

Cardiff Green Infrastructure SPG

Supplementary Planning Guidance



City of Cardiff Council

**Green Infrastructure Supplementary Planning Guidance
(SPG)**

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Mae'r ddogfen hon ar gael yn Gymraeg/This document is available in Welsh

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Green infrastructure is a network of multi-functional, connected green spaces that make the best use of land and provide green open space for all, helping wildlife to flourish, and delivering a wide range of economic, health and community benefits.'

Executive Summary

Supplementary Planning Guidance on Green Infrastructure.

This document provides planning advice on a number of areas relating to development and the environment, including protection and provision of open space, ecology and biodiversity, trees, soils, public rights of way, and river corridors. It also refers to sustainable drainage (SuDS) which forms part of green infrastructure, although the detailed Storm Water Guidance will be provided under a separate document which is currently being developed.

The green infrastructure approach combines all these elements to achieve a more joined-up approach to the environment. This approach is increasingly being used in Cardiff and across the UK. In Cardiff, planning advice in this area is often provided by a number of officers from across the Council working together as part of an integrated Green Infrastructure Group. This helps provide a more comprehensive approach.

The new document also differs from previous SPGs by providing more in depth design advice, aimed at giving developers a clearer understanding of the approach expected when submitting designs for new developments. By having this information up-front developers are better able to provide suitable designs to the Council through the planning process.

The overall context of the green infrastructure approach is set out in the Green Infrastructure Plan document, which is being developed SPG and provides a broader

overview of how green infrastructure in Cardiff will be protected, managed and enhanced.

The Consultation Process

The Council welcome the responses provided as part of the consultation process. Replies to these are included in the SPG appendix and where appropriate a number of revisions have been made to reflect these comments. A number of issues were raised regarding the size, structure and complexity of the document, along with ease of use, particularly when viewed in relation to smaller applications.

Although the combined size of the document is significant (due to combining a number of previously separate SPGs), its structure is designed to provide different levels of information.

The overview SPG document sets out the principles of green infrastructure, what information is required from developers, and the interaction between different elements e.g. open space and ecology.

The individual Technical Guidance Notes (TGNs) provide a greater depth of planning and design information on each area. By including them as an SPG rather than as separate design guides, the information they contain is given more weight. In order to address the points raised a number of changes have been made:

- The overview SPG has been slightly restructured to provide a document that is easier to follow.
- Additional information has been provided to give a better understanding of the term green infrastructure, and provide clear advice to applicants dealing with smaller developments on what is required

Cardiff Council trusts that the new Green Infrastructure SPG will prove a valuable resource in helping guide Cardiff's future development and ensure it retains its reputation as a green city.

1 Introduction

1.1 Green infrastructure in new developments

- 1.1.1 This draft Supplementary Planning Guidance (SPG) document sets out Cardiff Council's approach to the consideration of green infrastructure in relation to new developments. It provides further guidance to **Policy KP16: Green Infrastructure** set out in the Cardiff Local Development Plan 2006 – 2026 and will assist in securing the provision of sustainable development across the City.
- 1.1.2 Welsh Government supports the use of Supplementary Guidance (SPG) to set out detailed guidance on the way in which development plan policies will be applied in particular circumstances or areas. SPG must be consistent with development plan policies and national planning policy guidance. SPG helps to ensure certain policies and proposals are better understood and applied more effectively. They do not have the same status as the adopted development plan but are a material consideration in the determination of planning applications
- 1.1.3 In relation to planning and development; all new developments will need to satisfy the requirements for green infrastructure as set out in Policy KP16 of the Cardiff Local Development Plan, i.e.,

'Cardiff's distinctive natural heritage provides a network of green infrastructure which will be protected, enhanced and managed to ensure the integrity and connectivity of this multi-functional green resource is maintained.'

'Protection and conservation of natural heritage network needs to be reconciled with the benefits of development. Proposed development should therefore demonstrate how green infrastructure has been considered and integrated into the proposals. If development results in overall loss of green infrastructure, appropriate compensation will be required.'

- 1.1.4 This SPG is likely to be of particular benefit to those considering development proposals which may affect green infrastructure in Cardiff. It enables developers, landowners and potential objectors to understand how the Council considers development proposals and the standard of provision sought.
- 1.1.5 Green infrastructure policies will apply to both brownfield and greenfield developments, and across a range of scales from small developments of one or more houses, to larger scale developments, although the amount of detail required to be submitted will vary considerably depending on the size of the development.
- 1.1.6 The Green Infrastructure SPG is made up of seven documents.

Green Infrastructure SPG

This document sets out key information on green infrastructure in relation to new developments, including definitions of terms, what information will be required from an applicant, and the relationship between different elements of green infrastructure (such as open space and biodiversity).

Technical Guidance Notes (TGN)

These documents accompany the main SPG and provide more detailed planning and other technical advice on the individual elements that make up green infrastructure.

- Ecology and Biodiversity TGN
- Protection and Provision of Open Space TGN
- Public Rights of Way and Development TGN
- River Corridors TGN
- Soils and Development TGN
- Trees and Development TGN

1.1.7 Planning advice on green infrastructure will be provided by an integrated Green Infrastructure Group, comprising officers from across Cardiff Council.

1.2 Cardiff's Green Infrastructure Approach

1.2.1 Cardiff Council's strategy for considering green infrastructure is set out in the Green Infrastructure Plan document, which will accompany the Green Infrastructure SPG and provides a broader overview of how green infrastructure in Cardiff will be protected, managed and enhanced. Figure 1 shows the Council's overall green infrastructure approach.

1.2.2 The Green Infrastructure Plan sets out six objectives upon which that plan is based:-

1. To protect and enhance Cardiff's ecosystems to ensure that they continue to support diverse habitats and species, allowing them to adapt to change.
2. To ensure that Cardiff's green infrastructure is enhanced and managed in a way that increases resilience to the changing climate and provides protection for people and places.
3. To maximise the contribution that green infrastructure makes to Cardiff's economy by enhancing the city's attractiveness for business, tourism and living.
4. To increase the potential physical and mental health benefits from a good quality, natural environment by improving, promoting and creating connected, multi-functional green infrastructure in Cardiff.
5. To use Cardiff's green infrastructure to provide opportunities for people to access the outdoor environment and to participate in learning, training

and volunteering to foster social inclusion and equality and improve life chances.

6. To build upon Cardiff's reputation as a vibrant, green and attractive city by continuing to enhance and sustain the green infrastructure that underpins the city's unique qualities and sense of place.

Any development which is likely to significantly affect green infrastructure should seek to maximise the contribution to these six objectives.

1.3 Policy and Legislation

1.3.1 The policy and legislative context of Cardiff Council's green infrastructure approach is explained in Section 2 of the Green Infrastructure Plan document, which sets out how international, national and regional strategies, extant legislation, and national and local planning policies relate to green infrastructure.

1.3.2 Aside from Policy KP16, there are other policies within the Cardiff Council LDP which are relevant to green infrastructure. These are listed in the bullet points in the text of KP16.

Figure 1. Cardiff Council Green Infrastructure Process

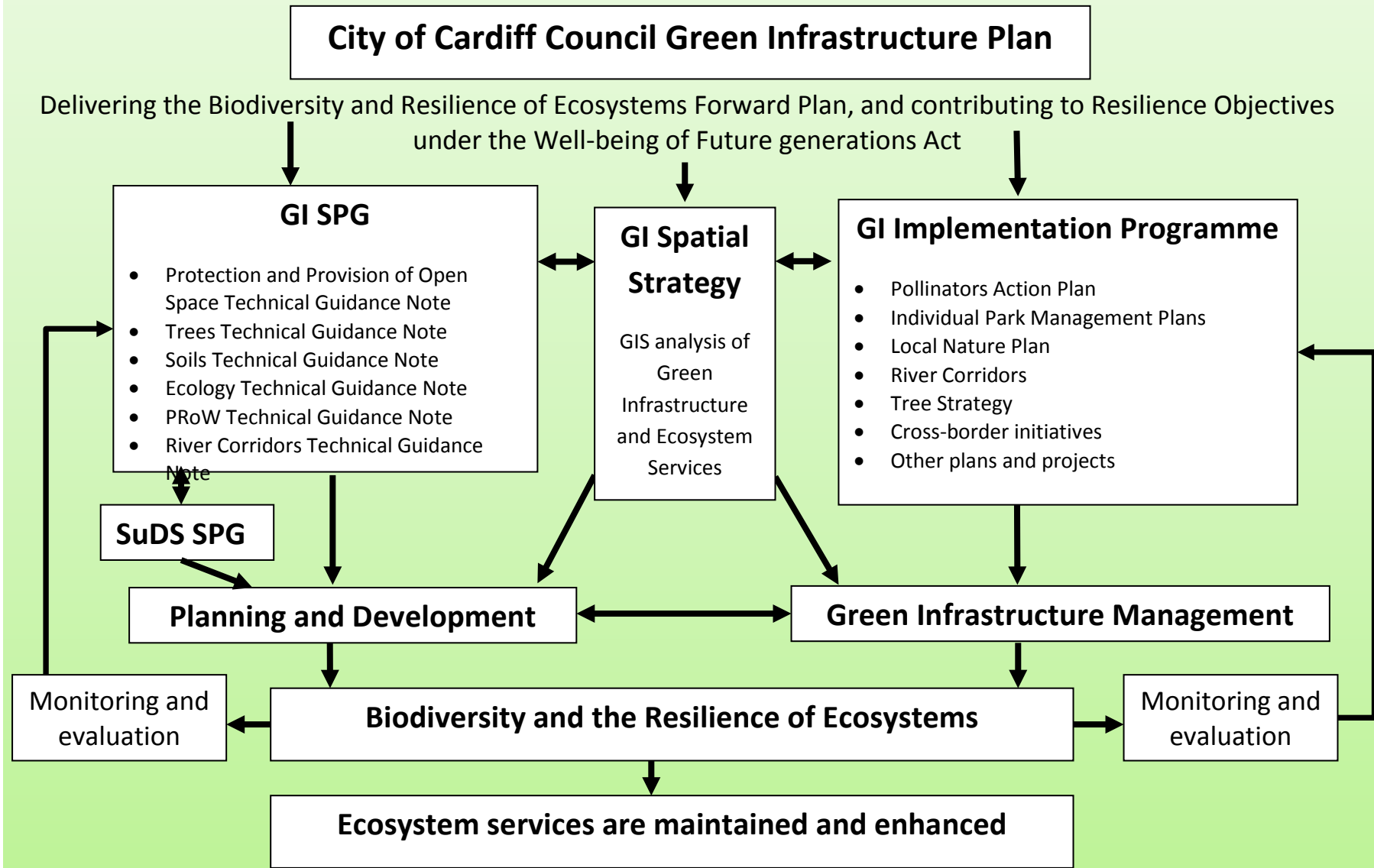


Figure 2

WHAT IS GREEN INFRASTRUCTURE?

Green infrastructure is a network of multi-functional, connected green spaces that make the best use of land and provide green open space for all, helping wildlife to flourish, and delivering a wide range of economic, health and community benefits.

Green infrastructure can include:-

- Parks
- Gardens
- Allotments and orchards
- Open countryside
- Rivers, lakes, ponds and streams
- Woodland and scrub
- Gardens
- Roadside verges
- Green roofs and walls
- School and hospital grounds
- Cemeteries and churchyards
- Hedgerows
- Golf courses
- Sustainable Drainage Systems (SuDS)
- Street trees
- Railway embankments
- Footpaths and bridleways
- Open mosaic habitat on previously developed land (Brownfield sites)
- Headlands and set-aside areas around agricultural fields
- Historical sites

Green infrastructure can be defined at a series of scales, such as individual buildings, streets, neighbourhoods or at a landscape scale. It is important that the benefits which arise from green infrastructure, and the impacts of development upon those benefits, are considered at the appropriate scale.

1.4 Definitions

1.4.1 For the purposes of this document, the definitions set out in Table 1 below apply.

Table 1 Definition of Terms

Biodiversity	The wide variety of ecosystems and living organisms; animals, plants, their habitats and their genes.
Ecosystem	An ecosystem may be considered as a unit within which an assemblage of living organisms interact with each other and with the chemical and physical environment. The resulting natural processes establish a series of complex ecological balances. Ecosystems may operate at a wide range of scales, from long-term global systems such as oceans, to very small, localised or ephemeral systems.
Ecosystem services	Human beings benefit from processes or structures within ecosystems that give rise to a range of goods and services called 'ecosystem services'. These range from the relatively simple, such as crop pollination to the highly complex, such as maintenance of soil fertility, sinks for waste or regulation of the climate. Ultimately all human life depends on ecosystem services for fundamental necessities such as clean air, clean water and food production. Services can be grouped into four categories – supporting services, provisioning services, regulating services and cultural services.
Ecosystems approach	A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable land use in an equitable way.
Green infrastructure	Green infrastructure is a network of multi-functional, connected green spaces that make the best use of land and provide green open space for all, helping wildlife to flourish, and delivering a wide range of economic, health and community benefits.
Major Development	Major development is defined in article 2 of the Town and Country Planning (Development Management Procedure) (Wales) Order 2012:

	<p>'major development' means development involving any one or more of the following—</p> <p>(a) the winning and working of minerals or the use of land for mineral-working deposits;</p> <p>(b) waste development;</p> <p>(c) the provision of dwelling houses where (i) the number of dwelling houses to be provided is 10 or more; or (ii) the development is to be carried out on a site having an area of 0.5 hectares or more and it is not known whether the development falls within sub-paragraph (c)(i);</p> <p>(d) the provision of a building or buildings where the floor space to be created by the development is 1,000 square metres or more;</p> <p>(e) development carried out on a site having an area of 1 hectare or more.</p>
Open space	<p>The following definition of open space is taken from TAN16:</p> <p>Open space is defined in the Town and Country Planning Act 1990 as land laid out as a public garden, or used for the purposes of public recreation, or land which is a disused burial ground.</p> <p>For the purposes of this guidance, open space should be regarded as all open space of public value, including not just land, but also areas of water such as rivers, canals, lakes and reservoirs which offer important opportunities for sport, recreation and tourism, and can also act as a visual amenity, and may have conservation and biodiversity importance.</p> <p>Areas which are privately owned may have amenity value, although access will not be possible without the agreement of the land owner. Areas like domestic gardens are relevant, since places without or with few gardens, are likely to be more reliant upon the provision of public spaces.</p>
Public open space	<p>The term public open space is often used interchangeably with the term open space and in legal terms, the definition is the same (see above).</p>

	<p>Public open space in the ownership of the local authority is held under either:</p> <ul style="list-style-type: none"> (a) the purpose of section 164 of the Public Health Act 1875 (pleasure grounds); or (b) in accordance with section 10 of the Open Spaces Act 1906 (duty of local authority to maintain open spaces and burial grounds) <p>Any disposal of public open space must conform to the requirements of the Local Government Act 1972 and any subsequent amendments.</p>
Public right of way (PRoW)	<p>A PRoW is a highway maintained at public expense which the public may use at any time. There are four types of PRoWs in Wales (footpaths, bridleways, byways open to all traffic and restricted byways) which the highway authority has a duty to protect and maintain under Section 130 of the Highways Act 1980.</p> <p>The Definitive Map and statements is held at the highway authority office and is a legal record of the rights of way network. Detailed information about how a path alignment can be changed (i.e. create, extinguish, or divert) is provided in the PRoW Technical Guidance Note (TGN).</p>
Sustainable drainage systems (SuDS)	<p>When land is altered by development, the natural process is often impeded, with the increase in impermeable area exacerbating flooding, pollution and erosion problems.</p> <p>Sustainable Drainage seeks to manage rainwater at source with the aim of reducing damage from flooding whilst maximising opportunities and benefits in relation to water quality, quantity, amenity and biodiversity both now and in the future (climate change). The early concept design of SuDS within a development provides the best opportunity to allow development to accommodate more significant rainfall events and reduce flooding.</p>

	<p>Examples of SuDS techniques are attenuation basins and ponds, swales, rain gardens, green roofs, etc. SuDS that are designed to manage rainwater at source and on the surface with the incorporation of vegetation provide the greatest benefit. The design of SuDS in combination with the ecosystems approach can provide significant betterment to ecosystem connectivity within and between developments.</p> <p>Detailed information relating to the requirements for the incorporation of SuDS into development is provided in the forthcoming City of Cardiff Council Storm Water Management document.</p>
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2 Green infrastructure requirements for new developments

2.1 General principles for provision of green infrastructure

2.1.1 Planning submissions that are likely to significantly impact upon green infrastructure will be considered to ensure that:

- The existing green infrastructure resource on the development site, and the potential impacts upon it, have been adequately considered
- The benefits of green infrastructure are reconciled with benefits of development
- Green infrastructure is integrated into proposals
- Opportunities for enhancement of green infrastructure, for the benefit of the community, have been taken as far as is reasonably possible

2.1.2 In order to achieve this:

- Surveys may be required to establish the existing green infrastructure resource
- Assessments may be required to establish the impact of the proposed scheme upon that resource
- Conditions or planning obligations will be used to protect and enhance green infrastructure
- Compensation will be required for the loss of green infrastructure where the benefits of development outweigh the retention and / or enhancement of existing green infrastructure
- Principles for management arrangements for green infrastructure must be in place before development commences

Further details of these requirements are set out in the Planning Obligations SPG, and in the Cardiff Liveable Design Guide.

2.1.3 In considering a development proposal against the KP16: Green Infrastructure policy, the following guiding principles will be applied as appropriate:-

- The components of what makes up green infrastructure are set out in Figure 2, above. Depending upon the context of the site, a range of these features, and the interactions between them, may be relevant, and should be considered in relation to new developments
- All elements of green infrastructure referred to in the text of policy KP16 should be considered in a holistic, integrated way
- Potential trade-offs between different elements of green infrastructure should be addressed according to the criteria in Section 3 below

2.1.4 Developments will be considered in terms of major and minor developments. Minor developments include alterations to existing buildings and structures, and built developments of between 1 and 9 dwellings. Major developments are as defined in Table 1, above.

2.1.5 Major Developments

- New major developments should include a Green Infrastructure Statement which should be appropriate to the scale of the development
- The Green Infrastructure Statement should take account of all of the elements of green infrastructure as set out in Policy KP 16
- For all new major developments, identification of the blue-green corridor (hydrological impact assessment) to determine flood risk and hydrological restrictions should be undertaken first

- Any masterplan for new major development should take into account the six strategic objectives of the Green Infrastructure Plan (see Section 1.2.2 above)
- Green infrastructure should be considered in terms of the phasing of the development and in conjunction with adjacent developments to achieve connectivity

Minor Developments

- Minor or householder proposed developments may have impacts upon green infrastructure, but this is more likely to affect individual elements, such as protected trees, hedges, local SuDS features, or habitats which support protected species. In these instances, assessment of impacts upon these individual elements may still be required, but overall assessment of the impacts upon green infrastructure will be undertaken by the planning case officer. A green infrastructure statement (described below) is not required for small scale developments.
- The applicant should seek to provide sufficient information to allow a proper assessment of the impacts of the proposed development on existing green infrastructure (both within and adjacent to the site) e.g. a BS5837 Arboricultural Survey and Arboricultural Impact Assessment where trees will be affected. This will enable a decision to be made on features which should be retained and those that can be removed.
- Overall the developer should seek to minimise impact of the development upon green infrastructure or where this cannot be avoided, provide a suitable replacement, e.g. new tree planting.

2.2 Assessment of existing green infrastructure prior to development

- 2.2.1 For all major developments, the existing green infrastructure resource in and around the site, based on the list of features in section 1.2 of the Green Infrastructure Plan, must be described and assessed. A thorough contextual analysis of the role of existing green infrastructure in and around the site (e.g. hydrology, habitats, public rights of way and parks) should be provided, appropriate to the scale of the proposed development. This should include a large scale map identifying the role of existing green infrastructure in the connecting wider city and neighbourhood context.
- 2.2.2 Evidence used to describe this resource can include novel approaches such as mapping of ecosystems and ecosystem services, and GIS network and opportunity analysis, as these and other resources become available.

2.3 Assessment of impact upon existing green infrastructure

- 2.3.1 The likely impact of the proposals upon green infrastructure features must be assessed. This should include a holistic assessment of all of the elements of green infrastructure, including the synergies and trade-offs between them. The assessment should also consider the impact not only upon the green infrastructure within the development site, but also upon the surrounding green infrastructure context. Subsequently the needs for development must be reconciled with the need to maintain and enhance green infrastructure. This assessment of impact should be undertaken by a landscape architect, ecologist or similarly qualified professional.

2.4 Green Infrastructure Statement

- 2.4.1 The culmination of analysis and conclusions of an impact assessment should be used to inform a Green Infrastructure Statement, which shows how all elements of the proposed green infrastructure (retained and new) and any associated uses and movement have a clear role and purpose in the new development. Conclusions drawn from analysis of this resource should be

expressed in an illustrative way, in the form of a Green Infrastructure Masterplan or Landscape Masterplan or similar. The resulting approach should explain how this is achieving good design. Examples include: why a hedgerow should remain in situ or where it is better relocated to create overlooked, connected streets and spaces; why a public right of way should remain in situ or if it is better diverted to maintain the rural function of rights of way in a green corridor and avoid isolated footpaths, lanes or alleyways through urban areas; whether or not a park is accessible by walking and cycling and how it might be integrated or modified to improve accessibility.

2.4.2 The Green Infrastructure Statement will include illustrations, plans and drawings that articulate how reports and technical data (e.g. tree and hedgerow assessments, landscape studies, environmental statements, hydrological reports) have been interpreted spatially. These need to communicate how conclusions have been drawn and how this has informed the design layout and landscape strategy. Additional sections and examples of existing areas (case studies/precedents) may be requested at key locations to illustrate what is proposed.

2.4.3 Where the masterplanning approach is invoked as set out in policy KP4 of the LDP, green infrastructure should inform, and be incorporated into, the masterplan of the site.

2.4.4 The Environment (Wales) Act 2016 places a duty upon public bodies such as Cardiff Council to promote the resilience of ecosystems. Similarly, the Guidelines for Ecological Impact Assessment 2016 2nd edition produced by CIEEM require that impacts upon ecosystems are considered as well as those upon habitats and species. Therefore all major planning applications should set out how impacts upon ecosystems have been assessed, and where necessary, mitigated. This assessment should be included in the Green Infrastructure Statement.

2.5 Green infrastructure impact mitigation

2.5.1 A Green Infrastructure Statement should apply the following mitigation hierarchy, i.e.

- | | |
|---------------------|--|
| Information | Sufficient information should be provided as to allow proper assessment of the impacts of a proposal, as set out in points 2.2 to 2.4 above |
| Avoidance | Where possible, potential impacts upon green infrastructure should be avoided |
| Mitigation | Where adverse impacts cannot be avoided, mitigation measures should be introduced to minimise or counteract them. |
| Compensation | Where residual adverse impacts remain after mitigation measures have been implemented, it may be necessary to secure compensatory provision of new green infrastructure. Where offsetting mechanisms exist in the Cardiff area, consideration should be given to whether an offsetting scheme will result in a better outcome for green infrastructure interests than more traditional elements of the mitigation hierarchy. |
| Enhancement | All development should seek to enhance green infrastructure |

2.5.2 The application of the mitigation hierarchy should be appropriate to the scale of the development proposed and to the scale of the impact upon green infrastructure. Generally, the larger the proposed development, the more of the elements of green infrastructure listed in policy KP16 will need to be considered.

2.5.3 As a guide, it may be useful to consider the following framework for identifying elements of existing green infrastructure present on the site before development and how these are going to be dealt with:

- **Necessary to retain** – Green infrastructure that has been identified as having a critical strategic, ecological, functional or statutory role to fulfil, which cannot be replaced. These need to be integrated as appropriate

into development with necessary buffer zones and limited public access if appropriate)

- **Preferable to retain** - features or landforms that have a quality or place-making value which can help shape built features, such as Parks, Green Corridors or SuDS areas
- **Can be removed or altered** – features which should be retained where possible, but for which there is evidence that it would be problematic to integrate into the layout in the interests of achieving overall good design. Likely features include landscaping which previously had a role in a countryside setting, but would be difficult to integrate and/or maintain in a built-up area, such as areas of scrubland or hedgerows which would cause movement barriers, overshadowing, creation of isolated footpaths/lanes, or difficult to maintain areas that would be better relocated in a strategic green corridor

2.5.4 Green infrastructure enhancements incorporated into new development should be multi-functional as far as possible, and aim to provide a range of green infrastructure benefits.

2.5.5 The Planning Obligations Supplementary Planning Guidance (SPG) sets out the Council's approach to planning obligations when considering applications for development in Cardiff. It also sets out the mechanisms for securing survey, assessment, mitigation, compensation and enhancement of the constituent components of green infrastructure.

2.5.6 In general, the main principles of a mitigation strategy should be set out in the Green Infrastructure Statement, but detailed mitigation will be set out in documents required by planning condition. Protection of green infrastructure during construction should be secured by a Green Infrastructure Construction Protection Plan, either as a standalone document or as part of a Construction Environmental Management Plan (CEMP). Ongoing management and

maintenance of green infrastructure features following construction of the development should be secured by a Green Infrastructure Management Strategy (GIMS), either at a strategic level for larger outline applications, or at a detailed level for smaller and reserved matter applications.

3 Integration of green infrastructure

3.1 Introduction

- 3.1.1 Where the green infrastructure resource at a site has been identified, and the impacts of a proposed development have been assessed, the subsequent mitigation approach should take into account all relevant elements of green infrastructure. In many cases, there will be opportunities for the mitigation approach to result in multiple benefits for several different elements. However, there may also be instances where the requirements of different elements are incompatible with each other, so trade-offs are required.
- 3.1.2 This section outlines some of the key components of green infrastructure to be considered in new developments. It provides some examples of the potential positive or negative interactions with other green infrastructure components, though this is by no means an exhaustive list of all such scenarios. Other components such as geology, landscape and historical features are not specifically considered in the current version of this SPG.
- 3.1.3 It is expected that development will seek to take advantage of any opportunity to exploit the synergy between different elements of green infrastructure, for example by ensuring that open space delivers multiple benefits.
- 3.1.4 Similarly, it is expected that development will seek to resolve potential conflict between different elements of green infrastructure, in accordance with the guidance set out below, in order to achieve a solution which maximises green infrastructure benefits.
- 3.1.5 Appendix 1 summarises these considerations and is intended to aid the developer in ensuring that a Green Infrastructure Statement is as comprehensive as necessary.

3.1.6 Further detail on specific requirements for each component, including quantity, quality and requirements for aftercare is provided in a series of Technical Guidance Notes.

3.1.7 Further guidance on the design of green infrastructure and the integration of the different elements of green infrastructure into the design of development is given in section 8 of the Cardiff Liveable Design Guide.

3.2 Holistic Integrated Surface Water Management Systems

3.2.1 Holistic Integrated Surface Water Management Systems are more commonly known as 'Sustainable Drainage Systems' or 'SuDS'. Detailed guidance in respect of SuDS and development is provided in the forthcoming City of Cardiff Council Storm Water management document which informs LDP Policies EN10 and EN14.

The SuDS Manual (CIRIA C753) approach to managing surface water runoff incorporates the latest technical advice and adaptable processes to assist in the planning, design, construction, management and maintenance of SuDS. This document advocates:-

- Using surface water runoff as a resource;
- Managing rainwater close to where it falls (at source);
- Managing runoff on the surface (above ground);
- Allowing rainwater to soak into the ground (infiltration);
- Promoting evapotranspiration;
- Slowing and storing runoff to mimic natural runoff rates and volumes;
- Reducing contamination of runoff through pollution prevention and by controlling the runoff at source;
- Treating runoff to reduce the risk of urban contaminants causing environmental pollution.

3.2.2 In general terms, the hydrological characteristics of a proposed development site will be determined by factors such as rainfall, topography, vegetation cover, soils and geology, which are already established prior to development. The design of any drainage scheme, including SuDS, would clearly be strongly influenced by these factors. Therefore it is natural that other elements of green

infrastructure will subsequently align with the best solution for water sensitive design, in compliance with Policy EN10.

3.2.3 This should not detract from other statutory duties and compliance with planning policies incumbent upon Cardiff Council, for example in relation to protected species, protected trees, public rights of way, open space etc.

3.2.4 Wetland features such as ponds and streams provide valuable habitat for wildlife, and SuDS features such as attenuation basins, swales, rain gardens and reedbeds etc. should be designed to provide multiple benefits, including for wildlife, where appropriate.

3.2.5 For example, species such as Great Crested Newt (GCN) fare better in the long term if they have access to a cluster of ponds rather than a single pond, so wherever possible, ponds which form part of a SuDS system should comprise a cluster of ponds rather than a single pond.

3.2.6 Early consideration must also be given to the role that existing and new planted trees will play in any SuDS scheme planned for any development site.

3.2.7 However, in some cases statutory requirement for provision of SuDS may conflict with requirement to provide mitigation or habitat compensation for protected habitats and species. This would particularly be the case on constrained sites where the area of non-developed area is limited. In such instances, off-site provision of habitat compensation may be required, but where this is not available, it may be necessary to refuse an application.

