



# Building with Nature

User Guide

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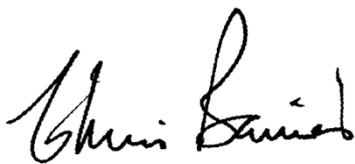
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# Building a Force of Nature

Of all the people on the Earth today, one in a hundred live in the British Isles and the vast majority of us live in towns and cities. Our crowded and busy lives are being made increasingly stressful by the effects of climate change and we need green breathing spaces more than ever before.

All too often built development seems to be at odds with nature, but that doesn't need to be the case. By taking account of a site's natural assets, forging green links into the wider landscape and making appropriate provision for long-term management it is possible to blend new built development into its surroundings. We can make positive use of the landscapes natural systems and we can create places that grow even better with time.

Success requires imagination and patience. It also demands technical and professional excellence from planners, architects, engineers, developers, manufacturers and the building trades as well as the knowledge of nature conservationists and the local community. Where all these elements come together, then new built development really can become a force of nature.



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# Building with Nature Overview

Building with Nature sets a new standard for green infrastructure. It is a voluntary approach that encourages developers to create places that really deliver for people and wildlife. It brings together existing guidance and good practice to recognise high-quality green infrastructure at all stages of the development process including policy, planning, design, delivery, and long-term management and maintenance. It has been developed by practitioners and policy makers, academic experts and end users, and has been tried and tested in multiple schemes from Cornwall to Central Scotland. We have an expert Standards Board whose role is to refresh the standards and update them with changes in legislation, policy and practice.

## Why Building with Nature?

People value living in places that are close to nature. As well as allowing wildlife to thrive, green infrastructure – such as parks, ponds or play areas - provides spaces for people to enjoy, and cost-effective ways to manage water naturally and prevent flooding.

The Building with Nature Benchmark makes it easier for those charged with designing, delivering and maintaining green infrastructure to deliver functions and benefits, also known as ecosystem services, for people and wildlife, now and in the long term. It does not require additional preparation of supplementary documentation, and rather provides a framework of principles to overcome the challenge of delivering high-quality green infrastructure and maximise multiple benefits for end users.

## What Does It Offer?

The benchmark is a voluntary scheme for those who want to go beyond the statutory minima. It offers an assessment and accreditation service to secure the delivery of high-quality green infrastructure in both new and existing communities.

The standards are free to use and can assist with the planning and development of new places and communities. It can be used to accredit a development or a policy document. This version of the User Guide provides technical guidance for those engaged in the design and delivery of development, including the retrofitting of green infrastructure into existing places.

This is not intended to be a tool designed to mitigate the loss of irreplaceable habitats, such as ancient woodland. Instead, Building with Nature offers a tool to demonstrate the value of early and sustained engagement in the design, implementation and long-term stewardship of high-quality green infrastructure.

## Who Should Use It?

The benchmark has been developed to support built environment professionals to deliver high-quality green infrastructure and draws together policy and practice guidance related to health and wellbeing, sustainable water management, ecology and biodiversity.

This guide has been designed to assist with decision making relating to each stage of the development process from design and feasibility through to placekeeping and place; and can be used for residential, commercial and mixed-use developments.

End users of Building with Nature include developers, local planning authorities, landscape architects, ecologists, engineers, construction site managers, transport planners, and other and built environment professionals involved in design, implementation and long-term management and maintenance.

It will also be of value to new and existing communities who wish to better understand how high-quality green infrastructure can deliver benefits to the built and natural environment, to people and to wildlife.

## How Does It Work?

If you decide you want to create a high-quality place for people and wildlife, use the framework of standards to reflect on the task you are undertaking, including policy writing, land allocation, master-planning, detailed design, implementation, management or maintenance.

If you decide to pursue Building with Nature accreditation, this is the stage where you identify a qualified Building with Nature Assessor to work with you to assess your scheme and compile the relevant evidence to support your application for Building with Nature Accreditation.

Once your application is ready, your Assessor will submit to Building with Nature for audit and approval. If you are successful, you will be awarded with the Building with Nature Accreditation. You will be also provided with an Evaluation Report which details the strengths of your scheme. This can be used to support a planning application or communicate the benefits of your scheme to your network of stakeholders.

Once the entire scheme or each phase/parcel of your scheme is completed, a Building with Nature Assessor will return to conduct a post-construction check. The report from this site visit will be to confirm the Building with Nature Accreditation and will reflect whether the commitments are being delivered.

If the scheme is performing as expected, you will be invited to apply for one of our prestigious National Awards. We will highlight best practice through our networks and showcase as part of a national awards ceremony.

If the Assessor has concerns, we will provide you with recommendations for remediation of green infrastructure features. A further site visit will be made, at which point the Accreditation will be signed off or retracted.

## Where Is It Relevant?

Building with Nature can be used in developments across the length and breadth of the UK. Developers and practitioners will, of course, need to deliver to the planning policy where they are working. This approach shows how to do that and more and is for those who want to go further delivering for nature, wellbeing and the wider environment.

Building with Nature is best suited to 'major' or 'significant' sites (10+ houses; 0.5 hectares or more; 1000+ square metres of floor space) and 'strategic' sites, such as major regeneration schemes or urban extensions.

## When Should It Be Applied?

An application for Building with Nature Accreditation can be made at any stage in the development process. However, applicants are encouraged to work with the standards as early as possible i.e. at the design and feasibility stage, as the benchmark provides a framework for securing the delivery of high-quality green infrastructure.

Accreditation can be (and have been) awarded to already completed schemes.

When should you do it? The answer is, now!

The UK is set to build hundreds of thousands of new homes and enhance thousands of existing communities in the coming years. There is a growing emphasis on the need for quality place-making. Building with Nature wants to ensure that these developments will also deliver for the natural world and healthy communities for present and future generations.

# How Building with Nature Works

## Engagement and training

Training is available on two levels. We provide a short, half-day induction to the scheme explaining in broad terms what it does, how use it and the potential benefits. Participants can attend an open-course, or we do bespoke orientation sessions for individual companies.

We also provide a two-day training for Building with Nature Assessors, on how to use the Standards to design and deliver high-quality green infrastructure. The Assessor training is aimed at those who are already accredited landscape architects (through the Landscape Institute), ecologists (through CIEEM), and planners (through RTPI). Accreditation is also open to individuals with other relevant qualifications in engineering, water management, or public health.

The Building with Nature training programme can be found at [buildingwithnature.org.uk](http://buildingwithnature.org.uk)

## Your assessment

To apply for Building with Nature Accreditation, you must engage a qualified Building with Nature Assessor to compile your application for accreditation.

It will be the role of the Assessor to draw together all the evidence of compliance for your application for accreditation. More information on this documentation and evidence of compliance can be found later in this section, and within each of the Standard descriptions in this User Guide.

## Applying for accreditation

Once the Assessor has completed the application, the next stage is to submit your application for accreditation to Building with Nature for an audit. This is the process by which we can assess your eligibility for a Building with Nature Accreditation, based on the evidence provided by your Building with Nature Assessor.

This enables us to ensure the high-quality standards across all applications for accreditation and provide you with the appropriate guidance for promoting your scheme should you be successful.

## Post construction checks and national awards

Accredited schemes which are signed off post-construction, will be invited to apply for a Building with Nature National Award. This is an opportunity to showcase development where we can see people and wildlife benefiting from well-designed, expertly implemented and sustainably managed features.

## Documentation Preparation

Applicants will work with a Building with Nature licensed Assessor to prepare evidence to demonstrate they have met the Building with Nature standards. This documentation will then be used by Assessor to make a recommendation for accreditation.

The evidence we require is the same or similar to that already provided in many planning applications. Therefore, in most cases applicants will need to gather this information into one place so all aspects relating to green infrastructure can be assessed for compliance. Exactly what should be contained in each document to show evidence of compliance with a particular standard is detailed in the 'Evidence of compliance' sections of the user guide. The names of the documents may vary between applications, but the content should be matched against the information below and the information provided in the 'Evidence of Compliance' sections.

The key documents that can be included with an application to Building with Nature are:

- **Green Infrastructure Strategy:** This sets out the approach undertaken in regard to the provision of green infrastructure across the development.
- **Green Infrastructure Parameter Plan<sup>1</sup>:** This sets the broad layout of the green infrastructure to be retained and created within the boundary of the development.
- **Environmental Statement - Non-Technical Summary:** A simplified version of the Environmental Statement to provide access to the broad scope of the information about environmental impact and mitigation.
- **Environmental Statement – Appendices:**
  - o Proposed development (GI included in Land Use Components)
  - o Economic and Social (Impacts during construction and occupation)
  - o Transport and Accessibility (Impacts during construction and occupation)
  - o Noise (Impacts during construction and occupation)
  - o Air Quality (Impacts during construction and occupation)
  - o Water resources (Impacts during construction and occupation)
  - o Landscape and Visual (Impacts during construction and occupation)
  - o Biodiversity (Impacts during construction and occupation)
  - o Cultural Heritage (Impacts during construction and occupation)
  - o Ground Conditions (Impacts during construction and occupation)
  - o Agriculture (Impacts during construction and occupation)

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<sup>1</sup> The information included within a Green Infrastructure Parameter Plans in some applications may be called Illustrative Landscape Framework Plan or Illustrative Masterplan in other applications. These documents are acceptable as long as they provides an illustration on how the green infrastructure features, including landscaping elements, green spaces and character areas, retained and created by the development could operate.

- **Green Infrastructure Biodiversity and Management Plan<sup>2</sup>**
  - o Providing more detail relating to management and maintenance of green infrastructure features, to ensure functionality and connectivity of features within the boundary of the development, and connectivity with features beyond the boundary.
  - o The information required for a GIBMP will therefore require an understanding of the site, the surrounding area, as well as key stakeholders and communities involved.
  - o Through subsequent stages of planning and development surveys and assessments are undertaken, such as species-specific ecological surveys restricted to certain times of year, and the results of these surveys and mitigation and enhancement will form part of the evidence for your GIBMP.
  - o The GIBMP will offer details of resource management, such as a management plan for individual green infrastructure features and how their operation and management will be funded.

The GIBMP will include a schedule for maintenance, detailing a maintenance regime for different features to ensure on-going maintenance whilst the development is in use, which secure their value as multifunctional green infrastructure assets.

Depending on the stage of completion of your development, the following documents will also hold important information relating to green infrastructure and should be included to support your application:

- Planning conditions (relating to green infrastructure e.g. phasing)
- Reserved Matters applications
- Discharge of planning conditions
- Construction package information (e.g. Construction Environmental Management Plan)
- Photo documentation (e.g. evidence of green infrastructure features in use).

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<sup>2</sup> Green Infrastructure Biodiversity and Management Plan are also referred to as: Green Infrastructure Management Plan; Green Infrastructure Management Strategy; Green Infrastructure Plan/Strategy; Biodiversity, Mitigation, Enhancement Management Plan/Strategy

# Accreditation and Awards

## *Accreditation*

There are three possible accreditations – Design, Good and Excellent.

### **Design**

We have created Building with Nature Design accreditation to recognise the quality of Masterplans which integrate high-quality green infrastructure.

The Design accreditation is aimed at developments pre-completion/pre-construction and permits an applicant to promote a development as having been accredited with the Building with Nature benchmark. Accreditation at this stage, as well as raising the bar on green infrastructure provision, can also be useful in engaging local stakeholders and with the planning process.

Once a phase/parcel of a development is completed, applicants are encouraged to work with a Building with Nature Assessor to be accredited for Full accreditation, recognising delivery of high-quality green infrastructure.

### **Full – Good and Excellent**

We have created the Full accreditation and Marque (Good or Excellent) to recognise delivery of high-quality green infrastructure. Applications for Full accreditation require the submission of documentation relating to Reserved Matters Applications and detailed design for individual phases/parcels of development. In addition, the Full accreditation process requires a post-construction check by a Building with Nature Assessor to check compliance with the standards post-construction/post-completion or in-use.

Applications are welcome from development that has recently been completed, or already in use. It is not a requirement to have been accredited with a Design accreditation to apply for a Full Award.

This is to avoid situations where the quality of green infrastructure outlined in a planning application deteriorates as a result of decisions later in the planning process, for example due to poor implementation or inadequate provision for long-term management and maintenance, or a lack of remediation as a response to monitoring of green infrastructure features.

A successful application will be awarded either Building with Nature Good or Building with Nature Excellent, depending on which standards have been met (see [Scoring System](#)). We appreciate that there are occasions where an approved planning application with Design

accreditation may undergo changes at subsequent stages. As such, an applicant may be required to document and justify any changes to demonstrate that a development still meets the Building with Nature standards.

## **National Awards**

To raise the bar across the industry and show what can be done, we run a programme of National Awards to spotlight best practice. These awards look at the performance after construction, and follow the post-construction visit and sign-off. We produce case studies on these National Award Schemes, promote them through our channels, and have a presentation at an annual awards ceremony. Developers are encouraged and supported to make use of these awards in their own communications.

## **Exceptions and disputes**

Building with Nature may judge that certain schemes may have such an overall negative impact on biodiversity or the wider environment that to accredit and award the scheme would be contrary to the overall goals of the scheme and its supporters. These may be schemes which within their boundaries affect special habitats or species or whose overall environmental or climate impact would be significantly damaging. Building with Nature reserve the right not to accredit schemes. If your Assessor thinks your scheme may be problematic in this respect, they will seek early advice from Building with Nature.

This scheme is voluntary and acts as an additional layer to the statutory planning system. Where applicants submit schemes for award that are not deemed to meet required standards, feedback will be given as to where and how the scheme can be improved.

# The Twenty-Three Standards

There are 23 standards in total. Five core standards together create a solid foundation for the delivery of high-quality green infrastructure through planning and development.

There are three additional thematic groups of standards. Within each of these themes there are three standards attainable at Good level (1-3) and three standards at Excellent level (4-6).

## CORE Standards

**CORE1:** The green infrastructure forms a multifunctional network.

**CORE2:** The scheme identifies important local character features as a starting point for the green infrastructure proposals and incorporates them into the scheme to reference, reflect and enhance the local environment.

**CORE3:** The type, quality and function of green infrastructure respond to the local context.

**CORE4:** The green infrastructure is resilient to climate change; and minimises the scheme's environmental impact with respect to air, soil, light, noise, and water; and enhances the quality of air, soil and water.

**CORE5:** Provision is made for long-term management and maintenance of all green infrastructure features post-development.

## WELLBEING Standards

### *Good*

**WELL1:** Green infrastructure is accessible for all and is situated close to where people live to promote health, wellbeing, and active living.

**WELL2:** The scheme encourages all people to use and enjoy green infrastructure and considers the needs and strengths of vulnerable and excluded groups.

**WELL3:** Green infrastructure is designed to encourage optimal use and employs hard and soft features to be accessible at all times of year.

