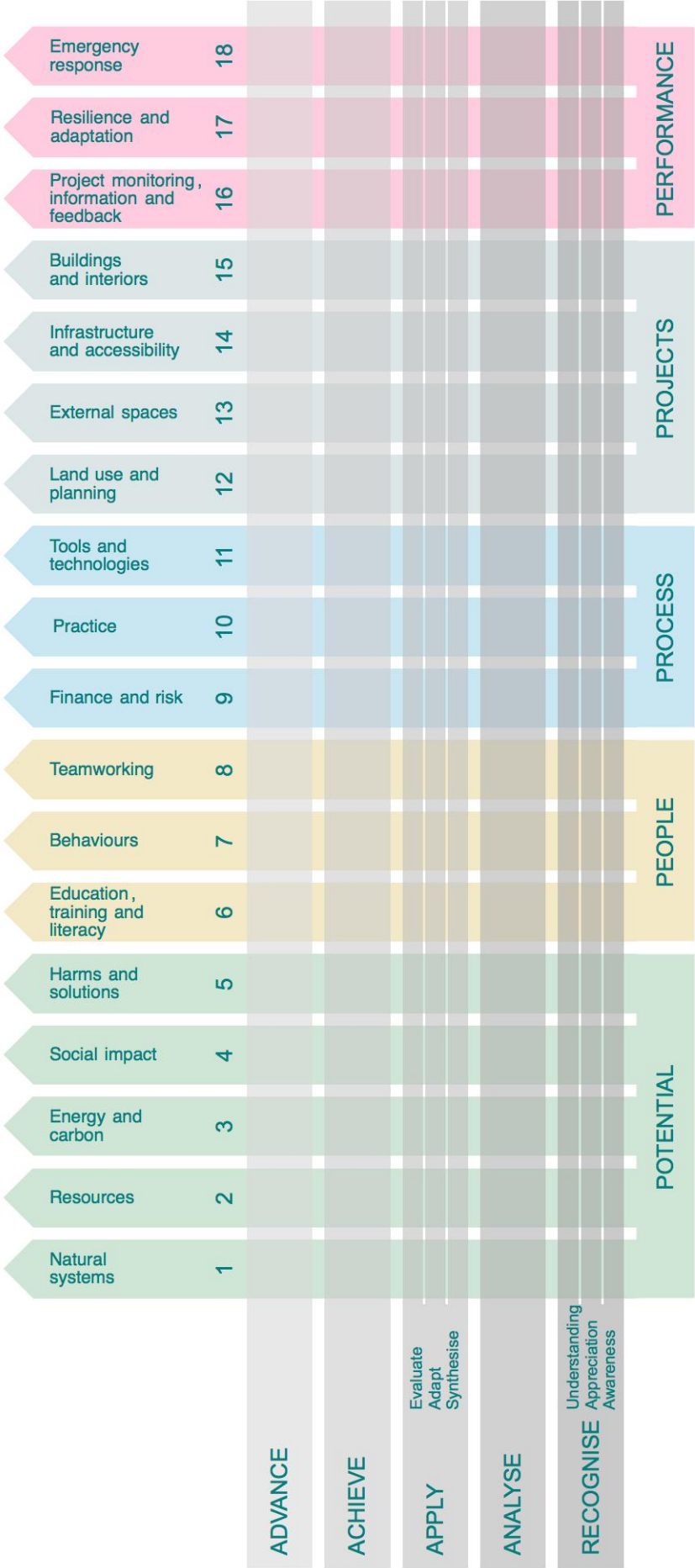


Diagram 1. Competence categories and levels

6.2 Potential: Natural systems, Resources, Energy and carbon, Social impact and Harms and solutions

All sector-specific competence frameworks should demonstrate how they meet the core competence criteria set out in Table 2, contextualized and at an appropriate stage relevant to the role, function, activity or task within the framework’s scope.

Table 2 – Potential - Natural systems, Resources, Energy and carbon, Social impact and Harms and solutions

Core competence criteria: Potential	Scope
1. Natural systems	
<p>a) Natural systems: Recognise the role of natural and nature-based systems in the provision of ecological services for the built environment, including the roles of:</p> <ul style="list-style-type: none"> • natural capital; • climate control; • air quality control; • water management; • biodiversity; • habitat provision; and • carbon sinks. <p>NOTE ‘Recognise’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of nature-based systems • Appreciation of the ecological services available • Understanding particular ecological services and the necessary conditions for their provision 	<ol style="list-style-type: none"> 1) Principles of natural systems, including: <ol style="list-style-type: none"> i) Earth and climate systems ii) The water cycle iii) Ecology and biodiversity iv) Natural capital v) Planetary boundaries 2) Regional and geographic variations and impacts 3) The impact of human (anthropogenic) activities on natural systems 4) The role of natural systems in human health and wellbeing 5) The range of potential nature-based services and solutions, including: <ol style="list-style-type: none"> i) Carbon sequestration, e.g. through woodland creation and peatland restoration ii) Ventilation and air quality iii) Temperature and humidity control iv) Pollution and noise abatement v) Flood and drought mitigation vi) Pest control vii) Health and wellbeing
<p>b) Natural systems: Recognise and be able to analyse the impact of deploying, protecting and enhancing natural systems in the provision of ecological services for the built environment.</p>	<ol style="list-style-type: none"> 1) Available natural and nature-based systems, including: <ol style="list-style-type: none"> i) Weather systems: sun, wind, rain, tides etc. ii) Diurnal and annual cycles for heat and cooling iii) Microclimates, especially interactions between buildings, streets etc. iv) Green infrastructure: landscapes, parks, gardens, green roofs, living walls, features to support wildlife species and planting, including native and/or pollinator-friendly species v) Blue infrastructure: cooling, drainage, leisure etc.

	<ul style="list-style-type: none"> vi) Trees and plants vii) Rocks and minerals viii) Biophilia 2) Growth and life cycles 3) Restoration and enhancement of existing systems 4) Deployment potential and techniques 5) Technical and research information 6) Costs and benefits
<p>c) Natural systems: Understand and be able to apply, protect, enhance and maintain effective natural systems, including being able to apply lessons learnt from natural systems, in the provision of ecological services for the built environment in accordance with the mitigation hierarchy</p> <p>NOTE 'Apply' comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise knowledge and experience • The ability to adapt existing knowledge and experience • The ability to evaluate potential solutions, monitor and record outcomes of actions taken 	<ul style="list-style-type: none"> 1) Available natural and nature-based systems 2) Growth and life cycles 3) Recovery and enhancement of existing systems 4) Integration of built and natural assets 5) Regenerative design 6) Biomimicry 7) Deployment techniques, advice and guidance 8) Monitoring 9) Management, maintenance and protection
<p>d) Natural systems: Understand and be able to achieve compliance with legislation, standards and targets covering natural systems and ecological services.</p>	<ul style="list-style-type: none"> 1) Regulatory and legal frameworks to protect people and to protect and enhance the environment through requirements, including statutes, planning, building regulations/standards and advisory documentation; 2) Requirements to construct and install in accordance with compliant design intent 3) Statutory and other requirements to monitor, manage and enhance habitats and environments in accordance with agreed plans 4) Requirements for managing public access to natural environments and ensuring appropriate protections
<p>e) Natural systems: Be able to develop and advance the understanding and use of natural and nature-based systems to provide ecological services in the built environment</p>	<ul style="list-style-type: none"> 1) Information/knowledge sharing platforms 2) Research 3) Leadership and responsibility 4) Communication, teaching and mentoring 5) Role and behaviour change

2. Resources:	
<p>f) Resources: Recognise the principle aspects of resources used by the built environment: including their:</p> <ul style="list-style-type: none"> • origins; • limits and depletion; • production requirements; • transportation patterns; and • energy intensity. <p>NOTE 'Recognise' comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of the range of resources available and their principle aspects • Appreciation of the principle impacts of available resources and materials • Understanding in detail the potential uses, costs and impacts of different resources and materials 	<ol style="list-style-type: none"> 1) Environmental and social impacts 2) Availability, sources and supply limitations 3) Competition for resources 4) Chains of custody and certification 5) Supply chains and costs 6) Material passports 7) Embodied carbon 8) Embodied biodiversity impacts 9) Circular economy potential 10) Recycling and re-use 11) Waste hierarchy
<p>g) Resources: Recognise and be able to analyse the availability, role, effectiveness, environmental impacts, conservation of resources in the delivery, use, re-use, recovery and eventual disposal of built environment solutions, including:</p> <ul style="list-style-type: none"> • Circular economy approaches • Human capital • Natural and renewable materials • Non-renewable resources • Energy resources • Waste and efficiency • Embodied carbon 	<ol style="list-style-type: none"> 1) Resource assessments undertaken in the course of project planning, including impacts (energy and water use, pollution, social and environmental harms etc.) from: <ol style="list-style-type: none"> i) Extraction ii) Agriculture, forestry etc. iii) Production and manufacturing iv) Energy use & embodied carbon v) Re-use and recycling including potential for disassembly vi) Potential for materials recovery vii) Waste 2) Whole life carbon statements 3) Circular economy statements 4) Environmental Product Declarations (EPD) 5) Information banks and databases providing sustainability evidence and metrics, including carbon and energy intensity, water use etc. 6) Manufacturers', suppliers' and other technical information
<p>h) Resources: Understand and be able to apply and deploy resources on projects to deliver sustainable outcomes.</p> <p>i) Know how to take and record decisions based on evidence of performance</p> <ul style="list-style-type: none"> • Fabrication • Installation and assembly • Research evidence • Safety performance • Impacts on wellbeing 	<ol style="list-style-type: none"> 1) The performance in use of different resources: <ol style="list-style-type: none"> i) Installation ii) Installation waste iii) Effectiveness iv) Pollutant shedding v) Wear and durability vi) Repair and maintenance vii) Lifecycle and longevity viii) End of life and disposal 2) Circular economy potential

<ul style="list-style-type: none"> • Lifecycle • Disposal <p>NOTE ‘Apply’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise knowledge and experience • The ability to adapt existing knowledge, skills and experience, including for the identification and deployment of recycled, emerging and innovative products • The ability to evaluate, monitor and record the impact of potential solutions and monitor outcomes 	<ol style="list-style-type: none"> 3) Information sources and databases providing evidence and metrics for performance in use. 4) Monitoring and evaluation
<p>j) Resources: Understand and be able to achieve compliance with legislative controls, standards and targets including those covering:</p> <ul style="list-style-type: none"> • resource extraction; • transportation; • production; • preparation; • installation; • performance in-use; • re-use; • resource recovery; and • disposal. 	<ol style="list-style-type: none"> 1) Regulatory and statutory requirements to protect people, communities and the environment 2) Civil society and sector standards and guidance on best practice to protect people, communities and the environment 3) Supply chain management, procurement and logistic systems, including chains of custody and traceability 4) Requirements for installation, monitoring, protection, maintenance and disposal 5) Requirements for assembly/disassembly, re-use, recycling, recovery and disposal
<p>k) Resources: Be able to develop and advance the understanding and use of resources and materials to provide verifiable sustainable outcomes</p>	<ol style="list-style-type: none"> 1) Information/knowledge sharing platforms 2) Research 3) Leadership and responsibility 4) Communication, teaching and mentoring 5) Role and behaviour change
<p>3. Energy and carbon:</p>	
<p>l) Energy and carbon: Recognise the sources, means and usage of energy in and the extent of their environmental impact as well as the carbon emissions generated and sequestered by the built environment, especially including:</p> <ul style="list-style-type: none"> • Operational energy and carbon; and • Embodied energy and carbon. <p>See also 1. Natural Systems</p> <p>NOTE ‘Recognise’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of different forms of energy and their emissions • Appreciation of their environmental impacts • Understanding of the causes and 	<ol style="list-style-type: none"> 1) Sources of primary energy 2) Energy availability, capacity and security 3) Environmental impacts of available energy supplies and their associated carbon intensities 4) Carbon/CO₂e emission limits 5) Energy and process-related carbon 6) Other carbon sources and sinks 7) Carbon capture and storage 8) Energy storage 9) Energy grids and microgrids 10) Local and on-site energy generation 11) Heat networks 12) Energy efficiency and intensity 13) Energy transition

extent of impacts	14) Energy targets
<p>m) Energy and carbon: Recognise and be able to model, calculate and analyse the demand for energy and associated carbon emissions related to operational and embodied aspects of projects, including carbon hotspots, in comparison with calculations of energy sufficiency and the opportunities for energy and carbon reductions resulting from supply, construction and the continuing operations of projects and assets.</p>	<ol style="list-style-type: none"> 1) Energy in-use metrics & databases 2) Energy demand and sufficiency 3) Patterns of use and behaviour 4) Energy efficiency and use reduction 5) Best practice targets and exemplar projects 6) Technology change and innovation 7) Energy and carbon modelling, including through parametric analysis 8) System boundaries 9) Carbon sequestration 10) Whole life carbon 11) Carbon trading 12) Offsetting
<p>n) Energy and carbon: Understand and be able to apply and incorporate low energy and carbon solutions into projects, including monitoring and maintaining them in use through the life of projects.</p> <p>NOTE 'Apply' comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise knowledge and experience to identify and deploy appropriate solutions for projects • The ability to adapt existing knowledge and experience for emerging and innovative solutions • The ability to evaluate whole life carbon emissions and monitor eventual outcomes. 	<ol style="list-style-type: none"> 1) Location and distribution 2) Orientation and form factors 3) Solar gain and shading 4) Fabric energy efficiency standards 5) Carbon management hierarchy (i.e. Avoid, Switch, Improve) 6) Airtightness and ventilation 7) Heat and energy recovery and storage 8) Building services, including metering, monitoring and building energy management and controls 9) Project specific energy generation 10) Project specific energy storage 11) Peak energy demand reduction 12) Operational and embodied carbon
<p>o) Energy and carbon: Understand and be able to achieve compliance with legislative controls, standards and targets covering energy use and carbon emissions, e.g. PAS2080; and Understand prevailing national/regional energy strategies/policies and deploy solutions that are consistent with them.</p>	<ol style="list-style-type: none"> 1) Regulatory and statutory requirements to limit energy use and carbon emissions 2) Regulatory and statutory requirements to ensure safety, health and security 3) Civil society and sector standards and guidance on best practice to limit energy use and carbon emissions 4) Compliant energy models and predictions, with commissioning and post-project validation 5) Timetables and programmes for future legislative change including transition arrangements 6) Accreditation and certification schemes
<p>p) Energy and carbon: Be able to develop and advance the understanding and use of energy efficient and low or negative carbon solutions to provide verifiable</p>	<ol style="list-style-type: none"> 1) Information/knowledge sharing platforms 2) Research and development 3) Evidence-based decision making 4) Leadership and responsibility