3.3 Parks, Open Space, and Accessible Natural Greenspace

3.3.1 Detailed guidance in respect of Parks, Open Space, Accessible Natural Greenspace and development is provided in the Technical Guidance Note which informs LDP Policies C3, C4 and C5.

- 3.3.2 Public parks and open spaces were originally developed from the mid-nineteenth century to address the declining health of urban populations. Today, as well as providing places for healthy activity and escape, parks and open spaces make a huge contribution to the character and quality of the modern city, helping to raise its national and international profile and encouraging inward investment and tourism. Parks play an important role in helping to mitigate the effects of the changing climate, ensuring that the quality of urban life remains high and that affordable opportunities for formal and informal open-air physical activity are available to all.
- 3.3.3 Green space for adoption as open space for recreational purposes will be land that is capable of supporting a range of formal and informal recreational uses. The layout of open space areas should take into account the need to protect and enhance *in situ* habitats, trees and access which, if incorporated into the open space layout will provide a diverse and attractive local environment for the new development.
- 3.3.4 Within new development sites, green spaces should be fully integrated into the development, thereby enhancing the urban environment rather than, for example, located at the rear of properties with little or no natural surveillance. Soft landscape features that are to be retained within development sites need to be robustly protected from the outset of the development.
- 3.3.5 Wherever possible, open space should be of sufficient size to accommodate multiple activities and provide multiple benefits. It should also be located so as to maximise green linkages both within developments and to surrounding areas to form a joined up network of green spaces, river corridors, wildlife areas and sports pitches.
- 3.3.6 However, there may be disturbance to habitats and species caused by multi-functional use of greenspace, for example erosion of ground flora, disturbance of nocturnal species by amenity lighting, or disturbance of sensitive species caused by human presence. Similarly, heavily-mown or over-tidied grassland areas can be of little value to biodiversity.

3.3.7 In this way, a statutory requirement for a certain provision of open space may conflict with the requirement to provide mitigation or habitat compensation for protected habitats and species. This would particularly be the case on constrained sites where the area of non-developed land is limited. Therefore in such instances green infrastructure should be sufficiently robust so as to allow habitats and species to flourish whilst providing other opportunities and benefits.

3.3.8 Regularly mown areas are required for formal recreation areas, for reasons of safety (immediately next to roads), in more formal settings (e.g. adjacent to buildings) and adjacent to footpaths. Elsewhere use of less frequent mowing regimes and creation of wildflower meadow will make open spaces more interesting and enhance biodiversity.

3.3.9 Where open space is located within a floodplain or SuDS area, the overall green space layout should facilitate both the function of green spaces and ease of maintenance.

3.3.10 Small isolated areas of green space in developments should be avoided as they provide limited benefit and cause maintenance issues. Areas of less than 0.08ha will not be considered as green infrastructure unless providing multiple benefits and forming part of a network of green spaces. Areas of open space less than 0.2ha will not be considered for adoption.

3.4 Ecology and biodiversity

3.4.1 Detailed guidance in respect of ecology and biodiversity and development is provided in the Technical Guidance Note which informs LDP Policies EN5, EN6 and EN7.

3.4.2 In terms of biodiversity, certain habitats and species benefit from legal protection, and these will be prioritised in the biodiversity element of green infrastructure. However, in addition to observing this legal protection, an

assessment of the impact of development upon green infrastructure must also include consideration of impacts upon ecosystems and ecosystem services.

- 3.4.3 In this way, a green infrastructure approach should maintain and enhance the resilience of ecosystems, whereby resilience is characterised by the diversity, extent, connectivity and condition of ecosystems.
- 3.4.4 Areas of bramble and scrub may be of great value for wildlife, but in open spaces these areas may be perceived as untidy by the public, particularly if they collect litter. Interpretation should be used to emphasise the nature conservation benefit of this habitat, together with provision for litter-picking in any habitat management regime.
- 3.4.5 Lighting may be required for certain footpaths and cycleways, but when placed close to semi-natural habitats it may cause disturbance to nocturnal species such as bats and dormice. Also, such lighting can attract insects at night, causing depletion of insects in adjacent habitat, resulting in reduction in prey resource for light-sensitive species, such as certain bat species, in that habitat. In both cases it is preferable to avoid lighting these areas in the first place, but if this is not possible then consideration should be given to the use of techniques to avoid these effects, such as directing light spillage away from vegetation, using wavelengths which do not attract insects or disturb mammals, using timers or motion sensors such that lights are switched off when not needed, etc.
- 3.4.6 SuDS waterbodies can be of value for priority species such as Great Crested Newts (GCN), but this value can be lost if they are likely to be flooded by nearby rivers and streams, thereby introducing fish which predate GCN larvae. Ideally, where permanent waterbodies feature as part of a SuDS system, these should be designed to dry out in drought years in order to favour GCN.
- 3.4.7 Also, water storage through SuDS should not cause flooding to areas which otherwise wouldn't normally flood, as this may compromise areas where species such as dormice and reptiles hibernate underground.

3.5 Public rights of way

3.5.1 Detailed guidance in respect of public rights of way and development is provided in the Technical Guidance Note which informs LDP Policies T1 and T8.

3.5.2 The following basic principles should be adopted to ensure the character, equally commodious and rural feel of rights of way affected by the development of rural green spaces is retained.

3.5.3 Existing rights of way should be retained on their alignment and:

- The character of the way should not be incorporated into the estate road network or enclosed in narrow corridors between garden fences and hedgerows
- Consideration should be given to upgrading the path surface where development is likely to increase potential usage
- A logical and coherent route to local facilities should be provided
- Used for recreational reasons and for access to areas of green space and the wider countryside

3.5.4 Diverting an existing right of way may be acceptable if the landowner is able to demonstrate the new alignment will:

- Divert onto the areas of green space set aside for public use such as wildlife corridors
- Form a logical and coherent route to local facilities and surrounding communities
- Form a logical and coherent link to the wider countryside bordering the development
- Be in open wide corridors to provide an enjoyable, safe and attractive route for recreation and other purposes

- 3.5.5 Local residents may have used a route through the development site for a considerable time and may wish to claim a right of way to record the route on the Definitive Map. During pre-application stage, the developer should identify any paths/rights of way crossing the development site which may need to be considered and liaise with the PRow Officers for specific advice on the status and significance of any such paths.
- 3.5.6 Creating paths may be necessary to supplement the existing network, especially within new housing developments where links for commuting and leisure is needed particularly for those living on the site. Standards and processes for creating new paths are in the PRow TGN.
- 3.5.7 Footpath verges and bounding features such as hedgerows can contribute to wildlife habitat, particularly in terms of linear connectivity. Encouraging walking/horse riding/cycling through semi-natural areas promotes public appreciation of and empathy with habitats and species, which has wider benefits for biodiversity. The creation of paths or rides through woodlands must be designed to ensure maximum ecological benefit and structural integrity of retained trees.
- 3.5.8 However there are some considerations which should be taken into account when planning footpaths, bridleways and cycle tracks as part of new development. For example the need for lighting of these features should take into account the impact upon nocturnal species such as dormice and bats.
- 3.5.9 Also, where riverside walks are planned adjacent to rivers, this could cause disturbance to otters, especially by dog walkers. In these situations it is better that the footpath meanders away from and towards the riverbank thereby giving areas of dense cover for otter lying-up areas, whilst also allowing views of the river.
- 3.5.10 Where habitats such as woodland are supported by an ecotone at their edge, pressure to increase a site's developed area may result in footpaths/bridleways

being placed within this ecotone. This may be acceptable provided that the path is informal, unlit, and is not widened and/or tarmacked.

3.5.11 Hedgerows are important features for wildlife, both in terms of the habitat and of the habitat connectivity that they provide. Retention of such features will normally be favoured, but in certain circumstances, as set out in section 3.7.3 below, replanting and/or translocation of hedgerows may result in better outcomes in ecological terms than retention of hedgerows within development.

3.6 Trees, landscaping and soils

3.6.1 Detailed guidance on trees and soils in relation to development is provided by the Trees and Development and Soils and Development Technical Guidance Notes that inform LDP Policies EN8 and KP15 and KP16.

3.6.2 Aside from their inherent beauty, trees can improve the aesthetic and environmental quality of development by screening eyesores, buffering sound pollution, improving air quality in accordance with Welsh Government's *Local Air Quality Management in Wales Policy Guidance*, June 2017, shading, cooling the air, providing shelter from the elements, retaining soil, intercepting and storing rainfall and providing a home and feeding place for a wide variety of wildlife. Trees and woodland can also provide areas for informal play, and allow for more commodious footpath links.

3.6.3 Trees within and adjoining development sites should be assessed in accordance with the Trees and Development Technical Guidance Note. The retention of existing high quality trees within development will usually be preferred, but where this conflicts with the retention or planting of trees that form a linear habitat corridor or woodland, then their removal is likely to be supported, but will be considered on a case by case basis.

3.6.4 All woodlands should incorporate ecotones to their boundaries, the size of which shall be determined in accordance with the Trees and Development Technical Guidance Note and with regard to any overriding ecological

constraints. The design of ecotones should not be compromised by the introduction of development infrastructure that conflicts with their primary function, but informal footpaths and sympathetically designed SuDS features, are likely to be acceptable.

- 3.6.5 Where new tree planting is proposed as part of development, its design should accord with the principles set out in the tree planting sections of the Trees and Development Technical Guidance Note. Site specific sectional and plan tree pit drawings should be drawn up at the earliest opportunity by the project Landscape Architect, in conjunction with product suppliers. Tree pits should be as large and continuous as practicable and wherever possible, located within or linking with existing soft landscape.
- 3.6.6 The planting of native tree species of local provenance, should be undertaken where this will provide clear, demonstrable ecological benefits, but otherwise mixed planting schemes incorporating native and non-native species well adapted to the predicted effects of climate change, are preferred. Planting schemes should also seek to provide a sufficiently diverse range of species to minimise the risks of catastrophic pest and disease outbreaks.
- 3.6.7 Soils are a fragile and essentially non-renewable resource that can perform many beneficial services, including the storage of carbon, supporting the growth of plants including economic crops, providing a home to a vast range of wildlife, storing, filtering and controlling the flow of water, and supporting buildings. Development can destroy, in seconds, soils that have taken thousands of years to develop. The destruction of or loss of functionality of soils is not only important in terms of the loss of beneficial services, but also because it may result in substantial costs to ameliorate, import or manufacture soils. Existing soils on development sites should be assessed in accordance with the Soils and Development TGN. This may include the production of a Soil Resource Survey and Soil Resource Plan that in turn inform tree protection, landscaping, SuDS, landscape maintenance, ecology, waste management and materials management strategies.

3.7 Hedgerows

- 3.7.1 Hedgerows within and bounding a development site should be assessed in accordance with the Hedgerows Regulations 1997. The assessment may form part of an Archaeological or Ecological Impact Assessment, but in all cases it should be clear where the assessment has been placed within the submissions that form part of a planning application.
- 3.7.2 Hedgerows found to be important in accordance with the Hedgerows Regulations 1997 should normally be retained and incorporated into the design of development, so that the characteristics that render them important are maintained or enhanced. Where overriding design considerations necessitate the removal or translocation of important hedgerows, it must be clear within the submitted Green Infrastructure Statement, how the loss will be mitigated through new planting and/or a translocation methodology.
- 3.7.3 In certain circumstances, retention of hedgerows within development may be less effective at providing habitat and habitat connectivity, than re-planting or translocating hedgerows to form a more robust, strategic wildlife corridor. In such circumstances, re-planting hedgerows should take place at a ratio of approximately 3 metres of new hedgerow for every metre of hedgerow lost, in order to compensate for the time it takes for the new hedgerow to achieve maturity and therefore provide the quality of habitat required by species, such as dormice.

3.8 River Corridors

- 3.8.1 The River Corridors Technical Guidance Note informs LDP Policy EN4 and sets out guidance on how planning applications located within the River Corridors will be assessed. The guidance note sets out a description and the key attributes of the four River Corridors and identifies a range of factors which will need to be taken into account when submitting a planning application within these areas. These factors include:

- Access and recreational routes

- Recreation
- Public Realm
- Biodiversity
- Historic and Cultural Environment
- Landscape
- Surface Water
- Floodplain
- Water Quality and Pollution Prevention
- Safety
- Litter
- Education
- Management and Maintenance
- Planning Obligations.

3.8.2 The factors have significant overlap with detailed guidance included in other parts of the SPG including Biodiversity, Public Rights of Way, Trees and Open Space and appropriate links to these and other SPG's including forthcoming City of Cardiff Council Storm Water management document, Waste Collection Facilities and Planning Obligations are included in the guidance note.

4 Sustainable Long-term Management of Green Infrastructure

- 4.1 Where the mitigation hierarchy has been applied to green infrastructure on a development site, the resulting green infrastructure resource will need to be managed in the long term in order to maintain its function, such that it continues to provide multiple benefits to society. The mechanism for delivering this management will depend upon the individual development, but will accord in all cases with the Technical Guidance Note for Protection and Provision of Open Space in New Developments, and in particular the section in that document which deals with practical management. Three options exist for aftercare of open space, green infrastructure and SuDS – Adoption and Maintenance by the Council, Maintenance/Management by a Private Management Company, and Maintenance/Management by a Community Land Trust established for that purpose. Further details of these are given in the Technical Guidance Note for Protection and Provision of Open Space in New Developments.
- 4.2 In many cases, aspects of green infrastructure such as SuDS, open space and semi-natural habitats will be closely linked and will form part of a coherent green infrastructure network. In such cases, ongoing management of these features is best considered holistically, and proposals which treat these elements as a coherent network rather than as individual features, will be favoured.

Appendix 1. Public Consultation.

Public consultation was undertaken between Thursday 22nd June 2017 and the Thursday 3rd August 2017. A press notice was placed in a local newspaper on Wednesday 21st June 2017. Copies of the draft guidance was placed in all Cardiff libraries and at County Hall Reception. The draft guidance was also published on the Council website. Letters notifying that consultation was being undertaken on the draft guidance were sent to all Councillors , the Welsh Government, Community Councils in Cardiff and any interested persons and the following organisations known to have general interest in planning in Cardiff or a potential interest in this guidance.

*** denotes consultees who have responded to consultation in addition to individual members of the public and individual councillors.

ACE - Action in Caerau and Ely	Cardiff & Vale Parents Federation
Alder King	Cardiff & Vale University Health Board
Alternatives for Transport	Cardiff Access Group
AMEC Environment & Infrastructure UK Limited	Cardiff Against the Incinerator
Arts Council of Wales	Cardiff Biodiversity Partnership
Arup	Cardiff Bus
Asbri Planning Ltd	Cardiff Bus Users
Associated British Ports	Cardiff Conservative Group ***
Association of Inland Navigation Authorities	Cardiff Civic Society ***
Atkins	Cardiff Community Housing Association
Austin-Smith: Lord	Cardiff Cycling Campaign
Barratt Homes	Cardiff Greenpeace
Barton Willmore	Cardiff Heliport
Bellway Homes	Cardiff International Airport Ltd.
Biffa	Cardiff Lib Dem Group ***
Bilfinger GVA	Cardiff Local Access Forum
Black Environment Network	Cardiff Metropolitan University
Blake Morgan LLP	Cardiff Naturalists
BNP Paribas Real Estate	Cardiff Pedestrian Liberation
Bovis Homes	Cardiff Transition
Boyer Planning	Cardiff University
Bristol City Council	Cardiff West Communities First
BT Group plc	Carolyn Jones Planning Services
Business in the Community Wales	CDN Planning
C2J	Celsa Manufacturing (UK) LTD
Cadwyn Housing Association	Cemex Uk Operations Ltd
Caerphilly County Borough Council	CFW Architects
Campaign for the Protection of Rural Wales	CGMS Consulting

Chartered Institute of Housing in Wales
Chichester Nunns Partnership
Chris Morgan Planning Consultant
Chwarae Teg
Civil Aviation Authority
Coal Authority
Coleg Glan Hafren
Communities First Adamsdown
Community Housing Cymru
Community Land Advisory Service Cymru
Confederation of British Industry
Confederation of Passenger Transport
Connections Design
Country Land and Business Association
CSJ Planning Consultants
Cymdeithas yr iaith gymraeg
Danescourt Community Association
David Lock Associates
Davies Sutton Architects
DavisMeade Agricultural
Derek Prosser Associates
Design Circle RSAW South
Design Commission for Wales
Development Planning Partnership
Development, Land & Planning Consultants Ltd
Disability Arts Cymru
Disability Wales
DLP Consultants
DLP Planning Ltd
DPP Cardiff
DTB Design
DTZ
Dwr Cymru Welsh Water
Edenstone Homes
Equality and Human Rights Commission
Ethnic Business Support Project
Federation of Small Businesses
First City Limited
FirstGroup plc
Firstplan

Forestry in Wales/Natural Resources Wales
Freight Transport Association
Friends of Nantfawr Community Woodland
Fulfords Land & Planning
G L Hearn
G Powys Jones
Garden History Society
Geraint John Planning Ltd
GL Hearn Planning
Glamorgan Bird Club ***
Glamorgan - Gwent Archaeological Trust Ltd
Glamorgan Gwent Housing Association
GMA Planning
Graig Community Council
Graig Protection Society
Great Western Trains Company Limited
Grosvenor Waterside
GVA
H O W Commercial Planning Advisors
Hafod Housing Association Limited/
Hafod Care Association Limited
Halcrow
Hammonds Yates
Heath Residents Association
Herbert R Thomas LLP
Home Builders Federation
Hutchinson 3G UK
Hyland Edgar Driver
Hywel Davies
Interfaith Wales
Jacobs Babbie
Jeremy Peter Associates
JLL
John Hughes
John Robinson Planning & Design
John Wotton Architects
Jones Lang LaSalle
JP Morgan Asset Management
Keep Wales Tidy
Kelly Taylor & Associates
Kingsmead Assets Limited

Knight Frank
Landscape Institute Wales
Levvel Ltd
Lichfields
Linc-Cymru
Lisvane Community Council
Llandaff Conservation Group
Llandaff Society
Lovell Partnership
Loyn & Co Architects
LUC
Madley Construction
Mango Planning and Development
Limited
Marshfield Community Council
Martin Robeson Planning Practice
McCarthy & Stone (plc)
Meadgate Homes Ltd
Mike Pitt
Mineral Products Association
Morgan Cole
Mott MacDonald
National Federation of Builders
National Youth Arts
Natural Resources Wales ***
Neame Sutton
Network Rail
Newport City Council
NFU Cymru
North West Cardiff Group
Novell Tullet
O2 UK
Oakgrove Nurseries
Old St Mellons Community Council
Orange
Origin3
Pantmawr Residents Association
Peace Mala
Peacock & Smith
Pegasus
Pentyrch Community Council
Persimmon Homes
Peterson Williams
Peterstone Community Council
Philippa Cole ***
Planning Aid Wales

Planning Potential
Police & Crime Commissioner
Powell Dobson
Powergen
Public Health Wales ***
Prospero Planning
Quarry Products Association
Quinco
Quod
Race Equality First
Radyr & Morganstown Association
Radyr and Morganstown Community
Council
Radyr and Morganstown
Partnership and Community Trust
(PACT)
Radyr Farm
Radyr Golf Club
Rapleys
RCT
Redrow Homes ***
Reeves Retail Planning Consultancy
Ltd
Renplan
Reservoir Action Group (RAG)
Rhiwbina Civic Society
Rhondda Cynon Taf County
Borough Council
RICS Wales
Rio Architects
Riverside Communities First Team
Robert Turely Associates
Roberts Limbrick
Robertson Francis Partnership
Royal Commission on the Ancient &
Historical Monuments of Wales
Royal National Institute for the Blind
RPS Group Plc
RSPB ***
Save Creigiau Action Group
Savills
Scope Cymru
Scott Brownrigg
Sellwood Planning
Shawn Cullen
SK Designs
SLR Consulting

South Wales Chamber of
Commerce Cardiff
South Wales Police
South Wales Police Crime
Prevention Design Adviser
South Wales WIN
Splott and Tremorfa Communities
First
Sport Wales
SSE Energy Supply Ltd
St Fagans Community Council
Stedman Architectural
Stewart Ross Associates
Stonewall Cymru
Stride Treglown Town Planning
Stuart Coventry Scott Wilson
Sullivan Land & Planning
Sustrans Cymru
Taff Housing Association
Tanner & Tilley
Taylor Wimpey
Terry Nunns Architects
The 20th Century Society
The Boarding Centre Ltd
The Environmental Dimension
Partnership ***
The Design Group 3
The Georgian Group
The Institute of Cemetery and
Crematorium Management
The Land Mark Practice
The Planning Bureau
The Royal Town Planning Institute
The Urbanists
The Victorian Society
The Wildlife Trust of South & West
Wales
Theatres Trust
T-Mobile (UK) Ltd
Tongwynlais Community Council
Torfaen County Borough Council
Turley
United Welsh Housing Association
Urban City Ltd
Velindre NHS Trust Corporate
Headquarters
Virgin Media

Vodafone
Wales & West Housing Association
Wales Council for Voluntary Action
Wales Women's Aid
Watts Morgan
Welsh Ambulance Services NHS
Trust - South East Region
Welsh Government
Welsh Government - Economy
Skills and Transport Division
Welsh Language Commissioner
Welsh Tenants Federation Ltd
Wentloog Community Council
White Consultants ***
White Young Green
Wildwood Ecology ***
Wimpey Homes
WS Atkins Planning Consultants
Wyevalle Garden Centre

Appendix 2. Comments provided in respect of the Public Consultation, and the responses of the Green Infrastructure Group officers to those comments.

Topic	Comment	Green Infrastructure Group Response
Ecology & biodiversity	The focus of the SPG must be to enhance and improve biodiversity, rather than simply maintaining what is already there	The GI SPG relates to various policies in the LDP, which were drafted before the Environment Act section 6 duty to 'seek to maintain and enhance biodiversity...' was in place. Nonetheless, the requirement to seek enhancements is explicit throughout the Ecology and Biodiversity Technical Guidance Note (EBTGN) for example in the Mitigation Hierarchy section on page 25, and in the 'Enhancements' section on pages 30 to 31. No change.
Ecology & biodiversity	Biodiversity surveys – Cardiff Council must insist that these are carried out by a qualified, preferably local, ecologist.	See 'Surveyor competencies and standards' section on page 26, which sets out these requirements. Unfortunately it is not possible to stipulate that an applicant uses 'local' ecological consultants. However, the local knowledge of Green Infrastructure Group members is brought to bear on consideration of any biodiversity surveys. No change.
Ecology & biodiversity	<p>Cardiff Council should require as a minimum the following for house nesting birds -</p> <p>Swifts 1 in 3 buildings House Martins 1 in 3 buildings House sparrows 1 in 3 buildings Starlings 1 in 20 buildings Swallows 1 in 20 buildings</p> <p>The documents must specify what is required and how nest boxes should be sited – e.g. the nest boxes for swifts and sparrows should be built into the fabric of the buildings. House martins will need to have artificial nest cups installed in suitable positions on buildings. Swallows will need ledges under cover, but with free access to the outside.</p>	<p>The finer details of siting of nest boxes should be left to the expertise of the applicant's ecological advisors, taking into account the nature and location of the buildings concerned. Therefore it is not appropriate to specify these details in this SPG.</p> <p>No source of reference has been given for the ratios specified, so as far as is possible to tell, these ratios do not have any basis in any published guidance.</p> <p>However, the guidance document referred to in the consultation draft has been superseded by a Second Edition, so it is this more recent version which should be referred to. Therefore a mend to read:- '...in accordance with the advice given in 'Designing for Biodiversity: A Technical Guide for New and Existing Buildings, Second Edition. RIBA Publishing, London. Gunnell, K. et al., 2013.'</p>
Ecology & biodiversity	Wildflowers – Cardiff Council must insist that these are planted wherever possible and maintained appropriately.	The pro-active enhancement of the Cardiff Council estate for wildflowers will be set out in a Pollinator Action Plan which is part of

		the Green Infrastructure Implementation Programme. It is not appropriate to include these details in the EBTGN. However, the 'Enhancements' section on pages 30 to 31 provides for enhancement of wildflower habitats within developments. No change.
Ecology & biodiversity	Mammals such as hedgehogs, which are in severe decline, need to be catered for. The Council must require that developers include hedgehog friendly fencing in garden and other fences.	Many species are in decline, and a list of species known to occur in Cardiff which are of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales is set out in Appendix 2A. Clearly it would be impossible to set out in the EBTGN the mitigation and enhancement measures for every one of these species. Instead, to ensure the EBTGN is of a manageable size, we have focused on the most heavily protected and most regularly impacted species or species groups at a European and UK level. No change.
Ecology & biodiversity	The needs of diverse insect species must be included, with a requirement that plants and trees are insect friendly. Hedges, areas of long grass, wetland areas and ponds also need to be included in plans for new developments.	It is not possible to provide bespoke nature conservation measures for all species, but the emphasis within the GI SPG on an 'ecosystem approach', with the assumption that healthy, resilient ecosystems will support a full range of invertebrate and other species. No change.
Ecology & biodiversity	As a Director of SEWBRcC, I am pleased that this TGN recognises our role as both a required source of data in the Cardiff area and a recipient of survey data.	Noted. No change.
Ecology & biodiversity	I am also pleased at the multiple references to wintering birds at the Severn Estuary and other sites. I think this would be better emphasised if the guidance on appropriate survey months included a row for wintering birds, as well as the existing one for breeding bird surveys.	Agreed. Where developments may affect the Severn Estuary Species Protection Area, which is designated for overwintering and migratory wetland birds, we always give the advice that these birds are mostly present between October and March inclusive. Therefore there is merit in including this window in the guide to survey timing. Therefore include row after 'Breeding Birds' and before 'Invertebrates' to include a field 'Overwintering and migratory season'.
Ecology & biodiversity	I wonder if the impact of the actual construction period is sufficiently detailed. Polluted run-off into sensitive water bodies would be one instance, as well as affecting water levels which might adversely impact	Agreed. The Mitigation Hierarchy section should make it clear that efforts should be made to avoid impacts both spatially and temporally.

	nesting birds and animals, including bank nesters such as water voles and sand martins.	
Ecology & biodiversity	With regard to the matrix for bat surveys being triggered (table 2, pages 45 and 46), there is no provision for if a property is a known bat roost from either previous survey, bat care record etc, if it is not a certain age or type of building. It would be therefore useful to allow existing records from the LRC to supplement this table, to prevent impacting on known roosts.	Agreed. The Bats section of the EBTGN should make it clear that a bat survey should be required for works to any structure which is already known to support a bat roost. Insert sentence after paragraph which begins 'Table 2 below should be used...'. Sentence to read:- 'Surveys will also be required where a building or structure is known to support a bat roost, but the most recent survey is more than two years old'.
Ecology & biodiversity	The numbers of survey refugia placed out at a site is recommended at a density of 10 per ha (following the Froglife Guidance. The TIN102 guidance suggesting 100 per ha and Sewell says 30 per site, regardless of size. It would be useful to emphasise the refugia should be placed in areas of good habitat and numbers of refugia should be justified.	This section of the EBTGN as drafted gives sufficient guidance on refugia density, and the figure in TIN102 relates to site clearance not to initial survey. This section goes on to emphasise that it should be demonstrated that refugia have been located correctly. No change.
Ecology & biodiversity	There is ambiguity in the number of reptile surveys required (para 3, page 65). Whilst the existing guidance documents do not all agree on the numbers of surveys required, the phrasing of the text in para 3 states that 7 nil return visits are the minimum to establish likely absence, and more than "this" (read as more than 7) are required to indicate abundance or relative population size. The text then goes on to say that 7 visits are required or if refugia have been in place for a long time, or detectability is high, then only 4 or 5 visits. Clarifying this would be useful.	This section is adequately clear. Seven visits are recognised as adequate to give confidence in a presence/ absence survey. If an indication of abundance is needed then more than seven visits may be required. No change.
Ecology & biodiversity	Will Appendix 2.A be updated? The records will be over 1yr old when going to approval.	It will not be possible to update this list regularly, but it is agreed that this section should include a sentence to guide the user to seek a more up-to-date list if needed.
Ecology & biodiversity	Survey timing is referenced on page 22 E&B TGN, suggesting that survey work can be undertaken at any time of year, however the table on the timing of bird surveys on page 30 seems to be at odds with this. The table indicates that the surveying of breeding birds " is not possible " from August through to February. Climate	Pages 22 and 23 state that '...surveys for certain species and/or habitats can often only take place at certain times of year...', so there is no conflict with Table 1. In relation to the 'Breeding Birds' section of Table 1, it is a valid point that perhaps some breeding activity continues into August, so we are happy to make that amendment. However, this table is intended to give a rough guide

	change is referenced in the Green Infrastructure guidance (Para 1.3.4 and in KP15). The plan needs to take into account that our climate is changing and biodiversity is having to adapt to these changes. We believe that the table should recognise this fact and all surveyors should be instructed “ to be aware ” that there may be birds breeding outside of the March to August period.	to the broad periods when surveys are acceptable, so there is a limit to how much detail can be included. There is a danger in advising that surveys may become acceptable outside these periods due to climate change, as this may lead to more surveys at inappropriate times of year being submitted. Therefore amend 'main breeding bird period' section of Table 1 to include the month of August. Therefore amend 'main breeding bird period' section of Table 1 to include the month of August.
Ecology & biodiversity	There are a number of species that pass through or overwinter in Cardiff. They don't seem to have been considered at all. The table on page 30 should include a section on birds outside of the breeding season	As in response to other comments, Table 1 will be amended to include the main overwintering and migratory season for wetland birds associated with the Severn Estuary.
Ecology & biodiversity	In the section on birds (Para 1.5.5 pages 60 and 61 E&B TGN) reference is made to house nesting birds, namely House Martin, Swift and Swallow. Starlings (red listed) and House Sparrows (amber listed) appear to have been omitted from this list?	These sections give examples ('...such as...') of some species which often nest in and around houses, and are not intended as definitive lists of species which may conceivably nest in a building. No change.
Ecology & biodiversity	The table on page 32 is poor and needs strengthening. All the bird species mentioned are either red or amber listed. The number of nest/roost sites that are expected to be included in new builds are totally inadequate. Swifts, House Martins and House Sparrows all nest in loose colonies. It is not adequate to state, for example, “1 Swift box/brick per 20 dwellings”. Developers must be guided as to the type of nest boxes, internal nest bricks, roosting platforms, orientation etc. that are expected. Guidance should also be given as to the grouping of features.	This table is replicated word for word from the two references provided, both of which are considered to be sufficiently authoritative sources of guidance. No change.
Ecology & biodiversity	Having examined a number of examples, we urge that the Cardiff SPG adopt some of the practices in the following: Dudley SPG, Exeter SPG (especially Appendix 2, pages 11 – 21) and the Cornish draft SPG. Exeter, for example, requires “all” new dwellings to have a nest brick, box or bat roost. Its plan has been adopted by the Town and Country Planning Association as an “example of best practice”, Cornwall has similar provision in its draft guidelines,	<p>All of the sources quoted promote differing levels of nesting / roosting provision in new development. Similarly, none of the sources quoted provide any authoritative reference for the levels of provision that they have stipulated (although some of them refer to each other).</p> <p>However, the guidance document referred to in the consultation draft has been superseded by a Second Edition, so it is this more</p>