### *Excellent*

**WELL4:** The scheme supports local priorities for reducing and/or preventing health inequalities.

**WELL5:** The scheme demonstrates innovative solutions to overcoming social and cultural barriers to use and enjoyment of green infrastructure and considers how green infrastructure can promote socially sustainable communities and community cohesion.

**WELL6:** The scheme demonstrates that green infrastructure is integral to the distinctiveness of place.

## WATER Standards

### *Good*

**WAT1:** Green infrastructure is integral to sustainable drainage and features are designed to minimise surface runoff, manage flood risk, and maintain the natural water cycle.

**WAT2:** Green infrastructure has been used to improve water quality within the boundary of the scheme.

**WAT3:** The design of SuDS enhances the capacity of green infrastructure features to create and sustain better places for people and nature.

### *Excellent*

**WAT4:** The scheme responds to the local policy context in terms of water management, demonstrating an innovative approach to move beyond the statutory minimum.

**WAT5:** A diversity of green infrastructure features are utilised to improve water quality, utilising more and better treatment stages to maximise pollution reduction downstream.

**WAT6:** Features relating to water management are used to enhance local distinctiveness and add value to the overall design.

## WILDLIFE Standards

### *Good*

**WILD1:** Green infrastructure delivers biodiversity net gain by avoiding, mitigating, and compensating for impacts on existing biodiversity, and where possible restores, creates and enhances biodiversity within the boundary of the scheme. Provision has been made for on-going monitoring and remediation.

**WILD2:** Green infrastructure features ensure linkages between habitats within the boundary of the scheme.

**WILD3:** Green infrastructure delivers key measures that contribute to the target conservation status of key species.

### *Excellent*

**WILD4:** Green infrastructure includes ecological features around and within the built environment.

**WILD5:** Green infrastructure is effectively connected to ecological features beyond the boundary of the scheme and plays a role in restoring and sustaining wider ecological networks.

**WILD6:** The scheme secures biodiversity measures in all stages of implementation and in the case of phased development schemes, across multiple phases of development.

# Scoring system

There are two levels of achievement that can be attained: **Building with Nature Good** and **Building with Nature Excellent**. To be eligible for either level, an applicant must demonstrate that they have met all five core standards. For Building with Nature Good an applicant must demonstrate they have met all nine ‘Good’ standards (standards 1-3 in each theme). For Building with Nature Excellent, an applicant must demonstrate they have met all nine ‘Good’ standards plus six out of nine ‘Excellent’ standards. This means that applicants to Building with Nature Excellent can chose to specialise in one or two thematic areas by choosing all excellent standards from one theme and only one or two from the others.

	Good		Excellent
Core 1 to 5	Wellbeing 1 to 3 + Water 1 to 3 Wildlife 1 to 3	+	Wellbeing 4 to 6 Water 4 to 6 Wildlife 4 to 6
		at least 6 from:	

Figure 1 Standards required for Good or Excellent award

Each standard includes the following details:

- **Aim:** what the standard is seeking to achieve and why
- **Illustrative examples:** further information and/or examples of how the standard can be met.

Each level within each theme also includes:

- **Evidence of Compliance:** An outline of what is expected of applicants in terms of the evidence required to demonstrate that a standard has been satisfactorily met. In most cases the same evidence will be required irrespective of the stage in the development process when the application is being made. However, in some instance this may be additive, for example, when an additional requirement is made to ensure that the standard will still be met post-construction. In this case ‘As above’ is used to denote that at each subsequent stage of development, the applicant is required to submit evidence from previous stages as well as any additional evidence relating to that stage.

Each theme also includes:

- **Further Information:** Links to useful policy or practice documents related to the standard.

The standards are periodically reviewed by a Building with Nature Standards Board to ensure the standards remain relevant to current policy, practice and research findings.

## Using This Guide

This user guide is for those applying for Building with Nature Accreditation for development. It describes how Building with Nature works, including the different stages of Assessment and different levels of Accreditation; and sets out the Building with Nature Standards in full.

There is another document available for the application process for certifying a policy document. Please contact Building with Nature for this

### *The Standards*

The following sections will explain the standards in full. Each section includes a one-page summary of the standards in that theme to help you navigate the user guide. Here we outline the scope of each group of standards and how each standard contributes to the delivery of high-quality green infrastructure.

Each standard is then described in terms of its Aim which highlights why a standard is important and detailed Illustrative Examples which offer examples of how you can demonstrate compliance with each standard.

The standards are grouped according to the two levels of Good and Excellent. For each group of standards, there is a further section titled Evidence of Compliance that shows you what evidence and documentation you should include in your application depending on what stage of planning applies to your development.

There are 23 Building with Nature standards in total. This includes five core standards, six wellbeing standards, six water standards and six wildlife standards:

### *Core Standards (CORE)*

Distinguish a green infrastructure approach to planning and development that delivers on multiple levels, from a more conventional open and green space approach.

### *Wellbeing Standards (WELL)*

Aim to secure the delivery of health and wellbeing outcomes through the delivery of green infrastructure features.

### *Water Standards (WAT)*

Aim to provide green infrastructure to effectively manage water quantity and quality, increase flood resilience, and maximise opportunities for amenity.

## *Wildlife Standards (WILD)*

Aim to ensure that green infrastructure allows nature to flourish, both within the boundary of the development, and at a landscape scale.

# Core (CORE) Standards

There are five core standards to define a green infrastructure approach to planning and development. They distinguish green infrastructure from a more conventional approach to the design and delivery of open and green space.

The CORE standards aim to deliver the following **principles**:

## 1. Multifunctional network

Ensures that individual features contribute to a multifunctional network of green infrastructure operating at a landscape scale.

## 2. Environmental Context

Ensures that the green infrastructure reflects the character of the local environment and positively contributes to local identity, landscape character and vernacular, and a sense of place.

## 3. Policy Context

Ensures green infrastructure effectively meets local priorities and needs as articulated in local policy or through consultation with local stakeholders.

## 4. Environmental Impact and Climate Change

The green infrastructure minimises the development's environmental impact with respect to carbon emissions, air, soil, light, noise, and water; and enhances the quality of air, soil and water. It contributes to adaptation and is itself resilient to climate change.

## 5. Management and Maintenance

Ensures that adequate provision is made for how green infrastructure will be managed and maintained including the responsibility for these activities and their funding.

Please note: These **principles** are intended to guide your thinking around each of the Standards, whilst you gather evidence to demonstrate compliance with the Standards, which are defined in the full over the following pages.

## CORE – 1

**CORE1: The green infrastructure forms a multifunctional network.**

### Background

‘Green infrastructure is valued for its multifunctionality and the connectedness of the individual features to each other, the surrounding countryside and urban populations’<sup>3</sup>. This standard therefore aims to ensure that green infrastructure features form and contribute to a multifunctional network of green infrastructure within the development and wider area. Green infrastructure features describe a range of features including integral building features, street and neighbourhood scale interventions, and landscape scale features:

- Bird and bat boxes
- Green roofs and living walls
- Water collection systems
- Street trees and hedges
- Private gardens
- Sustainable Drainage System (SuDS) components
- Play areas
- Areas for food cultivation
- Strategic green corridors
- Habitats such as woodland or grassland
- Blue features such as rivers, lakes and canals
- Other large areas of green infrastructure.

Connectivity makes a green infrastructure approach distinct from a green and open spaces approach; as a network of features, green infrastructure is not the same as conventional open space.

The potential functions of green infrastructure are multiple and varied and include: climate change adaptation; water cleansing and control; economic development; improved community cohesion; providing leisure and recreation opportunities; local food production; improved health and wellbeing; and enhancing local identity and sense of place<sup>4</sup>.

As a key principle of green infrastructure, multifunctionality recognises that green infrastructure ‘can fulfil a wide range of functions and diverse benefits to both human populations and nature’ and that ‘interactions between functions is emphasised’<sup>5</sup>; “to serve the requirements of local economics, the environment and social objectives”<sup>6</sup>.

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<sup>3</sup> Sinnett, et al., 2017

<sup>4</sup> Roe and Mell, 2013: 656

<sup>5</sup> Roe and Mell, 2013: 653

<sup>6</sup> Gallent et al., 2004: 100, cited in Roe and Mell, 2013: 655

## Illustrative Examples

The development demonstrates how it will protect and enhance existing green infrastructure features, as well as create new features that contribute positively to the network of multifunctional green infrastructure within the boundary of the development and the wider area.

The development includes an audit of existing green infrastructure within the site boundary, identifying existing green infrastructure assets, areas for improvement, and opportunities to meet gaps in provision in response to identified local need (*link to CORE3*). As a result, green infrastructure is designed into the development.

On larger developments green infrastructure comprises a range of multifunctional features; on smaller developments green infrastructure may comprise a single multifunctional element that contributes to a wider network.

The green infrastructure features within the development are designed to deliver multiple functions. For example:

- Green infrastructure components within SuDS provide functionality for water retention during heavy rainfall (*link to WAT1*), and an area for play and recreation at other times (*link to WAT3*).
- Natural play features provide health and wellbeing benefits to people, whilst enhancing the biodiversity value of a development, and attenuate water more effectively than sealed areas in other types of play area (*link to WELL1, WILD1, and WAT3*).
- Streets provide shade for buildings, pedestrians and cyclists, natural water attenuation and stepping stones for wildlife.
- Swales are located adjacent to paths to maximise their use for surface water run-off.
- Hedgerows providing foraging and nesting habitat for wildlife also form a key role within the built environment as permeable boundaries between properties.

Green infrastructure features within the development are designed to enhance connectivity across the development and to the wider area. For example:

- Green infrastructure features provided in the development connect with new or planned green infrastructure within 250m of the boundary of the site.
- Strategic green corridors seek to (re)connect active travel infrastructure and areas of nature conservation both within development and in the surrounding area.
- New woodland edge habitat is adjacent to existing woodland.

Ideally, strategic elements of the green infrastructure framework are brought forward in phase one of a development so as to create a landscape structure that other phases can fit into. If phase one does not include any significant contribution to green infrastructure,

evidence is shown that substantive green infrastructure is secured as early as possible in subsequent phases.

## CORE – 2

**CORE2:** The development identifies important local character features as a starting point for the green infrastructure proposals and incorporates them into the development to reference, reflect and enhance the local environment.

### Background

Green infrastructure features that reflect the character of the local environment can positively contribute to local identity, landscape character and vernacular, and a sense of place<sup>7</sup>. The character of the local environment is defined by both the natural environment, and the built form, including characteristics, such as land use, scale and density.

To ensure that the green infrastructure takes into account from the outset the existing natural habitats and features on site as a basis for identifying opportunities for ecological connectivity and incorporates other green infrastructure features in a way that enhances those features and provides and incorporates multifunctionality without compromising those features.

It is important that the development works with and reflects high-quality green infrastructure features present both on and off site where ever possible in terms of habitat type, land use, boundary features, scale and location and does not introduce features that have no local relevance. This will enhance local distinctiveness; contribute to local priorities and create a sense of place.

### Illustrative Examples

Green infrastructure is designed with sensitivity and reference to the character of the local environment, including existing habitat types (e.g. woodland) or existing green infrastructure features (e.g. species of street tree) which are considered valuable based on the multiple functions they deliver within the development and the wider context. Characteristic landscape features may also be drawn from any Nature Improvement Areas (NIA), or equivalent, within or in close proximity to the development (*link to WILD1*).

Green infrastructure is designed to optimise linkages to existing features that characterise the local environment. This can be achieved by, for example, designing features at a particular scale; selecting specific types of vegetation; or locating a feature in particular area within a development. This is particularly important if the character of the local environment lacks place distinctiveness and there is therefore an opportunity to create a sense of place by designing high-quality green infrastructure as part of the development.

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<sup>7</sup> Natural England, 2009: 19

Green infrastructure features are located and designed to work with the contours of the land rather than against them, exploring how built form and detailed housing design can creatively respond to the topographical character<sup>8</sup>.

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<sup>8</sup> Building for Life 12, 2015

## CORE – 3

**CORE3: The type, quality and function of green infrastructure respond to the local policy context.**

### Background

By designing the development's green infrastructure in light of the local context, including the local policy context, green infrastructure features will more effectively meet local priorities and needs<sup>9</sup>. In this way, the development's green infrastructure can contribute to strategic objectives relating to ecological constraints and opportunities, priorities relating to natural water management, and the social and cultural benefits of green infrastructure, as well as opportunities to enhance quality of life.

### Illustrative Examples

The green infrastructure is designed to respond to local green infrastructure needs and priorities relating to:

- Climate change adaptation and mitigation;
- Nature conservation and biodiversity;
- Environmental quality;
- Health and wellbeing;
- Sustainable transport/active travel;
- Design of the built and natural environment.

The green infrastructure delivers the aims of the local policy context. This could include, but is not restricted to:

- Local, sub-regional, city regional plans and policies including those relating to development, health and wellbeing, water management, and nature conservation;
- Green infrastructure strategies or policies;
- Planning policy, technical advice notes, planning advice notes, planning practice guidance, and other variations of national policy mechanisms.

Green infrastructure is highlighted as a key design principle in public consultation relating to the development, and local stakeholders and communities have been engaged in the identification of local green infrastructure needs and priorities.

Green infrastructure features are designed with reference to green infrastructure priorities as identified by local stakeholder groups. For example, if a Neighbourhood Development

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<sup>9</sup> CIWEM, 2010

Group have identified local priorities, green infrastructure assets, or green infrastructure with a 'special' character, this has been considered in the design of green infrastructure within the development.

Policy context relating to health and wellbeing will often be included in the Joint Strategic Needs Assessments, or other data published by the local Health and Wellbeing Board.

## CORE – 4

**CORE4:** The green infrastructure positively contributes to minimising environmental impact with respect to carbon emissions, air, soil, light, noise, and water; and enhances the quality of air, soil and water. It contributes to adaptation and is itself resilient to climate change.

### Background

This standard ensures the green infrastructure features are designed to deliver considers multiple benefits including shade provision<sup>10</sup>, carbon storage and removal<sup>11</sup>, improvement of soil and air quality<sup>12</sup>, reduction in noise and light pollution<sup>13</sup> that may arise from poor quality or inappropriate green infrastructure design. It ensures that the green infrastructure contributes to mitigation, adaptation and is resilient to the changing climate<sup>14</sup> so that the benefits are secured for the long term.

Please note that the impact of green infrastructure on water quality, and further opportunities for green infrastructure to contribute to climate change adaptation, is covered in more detail in standards relating to water management (WAT1-6).

### Illustrative Examples

The green infrastructure in the development has been planned, designed and delivered to withstand future climatic conditions.

For example:

- Individual green infrastructure features have been selected to provide a balance between native and resilient tree species, ensure species and genetic variability<sup>15</sup>.
- Green infrastructure provides additional habitat within the development to act as ‘stepping stones’ to improve the resilience of any existing ecological network.
- Trees have been used in key locations to provide shading for people and buildings.
- Urban cooling is considered in the selection of species (e.g. trees) and planting design<sup>16</sup> to ensure that opportunities to provide shade to the outdoor environment and buildings are maximised.