<p>whole life carbon outcomes</p>	<p>5) Communication, teaching and mentoring 6) Role and behaviour change</p>
<p>4. Social impact:</p>	
<p>q) Social Impact: Recognise the different ways the built environment can impact social value during the preparatory, construction and in-use stages of project cycles.</p> <p>NOTE 'Recognise' comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of potential social impacts • Appreciation of impact on individuals and communities • Understanding of the causes and extent of social impacts 	<p>1) Environmental inequality 2) Energy poverty 3) Health and wellbeing 4) Skills and employment 5) Social inclusion 6) Community cohesion and integration 7) Crime, safety and security</p>
<p>r) Social Impact: Recognise and be able to analyse the social impact relating to change in the built environment.</p>	<p>1) Environmental use value 2) Public Services (Social Value) Act 2012 3) Social Value Model 4) National TOMs (Themes, Outcomes, and Measures system) 5) Education and employment opportunities 6) Wellbeing indicators 7) Inequality metrics and data 8) Wider social benefits of sustainability measures including energy efficiency and net zero carbon</p>

<p>s) Social Impact: Understand and be able to apply evidence-based measures to improve social outcomes in the built environment.</p> <p>NOTE ‘Apply’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise knowledge and experience • The ability to adapt existing knowledge and experience • The ability to evaluate potential social outcomes and to monitor real life consequences over time. 	<ol style="list-style-type: none"> 1) Equality, diversity and inclusion (EDI) programmes 2) ESG requirements 3) Responsive environments 4) Personal, household and community provision 5) Employment creation 6) Social integration and cohesion 7) Crime reduction and neighbourhood security 8) Education and skills programmes 9) Space standards and guidance 10) Access to nature
<p>t) Social Impact: Understand and achieve compliance with legislative controls, standards and targets covering social outcomes in the built environment.</p>	<ol style="list-style-type: none"> 1) Regulatory and statutory requirements for ensuring social value 2) Equal opportunities 3) Public procurement systems 4) Town and country planning requirements and practice 5) Building regulations and standards 6) Disability discrimination requirements 7) Services provisions 8) Access to facilities and services 9) Secured by design
<p>u) Social impact: Be able to help develop and advance the understanding and use of evidence-based measures to provide verifiable improvements to social outcomes</p>	<ol style="list-style-type: none"> 1) Information/knowledge sharing platforms 2) Critical/structured thinking techniques 3) Research 4) Community participation 5) Leadership and responsibility 6) Communication, teaching and mentoring 7) Role and behaviour change
<p>5. Harms and solutions:</p>	
<p>v) Harms and solutions: Recognise the range of environmental harms that impact on and can be caused and intensified by the built environment and the potential approaches to mitigating them.</p> <p>NOTE ‘Recognise’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of potential environmental harms • Appreciation of potential harms • Understanding of the nature and causes of harms and the means to avoid or mitigate them. 	<ol style="list-style-type: none"> 1) Air quality 2) Water quality 3) Damp and mould 4) Nature and soil depletion 5) Pollutants and poisons 6) Waste disposal 7) Environmental Pollution 8) Forever chemicals and products 9) Flooding and sea level rise 10) Desertification and drought 11) Excess cold and heat 12) Noise 13) Light pollution
<p>w) Harms and solutions: Recognise and be able to analyse, employing systems thinking, the existing and potential harms</p>	<ol style="list-style-type: none"> 14) Pest infestation 15) Disease vectors and infections 16) Invasive species

<p>occurring in the built environment and potential avoidance and mitigation solutions, along with any barriers to their adoption.</p>	
<p>x) Harms and solutions: Understand and be able to employ and apply evidence-based measures to enhance and improve the overall environment, to avoid and mitigate harms in and, if necessary, to adapt, the built environment.</p> <p>NOTE 'Apply' comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise knowledge and experience • The ability to adapt existing knowledge and experience • The ability to evaluate possible outcomes of projects and to monitor and record the real life consequences over time. 	<ol style="list-style-type: none"> 1) Nature-based solutions – see also Natural Systems 2) Regenerative design 3) Circular economy models and systems 4) Passive design measures <ol style="list-style-type: none"> i.) Daylighting ii.) Natural ventilation iii.) Fabric energy efficiency improvements iv.) Thermal mass v.) Shading vi.) Screens vii.) Flood protection viii.) Acoustic controls 5) Active measures <ol style="list-style-type: none"> i.) Mechanical ventilation ii.) Heat recovery iii.) Heating & cooling systems iv.) Electrical systems v.) Public health systems 6) Hybrid solutions 7) Building controls 8) Modelling and calculation
<p>y) Harms and solutions: Understand and achieve compliance with legislative controls, standards and targets intended to enhance and improve the overall environment and/or avoid, mitigate and adapt to harms in the built environment</p>	<ol style="list-style-type: none"> 1) Global, national and regional agreements and protocols 2) Legislative and regulatory requirements 3) Civil society and sector standards and guidance on best practice 4) Authorized modelling and calculation methods 5) Case studies 6) Research findings and analysis
<p>y) Social impact: Be able to develop and advance the understanding and use of evidence-based measures to provide verifiable improvements to social outcomes</p>	<ol style="list-style-type: none"> 1) Information/knowledge sharing platforms 2) Critical/structured thinking techniques 3) Research 4) Community participation 5) Leadership and responsibility 6) Communication, teaching and mentoring 7) Role and behaviour change

6.3 People: Education training and literacy, Behaviours and Teamworking

All sector-specific competence frameworks should demonstrate how they meet the core competence criteria set out in Table 3, contextualized and at an appropriate stage relevant to the role, function, activity or task within the framework’s scope.

Table 3 – People: Education, training and literacy, Behaviours and Teamworking

Core competence criteria: People	Scope
6. Education, training and literacy:	
<p>a) Education, training and literacy: Recognise and maintain a good comprehension of sustainability issues, together with the necessary communication skills to explain the need for and to promote sustainable approaches</p> <p>NOTE ‘Recognise’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • General Awareness of sustainability issues • Appreciation of particular issues impacting on and resulting from the built environment • In depth Understanding of overall issues, including climate change and threats to biodiversity 	<ol style="list-style-type: none"> 1) Formal education <ol style="list-style-type: none"> i) Primary and secondary (school) ii) Non-vocational further education (FE) iii) Non-vocational higher education (HE) 2) Qualifications <ol style="list-style-type: none"> i) GCSE’s, A-Levels ii) National Vocational Qualifications (NVQ) iii) Degrees, MA, PhDs etc. 3) Informed reading and information acquisition 4) Self Development 5) Work experience 6) Shadowing and mentoring 7) Day in the Life observation and analysis 8) Continued Professional Development.
<p>b) Education, training and literacy: Possess and keep up to date adequate knowledge, skills, experience and behaviours to be able to recognise and analyse sustainability tasks and to recommend relevant approaches and actions, including through:</p> <ul style="list-style-type: none"> • Appropriate courses • Curricula structure and content • Rigorous qualification and accreditation procedures • Cross-disciplinary learning • Up to date research • Practical experience • Life-long learning • Regular testing and (re-) validation • Self reflection and reporting • Robust oversight and checking <p>Ensure other team members also possess the necessary knowledge, skills, experience and behaviours</p>	<ol style="list-style-type: none"> 1) Formal education <ol style="list-style-type: none"> i) Vocational further education (FE) ii) Vocational higher Education (HE) iii) Post-graduate education iv) Apprenticeships v) In-service education and training vi) Continuing Professional Development (CPD) vii) Trade-based qualifications viii) Reflective on the job training. 2) Qualifications <ol style="list-style-type: none"> i) Professional accreditations ii) Trade qualifications iii) Certification 3) Self, community and organizationally–directed learning and experience 4) Research literacy and awareness

<p>c) Education, training and literacy: Recognise and apply lessons learnt through systems thinking and structured learning programmes as appropriate on projects, ensuring that they are relevant to the full circumstances on an individual basis, checking and getting advice as necessary.</p> <p>NOTE 'Apply' comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise knowledge and experience • The ability to adapt existing knowledge and experience • The ability to evaluate possible outcomes and to monitor and record the real life consequences of actions over time. 	<ol style="list-style-type: none"> 1) Inception and briefing 2) Sector protocols and guidance 3) Refurbishment 4) Pre-construction 5) Commissioning 6) Operation and maintenance 7) Modification and adaptation 8) Deconstruction, demolition and end of life of projects 9) Benefits beyond the system boundary, e.g. recycling, recovery and reuse 10) Evaluation and feedback
<p>d) Education, training and literacy: Understand and achieve compliance with legislative controls and requirements for mandatory training, qualification and periodic revalidation for certain roles. Ensure that skills, knowledge and behaviours are fully acquired, kept up to date and demonstrated</p>	<ol style="list-style-type: none"> 1) Training and qualification 2) Accreditation 3) Skills and experience maintenance, including through CPD 4) Revalidation
<p>e) Education, training and literacy: Be able to help develop and advance education and training practice, taking in both content and pedagogy, including through:</p> <ul style="list-style-type: none"> • Research • Knowledge and technology transfer • Learning management systems • Curriculum development • New and updated pedagogical tools and techniques • Provision and accessibility of content • Strategic foresight /preparation • Application of new technologies and communication systems 	<ol style="list-style-type: none"> 1) Retraining, acquiring new skills 2) Directed learning 3) Research involvement 4) Experimentation & innovation 5) Community participation 6) Future studies 7) Teaching, coaching and mentoring others 8) Changing role/s

7. Behaviours:	
<p>f) Behaviours: Recognise the range, nature and impact of behaviours required to deliver sustainable outcomes</p> <p>NOTE ‘Recognise’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of sustainability behaviours • Appreciation of how appropriate behaviours assist in delivering sustainable outcomes • Understanding of how particular behaviours can lead to defined outcomes 	<ol style="list-style-type: none"> 1) Self awareness of personal limitations 2) Care and conscientiousness 3) Ethical frameworks 4) Honesty and integrity 5) Social purpose / public good 6) Respect and reliability 7) Peer pressure 8) Escalation 9) Communication and discussion 10) Effective behaviours 11) Unacceptable behaviours 12) Responses
<p>g) Behaviours: Recognise and analyse the effectiveness of relevant behaviours on sustainable outcomes, including through:</p> <ul style="list-style-type: none"> • Training • Codes of ethics/conduct/practice • Qualification and testing • Guidance • Judgment • Leadership • Peer feedback • Disciplinary procedures • Self reflection • Reputational damage 	<ol style="list-style-type: none"> 1) Ethical principles 2) Duties of care 3) Personal responsibility and accountability 4) Corporate responsibility and accountability 5) Communication and teamwork 6) Assigned role/s 7) Acting (commission and omission) 8) Reporting mechanisms 9) Accuracy and rigour 10) Consistency 11) Whistleblowing
<p>h) Behaviours: Understand and apply effective and ethical behaviours in practice and in relation to projects, including through:</p> <ul style="list-style-type: none"> • Protocols and guidance • Mentoring and advice • Good practice • Issue reporting • Self reflection <p>NOTE ‘Apply’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise knowledge and experience to select relevant and effective behaviours • The ability to adapt existing behaviours • The ability to evaluate possible behaviours and to monitor the real life consequences of their deployment 	<ol style="list-style-type: none"> 1) British Standards and other similar standards 2) Publicly Available Specifications (PAS) 3) Best practice guidance 4) Professional Codes of Conduct/Practice 5) Corporate Codes of Conduct/Practice 6) Trade organization Codes of Conduct/Practice 7) Guidance issued by government and recognized authoritative bodies 8) Peer reviewed research outputs 9) Reporting bodies

<p>i) Behaviours: Understand and achieve compliance with legislative requirements and codes of conduct and agreed modes of operation</p>	<ol style="list-style-type: none"> 1) Legal and statutory controls 2) Codes of conduct/practice 3) Guidance documents 4) Authoritative mentoring, advice and guidance
<p>j) Behaviours: Be able to help develop and advance more effective behaviours including through:</p> <ul style="list-style-type: none"> • Self awareness, reflection, counseling • Teamwork and leadership • Knowledge management • Sharing experience • Research • Feedback and response • Trialing innovative practice • Behavioural change 	<ol style="list-style-type: none"> 1) Training courses 2) Information/knowledge sharing platforms 3) Research protocols 4) Research trials 5) Stretch targets
<p>8. Teamwork:</p>	
<p>k) Teamwork: Recognise the roles and requirements of teamwork and working collaboratively, including its potential outcomes.</p> <p>NOTE 'Recognise' comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of teamworking and shared goals • Appreciation of the expectations and work practices associated with teamworking • Understanding how to participate in effective teamworking and collaboration 	<ol style="list-style-type: none"> 1) Principles of team building and multidisciplinary working 2) Roles and responsibilities 3) Goal setting 4) Objectives 5) Communication 6) Leadership 7) Equity, diversity and inclusion
<p>l) Teamwork: Recognise and be able to analyse the need for and selection of effective collaborative practices, team roles and agreement on shared goals</p>	<ol style="list-style-type: none"> 1) Team formation 2) Role definitions and remits 3) Protocols and programme 4) Training needs 5) Personal requirements and considerations, including of individual circumstances and mental and physical health conditions
<p>m) Teamwork: Understand, apply and participate in effective and appropriate collaborative working across disciplines</p> <p>n) Teamwork: Provide, as necessary, effective team leadership</p> <p>NOTE 'Apply' comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise knowledge and experience of teamworking • The ability to adapt existing behaviours 	<ol style="list-style-type: none"> 1) Analysis and identifying requirements 2) Decision-making 3) Team selection and dynamics 4) Performance monitoring 5) Sourcing specialist knowledge and advice 6) Leadership 7) Feedback 8) Communications

<ul style="list-style-type: none"> The ability to evaluate possible behaviours and to monitor the real life consequences of their deployment 	
<p>o) Teamwork: Understand and achieve compliance with legislation and agreed standards and targets</p>	<ol style="list-style-type: none"> 1) Legal and statutory controls, including employment law 2) Equal Rights legislation 3) Equality, Diversity and Inclusion (EDI) culture and practice 4) Health and safety requirements 5) Best practice guidance 6) Authoritative mentoring, advice and guidance
<p>p) Teamwork: Be able to help develop and advance teamwork and collaborative practice for sustainability, including through:</p> <ul style="list-style-type: none"> Awareness, reflection and groupwork Innovation, monitoring and reporting Cross disciplinary transfer of learning and experience 	<ol style="list-style-type: none"> 1) Training / retraining 2) Guided collaboration 3) Teambuilding exercises and processes 4) Use of wider sector networks

6.4 Process: Finance and risk, Practice, Tools and technologies

All sector-specific competence frameworks should demonstrate how they meet the core competence criteria set out in Table 4, contextualized and at an appropriate stage relevant to the role, function, activity or task within the framework’s scope.