	Edinburgh has a 1 in 4 policy, with further provision required on high rise developments. Dudley SPG has very specific guidance on the type and number of boxes etc.	recent version which should be referred to. Therefore amend to read:- '...in accordance with the advice given in 'Designing for Biodiversity: A Technical Guide for New and Existing Buildings, Second Edition. RIBA Publishing, London. Gunnell, K. et al., 2013.'
Ecology & biodiversity	By comparison, the Cardiff SPG on birds lacks the level of detail we would expect. Specific species should be referenced e.g. birds have 2 pages dedicated to their welfare, whereas bats take up 14!	Firstly, as with any such document, the EBTGN attempts to strike a balance between the level of detail on one hand and the usefulness of a large document on the other. Secondly, the EBTGN is part of a Supplementary Planning Guidance which aims to advise on how these areas are considered in the planning system. It is not a Local Biodiversity Action Plan or a Local Nature Plan and as such does not consider wider nature conservation issues outside of land use planning. With these two points in mind, it is natural that bats will have greater prominence than birds because bats receive much greater protection in UK and EU-based legislation that the birds which occur in Cardiff. No change.
Ecology & biodiversity	The table of Schedule 1 birds (pages 102-4, E&B TGN Part 2) includes four bird species. The description of the distribution of three of them needs adjustment. Three other species, currently red listed, breed in Cardiff - Lapwing, Herring Gull and Bullfinch. Lesser Spotted Woodpeckers may still breed in Bute Park also.	The species mentioned are not Schedule 1 bird species. As is explained in the note following this table, only the most protected species are listed, and given that birds generally receive some form of protection, it is not feasible to list every bird species which has occurred in Cardiff. No change.
Ecology & biodiversity	We believe that an opportunity has been lost, to include specific reference to some red listed bird species that are breeding in Cardiff e.g. Bullfinch in the Glamorgan Canal area, Lapwing on the Gwent Levels and Hawfinch (which is amber listed) which has bred in the Castell Coch/Fforestganol/Wenallt area.	These are wider nature conservation issues in respect of birds and it is not appropriate to include these details in Planning Guidance. No change.
Ecology & biodiversity	The wording surrounding Environmental Impact Assessments (para 1.4.1, page 23 E&B TGN) is weak. It is the opinion of the Glamorgan Bird Club that EIAs are an essential tool in the planning process.	This section is not intended to replicate all of the legislation, guidance and caselaw surrounding the EIA process. This element of the TGN is intended to guide development control officers to consult the County Ecologist where and EIA may be invoked. No change.
Ecology & biodiversity	The section on "costs and delays" on (page 24 E&B TGN) is so open ended that it could be seen as "a get out" clause for unscrupulous developers.	It is important that requests for surveys for protected species are proportionate, and not 'open-ended' in favour of surveys for every conceivable species which may be impacted by a scheme. It is not

		reasonable to ask for new survey work where existing data are adequate, where presence can reasonably be assumed and where the results of a survey would not alter the mitigation required. No change.
Ecology & biodiversity	We are astonished that insects, particularly pollinators, do not figure more. Cardiff holds nationally scarce species such as Shrill Carder and Brown-banded Carder Bees, plus various species of Oil beetle, for example.	These are wider nature conservation issues in respect of invertebrates and it is not appropriate to include these details in Planning Guidance. The SPG and TGNs are not intended as a 'LBAP' or Local Nature Plan', and in general refer only to those species, habitats, sites and ecosystems which may influence the planning system. Generally, that influence is restricted to those features which receive statutory protection, although it is not possible to consider in detail all species on the Section 7 lists. No change.
Ecology & biodiversity	Small mammals are poorly represented, e.g. Hedgehog? We feel that this should be addressed. Features such as hedgehog friendly fencing etc., should be included in the guidance.	There is a limit to how many species or species groups can be considered in detail in the EBTGN, in order to keep the document to a manageable size, so the focus is on those which receive the most statutory protection. The Hedgehog currently receives a relatively low level of protection, but of course the TGN could be amended if this were to change. No change.
Ecology & biodiversity	We urge that the provision of features such as beetle banks and the like should be included in your guidance for developers.	There are many types of enhancement which could be employed for a range of species, and it is not possible to cite all of these in the EBTGN, instead, we have focussed on those species or species groups which receive the greatest protection and are most likely to be impacted. No change.
Ecology & biodiversity	The whole thrust of the SPG must be to enhance and improve biodiversity, rather than simply maintaining what is already there	This is referred to throughout, for example at Section 1.2 of the GI SPG:- 'The LDP ecology, biodiversity and green infrastructure policies are intended to maintain and enhance biodiversity and green infrastructure, such that ecosystems are supported in their delivery of ecosystem services, in accordance with national and international strategies.' No Change.
Ecology & biodiversity	The introduction to this needs to mention the State of Nature Reports and the evidence they contain that biodiversity is being lost. Also, that Cardiff Council is committed to doing all it can to halt and reverse these declines.	The SPG / TGNs refer to the LDP policies as adopted, and these policies were drafted before the SoNaRR was produced. The SPG / TGNs make adequate reference to the Environment (Wales) Act and to the Natural Resource Management Process. This process entails a series of actions such as the production of SoNaRR, the

		<p>Natural Resources Policy and the Area Statements, so it would be more appropriate to amend the SPG / TGNs when all of these are in place.</p> <p>The LDP policies relating to green infrastructure and ecology / biodiversity were drafted to reflect nature conservation legislation and policy designed to maintain and enhance biodiversity. Therefore, by implementing these policies, guided by the present SPG /TGNs, it is implicit that Cardiff Council is seeking to maintain and enhance biodiversity. No Change.</p>
Ecology & biodiversity	The document needs to be both more detailed and prescriptive – it is after all supposed to provide technical guidance	Whilst other consultation respondents have commented that the SPG /TGNs are too long and too detailed, it is considered that the documents as drafted strike an appropriate balance between detail and usability. No Change.
Ecology & biodiversity	It is difficult to see how this document meets the legal duties of the Council under s.6 of the Environment (Wales) Act 2016 – to ‘seek to maintain and enhance biodiversity’. There does not seem to be an environmental impact assessment to show how the TGN meets this requirement.	The SPG / TGN advise on implementation of policies in the LDP which are designed to maintain and enhance green infrastructure, as required by extant policy and legislation. This is compatible with Cardiff Councils Section 6 duty under the Environment (Wales) Act. The Council's green infrastructure strategy, comprising the Green Infrastructure Plan, the TGN / SPGs, the GI Spatial Strategy and the GI Implementation Programme, is intended to represent the Council's response to the section 6 duty. No Change.
Ecology & biodiversity	<p>para 1.4.1 <i>It is considered best practice that such a survey is carried out before planning application is submitted.</i> <i>Planning permission should not be granted subject to a condition that protected species surveys are carried out (EtC).</i> This statement is both confusing and weak. It needs to be strengthened. The sentence in bold needs to read -</p> <p><i>Cardiff Council expects that such a survey is carried out.....</i> See Cornwall Council's draft Biodiversity Supplementary Planning Document:- - http://www.cornwall.gov.uk/media/26847714/biodiversity-spd-v4-sm.pdf</p>	The section referred to is quoted directly from Section 6.2.2 of TAN 5, and is considered to be sufficiently accurate and authoritative to be included in the TGN. No Change.

Ecology & biodiversity	It would also be helpful to explain how developers should assess whether or not there is a reasonable likelihood of protected species being present and thus that they should undertake surveys.	Generally the scoping of protected species surveys is undertaken either by the County Ecologist or the applicant's ecological consultant, or a combination of both. However, the previous Biodiversity SPG did contain the sentence:- 'In determining the requirement for survey information, the Council will consider the known distribution of a species in Cardiff and the suitability of the habitat for that particular species.' Therefore a statement to this effect should also be included in the present ENTGN; Insert the sentence:- 'In determining the requirement for survey information, the Council will consider the known distribution of a species in Cardiff and the suitability of the habitat for that particular species.' on page 23 of the EBTGN between '...in that process.' and 'Mindful of costs...'										
Ecology & biodiversity	<p>Page 32, table on recommended roosts and nest sites. These are old recommendations. Starlings are red listed in Wales. Swifts, house martins, house sparrows and swallows are amber listed. (Swifts would also be red listed if data on their numbers went back far enough. Cardiff Council should require as a minimum the following -</p> <table><tr><td>Swifts</td><td>1 in 3 buildings</td></tr><tr><td>House Martins</td><td>1 in 3 buildings</td></tr><tr><td>House sparrows</td><td>1 in 3 buildings</td></tr><tr><td>Starlings</td><td>1 in 20 buildings</td></tr><tr><td>Swallows</td><td>1 in 20 buildings</td></tr></table>	Swifts	1 in 3 buildings	House Martins	1 in 3 buildings	House sparrows	1 in 3 buildings	Starlings	1 in 20 buildings	Swallows	1 in 20 buildings	No source of reference has been given for the ratios specified, so as far as is possible to tell, these ratios do not have any basis in any published guidance. However, the guidance document referred to in the consultation draft has been superseded by a Second Edition, so it is this more recent version which should be referred to. Therefore amend to read:- '...in accordance with the advice given in 'Designing for Biodiversity: A Technical Guide for New and Existing Buildings, Second Edition. RIBA Publishing, London. Gunnell, K. et al., 2013.'
Swifts	1 in 3 buildings											
House Martins	1 in 3 buildings											
House sparrows	1 in 3 buildings											
Starlings	1 in 20 buildings											
Swallows	1 in 20 buildings											
Ecology & biodiversity	It is also essential that more detail is included about what is required and how nest boxes should be sited	It is not possible to specify further detail or site-by-site requirements in an SPG. Details on location and installation of nest boxes are set out in the sources of guidance specified. However, the guidance document referred to in the consultation draft has been superseded by a Second Edition, so it is this more recent version which should be referred to. Therefore amend to read:- '...in accordance with the advice given in 'Designing for Biodiversity: A Technical Guide for										

		New and Existing Buildings, Second Edition. RIBA Publishing, London. Gunnell, K. et al., 2013.'
Ecology & biodiversity	<p>page 32 - <i>In accordance with the Pollinator Action Plan for Wales, and with any local Pollinator Action Plan for Cardiff which is adopted, every effort should be made to allow wildflowers to develop on roadside verges, parks, attenuation basins, and any other greenspaces. The design of these areas should allow wherever possible for access for 'cut and lift' machinery, as cutting wildflower areas at an appropriate time of year, and removing the arisings, can be important in maintaining these areas</i></p> <p>Removing the arisings is essential! In the last sentence "can be important" needs to be replaced with "is vital".</p>	Agreed. Remove 'can be' and replace with 'is'.
Ecology & biodiversity	<p>page 61 - <i>Condition: No site clearance/demolition of (relevant features) to take place between 1st March and 15th August unless otherwise approved in writing by the Local Planning Authority. This approval will be granted if a consultant ecologist can evidence that there are no birds nesting in this these features immediately (48 hrs) before their removal.</i></p> <p>This period needs to be extended as many birds nest much earlier than this, probably due to global warming. 1st February, rather than 1st March would be preferable.</p>	There is a danger in advising that surveys may become acceptable outside these periods due to climate change, as this may lead to more surveys at inappropriate times of year being submitted. BTO Phenology data do not show a great deal of bird nesting activity into February, and whilst data do show that nesting times are getting earlier, probably due to climate change, the present LDP policies only extend to 2026 so it is not necessary that the EBTGN anticipates the effects of climate change beyond then. No Change.
Ecology & biodiversity	No mention of hedgehogs despite it being clear that they are in steep decline. Need for this TGN to specify hedgehog friendly fencing, etc, in developments.	Many species are in decline in the UK but it is not possible to set out detailed nature conservation measures for all of these in the EBTGN. However, this does not preclude the use specific mitigation measures in relation to Section 7 listed species where they are identified or likely to be present on a given site. No Change.
Ecology & biodiversity	Insects – no mention. Butterflies and bees in particular need appropriate plants to survive and thrive. This needs to be included.	Many species are in decline in the UK but it is not possible to set out detailed nature conservation measures for all of these in the EBTGN. However, this does not preclude the use specific

		mitigation measures in relation to Section 7 listed species where they are identified or likely to be present on a given site. No Change.
Ecology & biodiversity	Focus of this document seems to be very much on the countryside. However, Cardiff is a city and a rapidly growing one.	The biodiversity value of urban areas is recognised, particularly in relation to bats for example, which are European Protected Species present throughout the City. No Change.
Ecology & biodiversity	Dudley Council (also covering a very urban area) has been much more explicit about what it expects from developments and Cardiff Council needs to emulate this.	Noted. No Change.
Ecology & biodiversity	For details of the kind of Biodiversity TGN document Cardiff needs, please see both the Dudley and Cornwall SPDs -	Noted. No Change.
Ecology & biodiversity	Cornwall and Exeter Councils' guidance cited as examples of best practice.	Noted. No Change.
Ecology & biodiversity	We strongly urge and would applaud Cardiff Council in ensuring all the simple, swift-friendly guidance outlined in the appendix (to the consultation response) is formally adopted into the Green Infrastructure SPG, in order to not just fulfil legislative duties but to also demonstrate best practice and lead other Local Authorities by example.	Many species are in decline in the UK but it is not possible to set out detailed nature conservation measures for all of these in the EBTGN. However, this does not preclude the use specific mitigation measures in relation to Section 7 listed species where they are identified or likely to be present, or may be encouraged to colonise, at a given site. No Change.
Ecology & biodiversity	We welcome the biodiversity provisions set out in section 3.4 (page 23).	Noted. No Change.
Ecology & biodiversity	With regards to the Survey timetable (Table 1, Page 30) we recommend that Bats (Trees) are included, to cover surveys to look for potential roost features in trees. This is best done when trees are not in leaf.	The Survey timetable (Table 1, Page 30) is intended as a general guide to the most frequent surveys needed, so it is not possible to capture every type of survey that is needed. Bats use a variety of features for various purposes at different times of year, and it is not possible to accommodate each of these scenarios in this table. In any event, whilst it may be easier to survey trees for potential roost features while they are not in leaf, we receive and ask for such surveys throughout the year. No Change.
Ecology & biodiversity	We welcome that the TGN considers biodiversity enhancements (Page 31/32). The success and take-up of new protected species roost sites/resting places will	The importance of habitat connectivity is considered throughout the EBTGN and GISPG. No Change.

	depend not only on their location and design, but also their connectivity to suitable habitats in the wider landscape. This should be considered as part of the planning proposals.	
Ecology & biodiversity	We advise that biodiversity enhancements (Page 31/32) also consider dormice, a species which has undergone a significant decline over recent decades and is under significant threat from development in the Cardiff area.	Unlike the other species mentioned in this section, Dormice do not occur throughout the city so it would not be appropriate to stipulate generic enhancement measures for all development. As set out in this section of the EBTGN, the text of policies EN5 and EN7 both make it clear that biodiversity enhancements are expected, and specific enhancements for more localised species such as dormice will be considered on a site-by-site basis. No Change.
Ecology & biodiversity	It should be advised that all proposed enhancement measures should be agreed with the LPA Ecologist (Page 31/32).	This is addressed by the phrase ' <i>Cardiff Council has to consider how enhancements to the natural environment can be brought forward in development.</i> ' in this section of the EBTGN. No Change.
Ecology & biodiversity	We welcome that monitoring of mitigation measures will be required to establish their effectiveness (Page 33). We advise that if remedial measures are identified and agreed with the Council, that a timeframe for their implementation is agreed, and also that a report is provided, again within an agreed timeframe, to confirm to the Council that the agreed measures have been implemented.	Agreed - Amend Monitoring etc section of this page to read:- <i>'Where the results of monitoring show that mitigation aims an objectives are not being met, a monitoring report should set out how contingencies and/or remedial action are to be identified, together with a timeframe for implementation. These actions should be agreed with the decision-maker, and then implemented in accordance with that timeframe.'</i>
Ecology & biodiversity	With reference to Table 2: Screening matrix for works to buildings which may affect bats (Page 45), we advise that surveys are required for proposals that involve attaching wind turbines to roofs of all buildings except those listed in the last two columns of the table. This is because inappropriately siting microturbines outside a roost entrance has been shown to be detrimental to bats using the roost.	Agreed - Table to be amended accordingly.
Ecology & biodiversity	Survey standards (Page 48) – we advise that suitably qualified, experienced and licensed consultants are engaged to undertake bat surveys. This is particularly important for surveys involving inspections of buildings.	These points are adequately addressed by the text of pages 48 and 49 under the titles 'Survey Standards' and 'Survey Licensing'. No Change.

Ecology & biodiversity	Demolition Notices (Page 53). NRW does not offer a European Protected Species (EPS) licence pre-application service. Conditions that may be attached to any EPS licence that may be issued are only considered at the time an EPS licence application is processed. We advise that Prior Notifications of Demolition are treated as far as possible like planning applications. If a proposed demolition is likely to affect bats, we advise that the application comes forward with comprehensive details of all the relevant mitigation that will be put in place. This should be sufficient to confirm to the LPA that the proposals will not be detrimental the maintenance of the favourable conservation status of the population(s) of bats concerned.	As is stated, applications or prior approval are treated the same as planning applications with respect to protected species. As with planning applications, the LPA must establish, through dialogue with NRW, whether NRW would be likely to grant a subsequent EPS licence application, and if so, subject to which conditions. No Change.
Ecology & biodiversity	We note the reference on Page 53 that the Council can, in controlling the manner of demolition, incorporate any conditions likely to be attached to an EPS licence. However, it is our understanding that conditions cannot be attached to any consent issued for (prior notification of) demolition.	The wording should be amended to better reflect the DMM 2016 - Amend thus:- <i>In controlling the manner of demolition, Cardiff Council should secure compliance with the other permitted development conditions, restrictions, and if required, a Natural Resources Wales species licence</i> '.
Ecology & biodiversity	Bat Advisory (Page 54) – We advise that if bats are found during the course of works, works should cease and either NRW or a suitably qualified, experienced and licenced ecologist is consulted for advice on how to proceed.	Agreed - Amend thus:- <i>'If work has already commenced and bats are found, or if any evidence that bats are using the site as a roost is found, work should cease and either NRW or a suitably qualified, experienced and licenced ecologist is consulted for advice on how to proceed.'</i>
Ecology & biodiversity	With reference to page 57, where dormice may be affected by proposed developments, we advise that suitable habitats are retained as part of the overall design of the developments. Good connectivity should also be retained (and if necessary, bolstered) between them and suitable habitats in the wider countryside. Ecological buffers of an appropriate width should be considered to facilitate their effectiveness. Appropriate long-term management of	This section of the EBTGN cannot describe in detail the full range of mitigation measures in respect of dormice, but the bullet points in this section could be amended in accordance with these comments - Amend thus:- <ul style="list-style-type: none"> • Retention of habitat • Use of planting to create buffers • Road narrowing • Widening of the hedgerow or connectivity feature which is to be broken

	dormouse habitats within development sites will be important and should be considered.	<ul style="list-style-type: none"> • Dormouse 'bridges' and green bridges • Sensitive lighting schemes
Ecology & biodiversity	We agree that maintaining connectivity across roads is important (page 57), and that such infrastructure shouldn't serve to sever dormouse populations and habitats. In that respect, consideration should be given to the use of green bridges and maintaining aerial connectivity over roads from trees either side of the road. For wider roads, narrowing of the road width at intervals may present opportunities to maintain that aerial connectivity. We also agree that sensitive lighting schemes should be required.	Noted. No Change.
Ecology & biodiversity	We advise (page 58) that Great Crested Newt mitigation measures may include replacing lost terrestrial and aquatic habitats, maintaining their connectivity throughout the site and to the wider countryside, and their appropriate long-term management.	This section of the EBTGN cannot describe in detail the full range of mitigation measures in respect of GCN, but the reference cited provide adequate detail. No Change.
Ecology & biodiversity	<p>I'd like to see commitments made to:</p> <ul style="list-style-type: none"> • more wild-life friendly trees, hedges and wildflowers being planted (with measurable targets) • information and support for people with bats or birds using their home • reversing the decline of the hedgehog population • increasing the amount of bird/bat boxes by a specified amount 	The measures suggested are all worthwhile nature conservation activities, but notwithstanding the examples of enhancement measures set out in the EBTGN, these measures would be better described in a Local Nature Plan or similar pro-active document. No Change.
Ecology & biodiversity	Whilst the use of a TGN within an SPG is not considered appropriate, as set out above, it is considered that it should simply be consistent with the LDP and national planning policy. In this sense the extent of section 1.3 of the TGN is questioned over whether it is needed and appropriate as much is repeating LDP text and national policy text.	Separation of the different elements of green infrastructure into Technical Guidance Notes (TGNs) is merely a way of structuring the overall Green Infrastructure SPG to allow the appropriate section to be accessed more readily. The TGNs are, in effect, chapters of the GI SPG and therefore part of the GI SPG. Inclusion of TGNs relating to ecology, open space, trees and soils etc within the GI SPG serves to emphasise the integrated and holistic nature of the GI approach.

		The EBTGN is intended as a working document comprising a comprehensive single point of reference, as far as is reasonable, for planning officers among others. Therefore it is appropriate that local and national policy and legislation is set out in this document. No change.
Ecology & biodiversity	Para 3.5.9 refers to otter disturbance at river banks. This again is considered an overly detailed point. Ecology work and mitigation as required with the planning assessment would naturally pick this up on a case by case basis.	It is accepted that this is a detailed point, but it serves to illustrate that different elements of GI, in this case river valleys and ecology, can be compatible if designed correctly. No change.
Ecology & biodiversity	There is an overall concern with the prescriptive nature of the TGN to certain surveys. Nationally published best practice guidance is already in place so does this need repeating?	The EBTGN is intended as a working document comprising a comprehensive single point of reference, as far as is reasonable, for planning officers among others. Therefore it is appropriate that local and national policy and legislation is set out in this document. No change.
Ecology & biodiversity	The TGN also suggests additional requirements for surveys and mitigation but fails in some instances to provide evidence to justify the need for them. E.g. for dormouse surveys they require two or three methods to be employed but national guidance and research sets out that the methods to be employed when detecting presence of this species will depend entirely on habitats being surveyed.	National guidance, such as the Dormouse Conservation Handbook in this instance, by definition provide generic guidance for the country as a whole, and cannot take account of regional variations in climate and habitat. Therefore it is natural that guidelines such as these are adapted to suit local circumstances based upon local knowledge. For dormice in Cardiff, it has been noted on several occasions that whereas one survey technique produces a negative result, an alternative technique produces a positive result, so the requirement for the use of two survey techniques is justified. No change.
Ecology & biodiversity	The TGN goes on to say that October should be captured during surveys as being the most effective month but no evidence base for this has been provided.	This element is based upon local knowledge of the County Ecologist together with local NRW Species Officers. In many cases, this knowledge is based upon survey work undertaken by ecological consultants in respect of private development, so it is not possible to prevent this evidence in a publicly accessible SPG, however data on the Howardian Local Nature Reserve website illustrates the point.:- http://www.howardianlnr.org.uk/datadigest10.html No change.
Ecology & biodiversity	Another example is whereby a ratio of 3 ponds to be created for every great crested newt pond lost should be provided. National guidance sets a ratio of 2 to 1.	The GCN Mitigation Guidelines 2001 do suggest as an example that if five ponds were to be lost to development then ' <i>...the mitigation plan might involve the creation of around 10 new ponds...</i> '.

		Therefore there is by no means a hard and fast guideline that a 2:1 compensation ratio is required. In Cardiff, this species is likely to be in decline as several known breeding ponds have been lost over the past 20 years, so an increased compensation requirement is justified. We know that GCN fare better in the long term where ponds are in clusters rather than isolated, so a cluster of three ponds is likely to be more successful than one or two ponds. In any event, creation of three smaller ponds would only be marginally more onerous than creation of two larger ponds of the same surface area, so this marginal additional burden is justified in the light of a likely decline of this species locally. No change.
Ecology & biodiversity	The TGN recommending that a condition be applied (p.38) that is contrary to the advice contained in Circular WGC 016/2014 (national planning policy) is wholly inappropriate. As stated on p.39 of the draft TGN there are legal requirements that must be met and so this control via other legislation is not required. If the Council wish to query whether the correct licence has been obtained then they can request that off the developer at the time. A planning condition for this is clearly not required as the penalty to the developer is far greater from non-compliance with legislation (EPS licence) as opposed to non-compliance with a planning condition. It is very relevant to Cardiff as an authority that this matter was discussed during the conditions session of the Churchlands public inquiry. It was deemed that the planning condition was not necessary and this followed that the Welsh Ministers (decision maker) also agreed with the inspector's recommendation in this regard.	The use of this planning condition is set out in detail in this section. Should any further guidance in this regard be received from Welsh Government (amending, or otherwise, their letter of 2004), then this guidance will be observed. No change.
Ecology & biodiversity	Para 1.5.9 refers to "ancient semi-natural woodland". The only guidance referenced is from the Forestry Commission and states that the advice applies to planning authorities in England (is this endorsed by NRW and/or referred to in national planning policy or the LDP?).	The ASNW habitat is broadly similar in Wales as it is in England, and the Forestry Commission guidelines in relation to 15 buffers is sufficiently authoritative to be applied to Wales. No change.