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<sup>10</sup> Chris Blandford Associates, 2010

<sup>11</sup> Nowak et al., 2013

<sup>12</sup> cf. Pugh et al., 2012; Brantley et al., 2013; Setala et al., 2013

<sup>13</sup> cf. Davis et al., 2011; Defra, 2016

<sup>14</sup> Ranjha, 2016

<sup>15</sup> TDAG, 2012

<sup>16</sup> TDAG, 2012

- Opportunities to combine planting with other features such as children's play areas and seating should be taken to ensure that shade is provided at regular intervals in the public realm.
- The development demonstrates how green infrastructure has been designed to contribute to microclimatic cooling and minimise solar glare on buildings<sup>17</sup>.

Green infrastructure is designed and implemented to meet current good practice (see [Further Information](#)) relating to environmental impacts, including noise and light pollution, and air and soil quality.

For example:

- Air quality is considered in the selection of species (e.g. trees) and planting design<sup>18</sup> to ensure that opportunities to mitigate poor air quality are maximised.
- Green infrastructure features are used to mitigate harm and/or positively contribute to 'noise sensitive areas'<sup>19</sup>, including: wildlife areas; historic landscapes; parks and gardens; and designated areas of conservation status, such as an Area of Outstanding Natural Beauty (AONB) and Site of Special Scientific Interest (SSSI).
- Elements within the lighting design guide such as street lighting and any security lighting, are designed and located in such a way as to minimise negative impact on green infrastructure features including the provision of 'dark corridors' to mitigate the loss of habitat for light sensitive species ([link to WILD1](#)).

The development follows current good practice relating to soil and soil-forming materials.

For example:

- Soil and soil-forming placement standards and cultivation methods follow current good practice<sup>20</sup>.
- Non-peat-based composts and soil-forming materials from the waste stream are considered as a priority for the development<sup>21</sup>.
- TDAG's requirements<sup>22</sup> for soil management have been achieved.
- The development avoids transporting uncontaminated spoil away from the site that could be used for landscaping or adding level changes<sup>23</sup>.

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<sup>17</sup> Chris Blandford Associates, 2010: 33

<sup>18</sup> TDAG, 2012

<sup>19</sup> BRE, 2012: 42-44

<sup>20</sup> Sinnett, 2014; Moffat, 2014

<sup>21</sup> TDAG, 2012

<sup>22</sup> TDAG, 2012

<sup>23</sup> Building for Life, 2015

- British Standards relating to soil, including ‘Construction Code of Practice for the Sustainable Use of Soils on Construction Sites’<sup>24</sup> and ‘Specification for Topsoil’<sup>25</sup>.

The development is compliant with current good practice relating to tree planting, management and maintenance to maximise the health and longevity, and therefore the quality of trees, within the development’s green infrastructure.

For example:

- TDAG<sup>26</sup>’s requirements for tree planting have been achieved.
- An effective tree inspection and maintenance programme is in place, to ensure the sustainable establishment of individual trees (*link to CORE5*).

Climate change resilience is also important for health and wellbeing (*link to WELL1*), and development should be designed to help keep communities healthy for a future climate.

For example:

- Mitigation of urban heat island through utilisation of green infrastructure.
- Managing increased surface water and reducing risk of flooding (*link to WAT1*).

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<sup>24</sup> Defra, 2009

<sup>25</sup> BS 3882:2015

<sup>26</sup> TDAG, 2012

## CORE – 5

**CORE5: Provision is made for long-term management and maintenance of all green infrastructure features post-development.**

### Background

The long-term management and maintenance of green infrastructure is critical to ensure the functions and benefits of individual features are delivered and sustained over time. This standard ensures that adequate provision is made for how green infrastructure in public places will be managed and maintained, including the responsibility for these activities and their funding.

In addition, this standard considers how local people have been engaged in the ongoing management and maintenance of green infrastructure features. By involving people at an early stage, the green infrastructure features within the development are more likely to be used, enjoyed and local people are more likely to play an active role in their management and maintenance<sup>27</sup>.

### Illustrative Examples

Green infrastructure features are appropriate to the local character, landscape and climate, to increase the likelihood that ongoing maintenance will require minimal resource, to make the development as resource efficient as possible (*link to CORE2 and CORE4*).

The development recognises that long-term management and maintenance is critical to the success of green infrastructure features, and this is addressed at each stage of the planning and development process.

The scale of green infrastructure features included within the development are designed to be a manageable size to sustain the functions they are intended to deliver; as well as being realistic about the need for maintenance, including specialist requirements for maintenance (e.g. grassland habitat will require specialist maintenance to maintain its biodiversity function, and will need to be designed at a scale large enough to make this management feasible).

Green infrastructure features are implemented by suitably qualified professionals, in line with good practice guidance (*link to CORE4*), to ensure they are accessible for regular management and maintenance as required, including access for any necessary equipment or machinery.

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<sup>27</sup> cf. RICS, 2011; Barnwood Trust et al, 2016

Post-construction, green infrastructure features are managed and maintained by appropriately trained and qualified personnel, and maintenance contracts are reviewed every five years.

A Green Infrastructure Biodiversity Management Plan (GIBMP), or equivalent documentation is provided for the development. This includes details of a preferred options for managing individual features and a schedule for maintenance, detailing a maintenance regime for different features to retain safety and maximise their value as multifunctional green infrastructure assets.

For example:

- Routine and cyclical monitoring and maintenance of natural play features as a rigorous checking system to manage risk associated with materials and associated hazards through weathering.
- Maintenance of paths and vegetation along paths to optimise their primary function as identified within the Green Infrastructure Parameter Plan (i.e. paths within an area designated for wildlife will have a different maintenance treatment than those in a formal play area).
- In interpreting 'messy' areas to prospective purchasers as essential habitat to wildlife, and a great place for natural play.

Appropriately trained individuals and groups to lead the establishment and on-going maintenance of green infrastructure features<sup>28</sup>.

Green infrastructure features that are integral to sustainable drainage follow the guidance as set out in the CIRIA SuDS Manual relating to good design to ensure features can be easily and safely constructed and maintained; that the long-term operation and maintenance of the system is cost-effective; and that the system is safe for those living near or visiting the system, and for those involved in its operation and maintenance.

Where green infrastructure features are being designed for use by an existing community, these communities are consulted about the design of these features, and effective community engagement strategies aim to enhance people's understanding about the benefits of features, and particular approaches to maintenance.

The development recognises the importance of voluntary environmental stewardship to enhance a sense of belonging through communities taking an active role in the management and maintenance of green infrastructure features.

For example:

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<sup>28</sup> Cf. TDAG, 2012

- In existing communities, this may be facilitated through a range of governance structures and mechanisms e.g. public-voluntary sector partnerships<sup>29</sup>.
- A commitment to work in a joined-up way with community stakeholders and partners, including how community members can become actively involved in management and maintenance.

In new development, management and maintenance of green infrastructure forms a central focus in stakeholder consultation to establish as early in the development process as possible what options (mechanisms, governance structures, and partnerships) are available to secure the most sustainable solution for the context of the development.

For example:

- Approaches to design and implementation that enhance the opportunities for community input.
- Opportunities for voluntary stewardship e.g. Friends groups.
- Governance models to enhance opportunities for engagement e.g. Community Development Trust.

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<sup>29</sup> Dempsey et al., 2015

## *CORE1-5 Evidence of Compliance*

Stage of development: Design through to outline planning application

### **Suggested evidence includes:**

- Green Infrastructure Parameter Plan, or equivalent documentation, broadly indicating:
  - o location, quantum, multifunctionality, and connectivity of green infrastructure features within the development;
  - o how green infrastructure features connect to the wider area;
  - o how new green infrastructure features have been designed in response to existing features, within the development and in the wider area;
  - o how green infrastructure features are used to optimise links to the character of the local environment;
  - o how existing green infrastructure features that characterise the local environment are retained and protected, in particular where this includes irreplaceable natural habitat, such as ancient woodland;
  - o how new green infrastructure features are designed to be appropriate to the development and, respond to local policy context, and enhance the local character;
  - o the multifunctionality of individual green infrastructure features by indicating key functions and benefits delivered in the context of the development; and
  - o how green infrastructure features will be resilient to climate change resilience, minimise the development's environmental impact, and improve environmental quality.
- In the case of phased approvals, careful consideration is given to how green infrastructure is apportioned through phasing. The development demonstrates:
  - o a clear commitment to deliver green infrastructure at each phase of the development;
  - o how connectivity between green infrastructure features across different phases will be secured through conditions attached to the development;
  - o that strategic elements of the green infrastructure framework can be secured, in particular where features will be delivered across two or more phases.
- Evidence of conditions relating to the development's green infrastructure (including quantum, location, functionality, connectivity, phasing) that form part of the determination of outline planning permission.
- Where supporting information is required for the development, as dictated by planning (e.g. evidence from a Landscape Visual Impact Assessment), it is clear how this is reflected in the design for green infrastructure.
- Green Infrastructure Biodiversity and Management Plan (GIBMP), or equivalent documentation, broadly indicating preferred options for management and maintenance.

## Stage of development: Full planning application

- As above, plus additional material located within the Green Infrastructure Parameter Plan, or equivalent documentation, indicating:
  - o existing green infrastructure features that respond to local or national policy and how these have been retained and protected, or enhanced;
  - o new green infrastructure features that respond to local or national policy;
  - o green infrastructure features that reflect and enhance the character of the local environment and add positively to a sense of place;
  - o how green infrastructure features demonstrate resilience to climate change, minimise the development's environmental impact, and improve environmental quality, including supporting documentation e.g. planting schedule detailing species selection and location.

Additional suggested evidence includes:

- Green Infrastructure Biodiversity and Management Plan (GIBMP), or equivalent documentation, detailing:
  - o an options appraisal of the preferred model and funding mechanism for long-term management of green infrastructure features;
  - o how the design and implementation of green infrastructure features ensures their sustainable use and accessibility for regular maintenance;
  - o a maintenance schedule for all green infrastructure features during the construction phases and in use;
  - o requirements for monitoring of green infrastructure features, and remediation, where necessary.
- In the case of phased approvals, the development demonstrates in detail:
  - o which green infrastructure features will be implemented at each phase of the development; and
  - o how connectivity between green infrastructure features across different phases will be secured through implementation.
- Any documentation relating to green infrastructure conditioned as part of the determination at outline.

## Stage of development: Reserved matters

As above, plus additional material detailed within the Reserved Matters applications, and any documentation conditioned as part of the approval. If quantum, location, functionality and connectivity of green infrastructure features have changed from Outline and/or Full application stages this will need to be justified as part of application to Building with Nature accreditation.

Additional suggested evidence includes:

- A more detailed explanation of how green infrastructure features have been designed to contribute multifunctional benefits and how these relate to the development context. For example:
  - o The orientation of built and natural elements within the development protect a vista beyond the boundary of the development.
  - o New green links from the development to existing sustainable travel/active transport routes contribute to health and wellbeing outcomes to meet public health needs.
- Any further documentation relating to the long-term management and maintenance, and monitoring and remediation, of green infrastructure features (including within a particular phase of development). It is expected that the model and funding mechanism for securing the long-term management and maintenance of green infrastructure features will be confirmed at Reserved Matters stage.

### Stage of development: Post-construction

As above, plus evidence to be included on Building with Nature application form (e.g. photo documentation) from a site survey to confirm delivery of the green infrastructure features. Where relevant, documentation showing that the green infrastructure features have been delivered in accordance with previously approved plans. For example:

- Green Infrastructure Parameter Plan, or equivalent documentation, as approved at outline and/or full planning permission.
- Reserved Matters applications relating to green infrastructure features, including reserved matters relating to appearance, access, landscaping, layout or scale.
- Planning conditions relating to green infrastructure have been discharged.
- Green Infrastructure and Biodiversity Management Plan, or equivalent documentation, describing the management and maintenance of green infrastructure features within the development.
- Construction package information detailing how green infrastructure has been implemented at each stage of the construction process.

## *CORE – Further Information*

**Green infrastructure Partnership** ([www.greeninfrastructurep-uk.org](http://www.greeninfrastructurep-uk.org))

**Green Infrastructure Guidance** (Natural England, 2009) [PDF] Available at: [publications.naturalengland.org.uk/file/94026](http://publications.naturalengland.org.uk/file/94026)

**Planning for a healthy environment – Good practice for green infrastructure and biodiversity** (TCPA & The Wildlife Trusts, 2012) [PDF] Available at: <https://www.wildlifetrusts.org/sites/default/files/Green-Infrastructure-Guide-TCPA-TheWildlifeTrusts.pdf>

**Green Infrastructure in Urban Areas** (RICS, 2011) [PDF]. Available at [https://communities.rics.org/gf2.ti/f/200194/18045157.1/PDF/-/RICS Green infrastructure in urban areas 1 .pdf](https://communities.rics.org/gf2.ti/f/200194/18045157.1/PDF/-/RICS%20Green%20infrastructure%20in%20urban%20areas%201.pdf)

**Multi-functional Urban Green Infrastructure: A CIWEM Briefing Report** (CIWEM, 2010) Available at: <http://www.ciwem.org/wp-content/uploads/2016/02/Multifunctional-Green-Infrastructure.pdf>

**The Multifunctionality of Green infrastructure** (Science for Environmental Policy, 2012) [PDF] [http://ec.europa.eu/environment/nature/ecosystems/docs/Green\\_Infrastructure.pdf](http://ec.europa.eu/environment/nature/ecosystems/docs/Green_Infrastructure.pdf)

**UK-GBC Task Group Report: Demystifying Green Infrastructure** (UK-GBC, 2015) Available at: <http://www.ukgbc.org/resources/publication/uk-gbc-task-group-report-demystifying-green-infrastructure>

**Biodiversity Benchmark for a Living Landscape** (The Wildlife Trusts) Available at: <http://www.wildlifetrusts.org/biodiversitybenchmark>. Currently, the only accreditation to recognise and reward outstanding land management for biodiversity<sup>30</sup>.

**Green Infrastructure Audit Best Practice Guide** (2013) Victoria Business Improvement District [https://www.london.gov.uk/sites/default/files/bestpracticeguide\\_a4-10.pdf](https://www.london.gov.uk/sites/default/files/bestpracticeguide_a4-10.pdf)

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<sup>30</sup> UK-GBC, 2009

# Wellbeing (WELL) Standards

There are six wellbeing standards to secure the delivery of health and wellbeing outcomes through the delivery of green infrastructure features through planning and development.

The wellbeing standards encompass the following **principles**:

## 1. Accessible

Ensure that all people can use, enjoy and positively contribute to green infrastructure.

## 2. Inclusive

Ensure that green infrastructure is designed to recognise the needs and strengths of local people, and how these may change over time.