Table 4 – Process: Finance and risk, Practice, Tools and technologies

Core competence criteria: Process	Scope
9. Finance and risk:	
<p>a) Finance and risk: Recognise the role, approaches to and sources of finance and risk in the context of the sustainability of the built environment</p> <p>NOTE ‘Recognise’ comprises 3 rungs:</p> <ul style="list-style-type: none"> Awareness of sources and levels of project finance and risks Appreciation of the role of finance and means of identifying and managing environmental risk Understanding financial arrangements and the possible range of risks 	<ol style="list-style-type: none"> 1) Value 2) Triple bottom line of sustainability 3) ESG 4) Green finance 5) Risks <ol style="list-style-type: none"> i.) Life and wellbeing ii.) Environmental damage iii.) Climate volatility and impacts iv.) Viability v.) Infrastructure availability and disruption vi.) Stranded assets vii.) Lack of insurability viii.) Reputational damage ix.) System effects x.) Climate-related financial risks xi.) Nature-related financial risks xii.) Greenwashing and over-claiming

<p>b) Finance and risk: Recognise and be able to analyse project finance and risk relating to sustainable outcomes and future change</p>	<ol style="list-style-type: none"> 1) Environmental economic assessments tools 2) Valuation procedures 3) Depreciation 4) Information requirements <ol style="list-style-type: none"> i) Ecology assessments ii) Biodiversity net gain iii) Nutrient neutrality iv) Flood assessment 5) Disclosure <ol style="list-style-type: none"> i) Climate-related financial disclosure (CFD) requirements ii) Nature-related financial disclosure (NFD) requirements iii) Sustainability Accounting Standards Board (SASB) requirements iv) Global Reporting Initiative (GRI) v) Carbon Disclosure Project (CDP) 6) Risk assessment, frameworks & methods <ol style="list-style-type: none"> i) Hazards ii) Exposure iii) Vulnerability 7) Sector guidance and advice
<p>c) Finance and risk: Understand and be able to apply effective and appropriate mitigation and adaptation procedures to safeguard finance and reduce risk, including the use of:</p> <ul style="list-style-type: none"> • ESG monitoring and reporting • Environmental economic planning • Standard reporting and disclosure frameworks <p>NOTE ‘Apply’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise knowledge and experience for enabling effective management of finance and risk • The ability to adapt existing knowledge and experience • The ability to evaluate the financial and risk aspects of projects and to monitor the real life consequences of decisions 	<ol style="list-style-type: none"> 1) Standard accounting metrics and reporting mechanisms and procedures 2) Reports to investors and insurers 3) Risk reduction <ol style="list-style-type: none"> i) Resilience ii) Adaptability iii) Energy autonomy iv) Donut economics
<p>d) Finance and risk: Understand and achieve compliance with legislation and agreed standards and targets</p>	<ol style="list-style-type: none"> 1) Legal and statutory controls 2) Financial Conduct Authority (FCA) requirements 3) Accounting rulebooks and best practice 4) Mandatory reporting. 5) Property <ol style="list-style-type: none"> i) RICS Red Book ii) Whole life Carbon Assessment for the

	<p>Built Environment – RICS Professional Standard</p> <p>iii) UK Net Zero Carbon Buildings Standard</p> <p>6) Membership compliance requirements</p> <p>7) Sector benchmarking</p> <p>8) Whistleblowing</p>
<p>e) Finance and risk: Be able to help develop and advance finance and risk management assessments and procedures for the more effective delivery of sustainable outcomes</p>	<p>1) Accounting procedures</p> <p>2) Reporting mechanisms</p> <p>3) ESG requirements</p> <p>4) Institutional sustainability commitments</p>
<p>10. Practice:</p>	
<p>f) Practice: Recognise the range of options and means for delivering sustainable outcomes in the built environment.</p> <p>NOTE 'Recognise' comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of different approaches • Appreciation of the applicability and effectiveness of alternative approaches • Understanding the detailed aspects of and tools for managing projects 	<p>1) Trustworthy information</p> <p>2) Guidance and advice</p> <p>3) Management processes</p> <p>4) Sector standards</p> <p>5) Case studies</p>
<p>g) Practice: Recognise and be able to analyse the outcomes of implementing different approaches and measures intended to deliver sustainable solutions.</p>	<p>1) Options appraisal</p> <p>2) Best practice benchmarks and exemplars</p> <p>3) Lessons learnt & continuous improvement</p> <p>4) Procurement systems</p> <p>5) Briefing and specification requirements</p> <p>6) Research and innovation</p>
<p>h) Practice: Understand and be able to select and apply best practice approaches and procedures to achieve sustainable outcomes.</p> <p>NOTE 'Apply' comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise knowledge and experience of project and business management • The ability to adapt existing knowledge and experience • The ability to evaluate the practical, delivery and management aspects of projects and to monitor the real life consequences of different approaches 	<p>1) Standards and goal setting</p> <p>2) QA protocols, e.g. 'retrofit first'</p> <p>3) Verified systems, e.g. Passivhaus, NABERS</p> <p>4) Preparation and skills acquisition</p> <p>5) Modelling and iteration</p> <p>6) Experience and behaviours</p> <p>7) Physical testing</p> <p>8) Benchmarking</p> <p>9) Commissioning and tuning</p> <p>10) Monitoring and reporting</p> <p>11) Review and resolution</p>
<p>i) Practice: Understand and achieve compliance with legislation and agreed standards and targets.</p>	<p>1) Legislation</p> <p>i) Planning and Building regulations</p> <p>ii) Health and safety regulations</p> <p>iii) Biodiversity net gain and nutrient neutrality regulations</p> <p>2) Voluntary and reportable standards</p>

	3) Corporate and professional commitments and standards
j) Practice: Be able to help develop and advance project and business management procedures for the delivery of sustainable outcomes	<ol style="list-style-type: none"> 1) Business processes and protocols 2) Reporting mechanisms 3) Information/knowledge sharing platforms 4) Public policy 5) Institutional commitments
11. Tools and technologies:	
<p>k) Tools and technologies: Recognise the range of resources, tools and approaches available to learn about, deliver and monitor sustainability in the built environment</p> <p>NOTE ‘Recognise’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of available resources, tools and technologies • Appreciation of the usefulness and effectiveness of different tools and technologies • Understanding in detail of how to deploy tools and technologies 	<ol style="list-style-type: none"> 1) Learning sources, materials and courses 2) Technical information 3) Practical experience 4) Standardised and packaged solutions 5) Mentoring and advice 6) Research and innovation 7) Critical voices
<p>l) Tools and technologies: Recognise and analyse the potential advantages and disadvantages of using different tools and technologies for delivering sustainable outcomes</p>	<ol style="list-style-type: none"> 1) Consultation 2) Briefing 3) Option appraisal 4) Information databases 5) Advice and guidance 6) Evidence-based assessment 7) Calculation and benchmarking 8) Heuristics and checklists 9) Software packages 10) Modelling 11) Artificial intelligence software (AI) 12) Trialling and testing
<p>m) Tools and technologies: Understand, select and apply best practice approaches and procedures for achieving sustainable outcomes.</p> <p>NOTE ‘Apply’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise skills, knowledge, experience and behaviours and make effective use of tools and technologies • The ability to adapt to the use of emerging and innovative tools and technologies 	<ol style="list-style-type: none"> 1) Standardised schema, e.g. RIBA Plan of Work 2) Iteration through proposition, appraisal and progression (the design method) 3) Modelling and digital twins 4) Real time feedback 5) Expert advice and second opinions 6) Project protocols (e.g. Passivhaus, Soft Landings) 7) Specification 8) Material passports 9) At scale testing/trialling 10) Product/resource certification 11) Independent inspection

<ul style="list-style-type: none"> The ability to evaluate the effectiveness of different tools and technologies 	<ol style="list-style-type: none"> 12) New technologies 13) Post occupancy evaluation (POE) / Post-project evaluation 14) Commissioning and troubleshooting 15) Aftercare and stewardship
<p>n) Tools and technologies: Understand and achieve compliance with legislation, best practice and agreed methodologies.</p>	<ol style="list-style-type: none"> 1) Legislation, regulations and standards 2) Gateway processes 3) Approval processes (e.g. planning, building inspection) 4) Certification (e.g. Passivhaus) 5) Warranties 6) Testing (e.g. pressure testing) 7) Project passports 8) Insurance requirements 9) Reporting (mandatory and voluntary)
<p>o) Tools and technologies: Help to develop and advance resources, tools and technologies in order to achieve sustainable outcomes</p>	<ol style="list-style-type: none"> 1) Research and development 2) Cross-sector and discipline collaboration and partnership 3) Data sharing platforms 4) Software development 5) Communication

6.5 Projects: Land use and planning, External spaces, Infrastructure and accessibility and Buildings

All sector-specific competence frameworks should demonstrate how they meet the core competence criteria set out in Table 5, contextualized and at an appropriate stage relevant to the role, function, activity or task within the framework’s scope.

Table 5 – Projects: Land use and planning, External spaces, Infrastructure and accessibility and Buildings

Core competence criteria: Projects	Scope
12. Land use and planning:	
<p>a) Land use and planning: Recognise the impact on sustainable outcomes resulting from the way land is used and the potential of planning to improve these.</p> <p>NOTE ‘Recognise’ comprises 3 rungs:</p> <ul style="list-style-type: none"> Awareness of the impact and contribution of different land uses Appreciation of how decisions on land use and land management can 	<ol style="list-style-type: none"> 1) Underlying land character <ol style="list-style-type: none"> i) Geology and topography ii) Geography iii) Biology and biodiversity 2) Historic uses <ol style="list-style-type: none"> i) Archaeology ii) Ownership patterns and land rights 3) Rights and remedies 4) Planning policy <ol style="list-style-type: none"> i) National planning policy, including NPPF ii) Planning guidance iii) Model design codes

<p>deliver sustainable outcomes</p> <ul style="list-style-type: none"> • Understanding the detailed aspects of management of and change to land use and the relevant planning processes 	<ul style="list-style-type: none"> iv) Regional strategies v) Local Plans and design codes vi) Development controls <ol style="list-style-type: none"> 5) Assets <ul style="list-style-type: none"> i) Physical ii) Natural iii) Human iv) Heritage 6) Infrastructure <ul style="list-style-type: none"> i) Roads ii) Services iii) Access and connectivity 7) Management and operation systems 8) Risks <ul style="list-style-type: none"> i) Subsidence ii) Flooding and inundation iii) Pollution iv) Noise v) Traffic
<p>b) Land use and planning: Recognise and be able to analyse the environmental impacts of proposed land use changes and management and planning decisions.</p>	<ol style="list-style-type: none"> 1) Objectives 2) Existing land use assessment 3) Ecology and environmental studies 4) Strategic plans in place or in development (regional and local) 5) Existing infrastructure and planning consents in place 6) Locations and connections 7) Asset and risk assessments 8) Resource availability 9) Protections and controls 10) Consultation and community engagement
<p>c) Land use and planning: Understand, select and apply best practice approaches and procedures including management and monitoring to achieve sustainable outcomes</p> <p>NOTE 'Apply' comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise skills, knowledge, experience and behaviours for implementing land management and land use change • The ability to adapt to identify and deploy emerging and innovative changes • The ability to monitor and evaluate the effectiveness of different approaches 	<ol style="list-style-type: none"> 1) Brief objectives 2) Feasibility studies 3) Masterplanning <ul style="list-style-type: none"> i.) Infrastructure proposals ii.) Landscape proposals iii.) Building proposals iv.) Design codes 4) Ecological service assessment <ul style="list-style-type: none"> i.) Biodiversity net gain and nature recovery ii.) Nutrient neutrality iii.) Flood risks and control iv.) Public amenity 5) Avoidance of harms – see section on harms 6) Modelling and assessment 7) Phasing and programming

<p>d) Land use and planning: Understand and achieve compliance with legislation, standards, targets and best practice methodologies.</p>	<ol style="list-style-type: none"> 1) Regulations and standards 2) Sector and professional standards 3) Planning policy requirements, national and local 4) National Significant Infrastructure Project (NSIP) consents 5) Planning permissions and conditions 6) Biodiversity net-gain (BNG) protocols and other approaches 7) Other requirements, e.g. Environment Agency 8) Congestion controls
<p>e) Land use and planning: Help develop and advance the theory and practice of planning and land usage to improve sustainable outcomes, including through:</p> <ul style="list-style-type: none"> • Resetting objectives • Replanning, regeneration, rewilding • Innovation, monitoring and reporting • Knowledge and technology transfer • Sharing experience • Research • Behaviour change 	<ol style="list-style-type: none"> 1) Training courses (including leadership training) 2) Critical/structured thinking techniques 3) Community participation 4) Guided innovation 5) Nature-based solutions 6) Information/knowledge sharing platforms 7) Research protocols and trials 8) Teaching, mentoring 9) Role/behaviour change
<p>13. External spaces:</p>	
<p>f) External spaces: Recognise the potential and possible measures for achieving sustainable outcomes from external spaces and features</p> <p>NOTE ‘Recognise’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of the impact and contribution of external spaces and features • Appreciation of how they can be created and managed • Understanding the detailed aspects of their creation and management 	<ol style="list-style-type: none"> 1) Environmental objectives <ol style="list-style-type: none"> i) SMART objectives ii) Biodiversity iii) Resilience iv) Flood control, including SuDS and water capture v) Durability vi) Whole life carbon vii) Accessibility and inclusivity viii) Management and maintenance 2) Outcomes <ol style="list-style-type: none"> i) User experience ii) Monitoring and feedback iii) Improvements
<p>g) External spaces: Recognise and be able to analyse and determine the sustainable outcomes and goals of the project</p>	<ol style="list-style-type: none"> 1) Ecological assessments 2) Environmental Impact Assessments (EIA) 3) Asset and risk assessments 4) Resource availability 5) Modelling and assessment 6) Consultation and community engagement

<p>h) External spaces: Understand, select and be able to apply best practice approaches and procedures for creating and managing external spaces and features to achieve agreed sustainable outcomes.</p> <p>NOTE 'Apply' comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise skills, knowledge, experience and behaviours • The ability to adapt to identify and deploy emerging and innovative means and techniques • The ability to monitor and evaluate the effectiveness of different approaches 	<ol style="list-style-type: none"> 1) Standards and targets 2) Briefing 3) Design for <ol style="list-style-type: none"> i) Landscape ii) Water iii) Planting iv) Wildlife v) Materials vi) Heritage vii) Informational features viii) Buildings and infrastructure ix) Shared use and co-benefits 4) Nature-based services <ol style="list-style-type: none"> i) Biodiversity net gain and nature recovery ii) Flood mitigation and resilience (e.g. SuDS) iii) Temperature mitigation and control iv) Air quality v) Water quality vi) Noise level reduction 5) Whole-life carbon assessment <ol style="list-style-type: none"> i) Material and resource usage ii) Energy usage 6) Harm limitation and avoidance 7) Trialling and testing 8) Skill and workmanship 9) Comfort and wellbeing 10) Health and exercise opportunities 11) Leisure opportunities 12) Facilities management 13) Experience in use 14) Post-completion evaluation 15) Collecting and processing data
<p>i) External spaces: Understand and be able to achieve compliance with legislation, standards, targets and best practice methodologies</p>	<ol style="list-style-type: none"> 1) Regulation and standards <ol style="list-style-type: none"> i) Planning and Building regulations ii) National Design Guide and Model Design Code iii) Local bye-laws iv) Health and safety regulations v) Sector and professional standards 2) Planning designations, protections and controls 3) Key Performance Indicators (KPIs) 4) Best practice 5) Access and usage controls 6) Data reporting and benchmarking
<p>j) External spaces: Help develop and advance the use, design, operation and maintenance of external spaces to improve sustainable outcomes, including</p>	<ol style="list-style-type: none"> 1) Training courses (including leadership training) 2) Critical/structured thinking techniques 3) Community participation 4) Guided innovation