Ecology & biodiversity	It suggests a 15m buffer but also states that the appropriate buffer will depend on local circumstances and the type of development. For the TGN to suggest that a 15m wide ecotone around woodland sites (NB. not just ancient woodland) will normally be required is bold and inappropriate. It must be assessed on the local situation, each application on its merits and be proportionate to the development and the existing biodiversity resource to be impacted.	This section states that a 15 ecotone will ' normally ' be required which recognises that there may be circumstances where a lesser or greater width of ecotone is appropriate. No change.
Ecology & biodiversity	The planting of ecotones may in itself have impacts upon existing ecological features which could otherwise be retained. The size and make-up of an 'ecotone' should be considered before it is determined that a domestic garden is excluded from an ecotone. It is considered that domestic garden space can remain as space for wildlife to utilise and pass through. Consideration of location, topography and size of garden spaces should be factors to consider.	Noted. No change.
Ecology & biodiversity	Page 68 refers to monitoring of translocated reptiles. It is considered that the extent of monitoring should be agreed through a management plan (by condition) and it would be welcomed if the SPG reflected this established approach.	Agreed - Amend this section to read:- ' <i>...should continue for between 5 and 25 years, in accordance with an agreed mitigation management plan, depending on the size...</i> '
Ecology & biodiversity	The TGN includes guidance tables on when to undertake surveys. It is suggested that this is only used as an indicative table and are seen as over-simplified. The need for surveys, their scope and timing and quantum of mitigation must be determined by suitably qualified ecologists and taking account the site context.	The SPG does emphasis that the table referred to (Table 1) is a rough guide, and is intended as a general aid rather than prescriptive survey guidance. No change.
Ecology & biodiversity	Section 1.6 sets out the references within the document. Reference should be limited to at least documents / guidance demonstrated to be endorsed by the Welsh Government and / or NRW and therefore be consistent with national planning policy, as required by the LDP Manual for establishing new SPG.	<p>We do not consider that the LDP Manual limits LPAs to only referencing approved documents by Welsh Government and NRW in SPG's, because a range of other documents prepared by other agencies can be relevant depending on the topic area.</p> <p>The key issue to consider is that as long as the documents referenced help explain and are consistent with policies in the LDP and national planning policy they can be referenced. No change.</p>

Ecology & biodiversity	EDP also have a few concerns regarding the ecology TGN with respect to its prescriptions to species specific surveys. We firstly question why the document needs to set out survey methods when nationally published best practice guidance has already been adopted.	The EBTGN is intended as a working document comprising a comprehensive single point of reference, as far as is reasonable, for planning officers among others. Therefore it is appropriate that local and national policy and legislation, and technical guidance, is set out in this document. No change.
Ecology & biodiversity	<p>Secondly the TGN prescribes additional requirements for survey and mitigation, yet in some cases no evidence base is provided to justify the need for such additional measures. For example:</p> <ul style="list-style-type: none"> o Dormouse surveys: it requires two of three (nest tube, nest box and nut search) methods to be employed; however national guidance and research clearly states that methods to be employed when detecting presence of this species will depend entirely on the habitats to be surveyed, with nut searches only possible where hazel is fruiting, boxes only where woodland is present etc. Natural nest searches are also advocated nationally but excluded by the TGN. The TGN then goes on to state that surveys should capture the month of Oct due to it being the most effective month. However there is no evidence base provided, and could result in poor survey data collected if focus is on this month alone. Indeed nationally the month of Sept is seen as key. The TGN also acknowledges that mitigation is required where roads traverse habitat given the lack of evidence regarding the ability of this species to cross roads, yet they advocate the use of dormouse bridges as appropriate mitigation despite the widely acknowledged failure of such structures and lack of evidence confirming their effectiveness (as further reiterated at the last national dormouse conference); and o The TGN expects a ratio of 3 ponds to be created for every great crested newt pond lost, when national guidance sets this at a ratio of 2:1. 	<p>National guidance, such as the Dormouse Conservation Handbook in this instance, by definition provide generic guidance for the country as a whole, and cannot take account of regional variations in climate and habitat. Therefore it is natural that guidelines such as these are adapted to suit local circumstances based upon local knowledge. For dormice in Cardiff, it has been noted on several occasions that whereas one survey technique produces a negative result, an alternative technique produces a positive result, so the requirement for the use of two survey techniques is justified.</p> <p>The GCN Mitigation Guidelines 2001 do suggest as an example that if five ponds were to be lost to development then '<i>...the mitigation plan might involve the creation of around 10 new ponds...</i>'. Therefore there is by no means a hard and fast guideline that a 2:1 compensation ratio is required. In Cardiff, this species is likely to be in decline as several known breeding ponds have been lost over the past 20 years, so an increased compensation requirement is justified. We know that GCN fare better in the long term where ponds are in clusters rather than isolated, so a cluster of three ponds is likely to be more successful than one or two ponds. In any event, creation of three smaller ponds would only be marginally more onerous than creation of two larger ponds of the same surface area, so this marginal additional burden is justified in the light of a likely decline of this species locally. No change.</p>

Ecology & biodiversity	More generally the ecology TGN includes guidance tables on when to undertake bat surveys, detailing optimal timings for species surveys and setting out bird and bat box ratios. EDP would suggest that determining the need for such surveys, their scope and timing, and quantum of mitigation should be determined by suitably qualified ecologists and taking into account the context of the site. Determining the need based on these tables alone should not be encouraged, given that they are over-simplified, not entirely correct and/or lack the necessary caveats to ensure a proportionate approach.	The SPG does emphasise that the table referred to (Table 1) is a rough guide, and is intended as a general aid rather than prescriptive survey guidance. No change.
Ecology & biodiversity	It would be helpful to emphasise the overall requirement to enhance as well as maintain biodiversity.	The GI SPG relates to various policies in the LDP, which were drafted before the Environment Act section 6 duty to 'seek to maintain and enhance biodiversity...' was in place. Nonetheless, the requirement to seek enhancements is explicit throughout the EBTGN, for example in the Mitigation Hierarchy section on page 25, and in the 'Enhancements' section on pages 30 to 31. No change.
Ecology & biodiversity	Whilst enhancement is mentioned, its impact is lost and the Council's desire, indeed duty, to see this happen is not clear.	The GI SPG relates to various policies in the LDP, which were drafted before the Environment Act section 6 duty to 'seek to maintain and enhance biodiversity...' was in place. Nonetheless, the requirement to seek enhancements is explicit throughout the EBTGN, for example in the Mitigation Hierarchy section on page 25, and in the 'Enhancements' section on pages 30 to 31. No change.
Ecology & biodiversity	Ensure a greater take-up of measures to improve as well as maintain biodiversity clearer instruction is required. This can be rectified in the documents by:-	
Ecology & biodiversity	<ul style="list-style-type: none"> Biodiversity proposals included in all SPGs, including e.g open spaces and health. 	Whilst it is recognised that links between the TGNs could have been strengthened, for clarity the differing topic areas within green infrastructure, such as trees, parks, ecology etc, have to be set out in separate sections. It is recognised that all of the GI topics affect each other in some way, whether as conflicts or synergies, and this interaction is considered in section 3 - Integration of Green Infrastructure, in the GI SPG. No change.
Ecology & biodiversity	<ul style="list-style-type: none"> Cross referencing within all SPGs 	As above. In addition, the GISPG will be implemented in consultation with the Cardiff Council internal Green Infrastructure

		Group, who work to ensure that green infrastructure issues are considered in a holistic way. No change.
Ecology & biodiversity	<ul style="list-style-type: none"> An executive summary in each SPG to clarify and emphasise the priorities of each 	Concerns have been raised as to the large size of the GISPG documents, and it is felt that adding executive summaries would add to the volume of the documents without providing any great practical benefit. Whilst it is recognised that the GISPG document is large, it is structured into TGNs which themselves are organised into chapters with indexes. No change.
Ecology & biodiversity	<ul style="list-style-type: none"> More detailed practical advice about how to improve biodiversity throughout all the SPGs and the breadth of biodiversity habitat that is required- ie linking corridors and provision of a range of habitats from wildflower verges and areas to hedges, bushes, water features, buildings, soil as well as trees, niches for urban living animals, particularly those under threat including birds, bats, hedgehogs, slow worms, insects etc. 	Such details will be established on a case-by case basis, and it is not necessary for the present document to pre-empt the expertise of consultant ecologists, landscape architects and planners. The GISPG gives guidance on how the GI-related policies will be implemented, but does not have the capacity to set out the level of detail requested in this comment. No change.
Ecology & biodiversity	<ul style="list-style-type: none"> Is there the possibility of a graphic design to show how this would work as well as pictures illustrating greater biodiversity? The current pictures look quite barren and concrete heavy. 	Agreed; It is anticipated that the final published document will make use of images, colours and diagrams to enhance the document. No change.
Ecology & biodiversity	<ul style="list-style-type: none"> A clearer summary conclusion within the explanatory text about why biodiversity is important to the health and wellbeing of humans and thus a key requirement of planning guidance. 	These details are set out in the Green Infrastructure Plan, which in many ways sets the context for the GISPG, and which is being produced in parallel with the SPG. No change.
Ecology & biodiversity	More detail on exactly what mitigation can be put in place if there is absolutely no other alternative. (Germany requires developers/residents to replace nesting sites lost and therefore has a better outcome. From my personal experience, developers take no notice of the guidance, and nest sites are lost in the nesting season, trees uprooted and gardens paved over. In dialogue with developers a lot of information and education is needed about why it is important and also exactly how to remedy it.	Details are provided as to the type of mitigation and compensation that we are likely to require of developers, but without going into too much specific detail in most cases. As consultees on planning application, the members of the GI Group should be able to ensure that the guidance is adhered to. No change.

Ecology & biodiversity	Add recommended numbers or replacement numbers for bird or bat nesting sites lost in development , based on good practice, advice on how to site them, what sort of materials & how to incorporate into design first if possible as good practice, siting, numbers of sites/boxes, links to websites and good practice advice and information for further advice,e.g Swift Conservation, www.swift-conservation.org , RSPB , Wildlife Trusts etc.)- The current wording does not read that such mitigation is an important feature.	It would not be possible in a document such as this to go into too much details as to the nature, location and specification of all mitigation and compensation measures. We have given some examples, but ultimately the fine details of mitigation will be negotiated on a case-by-case basis during the planning process. No change.
Ecology & biodiversity	Include reference to access to nature and biodiversity as a factor in the health and wellbeing of humans, with reference to the clear evidence for this. (For example, Fuller et al. 2007 ; Jones and Reynolds 2008 ; Jones 2011 ; Luck et al. 2011 ; Dallimer et al. 2012 ; Galbraith et al. 2014 ; Belaire et al. 2015 ; Cox and Gaston 2016 in latest research highlighted by BTO in relation to birds, July 2017, and the importance of a range of connected habitats within urban areas to maintain this ecosystem, (BTO June 2017) and therefore to maintain human wellbeing). Also the importance of vegetation to reduce the impact of air pollution on humans.	The influence of green infrastructure over health and other social interests is set out in greater detail in the Green Infrastructure Plan, which is being developed in parallel with the GISPG. No change.
Ecology & biodiversity	The importance of trees and gardens in neighbouring areas and impact of developments on biodiversity.	This comment is not specific enough to enable a response. No change.
Ecology & biodiversity & biodiversity	It would be useful to have reassurance that the European Union Biodiversity Strategy will be an underpinning document for the council post-Brexit.	It is not possible to predict the impact of Brexit upon this area of policy and legislation, but if there are substantial changes, the SPG will have to be amended accordingly. No change.
Ecology & biodiversity & biodiversity	Page 36: The TGN may need to provide some clarity about what happens when the applicant is NRW themselves. In this instance, who scrutinises the application?	NRW have separate regulatory staff who consider licence applications from everyone, including their own works staff. No change.
Ecology & biodiversity	1.5.9 We welcome the reference to Ancient Semi-natural Woodland but would like additional clarity on what type of	Natural Resources Wales have an 'Ancient Woodland Inventory' and full details can be found at

& biodiversity	woodland this covers and what the size of that woodland has to be before it qualifies for such a designation.	https://naturalresources.wales/guidance-and-advice/environmental-topics/woodland-management/woodlands-and-the-environment/ancient-woodland-inventory/?lang=en No change.
Green infrastructure	There needs to be more cross-over between the TGNs – there is very little mention of the Biodiversity TGN in the Open Spaces, Trees or Residential Extensions and Alterations TGNs. It is vital that nature conservation is appropriately included in all these.	The interactions between the respective TGNs is considered extensively in section 3 of the Green Infrastructure SPG (GISPG). No change.
Green infrastructure	The documents seem reasonable overall. I do wonder if some anticipation of the post Brexit changes should be referenced, even in some general phrase referring to their future incorporation in UK law and the need in general to comply with future applicable UK and Welsh legislation. Otherwise everything may need to be revised and issued immediately after every legislative change.	It is not possible to predict the impact of Brexit upon our nature conservation legislation, and even under the terms of the Repeal Bill there is the facility to remove legislation altogether. We could include a statement to the effect that legislation based upon EU directives will be affected by Brexit, but this would not inform interpretation of the LDP policies in any useful way. However, it is reasonable to insert the following caveat:- “Where documents refer to EU legislation this should be taken to mean any subsequent relevant legislation adopted by UK government and/or Welsh Government post Brexit.”
Green infrastructure	We feel that the Green Infrastructure document needs a lot more detail	A balance has to be struck between the level of detail provided, and the overall usability of the SPG document, bearing in mind that the GI SPG including TGNs, already extends to over 400 pages. No change.
Green infrastructure	The consultation documents are lengthy and often written in technical language that does not aid those trying to make sense of them and provide comments and suggestions. These documents need to be accessible – not just to members of the public but to developers, builders, etc	The focal audience of these documents are Development Control planners, Planning Agents, and Ecological Consultants. Therefore it is appropriate that technical terminology is used. Also clients/landowners, who have limited understanding of GI and the planning process, so it has to be reasonably clear and straightforward in the main SPG document. No change.
Green infrastructure	There needs to be more cross-over between the TGNs – there is very little mention of the Biodiversity TGN in the Open Spaces, Trees or Residential Extensions and Alterations TGN. It is vital that nature conservation is appropriately included in all these.	The interactions between the respective TGNs is considered extensively in section 3 of the Green Infrastructure SPG (GISPG). No change.

Green infrastructure	Reference needs to be made to Welsh Government's <i>Local Air Quality Management in Wales Policy Guidance</i> , June 2017 and the recommendations need to be reflected throughout the SPG and the technical guidance notes	The contribution that green infrastructure can make to air quality is mentioned throughout these SPG and TGNs. It is not possible to have detailed links to all relevant guidance documents, but it is agreed that reference should be made to the guidance mentioned. Therefore amend section 3.6.2 to read '...improving air quality in accordance with Welsh Government's <i>Local Air Quality Management in Wales Policy Guidance</i> , June 2017...'
Green infrastructure	paras 3.4.5 and 3.5.8 – street/path lighting. This should be strengthened – i.e. developers will be expected to install motion sensor controlled lighting of an appropriate brightness level (to avoid light pollution), as this is better for wildlife and saves energy. Exceptions to this need to be well evidenced	The impact of lighting is mentioned in both the main Green Infrastructure document and the Ecology and Biodiversity TGN. The issue of lighting is considered, with reference to green infrastructure policies, at the level of the individual planning application, so it is not appropriate to specify detailed measures in the SPG / TGN. No change.
Green infrastructure	As Wales' capital city, it is essential that Cardiff leads the way and demonstrates best practice in enhancing biodiversity – especially as it is such a rapidly growing urban area. The SPG and the accompanying TGNs need to be considerably improved in order for Cardiff to show it takes its legal duties to protect the natural world seriously.	The request to 'considerably improve' these documents does not provide enough detail upon which to base an amendment to the draft text. No change.
Green infrastructure	we otherwise welcome the broad scope of the Green Infrastructure SPG.	Noted. No Change.
Green infrastructure	The SPG refers to a Green Infrastructure Plan (1.2.3 and elsewhere) which I cannot find on the Council website.	The Green Infrastructure Plan is being developed in parallel with the SPG, and although this plan sets the context for the GISPG (among other documents), the urgent priority is the progression of the SPG. No Change.
Green infrastructure	It is not clear if the GIP sets out the baseline for Green Infrastructure in Cardiff ie an assessment of individual GI assets' landscape/visual qualities, biodiversity value including for pollinators, recreational value, contribution to access, use for flood attenuation or other functions. If it does not, then you are not aware of the baseline situation and do not know if you are improving on this or not. Based on this baseline assessment it would also be desirable to undertake an assessment of vulnerability and where	We recognise the value of baseline assessment of the Green Infrastructure resource of Cardiff. However, as is acknowledged in the consultation response, this assessment is beyond the resources of Cardiff Council at the present time. Instead, as part of the Green Infrastructure Plan, which is being developed in parallel with the GISPG, it is intended to commission a GI Spatial Strategy based upon an assessment of the ecosystems and ecosystem services found within the county. This, together with existing GIS plans for Cardiff, and Section 2 of the EBTGN, which sets out the nature

	opportunities may exist for enhancement, which could be developed into a strategy or action plan. Then the GI SPG can refer to this and officers and developers and others can use it as a tool to achieve a coordinated improvement of GI in the city. Without it you rely entirely on officers reacting to a given situation using your set of principles which are fine as far as they go but they do not give guidance about what is most important in that situation or how actions may best contribute to the whole. In a sentence, you appear to lack a GI baseline and a framework. I hope you will undertake this, even if it is done in stages over a period of time due to budget constraints.	conservation resource in the county, form an interim baseline assessment. No Change.
Green infrastructure	Whilst the SPG explains GI and what is required of developers, it does this in a way which is quite wordy and prose based. This makes it more difficult to absorb than necessary. Confident checklists to follow, text boxes, colour, diagrams, photos and examples would all be useful.	Other examples of GI SPG that we examined showed excessive use of diagrams and text boxes such that the text was difficult to follow. It is intended that the final document will be produced with images and colour to enable readability. However, the priority with the present draft is to secure an appropriate text. No Change.
Green infrastructure	Importantly, clear plans showing what the existing mapped GI resource is would be helpful- why not four clear maps covering the city? I note that the small, indecipherable plan in the guidance doesn't appear to include gardens which, particularly if they are long, contribute a great deal to green infrastructure.	As part of the Green Infrastructure Plan, which is being developed in parallel with the GISPG, it is intended to commission a GI Spatial Strategy based upon an assessment of the ecosystems and ecosystem services found within the county. This may be of sufficient resolution to include gardens, which it is acknowledged contribute to the overall GI resources. It is challenging to present the existing Green Infrastructure GIS layer within the format of an A4 document, at sufficient resolution to allow legibility, so the present maps are included to give a broad indication of Cardiff's GI resource. No Change.
Green infrastructure	The SPG should state what is expected in developments which are not classified as major e.g. less than 10 houses. Small development still can be damaging to green infrastructure by closing off access or biodiversity corridors or removing vegetation which can act as a stepping stone for wildlife movement. I suggest that you	We acknowledge that minor developments can impact upon green infrastructure, and also that the scale of some major developments can have unique implications for green infrastructure. However it is not possible to provide bespoke guidance for householder, minor, major and strategic major developments. Instead, the LDP policies apply equally to all developments, where relevant, so the SPG

	add a section at least requiring a brief statement on how the six GI objectives are met, and most importantly demonstrated in the design and proposed management of proposals.	reflects this. Some minor re-ordering and formatting has taken place to enhance the legibility of the document.
Green infrastructure	We welcome that proposals for new developments will be required to consider the likely impacts on existing green infrastructure (GI) and the submission of a GI Statement.	Noted. No Change.
Green infrastructure	We note Cardiff's Strategic GI objectives (section 1.3) and the desire for green spaces to be as multi-functional as far as possible (2.5.4, page 17).	Noted. No Change.
Green infrastructure	However, we refer to the acknowledgement in the River Corridors Technical Guidance Note (TGN) that provision/retention and maintenance of GI for biodiversity purposes may not be compatible with other proposed uses of GI. Therefore in some circumstances it may be necessary to provide GI solely for ecological purposes. In those circumstances, appropriate buffers may also need to be considered. We advise that a suitably qualified and experienced ecologist is always involved with the person or project team drawing up the GI statement and associated plans/drawings. We consider that it would be beneficial to include the above within the GI SPG.	Section 2.3.1 of the GI SPG includes the following:- 'This assessment of impact should be undertaken by a landscape architect, ecologist or similarly qualified professional.' which adequately addresses this point. No Change.
Green infrastructure	Item 2.1.2 p14 should "to" in the first line be "in"? Developments will be considered in terms of ...	Agreed – Agreed Word "to" to be replace by "in"
Green infrastructure	The requirement for Green Infra Structure Statements on all developments and the relatively low 'trigger point' of 10 units for an extensive assessment on a scheme of 10 units or more will place further burden on developers – particularly those seeking to develop smaller sites.	Major developments in most cases will be required to undertake some sort of ecological impact assessment, as well as consideration of all of the other elements of green infrastructure, as relevant to the particular site. A GI Statement needn't be an onerous undertaking but should instead draw together the consideration of all of these elements of GI so that they are considered in an holistic way. The GI Plan, which is being developed in parallel with the GISPG, sets out the economic, social

		<p>and environmental benefits of a GI approach, and it is appropriate that major developments contribute to, and receive, these benefits.</p> <p>GIS statement will need to be tailored according to scale. No change to TGN.</p>
Green infrastructure	<p>The SPG itself cites many examples when potential elements of green infrastructure can be pulled in different directions or can be in conflict with other statutory requirements – SUDS and the adoption of such schemes being a case in point. In considering these matters for these policies and the SPG to be successful there needs to be a corporate approach within the council and with other statutory consultees that the consideration of development and Green Infrastructure applies not only at planning stage but in the consideration of proposals though to licencing and adoption. Without this joined up approach the policy will not be successful.</p>	<p>This is a valid point, and all members of the GI group are cognisant of the need to collaborate to ensure that conflicts are addressed and multiple benefits are achieved, not just at the determination stage but throughout the planning process. We also seek to work closely with statutory consultees, in particular Natural Resources Wales, although resource constraints. No change, but the comment is noted and will be addressed in the context of wider Green Infrastructure Group workload.</p>
Green infrastructure	<p>There is reference within the document to off site mitigation and compensation. This on the face of it is very much geared towards the developer finding solutions on his land either within or outside the application site. Smaller sites or sites owned by individuals are unlikely to have other land in their ownership or sufficient land within a small parcel to allow for mitigation or compensation or retention if a scheme is to be viable. In parallel with this SPG it would be helpful for the council to identify a range of projects on land either within council control. Other public bodies should be encouraged to do the same. Contributions to such projects could be secured through condition or through S106 agreements in order to facilitate development which would otherwise be appropriate.</p>	<p>It is a valid comment to suggest that Cardiff Council could be more pro-active in identifying potential off-site compensation sites on its land. However that would be a separate initiative and could not be included in this SPG. No change, but the comment is noted and will be addressed in the context of wider Green Infrastructure Group workload.</p>
Green infrastructure	<p>Examples of Green Study Plans for major and minor development proposals would be helpful.</p>	<p>Using case-study examples in this SPG was considered but were not incorporated due to time constraints and also to limit the document to a reasonable size. No change.</p>

Green infrastructure	If the Council require certain documents (e.g. Green Infrastructure Statement) with certain major applications and the Council wish for these to be validation documents then the appropriate method to deal with this would be via publishing 'Local Validation Requirements' as introduced with the 1APP forms in 2015.	It is anticipated that a Green Infrastructure Statement would be submitted along with other supporting documents such as an Ecological Impact Assessment (EclA). Cardiff Council does not currently employ validation checklists which require ecological information to be present in order to validate an application. If this should change, then the requirement in any validation checklists to provide a Green Infrastructure Statement may be incorporated. No change.
Green infrastructure	Para 1.2 refers to Cardiff Council's Green Infrastructure Strategy and 1.2.1 to a Green Infrastructure Plan document. If these are mentioned then they should be referenced. However, what status do these documents have and when were they produced? Have they followed the development plan preparation process of the LDP and therefore consistent with the LDP and national policy.	The Green Infrastructure Plan is being developed in parallel with the SPG, and although this plan sets the context for the GISPG (among other documents), the urgent priority is the progression of the SPG. No change.
Green infrastructure	The drafting of the SPG implies policy KP16 sets out the green infrastructure requirements and so it is suggested that reference is solely made from the LDP policy, and national policies as appropriate.	As with all documents of this nature, it is appropriate to make reference to a range of sources of guidance, such as published research, case studies, other Local Authorities' SPGs and guidance documents from SNCOs and NGOs. No change.
Green infrastructure	Para 1.2.6 refers to management arrangements for green infrastructure being in place before development commences. Larger developments have greater lead-in times and infrastructure works (can be a year or more before housing construction commences) and so it would appear sensible and reasonable that regard is had to this. Similarly with developments involving demolition/remediation works.	In most cases it should be possible for at least the principles of future green infrastructure management arrangements to be in place prior to development. For example, the agency responsible for this management together with the green infrastructure strategy to which they will be working, can normally be established prior to development, although it is recognised that finer details of management techniques may need to evolve as the details of construction evolve. Revision to clause 1.2.6 of GI SPG <i>"Principles of management arrangements for green infrastructure shall be in place before the development commences."</i>
Green infrastructure	Para 1.2.6 refers to the Cardiff Liveable Design Guide. This is not SPG and should not be cross referred to in the SPG unless the status of the document is explicit. The design guide has limited status until a hook is created from an appropriate adopted policy of the LDP.	The Cardiff Liveable Design Guide is an appropriate document to refer to in the GISPG, and will be afforded weight appropriate to its status in any consideration of green infrastructure design. No change.

Green infrastructure	Para 1.2.7 refers to a series of Technical Guidance Notes (TGN). The PROW TGN states that WG support the use of them. Where does WG support the use of TGNs and their inclusion within SPG? Layering TGNs in such a way is not considered user friendly and the matters discussed within the GI SPG could be missed both by potential consultees wanting to comment on aspects of the matters covered at this consultation stage but also when it comes to submission and assessment of planning applications. Redrow would typically expect to see the matters covered in the TGNs to be their own SPGs together with a GI SPG. This is the approach seen with other local planning authorities and is considered appropriate. Having an SPG that is 423 pages in length (based on GI SPG with all TGNs) is not user friendly.	Separation of the different elements of green infrastructure into Technical Guidance Notes (TGNs) is merely a way of structuring the overall Green Infrastructure SPG to allow the appropriate section to be accessed more readily. The TGNs are, in effect, chapters of the GI SPG and therefore part of the GI SPG. Inclusion of TGNs relating to ecology, open space, trees and soils etc within the GI SPG serves to emphasis the integrated and holistic nature of the GI approach. No change.
Green infrastructure	Notwithstanding the view that the SPG should be split out Redrow believes that the information provided at SPG level could be much more streamlined.	Every effort was made to keep the GI SPG as concise as possible whilst maintaining a useful level of detail. Other respondents have raised concerns that the document is not sufficiently detailed, so it is felt that an appropriate balance has been struck. No change.
Green infrastructure	Figure 1 on page 7 of the SPG refers to the City of Cardiff Council Green Infrastructure Plan. Again, what status does this have and when was it created? The top of the flow diagram should refer to LDP policies and national planning policies in line with the LDP Manual.	The Green Infrastructure Plan is being developed in parallel with the SPG, and although this plan sets the context for the GISPG (among other documents), the urgent priority is the progression of the SPG. No change.
Green infrastructure	Para 2.1.1 – continued reference to “must”. The SPG is only guidance and each application must be assessed on its merits. It would be impossible and inappropriate to word in such a way that all new major development must have undertaken a hydrological impact assessment or must include a GI statement. Does the conversion of office space to 10 flats require this? It could be possible that hydrologically matters are adequately dealt with under another assessment / document (e.g. FCA, drainage strategy) and so it would not appear appropriate to insist	The SPG sets out how Cardiff Council will implement LDP policies, and any planning consent granted will have to comply with these policies. Therefore it is appropriate that the SPG sets out in this way the requirements to conform to these policies. However, no guidance can provide for every conceivable scenario, so Cardiff Council will endeavour to be pragmatic and reasonable in implementation of this SPG. Must” replaced with “should” in para 2.1.1

	on a potentially overlapping document to be submitted to effectively tick a box.	
Green infrastructure	Para 2.1.1 (final bullet point) – recognition of land ownership and timescales for deliverability should be given and referenced.	Noted. No change.
Green infrastructure	Para 3.4.6 refers to designing wet ponds that dry out. This is deemed an overly detailed point and any Great Crested Newt mitigation would have to be dealt with as necessary during the application assessment.	It is accepted that this is a detailed point but it serves to illustrate that different elements of GI, in this case SuDS and ecology, can be compatible if designed correctly. No change.
Green infrastructure	Overall, we commend the council's aspirational approach to this subject. This is a comprehensive document but, unfortunately, to the point where it becomes 'unwieldy'. The approach taken to separating out the TGN's from the SPG is unhelpful and flies in the face of the principles which underpin GI of drawing together all these issues into a single, coordinated, coherent whole. Overall, the sheer scale of the documents (with several running to over 100 pages) means that we consider it unlikely that developers and their consultants will be able to get familiar enough with the requirements contained within to be able to quickly and effectively undertake GI Statements. Furthermore, in circumstances where it is not a multi-disciplinary team providing the GI inputs it is highly likely that each discipline will simply read their own particular TGN, rather than the whole suite, and that architects, urban designers and masterplanners may well see the whole suite of documents as being aimed at ecologists and landscape architects and as such give them little attention;	Separation of the different elements of green infrastructure into Technical Guidance Notes (TGNs) is merely a way of structuring the overall Green Infrastructure SPG to allow the appropriate section to be accessed more readily. The TGNs are, in effect, chapters of the GI SPG and therefore part of the GI SPG. Inclusion of TGNs relating to ecology, open space, trees and soils etc within the GI SPG serves to emphasise the integrated and holistic nature of the GI approach. Improve signposting in main SPG document to enable readers to understand structure of information more easily.
Green infrastructure	On the basis of the above, EDP strongly recommends that the separate documents are both abbreviated and combined into a single whole (consider what Monmouthshire have achieved in this regard).	Every effort was made to keep the GI SPG as concise as possible whilst maintaining a useful level of detail. Other respondents have raised concerns that the document is not sufficiently detailed, so it is felt that an appropriate balance has been struck.