## 3. Seasonal enjoyment

Ensure that green infrastructure features can be used and enjoyed at all times of year.

Going further

## 4. Reducing health inequalities

Ensure that green infrastructure features are designed and located to reduce and/or prevent health inequalities in existing and new communities.

## 5. Socially sustainable

Ensure that green infrastructure creates a sense of social cohesion and inclusion, thereby improving community wellbeing and increasing the likelihood of social sustainability.

## 6. Distinctive

Ensure that green infrastructure contributes to place distinctiveness, with the aim of creating a place where people feel a sense of belonging and pride in their neighbourhood.

Please note: These **principles** are intended to guide your thinking around each of the Standards, whilst you gather evidence to demonstrate compliance with the Standards, which are defined in the full over the following pages.

## WELLBEING – 1

**WELL1: Green infrastructure features are accessible for all and situated close to where people live to promote health, wellbeing, and active living.**

### Background

Green infrastructure supports a wide range of healthy activities. Access to good quality green infrastructure can encourage more active lifestyles, and there is a clear association between psychological health, mental wellbeing, and physical activity<sup>31</sup>. For example, parks and woodlands can be enjoyed for recreational activities as well as education and learning; orchards and urban farms can be utilised for food production and therapeutic benefits; and linear assets such as canals provide active travel routes and opportunities to get close to nature.

This standard ensures that green infrastructure features are ‘accessible for all’ and builds on evidence that the quality of green infrastructure can impact on its usability and attractiveness to individuals and communities<sup>32</sup> and there are key indicators that impact on the quality of green infrastructure, including proximity<sup>33</sup>. This association is particularly evident in more urban and deprived areas<sup>34</sup>. In the context of Building with Nature, ‘accessible for all’ defines features that people can use, enjoy and positively contribute to. The intention is to ensure that no individuals or groups of users are excluded because of their age, physical needs, learning needs, or social and cultural needs, or any protected characteristic (e.g. gender, sexual orientation).

Health benefits<sup>35</sup> derived from access to green infrastructure include: benefits associated with physical activity, for example improved fitness, reduced obesity, and reduced exposure to air pollution; benefits associated with restorative psychological effects, for example improved relaxation and restoration; and the social benefits associated with the opportunities for informal and formal social interaction, for example improved social capital<sup>36</sup>. These benefits are particularly well evidenced when green infrastructure is situated close to where people live and work<sup>37</sup>, optimising opportunities for regular use and enjoyment, for example through the provision of active travel routes at the neighbourhood level.

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<sup>31</sup> Bragg and Atkins, 2016; Forest Research, 2012: 13; O’Brien et al., 2010

<sup>32</sup> Gidlow, Ellis and Bostock, 2012

<sup>33</sup> O’Neil and Gallagher, 2014

<sup>34</sup> Maas, et al., 2006; Mitchell and Popham, 2007

<sup>35</sup> Gidlow, Ellis and Bostock, 2012: 347

<sup>36</sup> Egorov et al., 2016

<sup>37</sup> Ward-Thompson et al., 2012

## Illustrative Examples

Green infrastructure is designed to optimise the quality of individual features, and the proximity between individual features and where people live and work. For example:

- A primary factor affecting people's use and enjoyment is the quality of green infrastructure<sup>38</sup>. Therefore, the development demonstrates how the quality of individual features will be secured at each stage of development, including design, implementation and long-term maintenance.
- The development works to existing standards outlined in good practice guidelines for distances between accessible green infrastructure features by means of active travel (cycling and walking)<sup>39</sup>.

Connectivity, or 'linkage'<sup>40</sup>, between features within the development, and from the development to features beyond the site boundary, is secured at each stage of delivery, and across multiple phases of development in the case of phased development. For example:

- Connections and linkages are made between green infrastructure features within the boundary of the development, and existing features beyond the boundary, for example enhancing green routes from the development to existing settlements, urban centres, transport interchanges and established active travel networks such as the National Cycle Network.
- The quantity and quality of 'linkages' between green infrastructure features is well designed i.e. paths are fit for purpose<sup>41</sup>.
- Where possible, vegetation is utilised as a preferred boundary demarcation between properties and alongside active travel routes, to optimise connectivity within the development for the benefit of people (e.g. attractiveness of landscape can encourage more people to walk and cycle as a preferred mode of transport for short trips).
- The development retains and enhances existing networks, or makes provision for new networks, of safe and attractive active travel routes between green infrastructure features and homes and community facilities (e.g. schools, health and community centres), and routes are designed to be more attractive for people to use. For example, using landscaping and regular, cyclical and remedial maintenance (particularly where proximity of vegetation may reduce the usability of paths) (*link to CORE5*).

When assessing the quality of green infrastructure within a development, the range of green infrastructure features that are accessible by the local community is critical to optimising use

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<sup>38</sup> cf. Gidlow, Ellis and Bostock, 2012; CABE, 2010

<sup>39</sup> Natural England (2010); BRE (2012)

<sup>40</sup> O'Neil and Gallagher, 2014

<sup>41</sup> O'Neill and Gallagher, 2014: 212

and enjoyment<sup>42</sup>. The development should therefore provide physical links (e.g. active travel routes) between the green infrastructure in the development and existing neighbourhoods and/or features.

Walking distance between green infrastructure features is considered and the network of green infrastructure features is designed to allow all users to be within walking distance of an appropriate range of accessible green spaces for the scale and type of development.

An appropriate range of accessible green spaces are provided for the scale and type of development, these can be classified by their size and associated functions and benefits:

- Smaller areas or 'neighbourhood green space' e.g. 'LEAP', 'pocket park';
- Larger areas or 'sub-regional'/'regional' green space<sup>43</sup> e.g. country park, recreational woodland.

Recommended walking distances, via safe and convenient pedestrian routes, are as follows:

- <650m in an urban development or <1300m in a rural development<sup>44</sup>.
- In urban areas, the Accessible Natural Greenspace Standard (ANGSt)<sup>45</sup> is achieved or exceeded.

To enhance exposure to green spaces intended for public use, a launch event or public opening optimises future use and engagement<sup>46</sup>.

Where necessary, mitigation is provided for negative impacts of green infrastructure on health, for example the negative impacts of increased disease vectors and allergens.

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<sup>42</sup> Gidlow, Ellis and Bostock, 2012: 348

<sup>43</sup> CABE, 2009

<sup>44</sup> BRE, 2012: 95

<sup>45</sup> Natural England's, 2011

<sup>46</sup> Shackell and Walter, 2012: 42

## WELLBEING – 2

**WELL2: The development encourages all people to use and enjoy green infrastructure and considers the needs and strengths of vulnerable and excluded groups.**

### Background

As well as the proximity to the built environment, the usability and attractiveness of green infrastructure features is critical to optimise accessibility and enjoyment by different user groups<sup>47</sup>. This standard builds on WELL1 by expanding accessibility to include viewing nature (e.g. visual access) and being in the presence of nature (e.g. auditory access, socialising in a park), rather than just actively participating in activities in nature<sup>48</sup> (e.g. walking, gardening), the aim of this standard is to encourage the design of green infrastructure to include the needs and strengths of groups who may ordinarily be excluded from the use and enjoyment of green infrastructure. This can be of particular benefit for vulnerable and excluded groups, for example people living with dementia, depression and other conditions that affect mental health, reduce mobility and increase social isolation<sup>49</sup>; as well as people living in areas which are multiply deprived<sup>50</sup>.

Research suggests that higher quality green infrastructure is linked to increased health benefits<sup>51</sup>, and that this link is even stronger in areas of deprivation<sup>52</sup>. This standard therefore ensures that existing and new green infrastructure features are designed to reflect the needs and strengths of local people, to consider how these needs and strengths may change over time, and to secure health benefits through appropriate mechanisms for the on-going management and maintenance of features. For example, a feature may require re-designing when a development is in use to match the needs and strengths of local people in the future (*link to CORE5*).

### Illustrative Examples

The development demonstrates that use and enjoyment have been optimised by ensuring green infrastructure features are attractive and usable to a wide range of users with different needs and strengths, including vulnerable and excluded groups.

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<sup>47</sup> CABE, 2010; Schipperijn et al., 2010

<sup>48</sup> Pretty et al., 2005; Gladwell et al., 2012; TCPA, 2012

<sup>49</sup> Bragg and Atkins, 2016

<sup>50</sup> Mitchell and Popham, 2008

<sup>51</sup> Gidlow, Ellis and Bostock, 2012: 347

<sup>52</sup> Mitchell and Popham, 2008

The diversity of existing and future users should be reflected in the range (i.e. size and type) of green infrastructure features included within the development to support the needs and strengths of local people and encourage healthy lifestyles. For example:

- Needs may relate to an absence of a particular type of green infrastructure feature within or in proximity to the development, or an evaluation of demographic needs of existing or intended communities (link to CORE 2). Needs could be based on a number of factors including sex, age profile, socio-economic group, employment status, household composition<sup>53</sup> (e.g. public open spaces for informal gatherings and cultural events; areas for tranquillity and quiet; areas for children's play);
- Strengths could be based on existing or proposed characteristics such as the presence of amenities, community groups or other initiatives that may engage with, or benefit from, the green infrastructure features (e.g. schools, commercial premises, health centre).

Green infrastructure features are designed in recognition that needs and strengths may change over the lifetime of a development, in response to shifting demographics within a community (link to CORE 2).

The demographics of an existing community or intended demographics of a new community should be a principal reference point in the design of new or enhancement of existing green infrastructure features. This should inform decisions about what green infrastructure features to retain, enhance or create to respond effectively to the needs and strengths of existing or future local people (link to CORE 2).

The development includes a range of features facilitating the same or similar functions. By combining functions, green infrastructure features may prove more flexible to meet socio-demographic needs and resilient to changes in interest and focus at the local level. For example:

- Features that provide outdoor play and sports opportunities also contribute to environmental education opportunities through the creation of additional wildlife habitat.
- Opportunities for food production is delivered through a range of publicly accessible features (e.g. allotments, community orchards, community gardens), in addition to private gardens.
- The development includes green roofs and green walls to create a stimulating and attractive environment to maximise enjoyment through visual and auditory access to green infrastructure.

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<sup>53</sup> Gidlow, Ellis and Bostock, 2012: 354

## WELLBEING – 3

**WELL3: Green infrastructure is designed to encourage optimal use and employs hard and soft features to be accessible at all times of year.**

### Background

By designing green infrastructure features that may be used and enjoyed at all times of year, the benefits of green infrastructure for individuals and communities are optimised. For example, providing additional facilities, seating and other furniture, and considering lighting provision, may all result in people feeling more able, welcome and safe when accessing green infrastructure features within the development.

This standard builds on the focus on quality of green infrastructure features in WELL2 by emphasising the importance of carefully designed and well-maintained features to ensure green infrastructure features are accessible at all times of year. It extends consideration to the impact of aesthetics, amenities and landscape character to optimise use of green infrastructure features. Evidence shows that the design of hard features (e.g. seating, shelter, cycle parking, litter/dog bins, signage) and soft features (e.g. wildlife areas, trees/plants/flowers) can influence usability and quality of green infrastructure features<sup>54</sup>.

### Illustrative Examples

The development includes a range of interventions, both hard (e.g. seating) and soft (e.g. street trees), to encourage optimal use and maximise the benefits of green infrastructure throughout the year. For example:

- Seating and shelter is located to consider sun, shade, wind and rain<sup>55</sup>.
- The development considers the design and positioning of buildings, and their relationship with landscaping, to enhance the functions and benefits of green infrastructure; such as situating street trees to provide shade and urban cooling.
- The use of active travel routes within the development is optimised through the utilisation of lighting, provision for safe and secure facilities to lock cycles, and where possible and appropriate, prioritisation is given to pedestrians and cyclists over vehicles through limited vehicle access and car speed limitations.

The development includes a range of features and microclimates that facilitate year round use and enjoyment of green infrastructure.

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<sup>54</sup> Gidlow, Ellis and Bostock, 2012: 350-353

<sup>55</sup> BRE, 2012

Soft features are used to maximise the seasonal differences of green infrastructure features. For example:

- Consideration is given to the functions and benefits of particular types of vegetation, and vegetation is used to optimise enjoyment for all users, for example planting can emphasise season changes and the passage of time, or the use of scented or brightly coloured leaves and flowers can provide additional stimulation and therapeutic benefits.
- The use of water within the built environment can also enhance the multisensory and therapeutic benefits of green infrastructure.

## *WELLBEING 1-3 Evidence of Compliance*

Stage of development: Design through to outline planning application

**Suggested evidence includes:**

Green Infrastructure Parameter Plan, or equivalent documentation, broadly indicating:

- proximity between green infrastructure features designed for regular access by people (green spaces, allotments, and active travel routes) and the built environment (including homes, places of work, and community facilities);
- what particular functions and benefits have been identified in the context of the development, as it relates to new and existing communities;
- how will these features contribute to the use and enjoyment of all users; and
- how features are retained, protected, created or enhanced to reflect existing and future needs and strengths of local people as defined by an understanding of the demographic profile or existing and/or new communities; and the range of hard and soft features included to encourage optimal use and enjoyment at all times of year.

Stage of development: Full planning application

As above, but with a more detailed Green Infrastructure Parameter Plan indicating the design of individual green infrastructure features and how this design supports the delivery or functions and benefits identified at outline.

- For example, green infrastructure features are located to be accessible by active travel routes that are designed to be safe and convenient to use in all weathers.

Any documentation conditioned as part of the determination e.g. Green Infrastructure and Biodiversity Management Plan (GIBMP).

In the case of phased development, a more detailed indication of what green infrastructure features will be delivered in each phase, with a demonstrated commitment to deliver green infrastructure at each phase of implementation and construction to maximise the use and enjoyment for all users, including those within the first phase of completion.

Stage of development: Reserved matters

As above but with any adjustments detailed and explained. Plus, any documentation relating to health and wellbeing conditioned as part of the approval.

Details within the Green Infrastructure and Biodiversity and Management Plan (GIBMP), or equivalent documentation, to identify:

- how key aspects of the design of green infrastructure features that contribute to the use and enjoyment of all users, including vulnerable and excluded groups, will be managed and maintained in the long term;
- how hard and soft features that contribute to optimal use and enjoyment of green infrastructure features will be managed and maintained in the long term.

Stage of development: Post-construction

See CORE 1-6: Evidence of Compliance.

## WELLBEING – 4

**WELL4: Green infrastructure supports local priorities for reducing and/or preventing health inequalities.**

### Background

Health inequalities are the ‘unfair and avoidable differences in people’s health across social groups and between different population groups’ and are ‘most commonly associated with socio-economic inequalities but can also result from discrimination’ (NHS Scotland). The social determinants of health<sup>56</sup> impact on individuals and communities and include: age, sex, lifestyle, activities, built environment, and natural environment. ‘Local authorities are uniquely placed to tackle health inequalities, as many of the social and economic determinants of health, and the service and activities which can make a difference, fall within their remit’<sup>57</sup>. The role of local government in green infrastructure planning, including in the production of policy documents, and through the development and plan-making process, is therefore key to ensuring green infrastructure can contribute to reducing health inequalities by optimising the role green infrastructure plays in supporting and optimising the health and wellbeing of individuals and communities.