<p>through:</p> <ul style="list-style-type: none"> • Resetting objectives • Redesign, regeneration and rewilding • Innovation, monitoring and reporting • Knowledge and technology transfer • Sharing experience • Research • Behaviour change 	<ol style="list-style-type: none"> 5) Nature-based solutions 6) Information/knowledge sharing platforms 7) Research protocols and trials 8) Teaching, mentoring 9) Role/behaviour change
<p>14. Infrastructure and accessibility:</p>	
<p>a) Infrastructure and accessibility: Recognise the potential and possible measures for achieving sustainable outcomes from infrastructure interventions</p> <p>NOTE 'Recognise' comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of the impact and contribution of infrastructure provision • Appreciation of how infrastructure can be designed, configured, installed and managed • Understanding the detailed aspects of design, configuration, installation and management 	<ol style="list-style-type: none"> 1) Environmental objectives and impacts <ol style="list-style-type: none"> i) SMART objectives ii) Provision of services iii) Accessibility, connectivity and modal shift iv) Use of nature-based services and solutions v) Biodiversity vi) Resilience vii) Flood control, inc berms, SuDS and water capture viii) Co-benefits, e.g. with other improvements ix) Avoidance of harms x) Durability and life cycle impacts xi) Energy and carbon assessment xii) Management and maintenance xiii) Upgrading 2) Outcomes <ol style="list-style-type: none"> i) User experience ii) Commissioning iii) Social impacts iv) Monitoring and feedback v) Planned improvements
<p>b) Infrastructure and accessibility: Recognise and be able to analyse and determine the sustainable outcomes and goals of the project</p>	<ol style="list-style-type: none"> 1) Sector and professional standards 2) Macro calculations for energy, carbon, pollution etc. 3) Ecological assessments 4) Environmental Impact Assessments (EIA) 5) Asset and risk assessments 6) Co-benefits and synergies 7) Resource availability and use 8) Modelling and assessment, inc. BIM, Digital twins etc. 9) Lifecycle assessments 10) Consultation and community engagement 11) Facility management and maintenance 12) Resilience and durability 13) Lifecycle, upgrade and replacement
<p>c) Infrastructure and accessibility: Understand and be able to apply best</p>	<ol style="list-style-type: none"> 1) Briefing - standards and targets for: <ol style="list-style-type: none"> i) Achieving accessibility, connectivity and

<p>practice approaches and procedures for designing, configuring, installing and managing infrastructure systems to achieve agreed sustainable outcomes.</p> <p>NOTE ‘Apply’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise skills, knowledge, experience and behaviours • The ability to adapt existing skills, knowledge, experience and behaviour to identify and deploy emerging and innovative means and techniques • The ability to monitor and evaluate performance 	<ul style="list-style-type: none"> modal shift ii) Ecological systems recovery iii) Resource efficiency; including water, minerals etc. iv) Avoidance of harm v) Biodiversity net gain and nature recovery vi) Use of nature-based services vii) Climate mitigation – energy efficiency and whole life carbon viii) Climate adaptation, resilience and recovery ix) Durability and longevity x) Maintainability and repairability xi) Social outcomes; Community wellbeing, health, exercise and leisure xii) Safety and security xiii) Nature restoration after construction and at end of use <p>2) Post-completion evaluation</p> <ul style="list-style-type: none"> i) Collecting and processing data ii) Benchmarking iii) Experience in use
<p>d) Infrastructure and accessibility: Understand and be able to achieve compliance with legislation, best practice methodologies, standards and targets</p>	<ul style="list-style-type: none"> 1) Regulation and standards <ul style="list-style-type: none"> i) Infrastructure Act ii) Planning and Building regulations iii) National Design Guide and Model Design Code iv) Local bye-laws v) Environmental regulations vi) Health and safety regulations vii) Sector and professional standards 2) Planning designations, protections and controls 3) Key Performance Indicators (KPIs) 4) Access and usage controls 5) Data reporting and benchmarking
<p>e) Infrastructure and accessibility: Help develop and advance the use, design, operation and maintenance of infrastructure and services to improve sustainable outcomes, including through:</p> <ul style="list-style-type: none"> • Resetting objectives • Redesign • Regenerative / circular economy practice • Nature-based solutions • Innovation, monitoring and reporting • Knowledge and technology transfer • Sharing experience 	<ul style="list-style-type: none"> 1) Training courses (including leadership training) 2) Critical/structured thinking techniques 3) Systems-based approach 4) Community participation 5) Guided innovation 6) Nature-based solutions 7) Information/knowledge sharing platforms 8) Research protocols and trials 9) Teaching, mentoring 10) Role/behaviour change

<ul style="list-style-type: none"> • Research • Behaviour change 	
<p>15. Buildings and interiors:</p>	
<p>f) Buildings and interiors: Recognise potential and applicable measures for achieving sustainable outcomes from building systems, buildings and interiors and their operation and use</p> <p>NOTE 'Recognise' comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of the impact and contribution of buildings • Appreciation of how buildings can be designed, constructed and operated • Understanding the detailed aspects of design, construction and operation 	<ol style="list-style-type: none"> 1) Environmental objectives and impacts <ol style="list-style-type: none"> i) SMART objectives ii) Provision of accommodation and services iii) Accessibility and convenience iv) Use of nature-based services and solutions v) Biodiversity vi) Resilience vii) Avoidance of harms viii) Durability and life cycle ix) Energy and carbon assessment x) Management and maintenance xi) Future upgrading 2) Outcomes <ol style="list-style-type: none"> i) User experience ii) Commissioning iii) Social impact iv) Monitoring and feedback v) Planned improvements
<p>g) Buildings and interiors: Recognise and be able to analyse and determine the sustainable outcomes of building systems, buildings and interiors projects</p>	<ol style="list-style-type: none"> 1) Sector and professional standards 2) Design and planning for: <ol style="list-style-type: none"> i) Location ii) Functionality iii) Accessibility iv) User comfort v) Climate mitigation vi) Climate adaptation vii) Resilience 3) Nature-based services 4) Whole-life carbon assessment <ol style="list-style-type: none"> i) Material and resources ii) Transport and transmission iii) Construction iv) Energy in use v) End of life 5) Social benefits <ol style="list-style-type: none"> i) Community and personal wellbeing ii) Health and quality of life iii) Leisure iv) Health and safety 6) Post-completion evaluation <ol style="list-style-type: none"> i) Collecting and processing data ii) Benchmarking iii) Experience in use
<p>h) Buildings and interiors: Understand, select</p>	<p>1) Briefing - standards and targets for:</p>

<p>and be able to apply best practice approaches and procedures to achieve sustainability objectives from building systems, buildings and interiors projects.</p> <p>NOTE ‘Apply’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise skills, knowledge, experience and behaviours • The ability to adapt existing skills, knowledge, experience and behaviours • The ability to monitor, evaluate and record the performance of buildings 	<ul style="list-style-type: none"> i) Functionality ii) Biodiversity net gain and nature recovery iii) Resource efficiency; inc water, chemicals, minerals etc. iv) Avoidance of harm, including pollutants and virgin materials v) Use of nature-based services vi) Re-use of existing buildings, structures, elements and materials vii) Passive/active systems viii) Climate mitigation – energy sources and efficiency of use, whole life carbon ix) Climate adaptation and resilience x) Comfort and wellbeing xi) Accessibility and convenience xii) Controls and building information systems xiii) Maintainability and repairability xiv) Durability and longevity xv) Social outcomes - public goods and amenity, health, exercise and leisure xvi) Safety and security xvii) Commissioning and improving xviii) Future use and adaptability xix) Disassembly, recyclability and disposal xx) Post-project evaluation xxi) Collecting and processing data xxii) Benchmarking xxiii) Experience in use
<p>i) Buildings and interiors: Understand and be able to achieve compliance with legislation, best practice methodologies, targets and standards</p>	<ul style="list-style-type: none"> 1) Regulations and standards <ul style="list-style-type: none"> i) Planning and Building regulations ii) Local planning policies iii) Environmental controls iv) Health and safety regulations v) Sector and professional standards 2) Planning designations, protections and controls 3) Key Performance Indicators (KPIs) 4) Access and usage controls 5) Data reporting and benchmarking
<p>j) Buildings and interiors: Help develop and advance the use, design, operation and maintenance of buildings and interior spaces to improve sustainable outcomes, including through:</p> <ul style="list-style-type: none"> • Resetting objectives • Redesign, refurbishment, renovation • Change of use 	<ul style="list-style-type: none"> 1) Training courses (including leadership training) 2) Critical/structured thinking techniques 3) Community participation 4) Guided innovation 5) Nature-based solutions 6) Information/knowledge sharing platforms 7) Research protocols and trials 8) Teaching, mentoring

<ul style="list-style-type: none"> • Regenerative / circular economy practice • Nature-based solutions • Innovation, monitoring and reporting • Knowledge and technology transfer • Sharing experience • Research • Behaviour change 	<p>9) Role/behaviour change</p>
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6.6 Performance: Project monitoring, information and feedback, Resilience and adaptation and Emergence response

All sector-specific competence frameworks should demonstrate how they meet the core competence criteria set out in Table 5, contextualized and at an appropriate stage relevant to the role, function, activity or task within the framework’s scope.

Table 6 – Performance: Project monitoring, information and feedback, Resilience and adaptation and Emergency response

Core competence criteria: Performance	Scope
16. Project monitoring, information and feedback:	
<p>a) Project monitoring, information and feedback: Recognise the principles, methods, metrics and experience of providing project information on sustainability performance.</p> <p>NOTE ‘Recognise’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of the range of performance metrics • Appreciation of what and how to measure, monitor and record • Understanding the detailed aspects of measuring, monitoring and recording 	<ol style="list-style-type: none"> 1) Data collection 2) Monitoring opportunities 3) Monitoring techniques 4) Standard performance metrics and KPIs, including: <ol style="list-style-type: none"> i) Energy use ii) Embodied carbon iii) Whole life carbon iv) Waste v) Biodiversity change vi) Water usage vii) Pollutants viii) User experience ix) Health and wellbeing x) Social value xi) Resilience 5) Information processing and aggregation 6) Reporting 7) Benchmarks 8) Budgeting and Cost control 9) Risk 10) Quality Management 11) Feedback mechanisms 12) Exemplar studies
<p>b) Project monitoring, information and feedback: Recognise and be able to</p>	<ol style="list-style-type: none"> 1) Technical guidance 2) Sensors and metering

<p>analyse the optimum methods for monitoring project performance</p> <p>c) Recognise and be able to analyse, compare and report on project performance metrics against sustainable outcomes and benchmarks</p>	<ol style="list-style-type: none"> 3) Occupant surveys 4) Ecology surveys 5) Building passports 6) Data platforms 7) Benchmark standards
<p>d) Project monitoring, information and feedback: Understand and be able to select, apply and manage the monitoring and evaluation of project performance</p> <p>NOTE 'Apply' comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise skills, knowledge, experience and behaviours • The ability to adapt existing skills, knowledge, experience and behaviours • The ability to monitor and evaluate 	<ol style="list-style-type: none"> 1) User satisfaction 2) Temperature 3) Energy use 4) Carbon emissions 5) Water use 6) Air movement and quality 7) Pollutant emissions 8) Waste 9) Biodiversity 10) Soil health 11) Occupant health 12) Productivity
<p>e) Project monitoring, information and feedback: Understand and be able to achieve compliance with legislation, targets, standards and best practice methodologies</p>	<ol style="list-style-type: none"> 1) Regulations and standards <ol style="list-style-type: none"> i) Building regulations ii) CIBSE Technical Memoranda iii) ASHRAE Standards and Guidelines iv) Energy performance/Display Energy Certificates 2) Guidance and protocols <ol style="list-style-type: none"> i) Soft Landings ii) Passivhaus / EnerPhit iii) NABERS iv) Whole Life Carbon Assessment 3) Benchmarking and aggregation <ol style="list-style-type: none"> i) Built Environment Carbon Database
<p>f) Project monitoring, information and feedback: Help to develop and advance project performance monitoring and approaches, equipment and techniques</p> <p>g) Project monitoring, information and feedback: Help to develop and advance project performance reporting and feedback systems including:</p> <ul style="list-style-type: none"> • Metrics; • Shared platforms; • Interpretation; • Research outputs; and • Communications 	<ol style="list-style-type: none"> 1) Project management systems 2) Information/knowledge sharing platforms and media 3) Research protocols and trials 4) Teaching, mentoring 5) Role/behaviour change

17. Resilience and adaptation:	
<p>h) Resilience and adaptation: Recognise the principles and means of achieving resilience in the built environment and the possibilities for its adaption to cope with changing climate and other conditions</p> <p>NOTE ‘Recognise’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of the need for and range of resilience and adaptation measures • Appreciation of the potential forms, use and function of different measures • Understanding in detail the ways measures can be employed including potential disadvantages 	<ol style="list-style-type: none"> 1) Resilience: economic, social and environmental 2) Social cohesion 3) Foresight and prediction 4) Vulnerability and risk assessment 5) Systems thinking 6) Safe failure 7) Capacity redundancy 8) Flexibility and adaptability 9) Component modularity 10) Emergency plans and guidance 11) Management 12) Recovery 13) Resilience measures 14) Adaptation measures
<p>i) Resilience and adaptation: Recognise and analyse risks and requirements, including worst case scenarios, and predicted needs for resilience measures and the adaption requirements of projects</p>	<ol style="list-style-type: none"> 1) Risk assessment 2) Capacity and capability assessment 3) Asset registers 4) Scenario planning 5) Modelling 6) Protection for critical infrastructure and continuity 7) Communication requirements 8) Innovation and technology
<p>j) Resilience and adaptation: Understand and be able to select, apply and manage resilience and adaptation measures over time and into the future</p> <p>NOTE ‘Apply’ comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise skills, knowledge, experience and behaviour for selecting, installing and managing resilience and adaptation measures • The ability to adapt existing skills, knowledge, experience and behaviour to identify and deploy measures • The ability to monitor, evaluate and report 	<ol style="list-style-type: none"> 1) Built environment resilience measures; <ol style="list-style-type: none"> i) Anticipating and assessing risks and risk responses ii) Monitoring and maintenance iii) Climate resilient development (CRD), including Pathways for CRD iv) Prevention measures, e.g. drainage systems and nature-based solutions v) Protective measures, e.g. flood barriers, fire breaks, storm proofing, shading vi) Resistant and restorable environments, e.g. durable buildings, deep rooted trees vii) Sacrificial measures, flood plains viii) Safeguarding critical public assets and services ix) Safeguarding supplies, e.g. clean water and maintaining communication systems 2) Adaptation measures; <ol style="list-style-type: none"> i) Adaption/adaptive pathways ii) Land use planning – see land use section iii) Green and blue infrastructure iv) Use of natural systems v) Landforming