		Monmouthshire is a very different County to Cardiff, and whilst their GI SPG may be appropriate for a rural area, it is not necessarily appropriate for a largely urban area such as Cardiff. The GI Group in Cardiff Council were unanimous that the Monmouthshire GI SPG was not an appropriate template for Cardiff, though, as with all other examples of GI SPG, there are useful elements which can be implemented. No change.
Green infrastructure	We would suggest that design guidance is separated out of the SPG/TGN and incorporated into a separate Design Guide - possibly a reworking of the Cardiff Liveable Design Guide adopted earlier this year (without consultation?) – this would mean that the SPG was of greater benefit to ‘assessors’ while the design guide was more targeted at the ‘designers’ – albeit, in some instances, these may be within the same practice or even the same people.	Noted. No change.
Green infrastructure	The requirement for a GI Statement to accompany major planning applications is welcomed, as is the recognition that the response must be proportionate to the scheme and the effects on the GI	Noted. No change.
Green infrastructure	Further clarity could be provided though to ensure there is no overlap with other existing report requirements – at present (again, particularly where serviced through separate consultancies) there is significant potential overlap and contradiction between the GI statement, biodiversity assessments, landscape and visual impact assessments, tree surveys and impact assessments and Design and Access Statements. EDP would recommend that Design and Access Statements be required to provide a summary of the findings of the GI Statement while LVIA's, Biodiversity Assessments and Tree Reports might be appended to the GI Statement (which they inform).	The format of the Green Infrastructure Statement, and its relationship to other documents submitted in support of a planning application, should be decided by the applicant's ecologist and landscape architect. No change.
Green infrastructure	The required replacement ratio of 3m for every 1m lost is overly prescriptive however and should be revised to enable such compensation to be proportionate to impacts rather than losses. Quality should be considered	As is stated in section 3.7.3, re-planting hedgerows is only applicable in certain circumstances, and the 3:1 ratio reflects the time taken for the new hedgerow to achieve maturity. In other words, the smaller length of high quality habitat is replaced by a

	alongside quantity, particularly should EPS be present – i.e. design and future management of the hedgerow resource with respect to width, form, species composition, connectivity and buffering should take precedent over just its length.	greater length of low quality habitat, at least in the short term. However, in recognition that these lengths and ratios can never be precise, the term 'approximately' is inserted.
Green infrastructure	In consideration of licensing and legislation requirements of EPS, compensation/mitigation for habitat losses should focus on restoring habitat function necessary to maintain their favourable conservation status. The restoration of function does not rely on linear coverage alone however. Additionally this requirement is not consistent across documents, with no mention of it within the ecology or tree TGN (nor are tree planting ratios provided).	In addition to the response already given above, there is a presumption that replacement hedgerows will be of sufficient quality, in terms of their composition, planting and management, to provide suitable habitats for the species concerned. No change.
Green infrastructure	The SPG requires that management arrangements for GI should be in place prior to the commencement of work on the GI and not necessarily before any development can commence. This can cause delay in developers getting on site and is potentially too onerous before development commences– the requirement should be for management principles and processes to be agreed in advance of development, not 'in place' or necessarily under way; this is typically achieved through a Management Plan being required by condition and agreed prior to commencement.	In most cases it should be possible for at least the principles of future green infrastructure management arrangements to be in place prior to development. For example, the agency responsible for this management together with the green infrastructure strategy to which they will be working, can normally be established prior to development, although it is recognised that finer details of management techniques may need to evolve as the details of construction evolve. Revision to clause 1.2.6 <i>"Principles of management arrangements for green infrastructure should be in place before the development commences."</i>
Green infrastructure	The documents are too disparate, too detailed and contradictory to both each other and existing national guidance/policy. EDP has an established track record in delivering GI assessments and strategies and in masterplanning schemes driven by the GI approach – even with this experience we would find the documents in their current form extremely challenging to respond to robustly and, were we able to achieve this, we consider our clients (landowners, private developers, housebuilders, affordable housing groups etc) would find it prohibitively expensive and time consuming. This will do nothing to stimulate or encourage the delivery of new	These comments do not refer to specific sections of the SPG in sufficient detail to enable a response, however the comments are noted. No change.

	development (possibly the opposite) and such new development is necessary to deliver GI enhancement and provide new assets.	
Green infrastructure	Ref1.2.5 Define which developments would be deemed to significantly impact on green infrastructure. Recognising limitations on staff time, all green infrastructure is important to the city of Cardiff.	'Likely significance' will be determined on a case-by-case basis, but generally the assumption is that major developments are more likely significantly to affect GI than minor ones. No change.
Green infrastructure	More cross reference to the importance of adequate sinks and run offs and the environmental features that can be incorporated into this- a double win.	The interaction between different elements of green infrastructure, and the need to secure multiple benefits from green infrastructure, is emphasised throughout the GI SPG. No change.
Green infrastructure	The only way I could improve this would be to do a full ecosystem service audit of Cardiff City, using climate, noise, air pollution, hydrology, accessible natural green space, and biodiversity mapping, set standards for ecosystem service provision, and then require all new developments to deliver the ecosystem services in the quantity, quality and location required in that area. As it's taken me nearly a decade to struggle towards a full accessible natural green space assessment of Wales, then it would be a bit much to ask Cardiff to do that for all the ecosystem services needed in the city!	It is intended to commission a green infrastructure spatial strategy, including mapping of ecosystems and ecosystem services, together with constraints and opportunities. However, this would be a document separate to the SPG, though part of the GI 'family' of documents. No change.
Green infrastructure	We have concerns about the lack of clarity within parts of this SPG. The chart on page 7, which is something of a confusing mess, demonstrates this graphically. In particular, we draw attention to the following sections.	Noted. No change.
Green infrastructure	1.2.5 (bullet point 4) There is a failure to define what is meant by 'reasonably possible', which leaves this qualifier open to (mis)interpretation.	It is not possible to specify in any greater detail than this the nature of GI enhancement, however this will be assessed on a case-by-case basis by GI Group members. What constitutes 'reasonable' can only be determined by the size and location of the site, and the nature of the impact upon the GI resource at that site.
Green infrastructure	2.2.1 We are unclear what constitutes a thorough contextual analysis. What level of detail needs to be provided to demonstrate that the assessment is more than a cut and paste job?	Some detail is provided within this paragraph but It is not possible to specify in any greater detail than this. The nature of GI enhancement, however this will be assessed on a case-by-case basis by GI Group members. What constitutes 'reasonable' can

		only be determined by the size and location of the site, and the nature of the impact upon the GI resource at that site. No change.
Green infrastructure	2.3.1 Should assessments be carried out by independent experts to ensure impartiality?	Invariably these assessments are carried out by consultants commissioned by the planning applicant. We have to rely to a certain extent on their objectivity and professional integrity, but all assessment submitted are assessed by the Council's internal technical advisors to ensure that they are fit for purpose. No change.
Green infrastructure	3.2.7 Greater detail is needed about what on-site habitat compensation would entail to avoid it being tokenistic.	Some detail is provided within this section but It is not possible to specify in any greater detail than this. The nature of GI enhancement, however this will be assessed on a case-by-case basis by GI Group members. Appropriate habitat compensation can only be determined by the size and location of the site, and the nature of the impact upon the GI resource at that site. No change.
Green infrastructure	3.4.5 The SPG remains unclear in how to balance lighting in open spaces so as to provide safe routes for pedestrians and cyclists, while not having an adverse effect on nocturnal creatures. (The technical note does not provide enough additional detail.)	Some detail is provided within this section but It is not possible to specify in any greater detail than this. The appropriate level of lighting will be assessed on a case-by-case basis by GI Group members. No change.
Green infrastructure	4.1. Need greater exploration of how open space can be maintained by community and 'Friends' groups.	It is not possible to specify all future management scenarios in this section, but as is stated, management will depend upon the individual development, but will accord in all cases with the Parks and Public Open Spaces TGN. No change.
Open space	The Open Space TGN must require open space to be developed with biodiversity in mind. The section that covers this deals almost entirely with the preservation of existing features, rather than the creation of new ones. This is an omission that needs to be rectified. There needs to be much more tie in with the Biodiversity TGN.	<p>Open space has to balance a number of factors, including biodiversity, when being designed. But it is agreed that the link to Biodiversity would benefit from being included in the list of design principles for successful open space layout (Table 7 page 31).</p> <p>Clauses 3.3.6 and 3.3.7 the overarching SPG document also discuss the relationship between open space and biodiversity.</p> <p>Overall the combined green infrastructure team approach leads to biodiversity being discussed as part of open space design. The following change is made:- <i>"Design of open space should seek to maximise opportunities to increase biodiversity, through the</i></p>

		<i>protection of existing habitat and development of new habitat where appropriate, and seeking to strengthen wildlife corridors and habitat connectivity to other open space, in line with the Biodiversity TGN."</i>
Open space	There seems to be very little requirement for open space to be developed with biodiversity in mind. The section that covers this deals almost entirely with the preservation of existing features, rather than the creation of new ones. This is an omission that needs to be rectified. There needs to be much more tie in with the Biodiversity TGN.	<p>Open space has to balance a number of factors, including biodiversity, when being designed. But it is agreed that the link to Biodiversity would benefit from being included in the list of design principles for successful open space layout (Table 7 page 31).</p> <p>Clauses 3.3.6 and 3.3.7 the overarching SPG document also discuss the relationship between open space and biodiversity.</p> <p>Overall the combined green infrastructure team approach leads to biodiversity being discussed as part of open space design. Additional text to Table 7 Design principles for open space. Item 7 Resilience and Mitigation (from start of paragraph)</p> <p><i>"Design of open space should seek to maximise opportunities to increase biodiversity, through the protection of existing habitat and development of new habitat where appropriate, and seeking to strengthen wildlife corridors and habitat connectivity to other open space, in line with the Biodiversity TGN."</i></p>
Open space	It may be beneficial to advise that the CEMP and GICPP (8.3.1 and 8.3.2 page 42) may need to reflect any method statement/other documents approved for any EPS licence required.	<p>Amendments to text in Open Space TGN to be made for clarity. Amend 8.3.1 at end of paragraph to read:- <i>"CEMP should be in accordance with any method statement / other documents approved for a European Protected Species (EPS) licence, or equivalent legislation."</i></p> <p>Amend 8.3.2 at end of paragraph to read <i>"GICPP should be in accordance with any method statement / other documents approved for an EPS licence, or equivalent legislation."</i></p>
Open space	In The list of Appendices, 7 and 8 are not aligned	Agreed - Page 3 : Title of Appendices 7 and 8 to be indented further to correspond with other titles
Open space	Item 2.1.2 p8 I think that "regards to" in line one should be "regard to"	Agreed - Replace "regards" with "regard"

Open space	Item 2.3.4 p10 In the last but two line of the italic section, a 3 is added to the end of transport “ ..cycling and public transport3.”	Agreed - Omit "3" from text
Open space	Item 2.5.2 p12 I am not comfortable with the statement at the end of the item where it refers to an excess of such provision in the area. This would mean that some educational playing fields would not be protected.	Planning Policy Wales includes the term ‘excess of provision’ and this is also in the Welsh Government publication “The Playing Fields (Community Involvement in Disposal Decisions) (Wales) Regulations 2015”. The latter sets out that any proposal to dispose of a Local Authority owned playing field is subject to an assessment of the impact disposal would have on the health and wellbeing of the community, and be subject to consultation with the community. The SPG is consistent with this and is geared in favour of protection of open space. No Change.
Open space	Item 2.6 Reference is made in 2.6.1 to Local Authorities being encouraged to develop their own local standards yet in 2.6.2 it states ours are based on FIT ‘benchmark standard’. Cardiff is supposedly a city with more green space per head of population than most other cities, as I believe is referenced within this, or another of the draft SPGs, yet if we set our standards against a benchmark, we will be reducing our areas to match others’. This is against the references made to the importance of open space to the economy, health and other factors, important to the city. Standards for new development should match Cardiff’s current levels and not the potentially lower levels of a benchmark. Noting that 4.2.5 refers to a standard as a minimum” Unfortunately, where stated, minimums tend to be become the standard!	<p>The FIT standard is a widely used benchmark across many authorities and with developers, and although not perfect, use of it to calculate open space requirements is less likely to be challenged by developers.</p> <p>Amounts of open space across a city vary considerably depending on the nature of the area – densely populated urban areas often have open space well below the required standard. Therefore even with a local Cardiff standard this will only give an average level of across the city. No Change.</p>
Open space	Item 3.1.1 Reference is made to an assessment “due for completion in early 2017” As that has now passed, the phrase needs amending.	A full assessment of all open space in Cardiff is undertaken at regular intervals and the latest was completed in 2017. Open spaces across the city are assessed and classified to provide a central data set that can be easily updated which will provide the baseline data for all future open space analysis and assessment

Open space	Item 6.2.1 p 34 Tab setting out for "Timescale for implementation" as part of the list given.	Agreed - Correct tab setting for "Timescale for implementation"
Open space	Item 7.4.4 p 38. In the table spanning from p38 to p39. There is a large gap between the two bullet points of 5 and the start of 6. Is something missing or is it just that 6 has to be moved up the page?	Agreed - Reduce gap between items 5 and 6.
Open space	P48 Tab setting to list out for Appendix 8.	Agreed - Title of Appendix 8 to be indented further to correspond with other titles.
Open space	The impact of green spaces on health and well-being has been omitted and inclusion would strengthen the SPG.	<p>The Green Infrastructure SPG does include the impact of green space on health as being a key objective, item 4 of the 6 Cardiff strategic green infrastructure objectives.</p> <p>Item 3.3.2 of the same document also mentions the relationship between open space and health. Additional text to Table 7 in Open Space TGN - Design principles for open space. Item 6 Multifunctional use (end of paragraph)</p> <p><i>"Well designed open space should seek to provide a valuable resource for improving health and wellbeing."</i></p>
Open space	The SPG makes limited reference to the Well-being of Future Generations (Wales) Act 2015. We recommend that this be strengthened by highlighting the role of the SPG in assisting the City of Cardiff Council and the Cardiff Public Service Board take forward the sustainable development principle, the ways of working and the Well-being Plans. The Future Generations Commissioner for Wales ¹ has encouraged the strengthening of links between Local Development Plans and Well-being Plans and supports the consideration of the role that places and spaces play in people's well-being; the SPG is well placed to influence this.	<p>Well-being of Future Generations (Wales) Act 2015 is mentioned in paragraph 2.1.3 of the Open Space TGN, and further information will be given in the accompanying Green Infrastructure Plan once published.</p> <p>It is acknowledged that the Act underpins many aspects of green infrastructure and open space design. No change.</p>

¹ https://futuregenerations.wales/wp-content/uploads/2017/07/FGCW_Well-being_in_Wales-Planning_today_for_a_better_tomorrow_2017FINALENG.pdf

Open space	The Public Health (Wales) Act 2017 will make changes to the law in Wales to improve health and prevent avoidable health harms. Some of the relevant changes in the Act include the production of a national strategy on preventing and reducing obesity and a requirement to undertake health impact assessment for key decisions. It would be wise to make reference to the Act in the SPG.	Act not in existence during drafting but acknowledged as key element alongside Well-being of Future Generations (Wales) Act. Add a new paragraph 2.1.4 of the Open Space TGN (p8) <i>“Public Health (Wales) Act 2017 requires Local Authorities to undertake health impact assessments in order to reduce national levels of obesity. Provision of recreational open space contributes to improved access to a healthy lifestyle.”</i> Also to be added to the Green Infrastructure Plan to accompany SPG.
Open space	The City of Cardiff Council Planning for Health SPG provides guidance on the role of planning in improving population health and well-being. The benefits to well-being of having easy access to open space is included and cross referencing to this SPG would be useful.	SPG not in existence during drafting but needs to be tied in to GI SPG. Add to paragraph 2.1.4 of the Open Space TGN (p8) :- “The objectives of the act are supported within the Planning for Health and Wellbeing SPG”.
Open space	The food environment plays an important role in promoting a healthy diet and mounting evidence confirms the role of planning and local authorities in ensuring access to food growing spaces. Allotments, community food growing spaces and adequate garden spaces are fundamental elements of the city's green infrastructure and we would recommend inclusion in the SPG. Various resources and texts are available and we would be keen to provide this evidence and support the drafting of a section for inclusion.	Included in Appendix 5 of Open Space TGN – Guidance on provision of allotments and community growing. And defined on p8 of OS TGN. No change. Also within Table 1 of Cardiff Open Space Standard in Open Space TGN. Provision of allotments and community gardens has been identified as a key requirement in masterplanning Strategic Development sites. However due to decision in the LDP hearing allotment provision does not form part of non- strategic sites and is included as part of the 2.43 ha standard, although off-site contributions can in theory be used towards these.
Open space	Child Friendly Cities. The City of Cardiff Council is committed to engaging with the UNICEF Child Friendly Cities Initiative, focusing on ensuring that children's rights are embedded across the organisation and partnerships and that policies and practice are child-	Not seen as a direct part of the SPG Many open space and green infrastructure designs are child focused and specific provision is made for fixed and equipment and informal play. No change.

	centred. We suggest inclusion and consideration of this in the SPG.	
Open space	Para 3.3.8 seeks to limit the location of heavily mown area. It is considered informal recreation areas should be included in this. Parks such as Bute Park have areas of informal recreation that would not appear to fall within the current definition suggested.	<p>Wording was highlighting potential conflict between open space management/use and biodiversity requirements, but clarification to be added to text. Revise wording in GI SPG Para 3.3.8</p> <p><i>“Regularly mown areas are required for formal recreation areas, for reasons of safety (immediately next to roads), in more formal settings (e.g. adjacent to buildings) and adjacent to footpaths. Elsewhere use of less frequent mowing regimes and creation of wildflower meadow will make open spaces more interesting and enhance biodiversity”</i></p> <p>Omit last sentence “Off-site provision”.</p>
Open space	Para 3.3.10 – stating that isolated small area of single function green space will not form part of the green infrastructure of the development is contrary to the ‘Open Space’ definition on p.10 of the SPG which states that open space can also act as visual amenity and may have conservation and biodiversity importance. If isolated small areas are provided in a development because they cannot be developed then they should form part of the green infrastructure.	<p>The wording refers to the aim to avoid small isolated areas of grass within developments which have no function and cause problems to maintain. The Open Space definition refers to areas of open space that have multiple benefits and these will be considered as part of the green infrastructure, particularly where they create a green corridor.</p> <p>In line with the previous Open Space SPG areas of less than 0.2 ha will not be considered for adoption, and areas of less than 0.08ha will not be considered as green infrastructure unless providing multiple benefits and forming part of a network of green spaces. Revise text 3.3.10</p> <p><i>“Small isolated areas of green space in developments should be avoided as they provide limited benefit and cause maintenance issues.</i></p>

		<p><i>Areas of less than 0.08ha will not be considered as green infrastructure unless providing multiple benefits and forming part of a network of green spaces.</i></p> <p><i>Areas of open space less than 0.2ha will not be considered for adoption."</i></p>
Open space	Para 3.1.1 refers to a full assessment of all open space in Cardiff and it being completed in early 2017. Is this information available as it is now mid 2017?	A full assessment of all open space in Cardiff is undertaken at regular intervals and the latest was completed in 2017. Open spaces across the city are assessed and classified to provide a central data set that can be easily updated which will provide the baseline data for all future open space analysis and assessment
Open space	It would appear appropriate to publish the baseline data on a ward basis and include within an SPG. This is the approach seen with other local authorities and provides applicants with an understanding of the level of 'open space' requirements.	This will be included in the above assessment document. No change.
Open space	Table 2 (p.19) defines 'outdoor sports facilities' but excludes school and other institutional playing fields. If these facilities are publically available (dual use) then they should be counted. The SPG should recognise that a flexible approach can be given when the dual use of sites (e.g. strategic sites) can be designed and catered for at the start.	<p>Where dual use facilities are available and sustainable in the long term this would be included, but as Appendix 2.5 discusses dual use facilities and says "<i>Opportunities may exist for joint use of facilities with schools or private sports clubs, through negotiation of a Community Use Agreement to make them available to the general public. But in order to be considered as providing part of the formal recreational allocation for any new development, there has to be certainty that facilities located within the school or club will be available for community use in perpetuity (or as long as the school or club is present) and will be maintained in a good condition.</i>"</p> <p>Revision to text in Table 2 (p19 of Open Space TGN)</p> <p><i>"Cardiff definition excludes school and other institutional playing fields unless formal long term dual use agreement in place."</i></p>

Open space	Para 4.5.1 refers to a Built Heritage SPG. Does this exist?	Built Heritage SPG confirmed as not being written. 4.5.1 of Open Space SPG redrafted <i>"Where built heritage exists within open space (including scheduled ancient monuments, listed buildings or structures and registered historic parks and gardens), an assessment of these will be required in order to be able to determine the impact of the development on the heritage value of the site."</i>
Open space	Para 5.2.2 refers to functional open space to be more than 0.8ha. This is considered unreasonable and smaller spaces of the correct design can be capable of providing a range of recreational use.	Text refers to 0.08ha rather than 0.8ha. This figure has been used in the previous Open Space SPG and is considered reasonable, although this doesn't rule out exceptions to the rule on specific schemes, particularly where the space forms part of a wider green corridor. No change.
Open space	Para 6.1.1 is overly onerous and unreasonable. An SPG is relevant to a planning application but if an outline planning application is submitted then it would be unreasonable to require the level of detail sought. The appropriate way to require the information would be make it conditional at the point of determination of the outline application. The information could be secured by a standalone planning condition or pursuant to a reserved matters submission.	The information required is reasonable, but the timing of delivery will vary depending on whether it is an outline, hybrid or full application. The more information that can be provided early on in a planning process the better, but this has to be proportionate with the type of application. Additional wording at end of 6.1.1 <i>"The amount of information and stage of delivery will depend on the type of application, with outline applications requiring less information than full, hybrid or reserved matters applications"</i>
Open space	The SPG suggesting that timber is not a suitable material for playgrounds is inconsistent with best practice to see more naturalistic play equipment such as the 'balance' trail in Bute Park. The appendices are considered too prescriptive and potentially threaten creativity and innovative design.	See response relating to query on A3.7d below. No change.
Open space	A1.3.b) types of boundary fencing – knees rails to only be steel. This is considered overly restrictive and a visually pleasing material in a residential environment.	Timber knee rails have proved to be less durable and easily vandalised in more exposed locations. Steel knee rails are the required option for Council adoption option but timber may be used in more protected environments and where resources are available to carry out regular repair and maintenance. Revise text A1.3.b <i>"Knee rails - steel only to be used for sites to be adopted"</i>
Open space	A3.7 d) use of timber equipment. The use of timber equipment is wholly suitable provided the correct timber	A3.7d states that <i>"timber equipment is not suitable for the majority of playgrounds in Cardiff due to the damp climate. Where timber</i>

	and fixings / fitting are used. It does not appear appropriate for a GI SPG to include a requirement that essentially deters the use of natural play and timber trim trails.	<i>equipment is used, it should be fitted with steel shoes for ground installation.</i> " This has been found through considerable experience. Timber equipment is not excluded from designs but has to be in a suitable location in terms of ground conditions and potential for vandalism. Timber provided in play equipment varies significantly in quality and only high quality timber play products should be used. Too often timber equipment is seen as a cheap option to install with little consideration of longevity. There have also been recent safety concerns due to internal decay within timber play equipment leading to unexpected failure. No change.
Open space	A3.7 f) play surfacing - disagree with surfacing only being around individual equipment, especially when they then recommend the use of sand dressed safety carpet. Feel the design needs to be more flexible as otherwise may compromise the design.	Although safety surfacing across the whole play area can be visually attractive compared to isolated areas, the long term costs of these need to be considered when it comes to replacement. Large areas of surfacing are much more expensive and difficult to repair. Isolated areas can easily be repaired if damaged without the whole playground being affected. Revision to wording on A3.7f <i>"In order to minimise costs of repair and maintenance of safety surfacing, the selected surface is best limited to within the approved safety zone of the equipment, unless larger repair budgets are available. The Council will not adopt large continuous areas of safety surfacing"</i>
Open space	A5.3a) security fencing to allotments – it is considered that options other than galvanized steel palisade security fencing should be referenced and consideration of such at the appropriate time be allowed for.	Agreed, other types of fencing could be suitable depending on the location. Any fencing type must be robust and provide security. Revision to wording A5.3a <i>"The allotment site should be secured with galvanised or powder coated steel palisade security fencing, minimum 1.8m high, or an alternative such as vertical bar or weldmesh fencing where this provides sufficient security "</i>
Open space	The Open Spaces TGN suggests that 'small areas' of open space won't be adopted or counted within open space calculations. EDP considers that 'small areas' is too vague and, at least, that a minimal space of open space should be given below which it won't be counted – A LAP is a small area... it might not be adopted but it should be counted as a viable contribution to the overall open space of a development.	The wording refers to the aim to avoid small isolated areas of grass within developments which have no function and cause problems to maintain. The Open Space definition refers to areas of open space that have multiple benefits and these will be considered as part of the green infrastructure, particularly where they create a green corridor. In line with the previous Open Space SPG areas of less than 0.2 ha will not be considered for adoption, and areas of less than 0.08ha

		<p>will not be considered as green infrastructure unless providing multiple benefits and forming part of a network of green spaces. Revise text 3.3.10</p> <p><i>“Small isolated areas of green space in developments should be avoided as they provide limited benefit and cause maintenance issues.</i></p> <p><i>Areas of less than 0.08ha will not be considered as green infrastructure unless providing multiple benefits and forming part of a network of green spaces.</i></p> <p><i>Areas of open space less than 0.2ha will not be considered for adoption.”</i></p>
Open space	Add references within multi functional green space to also ‘take account of biodiversity’	<p>Open space has to balance a number of factors, including biodiversity, when being designed. But it is agreed that the link to Biodiversity would benefit from being included in the list of design principles for successful open space layout (Table 7 page 31).</p> <p>Clauses 3.3.6 and 3.3.7 the overarching SPG document also discuss the relationship between open space and biodiversity.</p> <p>Overall the combined green infrastructure team approach leads to biodiversity being discussed as part of open space design. Additional text to Table 7 Design principles for open space. Item 7 Resilience and Mitigation (from start of paragraph)</p> <p><i>“Design of open space should seek to maximise opportunities to increase biodiversity, through the protection of existing habitat and development of new habitat where appropriate, seeking to strengthen wildlife corridors and habitat connectivity to other open space, in line with the Biodiversity TGN.”</i></p>

Open space	Include biodiversity measures in open space design and reference the evidence for the value for human health and wellbeing.	As above and see previous comments relating to health.
Open space	We welcome the detail in this TGN as well as the provisions outlined.	Noted. No change.
Open space	In particular, we note in 5.3.3 (and the accompanying table) the comment regarding the lack of recreational, allotment and teen/youth provision in the use of open space, putting pressure on existing facilities. We therefore urge that future developments should focus on seeking to remedy this.	Noted. No change.
Open space	A2.5 on Dual Use facilities raises the value of using school facilities but fails to deal with the problem that so often stops such dual use: the cost to the school of opening up, paying the caretaker, heating the school. To cover these costs often sees fees that are prohibitive for small clubs, be they sport or social. Were those costs to be met by the council, then dual use would become viable, with longer term cost savings.	Noted. Additional text A2.5 b) 4 th bullet point <i>“Costs of opening school facilities for a longer period to allow dual use often seen as prohibitive to schools / clubs without additional funding”</i>
Public rights of way	In 4.1 (page 7) reference should be made to avoiding ecologically sensitive areas.	<p>There are several rights of way paths within ecological sensitive areas. There are also many informal routes which the public are using; therefore a development could use the opportunity to formal strategic routes which will then prevent additional damage to the area. A amendment below clarifies the need to ensure the realignment or creation of a path needs to coincide with the Green Infrastructure SPG:</p> <p>4.1.1 Paths being realigned or created in an ecologically sensitive area will need to consider technical guidance and the Green Infrastructure SPG to minimise any impact on biodiversity. For example, a site survey may highlight informal routes which are already being used by the public and by formalising and upgrading the surface condition of one or two of the routes will protect the flora and fauna in surrounding area.</p>

Public rights of way	Generally, it may be beneficial to add 'now Natural Resources Wales' in brackets after 'Countryside Council for Wales'.	Page 14) CCW changed to Natural Resources Wales
Public rights of way	Para 3.5.2 refers to retaining the rural character of a retained Public Right of Way. It is questioned how the realistic expectation for a public right of way affected by development to retain its rural character. It's retention within a green corridor would seemingly be appropriate but it is unlikely that this retain the rural character that it had previously.	No change. The reference of keeping a rural character is to highlight the need to keep rights of way within open green spaces and green corridors and anywhere which is not in a built up environment.
Public rights of way	Para 4.5.1 refers to lighting of footpaths. It is suggested that reference be made to ecological sensitivities that could influence the type, siting and/or amount of lighting.	Update below as the lighting will be determined on a case by case scenario. The basic principles are outlined and updated in section 4.5.1: Paths which create part of the key links for communities to shops, schools, and transport. Paths which are being considered for upgrading to an adoptable standard will require street lighting. Other paths, which are in an ecologically sensitive area, may not be suitable for street lighting and will need to refer to Protection and Provision of Open Space and Ecology and River Corridors TGNs. Landscape should be creating around a path to ensure there is adequate natural light and preventing dark corners where possible to create a safe and enjoyable path for public access.
Public rights of way	Para 4.6.1 refers to new paths intended for shared use will need to be 4m wide or more. What evidence is there for this and where has the 4m figure been derived from?	This is a recommendation by Sustrans for Active Travel Routes. This can be negotiated depending on the location of the cycle path and how busy it will be.
Public rights of way	It might be useful to include a statement on paths through public parks, whether they constitute a public right of way and how the locking of parks, effectively denying of the public right of way, is justified within any relevant legislation.	Amendment below under section 4.1.1: Public rights of way paths, by law, must be accessible at all times. For example, if a new development is creating public open space and there is a right of way which crosses it, the park cannot be locked at any time.