Social interaction and access to outdoor, natural environments is important to increase the quality of life for people living with dementia; and nature-based interventions, and activities in natural settings, such as Social and Therapeutic Horticulture, Care Farming, and Animal Assisted Therapy, can have therapeutic benefits on less healthy and vulnerable groups in society<sup>58</sup>. In the case of people living with dementia<sup>59</sup>, health benefits associated with access to nature include: improved emotional state; reduced stress, agitation, anger, apathy and depression; improved sleeping and eating patterns; improved verbal expression, memory and attention; improved awareness, sense of wellbeing, independence, self-esteem and control; as well as improved social interaction and sense of belonging. In the case of children suffering from attention deficit hyperactivity disorder (ADHD), access to green infrastructure has a restorative effect on mental health and is associated with less severe symptoms<sup>60</sup>.

### Illustrative Examples

The development demonstrates that each stage of green infrastructure delivery (design, implementation, management and maintenance) addresses health inequalities, and social determinants of health, as identified in local policy. To maximise opportunities for healthy

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<sup>56</sup> NICE, 2012; Marmot, 2010

<sup>57</sup> NICE, 2012

<sup>58</sup> Bragg and Atkins, 2016: 12

<sup>59</sup> Clark, et al., 2013, cited in Bragg and Atkins, 2016: 12

<sup>60</sup> Coutts, 2016; Forest Research, 2010: 16

living, ensuring all people feel safe, secure and comfortable whilst using green infrastructure features, the development integrates elements that meets the needs of vulnerable user groups at risk of being excluded.

Older people can be more susceptible to environmental stressors<sup>61</sup>, and as such green infrastructure features aim to support healthy ageing in urban areas. The development highlights the importance of design, enhancement, management, therapeutic and health and wellbeing related activities, and biodiversity in determining the capacity of green infrastructure to deliver health benefits. As such, this standard ensures inclusive design elements are employed to make sure green infrastructures are inviting and functional, for example street furniture can be designed to be dementia-friendly<sup>62</sup>.

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<sup>61</sup> Green Infrastructure and Health and Wellbeing Influences on an Ageing Population (GHIA)

<sup>62</sup> TCPA, 2008: 9

## WELLBEING – 5

**WELL5:** The development demonstrates creative solutions to overcoming social and cultural barriers to use and enjoyment of green infrastructure and considers how green infrastructure can promote socially sustainable communities and community cohesion.

### Background

The more connected individuals and groups within a community are, the greater the potential to create a sense of cohesion and inclusion, improve community wellbeing, and promote a sense of social inclusion. Places with these characteristics are more likely to be socially sustainable.

Access to green infrastructure can impact positively on key social indicators<sup>63</sup>, and high-quality green infrastructure help make neighbourhoods ‘more attractive, relaxing, comfortable and welcoming’ by ‘increasing levels of social contact and social integration; creating community cohesion and enhancing social ties, especially within disadvantaged communities; providing a sense of community; engaging individuals from different social groupings that may not normally interact, particularly in underprivileged neighbourhoods; and creating opportunities for community participation in volunteering’<sup>64</sup>.

A lack of community cohesion, particularly in new developments, can have a negative impact on levels of health and wellbeing. The provision of green infrastructure at the earliest opportunity can mitigate a sense of separation and isolation in new communities and facilitate a sense of belonging<sup>65</sup>; which in turn can improve social sustainability.

By identifying ways for all groups to feel able to contribute positively to the design and long term management and maintenance of green infrastructure features, for example through the adoption of green infrastructure features by local individuals and groups, the development can support a wider commitment to delivering socially inclusive and sustainable communities.

### Illustrative Examples

Green infrastructure is designed to enhance social cohesion and accommodate the needs of groups who are particularly vulnerable to social exclusion, including ethnic minorities, young people, older people, and those at an economic disadvantage<sup>66</sup>.

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<sup>63</sup> Wildlife Trust Wales, 2016

<sup>64</sup> Wildlife Trust Wales, 2016: 19

<sup>65</sup> Barnwood Trust et al., 2016

<sup>66</sup> Wildlife Trust Wales, 2016: 19

For example:

- Green infrastructure features are designed to address barriers to use in development where demographics include people most vulnerable to social exclusion. This may involve strategies to design out crime, as perceived safety of individual features can impacts on use<sup>67</sup>.

Within the context of the development, the design for green infrastructure reflects the socio-demographic composition of new and/or existing communities so as the provision for green infrastructure features meets the actual and potential needs of different user groups, including needs relating to social and cultural preferences.

For example:

- There is a range of green infrastructure features to meet the diversity of user groups, whose needs may vary according to cultural beliefs.
- The development provides areas where dog walking is restricted to encourage the use of green infrastructure by user groups whose preference or cultural practices prohibit their enjoyment of green infrastructure which is used regularly by large numbers of dog walkers.

The layout and connectivity of green infrastructure features is designed to maximise opportunities for all individuals and groups to enjoy informal social interaction, and formal social and cultural events.

For example:

- The development provides places for informal social gathering, such as community gardens and allotments, community orchards, and places for formal social gathering and cultural events.

Facilities are provided to enhance the ease of use, comfort and enjoyment of all user groups, ([link to WELL2](#)).

For example:

- Provision is made for access to specialist facilities, for example adapted<sup>68</sup> toilets and changing rooms.
- Provision of signage in multiple languages.

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<sup>67</sup> CABE, 2010

<sup>68</sup> Changing Places [online] provide extra equipment and space, required for people with profound and multiple learning disabilities, as well people with other physical disabilities such as spinal injuries, muscular dystrophy and multiple sclerosis to use facilities safely and comfortably.

If the development is delivered in phases, temporary green infrastructure features are used in early phases to contribute to community cohesion and socially sustainable communities.

For example:

- Creating 'meanwhile spaces' and 'pop up parks' at an early stage of development where communities can meet and connect<sup>69</sup>.

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<sup>69</sup> Barnwood Trust et al., 2016

## WELLBEING – 6

**WELL6:** The development demonstrates that green infrastructure is integral to the distinctiveness of place.

### Background

The natural environment can contribute to a sense of place, and support feelings of pride and identity within communities<sup>70</sup>. People's perception of place is intrinsically linked to how people experience the qualities of a place; this is often defined in terms of place distinctiveness<sup>71</sup>. Place distinctiveness can add to the vitality of a place, which in turn impacts positively on people feeling a sense of belonging and pride in where they live; attributes that can contribute directly to health and wellbeing<sup>72</sup>. This standard ensures that green infrastructure contributes to place distinctiveness, with the aim of creating a place where people can live well and flourish.

### Illustrative Examples

The development clearly outlines the importance of green infrastructure to place distinctiveness, and demonstrates a commitment to retain, restore, enhance and expand existing green infrastructure features within the development which positively contribute to place distinctiveness. This includes:

- Green infrastructure features that reflect and enhance landscape character, if this character has been identified as being locally distinctive or 'special, are retained.
- Green infrastructure features that add value to existing heritage and historic features, where these features are considered to be important to place distinctiveness.
- Green infrastructure features that protect or enhance valuable views into and out of the site; and features that enhance the setting of development, within and beyond the site boundary.
- Green infrastructure features that enhance integration with the surrounding area e.g. existing hedgerows.

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<sup>70</sup> The Natural Environment White Paper, 2010

<sup>71</sup> Scottish Natural Heritage, 2011: 45

<sup>72</sup> Eyles and Williams, 2008

## *WELLBEING 4-6 Evidence of Compliance*

### Stage of development: Design through to outline planning application

Green Infrastructure Parameter Plan, or equivalent documentation, broadly indicating:

- how the quantum and layout of green infrastructure (CORE1) within the development has been designed to support health inequality priorities and consider the needs of vulnerable and excluded groups;
- how green infrastructure has been designed to mitigate any social or cultural barriers which may minimise the use and enjoyment of green infrastructure features;
- which existing green infrastructure features are retained, restored, enhanced or expanded to positively contribute to place distinctiveness;
- which green infrastructure features are created to positively contribute to place distinctiveness.

### Stage of development: Full planning application

A detailed plan indicating how the development's design, implementation, management and maintenance of green infrastructure features, and their location, connectivity and proximity to the built environment, will:

- support the delivery of multifunctional benefits for all people, included those affected by health inequalities, and those labelled as vulnerable or excluded;
- promote community cohesion and wellbeing, and contribute to socially sustainable communities;
- protect and enhances characteristics which are defined as being locally distinctive or 'special', including views and vistas which add to the development's place distinctiveness.

In the case of a phased development, a more detailed indication of what green infrastructure features will be delivered in each phase, with a demonstrated commitment to delivering green infrastructure at each phase of implementation and construction to maximise the use and enjoyment for all users, including those within the first phase of completion.

### Stage of development: Reserved matters

As above but with any adjustments detailed and explained. Plus, a detailed Green Infrastructure Parameter Plan, or equivalent documentation, and a Green Infrastructure and Biodiversity and Management Plan (GIBMP), or equivalent documentation, indicating how individual features will be implemented, managed and maintained to deliver benefits to:

- support health inequality priorities and the needs of vulnerable and excluded groups;
- overcome social and cultural barriers to use of particular features;
- promote community cohesion and wellbeing, and contribute to socially sustainable communities; and
- contribute positively to place distinctiveness.

In the case of phased development, a more detailed indication of what green infrastructure features will be delivered in each phase, with a demonstrated commitment to deliver green infrastructure at each phase of implementation and construction to maximise the use and enjoyment for all users, including those within the first phase of completion. This is particularly important for strategic scale, multi-phase developments. In these cases, there is evidence that the first phase of development includes green infrastructure to support the health and wellbeing outcomes of new communities.

Stage of development: Post-construction

See [CORE 1-6: Evidence of Compliance](#)

## *WELLBEING – Further Information*

**Sporting Future: A New Strategy for an Active Nation** (HM Government, 2015) Available at: <https://www.gov.uk/government/publications/sporting-future-a-new-strategy-for-an-active-nation>. In particular, Para. 10; Para. 13; Para. 23; Para. 61; and Para. 78.

**Healthy Urban Planning Checklist** (NHS London Healthy Urban Development Unit, Second Edition, 2015) Available at: <http://www.healthyurbandevelopment.nhs.uk/wp-content/uploads/2015/07/Healthy-Urban-Planning-Checklist-June-2015.pdf>

**‘Nature Nearby’ Accessible Natural Greenspace Guidance. NE265. Natural England** (2010) Available at: <http://webarchive.nationalarchives.gov.uk/20140605145320/http://publications.naturalengland.org.uk/publication/40004?category=47004> Accessed 25 February 2017

**Open space strategies: Best practice guidance** (CABE Design Review, 2009) [PDF] Available at: <https://www.designcouncil.org.uk/sites/default/files/asset/document/open-space-strategies.pdf>

**Green spaces strategies: A good practice guide** (CABE Design Review, 2004) [PDF] Available at: <http://webarchive.nationalarchives.gov.uk/20110118095356/http://www.cabe.org.uk/files/green-space-strategies.pdf>

**Welcome to the Future: A local model for building socially sustainable communities.** (Barnwood Trust, Cheltenham Borough Homes, Bromford and Sovereign, 2016) [PDF] Available at: [https://www.cheltenham.gov.uk/download/downloads/id/5561/socially\\_sustainable\\_communities.pdf](https://www.cheltenham.gov.uk/download/downloads/id/5561/socially_sustainable_communities.pdf)

**Describing and Promoting the Landscapes of Central Scotland, CSGN landscape audit.** (Scottish Natural Heritage, 2011a) [PDF] Available at: <http://www.snh.gov.uk/docs/B1005345.pdf>

**The contribution of the natural heritage to better place-making: illustrative examples.** (Scottish Natural Heritage, 2011b) [PDF] Available at: <http://www.snh.gov.uk/docs/A492122.pdf>

**The Natural Choice: securing the value of nature.** (HM Government, 2011) [PDF] Available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/228842/8082.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228842/8082.pdf)

# Water (WAT) Standards

There are six water standards to effectively manage water quantity and quality, increase flood resilience, and maximise opportunities for biodiversity and amenity.

The water standards encompass the following **principles**:

## 1. Quantity

Ensure that green infrastructure supports the management of flood risk and maintains and protects the natural water cycle by managing and using rainwater close to where it falls.

## 2. Quality

Ensure that green infrastructure positively contributes to surface water management and associated components to deliver a controlled flow of clean water.

## 3. Amenity and biodiversity

Ensure that green infrastructure is integrated with SuDS to enhance benefits for people and nature.

## 4. Innovative

Ensure that green infrastructure within the boundary of the development is used to enhance the water storage capacity of land adjacent to, or downstream from, the development.

## 5. Resilient

Use a diversity of green infrastructure features to enhance water quality through more and better treatment stages, thereby maximising resilience and efficiency of pollution reduction.

## 6. Locally distinctive

Use water management features to create a distinct sense of place.

Please note: These **principles** are intended to guide your thinking around each of the Standards, whilst you gather evidence to demonstrate compliance with the Standards, which are defined in the full over the following pages.

## WATER – 1

**WATER1: Green infrastructure is integral to sustainable drainage and features are designed to minimise surface runoff, manage flood risk, and maintain the natural water cycle.**

### Background

This standard is about controlling water quantity through surface water management. This standard aims to support the utilisation of green infrastructure to control the quantity of surface runoff, which in turn supports the management of flood risk<sup>73</sup>. By integrating surface water management into the design of green infrastructure in the built environment, surface water can be managed for maximum benefit, now and in the future<sup>74</sup>.

The principal method of managing surface water is through the delivery of SuDS which are defined as ‘an interconnected system of individual components (such as filter strips, swales, and detention ponds) designed to manage, treat and make the best use of surface water, from where it falls as rain to the point at which it is discharged into the receiving environment beyond the boundaries of the site’<sup>75</sup>.

The greater the number of SuDS components utilised within a water management system, the more resilient the system. By splitting the volumes up as much as possible, storing water within a sub-catchment in more than one place, and varying the type of green infrastructure feature utilised for water management, it is possible to maximise natural losses to groundwater, which in turn enhances flood resilience. Where possible, these features should be connected and continuous to maximise their capacity to attenuate natural losses.

In turn, by introducing and enhancing a scheme’s water storage capacity, sustainable drainage can contribute to a more hydrated landscape which can maximise resilience to flooding and reduce the demand for additional water to maintain green infrastructure features.