	<ul style="list-style-type: none"> vi) Permeable surfaces and sustainable urban drainage systems (SUDs) vii) Erosion prevention viii) Use of appropriate materials and finishes ix) Retrofitting buildings and environments x) Systems and facility management <p>3) Social measures;</p> <ul style="list-style-type: none"> i) Planning and communication, including early warning systems ii) Education and behaviour iii) Community structures and supports, including shelters and stores iv) Logistics and supplies v) Back up systems vi) Post event assessment
<p>k) Resilience and adaptation: Understand and be able to achieve compliance with legislation, best practice methodologies, targets and plans in place for resilience and adaptation</p>	<ul style="list-style-type: none"> 1) Regulations and standards 2) Local, national and international plans 3) Institutional frameworks and protocols 4) Roles and responsibilities
<p>l) Resilience and adaptation: Help develop and advance improved and evidenced-based means of achieving resilience and adaptation</p>	<ul style="list-style-type: none"> 1) Critical/structured thinking techniques 2) Community action 3) Guided and applied innovation 4) Nature-based solutions 5) Information/knowledge sharing platforms 6) Research
<p>18. Emergency response:</p>	
<p>m) Emergency response: Recognise and maintain awareness of the principles and practice of emergency requirements and responses</p> <p>NOTE 'Recognise' comprises 3 rungs:</p> <ul style="list-style-type: none"> • Awareness of emergency response measures and how to engage them • Appreciation of what measures are available and their potential use and function • Understanding in detail the ways measures perform and their support and maintenance requirements 	<ul style="list-style-type: none"> 1) Public safety in complex and built environments 2) Integrated emergency/safety management: (Anticipate, Assess, Prevent, Prepare, Respond, Recover) 3) Emergency response plans in place 4) Communications protocols 5) Rescue and recovery plans

<p>n) Emergency response: Recognise and be able to analyse the effectiveness of plans for emergency response and recovery, including through:</p> <ul style="list-style-type: none"> • Partnership and collaboration • Understanding and teamwork • Resourcefulness and flexibility 	<ol style="list-style-type: none"> 1) Risk assessment and monitoring 2) Emergency planning development 3) Roles and responsibilities 4) Training and qualification 5) Rehearsals and drills 6) Systems maintenance 7) Logistics and supply chains 8) Emergency and back up supplies
<p>o) Emergency response: Understand and be able to apply capabilities in the preparation and provision of emergency response and recovery measures</p> <p>p) Emergency response: Understand and be able to apply capabilities to enact and provide emergency response and recovery services</p> <p>NOTE 'Apply' comprises 3 rungs:</p> <ul style="list-style-type: none"> • The ability to synthesise skills, knowledge, experience and behaviours for selecting, enacting and managing emergency response measures • The ability to adapt existing skills, knowledge, experience and behaviours to identify and deploy relevant services • The ability to monitor, evaluate and report on performance 	<ol style="list-style-type: none"> 1) Plan initiation 2) Disaster assessment 3) Response measures 4) Communication 5) Recovery measures
<p>q) Emergency response: Understand and be able to achieve compliance with legislation, targets, best practice and agreed standards for emergency response.</p>	<ol style="list-style-type: none"> 1) UK Government legislation and guidance 2) H&SE guidance 3) International and sector best practice 4) Adopted plans 5) Chains of command
<p>r) Emergency response: Help develop and advance improved and evidenced-based means of delivering emergency response</p>	<ol style="list-style-type: none"> 1) Critical/structured thinking techniques 2) Community action 3) Guided innovation 4) Nature-based solutions 5) Information/knowledge sharing platforms 6) Collaboration 7) Research and development programmes

6.7 Knowledge management and communication

All sector-specific competence frameworks should demonstrate how they meet the core criteria set out in Table 7 contextualized and at an appropriate level relevant to role, function, activity or task within the framework’s scope.

Table 7 – Knowledge management and communication

Core competence criteria	Scope
<p>a) Contribute to the recording of, development, collection, organization, and sharing of information about the project’s design, construction, operation, maintenance and refurbishment throughout the project lifecycle to preserve up-to-date critical information, e.g. the golden thread of information.</p> <p>b) Obtain, record, update, share, safeguard and keep secure information about the project described in a).</p>	<ol style="list-style-type: none"> 1) Requirements for documented information at a project, site, premises and organizational level. 2) Capture, issue and maintenance of relevant information; identification of records that should be kept and how those should be retained; obtaining and managing access to information; maintain the golden thread of information, including but not limited to: <ol style="list-style-type: none"> i) digital systems including building management systems, digital records and building information modelling and digital engineering standards and systems; ii) as-designed/as-built information; iii) building maintenance strategy, information and scheduling; iv) testing and commissioning information including acceptance reports; v) inspection reports and any declarations, sign off or notices vi) lifecycle and replacement data; vii) data protection and cyber security; viii) management of deleterious materials including asbestos; ix) information relating to temporary works; x) information relating to safe dismantling or demolition, re-use, recycling, recovery and disposal of building materials and products; xi) operation manuals and building user guides; xii) details of persons or organizations engaged to undertake work, including design work, and their competence; xiii) emergency procedures; and xiv) lessons learned from practices, issues and experience. 3) Research to obtain information, or identify and highlight relevant missing information, especially in existing facilities. 4) Requirements for information to be available to building occupants including residents, visitors and

	<p>staff.</p> <p>5) Management and security requirements for information</p>
<p>c) Effectively communicate issues relating to sustainability and the environment with occupants including residents, clients and members of project or management teams.</p>	<p>1) Requirements/obligations and duties for transparency regarding relevant information, communication using appropriate mechanisms, consultation and response to occupants including residents, emergency services or persons otherwise affected by building and building work, such as duty holders, clients and project team members.</p> <p>2) Balanced, proportionate and factual explanation of approaches to sustainability and the health of the environment, including clear recommendations for mitigating measures in extreme weather conditions.</p>

6.8 The built environment as a system, including construction products and materials

All sector-specific competence frameworks should demonstrate how they meet the core criteria set out in Table 8, contextualized and at an appropriate level relevant to the role, function, activity or task within the framework’s scope.

Table 8 – The built environment as a system, including construction products and materials

Core competence criteria	Scope
<p>a) Coordinate project design, management or construction activities to achieve overall sustainable outcomes</p>	<p>1) Appropriate selection for intended use so that construction products and building systems function individually and together to achieve sustainable outcomes.</p> <p>2) Impact of the standard and applicability of installation on construction product and building system performance, and need for quality assurance and quality management processes.</p> <p>3) Requirements for construction product durability over time, taking building use into account.</p> <p>4) Taking into account the location and context in construction product performance and selection, e.g. local sourcing, size, environmental and weather conditions.</p>

<p>b) Understand construction products and building system characteristics and utilize testing, assessment and maintenance information and procedures to optimize performance throughout the building lifecycle</p>	<ol style="list-style-type: none">1) Use of construction product or building system testing information, including certification, classification and industry approved or sector-recognized standards (alongside as-built design and construction information on existing buildings), to inform design, specification, construction, installation and management decisions.2) Maintenance requirements for construction products and building systems through the project lifecycle, including planning, procuring, monitoring, undertaking or managing maintenance of building fabric and systems.3) Replacement, refurbishment, recycling or safe disposal of construction products and buildings systems at the end of their lifecycle to maintain building safety.4) Notification of building operators, suppliers and manufacturers where defects or mal-operation issues are found in construction products or building systems which impact on sustainable outcomes.
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Annex A (informative) Behavioural competence

COMMENTARY ON ANNEX A

NOTE An extended version of this Annex is available in BSI 8670-1 and should be referred to as necessary. The text below only deals with those aspects of behavioural competence directly relating to sustainability.

A.1 Context for behavioural competence

A strong sustainability culture founded in effective behaviours is needed to re-balance any inadequate custom and practice. Commissioning clients play an important part in setting the tone for this sustainability culture, which then underpins requirements for competence (including behavioural competence) set in sector-specific frameworks.

It is recognized that pressures relating to competition, cost and time, often driven by contractual and procurement conditions can, if unchecked, lead to the development of customs and practices, which can incentivize unethical or undesirable behaviours and lead to poor performance and ineffective sustainability outcomes.

The sustainability culture of an organization is understood to be the product of individual and group values, attitudes, perceptions, competences and patterns of behaviour. These determine the commitment to, and the style and proficiency of, an organization's management. To achieve the desired culture change in built environment industries requires the integration of effective behavioural competence relevant to the role, function, activities and tasks undertaken by individuals.

This annex provides informative text on the core criteria for behavioural competence and ethical standards recommended by this Standard.

In the context of this Standard there are six key behaviour sets that are important in demonstrating suitable behavioural competence:

- ethical principles, standards and conduct;
- leadership, teamwork and communication;
- individual and organizational competence;
- personal responsibility and accountability;
- duty of care to the environment and wider world; and
- duty of care to others including workers, occupants, users and the wider community.

In combination, these behavioural competences can mitigate risks from bad practice and incentivize good behaviours.

A.2 Ethical principles, standards and conduct

A.2.1 General

In the particular case of sustainability in the built environment there is a growing body of opinion that the ethical judgements to be made in the present, during the lifecycle of a project and using standards prevailing at the time of judgement as a basis, must also account for other relevant available knowledge, for instance warnings issued that certain consequences of actions would be very likely or even inevitable. This will apply to acts of omission as well as commission; what we failed to do as much as what we did.

In this context ethical judgements should be both forward looking; seeking to make decisions based on conditions and circumstances that may not exist yet, but could reasonably be assessed to have a

high probability of occurring; and backward looking; seeking to recognise and account for historical behaviour (for instance, of a region in relation to other regions around the world), in order to achieve more equitable future outcomes. These might include, for example, relative levels of historic carbon emissions or a region's relative capability to act to mitigate climate breakdown.

A.2.2 Respect for life, law, the environment and public good

All those involved in the specification, design, manufacture, construction, inspection, assessment, management, operation, maintenance, refurbishment and demolition of buildings have a duty to be familiar with all applicable laws and regulations and give due weight to facts, published standards and guidance, and the wider public interest. This includes acting to:

- a) protect, and aim to improve, the quality of built and natural environments;
- b) hold paramount the wellbeing of others and draw attention to hazards;
- c) ensure their work is lawful, ethical and justifiable;
- d) recognize the importance of physical and cyber security, and data protection;
- e) respect and protect personal information and intellectual property;
- f) maximize the public good and minimize both actual and potential adverse effects for their own and succeeding generations; and
- g) take due account of the limited availability of natural resources.

A.3 Behavioural competences

A.3.1 Leadership, teamwork and communication

Building sustainability extends beyond workplace sustainability culture to include taking into account the sustainability for all those who will interact with a project throughout its lifecycle. This requires a change in behaviour to recognize and act on these longer-term responsibilities.

Strong and visible commitment to prioritize sustainability is required from senior management to develop and sustain effective sustainability cultures within organizations. While this requires leadership at the top, leadership on sustainability is also required at every level throughout the organization, including within teams and by individuals in positions of responsibility.

Sustainability culture also requires projects and management practices where collaboration and teamwork are encouraged. It is important that people are empowered to take action where they have concerns and there has to be a pro-active sustainability culture where those concerns are listened to and acted upon.

In addition, it is important that communication is effective in all directions within and between organizations to identify and manage, understand, agree, implement and manage sustainability approaches and measures.

A.3.2 Individual and organizational competence

To act sustainably, it is important that people understand the limits of their personal competence and the competence of their organization, operate within these limits, and be allowed sufficient time and resource to dedicate to sustainability issues. This can include regular peer-supervised or self-assessment activities to identify areas where improvement is required. Ideally, these will be translated into personal development plans and activities to maintain or develop competence.

A.3.3 Individual responsibility and accountability

It is important that competent individuals clearly understand how their actions can impact on others. This includes potential impacts on work colleagues, the general public and wider society, whether in the immediate project vicinity or further afield, both during and after they have fulfilled their role.

A.3.4 Duty of care to the environment and wider world

A positive sustainability culture requires that everyone with individual responsibility for sustainability in the built environment understands that the built environment has the potential to cause either benefit or harm to both the immediate and wider environment, often with long-lasting or permanent effects. The moral and legal expectations to ensure good environmental outcomes are often expressed in terms of a “duty of care”. It is important that individuals recognize where they have a duty of care to the immediate and wider environment and act accordingly. This includes:

- a) being aware of specific legal requirements and ethical or professional responsibilities for providing good sustainable outcomes;
- b) ensuring their own and, if appropriate, others’ competence to assess, design, specify, construct, maintain and manage projects for the benefit of the overall environment;
- c) having sufficient knowledge of the state and likely future condition of the immediate and wider environment and of the likely impact of interventions, to allow proper assessment of and decisions on mitigating measures to be made and enacted; and
- d) acting to achieve environmentally positive actions at a pace commensurate with or exceeding both the rate and the risk of damage being caused through factors including carbon emissions, pollution, clean water availability and nature depletion.

A.3.5 Duty of care to others, including workers, occupants, users and the wider community

A positive sustainability culture requires that everyone with individual responsibility for sustainability in the built environment understands that the built environment has the potential to cause harm to the both the immediate and wider environment, both now and long into the future. These moral and legal expectations to ensure good environmental outcomes are often expressed in terms of a “duty of care”. It is important that individuals recognize where they have a duty to promote sustainability and act accordingly. This includes:

- a) being aware of specific legal requirements, which impose a duty of care and understanding good practice in complying with those duties;
- b) taking reasonable steps to understand and manage their own competence to design, construct, maintain and manage the build environment and its associated local environment sustainably and to achieve wellbeing;
- c) understanding the importance of effective consultation and communication with clients, occupants and others likely to be affected by the built environment or building work;
- d) taking into accounts factors that affect diversity and inclusion for individuals who occupy or are affected by the built environment or building work.
- e) taking into account future generations, including future users of the project and others impacted by the wider ramifications of its resourcing, construction, operation, maintenance, re-use and disposal; and
- f) being aware of accrued moral responsibilities to others, both individuals and communities and their successors, impacted by works to the built environment over time and the obligation to act appropriately and promptly in redress.

Annex B Terms and definitions

COMMENTARY ON ANNEX B

The list of terms in this annex is not intended to be comprehensive, but for the purposes of this Standard, the following definitions apply.

- B.1 accessibility**
the ease with which people may reach destinations³
- B.2 accountability**
the liability to ensure that a task is satisfactorily done⁴
- B.3 acuity**
the ability to perceive and think accurately and clearly
- B.4 adaptability**
the ease with which projects can be physically modified, deconstructed, refurbished, reconfigured, repurposed, and/or expanded⁵
- B.5 adaptation**
in human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate⁶
- B.6 aftercare**
support for the asset to meet its optimum performance and support the end operators and users in providing an environment that supports the required performance. Aftercare starts when the project passes from its final construction phase and into full time occupancy⁷
- B.7 airtightness**
the resistance of the building envelope to infiltration. The greater the airtightness at a given pressure difference across the envelope, the lower the infiltration⁸
- B.8 anthropogenic**

³ Sundquist, E., McCahill, C., Brenneis, M., *Measuring Accessibility: A guide for transportation and land use practitioners*, (2012), State Smart Transport Transportation Initiative. Available from <https://ssti.us/wp-content/uploads/sites/1303/2020/12/Measuring-Accessibility-Final.pdf>

⁴ See: McGrath, S.K. and Whitty, S.J., *Accountability and responsibility defined*, (2018), International Journal of Managing Projects in Business, Vol. 11 No. 3, pp. 687-707. <https://doi.org/10.1108/IJMPB-06-2017-0058>

⁵ Ross, B.E.; Chen, D.A.; Conejos, S.; Khademi, A. *Enabling Adaptable Buildings: Results of a Preliminary Expert Survey*. Procedia Eng. 2015, 145, 420–427, doi:10.1016/j.proeng.2016.04.009.