River Corridors	River Rhymney Positive attributes (2.12 page 7): The last two bullet points appear to be negative rather than positive.	Move text to list of negative attributes
River Corridors	The negative attributes (pages 7, 11 & 14) of the river corridors do not capture the Water Framework Directive (WFD) impacts particularly well. - The Rhymney/ Nant Fawr has urban pressures on the physical environment which are likely to impact biodiversity, connectivity and water quality. - The Taff has urban pressures on the physical environment which are likely to impact biodiversity, connectivity and water quality. - The Ely in parts has the same urban pressures as the Rhymney/Nant Fawr and the Taff. However, it also has agricultural pressures on the water environment.	Amend list of negative attributes for each of the river corridors to include the additional text.
River Corridors	It appears that not all designations are identified in the descriptive text for the river corridors. It is presumed that this text is an overview as opposed to a detailed/exhaustive description of matters to be taken into account in considering planning queries/applications/etc.	Agreed. No Change.
River Corridors	Impacts on otters and other riparian species such as water voles are always a key consideration for developments near rivers. In that respect we welcome the ecological considerations set out in section 3.12 (page 16/17).	Noted. No Change.
River Corridors	We consider that 3.12 (page 16/17) should mention the use of soft engineering and the opportunity to remove previous hard engineering / open up culverts.	Agreed - Insert new text "Encourage where possible the use of soft engineering and the opportunity to remove previous hard engineering / open up culverts" to list :

River Corridors	Reference should be made in 3.19 (page 18) to certain works and activities within the river corridors potentially requiring a flood risk activity permit (FRAP) which are issued by NRW. Further information can be found at: https://naturalresources.wales/permits-and-permissions/flood-risk-activities/?lang=en	Agreed - Update para 3.19 to include “Certain works and activities within the river corridors may require a flood risk activity permit (FRAP) which are issued by NRW. Further information is available from: https://naturalresources.wales/permits-and-permissions/flood-risk-activities/?lang=en ”
River Corridors	Surface water drainage (3.17 page 18) should also consider the potential benefits of slowing the flow of water.	Agreed - Insert additional text into para 3.17.
River Corridors	We consider there is opportunity to mention Water Framework Directive (WFD) objectives in section 3.20 (page 18) and the aim of no deterioration of these. A link to River Basin Management plans / NRW's Water Watch Wales website for further information could be provided.	Agreed - Amend para 3.20 to include “Development proposals should take account of the requirements of the Water Framework Directive and the River Basin Management Plans. Further information is available on NRW's website at: https://naturalresources.wales/evidence-and-data/research-and-reports/water-reports/river-basin-management-plans-published/?lang=en http://waterwatchwales.naturalresourceswales.gov.uk/en/ “
River Corridors	The positive confirmation that the policy is not intended to prevent any development in the designated River Corridor areas as set out in Para 1.9.	No change.
River Corridors	As set out in response to the SPG on Green Infrastructure a corporate and holistic approach to proposals in these areas is required from the council and other statutory authorities	No change.
River Corridors	Landscape Study of Cardiff (1999) is used to define positive and negative attributes of the river corridors. This is a dated approach.	Noted – information formed part of the LDP evidence base and based on an approved methodology and is the latest information available. No change proposed. No change.

River Corridors	Roath Flood Scheme should be mentioned to illustrate how the river corridor is being managed to mitigate against flood risk..	Agreed - Para 2.10 updated to include reference to the Roath Flood Scheme.
River Corridors	As set out in response to the SPG on Green Infra Structure a corporate and holistic approach to proposals in these areas is required from the council and other statutory authorities	Noted. No change.
River Corridors	Reference to UWIC should be Cardiff Metropolitan University	Agreed - Reference updated.
River Corridors	Section on the International Sports Village and Cardiff Bay should be updated in light of recent development and regeneration.	Noted – Section updated.
Suds	Reference is made (p.12) to the City of Cardiff Council SuDS Technical Standards. If this is mentioned then it should be referenced. However, what status does this document have and when was it produced? Has it followed the development plan preparation process of the LDP and therefore consistent with the LDP and national policy?	Cardiff Council's Storm Water Management document is nearing completion. The document will be in accordance with relevant strategies and best practise documents for implementing development with the use of sustainable drainage systems. The document will adhere to all required procedures following its completion as a draft document and reference has been made within the Green Infrastructure SPG as it is anticipated to be a live document prior to the next iteration of the Green Infrastructure SPG review. No change.
Suds	Reference is made on numerous occasions to the SuDS SPG. Does this even exist?	Cardiff Council's Storm Water Management document is nearing completion. The document will be in accordance with relevant strategies and best practise documents for implementing development with the use of sustainable drainage systems. The document will adhere to all required procedures following its completion as a draft document and reference has been made within the Green Infrastructure SPG as it is anticipated to be a live document prior to the next iteration of the Green Infrastructure SPG review. No change.
Trees and soils	The documents need to make it clear that any trees planted must be wild-life friendly, providing flowers, berries, nuts and seeds, roosts and nesting sites. The document should include guidance on the kind of trees	The Trees TGN includes a section on wildlife value and an appendix that gives wildlife value as a selection criterion. This is considered sufficient to enable informed decision making regarding the wildlife value of particular trees in relation to development proposals. Tree

	and shrubs that should be planted – e.g. RHS list - https://www.rhs.org.uk/advice/profile?PID=551	planting should be undertaken not only in the interests of wildlife but for the wider environmental and aesthetic benefits it provides. Many non-native trees have important attributes in this regard and are not devoid of wildlife. No change.
Trees and soils	Hedgerows – the document needs to make clear that hedges are of great importance to wildlife and new hedges must be provided wherever possible and appropriate. Hedges must comprise a mixture of nature-friendly species	Hedgerows can be of importance to wildlife and the purpose of the assessment in accordance with the Hedgerows Regulations specified in the Trees TGN is to establish how important they may be in this regard, and whether the hedgerow has other important attributes that mean its retention or translocation is desirable as part of development. Unless hedgerows have been specifically designed to benefit wildlife, rather than as a barrier to farm livestock or to demarcate an important boundary, then their value to wildlife is context dependent. Much greater value to wildlife might, for example, be obtained from a line of trees. In this light, an excessively prescriptive approach to hedgerow retention and planting is not considered appropriate and should instead be informed by appropriate assessments. No change.
Trees and soils	There is no specific mention of consideration for species (e.g. bats, birds, dormice etc) when removing trees. It would be beneficial to include within this TGN a statement requiring trees with crevices or hollows or other features to be subject to survey in line with the BCT Guidelines 2016 and Dormouse Conservation Handbook 2006. Reference also should be made to the Bat Tree Habitat Key.	The Trees TGN is not intended to cover topics around wildlife law that run separate to planning policy and are adequately covered in other SPG and in law. Such duplication would make for a more unwieldy document. No change.
Trees and soils	para 3.6.6 - <i>The planting of native tree species of local provenance, should be undertaken where this will provide clear, demonstrable ecological benefits, but otherwise mixed planting schemes incorporating native and non-native species well adapted to the predicted effects of climate change, are preferred.</i> In what circumstances would planting native trees of local provenance NOT provide ecological benefits? This para needs to be strengthened to make it clear that any trees	Ecological benefits do not come from flowers, berries, nuts etc. alone, and the Trees TGN includes a section on trees and wildlife that explains this. For example, a line of native oaks planted in a hard landscape environment may rapidly suffer stress and poor health, with a limited range of organisms taking advantage of this (e.g. pathogens), resulting in stunted growth and a reduced life expectancy. A line of urban tolerant non-native trees may thrive in the same environment, living for a long time, intercepting lots of rainfall and pollution, and not presenting a nuisance to users of the surrounding environment - e.g. by the fall of fruit. The Trees TGN

	<p>(native or not) planted must be wild-life friendly, providing flowers, berries, nuts and seeds, roosts and nesting sites. (See Dudley Council Nature Conservation SPD, Appendix 3 - http://www.dudley.gov.uk/resident/planning/planning-policy/local-plan/naturecons-spd/)</p> <p>The TGN should include guidance on the kind of trees and shrubs that should be planted – e.g. RHS list - https://www.rhs.org.uk/advice/profile?PID=551</p>	<p>includes an appendix with wildlife value one of a number of selection criteria to take into account when planting trees as part of development. No change.</p>
Trees and soils	<p>paras 3.7.2 and 3.7.3 – hedgerows – the document needs to make clear that hedges are of great importance to wildlife and where new hedges are to be provided, these must be a mixture of nature-friendly species</p>	<p>Hedgerows can be of importance to wildlife and the purpose of the assessment in accordance with the Hedgerows Regulations specified in the Trees TGN is to establish how important they may be in this regard, and whether the hedgerow has other important attributes that mean its retention or translocation is desirable as part of development. Unless hedgerows have been specifically designed to benefit wildlife, rather than as a barrier to farm livestock or to demarcate an important boundary, then their value to wildlife is context dependent. Much greater value to wildlife might, for example, be obtained from a line of trees. In this light, an excessively prescriptive approach to hedgerow retention and planting is not considered appropriate and should instead be informed by appropriate assessments. No change.</p>
Trees and soils	<p>Appendix 1 – the importance of hedges needs to be strengthened in the <i>Does the Green Infrastructure Statement adequately reflect?</i> Section.</p>	<p>As above. No change.</p>
Trees and soils	<p>The appendix of tree species appears to be missing.</p>	<p>It is at the end of the Trees TGN. No change.</p>
Trees and soils	<p>Trees must be wildlife friendly – e.g. providing food, roost and nest sites.</p>	<p>The Trees TGN includes a section on wildlife value and an appendix that gives wildlife value as a selection criterion. This is considered sufficient to enable informed decision making regarding the wildlife value of particular trees in relation to development proposals. Tree planting should be undertaken not only in the interests of wildlife but for the wider environmental and aesthetic benefits it provides. Many</p>

		non-native trees have important attributes in this regard and are not devoid of wildlife. No change.
Trees and soils	It would also be helpful to provide the names of trees in both Latin and English.	This is done in the appendix at the end of the Trees TGN. No change.
Trees and soils	Hedgerows 4.3 (Page 17):It would be useful to advise that where hedgerows form part of an application site or development is to affect hedgerows, there is the potential need to undertake ecological surveys by an appropriately qualified, experienced and licenced ecologist and where appropriate an EPS licence obtained from NRW.	This section makes clear the requirement to undertake an assessment in accordance with the Hedgerows Regulations. Other assessments are covered by the Ecology TGN. No Change.
Trees and soils	It would be useful to advise that where trees are to be removed they may need to be surveyed/checked for protected species by an appropriately qualified, experienced and licenced ecologist and where appropriate an EPS licence obtained from NRW. Where no licence is required it may be useful to advise that trees are removed with a precautionary approach to ecology.	The Trees TGN is not intended to cover topics around wildlife law that run separate to planning policy and are adequately covered in other SPG and in law. Such duplication would make for a more unwieldy document. No Change.
Trees and soils	Para 3.7.3 refers to replanting of hedgerows. A required replacement ratio of 3 to 1 is considered overly strict and the compensation should be weighed up and be proportionate to impact. The quality of the replacement planting should be given proper regard as well as the quantity, especially when looking at large strategic sites. In consideration of licensing and legislation requirements of EPS, mitigation measures should focus on restoring habitat function necessary to maintain favourable conservation status of the protected species. Additionally these requirements are not consistent across documents, with no mention of it within the ecology or tree TGN (nor are tree planting ratios provided).	Providing a ratio of 3 to 1 may be justifiable on ecological grounds, and this should be covered in the ecology TGN. It is accepted that much depends on context, though planting only in the interests of protected species rather than ecosystems, is considered too prescriptive. The Trees TGN seeks to avoid 'numbers games', placing the emphasis on good design. For example, two well-planted large species trees may bring greater cumulative value than 5 small trees planted in sub-optimal locations and to poor specifications. No change.
Trees and soils	Para 8.6.1 deals with protection of Council trees. Any tree survey and subsequent protection measures would be to	Noted. No change.

	the appropriate British Standard for any tree(s). It is not understood why Council trees are specially mentioned.	
Trees and soils	Monitoring suggested on page 15 is not considered reasonable. The requirements for monitoring should be agreed through the provision of an AIA (either as a submission or by planning condition) and then adhered to in writing. Further monitoring / control to this is not required or reasonable.	The Arboricultural Impact Assessment (AIA) should show what the likely impacts of development on trees will be, but does not provide for a methodology to ensure their protection during the course of development. Extensive case experience has shown that the only way to have reasonable confidence that tree protection measures that have been agreed in writing during the planning process are being adhered with during development, is through auditable site monitoring by an arboriculturist. The comment does not provide for a sensible alternative and does not explain what is unreasonable or unnecessary about this requirement. No change.
Trees and soils	Regarding buffers adjacent to woodland, the documents are not particularly consistent with each other. The 15m ecotone buffer applies to Ancient Woodland in the Ecology TGN but seemingly applies to all woodland resource within the tree TGN. There is a further general requirement for ecotones to be planted adjacent to all woodland habitat which could be of concern to developers regarding planting/management costs, over-shading, etc. EDP would suggest this requirement is again too prescriptive. Whilst the 15m buffer precedent for AW has been set through case law, what is to be provided within such buffers should be determined on a case by case basis and should be proportionate and appropriate both to the development and to the existing biodiversity resource to be impacted.	The Trees TGN makes clear the multi-functional (not just ecological) benefits of ecotones, and also makes clear that 15m is the default extent, not the extent that is appropriate in all cases. It also makes clear that an ecotone may be planted, or achieved via natural regeneration with management intervention. Extensive case experience with woodlands bounding residential development is of high levels of perceived and actionable nuisance, branch and tree failures due to wind tunnel effects and degradation of the woodland due to tipping of garden and general waste and unsuitable pruning or felling. No change.
Trees and soils	As a general, introductory observation, this TGN refers to Cardiff as the 'undisputed tree capital' of the UK, but we question whether the appropriate resources for the management of trees are in place. There are innumerable instances of overgrowth obstructing bus stop signs and lamp-posts, all of which can have a detrimental impact on how people move about an area, making them more likely to use their car rather than walk or cycle. Ward members	These are all non-planning matters and the SPG is not the appropriate place to address them. No change.

	also regularly report incidents where trees have grown into roads, creating safety hazards for drivers and pedestrians.	
Trees and soils	In reference to the 'Ecotone' (page 17) the TGN refers to the need to minimise risks of garden waste and litter being thrown into woodlands. The council currently has no successful strategy in place for achieving this in current estates, let alone future developments.	This is not a planning matter and the SPG is not the appropriate place to address the issue. No change.
Trees and soils	There also needs to be clarity about whether retrospective action can be taken when old planting schemes do not meet modern guidance on the 'Ecotone' 15 metre buffer. Where trees have been planted in such close proximity to homes that they become a nuisance (as detailed on page 13), can residents have an expectation that remedial action will be taken to remove the offending trees, so long as there are no compelling reasons for their retention?	This is not a planning matter and the SPG is not the appropriate place to address the issue. No change.

Appendix 3. List of considerations for Green Infrastructure Statement

The following table sets out a list of considerations that planning applicants are advised to consider when providing green infrastructure information in support of their application. It is not a checklist as such, but rather a guide to aid a structured approach to considering green infrastructure and to producing a Green Infrastructure Statement.

Details in support of planning application	Signpost to Technical Guidance Note (TGN) or Supplementary Planning Guidance (SPG)
Are any of the following required:	
Environmental Statement	Ecology TGN
Green Infrastructure Statement	
Landscape character assessment	Parks / POS TGN
Hydrological Impact Assessment	Forthcoming Storm Water management document
Preliminary Ecological Appraisal	Ecology TGN
Ecological Impact Assessment	Ecology TGN
Large scale map of existing GI showing context at neighbourhood and citywide levels.	Parks / POS TGN
Conclusions of contextual analysis – with illustrations	Parks / POS TGN
Tree assessment in accordance with BS5837:2012	Trees TGN
Soil Resource Survey	Soils TGN
Multifunctional green space	
Does the Green Infrastructure Statement adequately reflect:	
A joined-up network of multifunctional green space	Parks / POS TGN
Avoidance of greenspace at rear of properties	Parks / POS TGN
Avoidance of isolated green space	Parks / POS TGN
SuDS integrated into greenspace layout	Forthcoming Storm Water management document
Floodplain integrated into greenspace layout	Forthcoming Storm Water management document
Retention of soft landscape features identified and protection proposed	Parks / POS TGN
Space provided for new tree growth	Trees TGN

Service runs in pathways where possible and not impacting on trees	Trees TGN
Adequate open space provision	Parks / POS TGN
Adequate children's play provision	Parks / POS TGN
Adequate teen facilities provision	Parks / POS TGN
Adequate allotments / growing provision	Parks / POS TGN
Ecology and Biodiversity	
Does the Green Infrastructure Statement adequately reflect:	
Statutory protection afforded to certain designated sites	Ecology TGN
Statutory protection afforded to certain species	Ecology TGN
Maintenance and enhancement of ecosystem resilience	Ecology TGN
Mitigation hierarchy applied where potential impacts upon nature conservation interests have been identified	Ecology TGN
Robust habitat corridors provided, where habitat is to be lost	Ecology TGN
Appropriate consideration of SINC sites in accordance with section 5.5.3 of TAN5	Ecology TGN
Ponds incorporated into SuDS, where appropriate	Forthcoming Storm Water management document
Habitat features incorporated into built environment where appropriate	Parks / POS TGN
Receptor sites for translocated species secured in advance of development	Ecology TGN
Management regimes of verges considered	Parks / POS TGN
Dark corridors for wildlife such as bats	Ecology TGN
Provision of ecotones of 15m width adjacent to woodland	Trees TGN
Public Rights of Way	
If being retained on their original alignment:	
Is the character retained?	PRoW TGN
Is the route still logical and coherent?	PRoW TGN
Does the route link areas of green space/wider countryside?	PRoW TGN
If the route is being diverted:	
Does the route divert into open space or a wildlife corridor?	PRoW TGN
Does the route link to local facilities and community?	PRoW TGN
Does the route link to the wider countryside?	PRoW TGN
Is the corridor wide enough to be safe and attractive?	PRoW TGN
If there are new routes to be considered:	
Are there routes through the development site the public are using but not yet recorded as PROWs?	PRoW TGN

Does the route link to local facilities and community?	PRoW TGN
Trees, Landscaping and Soils	
Does the Green Infrastructure Statement adequately reflect:	
Assessments of trees and hedgerows used to inform design	Trees TGN
Consideration of impact of services upon new and retained trees	Trees TGN
Early involvement of landscape architect and arboriculturist at design inception	Trees TGN
Supply, planting and aftercare programme for newly planted trees in accordance with BS 8545:2014	Trees TGN
Highway and other transport infrastructure accommodates, where feasible, sufficient growing space to allow establishment and long-term growth of new trees	Trees TGN
Provision of ecotones of 15m width adjacent to woodland	Trees TGN
Native trees of local provenance used where there is a clear ecological benefit	Trees TGN
New tree planting must follow a clear design aesthetic rather than comprising randomly selected trees	Trees TGN
New tree planting has considered the predicted impacts of climate change	Trees TGN
Early consideration given to the adequate provision of useable soil, water and oxygen for newly planted trees	Trees TGN / Soils TGN
Location of tree planting reflects future growth potential of the tree	Trees TGN
Soils must be subject to assessment in conjunction with the 'Construction Code of Practice for the Sustainable Use of Soils on Construction Sites' (DEFRA, 2009)	Soils TGN
River Corridors	
Is the proposed development within one of the River Corridors as defined in the River Corridors TGN?	River Corridors TGN
Do the proposals affect visual and/or physical access to the river?	PRoW/River Corridors TGN
Is the provision of open space within the river corridor taken into account?	POS/River Corridors TGN
Is the biodiversity within the river corridor maintained or enhanced by the proposal?	Ecology & Biodiversity / River Corridors TGN
Has the impact upon landscape, and the historical and cultural environment, been considered?	River Corridors TGN
Does the proposal adequately consider surface water drainage, flood prevention, water quality and pollution	SuDS SPG / Waste Collection and Storage

prevention, safety, litter and management and maintenance?	Facilities / River Corridors TGN
Aftercare	
Has aftercare been considered / agreed such that all elements of Green Infrastructure are managed in an integrated way?	All
Are monitoring and remediation measures in place to ensure that green infrastructure mitigation measures are effective in the long term?	All

An additional checklist relating to protection of existing open space and design of new open space is given at the end of the Protection and Provision of Open Space Technical Design Guide.

Appendix 4. References

Biodiversity Positive: Eco-towns Biodiversity Worksheet. TCPA. December 2009

Biodiversity for Low and Zero Carbon Buildings: A Technical Guide for New Build Bat. Conservation Trust. March 2010.

Cardiff Liveable Design Guide – Placemaking, Urban Design, Architecture. Cardiff Council. May 2015.

Guidance for Local Authorities on Public Rights of Way, WG28059. August 2016

POST Note No 281: Ecosystem Services. Parliamentary Office of Science and Technology. March 2007.

Planning Obligations Supplementary Planning Guidance draft November 2016

The SuDS Manual CIRIA C753. 2015.

Cardiff Green Infrastructure SPG

Ecology and Biodiversity

Technical Guidance Note (TGN)



November 2017

Cardiff Green Infrastructure SPG: Ecology & Biodiversity Technical Guidance Note (TGN) November 2017

Mae'r ddogfen hon ar gael yn Gymraeg/This document is available in Welsh

Ecology & Biodiversity TGN Part 1 – Policy Guidance

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Ecology & Biodiversity TGN Part 2 – The Cardiff Resource

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PART 2

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Part 1

1.1 Introduction

This Technical Guidance Note (TGN) forms part of the Green Infrastructure Supplementary Planning Guidance, which supplements policies in the adopted Cardiff Local Development Plan (LDP).

Welsh Government supports the use of Supplementary Guidance (SPG) to set out detailed guidance on the way in which development plan policies will be applied in particular circumstances or areas. SPG must be consistent with development plan policies and national planning policy guidance. SPG helps to ensure certain policies and proposals are better understood and applied more effectively. They do not have the same status as the adopted development plan but are a material consideration in the determination of planning applications. Policies in the LDP to which this TGN relates are identified in the following sections:-

- Part 1 sets out how the Council will implement development plan policies relating to ecology and biodiversity, including how it will assess planning applications which could have an impact on ecological and biodiversity interests, the information applicants will need to provide to enable this, and the legislative framework within which the Council must operate.
- Part 2 sets out the biodiversity/nature conservation resource of Cardiff, including designated sites and biodiversity priorities.

Biodiversity is defined by the Convention on Biological Diversity as “*the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems*”.

For the purposes of this document, ‘biodiversity’ (short for biological diversity) is taken to have the same meaning and be interchangeable with terms such as ‘nature’ and ‘wildlife’.

Further guidance on how biodiversity should be considered in the planning system are given on the Biodiversity Planning Toolkit website:-
<http://www.biodiversityplanningtoolkit.com/default.asp>

1.2 Context in relation to Green Infrastructure SPG

The Ecology & Biodiversity TGN forms part of the Green Infrastructure SPG, alongside other subject areas, as follows:-

- Ecology and Biodiversity TGN
- Open Space TGN
- Public Rights of Way and Development TGN
- River Corridors TGN
- Soils and Development TGN
- Trees and Development TGN

A forthcoming City of Cardiff Council Storm Water Management document will also relate to the Green Infrastructure SPG.

Green Infrastructure is defined as:-

‘The multi-functional, connected green spaces that make the best of land - providing green open space for all, at the same time helping wildlife to flourish, and delivering a wide range of economic, health and community benefits. This is as important to the city as its ‘grey’ infrastructure of roads, buildings and power lines, and helps to address many of the social and environmental issues linked to urban life.’

Green infrastructure represents the biological and hydrological element of an ecosystem, which along with other elements such as geology, topography, climate and the weather, combine to provide the ecosystem services upon which our lives depend.

This direct link between biodiversity and ecosystem services, via green infrastructure, has gained widespread recognition, for example:-.

- According to the General Assembly of the United Nations, biodiversity *'underpins ecosystem functioning and the provision of ecosystem services'*.
- According to the Environment (Wales) Bill 2015 Explanatory Memorandum, *'Biodiversity drives the functioning of our ecosystems which in turn deliver a multitude of essential ecosystem services to society. Changes in the distribution and abundance of plants, animals, and microbes affect ecosystem functions and the capacity of those functions to deliver ecosystem services. Loss of species from ecosystems affect their ability to resist invasion by other species, affect production and nutrient cycling, and affect the reliability and stability of ecosystems. Therefore, biodiversity is essential to sustaining ecosystems that provide the vital services our lives depend on. Where biodiversity is lost and perhaps never fully recovered, it affects the capacity of ecosystems to adapt to changes and disturbances.'*

Maintaining and enhancing the diversity of biological organisms is a key component of both the integrated approach and of the sustainable management of natural resources. The variability of our biological resources is a vital element in ensuring that our ecosystems are healthy and functioning, and that their integrity is maintained and enhanced such that they continue to provide the ecosystem services upon which we all rely.

In other words, biodiversity is an essential component of green infrastructure, and in turn, green infrastructure provides essential support for biodiversity.

The LDP ecology, biodiversity and green infrastructure policies are intended to maintain and enhance biodiversity and green infrastructure, such that

ecosystems are supported in their delivery of ecosystem services, in accordance with national and international strategies.

1.3 Context in Relation to Policy and Legislation

1.3.1 International Nature Conservation Policy

International nature conservation policies, set out below, provide the context for Wales' national nature conservation policies, which in turn must be reflected in Cardiff's local policies.

Convention on Biological Diversity (CBD)

The United Nations Convention on Biological Diversity (the 'CBD'), to which the UK government is a signatory, has produced a Strategic Plan for 2011-2020. The vision of this strategic plan is:-

“By 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people.”

A series of Biodiversity Targets, known as the 'Aichi Targets' are set out by the CBD. There are grouped into 5 strategic goals thus:-

Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society

Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use

Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services

Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building

In addition, the CBD considers the ecosystem approach, describing it as ‘*a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way*’, which is widely recognised as international best practice for addressing the decline in biodiversity. Through the concept of sustainable management, the Environment (Wales) Act 2016 puts the ecosystem approach on a statutory basis, drawing on the 12 principles established by the CBD.

European Union Biodiversity Strategy (EUBS)

The European Union Biodiversity Strategy is aimed at reversing biodiversity loss and speeding up the EU's transition towards a resource-efficient and green economy. The 2020 headline target is one of ‘*Halting the loss of biodiversity and the degradation of ecosystem services in the EU by 2020, and restoring them in so far as feasible, while stepping up the EU contribution to averting global biodiversity loss*’.

The EUBS document places a new focus on ecosystem services, so in addition to halting the loss of biodiversity, the new strategy also highlights, for the first time, the immense value of ecosystem services and the urgent need to maintain and restore these for the benefit of both nature and society.

1.3.2 UK Nature Conservation Policy

The UK Post-2010 Biodiversity Framework

The UK Post-2010 Biodiversity Framework, published in July 2012, succeeds the UK Biodiversity Action Plan (UKBAP) and the ‘Conserving Biodiversity – the UK Approach’ document. It is the result of a change in strategic thinking following the publication of the CBD’s ‘Strategic Plan for Biodiversity 2011–2020’ and its 20 ‘Aichi Biodiversity Targets’, at Nagoya, Japan in October 2010, together with the launch of the new EU Biodiversity Strategy (EUBS) in May 2011. The Framework demonstrates how the work of the four countries and the

UK contributes to achieving the Aichi Biodiversity Targets, and identifies the activities required to complement the country biodiversity strategies in achieving the targets.

1.3.3 Nature Conservation Policy in Wales

The Environment Strategy for Wales

The Environment Strategy for Wales 2006 is the Welsh Assembly Government's long term strategy for the environment of Wales, setting the strategic direction up to 2026. It is supported by a series of regularly updated action plans and a policy map setting out the key actions that will be taken to deliver the outcomes in the Strategy. The purpose of the Strategy is to provide the framework within which to achieve an environment which is clean, healthy, biologically diverse and valued by the people of Wales. By 2026, the ambition is to see Wales' distinctive environment thriving and contributing to the economic and social wellbeing and health of all of the people of Wales. The Environment Strategy for Wales is currently being reviewed in the light of the Natural Resource Management Approach, below.

Natural Resource Management Approach

Welsh Government strategy for management of natural resources involves taking an integrated approach to ensure that natural resources are managed sustainably.

'Natural resources cover much more than the "environment". They supply everything from the air we breathe to the food we eat; from the land we develop to the water we use to cool our heavy industry.

They are as fundamental to the success of our economy and the wellbeing of our people as they are to quality of the natural environment. Demands on our natural resources are increasing so we need to find a way to work together to build healthier relationships with our

environment. By managing our natural resources sustainably, we can create jobs and support sustainable housing and infrastructure to help our economy thrive.