### Illustrative Examples

The development has adopted a SuDS approach to water management, where water management is designed to be on or at the surface, and SuDS components are integral to green infrastructure. The types of SuDS components integral to green infrastructure include:

- Rainwater harvesting systems;
- Green roofs;

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<sup>73</sup> CIRIA C753, 2015: 6

<sup>74</sup> CIRIA C753, 2015

<sup>75</sup> CIRIA C753, 2015: 27

- Infiltration systems;
- Proprietary treatment systems;
- Filter strips;
- Swales;
- Bioretention systems;
- Trees;
- Pervious pavements;
- Detention basins;
- Ponds, reed beds and wetlands<sup>76</sup>.

As such, the approach to surface water management within the boundary of the development is through a range of green infrastructure features, of different types and sizes, which are integral to the design of SuDS components to maximise the multiple-benefits of slowing the flow of water through a scheme and maintaining a hydrated landscape.

Green infrastructure is used to optimise water storage within the boundary of the development through inclusion of green infrastructure features in as many locations across the scheme as possible, improving connectivity between features to enhance their capacity to attenuate natural losses.

The design and implementation of water management is carried out by appropriately qualified professionals in line with current good practice.<sup>77</sup>

Within the development's characteristics, development context and local policy objectives, there is evidence that the CIRIA SuDS Manual's Design Criteria<sup>78</sup> for water quantity are adopted.

The design for SuDS is based on a series of assessments including:

- Surface water runoff calculations;
- Hydraulic modelling to determine the storage requirements for each square metre of impermeable land use for specified rainfall return periods<sup>79</sup>;
- Total area of impervious roof surfaces to calculate the available roof collection area<sup>80</sup>.

Green infrastructure features that are integral to individual SuDS components within the development include consideration of an appropriate approach to flows and volumes to minimise peak rate of surface water run-off.

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<sup>76</sup> CIRIA C753, 2015: 29; BRE, 2012

<sup>77</sup> BRE, 2012

<sup>78</sup> CIRIA C753, 2015: 34

<sup>79</sup> For example, using the methodology developed by Robert Bray Associates.

<sup>80</sup> A calculation method for roof collection is described in BS EN 12506-3:2000

Recommendations of the appropriate statutory bodies are incorporated within the site-specific flood risk assessment<sup>81</sup>.

There is a clear management strategy for any additional volume of rainwater discharge predicted for a 1 in 100-year event of 6-hour duration (including an allowance for climate change), and where this is not possible alternative flow rates are agreed with relevant technical experts and planning authorities<sup>82</sup>.

Storage requirements are dispersed throughout the site and development is divided into smaller sub-catchments and all green infrastructure features, including roofs and paved areas, have been considered for their potential to integrate SuDS components allowing the integration of SuDS into a development with little or no impact on developable land.

A range of flow control mechanisms to allow the control of flow rates as water passes from one part of the system to another are utilised, to manage the low hydraulic heads driving flows associated with shallow storage features when working with smaller sub-catchments. There is evidence that the development has considered how interventions which manage surface water run-off can also effectively minimise water demand.

For example:

- SuDS components are integral to green infrastructure features within the development, satisfying water demand for planting and landscape whilst delivering additional benefits to people and wildlife (*link to WAT3*).
- A range of simple, robust and easy to maintain inlets, outlets and flow control devices have been designed and implemented throughout the development.

Green infrastructure features contributing to surface water management are designed in such a way that adoption is made simpler.

For example:

- Permeable paving as part of a new development is designed as part of the highway network for the development.

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<sup>81</sup> BRE, 2012

<sup>82</sup> BRE, 2012

## WATER – 2

**WATER2: Green infrastructure has been used to improve water quality and maintain the natural water cycle within the boundary of the development.**

### Background

This standard is about managing surface water run-off within a scheme to prevent pollution. This standard builds on WAT1 by supporting the use of green infrastructure as part of a sustainable drainage approach to surface water management to not only manage water quantity, but to help maintain and protect the natural water cycle by managing and using rainwater close to where it falls. The aspiration of surface water management is to create a controlled flow of clean water as soon as possible at source, and by utilising SuDS components it is possible to mimic the role of natural hydrology and manages potential water pollution at source.

Green infrastructure features can be utilised to discharge a controlled flow of clean water, shifting resources away from a solely civil engineering approach to surface water management through source control and a legible management train. This standard therefore ensures that interventions are designed to minimise the risk of pollution from surface water run-off by managing the flow and quality of water within the boundary of the scheme.

### Illustrative Examples

Water quality issues are determined in the initial parameters of design. It is clear from documentation detailing the design of green infrastructure features that water is an integral element to the development, and the role of water and the function of green infrastructure in improving the quality of water on site, is clear in the layout of the site, and selection of green infrastructure features.

Within the development's characteristics, development context and local policy objectives, there is evidence that the CIRIA SuDS Guide's Design Criteria<sup>83</sup> for water quality are adopted.

Green infrastructure features are designed to assist with management of water quality within the development and are designed to be managed as standard landscape features.

SuDS components are designed to meet current good practice in terms of water quality management.

For example:

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<sup>83</sup> CIRIA C753, 2015: 34

- The Simple Index Approach (SIA) Tool<sup>84</sup> is used to check the sufficiency of proposed SuDS components in mitigating water quality risks to receiving water bodies and establish the relevant 'Design Conditions' necessary to manage each inflow or 'runoff area' on a site by site basis.

The source of any water pollution is controlled as soon as possible, and green infrastructure is designed to enhance interception losses to stop pollution moving through the management train. SuDS features follow a sequential system in series (i.e. one-two or on-two-three) and there is a minimum number of treatment stages<sup>85</sup>.

For example:

- Rain gardens, green roofs, and filter strips can be utilised can be integrated within a SuDS system to remove pollutants and silt.
- Green infrastructure features are designed to absorb the first 5mm of rainfall, avoiding the mobilisation of pollutants further downstream.

Consideration is given to the nature of the development and its associated risk of water pollution.

- Residential and commercial developments are generally 'low-medium';
- Industrial developments are 'medium-high'.

The development makes provision for conveyance at or near the surface for water treatment and biological benefit AND more than one type of green infrastructure feature to support water management OR all features are vegetated to maximise water treatment effectiveness, resilience, and to provide maximum opportunities for amenity and biodiversity (*link to WAT3*).

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<sup>84</sup> CIRIA C753, 2015

<sup>85</sup> CIRIA C753, 2015

## WATER – 3

**WATER3: The design of SuDS enhances the capacity of green infrastructure features to create and sustain better places for people and nature.**

### Background

This standard recognises that whilst SuDS are utilised to manage water quantity (WAT1) and quality (WAT2), there is a further opportunity to enhance benefits for people and nature by integrating SuDS components within green infrastructure features. This standard builds on this foundation of good practice by ensuring that green infrastructure features that contribute to surface water management are designed to be multifunctional and beneficial for both people and wildlife. For example, enhancing existing water bodies to more effectively capture and hold a clean flow of water within a development, provides additional habitat for a range of species and a natural environment resource that benefits communities by optimising amenity and educational opportunities (*link to WELL1*).

Essentially, surface water management which prioritises the utilisation of existing and new green infrastructure features, including a consideration of topography and landscape character, captures the design philosophy of a SuDS approach, and offers more and better opportunities for nature and people than an approach which places more focus on highly engineered solutions.

In addition, from a landscape perspective, a sub-catchment approach represents the best practice approach to water management: rehydrating the landscape through interception, reducing the risk of flooding (*link to WAT1*), reducing the demand for additional water to maintain green infrastructure, and creating multiple benefits for amenity and biodiversity.

### Illustrative Examples

The development designs SuDS components, to be integral to green infrastructure features, where possible, to enhance opportunities for amenity and biodiversity<sup>86</sup>.

SuDS components contribute positively to a high-quality environment for people, by providing amenity value, opportunities for environmental education, delivering safe surface water management systems, and increasing resilience to climate change; and for nature, by creating additional habitats, and improving ecological connectivity.

In order to create maximum value for biodiversity, green infrastructure features that contribute to water management are designed within a “hierarchy of storage”.<sup>87</sup>

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<sup>86</sup> CIRIA C753, 2015: 34

<sup>87</sup> Robert Bray Associates

For example:

- The “first flush” (first 10-15mm of rain) is caught and made clean as soon and as close to source as possible by employing a range of SuDS components (*link to WAT2*) e.g. pervious paving.
- Volumes > 10mm rainfall, now clean, are stored in the landscape and utilised in the regulation of green infrastructure features e.g. ponds, wetlands, and vegetated swales, thereby enhancing the opportunities to derive additional benefits through amenity and biodiversity.
- The development integrates ‘sub-catchments’, rather than designing one single component to manage water volumes; the site is designed so water is managed in small volumes throughout the site, optimising the number of green infrastructure features that can include SuDS components, and thereby contribute to water management, and gain reciprocal benefits for people and wildlife. From a landscape perspective, this sub-catchment approach represents the best practice approach to water management; rehydrating the landscape through interception, reducing the risk of flooding, reducing the demand for additional water to manage green infrastructure, and creating multiple benefits for amenity and biodiversity.

## *WATER 1-3 Evidence of Compliance*

Stage of development: Design through to outline planning application

Green Infrastructure Parameter Plan, or equivalent documentation, broadly indicating:

- how surface water will be managed at a sub-catchment level, showing how water storage capacity is supported by the design of a network of green infrastructure features, which have been designed, and located, to contribute to surface water management and the reduction of flood risk;
- how the design of green infrastructure features contributes to the management of water quality within the boundary of the development;
- how green infrastructure features have been used to maximise opportunities for multifunctional benefits;
- how SuDS components are designed with people and wildlife in mind to enhance the amenity and biodiversity value of the development.

Documentation clearly outlining the following in the context of the development:

- Flood risk, including reference to appropriate flood risk strategies, policy and practice guidelines;
- Calculation of surface run-off within the context of the development, and appropriate design options for managing water quantity;
- Calculation of surface run-off takes into account climate change; and water management within the development accounts for climate change.
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It is clear from the Green Infrastructure Parameter Plan, or equivalent documentation, that water is an integral element to the development. It is also clear from the layout of the site and selection of green infrastructure features that green infrastructure is being used to manage water quantity, improve water quality, and provide additional amenity and biodiversity value.

Stage of development: Full planning application

Green Infrastructure Parameter Plan, or equivalent documentation, includes a detailed plan of:

- how the quality of surface water will be managed, including details of how green infrastructure is designed to integrate SuDS components to assist with a controlled flow of clean water at source;
- how the SuDS development has been informed by flow and volume calculations. The inclusion of inlets, outlets and flow control devices with SuDS on site to manage water effectively within the landscape and keep water flow at the surface;

- an assessment of the ground water and peak rate of run-off to determine the suitability of the SuDS and to act as a baseline for improving the quality and managing the quantity of water on site and as a result of development;
- appropriate justification of inclusion or absence of SuDS features to optimise the use and re-use of water from collection to discharge;
- how water quality will be managed utilising green infrastructure features, including the design of SuDS components to assist with a controlled flow of clean water at source;
- how green infrastructure which is designed to be integral to SuDS components will assist with a controlled flow of clean water at source, delivering multiple benefits for amenity and biodiversity.

Evidence that individual SuDS components are linked together in a network of green infrastructure features to provide for water management, as well as increased biodiversity and where appropriate, an accessible, natural recreational resource.

Demonstration of how a specific selection of SuDS components will contribute to amenity and biodiversity based on their function, scale and location in the development.

Depending on the scale of the development, the range of water management features will include SuDS components which are designed to be integral to large, landscape-scale features; as well as smaller, integral features within the built environment.

### Stage of development: Reserved matters

As above but with any adjustments detailed and explained. Plus, any documentation relating to water management conditioned as part of the approval.

A Green Infrastructure and Biodiversity and Management Plan (GIBMP), or equivalent documentation, indicating that:

- components are designed to be robust and easy to maintain, including provision of adequate access for inspection and regular maintenance;
- green infrastructure features that are contingent on the management of water quantity, including those with integral SuDS components, will be managed and maintained in the long term.

A clear indication of the most appropriate mechanism/s for long-term management and maintenance, as well as remediation, of integral green infrastructure features designed to contribute to sustainable water management. Consideration is given to how features that are integral to the footprint of individual private dwellings will be managed and maintained in the long-term.

Stage of development: Post-construction

See CORE 1-6: Evidence of Compliance

## WATER – 4

**WATER4: The development responds to the local policy context in terms of water management, demonstrating an innovative approach to move beyond the statutory minimum.**

### Background

The aim of this standard is to recognise innovation in utilising green infrastructure to respond to local policy priorities for water management. This standard builds on WAT1 by ensuring the strategy for water management makes explicit reference to local policy as it relates to water quality and water quantity within the geographic context of the development.

By supporting innovative approaches to water management, this standard encourages the design and implementation of green infrastructure that not only contributes to surface water management (*link to WAT1*) but creates additional value by responding to local policy priorities. This may apply to site-scale interventions brought forward through development, or landscape-scale interventions such as natural flood management.

### Illustrative Examples

The development makes clear reference to relevant legislation, policies and strategies to assess the scheme's impact on water management and identify and inform the design and approach to water management<sup>88</sup>. This includes but is not limited to national planning policy; strategic flood risk assessments or equivalent; Water Framework Directive; and River Basin Management Plan(s).

A Water Strategy, or equivalent documentation, is developed to guide the design of green infrastructure features, including specifications of landscaping, vegetation and hard surfaces, and to manage water demand to meet specified consumption targets.

The process of preparing a Water Strategy includes engagement with water suppliers, local authority partners, and the appropriate regulatory body (i.e. the Environment Agency, Internal Drainage Boards, etc.) to develop overall water consumption targets for the development, taking into account the current availability of water and demands in the area; the future predicted availability taking climate change into account; the predicted water demand for the area resulting from growth and climate change.

The strategy includes:

- Actions to minimise the predicted use on the development; and maintain this in future ownership and maintenance of any shared facilities;

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<sup>88</sup> Chris Blandford Associates, 2010: 33

- Design options to reduce the water demand in landscaping, any other predicted water use and on-site collection/storage opportunities;
- Targets for water use in residential and non-domestic buildings in the development site.

## WATER – 5

**WATER5: A diversity of green infrastructure features are utilised to improve water quality, utilising more and better treatment stages to maximise pollution reduction downstream.**

### Background

The development maximises connectivity and continuity of green infrastructure features to allow optimal natural losses through permeable surfaces to enhance the water storage capacity and maximise the development's resilience to flooding.

This standard brings focus to the range of green infrastructure features that can be utilised to improve water quality in water courses and water bodies downstream. Whereas WAT2 requires conveyance at or near the surface through one or more type of feature, this standard requires a range of different green infrastructure features for water management to optimise opportunities for pollution reduction.

Through the creation of a range of green infrastructure features, with more and better treatment stages, improving the quality of water within the development may create opportunities to improve water quality at a landscape scale by maximising pollution reduction in water courses and water bodies both beyond the boundary of the development.