⁶ IPCC, (2012) Glossary of terms. In: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press, Cambridge, UK, and New York, NY, USA, pp. 555-564. Available at https://archive.ipcc.ch/pdf/special-reports/srex/SREX-Annex_Glossary.pdf

⁷ UK Cabinet Office, *Government Soft Landings, Section 8- Planning for Aftercare* (2013). Available at <https://www.cdbb.cam.ac.uk/system/files/documents/GovernmentSoftLandingsSection8PlanningforAftercare.pdf>.

⁸ The Building Regulations 2010, *Approved Document F*, HM Government

resulting from or produced by human activities⁹

B.9 ASHRAE standards and guidelines

technical documents published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

B.10 assessment

evaluation and documentation of the level of learning, skills, knowledge, experience and behaviour of an individual

B.11 asset

physical entity forming part of a network and/or system that has potential or actual value to an organization and its stakeholders

NOTE For the purpose of this document, buildings are regarded as assets. They are serviced by infrastructure networks, which combined form different systems as part of the built environment¹⁰

B.12 asset register

a comprehensive record-keeping system that tracks and manages an organization's assets along with relevant information such as location, condition and value¹¹

B.13 behaviour

observable things that an individual or organization does or does not do¹²

B.14 behaviour change

alterations to individual behaviour that result in measurable contributions to achieving or impeding sustainability goals

B.15 benchmarking

the process of comparing performance and outcomes against equivalent outcomes from projects, standards and best practice examples of a similar type

B.16 biodiversity

variability among living organisms, including terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are a part

NOTE This includes diversity within species, between species and of ecosystems¹³

B.17 biodiversity net gain (BNG)

specific, quantifiable outcome of project activities that deliver demonstrable benefits for biodiversity compared to the baseline situation

NOTE In order to achieve BNG, a project has to follow the mitigation hierarchy and be able to demonstrate that it has followed the BNG Good Practice Principles for development¹⁴

B.18 biomimicry

the practice of learning from the natural world to solve engineering and design challenges¹⁵

⁹ IPCC, *Sixth Assessment Report, Annex VII - Glossary* (2022)

¹⁰ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023)

¹¹ Prasanth, *What is an asset register, and what are the benefits of maintaining asset registers*, (2023) Infraon. Available at <https://infraon.io/blog/what-is-an-asset-register/> [Accessed 29/8/24]

¹² BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024) (modified)

¹³ BSI, *Process for designing and implementing Biodiversity Net Gain - Specification BS 8683:2021* (2021)

¹⁴ BSI, *Process for designing and implementing Biodiversity Net Gain - Specification BS 8683:2021* (2021)

¹⁵ Royal Botanic Gardens Kew, Available at <https://www.kew.org/read-and-watch/biomimicry>

- B.19 biophilia**
an approach to design for the built environment that integrates nature to enhance and improve wellbeing¹⁶
- B.20 blue infrastructure**
infrastructure elements and connections including rivers, canals, ponds, wetlands, floodplains and water treatment facilities¹⁷
- B.21 building**
structure, usually enclosed by walls and a roof, constructed to provide support or shelter for intended occupancy¹⁸
- B.22 building energy management**
the act of energy conservation in a project through identifying and monitoring energy consumption and directing building and user behaviour to decrease energy consumption and costs¹⁹
- B.23 building passport**
a whole life cycle repository of building information covering a building's administrative documentation as well as data regarding its plot and location, its technical and functional characteristics, and its environmental, social and financial performance²⁰
- B.24 building services**
the systems required for the safe, comfortable and efficient operation of the built environment. This includes energy supply and distribution, heating, air-conditioning, ventilation, refrigeration, lighting, lifts, escalators, IT networks, security, alarms, fire detection and fire protection²¹
- B.25 building system**
assembly of construction products²²
- B.26 built environment**
collection of human-made or induced physical objects located in a particular area or region and, when treated as a whole, typically is taken to include buildings, external works (landscaped areas), infrastructure, and the products of construction works within the area under consideration²³

¹⁶ UCEM, *What is biophilic architecture?* (2024). Available at <https://www.ucem.ac.uk/whats-happening/articles/biophilia-examples-built-environment/>

¹⁷ Dolman, N. and O'Donnell, E., *5 lessons learned from blue-green infrastructure delivery* (2021), Institution of Civil Engineers. Available at <https://www.ice.org.uk/news-insight/news-and-blogs/ice-blogs/the-civil-engineer-blog/5-lessons-learned-from-blue-green-infrastructure-delivery>

¹⁸ BSI, *Sustainability in buildings and civil engineering works – General principles* BS ISO 15392:2019, Ed 2., (2019)

¹⁹ Encyclopedia of Sustainable Management, (2023), Springer link. Available at https://link.springer.com/referenceworkentry/10.1007/978-3-031-25984-5_82

²⁰ Hartenberger, U., Ostermeyer, Y., & Lützkendorf, T. *The building passport: A tool for capturing and managing whole life data and information in construction and real estate. Practical guideline.* (2021). Global Alliance for Buildings and Construction (GABC). Available at https://globalabc.org/sites/default/files/2021-09/GABC_The-Building-Passport_FINAL.pdf

²¹ Lam, C. *Useful Information Guide NB BG 87/2024*, (2024), BSRIA

²² BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

²³ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023)

- B.27 carbon dioxide equivalent (CO₂e)**
unit for comparing the radiative forcing of greenhouse gases (GHGs) to carbon dioxide
- NOTE The carbon dioxide equivalent is calculated using the mass of a given GHG multiplied by its global warming potential²⁴*
- B.28 carbon emissions**
the amount of greenhouse gases released to the atmosphere by a project, sector, activity or other defined category, expressed as the carbon dioxide equivalent
- B.29 carbon hotspot**
the elements of the built environment at different scales that encompass high or intense levels of carbon emissions and that can be targeted for readily available carbon reductions
- B.30 carbon management**
assessment, reduction and removal of greenhouse gas emissions during the planning, optioneering, design, delivery, operation, use end of life (and beyond) of new, or the management of existing, assets, networks and/or systems²⁵
- B.31 carbon sequestration**
the process by which CO₂ is removed from the atmosphere and incorporated as biogenic carbon in biomass and soils through photosynthesis and other processes associated with the carbon cycle²⁶
- B.32 carbon sink**
an absorber of carbon (usually in the form of carbon dioxide). Natural carbon sinks include forests and oceans²⁷
- B.33 chain of custody**
a documented account of the people or entities that handle a product (and its constituent parts or ingredients), from its journey from raw material to the end customer
- B.34 CIBSE Technical Memoranda**
technical documents published by the Chartered Institute of Building Services Engineers (CIBSE)
- B.35 circular economy**
economy that is restorative and regenerative by design, and which aims to keep products, components and materials at their highest utility and value at all times, distinguishing between technical and biological cycles
- NOTE Circular economy principles can be applied across all work stages of projects and/or programmes of work to assess materials/products in terms of reuse and recycling potential after end of life, as well as their flexibility in being repurposed or retrofitted whilst satisfying the whole life performance required from their respective assets and networks²⁸*

²⁴ BSI, *Sustainability in buildings and civil engineering works – General principles* BS ISO 15392:2019, Ed 2., (2019) (modified – note 2 deleted)

²⁵ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023)

²⁶ WLCN & LETI, *Carbon Definitions for the Built Environment, Buildings and Infrastructure, Version 'A'*, (2021). Available from https://www.leti.uk/files/ugd/252d09_879cb72cebea4587aa860b05e187a32a.pdf (modified)

²⁷ Committee on Climate Change, *The Fourth Climate Budget: Reducing emissions through the 2020s*, (2010)

²⁸ BSI, *Carbon management in buildings and infrastructure ISO 20400:2017, 3.1 / PAS 2080:2023* (2023)

B.36 climate and biodiversity emergencies

declared crises caused by ‘unprecedented changes in climate and biodiversity that, driven by human activities, have combined and increasingly threaten nature, human lives, livelihoods and well-being around the world.’²⁹

B.37 climate change

the change of climate, which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods³⁰

B.38 climate mitigation

a human intervention to reduce emissions or enhance the sinks of greenhouse gases³¹

B.39 climate-related financial risks

a set of potential risks that may result from climate change and that could potentially impact the safety and soundness of individual financial institutions and have broader financial stability implications for the banking system. These risks are typically classified as physical and transition risks³²

B.40 climate-related financial disclosure (CFD)

mandatory disclosures on climate change-related risks and opportunities, where these are material, covering how climate change is addressed in corporate governance; the impacts on strategy; how climate-related risks and opportunities are managed; and the performance measures and targets applied in managing these issues³³

B.41 co-benefits

added benefits of sustainability measures, above and beyond their direct intended benefits

NOTE Examples of co-benefits include, but are not limited to, reduced air pollution, increased resilience, reduced cost and risks, employment possibilities, security, social justice, nature restoration and regeneration and biodiversity net gain³⁴

B.42 competence

application of skills, knowledge, experience and behaviour to achieve a defined outcome³⁵

B.43 competence assessment

evaluation of an individual’s performance against competence requirements, supported by documentary evidence

²⁹ Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), *Press release* (2021)

³⁰ United Nations, *UN Framework Convention on Climate Change*, (1994)

³¹ IPCC, *Sixth Assessment Report, Annex VII - Glossary* (2022)

³² UKGBC, *A Framework for Measuring and Reporting of Climate-related Physical Risks to Built Assets*, (2022)

³³ Department for Business, Energy and Industrial Strategy (BEIS), *Mandatory climate-related financial disclosures by publicly quoted companies, large private companies and LLPs*, (2022). Available at <https://assets.publishing.service.gov.uk/media/62138625d3bf7f4f05879a21/mandatory-climate-related-financial-disclosures-publicly-quoted-private-cos-llps.pdf>

³⁴ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023) (modified)

³⁵ BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

B.44 competence framework

procedures and requirements for the development, assessment and maintenance of agreed skills, knowledge, experience and behaviours required for an individual undertaking a role, function, activity or task in order to perform their work to predetermined standards and expectations, and to maintain or improve their performance over time³⁶

B.45 competence management

systematic identification, development, assessment, deployment and maintenance of the skills, knowledge, experience and behaviours required to fulfil responsibilities and to perform activities or tasks to recognized standards of competence³⁷

B.46 competent person

a person with a recognised relevant qualification, sufficient experience and membership of a relevant professional or other organisation³⁸

B.47 construction product

product, substance or collection thereof that has been manufactured, refined or processed and declared by its manufacturer for an intended end use for temporary and/or permanent inclusion in building or civil engineering works, refurbishment or maintenance³⁹

B.48 continuing professional development (CPD)

activities undertaken by an individual to maintain and develop competence, including formal and informal learning, self-assessment, obtaining feedback and identifying areas for improvement⁴⁰

B.49 culture change

alterations to organizational and group understanding, expectations and behaviours that result in measurable contributions to achieving or impeding sustainability goals

B.50 cycles – diurnal and annual

patterns that recur every 24 hours (diurnal) or every year (annual) typically describing phenomena such as changes in levels of daylight, temperature, rainfall, CO₂ or biological activity

B.51 demolition

removal in part or whole of a structure or building and authorised disposal of the resulting materials and components

B.52 digital twin

a virtual representation of real-world entities and processes, synchronised at a specified frequency and fidelity⁴¹

a digital twin can be used to simulate real situations and their outcomes and provide services relating, but not limited to; design, integration, testing, construction, operating, monitoring, maintenance and demolition throughout a project's lifecycle

³⁶ ibid

³⁷ ibid

³⁸ Department of Levelling Up, Housing & Communities (DLUHC), *National Planning Policy Framework*, (2023) (modified)

³⁹ BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

⁴⁰ ibid

⁴¹ Digital Twin Consortium, *Definition of a Digital Twin*, (2020). Available at: <https://www.digitaltwinconsortium.org/hot-topics/the-definition-of-a-digital-twin/> [Accessed 21/8/24]

- B.53 disassembly**
non-destructive taking-apart of a construction works or constructed asset into constituent materials or components⁴²
- B.54 Display Energy Certificate (DEC)**
shows the amount of energy consumed during the occupation of a building over a period of 12 months⁴³
- B.55 disposal**
the lowest level of the waste hierarchy involving removal to landfill or incineration without energy recovery⁴⁴
- B.56 Doughnut Economics**
a visual framework for sustainable development – shaped like a doughnut – ⁴⁵ combining the concept of planetary boundaries with the complementary concept of social boundaries
- B.57 duty**
a responsibility to do something because it is legally or morally right to do it⁴⁶
- B.58 duty of care**
a duty recognized by law⁴⁷ to act with reasonable skill and care, to the standard of competence expected of another equivalently qualified person, to avoid posing an unreasonable risk of harm to others
- B.59 duty-holder**
key role (whether fulfilled by an individual or organization) assigned specific responsibilities at particular phases of the building life cycle⁴⁸
- B.60 ecological**
relating to the distribution and abundance of species, the interaction between species and their environment and the structure and function of ecosystems⁴⁹
- B.61 embodied biodiversity impacts**
the impacts on biodiversity as a result of all of the processes that take place throughout a material's or product's lifecycle, which are not covered by other metrics such as biodiversity net gain⁵⁰

⁴² ISO 15392:—, 3.11, modified

⁴³ MHCLG, *Energy Performance of Building Certificates: glossary* (2021) Accessible from https://assets.publishing.service.gov.uk/media/60acff14d3bf7f7380ffb662/Energy_Performance_of_Buildings_Certificates_-_glossary.pdf, [Accessed 22/8/24]

⁴⁴ Department for Environment, Food & Rural Affairs (Defra), *Guidance on Applying the Waste Hierarchy*, (2011). Available at: <https://assets.publishing.service.gov.uk/media/5a795abde5274a2acd18c223/pb13530-waste-hierarchy-guidance.pdf>

⁴⁵ Raworth, K., *A Safe and Just Space for Humanity: Can we live within the doughnut*, (2012), Oxfam Discussion Papers. Accessible at https://www-cdn.oxfam.org/s3fs-public/file_attachments/dp-a-safe-and-just-space-for-humanity-130212-en_5.pdf

⁴⁶ Cambridge Dictionary

⁴⁷ For example - Section 13 of *The Supply of Goods and Services Act 1982*

⁴⁸ Hackett, J. *Building a Safer Future: Independent Review of Building Regulations and Fire Safety – Final Report*, (2018), MHCLG

⁴⁹ BSI, *Biodiversity: Code of practice for planning and development BS 42020:2013* (2013)

⁵⁰ Expedition Engineering and Institution of Civil Engineers (ICE), *The Embodied Biodiversity Impacts of Construction Materials: Research Report*, (2023)

B.62 embodied carbon

the total GHG emissions and removals associated with materials and construction processes in the creation to end-of-life treatment of an asset, network or system, and with its maintenance and refurbishment

NOTE This Standard recognizes the use of the established terms “capital carbon” and “upfront carbon” by parts of the sector (in accordance with existing life cycle assessments standards and guidance) to refer to similar stages of a whole life carbon assessment. For the purpose of this document, “embodied carbon” is the preferred terminology.⁵¹