Our aim is to sustainably manage our natural resources in a way and at a rate that can maintain and enhance the resilience of our ecosystems whilst meeting the needs of present generations without compromising the ability of future generations to meet their needs. Our overall aim is to ensure that Wales has increasingly resilient and diverse ecosystems that deliver economic, environmental and social benefits.'

(<http://gov.wales/topics/environmentcountryside/consmanagement/natural-resources-management/?lang=en> accessed November 2016)

Nature Recovery Plan

Welsh Government has produced a Nature Recovery Plan which is aimed at addressing the underlying causes of biodiversity loss by putting nature at the heart of its decision-making, by increasing the resilience of Wales' natural systems (ecosystems), and by taking specific action for habitats and species. It sets out how Wales will deliver the commitments of the EU Biodiversity Strategy and the UN Convention on Biological Diversity to halt the decline in our biodiversity by 2020 and then reverse that decline.

The plan builds on Wales' ground-breaking new legislative framework. The Well-being of Future Generations (Wales) Act 2015 challenges us all to look at the long-term impacts of decisions and to work to meet our seven Well-being Goals, including increasing the resilience of our ecosystems, while the Environment (Wales) Act 2016 enshrines the principles of the UN's Convention on Biological Diversity in law by adopting an ecosystems approach to how we manage our natural resources in future.

The Nature Recovery Plan will also set out the governance structure for the coordination of local nature-conservation action in Wales. This will replace the Local Biodiversity Action Plan process.

1.3.4 National Planning Policy

The Welsh Government's aims and objectives for nature conservation are set out in Planning Policy Wales (PPW – 9th Edition November 2016)) Chapter 5 and supported by the advice in Technical Advice Note (TAN) 5. It is clear from these policy documents that the protection and enhancement of landscapes, habitats and species are among the Welsh Government's priorities. **Policy 5.2.8** of PPW sets out how the planning system has an important part to play in meeting biodiversity objectives by promoting approaches to development which create new opportunities to enhance biodiversity, prevent biodiversity losses, or compensate for losses where damage is unavoidable. Local planning authorities must address biodiversity issues, insofar as they relate to land use planning, in both development plans and development management decisions. Local planning authorities should consider how they might accommodate a response to climate change as part of their overall approach towards meeting biodiversity objectives. Ways in which the adaptation needs of biodiversity could be considered include identifying the scope for minimising or reversing the fragmentation of habitats and improving habitat connectivity through the promotion of wildlife corridors. Local planning authorities should ensure that development minimises impact within areas identified as important for the ability of species to adapt and/or to move to more suitable habitats.

Policy 5.5.11 of PPW states that the presence of a species protected under European or UK legislation is a material consideration when a local planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat. Local planning authorities should advise anyone submitting a planning application that they must conform to any statutory species protection provisions affecting the site concerned, and should consult CCW (now incorporated into Natural Resources Wales) before granting permission. An ecological survey to confirm whether a

protected species is present and an assessment of the likely impact of the development on a protected species may be required in order to inform the planning decision.

Policy 5.5.12 relates to European Protected Species, and reminds us that developments are always subject to the legislation covering European protected species regardless of whether or not they are within a designated site. New developments for which development works would contravene the protection afforded to European Protected Species require derogations from the provisions of the Habitats Directive. A derogation may only be authorised if there is no satisfactory alternative and if the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in its natural range. The development works to be authorised must be for the purposes of preserving *'public health or safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment'*. Derogations are granted by a licence issued by Natural Resources Wales. Local planning authorities are under a duty to have regard to the requirements of the Habitats Directive in exercising their functions. **To avoid developments with planning permission subsequently not being granted derogations in relation to European protected species, planning authorities should take the above three requirements for derogation into account when considering development proposals where a European protected species is present.**

Planning Policy Wales is supported by Technical Advice Note (TAN) 5 which provides advice about how the land use planning system should contribute to protecting and enhancing biodiversity and geological conservation.

The **Development Management Manual 2016** also considers protected species as a material planning consideration. Section 9.4.13 states that the presence of a protected species is a material consideration when an LPA is considering a development proposal that, if carried out, would be likely to result in disturbance or harm to the species or its habitat. Section 9.4.14 adds that it

is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision.

1.3.5 Local Planning Policy

Local Development Plan Policies

The following are excerpts from the main LDP policies which relate directly to ecology and biodiversity.

KP16: Green Infrastructure

Cardiff's distinctive natural heritage provides a network of green infrastructure which will be protected, enhanced, and managed to ensure the integrity and connectivity of this multi-functional green resource is maintained.

Protection and conservation of natural heritage network needs to be reconciled with the benefits of development. Proposed development should therefore demonstrate how green infrastructure has been considered and integrated into the proposals. If development results in overall loss of green infrastructure, appropriate compensation will be required.

EN5: Designated Sites

Development will not be permitted that would cause unacceptable harm to sites of international or national nature conservation importance.

Development proposals that would affect locally designated sites of nature conservation and geological importance should maintain or enhance the nature conservation and/or geological importance of the designation. Where this is not the case and the need for the development outweighs the nature conservation importance of the site, it should be demonstrated that there is no

satisfactory alternative location for the development which avoids nature conservation impacts, and compensation measures designed to ensure that there is no reduction in the overall nature conservation value of the area or feature.

EN6: Ecological Networks and Features of Importance for Biodiversity

Development will only be permitted if it does not cause unacceptable harm to:

- (i) Landscape features of importance for wild flora and fauna, including wildlife corridors and 'stepping stones' which enable the dispersal and functioning of protected and priority species;
- (ii) Networks of importance for landscape or nature conservation.

Particular priority will be given to the protection, enlargement, connectivity and management of the overall nature of semi natural habitats.

Where this is not the case and the need for the development outweighs the nature conservation importance of the site, it should be demonstrated that there is no satisfactory alternative location for the development and compensatory provision will be made of comparable ecological value to that lost as a result of the development.

EN7: Priority Habitats and Species

Development proposals that would have a significant adverse effect on the continued viability of habitats and species which are legally protected or which are identified as priorities in the UK or Local Biodiversity Action Plan will only be permitted where:

- i. The need for development outweighs the nature conservation importance of the site;

- ii. The developer demonstrates that there is no satisfactory alternative location for the development which avoids nature conservation impacts; and
- iii. Effective mitigation measures are provided by the developer.

Where harm is unavoidable it should be minimised by effective mitigation to ensure that there is no reduction in the overall nature conservation value of the area. Where this is not possible, compensation measures designed to conserve, enhance, manage and, where appropriate, restore natural habitats and species should be provided.

Other relevant policies

The following policies contain elements which relate to green infrastructure and/or Biodiversity, and so may be invoked where a development proposal may impact upon nature conservation interests.

KP3(A): Green Wedge

In order to strategically manage the urban form of Cardiff and to protect the setting of the urban area, a Green Wedge is proposed on land North of the M4 as shown on the Proposals Map. Within this area development which prejudices the open nature of this land will not be permitted. Positive biodiversity, landscape, climate change mitigation and informal recreational management and enhancement measures will be encouraged in this area to further enhance the long term role of the area as a key natural resource benefitting the city.

KP7: Planning Obligations

The Planning Obligations Supplementary Planning Guidance (SPG) sets out the Council's approach to planning obligations when considering applications for development in Cardiff. It also sets out the mechanisms for securing survey, assessment, mitigation, compensation and enhancement of ecological and biodiversity interests.

KP15: Climate Change

To mitigate against the effects of climate change and adapt to its impacts, development proposals should take into account the following factors:

- i. Reducing carbon emissions;
- ii. Protecting and increasing carbon sinks;
- iii. Adapting to the implications of climate change at both a strategic and detailed design level;
- iv. Promoting energy efficiency and increasing the supply of renewable energy;
- v. Avoiding areas susceptible to flood risk in the first instance in accordance with the sequential approach set out in national guidance;
- vi. Preventing development that increases flood risk.

KP 18: Natural Resources

In the interests of the long-term sustainable development of Cardiff, development proposals must take full account of the need to minimise impacts on the city's natural resources and minimise pollution.

EN4: River Corridors

The natural heritage, character and other key features of Cardiff's river corridors will be protected, promoted and enhanced, together with facilitating sustainable access and recreation.

EN8: Trees, Woodlands and Hedgerows

Development will not be permitted that would cause unacceptable harm to trees, woodlands and hedgerows of significant public amenity, natural or cultural heritage value, or that contribute significantly to mitigating the effects of climate change.

1.3.6 Legislation

Certain pieces of nature conservation legislation place statutory duties upon Cardiff Council, including its planning function. Implementation of the nature conservation policies in the LDP will ensure compliance with these statutory duties. Where documents refer to EU legislation, this should be taken to mean any subsequent relevant legislation adopted by UK Government and/or Welsh Government post-Brexit.

Conservation of Habitats and Species Regulations 2010 (as amended).

This legislation is often referred to as the 'Habitats Regulations' and implements the EU Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora, and the 2009/147/EC Directive of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds. These are known as the 'Habitats Directive' and the 'new Wild Birds Directive', respectively.

The main link between this legislation and the planning system is Regulation 9(3), which states that *'Without prejudice to the preceding provisions, a competent authority, in exercising any of their functions, must have regard to the requirements of the Directives so far as they may be affected by the exercise of those functions.'* This means that as part of any Cardiff Council function, including its planning function, it must be ensured that the protection afforded to European Protected Species (EPS) or habitats, is in place.

Specific procedures relating to EPS and European designated sites are set out in more detail in relevant sections of this TGN.

Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000 and the Natural Environment and Rural Communities Act 2006)

The Wildlife and Countryside Act is the main legislation in the UK which sets out protection of species and designation of Sites of Special Scientific Interest (SSSIs). It also considers invasive non-native species, and control of hunting and trapping wild animals.

Specific procedures relating to UK protected species and SSSIs are set out in more detail in relevant sections of this SPG.

Natural Environment and Rural Communities (NERC) Act 2006

The Act is primarily intended to implement key aspects of the Government's Rural Strategy published in July 2004; it also addresses a wider range of issues relating broadly to the natural environment. The Act also makes provision in respect of biodiversity, pesticides harmful to wildlife and the protection of birds, and in respect of invasive non-native species. It alters enforcement powers in connection with wildlife protection, and extends time limits for prosecuting certain wildlife offences. It addresses a small number of gaps and uncertainties which have been identified in relation to the law on sites of special scientific interest. It also amends the functions and constitution of National Park authorities, the functions of the Broads Authority and the law on rights of way (DEFRA website September 2016).

Environment (Wales) Act 2016

The Environment (Wales) Act became law in 2016, and includes, among other things, a new Biodiversity and Resilience of Ecosystems Duty:-

‘(1) A public authority must seek to maintain and enhance biodiversity in the exercise of functions in relation to Wales, and in so doing promote the resilience of ecosystems, so far as consistent with the proper exercise of those functions.

(2) In complying with subsection (1), a public authority must take account of the resilience of ecosystems, in particular the following aspects—

- (a) diversity between and within ecosystems;*
- (b) the connections between and within ecosystems;*
- (c) the scale of ecosystems;*
- (d) the condition of ecosystems;*
- (e) the adaptability of ecosystems.'*

A further duty is that public bodies such as Cardiff Council will have to publish a report on how they intend to comply with the Biodiversity and Resilience of Ecosystems Duty before the end of 2017. By the end of 2019, and before the end of every third year after 2019, Cardiff Council will have to report on how it has achieved compliance with that duty.

These measures, together with those in the Well-being of Future Generations Act below, are intended to ensure that the Ecosystem Approach is put on a statutory footing in Wales.

Natural Resources Wales (NRW) has a duty set out in this Act to prepare and publish statements ("area statements") for the areas of Wales that it considers appropriate for the purpose of facilitating the implementation of the national natural resources policy. Each area statement must—

- (a) specify the priorities, risks and opportunities for sustainable management of natural resources which NRW considers need to be addressed in the area, and
- (b) state how NRW proposes to address them.

NRW must—

- (a) take such steps as appear to it to be reasonably practicable to implement an area statement, and
- (b) encourage others to take such steps.

The Welsh Ministers may direct a public body, such as Cardiff Council, to take such steps as appear to them to be reasonably practicable to address the matters specified in an area statement provided by NRW.

Specific procedures relating to Environment (Wales) Act Section 7 species are set out in more detail in relevant sections of this TGN.

Well-being of Future Generations (Wales) Act 2015

Public bodies such as Cardiff Council must set objectives which contribute to the Welsh Government's seven Well-being Goals. The most relevant goal (the 'Resilience' Goal) in the context of this TGN is:-

'A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support social, economic and ecological resilience and the capacity to adapt to change (for example climate change).'

Those objectives may include measures to ensure that the planning system in Cardiff contributes to the Resilience Goal.

Crime and Disorder Act 1998

Section 17 (1) of this Act states that *'Without prejudice to any other obligation imposed on it, it shall be the duty of each authority to which this section applies to exercise its various functions with due regard to the likely effect of the exercise of those functions on, and the need to do all that it reasonably can to prevent, crime and disorder in its area.'*

Crime in this instance can be taken to include wildlife crime, such as offences against protected species. This being the case, the Council's planning function, including the attachment of conditions which would prevent wildlife crime taking place, must be compliant with this legislation.

Other Legislation

There are other pieces of legislation which relate to nature conservation, but which do not directly impose duties upon Cardiff Council. Nevertheless, Cardiff Council expects those proposing development to comply with this legislation, and will seek to ensure this, where appropriate, in discharge of its duties under the Environment (Wales) Act, as set out above.

This legislation includes:-

- Protection of Badgers Act 1992
- Deer Act 1991
- Wild Mammals (Protection) Act 1996

1.4 General Procedure for Assessing Planning Applications in Relation To LDP Policies

1.4.1 Ecological Impact Assessment (EcIA) Procedure

In accordance with Policies **EN5**, **EN6** and **EN7**, the impact of a development proposal upon nature conservation interests must be assessed prior to determination of an application, as those interests, and the impacts upon them, may be a material consideration.

An Ecological Impact Assessment (EcIA) is the normal procedure by which impacts upon nature conservation interests on a site are assessed. An EcIA may relate to a number of habitats, species, ecological features or ecosystems present at a site.

Section 6.2.2 of TAN 5 advises that *'it is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. **It is considered best practice that such a survey is carried out before planning application is submitted.** Planning permission should not be granted subject to a condition that protected species surveys are carried out and, in the event that protected species are found to be present, mitigation measures are submitted for approval. However, bearing in mind the delay and cost that may be involved, developers should not be required to undertake surveys for protected species unless there is a reasonable likelihood of them being present. However, the level of likelihood that should trigger a requirement for developers to undertake surveys should be low where there is a possibility that European protected species might be present.'*

This is re-iterated in the **Development Management Manual 2016** which states at section 9.4.14 that it is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed

development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision.

BS42020 further advises that ideally, '*...all necessary detailed survey information should be part of the application it is first registered with the decision-maker*'. (Section 6.4.5).

Cardiff Council expects that all EclA, whether as a standalone assessment or as part of a wider Environmental Impact Assessment (EIA), must be carried out in accordance with the most recent edition of the '*Guidelines for Ecological Impact Assessment in the UK and Ireland*', published by the Chartered Institute of Ecology and Environmental Management (CIEEM). Currently the most recent edition is the Second Edition published in January 2016, and these are referred to as the '2016 EclA Guidelines'.

In addition, Cardiff Council expects that all EclA should conform to the British Standard BS42020:2013, entitled '*Biodiversity – Code of Practice for Planning and Development*'. This document advises that any assessment should be based on objective professional judgement informed by sound scientific method and evidence and be clearly justified through documented reasoning (BS42020 section 4.4.1).

Survey methodologies should accord with those set out in the CIEEM Sources of Survey Methods (SoSM) web pages, or the IEEM 'Guidance on Survey Methodology' document.

Where an EclA has been submitted, or the need for an EclA has been invoked, the County Ecologist should be consulted on that planning application.

The need for an EclA, and the scope of any ecological assessments, should be agreed with the County Ecologist at the earliest possible stage in the planning process. This is because surveys for certain species and/or habitats can often

only take place at certain times of year, and this may lead to significant delays in the planning process if the need for a survey is identified late in that process.

In determining the requirement for survey information, the Council will consider the known distribution of a species in Cardiff, the suitability of the habitat for that particular species and the likelihood that it will have been able to colonise that habitat.

Mindful of the costs and delays that the requirement for species and habitat surveys may cause, surveys will only be required where:-

- There are insufficient existing survey data, or
- The presence of a species or its usage of a site cannot reasonably be assumed, or
- Any eventual mitigation of the impacts of a project upon a given species would be dependent upon the outcome of a survey.

An approach based on assumed presence, otherwise referred to as 'worst case scenario' or 'minimal survey approach' should not be considered as the default standard but should be considered only in exceptional cases. If this approach is taken, planning applicants should be explicitly informed that (a) additional surveys may be necessary at the European Protected Species (EPS) licensing stage, if an EPS licence is necessary, and that (b) they may be providing more mitigation than would otherwise be required for the actual impact upon the species concerned. Because of the number of different species in Cardiff, and their complex lifestyles requiring a number of different roosting conditions, it is generally unlikely that an assumed presence approach will be appropriate in the case of bats.

Surveys in respect of a Regulation 61(1) Habitats Regulations Assessment may be required in order to provide the information referred to in Reg. 61(2), as set out in Policy EN5.

To aid consideration of development management operations in the light of nature conservation policy and legislation, a checklist is provided at Appendix

1.A. This checklist sets out a series of questions, which if followed should allow full consideration of the relevant policy and legislation. This checklist should be used on a precautionary basis, such that if there is any doubt as to impacts upon habitats, species or ecosystems, then the County Ecologist should be contacted for advice.

Environmental Impact Assessment (EIA)

Certain developments may require EIA, as set out in section 5.5.9 of PPW. The County Ecologist should be consulted on EIA screening and scoping requests. Where an EIA is required, the County Ecologist should be consulted on the ecological/biodiversity section of any Environmental Statement which results from that EIA.

Preliminary Ecological Appraisal (PEA)

Normally, the first stage of an EcIA is a Preliminary Ecological Appraisal (PEA) which is an initial assessment of the likely habitats, species and ecosystems at a site. This PEA will provide the scope for further surveys works that are needed. PEAs should be undertaken in accordance with the CIEEM Guidelines for Preliminary Ecological Appraisal 2013. Where there is good reason to believe that the likely habitats, species and ecosystems at a site can be accurately predicted, then the PEA stage may be omitted in favour of proceeding to a full EcIA.

Desktop Studies

The assessment of impact of a proposal upon nature conservation interests must take account of existing data on the presence and distribution of species in the area. These data, or 'records', are held by the South East Wales Biodiversity Records Centre (SEWBRc). All EcIA reports should set out how data have been supplied by SEWBRc and considered in any assessment. For the avoidance of doubt, it is not acceptable to rely solely upon data provided

by the National Biodiversity Network (NBN) Gateway – where data are needed, these must be provided by SEWBRc in the first instance.

Consideration of Ecosystems

The 2016 EclA Guidelines make it clear that an EclA should consider the impacts upon ecosystems, as well as habitats and species. Statements to this effect are found throughout the document, for example at sections 1.3, 1.9, 2.3, 4.1 and 4.8 etc. All EclA's submitted to Cardiff Council should demonstrate how the impacts upon ecosystems have been assessed, in accordance with the 2016 EclA Guidelines. This will allow Cardiff Council to demonstrate compliance with the ecosystem approach as required by the legislation referred to above.

Mitigation Hierarchy

Where it is predictable that a development proposal will impact upon nature conservation interests, the 'mitigation hierarchy' should be applied as follows (adapted from British Standard BS42020):

- Information – sufficient information should be provided as to allow proper assessment of the impacts of a proposal
- Avoidance – where possible, potential impacts upon nature conservation interests should be avoided, in terms of location, methods and timing of works, noting that retention of habitats and species on a development site does not always constitute avoidance of harm to them
- Mitigation – where adverse impacts cannot be avoided, mitigation measures should be introduced to minimise or counteract them.
- Compensation – where residual adverse impacts remain after mitigation measures have been implemented, it may be necessary to secure compensatory provision, for example, of new habitats
- Enhancement – all development should seek to enhance habitats for wildlife

Normally, the principles of mitigation should be agreed at the planning decision stage, with a condition attached to any consent requiring a more detailed mitigation strategy. However, the exact balance of the extent of information which is required before consent or as a condition of consent, will be determined on a case-by-case basis. For further advice on this aspect, refer to Section 9.2 of BS42020.

Offsetting

Where offsetting mechanisms exist in the Cardiff area, consideration should be given to whether an offsetting scheme will result in a better outcome for nature conservation interests than more traditional elements of the mitigation hierarchy.

Surveyor competencies and standards

Surveys should be carried out by a suitably qualified and experienced ecologist, with the appropriate licences if necessary, using appropriate methodology and techniques. Ecological consultants submitting EclA's should preferably hold membership of a professional body such as the Chartered Institute of Ecology and Environmental Management (CIEEM). Where they do not hold this membership, they should still act in accordance with the CIEEM Code of Conduct (See Section 4.2 of BS42020). We recommend that reference is made to the relevant survey methods listed in the CIEEM Sources of Survey Methods document, as part of the CIEEM Technical Guidance Series.

Ecological surveyors should meet the level of competency for each of the species/groups that they are surveying, as set out in the CIEEM Competencies for Species Survey documents. Surveyors should be able to demonstrate that they have the necessary training, skills and experience, required. They should also be able to adapt their approach to survey and mitigation where necessary, allowing deviation from published guidance if it can be supported by reasoned justification (Section 6.3.7 of BS42020).

Survey Timing

Table 1 below provides a rough guide to the times of year that surveys can be undertaken for features which may be affected by development. Survey work should be carried out at a time of year which gives the maximum likelihood of encountering the species concerned. Whilst any of the species listed below may be encountered at any time of year under extreme circumstances (such as abnormal weather conditions), these unusual occurrences do not mean that surveys can take place at any time of year.

Data Shelf-life

As a general principle, survey work which is more than 2 years old will be regarded with caution, as certain species may colonise or leave an area in the interim period. This is particularly the case with mobile species such as bats, and bat surveys greater than 2 years old will have to be repeated. A planning condition should normally be attached stating that survey work should be repeated if works which may affect the species concerned haven't taken place within two years of the date of the most recent survey:-

Condition: If site clearance in respect of the development hereby approved does not commence (or, having commenced, is suspended for more than 12 months) within 2 years from the date of the most recent survey for XXX Species, the approved ecological measures secured through (other planning conditions) shall be reviewed and, where necessary, amended and updated. The review shall be informed by further ecological surveys commissioned to i) establish if there have been any changes in the presence and/or abundance of XXX Species and ii) identify any likely new ecological impacts that might arise from any changes.

Where the survey results indicate that changes have occurred that will result in ecological impacts not previously addressed in the approved

scheme, the original approved ecological measures will be revised, and new or amended measures, and a timetable for their implementation, will be submitted to and approved in writing by the local planning authority prior to the commencement of development. Works will then be carried out in accordance with the proposed new approved ecological measures and timetable.

Reason: To ensure that the assessment of the impacts of the development upon the species concerned, and any measures to mitigate those impacts, are informed by up-to-date information.

Table 1. General guide to survey timing.

Survey \ Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Vegetation / habitat	Sub-optimal survey period			Optimal survey period						Sub-optimal survey period			
Otter	Surveys possible				Surveys may be limited by vegetation cover					Surveys possible			
Dormouse	Gnawed hazelnut search			Nest tube / box survey							Gnawed hazelnut search		
Bats (Activity / Summer Roost)	Surveys not possible			Sub-optimal	Optimal survey period				Sub-optimal	Surveys not possible			
Bats (Hibernation roosts)	Optimal survey period		Sub-optimal	Surveys not possible							Sub-optimal	Optimal	
Preliminary bat roost likelihood assessment	Assessment possible year-round (though may indicate that a further specific roost survey is needed, which can only take place as above)												
Water Vole	Surveys possible				Surveys may be limited by vegetation cover				Surveys possible				
Badger	Surveys for badger signs possible year-round												
Great Crested Newt	Surveys not possible		Optimal survey period (Breeding adults)			Sub-optimal survey period (adults and larvae)				Surveys not possible			
Reptiles	Surveys not possible		Optimal survey period			Sub-optimal survey period			Optimal	Sub-optimal	Surveys not possible		
Breeding birds	Surveys not possible		Main breeding bird period						Surveys not possible				
Overwintering and Migratory Birds	Overwintering and migratory survey period			Surveys not possible						Overwintering and migratory survey period			
Invertebrates	Surveys not possible			Optimal survey period						Surveys not possible			
Fungi									Optimal survey period				
Freshwater Crayfish	Surveys not possible			Sub-optimal			Optimal survey period				Surveys not possible		

Data Format

In order to help us to better analyse the data obtained in survey work, it would be helpful if these data were presented in spreadsheet format (i.e. MS Excel) as well as in the usual tabular form in the context of text reports. In accordance with section 6.11.1 of BS42020, original field and desk-top data should be available for scrutiny and verification. Furthermore, there should be an undertaking to allow these data to be supplied to the local records centre SEWBRc, and incorporated into the Cardiff Biological Database in accordance with Section 6.4.7 of BS42020.

Enhancements

In accordance with the BRE duty, as set out above, Cardiff Council has to consider how enhancements to the natural environment can be brought forward in development.

Furthermore, section 5.2.8 of Planning Policy Wales states that:- *'The planning system has an important part to play in meeting biodiversity objectives by promoting approaches to development which create new opportunities to **enhance biodiversity**, prevent biodiversity losses, or compensate for losses where damage is unavoidable.'*

Polices **EN5** and **EN7** of the LDP both reflect this, setting out respectively:-

*'Development proposals that would affect locally designated sites of nature conservation and geological importance should maintain or **enhance** the nature conservation and/or geological importance of the designation.'*

and,

*‘Where harm is unavoidable it should be minimised by effective mitigation to ensure that there is no reduction in the overall nature conservation value of the area. Where this is not possible, compensation measures designed to conserve, **enhance**, manage and, where appropriate, restore natural habitats and species should be provided.’*

In terms of specific enhancement features, nesting or roosting opportunities for birds and bats should be incorporated into new build, in accordance with the advice given in ‘Designing for Biodiversity: A Technical Guide for New and Existing Buildings, Second Edition. RIBA Publishing, London. Gunnell, K. et al., 2013’, or most recent subsequent edition thereof. ’

Where amphibians are known or likely to occur on a site, drainage systems which involve roadside gulley pots are likely to trap and kill them, so there are a range of measures which can be used to prevent this. These include inset kerbs, offset gulley pots or ‘amphibian ladders’ within gulley pots.

In accordance with the Pollinator Action Plan for Wales, and with any local Pollinator Action Plan for Cardiff which is adopted, every effort should be made to allow wildflowers to develop on roadside verges, parks, attenuation basins, and any other greenspaces. The design of these areas should allow wherever possible for access for ‘cut and lift’ machinery, as cutting wildflower areas at an appropriate time of year, and removing the arisings, is important in maintaining these areas.

Local Nature Conservation Priorities

Local nature conservation priorities, be they species, habitats, ecosystems or green infrastructure, will be set out in a Local Nature Plan or similar process as advised by the Wales Nature Recovery Plan. Development proposals will be expected to take account of these priorities, along with any actions required to further the conservation and enhancement of these priorities.

Monitoring of Mitigation Measures, and Remediation

In accordance with sections 11.2.3.3 to 11.2.3.5 of BS42020, monitoring of the effectiveness of mitigation measures should be undertaken, as secured by planning condition. Where the results of monitoring show that mitigation aims an objectives are not being met, a monitoring report should set out how contingencies and/or remedial action are to be identified, together with a timeframe for implementation. These actions should be agreed with the decision-maker, and then implemented in accordance with that timeframe. A draft planning condition to this effect is set out in Section D.4.2 of BS42020..

Other Local Authority Consents

The statutory duties which apply to the granting of planning consent also apply to other forms of consent that Cardiff Council has the power to grant. For example, the Regulation 9 duty to have regard to the EU Habitats Directive in the exercise of functions also applies to Demolition Notices, Tree Preservation Orders (TPO's), Listed Building Consent, and Conservation Area Consent (Section 9.5.2 of BS42020). In all cases, early consultation with the County Ecologist is advised so that any potential constraints are identified.

1.4.2 European Protected Species (EPS)

Policy EN7: Priority Habitats and Species

In accordance with Regulation 9(3) of the Conservation of Habitats and Species Regulations 2010 (as amended), Cardiff Council has a duty to have regard to the requirements of the Habitats Directive so far as they may be affected by the exercise of its functions. The requirements in this case being the strict protection afforded to EPS.

EPS in Cardiff include all bat species, the Otter, the Dormouse and the Great Crested Newt.