This standard builds on WAT1 by ensuring that the development integrates more places to collect and store water within the design, maximising the resilience and efficiency the water management system. By splitting the volumes up as much as possible, storing water within a sub-catchment in more than one place, and varying the type of green infrastructure feature utilised within the design for water management, the development maximises natural losses to groundwater, enhancing flood resilience. This approach can in turn increase the capacity of green infrastructure features to contribute to amenity and biodiversity (*link to WAT3*).

### Illustrative Examples

The key difference between WAT2 and WAT5 is the resilience and efficiency of the water management system to withstand internal or external changes. By integrating more and better treatment stages into the design of sustainable drainage, and by including different green infrastructure features, improving water quality within the boundary of the development can also lead to the enhancement of features beyond the boundary of the development.

The higher the number and quality of green infrastructure features included within the design for sustainable drainage, the more opportunity to reduce water pollution and provide maximum biological benefit for water courses and water bodies affected by the development.

The development provides for a range of green infrastructure features within the management train and demonstrates how improved levels of water quality will result in additional habitat and habitat richness, both within and beyond the boundary of the development.

The design of green infrastructure contributes positively to sustainable drainage by creating features that are suitable for water storage, in as many locations across the development as possible, improving connectivity between features to enhance their capacity to attenuate natural losses.

A range of green infrastructure features, of different types and sizes, are integral to the design of sustainable drainage to maximise natural losses across the site. Where possible, SuDS components are integral to green infrastructure features within the sub-catchment, to maximise the multiple-benefits of slowing the flow of water through a development, and maintaining a hydrated landscape, in turn enhancing habitat resilience and unlocking the potential of a feature to support amenity and biodiversity functions (*link to WAT3*).

Green infrastructure features are designed to split volumes of water up as much as possible, increasing the biological benefits of sustainable drainage by introducing different types of habitat, and building resilience into the development by managing water quantity more effectively.

## WATER – 6

**WATER6: Features relating to water management are used to enhance local distinctiveness and add value to the overall design.**

### Background

Green infrastructure features that are designed to be integral to a water management system can be designed to contribute positively to the development's local distinctiveness by creating an attractive place to live and/or work and enhancing the aesthetic and functional quality of the development's design.

This standard recognises that by utilising a range of features (e.g. rain gardens, green roofs, green walls), and enhancing the physical connectivity between them, the capacity of each individual feature to contribute to water management is increased. Moreover, when green infrastructure features are designed within a multifunctional network, including integral features within the built environment, features relating to water management become a distinctive characteristic of overall design of green infrastructure.

### Illustrative Examples

Green infrastructure features are integrated throughout the development to enhance connectivity between individual SuDS components, with the result of enhancing their functions and benefits, and positively contributing to the overall design and sense of place.

By treating the whole landscape as a 'SuDS Landscape', the flow of water is utilised to create dynamic and interesting landscapes that offer an unusual level of beauty, biodiversity, usability and local distinctiveness.

The topography and geology of the development have been utilised to characterise the water management system<sup>89</sup>.

In the context of retrofit development, the development considers how to integrate SuDS components into an existing landscape and the development demonstrates innovation in working within the additional constraints of an existing community, landscape and infrastructure<sup>90</sup>.

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<sup>89</sup> Building for Life, 2015

<sup>90</sup> Robert Bray Associates

## *WATER 4-6 Evidence of Compliance*

Stage of development: Design through to outline planning application

Green Infrastructure Parameter Plan, or equivalent documentation, broadly indicating:

- a network of green infrastructures features in different locations across the development, designed in response to local policy, and designed to positively contribute to sustainable water management beyond the boundary of the development;
- a range of green infrastructure features within the development designed to contribute to place distinctiveness.

Stage of development: Full planning application

A more detailed Green Infrastructure Parameter Plan, or equivalent documentation, clearly indicating:

- how surface water will be managed at a sub-catchment level, showing how water storage capacity is supported by the design of a range of green infrastructure features, in appropriate locations within the development;
- how surface water will be managed through more and better treatment stages, including the location of green infrastructure features in relation to the wider sustainable drainage system for water management;
- how approaches water quality within the development will optimise opportunities for water quality downstream, identifying water courses or water bodies within the boundary of the development or in close proximity to the development that would benefit from reducing maximum pollution and provisioning for maximum biological benefits;
- how individual green infrastructure features have been designed and located within the development to contribute positively to local distinctiveness, for example how green infrastructure features are integral to SuDS components to provide multifunctionality and contribute positively to the overall design.

Stage of development: Reserved matters

As above but with any adjustments detailed and explained. Plus, any documentation relating to water management conditioned as part of the approval.

A Green Infrastructure and Biodiversity and Management Plan (GIBMP), or equivalent documentation, identifying:

- The preferred option for the management and maintenance option of green infrastructure features delivered as part of the development to contribute positively to reduction of flood risk downstream and pollution of water bodies beyond the boundary of the development and;

- The preferred option for the management and maintenance option of green infrastructure features designed as integral to SuDS components within the footprint of individual private dwellings, to secure green infrastructure benefits as they relate to place distinctiveness.

Stage of development: Post-construction

See CORE 1-6: Evidence of Compliance

## *WATER – Further Information*

**Susdrain** [online] SuDS and Planning guidance, including advice on design; construction; and management of SuDS. Available at: <http://www.susdrain.org/delivering-suds/using-suds/delivery/planning.html>

**CIRIA** ([www.ciria.org](http://www.ciria.org))

**The SuDS Manual (C753)** (CIRIA, 2015)

- ‘CIRIA SuDS Manual C753 (2015) is a practical guide on how to design, implement, manage and maintain SuDS systems and features in the built environment to transfer multifunctional benefits for amenity (people) and biodiversity (wildlife), and high-quality places (managing water quality and water quantity)’ (CIRIA, 2015). Available at:  
[http://www.ciria.org/Resources/Free\\_publications/SuDS\\_guide\\_C753.aspx](http://www.ciria.org/Resources/Free_publications/SuDS_guide_C753.aspx)

Particularly useful for planning practitioners is:

- Part A (Introduction to the SuDS Guide)
- Part B (Philosophy and approach, including: Chapter 3 'Designing for water quantity'; Chapter 4 'Designing for water quality'; Chapter 5 'Designing for Amenity'; and Chapter 6 'Designing for biodiversity')
- Part C (Applying the approach, including: Chapter 8 'Designing for specific site conditions'; Chapter 9 'Designing for roads and highways'; and, Chapter 10 'Designing for urban areas').
- And for those involved in the design of SuDS for a development:
  - designing SuDS components (chapters 1-6)
  - applications of good practice approaches (chapters 7-10)
  - technical detail (chapters 11-23)
  - supporting guidance (chapters 24-36).

**Defra** (2015) National standards for sustainable drainage:

- **English non-statutory SuDS technical standards** (2015) Available at:  
<https://www.gov.uk/government/publications/sustainable-drainage-systems-non-statutory-technical-standards>
- **Recommended non-statutory standards for sustainable drainage in Wales** (Welsh Government, 2017). Available at:  
<http://gov.wales/topics/environmentcountryside/epq/flooding/drainage/?lang=en>
- **Non-statutory technical standards for sustainable drainage: practice guidance** (LASOO, 2016). [PDF] Available at: [http://www.susdrain.org/files/resources/other-guidance/lasoo\\_non\\_statutory\\_suds\\_technical\\_standards\\_guidance\\_2016\\_.pdf](http://www.susdrain.org/files/resources/other-guidance/lasoo_non_statutory_suds_technical_standards_guidance_2016_.pdf)

**BREEAM Communities Guide** (2012) Available at: <http://www.breeam.com/communities>

You will need to register with BREEAM (free) in order to view / download the guide. Useful sections include:

- SE 03 - Flood risk assessment – Page 30.
- SE 13 – Flood risk management – Page 89.
- LE 03 - Water pollution. Page 96.

**BREEAM UK New Construction Technical Guide** (2014: 339) [PDF] Available at: [http://www.breeam.com/filelibrary/BREEAM%20UK%20NC%202014%20Resources/SD5076\\_DRAFT\\_BREEAM\\_UK\\_New\\_Construction\\_2014\\_Technical\\_Guide\\_ISSUE\\_0.1.pdf](http://www.breeam.com/filelibrary/BREEAM%20UK%20NC%202014%20Resources/SD5076_DRAFT_BREEAM_UK_New_Construction_2014_Technical_Guide_ISSUE_0.1.pdf)

- This guide produced by BRE outlines key publications that should be referred to for calculating the peak rate of run-off of a development.

**The EU Water Framework Directive – integrated river basin management for Europe.** Available at: [http://ec.europa.eu/environment/water/water-framework/index\\_en.html](http://ec.europa.eu/environment/water/water-framework/index_en.html)

- This EU Directive should be consulted if appropriate for development.

**Sustainable Drainage Systems: Maximising the potential for people and wildlife. A Guide for Local Authorities and Developers** (RSPB and WWT, 2012) [PDF] Available at: [https://www.rspb.org.uk/Images/SuDS\\_report\\_final\\_tcm9-338064.pdf](https://www.rspb.org.uk/Images/SuDS_report_final_tcm9-338064.pdf)

**Sustainable drainage – Cambridge design and adoption guide** (Cambridge City Council, 2009) Available at: <https://www.cambridge.gov.uk/sites/default/files/docs/SUDS-Design-and-Adoption-Guide.pdf>

**Flood and Water Management Act** (2010) <http://www.legislation.gov.uk/ukpga/2010/29/contents>

**National Planning Policy Framework** (2012) <https://www.gov.uk/guidance/national-planning-policy-framework>

# Wildlife (WILD) Standards

There are six wildlife standards to ensure that green infrastructure delivered as part of the development allows nature to flourish, both within the boundary of the development, and at a landscape scale.

The wildlife standards encompass the following **principles**:

## 1. Bigger and better

Ensure that over time green infrastructure contributes positively to reversing the long-term decline in biodiversity.

## 2. More joined up

Ensure connectivity between habitats within the boundary of the scheme.

## 3. Locally-relevant

Ensure that habitat creation provides optimal conditions to reverse the long-term decline in biodiversity.

## 4. Nature-rich development

Ensure that space is provided for wildlife to flourish throughout the built environment.

## 5. Ecological networks

Ensure that green infrastructure creates and restores linkages from the development to the wider landscape.

## 6. Sensitive construction

Ensure that opportunities to protect and enhance biodiversity are taken during planning and construction of new development.

Please note: These **principles** are intended to guide your thinking around each of the Standards, whilst you gather evidence to demonstrate compliance with the Standards, which are defined in the full over the following pages.

## WILDLIFE – 1

**WILD1: Green infrastructure delivers biodiversity net gain by avoiding, mitigating, and compensating for impacts on existing biodiversity, and where possible restores, creates and enhances biodiversity within the boundary of the scheme. Provision has been made for on-going monitoring and remediation.**

### Background

Expanding and linking habitats to restore ecosystem function can contribute positively to reversing the long-term decline in biodiversity<sup>91</sup>. The aim of this standard is to ensure the development takes advantage of opportunities to move beyond compliance as defined by the mitigation hierarchy which has been designed to achieve net positive gains for biodiversity.

In part this standard aims to support the collation of consistent data and ecological information to contribute to a greater understanding of change to habitats and species as a result of development activity<sup>92</sup>.

Where sites are protected for their ‘special’ attributes relating to their plants, animals, habitats, their rocks or landforms, for example Sites of Special Scientific Interest (SSSI) the development should consider the characteristics of these sites when designing the development. This is to ensure that these sites are protected, and where possible enhanced through development, as they represent the best natural features locally and support a wider network across the UK.

### Illustrative Examples

Green infrastructure within the development contributes to local biodiversity targets.

- Where local targets don’t exist, reference is made to national targets and the local authority ecologist is consulted to ensure biodiversity measures introduced as part of the development will deliver against identified biodiversity targets.
- The design of green infrastructure features throughout the development considers local biodiversity priorities and prioritisation is given to features with a high biodiversity value (e.g. retained mature tree, retained hedgerow, established wildflower meadow)
- Where features with low biodiversity value (e.g. amenity grassland) are selected when features with high biodiversity value (e.g. amenity grassland with bulbs/naturalised grassland) would deliver similar functions and benefits (e.g.

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<sup>91</sup> cf. Hayhow *et al.*, 2016; Lawton, 2010.

<sup>92</sup> UK-GBC, 2009:8

within a park area), justification is given as to why the features are designed in this way<sup>93</sup>.

Green infrastructure has been designed in line with local landscape-scale conservation priorities.

- Landscape-scale conservation priorities as defined locally are the first point of reference for reflecting local biodiversity and landscape-scale conservation priorities.

To ensure that, over time, individual green infrastructure features continue to support particular ecological functions, such as habitat provision, it is necessary to indicate how the development will provide for on-going monitoring of biodiversity measures.

- This standard supports CORE5 which relates to the wider mechanism for long-term management and maintenance.
- A baseline assessment of green infrastructure pre-construction and immediately post-construction has been carried out by an appropriately skilled/qualified person. Where appropriate, this assessment includes: an ecological desk study; an Extended Phase 1 Habitat Survey; and an Ecological Constraints and Opportunities Plan (ECOP) is prepared as a preferred way to interpret biodiversity losses and gains through development<sup>94</sup>.
- There is a commitment to prepare and implement a landscape management and maintenance plan to ensure long-term achievement of biodiversity priorities.

As part of the commitment to on-going monitoring, the development makes provision for remediation where monitoring shows that biodiversity measures have been unsuccessful in achieving defined biodiversity targets and landscape-scale conservation priorities.

- On-going monitoring and remediation apply to natural and artificial features that encourage use of green infrastructure features (*link to WELL3*), such as natural play features that require regular and cyclical maintenance to ensure health and safety compliance.

Provision is made for 'dark green infrastructure' (e.g. dark corridors) in the development, in particular where light sensitive species are present (*link to CORE4*).

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<sup>93</sup> Scottish Wildlife Trust, 2017: 5-7

<sup>94</sup> BS42020, 2013

## WILDLIFE – 2

**WILD2: Green infrastructure features ensure linkages between habitats within the boundary of the development.**

### Background

The intention of this standard is to seek the restoration, creation, expansion and linkage of features to restore ecosystem function of habitat areas within the boundary of the development. In turn, by supporting the connectivity and linkages between habitat areas, opportunities are created for the development to contribute positively to reversing the long-term decline in biodiversity<sup>95</sup>.

### Illustrative Examples

Where possible, the development will protect existing key habitat areas, and restore, create, connect to or enhance more integrated, large scale areas for wildlife<sup>96</sup>.

- The links between habitats need not necessarily be physical but may relate more in character to the 'stepping stones' approach outlined in The Lawton Report (2010).

Green infrastructure features are designed to support the ecosystem functions of habitats and linking between habitats.