B.63 end of life

stage which begins when the asset has reached the end of its design life and is ready for refurbishment, retrofit, disposal, dismantling etc., and ends when the asset is recycled, reused, recovered or returned to nature (combustion, deterioration)⁵²

B.64 energy autonomy

local energy generation and use, providing a self-sufficient power balance between demand and supply within a set time span⁵³

B.65 Energy Performance Certificate (EPC)

records how energy efficient a property is as a building, using an A+ to G rating scale (or A to G in the case of a building that is a dwelling) where A+ is the most efficient and G is the least efficient)⁵⁴

B.66 energy storage

installation able to absorb energy, to store energy for a certain duration and to provide energy⁵⁵

B.67 Environmental Impact Assessment (EIA)

formal process used to assess the potential environmental impacts of a planned policy, project or programme

B.68 environmental performance

the measured performance of a project, process, system or organization as recorded against environmental policy, objectives, standards or other indicators

B.69 Environmental Product Declaration (EPD)

a document that clearly shows the environmental performance or impact of any product or material over its lifetime⁵⁶

⁵¹ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023) (modified)

⁵² *ibid*

⁵³ Juntunen, J., Martiskainen, M., *Improving understanding of energy autonomy: A systematic review*, (2021), Renewable and Sustainable Energy Reviews V141, 110797, Accessible from <https://doi.org/10.1016/j.rser.2021.110797> (modified)

⁵⁴ MHCLG, *Energy Performance of Building Certificates: glossary* (2021) Accessible from https://assets.publishing.service.gov.uk/media/60acff14d3bf7f7380ffb662/Energy_Performance_of_Buildings_Certificates_-_glossary.pdf, [Accessed 22/8/24]

⁵⁵ BSI, *Electrical energy storage (EES) systems BS EN IEC 62933-1:2024. Vocabulary*

⁵⁶ RICS, *Whole life carbon assessment for the built environment, Global, 2nd edition* (2023)

B.70 environmental standards

requirements, whether administrative, legal, regulatory or voluntary, for establishing environmental management policies, determining environmental impacts of products or services, planning environmental objectives, implementing programs to meet objectives, and conducting corrective action and management review⁵⁷

B.71 equal opportunities

an equal distribution, among individuals, of opportunities for education, training, employment, career development and the exercise of power without their being disadvantaged on the basis of their sex, race, language, religion, economic or family situation, and so forth⁵⁸

B.72 equality, diversity and inclusion (EDI)

organizational framework which seeks to promote the fair treatment and full participation of all people, particularly groups who have historically been underrepresented or subject to discrimination on the basis of identity or disability

B.73 ESG

a set of standards (**environment, social and governance**) collectively used to measure an organization's environmental and social impact and risk management

B.74 ethical practice

the application of ethical values and codes of practice to individual and organizational behaviour⁵⁹

B.75 experience

participation in relevant activities or observation of facts and events leading to acquisition or improvement of knowledge and skills⁶⁰

B.76 fabric energy efficiency

a measure of the 'useful' energy demand of a building. It is affected only by the fabric of the building and quantifies the space heating and space cooling energy demands⁶¹

B.77 facilities management

an organizational function to help maintain and improve the built environment through managing people, systems and processes

B.78 feedback

the process in which information and data on project outcomes is returned as inputs to improve future outcomes, either directly or through a process of assessment, evaluation, dissemination and learning

⁵⁷ American Society for Quality (ASQ), *What is the ISO 14000 Standards Series*, Available at <https://asq.org/quality-resources/iso-14000>, (modified)

⁵⁸ *Directive 2006/54/EC of the European Parliament*. Available at <https://www.eurofound.europa.eu/en/european-industrial-relations-dictionary/equal-opportunities>

⁵⁹ CIPD, *Ethical practice and the role of people professionals*, (2023) – available at <https://www.cipd.org/uk/knowledge/factsheets/ethics-role-hr-factsheet/> [Accessed 29/8/24] (modified)

⁶⁰ BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

⁶¹ Department for Levelling Up, Housing & Communities, *The Future Homes and Buildings Standards: 2023 consultation* (2023). Available at <https://www.gov.uk/government/consultations/the-future-homes-and-buildings-standards-2023-consultation/the-future-homes-and-buildings-standards-2023-consultation> [accessed 22/8/24]

- B.79 forever chemical**
a class of chemicals, including per- and polyfluorinated alkyl substances (PFAS), that persist in the environment for decades without breaking down
- B.80 form factor**
the ratio between the external surface area and the internal treated floor area⁶²
- B.81 formal learning**
organized and structured learning objectives⁶³
- B.82 framework owner**
person(s) involved in the development, oversight and maintenance of a competence framework⁶⁴
- B.83 future generations**
those generations that do not yet exist, are yet to come and who will eventually inherit this planet⁶⁵
- B.84 golden thread of information**
recording, developing, collecting, organizing and sharing of information by duty holders or accountable persons in accordance with prescribed standards to facilitate full and continued accessibility to that information throughout the life cycle of a building⁶⁶
- B.85 Global Reporting Initiative (GRI)**
an organization that provides a platform for reporting corporate sustainability information against a single, coherent global set of standards – see www.globalreporting.org
- B.86 green infrastructure**
infrastructure elements and connections including trees, forests and parks⁶⁷
- B.87 heat network**
a supply of heat from a central source to individual consumer units, commonly via distribution pipes carrying hot water or steam. Also known as District Heating.
- B.88 heat recovery**
a system that utilises exhaust or waste heat from outward flows from spaces and equipment to warm inward supplies via a heat exchanger. Examples include air-to-air and water-to-water heat recovery.
- B.89 horizon scanning**
a systematic and proactive foresight method for identifying and responding to early signals of change⁶⁸

⁶² Mcleod, R., Mead, K. Standen, M., *Passivhaus primer: Designer's guide: A guide for the design team and local authorities*, BRE. Available at https://passivehouse-international.org/upload/BRE_Passivhaus_Designers_Guide.pdf, [Accessed 22/8/24]

⁶³ BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

⁶⁴ ibid

⁶⁵ Unesco, *Youth and future generations* (2024) see - <https://www.unesco.org/en/articles/youth-and-future-generations>

⁶⁶ BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

⁶⁷ Dolman, N. and O'Donnell, E., *5 lessons learned from blue-green infrastructure delivery* (2021), Institution of Civil Engineers. Available at <https://www.ice.org.uk/news-insight/news-and-blogs/ice-blogs/the-civil-engineer-blog/5-lessons-learned-from-blue-green-infrastructure-delivery>

⁶⁸ See - <https://www.gov.uk/government/news/horizon-scanning-programme-a-new-approach-for-policy-making>

- B.90 impacts**
the consequences of realised risks on natural and human systems. Impacts generally refer to effects on lives, livelihoods, health and wellbeing, ecosystems and species, economic, social and cultural assets, services (including ecosystem services), and infrastructure. Impacts may be referred to as consequences or outcomes, and can be adverse or beneficial⁶⁹
- B.91 individual**
single human being⁷⁰
- B.92 influence**
ability of a value chain member to support other value chain members to take sustainability decisions⁷¹
- B.93 informal learning**
self-directed learning or learning from experience⁷²
- B.94 information/knowledge sharing platform**
a centralized online repository where individuals and organizations can access, share, organize and store information
- B.95 key performance indicators (KPI)**
factors by reference to which the development or performance of the project, programme, system or organization can be measured effectively⁷³
- B.96 knowledge**
assimilation of facts, theories and practices in relation to a given role, function activity or task⁷⁴
- B.97 knowledge management**
a holistic, cross-functional discipline and set of practices concerned with the way organisations create and use knowledge to improve outcomes⁷⁵
- B.98 leadership**
ability of an individual, group or organization to lead, influence or guide other individuals, teams or entire organizations⁷⁶
- B.99 life cycle**
consecutive and interlinked stages of a product, equipment or service, from raw material acquisition or generation from natural resources to design, production, transportation/delivery, use, end-of-life treatment and final disposal⁷⁷

⁶⁹ IPCC, *Sixth Assessment Report, Annex VII - Glossary* (2022)

⁷⁰ BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

⁷¹ BSI, *PAS 2080:2023 Carbon management in buildings and infrastructure* (2023) (modified)

⁷² BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

⁷³ Modified from the definition in *The Companies Act 2006, section 414(5)*

⁷⁴ BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

⁷⁵ *APM Body of Knowledge, 7th Edition*

⁷⁶ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023)

⁷⁷ *ibid*

B.100 lifecycle assessment

methodology used to quantitatively assess the environmental performance (e.g. emissions) of a product or service from its cradle to grave⁷⁸

B.101 mapping competence

a process used to identify and define the skills, knowledge, experience and behaviours required to define a competency for a specific sector or discipline

B.102 material passport

an instrument that offers a platform and repository for storing, linking and providing relevant information actors along the value chain. They can be created with different levels of data, creating different types of passports, from material and products, up to building-level passports⁷⁹

B.103 mental health

a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community. It is an integral component of health and wellbeing that underpins our individual and collective abilities to make decisions, build relationships and shape the world we live in. Mental health is a basic human right. And it is crucial to personal, community and socio-economic development⁸⁰.

B.104 mentoring

a relationship in which a more experienced colleague shares their greater knowledge to support the development of an inexperienced individual⁸¹

B.105 metering

capturing, aggregating, and analysing real-time data related to the usage of resources or services⁸²

B.106 microclimate

local climate at or near the Earth's surface⁸³

B.107 mitigation hierarchy

hierarchical sequence of actions to anticipate and avoid impacts on biodiversity or ecosystem services; and, where avoidance is not possible, minimize; where impacts occur, restore; and finally where significant residual impacts remain, offset

NOTE 1 *Its application requires taking each step in turn, focusing on all possibilities before moving on to the next step*

NOTE 2 *The term “compensation” is sometimes used interchangeably with “offset”⁸⁴*

⁷⁸ Committee on Climate Change, *The Fourth Climate Budget: Reducing emissions through the 2020s*, (2010)

⁷⁹ Wilde, C., *What are Material Passports and what are the benefits of using them?* (2024), UKGBC. Available at <https://ukgbc.org/news/what-are-material-passports-and-what-are-the-benefits-of-using-them/> [Accessed 22/8/24]

⁸⁰ World Health Organization, *Mental Health*, (2022). Available at <https://www.who.int/news-room/fact-sheets/detail/mental-health-strengthening-our-response>. [Accessed 22/8/24]

⁸¹ CIPD, *Coaching and mentoring* (2024). Available at <https://www.cipd.org/uk/knowledge/factsheets/coaching-mentoring-factsheet/>. [Accessed 22/8/24]

⁸² Poquiz, R., *Metering its Modern Significance and Pioneering Opportunities*, (2023), Digital Route. Available from <https://www.digitalroute.com/blog/metering/> [Accessed 22/8/24]

⁸³ IPCC, *Sixth Assessment Report, Annex VII - Glossary* (2022)

⁸⁴ Cross Sector Biodiversity Initiative. *A cross-sector guide for implementing the Mitigation Hierarchy*, (2015), CSBI

B.108 modal shift

a change from one form of transportation to another for passengers or freight

B.109 NABERS (National Australian Built Environment Rating System)

A standardised rating system that measures the environmental performance of buildings providing a rating from one to six stars for buildings' efficiency across:

- Energy
- Water
- Waste
- Indoor environment⁸⁵

B.110 National TOMs

a minimum reporting standard for measuring social value – the National Themes Outcomes and Measures (TOMs) Framework 2019⁸⁶

B.111 natural capital

includes certain stocks of the elements of nature that have value to society, such as forests, fisheries, rivers, biodiversity, land and minerals. Natural capital includes both the living and non-living aspects of ecosystems.

Stocks of natural capital provide flows of environmental or 'ecosystem' services over time⁸⁷

B.112 natural systems

naturally occurring living and non-living systems - also known as ecosystems

B.113 nature recovery

active restoration of natural systems to achieve aims including, but not limited to: enhancing sites; creating and restoring wildlife habitats; improving resilience; managing flood risk; sustaining vital ecosystems that provide healthy soil, clean water and clear air; protecting natural, geological and cultural diversity; and providing better green spaces to improve health and wellbeing⁸⁸

B.114 nature-based solutions

actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human wellbeing and biodiversity benefits⁸⁹

B.115 nature-related financial risks

financial risks that arise from changes in the stock and/or condition of natural capital and from societal responses to those changes. These risks can arise from three channels or 'risk factors': physical, transition and litigation⁹⁰

⁸⁵ See <https://www.nabers.gov.au/>

⁸⁶ See *National TOMs Framework 2019 for social value measurement: Guidance*, National Social Value Taskforce, <https://www.local.gov.uk/sites/default/files/documents/National%20TOMs%202019%20Guidance%201.0.pdf>

⁸⁷ HM Treasury, *The Green Book: Central Government guidance on appraisal and evaluation*, (2022)

⁸⁸ Department for Environment Food & Rural Affairs (Defra), *The Nature Recovery Network* (2024). Available at: <https://www.gov.uk/government/publications/nature-recovery-network/nature-recovery-network>

⁸⁹ BSI, *PAS 2080:2023 Carbon management in buildings and infrastructure*, (2023)

⁹⁰ Dasgupta. P. *The Economics of Biodiversity: The Dasgupta Review*, (2021) HM Treasury, p506

- B.116 nature-related financial disclosure (NFD)**
a reporting initiative for organizations to monitor, assess and transparently disclose their risks, dependencies and impacts on biodiversity⁹¹ - see <https://tnfd.global/>
- B.117 net zero**
reduction of anthropogenic greenhouse gas emissions to zero or to a residual level that is consistent with reaching net zero emissions in eligible 1.5°C pathways (hence time-bound) and neutralizing the impact of residual emissions (if any) by removing an equivalent volume of carbon⁹²
- B.118 nutrient neutrality**
a legal measure to ensure there is no net increase in nutrients as a result of a development plan or project⁹³
- B.119 obligation**
a legal, ethical or social duty to do, or not do, something
- B.120 offsetting**
a means of compensating for an action or occurrence in one location by an equivalent, balancing action elsewhere, leading to an overall neutral outcome within a set time period and, if required, geographical area
- B.121 operation and maintenance (O&M)**
services, competencies, processes and tools required to ensure built environment projects continue to meet the performance standards planned and required
- B.122 operational carbon**
greenhouse gas emissions and removals associated with the operation of an asset, network and/or system required to enable it to operate and deliver its service⁹⁴
- B.123 organization**
company, corporation, firm, enterprise, authority or institution, or part or combination thereof, public or private, that has its own function and administration⁹⁵
- B.124 orientation**
the alignment of a building or structure in relation to external factors, including neighbouring features, daylight, wind direction, access etc.
- B.125 parametric analysis**
the technique of representing processes that cannot be explicitly resolved at the spatial or temporal resolution of the model (sub-grid scale processes) by relationships between model-resolved larger-scale variables and the area- or time-averaged effect of such subgrid scale processes⁹⁶
- B.126 peak energy demand reduction**
strategies to even out energy demand across diurnal or annual cycles with the aim of reducing stress on generating, transmission and distribution systems and/or utilising spare generating capacity. Strategies can be targeted at local, regional or transnational scales

⁹¹ UNDP, *Supporting Nature related financial disclosures* – see <https://www.undp.org/nature/our-flagship-initiatives/tnfd>

⁹² BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023)

⁹³ See Natural England, *Nutrient Neutrality Principles (TIN186)*, (2023) – Available at <https://publications.naturalengland.org.uk/file/5655965047980032>

⁹⁴ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023)

⁹⁵ *ibid*

⁹⁶ IPCC, *Sixth Assessment Report, Annex VII - Glossary* (2022)

B.127 performance in-use

how a building or project and its elements are performing during normal use, including, but not limited to: internal air quality, energy and water use, occupant comfort and satisfaction, building services and operating strategies

B.128 performance monitoring

regular or continuous monitoring and metering of building and project performance

B.129 planetary boundaries

Earth system processes critical for maintaining the stable state of the Holocene, such as biosphere integrity, land-use change and climate change. Although not all these processes have definable single thresholds, crossing the boundaries increases the risk of large-scale, potentially irreversible, environmental changes⁹⁷

B.130 post-project evaluation

formal post-completion evaluation of a project's performance in terms of budget, timeline, and deliverables - including assessment of performance in-use data - with the aim of learning lessons, sharing insights and improving the performance of future projects

B.131 primary energy

energy that has not been subjected to any conversion or transformation process. Primary energy includes non-renewable energy and renewable energy. If both are taken into account it can be called total primary energy

For a building, it is the energy used to produce the energy delivered to the building. It is calculated from the delivered and exported amounts of energy carriers, using conversion factors⁹⁸

B.132 prior learning

formal or informal learning used as a reference point for the likely skills, knowledge and experience required to competently undertake a specific role, including qualification, certification and training⁹⁹

B.133 procurement

the process by which products and services are acquired from an external provider for incorporation into the project, programme or service¹⁰⁰

B.134 project

a unique process, consisting of a set of coordinated activities and controlled resources undertaken to achieve certain objectives that can take place at the asset, network or system level¹⁰¹

B.135 PAS

a standardization document that closely resembles a British Standard in structure and format but which has a different development model¹⁰²

⁹⁷ Dasgupta. P. (2021) *The Economics of Biodiversity: The Dasgupta Review*, HM Treasury, p506

⁹⁸ International Energy Agency, *Terminology and Definitions (Annex 56)*, (2017). Available from https://www.iea-ebc.org/Data/publications/EBC_Annex_56_Terminology_Definitions.pdf

⁹⁹ BS ISO 21931-2:2019, 3.22, (modified – expanded to include resources)

¹⁰⁰ Association of Project Managers (APM), *APM Body of Knowledge, 7th Ed.* (2019) (modified)

¹⁰¹ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023)

¹⁰² BSI, *Principles of PAS Standardization, PAS 0:2012* (2012)

- B.136 quality assurance (QA)**
part of quality management focused on providing confidence that quality requirements will be fulfilled¹⁰³
- B.137 quality management**
a discipline for ensuring that outputs, benefits, and the processes by which they are delivered, meet stakeholder requirements and are fit for purpose¹⁰⁴
- B.138 reflection**
an internal process of observation, examination, exploration, analysis and review
- B.139 regenerative design**
an approach in which human systems are designed to co-exist and co-evolve with natural systems over time¹⁰⁵
- B.140 regulator**
government or authority (e.g. country, state, city council, planning authority, highway authority, government department) which owns the regulatory applications of a specific sector or area, which serve as principles, policies or rules governing or prescribing the behaviour of users as well as the provisioning of goods, services and/or rights interchanged¹⁰⁶
- B.141 resilience**
the capacity to anticipate, prepare for and respond to hazardous events or trends related to climate. In the built environment, it is the ability of buildings, landscapes, and infrastructures to adapt to – and reduce the impacts of – climate-related events, such as flooding or overheating¹⁰⁷
- B.142 resource extraction**
the separation and removal of natural resources from their immediate context¹⁰⁸
- B.143 resources**
something that lies ready for use or that can be drawn upon (material and non-material) for aid or to take care of a need¹⁰⁹
- B.144 responsible person**
person or organization tasked with responsibility for ensuring that certain actions are taken at an appropriate time
- B.145 responsibility**
the obligation to satisfactorily perform a task¹¹⁰

¹⁰³ BSI *Quality management systems: Fundamentals and vocabulary BS EN ISO 9000:2015*, (2015), BSI Standards Publication

¹⁰⁴ Association of Project Managers (APM), *APM Body of Knowledge, 7th Ed.* (2019)

¹⁰⁵ UK Architects Declare, *Regenerative Design Primer* (2024)

¹⁰⁶ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023)

¹⁰⁷ UKGBC, *A Framework for Measuring and Reporting of Climate-related Physical Risks to Built Assets*, (2022)

¹⁰⁸ Bridge, G., *Resource Extraction*, (2017), International Encyclopedia of Geography: People, the Earth, Environment and Technology, Wiley. Available at <https://doi.org/10.1002/9781118786352.wbieg1047>

¹⁰⁹ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023)

¹¹⁰ See: McGrath, S.K. and Whitty, S.J. (2018), "Accountability and responsibility defined", *International Journal of Managing Projects in Business*, Vol. 11 No. 3, pp. 687-707.

B.146 retrofit, renovation, refurbishment, repair

retrofit is the introduction of new materials, products and technologies into an existing building to reduce the energy needed to occupy that building. Retrofit is not the same as renovation or refurbishment, which often make good, repair or aesthetically enhance a building without aiming to reduce its energy use¹¹¹

B.147 revalidation

formal process of reassessing an individual's competence on a periodic basis to check that competence has been maintained¹¹²

B.148 risk

the potential for adverse consequences, determined probabilistically as a function of hazard, exposure, vulnerability and capacity. In the built environment, risk is defined as the potential loss including destroyed or damaged assets within a defined zone of influence which could occur in a specific period of time, which can be determined as a function of consequence and probability¹¹³

B.149 risk management

plans, actions, strategies or policies to reduce the likelihood and/or magnitude of adverse potential consequences, based on assessed or perceived risks¹¹⁴

B.150 SASB Standards

a disclosure system for sustainability-related risks and opportunities that could reasonably be expected to affect an organization's cash flows, access to finance or cost of capital over the short, medium or long term – see <https://sasb.ifrs.org/standards/>

B.151 scenario

a plausible and often simplified description of how the future may develop based on a coherent and internally consistent set of assumptions about driving forces and key relationships. Scenarios may be derived from projections, but are often based on additional information from other sources, sometimes combined with a narrative storyline¹¹⁵

B.152 scenario planning

a systematic teams-based approach to planning for the future through developing and analysing a range of contrasting scenarios

B.153 sector

collection of organizations involved in the delivery and operation of assets for the purpose of providing a service (e.g. energy, water, telecommunications)¹¹⁶

B.154 sector-specific competence framework

competence framework relevant to a specific role, function, activity, task, trade or discipline¹¹⁷

¹¹¹ Baeli, M., *Residential Retrofit: 20 Case Studies*, (2013), RIBA Publishing.

¹¹² BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

¹¹³ UKGBC, *A Framework for Measuring and Reporting of Climate-Related Physical Risks to Built Assets*, February 2022

¹¹⁴ IPCC, *Sixth Assessment Report, Annex VII - Glossary* (2022)

¹¹⁵ IPCC, *Glossary of terms. In: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*, (2012). Available at https://archive.ipcc.ch/pdf/special-reports/srex/SREX-Annex_Glossary.pdf

¹¹⁶ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023)

¹¹⁷ BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

- B.155 shadowing**
a form of training involving observing an experienced worker to gain an understanding of their role, practises and work environment
- B.156 skills**
ability to perform an activity or task consistently with a specific intended outcome¹¹⁸
- B.157 SMART objectives**
S.M.A.R.T. is an acronym for goal-setting criteria:
- Specific
 - Measurable
 - Achievable
 - Relevant
 - Timebound
- B.158 social impact**
the social value produced by the activities of an organisation and how much change in people’s well-being or the condition of the natural environment has occurred and can be attributed to an organisation's activities¹¹⁹
- B.159 social outcomes**
the effect on a cohort that a project tries to achieve. Outcomes should be predefined and measurable, or have close proxies¹²⁰
- B.160 social value**
measurable and predetermined improvements to the quality of life of identified groups of people, including future generations, achieved when changes to buildings, places and infrastructure support environmental, economic and social wellbeing¹²¹
- B.161 Standard Industrial Classification (UK SIC)**
a classification numbering providing the framework for collecting and presenting a large range of statistical data according to economic activity¹²²
- B.162 statutory role**
a service provision defined by law and regulation, potentially requiring compliance with specific training, qualifications/accreditations, standards, guidance, processes and obligations
- B.163 stewardship**
a practice that delivers ethical practice and responsible long-term planning and management of resources

¹¹⁸ ibid

¹¹⁹ OECD (2023), *Policy Guide on Social Impact Measurement for the Social and Solidarity Economy*, Local Economic and Employment Development (LEED), OECD Publishing, Paris, <https://doi.org/10.1787/270c7194-en>.

¹²⁰ UK Cabinet Office, *Commissioning Better Outcomes and the Social Outcomes Fund*, (2013) available from https://assets.publishing.service.gov.uk/media/5a7c4d33ed915d338141de4f/SOF-CBO_Glossary_of_terms.pdf (modified)

¹²¹ UKGBC, *Framework for Defining Social Value*, (2021) – available from <https://ukgbc.org/wp-content/uploads/2021/02/Framework-for-Defining-Social-Value.pdf> (modified)

¹²² Office for National Statistics, *UK Standard Industrial Classification of Economic Activities*, Available at <https://www.ons.gov.uk/methodology/classificationsandstandards/ukstandardindustrialclassification/economicactivities> [Accessed 28/8/24]

- B.164 stranded asset**
an asset which loses economic value well ahead of its anticipated useful life, whether that is a result of changes in legislation, market forces, disruptive innovation, societal norms, or environmental shocks¹²³
- B.165 sufficiency**
a set of policy measures and daily practices which avoiding the demand for materials, energy, land, water and other natural resources while delivering a decent living standard for all within the planetary boundaries¹²⁴
- B.166 supply chain**
the series of organizations involved in the development, design, production, distribution, assembly, construction and end of life of a project in the various stages through which it passes
- B.167 sustainability**
an environmental, social and economically integrated approach to development that meet present needs without compromising the environment for future generations¹²⁵
- B.168 sustainable drainage systems (SuDS)**
systems that manage stormwater locally (as close its source as possible), mimic natural drainage and encourage its infiltration, attenuation and passive treatment¹²⁶
- B.169 sustainable outcomes**
verifiable results of actions which improve life on the planet in accordance with the UN Sustainable Development Goals (UNSDGs)
- B.170 system boundary**
physical, process, temporal and geographical limits of activities for assessing impacts and measurements
- B.171 systems thinking**
an approach to problem solving which takes into account the overall system as well as its individual parts¹²⁷
- B.172 thermal mass**
the capacity of a building material to store heat. Materials with a high thermal mass absorb heat, store it and then release it later on¹²⁸
- B.173 triple bottom line of sustainability**
an accounting framework with three dimensions: social, environmental/ecological and economic

¹²³ Bos, K., and Gupta, J. (2019). *Stranded assets and stranded resources: Implications for climate change mitigation and global sustainable development*. Energy Research & Social Science, 56

¹²⁴ Saheb, Y., *COP26: Sufficiency should be first* (2021), Buildings and Cities. Available at <https://www.buildingsandcities.org/insights/commentaries/cop26-sufficiency.html>.

¹²⁵ Association of Project Managers (APM), *APM Body of Knowledge, 7th Ed.* (2019)

¹²⁶ Local Government Association, *Sustainable drainage systems*, (2024). Available at <https://www.local.gov.uk/topics/severe-weather/flooding/sustainable-drainage-systems> [Accessed 28/8/24]

¹²⁷ APM, *What is systems thinking* (2024). Available from <https://www.apm.org.uk/resources/find-a-resource/what-is-systems-thinking/> [Accessed 28/8/24]

¹²⁸ Passive House+, *Glossary*. Available at <https://passivehouseplus.co.uk/thermal-mass>. [Accessed 28/8/24]

B.174 UN Sustainable Development Goals (SDGs)

17 global economic, environmental and social goals adopted as part of the United Nation's 2030 Agenda for Sustainable Development in 2015. The SDGs highlight the connections between the different aspects of sustainable development

B.175 urban heat island

the relative warmth of a city compared with surrounding rural areas, associated with changes in runoff, the concrete jungle effects on heat retention, changes in surface albedo, changes in pollution and aerosols, and so on¹²⁹

B.176 user experience

every aspect of a user's interaction with a product, service, or company that make up the user's perceptions of the whole¹³⁰

B.177 validation

formal process of assessing an individual's competence against a sector-specific competence framework¹³¹

B.178 value chain

organizations and stakeholders involved in creating, operating and managing assets and/or networks¹³²

B.179 waste

any substance or object which the holder discards or intends or is required to discard¹³³

B.180 waste hierarchy

ranks waste management options according to what is best for the environment from prevention, through; preparing for re-use, recycling and other recovery, to disposal¹³⁴

B.181 wellbeing

a measure of the extent to which a person's informed desires are realised¹³⁵

B.182 whole life carbon

sum of all asset-related greenhouse gas emissions and removals, both operational and embodied, from all work stages of a project and/or programme of works, including disposal, within the specified boundaries

NOTE *This includes GHG emissions and removals within the project/programme boundary, as well as emissions/removals between the project/programme and study boundary.*¹³⁶

¹²⁹ IPCC, (2012) *Glossary of terms. In: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* Available at https://archive.ipcc.ch/pdf/special-reports/srex/SREX-Annex_Glossary.pdf

¹³⁰ Usability Body of Knowledge: Glossary. (2005-2012). Available at <https://www.usabilitybok.org/glossary/> [Accessed 28/8/24]

¹³¹ BSI, *Competence frameworks for building safety. Core criteria. Code of practice BS 8670-1:2024* (2024)

¹³² BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023)

¹³³ *Directive 2008/98/EC of the European Parliament and of the Council*, (2008). Available at <https://www.legislation.gov.uk/eudr/2008/98/article/3>

¹³⁴ *Guidance on Applying the Waste Hierarchy*, (2011), Department for Environment, Food & Rural Affairs (Defra). Available at: <https://assets.publishing.service.gov.uk/media/5a795abde5274a2acd18c223/pb13530-waste-hierarchy-guidance.pdf>

¹³⁵ Dasgupta. P. (2021) *The Economics of Biodiversity: The Dasgupta Review*, HM Treasury, p509

¹³⁶ BSI, *Carbon management in buildings and infrastructure PAS 2080:2023* (2023) (modified)

B.183 whole life carbon assessment

the calculation and reporting of the quantity of carbon impacts expected throughout all life cycle stages of a project, but also including an assessment of the potential benefits and loads occurring beyond the system boundary¹³⁷

- End -

¹³⁷ RICS, *Whole life carbon assessment for the built environment, Global, 2nd edition* (2023)