Connectivity and linkages between features are used to enhance their functionality and associated benefits.

- This standard relates to habitat connectivity, and how to contribute positively to connectivity through the provision of green infrastructure features, such as wildlife corridors which can assist with the mobility of priority species (e.g. bats) across the development.

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<sup>95</sup> cf. Hayhow *et al.*, 2016; Lawton, 2010.

<sup>96</sup> TCPA, 2012: 22

## WILDLIFE – 3

**WILD3: Green infrastructure delivers key measures that contribute to the target conservation status of priority species.**

### Background

A development's green infrastructure features, including provision for habitat protection, creation, and enhancement, can have a positive impact on populations of key species, within and beyond the development boundary.

The design of features can therefore make provision for biodiversity measures which optimise conditions required for the improvement of conservation status of target species.

This is important as several factors associated with poor quality green infrastructure (i.e. fewer and smaller features, poor connectivity between features, or a fragmented network of features) can result in an overall negative impact on populations of key species.

### Illustrative Examples

Green infrastructure is used to compensate for fragmentation and create more suitable habitat allowing movement of key species.

Where possible, and appropriate, transitional and supplementary habitats are created to sustain more widespread habitats and species<sup>97</sup>.

This standard requires a commitment to ongoing monitoring of the development to establish the impact of a development's approach to the conservation status of key species (*link to WILD1*).

- In certain circumstances, consideration could be given to off-site compensation or enhancement, where this would deliver a better outcome for species than could be managed within the boundary of the development. The circumstances where this approach is acceptable may be limited and it will be essential to demonstrate sufficient information to prove this is the result of an evidence-based process.

The objectives of protected species mitigation are reflected in the design, implementation and management plans for green infrastructure features.

- Wherever possible, industry standards relating to the conservation status of key species are integral to the development's design, e.g. CIEEM standards.

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<sup>97</sup> TCPA, 2012: 22

## *WILDLIFE 1-3 Evidence of Compliance*

Stage of development: Design through to outline planning application

Green Infrastructure Parameter Plan, or equivalent documentation, broadly indicating:

- How the development moves beyond compliance with the mitigation hierarchy.
- Provision for habitat areas within the boundary of the development.
- Retention of existing features that contribute to local biodiversity priorities; including irreplaceable habitat e.g. ancient woodland.
- Where existing green infrastructure features with biodiversity value are removed, evidence of alternative provision within the boundary of the development which moves beyond compliance with the mitigation hierarchy.
- Identification of features that require provision for monitoring, both during and post-construction to ensure the longevity of biodiversity measures.
- Details outlining how provision has been made for remediation of biodiversity measures if monitoring shows features fail to deliver positive outcomes against local biodiversity priorities.
- How green infrastructure features have been designed, in terms of layout and location, to optimise linkages and connectivity between habitats and landscape features.
- How green infrastructure features include provision for particular habitats which have been identified as important within the context of the development.
- Identification of priority species affected by the development, and priority species within proximity to the development, which could be affected positively through the design of green infrastructure.

How green infrastructure features have been designed, in terms of type, broad layout and location within the boundary of the development, to retain, restore, create or enhance habitats that support priority species.

Stage of development: Full planning application

As above, plus a more detailed Green Infrastructure Parameter Plan, or equivalent documentation, relating to the form and function of green infrastructure features within the boundary of the development and how they positively contribute to:

- local biodiversity priorities;
- ecological connectivity within the boundary of the development; and
- key measures that support the conservation status of priority species.

Stage of development: Reserved matters

As above but with any adjustments detailed, and explained. Plus any documentation relating to ecology conditioned as part of the approval. Detailed plans for the design of individual

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green infrastructure features, and how their design and implementation will secure provision for local biodiversity n priorities; the linkage and connectivity of habitats within the boundary of development; and contribution to the conservation status of priority species.

Green Infrastructure and Biodiversity and Management Plan (GIBMP), or equivalent documentation, to identify how provision is made for on-going monitoring of biodiversity priorities and priority species, and if necessary remediation, to ensure the continued functionality of green infrastructure features as they relate to local biodiversity priorities, habitat connectivity, and priority species within the context of the development.

Stage of development: Post-construction

See CORE 1-6: Evidence of Compliance

## *WILDLIFE – 4*

**WILD4:** Green infrastructure includes ecological features around and within the built environment.

### **Background**

The relationship between green infrastructure and the built environment within the development can maximise opportunities to sustain and increase biodiversity<sup>98</sup>. This is important as the pressures on land use, for example the provision of land for agriculture and housing, means that the quality of green infrastructure and features within the built environment is critical in delivering space for wildlife to flourish.

When green infrastructure features are designed and implemented to be integral to the built environment, the role of built features can positively contribute to the ecological value of a site.

### **Illustrative Examples**

Green infrastructure is utilised to improve the quality of built features (e.g. roofs, terraces, facades) to optimise the provision for additional wildlife habitat.

In line with local biodiversity and landscape-scale conservation priorities, integral building features such as bird bricks, bat roost opportunities, and insect boxes, are included within all buildings or at appropriate locations, to reflect the requirements of species within the area<sup>99</sup>. When making provision for ecological features within and around the built environment, these features are designed to target particular species which have been identified as key species within the context of the development.

This standard assumes that the development is compliant with relevant guidance relating to buildings within the development.

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<sup>98</sup> TCPA, 2012: 20

<sup>99</sup> TCPA & TWT, 2012: 32; BRE, 2014: 307, 310

## WILDLIFE – 5

**WILD5:** Green infrastructure is effectively connected to ecological features beyond the boundary of the development and plays a role in restoring and sustaining wider ecological networks.

### Background

By ensuring the development makes provision for connectivity to ecological features beyond the site boundary, this standard builds on WILD2 by requiring demonstration that the design of green infrastructure features within the boundary of the development restores and sustains the functions of ecological networks beyond the boundary of the development.

There is an expectation that local planning authorities<sup>100</sup> will ‘plan for biodiversity at a landscape-scale across local authority boundaries’ and ‘identify and map components of local ecological networks including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation’<sup>101</sup>. This represents a summary of what planning and development should aim for in terms of restoring and sustaining ecological networks.

### Illustrative Examples

The development identifies existing ecological networks beyond the boundary of the scheme, and demonstrates how the design of green infrastructure features within the development contribute towards the restoration, enhancement or expansion these networks.

For example:

- Boundary treatments can maximise opportunities for connectivity with ecological networks.

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<sup>100</sup> Specific expectations for England, Scotland, Wales, Northern Ireland and Ireland are detailed in national planning policy and the relevant Biodiversity Strategy for each country.

<sup>101</sup> DCLG, 2012: para 117

## WILDLIFE – 6

**WILD6: The development secures biodiversity measures in all stages of implementation, and in the case of phased developments, across multiple phases of development.**

### Background

This standard ensures that opportunities to protect and enhance biodiversity are considered at each stage of the development process (planning, construction, in use), and across multiple phases in larger developments, with a particular focus on improving practices during implementation and construction.

Too often biodiversity protection and enhancement can be overlooked at different stages of development and securing green infrastructure connectivity and linkages across different phases of development, can also prove to be difficult in the context of the larger developments. This can have a negative impact on the potential for the development to meet biodiversity targets and landscape-scale conservation priorities.

### Illustrative Examples

Green infrastructure delivery is considered at each stage of the planning and development process, identifying how biodiversity measures are secured from planning, through construction, and once the development is in use.

The development employs appropriate mechanisms to ensure the successful implementation of biodiversity measures through construction by making provision for the protection and monitoring of particular habitats and species at each stage of the construction process.

The development employs appropriate mechanisms to ensure the successful implementation of biodiversity measures when the development is in use by making provision for the on-going monitoring of biodiversity measures (*link to WILD1*), remediation of features where necessary, and provision is made for long-term management and maintenance (*link to CORE5*).

Approaches to phasing of development maximise opportunities to create, protect and enhance biodiversity within the boundary of the development. For example:

- The design of green infrastructure is included in planning conditions and/or phasing plans attached to the development's approval.

## *WILDLIFE 4-6 Evidence of Compliance*

Stage of development: Design through to outline planning application

Green Infrastructure Parameter Plan, or equivalent documentation, broadly indicating:

- How integral green infrastructure features have been designed to make provision for additional habitat, and enhanced nesting and roosting opportunities for priority species, within the built environment.
- How green infrastructure features within the boundary of the development have been designed, in terms of broad layout and location, to enhance connectivity and viability of existing ecological networks beyond the boundary of the development.
- How green infrastructure features will be delivered across multiple phases, to secure the functionality of individual features as a network.
- What provision is made to secure the delivery of biodiversity measures during the construction phase/s e.g. indication that a Construction Environment Management Plan, or equivalent documentation, will guide the protection of wildlife during construction.

How provision will be made for wildlife through appropriate management of green infrastructure features once the development is in use.

Stage of development: Full planning application

As above, plus a more detailed Green Infrastructure Parameter Plan or equivalent documentation, showing:

- which features are integral to the built environment, and indicating how this contributes additional high-quality habitat;
- which priority species have been identified within the context of the development and how green infrastructure features will positively contribute to their target conservation status within the context of the development;
- a detailed plan of how green infrastructure features is designed to secure biodiversity measures at each stage of development, and across multiple phases. Provision for multiple construction phases is set out in detail in a Construction Environment Management Plan, or equivalent documentation. Provision for biodiversity measures whilst in use is set out in detail in a Green Infrastructure and Biodiversity and Management Plan (GIBMP), or equivalent documentation.

Stage of development: Reserved matters

As above but with any adjustments detailed, and explained. Plus any documentation relating to biodiversity conditioned as part of the approval.

A finalised Green Infrastructure and Biodiversity and Management Plan (GIBMP), or equivalent documentation, to identify how green infrastructure features will be managed and

maintained in the long-term sustain green infrastructure functions as they relate ecological connectivity, from the building scale to the landscape-scale. Adequate provision is made to protect and sustain the functionality of integral green infrastructure features, including those within the footprint of buildings, including individual private dwellings.

Stage of development: Post-construction

See CORE 1-6: Evidence of Compliance

## *WILDLIFE – Further Information*

**CIRIA, CIEEM and IEMA Biodiversity Net Gain Principles:** Available at:

[https://www.cieem.net/data/files/Publications/Biodiversity\\_Net\\_Gain\\_Principles.pdf](https://www.cieem.net/data/files/Publications/Biodiversity_Net_Gain_Principles.pdf)

**The UK Post-2010 Biodiversity Framework** (JNCC and Defra, 2012) Available at:

<http://jncc.defra.gov.uk/page-6189>

**The UK Post-2010 Biodiversity Framework Implementation Plan** (JNCC and Defra, 2013)

Available at: <http://jncc.defra.gov.uk/page-6583>

**Biodiversity Strategy 2010: A strategy for England’s wildlife and ecosystem services** (Defra, 2011) Available at: <https://www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services>

**2020 Challenge for Scotland’s Biodiversity** (Scottish Government, 2013) Available at:

<http://www.gov.scot/Publications/2013/06/5538> Or via PDF:

<http://www.gov.scot/Resource/0042/00425276.pdf>

**Wales Biodiversity Partnership** [online] Available at: <https://www.biodiversitywales.org.uk/>

**The Nature Recovery Plan for Wales – Setting the Course for 2020 and beyond** (Welsh Government, 2015) Available at:

<http://gov.wales/topics/environmentcountryside/consmanagement/conservationbiodiversity/?lang=en>

**Valuing Nature – A Biodiversity Strategy for Northern Ireland to 2010** (Department of Agriculture, Environment and Rural Affairs, 2015) Available at <https://www.daera-ni.gov.uk/publications/biodiversity-strategy-northern-ireland-2020-0>

**National Biodiversity Plan - ‘Actions for Biodiversity 2011-2016, Ireland’s National Biodiversity Plan’** (Department of Arts, Heritage and the Gaeltacht, 2011) [PDF] Available at:

<https://www.npws.ie/sites/default/files/general/national-biodiversity-plan-english.pdf>

**Biodiversity by Design – A Guide for Sustainable Communities** (Urbed and TCPA, 2005)

Available at: <http://urbed.coop/projects/biodiversity-design>

**UK-GBC Impact Report** (UK-GBC, 2009) Available at:

<http://www.ukgbc.org/resources/publication/uk-gbc-impact-report-2009>

**BS 42020 – Biodiversity Code of Practice for planning and development** (2013) [Purchase

required] Available at: <http://shop.bsigroup.com/ProductDetail/?pid=000000000030258704>

**BREEAM Strategic Ecology Framework** (2016) Available at: <http://www.breeam.com/strategic-ecology-framework>

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**Making Space for Nature – The Lawton Report** (Professor Sir John Lawton, 2010,) Available at:  
<https://www.kew.org/files/making-space-nature-lawton-reportpdf>

**CIEEM Technical Guidance Series (TGS)** Available: <https://www.cieem.net/technical-guidance-series-tgs->

**What are Living Landscapes?** (The Wildlife Trusts, 2006). Available at:  
<http://www.wildlifetrusts.org/living-landscape/our-vision> (accessed 09/09/15).

## Next Steps

If you have read through this document, you are now ready to apply the Building with Nature framework to your scheme. Doing great green infrastructure brings multiple benefits. As well as allowing wildlife to thrive, green infrastructure provides spaces for people to enjoy, and cost-effective ways to manage water naturally and prevent flooding. It can also improve the overall quality of a scheme

Applying the Building with Nature framework and getting accredited can reduce planning uncertainty, which may assist with a smoother passage through planning. It can also help to engage local communities and attract consumers, who understand the value and appreciate the benefits of living with nature.

If you, with an Assessor, have already shaped your scheme and gathered the evidence to apply for accreditation, please forward an application with supporting evidence to [info@buildingwithnature.org.uk](mailto:info@buildingwithnature.org.uk) – application documents are available on request.

The Evidence of Compliance sections of the User Guide will show which documents may be relevant to your application, and due to the large file size of many plans and documents, it may be easier to do this through [Dropbox](#) or [Wetransfer](#).

Through using this framework, you will be making great places for people and wildlife, helping raise the quality bar across the industry and securing our natural environment for future generations.

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# Authorship and Origination

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Keywords	Reader interest	User
Green infrastructure, public health infrastructure, health and wellbeing, sustainable water management, sustainable drainage, water quality, biodiversity, ecological connectivity, environmental quality, climate change, placemaking, nature-based solutions, green spaces, blue spaces, parks, gardens.	Building with Nature is designed to support end-users and those involved in the planning, design, construction and long-term management and maintenance of green infrastructure to deliver high-quality features that secure benefits for health and wellbeing, sustainable water management, and nature conservation.	Developers, planners, policy makers, landscape architects, built environment consultants, construction professionals, local authorities, local lead flood authorities, citizens and communities, and other organisations and individuals involved in the planning, delivery and management and maintenance of green infrastructure features in new and existing places.

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