In relation to EPS, section 5.5.11 of Planning Policy Wales advises '*The presence of a species protected under European or UK legislation is a material*

consideration when a local planning authority is considering a development proposal which, if carried out, would be likely to result in disturbance or harm to the species or its habitat. Local planning authorities should advise anyone submitting a planning application that they must conform with any statutory species protection provisions affecting the site concerned, and should consult NRW before granting permission. An ecological survey to confirm whether a protected species is present and an assessment of the likely impact of the development on a protected species may be required in order to inform the planning decision.'

Furthermore, section 5.5.12 advises:- *'To avoid developments with planning permission subsequently not being granted a derogation in relation to European protected species, planning authorities should take the three requirements for a derogation into account when considering development proposals where a European protected species is present'.*

Similarly, section 6.3.7 of Technical Advice Note 5 states:- *'It is clearly essential that planning permission is not granted without the planning authority having satisfied itself that the proposed development either would not impact adversely on any European protected species on the site or that, in its opinion, all three tests for the eventual grant of a regulation 44 licence are likely to be satisfied. To do otherwise would be to risk breaching the requirements of the Habitats Directive and regulation 3(4). It would also present the very real danger that the developer of the site would be unable to make practical use of the planning permission which had been granted, because no regulation 44 licence would be forthcoming.'*

The three tests referred to are:

- That the derogation licence is for preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment (Reg. 53 (2)(e))

- That there is no satisfactory alternative (Reg. 53 (9(a)); and
- That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range (Reg. 53 (9)(b)).

These three tests should be taken into consideration during the planning decision, and Natural Resources Wales (NRW) should be consulted regarding the third test.

The interpretation which has arisen through caselaw is that in order to comply with its Regulation 9(3) duty, a Competent Authority such as Cardiff Council must first ascertain whether an activity which it is empowered to regulate would cause an offence under the Habitats Regulations, and secondly whether NRW would be likely to grant a licence to allow that activity to proceed legally.

In reality, the grant of such a licence would require consideration of the three tests as above, two of which (the 'imperative reasons' test and the 'satisfactory alternatives' test) are addressed in consultation with the Local Planning Authority (i.e. Cardiff Council), so effectively consultation of NRW at the planning stage is to ascertain whether the remaining test, the 'favourable conservation status test', would be met.

Evidently, if Cardiff Council is of the view that there are no imperative reasons of overriding public interest that a development should take place, or that there are alternatives to the development which would have a lesser or no effect upon an EPS, then it is prudent to take account of that view at the planning decision stage, rather than granting consent and subsequently advising NRW that a licence should not be issued because one or both of these tests have not been met.

Favourable Conservation Status at a National level has not been determined for the EPS which occur in Cardiff. Therefore, the assumption is made that if

no detriment occurs to the local conservation status of the species at a site level, then no detriment to National Favourable Conservation Status will have occurred.

Where NRW have been consulted on a planning application and have formally objected to that application, it will be assumed that they consider that the test of favourable conservation status (the 'third test') would not be met, such that they would not grant a licence for the proposed activity.

In this instance, the application should either be refused in accordance with section 5.5.12 of Planning Policy Wales, or the scheme should be amended such that, taking into account mitigation measures, there would be no adverse effect on the favourable conservation status of the EPS concerned.

Certain activities may not require an EPS licence issued by NRW in order to proceed, but may nonetheless adversely affect the favourable conservation status of a species. For example, mature hedgerows which bats may not use as breeding sites or resting places, may nonetheless be important features for foraging, commuting between roosts, or for navigation. Where such features are likely to be impacted by a proposed development, NRW may formally submit an objection to that proposal.

The need for an EPS survey should be established in consultation with the County Ecologist. Where a survey for any EPS has taken place in respect of a planning application, the County Ecologist should be consulted on the survey report, even if it reports a negative result.

Where surveys reveal the presence of EPS on the site of a planning application, then NRW must formally be consulted on that application.

EPS and Applications for Prior Approval

Where prior approval is sought for an activity which benefits from Permitted Development Rights, the procedure in relation to EPS is set out in:-

Development Management Manual Revision 1 November 2016 Section 3
Annex – ‘Application of the Habitats Directive to the Process of Prior Approval’.

Use of Planning Conditions to Require Proof of Protected Species Licence.

In July 2004 all LPAs in Wales received a letter from the Welsh Assembly Government reminding them of their duties in respect of European Protected Species (EPS), and asking that they attach the following planning condition to any consent.

The condition reads:

"Where any species listed under Schedules 2 or 4 of The Conservation (Natural Habitats, &c.) Regulations 1994 is present on the site [or other identified part] in respect of which this permission is hereby granted, no works of site clearance, demolition or construction shall take place in pursuance of this permission unless a licence to disturb any such species has been granted in accordance with the aforementioned Regulations and a copy thereof has been produced to the local planning authority."

The letter further states that ‘... *it is essential that you attach it as appropriate when granting new planning permissions to ensure that animal and plant species which come within the terms of the Regulations are effectively protected.*’

The regulations quoted in that letter have since been amended, but an LPA duties in respect of EPS remains the same. British Standard 42020:2013 ‘Biodiversity – the Code of Practice for Planning and Development’ updates the wording of this condition of this condition in the light of amendments to the legislation, in section D.6.2 of that document:-

‘The following works [...state the specific works or activity likely to cause harm to particular protected species ... and as identified in plan/drawing/specification X...] shall not in any circumstances commence unless the local planning authority has been provided with either:

- a) a licence issued by [the relevant licensing body] pursuant to Regulation 53 of The Conservation of Habitats and Species Regulations 2010 authorizing the specified activity/development to go ahead; or*
- b) a statement in writing from the relevant licensing body to the effect that it does not consider that the specified activity/development will require a licence.’*

This template condition is one of a series of such templates set out in BS4202, each of which has been subject to legal scrutiny and satisfies the ‘six tests’ for planning conditions as required by guidance.

There is a view (for example Circular WGC 016/2014: Use of Planning Conditions for Development Management) that a planning condition such as this should not be used, as it duplicates other controls. A number of reasons are set out below why this is not correct, and that such a condition is appropriate.

- The 2014 circular explains in section 1.10 that *‘Unless otherwise stated, this circular does not seek to replace advice in Planning Policy Wales or on specialist matters set out in other circulars and TANs, some of which may also contain suggested wording for conditions.’* As below, section 6.2.2 of TAN5, and the 2004 circular both speak of the need for a planning condition requiring proof of an EPS licence, and so are not replaced by the WGC 016/2014 circular.
- It is a legal requirement under Regulation 53 of the Habitats Regulations that an EPS licence must be obtained in order to undertake works which may otherwise contravene Regulation 41, whereas a condition requiring proof that a licence has been obtained is in discharge of a competent

authority's duty under Regulation 9(3). Therefore, there is no duplication, as the licence is to allow work to proceed legally, whereas the condition is to demonstrate that the LPA has adequately considered the Habitats Directive in the exercise of its functions.

- Section 17 of the Crime and Disorder Act 1998 (the CDA) states that *'Without prejudice to any other obligation imposed on it, it shall be the duty of each authority to which this section applies to exercise its various functions with due regard to the likely effect of the exercise of those functions on, and the need to do all that it reasonably can to prevent, crime and disorder in its area.'* The crime referred to includes wildlife crime, such as, for example, causing harm to EPS and their breeding sites and resting places, without an EPS licence. Therefore, a condition requiring proof that a required EPS licence has been obtained serves to assure an LPA that an offence under the Habitats Regulations would not be committed, and thereby discharges its duty under the CDA as above.
- The advice to avoid planning conditions which duplicate other controls arises from a guidance circular, whereas the duty to consider European Protected Species in respect of development arises from primary legislation, which itself enacts a European Directive, and thus outweighs a circular.

There is also caselaw to the effect that conditions requiring an EPS licence to be obtained, can be attached:-

- In the 'Halkyn' Judgement (Case No: CO/1872/03, Duke of Westminster Settlement –v- Welsh Assembly Government) which related to an EPS (Great Crested Newts) Mr Justice Pitchford stated at point 114:- *'Furthermore, the planning authority can, in an appropriate case, impose a condition that the developer may not proceed without a regulation 44 licence'*, setting a precedent to the effect that planning conditions such as this can be attached.

This precedent has been incorporated into planning policy:

- Section 6.2.2 of TAN 5 (2009) states:- *'In appropriate circumstances, the permission may also impose a condition preventing the development from proceeding without the prior acquisition of a licence under the appropriate wildlife legislation.'*
- Section 99 of Government Circular 06/2005 states:- *'In appropriate circumstances the permission may also impose a condition preventing the development from proceeding without the prior acquisition of a licence under the procedure set out in section C below.'*

There is also specific NRW advice to the effect that conditions requiring an EPS licence to be obtained, can be attached.

- The October 2015 NRW Approach to Bats and Planning: Good Practice Guide, recommends in the flow-chart at Annex 2 that *'The LPA includes conditions or planning obligations to secure measures required to avoid disturbance, AND requires a copy of the licence issued by NRW to be submitted to the LPA, or confirmation from NRW that a licence is not required'*.

Finally, an LPA in Wales has statutory duties in relation to nature conservation, and requiring proof that an EPS licence has been obtained where necessary, is compliant with those duties:-

- Each LPA in Wales has a duty under Section 6 of the Environment (Wales) Act 2016 to seek to maintain and enhance biodiversity in the exercise of its functions and in doing so to promote the resilience of ecosystems. Were an LPA to grant planning consent for a development which adversely affected an EPS and/or its habitat, because an EPS licence had not been obtained, it would be difficult to argue that that LPA

had sought to maintain and enhance biodiversity, without having assured itself that the appropriate licence was in place.

1.5 Specific Procedure Guides

1.5.1 Bats

Policy EN7: Priority Habitats and Species

Summary of Main Points

- Protected Species such as bats are a **material consideration** in the planning process
- All information needed to assess the impacts of a planning application upon bats must be **available when the planning decision is made**
- This information may need to include the results of a survey for bats, and these can only be undertaken at **certain times of the year**
- Planning guidance reminds us that it is **not generally acceptable to require protected species surveys to be provided as a condition of consent**
- Therefore **early dialogue** between someone considering making a planning application, and the Cardiff Council planning service, is advised, so that all necessary survey reports are **provided when the planning application is submitted**
- A roost which has been used by bats is protected whether it is occupied or not

Section 5.139 of Policy EN7 of the adopted Cardiff LDP states that:- *‘Development proposals that have the potential to cause a significant adverse effect on priority habitats and species will need to be accompanied by an ecological survey and an assessment of the likely impact of the development on the protected species. The need for such assessments will be undertaken at the appropriate time of year, in accordance with the Council’s Biodiversity SPG.’*

The priority species referred to in this policy include all bat species in Cardiff, and the development proposals referred to include works to buildings, which may be used by bats for roosting. Therefore this Technical Guidance Note is intended to provide guidance on how this policy will be implemented in relation to planning applications which affect existing buildings. For applications which affect trees, caves or wider landscape features such as hedgerows, woodland, waterbodies, the Cardiff Council Ecologist should be consulted for advice.

Bats in Cardiff

Bats are found throughout Cardiff, and there is nowhere in Cardiff that bats are not found. Most of the bat species found in the UK have been recorded in Cardiff. In central urban areas, species of Pipistrelle bat tend to be the most common, whereas rarer species such as Greater and Lesser Horseshoe Bats are generally confined to the rural areas. Although larger, older buildings tend to present more roosting opportunities, modern buildings may also support bat roosts. Certain species are more likely to be found in houses than others, but all species receive equal protection.

Different species use buildings in different ways. Brown long-eared bats for example tend to roost in roof voids such as attics, and droppings and feeding remains will be evident below their perch. Pipistrelle bats on the other hand tend to roost in crevices in the structure of a roof or wall, and therefore may not be easily detectable. With crevice-dwelling bats, any signs of their presence may remain in the structure of the feature they are using, such as between inner and outer roof linings, or in cavity walls. Therefore, internal inspections of buildings may not detect them, in which case only emergence/re-entry surveys are valid.

As well as roosting sites, bats need access to foraging areas, which include woodland, wetlands, meadows, roadside verges, railway embankments and hedgerows. Buildings which are closer to these features are more likely to support roosting bats than those which are further away.

Development Control Procedure

The procedure Cardiff Council will use in considering whether an individual planning application has the potential to affect bats in this way, and to decide whether a bat survey is needed in order to comply with this policy, is set out in the interactive bat protocol found at http://www.biodiversityplanningtoolkit.com/bats/bio_bats.html Appendix 1 to this document presents a simplified flow diagram which accompanies the interactive protocol. The following notes are intended to aid interpretation of that protocol.

Implementation of this procedure in relation to minor or householder planning applications is the responsibility of the DC Case Officer. The County Ecologist will

advise in relation to major planning applications. For all applications, where surveys reveal that bats are present in a property, then the County Ecologist should be consulted.

Table 2 below should be used as a guide to which types of building are likely to support bats, to which activities are likely to affect bats if present, and to whether Cardiff Council planning service is likely to require a survey to be undertaken. Surveys will also be required where a building or structure is known to support a bat roost, but the most recent survey is more than two years old.

It is recognised that, in theory, bats may inhabit any type of building, and that any type of work to that building may affect bats. However, it is not practical or desirable within the limits of an efficient planning system to require a bat survey for every planning application for every type of work to every type of building. Therefore a coarse filter is required to help determine whether an activity is likely to disturb bats, in which case a bat survey is needed, or whether the likelihood of significant disturbance is low, such that an advisory note can be provided to the applicant.

Table 2. Screening Matrix for works to buildings which may affect bats.

Activity \ Building type ¹	Brick/stone Farm Buildings or churches	Buildings with weather boarding/hanging tiles	Pre-1960 buildings within 200m of woodland or water	Pre-1914 buildings within 400m of woodland or water	Pre-1914 buildings with gable ends or tiled roof	Buildings within or immediately adjacent to woodland or water	Buildings or structures ² not falling within any of these categories	Dutch barns or livestock buildings with single skin roof
Demolition/removal of building, or part thereof	Survey	Survey	Survey	Survey	Survey	Survey	Survey	Advisory
Modification of roof not covered by the above, including re-roofing	Survey	Survey	Survey	Survey	Survey	Survey	Advisory	Advisory
Internal conversion /refurbishment/ change of use affecting loft or roof void	Survey	Survey	Survey	Survey	Survey	Survey	Advisory	None
Any extension affecting roof, including hip-to-gable conversion	Survey	Survey	Survey	Survey	Survey	Survey	Advisory	None
Attachment of lighting or wind turbine to roof	Survey	Survey	Survey	Survey	Survey	Survey	Advisory	None
Attachment of exterior cladding or insulation to building	Survey	Advisory	Advisory	Advisory	Advisory	Advisory	None	None
Re-pointing, rendering, or repairs to soffits, fascias or barge-boards	Survey	Advisory	Advisory	Advisory	Advisory	Advisory	None	None

Installation dormer windows	Survey	Advisory	Advisory	Advisory	Advisory	Advisory	None	None
Installation of Velux windows or rooflights	Survey	Advisory	Advisory	Advisory	Advisory	Advisory	None	None
Installation of solar panels	Survey	Advisory	Advisory	Advisory	Advisory	Advisory	None	None
Internal conversion /refurbishment/ change of use not affecting loft, roof void or cavity wall	Advisory	Advisory	Advisory	Advisory	Advisory	Advisory	None	None

¹ Buildings include dwellings, schools, hospitals, places of worship, factories, castles, stately homes, shops, garages, light industry units, business park buildings, office buildings, farm buildings etc.

²Tunnels, mines, adits, ice-houses, lime kilns, bridges, aqueducts, viaducts, air-raid shelters, cellars, unused industrial chimneys etc.

Bat Surveys

When submitting a planning application is being considered, early discussion between the planning service and prospective applicant is advised, because if certain surveys are needed, these can only be undertaken at certain times of the year (See Table 1, above). As set out in section 6.2.2 of TAN 5, it is considered best practice that surveys are carried out **before** the planning application is submitted.

A preliminary roost assessment should normally be undertaken, as this can take place at any time of year. However, if the application is submitted from May to August inclusive, it may be more advantageous for the applicant to omit the preliminary assessment and proceed directly to a full survey. Similarly, if there are known records of bats being present in a building or high likelihood of their being present, it may be more advantageous for the applicant to omit the preliminary assessment and to wait until the appropriate time of year to have a full survey.

The types of outcome of a preliminary roost assessment include:-

- an adverse impact upon bats is so unlikely that no further action in relation to bats is necessary
- the likelihood of an impact is low, such that precautionary mitigation measures can reduce this likelihood still further
- the likelihood of an impact upon bats is high, so further survey are needed in order to establish exactly what the impact would be
- the outcome is uncertain due to, for example, lack of access to certain areas of the building, so further survey are needed in order to establish exactly what the impact would be
- the impact is certain and can be defined precisely on the basis of the preliminary assessment, such that no further surveys are needed, but a

licence issued by NRW would be required to allow works to proceed legally

Where surveys or further surveys are indicated, but the results of those surveys would not be available within the statutory period for determination of an application, then the application should either be withdrawn by the applicant, or refused on the basis that there is insufficient information to allow the application to be determined whilst having regard to the provisions of the Habitats Directive.

If it is not possible to carry out a summer emergence/re-entry survey for bats, the applicant should seek advice from their consultant ecologist as to whether it is possible to undertake a fingertip search of all likely bat roosting areas and access points. These should include: all rooms, all roof voids, all cellars, basements or boiler-rooms, all soffits, fascias and bargeboards, any gable end apex points, lead flashing, hanging tiles or weatherboards, gaps in mortar, mortice joints, cracks and holes in roof timbers, and any other features likely to allow bat access, plus a visual inspection of all roof tiles and ridge tiles. Any potential access points should be closely examined for signs of bat use, such as fur/urine staining, droppings, smells, scratch marks, absence of cobwebs and any other signs of bat use.

Survey Standards

Surveys for bats should be undertaken by suitably qualified and experienced ecological consultants. Normally, ecological consultants should hold membership of a professional body such as the Chartered Institute of Ecology and Environmental Management (CIEEM). The CIEEM Professional Directory lists members who are qualified to undertake bat surveys. In addition, ecological consultants should be able to demonstrate that they meet the CIEEM competencies set out in the CIEEM '*Competencies for Species Survey: Bats*'.

Survey methodology should adhere to Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.) The Bat

Conservation Trust, London., or the most recent subsequent edition. Where deviation from this methodology is proposed, it should be supported by a reasoned justification based upon published evidence.

The CIEEM document '*What to Expect From a Bat Survey - A Guide for UK Homeowners*' should be made available to those who have been advised to commission a bat survey, as it provides useful advice on the bat survey process. It is available in English and Welsh.

A report on the bat survey should be submitted which accords with BS42020, NRW advice on a suitable bat report, and CIEEM report writing guidance.

Survey Licensing

Surveys of bats in flight using bat detectors do not need a licence, but where internal inspections of buildings, for example in attics, are needed, then those surveys may cause disturbance to bats. In this instance, the bat surveyor should be able to demonstrate that they have a licence issued by NRW to allow that disturbance to take place legally in the context of a survey. For the avoidance of doubt, a licence issued by Natural England, Scottish Natural Heritage, or any other agency, does not permit a surveyor to disturb bats as part of a survey in Wales – a licence issued by NRW is required for all such surveys in Cardiff.

Survey Timing

Preliminary roost assessments can take place at any time of year, and this can give an indication of whether bats are likely to be using a building as a roost. A preliminary assessment may also find signs of bat use such as bats themselves, their droppings or their feeding remains etc. However, in most cases, a flight survey will be needed to confirm where the bats are accessing the building concerned, which species of bats are present, how many of them there are, and for what purpose they are using the building. These flight surveys involve observing bats leaving the building at dusk, and then re-entering the building

just before dawn. These emergence/re-entry surveys, can only be carried out during the bats' active season, which is roughly between March and October. However, the formation of a maternity roost is a critical element of bats' lifecycle, and this normally takes place between May and August inclusive. Therefore surveys which take place during March and April, or during September and October, may not detect a maternity roost, because they may not have formed, or may have dispersed from, their maternity roost. This being the case, unless it can be evidenced that the presence of a maternity roost is unlikely, **all emergence/re-entry surveys must be carried out between May and August inclusive.** This timing constraint must be considered when submitting or considering a planning application.

Mitigation of Impacts upon Bats

Where a proposed development may affect bats or their breeding sites or resting places, those effects will need to be avoided, mitigated or compensated for. Where effects cannot be avoided, it is likely that a licence will be required from NRW, to allow those works to proceed legally, as set out below. In order to demonstrate compliance with Regulation 9, as well as to ensure that planning consent is not granted for a development which would not subsequently receive an EPS licence, the principles of any mitigation measures need to be agreed prior to granting planning consent. The level of detail required to be sure at the determination stage that mitigation will be adequate, will be determined on a case-by-case basis.

Generally, loss of smaller roosts can be offset by the provision of manufactured bat roosts in the form of 'bat boxes' or 'bat bricks' or similar, either incorporated into buildings or attached to buildings or trees. Loss of maternity roosts cannot generally be offset by the provision of bat boxes. For larger roosts or maternity roosts, it may be more appropriate to provide access points such that bats can enter a new roof void or cavity wall. In certain cases, it may be necessary to construct a bespoke 'bat house' for the sole use of bats, and there are examples of this in Cardiff.

Where a bat roost has not been detected, but there remains a low risk of their being present, or if a roost survey is not conclusive, then a range of precautionary measures can be introduced in order to further reduce the risk of harm or disturbance to bats. These precautionary measures include:-

- Timing of works to avoid bats' maternity and hibernation seasons
- Giving tool-box talks to site operatives such that they are aware that bats may be present
- 'soft-stripping' of features such as roof tiles, soffits, barge-boards, fascias etc, and any other features which bats may use to roost or to access a roost
- Having an ecologist on call in case bats are found during demolition, etc. If bats are found during these works, they should stop immediately and Natural Resources Wales contacted for advice
- Incorporating enhancement measures for bats, such as bat bricks, bat tiles or providing bat access to roof voids
- A final pre-demolition internal inspection of the roof void of the building
- Repeat of the bat survey if works do not take place within one year of the most recent survey

Development Licensing

Where bats are roosting in a building, and the proposed works to that building would adversely affect the roost or the bats themselves, then in most cases a licence is required from NRW to allow those works to proceed. This is because to do so otherwise would lead to an offence under the legislation which protects bats. A licence will not normally be issued until planning consent has been granted. However, to avoid the situation whereby planning consent is granted but works cannot proceed because NRW will not issue a licence, the planning service in Cardiff Council should consider the likelihood that NRW will issue a licence, when the planning decision is made. In practice this means that we have to consider the same three tests when we determine a planning

application that NRW has to consider when looking at a licence application. This approach is set out in section 5.5.12 of PPW and section 6.3.6 of TAN5.

One of these tests is that the proposed activity will not compromise the Favourable Conservation Status (the 'FCS') of the species concerned. Only NRW can advise on whether this would be the case, which is why **it is essential to consult NRW as soon as a report is received which confirms that bats are roosting in a building** which is the subject of a planning application. If NRW are of the view that FCS cannot be maintained, then the proposals should be altered or the application should be refused. In most cases however, it is possible to find a form of mitigation or compensation which maintains FCS, and which allows NRW to confirm that they would grant a licence for the proposed works, if planning consent were granted. If the Cardiff Council planning service believes that either of the other two licensing tests would not be met, then planning consent could also be refused on those grounds. Those tests are that there are no satisfactory alternatives to the proposed development, or that there are 'imperative reasons of overriding public interest' (the 'IROPI' test) that the proposed development should proceed.

In practical terms this means that it is essential that all survey information and details of mitigation of any impacts upon bats are considered at the time that the planning application is determined. Section 5.5.11 of PPW reminds us that the presence of a protected species is a material consideration in the planning decision. Therefore **it is not generally possible to require that surveys are provided as a condition of a planning consent**, apart from in exceptional circumstances, and these are listed in section 9.2.4 of BS42020.

In their good practice guide entitled '*NRW Approach to Bats and Planning*', NRW set out those cases which they consider to be 'lower risk' and how they will approach consideration of those cases. Lower risk cases are those which **do not** involve:-

- Maternity roosts
- Hibernation roosts

- Greater or Lesser Horseshoe bats, Barbastelles, Bechstein's, Grey Long-eared, Leisler's, Serotine or Nathusius' Pipistrelle bats
- Buildings with three or more of any bat species
- Mating or swarming roosts identified as being important.

In these cases, NRW consider that development is not likely to be detrimental to the Favourable Conservation Status of the species concerned, provided the recommendations of a suitable bat report are implemented. The guidance goes on to describe what NRW would consider to be a 'suitable bat report'. In such cases, it is not necessary to consult NRW. If that report concludes that the development would be likely to cause an offence in law, then a licence from NRW would still be needed

Demolition Notices

The administration of the Prior Notification of Demolition process is a function in the context of Cardiff Council's duty under Reg. 9(3) of the Habitats Regulations, as set out above. Therefore we have to have regard to the strict protection afforded to bats and their roosts, when considering prior notification of demolitions.

Where a survey is triggered in accordance with Table 1 above, those seeking prior approval of demolition should commission a bat survey in accordance with the Survey Standards and Survey Timing sections above. Where bats are found, it is likely that demolition could only proceed in accordance with a licence issued by NRW. That licence may be granted according to a series of conditions which are in place to ensure mitigation of the impact upon bats, such that their Favourable Conservation Status is maintained. In controlling the manner of demolition, Cardiff Council should secure compliance with the other permitted development conditions, restrictions, and if required, a Natural Resources Wales species licence'

It is worth reiterating that if a building is demolished and bats or their roost are harmed as a result, the persons undertaking that demolition may be liable to

prosecution. If this were the case, those persons may query whether Cardiff Council had adequately discharged its duty under Reg. 9(3) of the Habitats Regulations when administering the prior notice of demolition.

The Section 3 Annex to the Development Management Manual 2016: 'Application of the Habitats Directive to the Process of Prior Approval', provides further advice in this respect.

Bat Advisory Note

The following advisory note will be used when Table 1 above indicates that there is not sufficient justification to require a bat survey, but that some limited potential for bat presence exists.

'Bats often roost in houses and other buildings, and work on these buildings may disturb a bat roost. All bats and their roosts are protected against disturbance under UK and European legislation. If works are planned on a building in which bats are roosting, Natural Resources Wales must be contacted for advice.

If work has already commenced and bats are found, or if any evidence that bats are using the site as a roost is found, work should cease and either NRW or a suitably qualified, experienced and licenced ecologist is consulted for advice on how to proceed.

Where there is a likelihood that bats are present, or where bats are found to be present, a suitably qualified and experienced ecological consultant should be contracted to provide an assessment of the impact of the proposed works, and undertake bat surveys if necessary.

Where bats or their roosts are present, no works of site clearance, demolition or construction should take place unless a licence to disturb these species and/or their roosts has been granted in accordance with the relevant legislation. Otherwise, a prosecution may result in a fine and/or

imprisonment.

NRW can be contacted at:-

Natural Resources Wales, Tŷ Cambria, 29 Newport Road, Cardiff CF24
0TP, 0300 065 3000

Bat Conservation Trust can be contacted at:-

5th Floor, Quadrant House, 250 Kennington Lane, London, SE11 5DR,
0845 1300228'

Conditions

If EPS have been recorded on a site, we should attach the following condition as recommended by Welsh Government:

Condition: Where any species listed under Schedules 2 or 4 of The Conservation of Habitats and Species Regulations 2010 (as amended) is present on the site [or other identified part] in respect of which this permission is hereby granted, no works of site clearance, demolition or construction shall take place in pursuance of this permission unless a licence to disturb any such species has been granted in accordance with the aforementioned Regulations and a copy thereof has been produced to the local planning authority.

Reason: To ensure protection of European Protected Species.

1.5.2 Dormice

Policy EN7: Priority Habitats and Species

Dormice are European Protected Species, so the EPS procedure should be applied.

Dormice are found in hedgerows, woodland and scrub in rural and suburban areas of Cardiff, and are particularly prevalent in the north-eastern part of the

city. Any proposed works which involve removal of these habitats should be assessed for their potential to affect dormice.

Where dormice are likely to be present on site, surveys should be undertaken using an appropriate methodology at an appropriate time of year. Typically this involves the use of nest tubes and/or nest boxes attached to trees etc. in accordance with the methodology set out in Bright, P, Morris, P & Mitchell-Jones, T (2006). *The Dormouse Conservation Handbook*. Second Edition. English Nature. Peterborough.

Surveys can be carried out from April to November, but experience has shown that in Cardiff the most effective month for detecting this species with this method is October. Therefore all surveys should include at least one nest tube/box check in the month of October.

As with all species, it should be remembered that no survey method is guaranteed to detect the focal species, and this is acknowledged in the *Dormouse Conservation Handbook* and the reports upon which it is based. For example, paragraph 3.2.5 of the *Dormouse Conservation Handbook* states '*(nest boxes) are often not used immediately. Sometimes they remain empty for several years.*' The nest-tube methodology set out in the *Dormouse Conservation Handbook* is based on the Chanin and Woods 2003 report¹. Page 16 of that report states that '*nevertheless it is evident that some dormice are being missed as they were present at some sites where they were not recorded*'. In other words, at sites where dormice were known to exist, they were not detected by nest tubes as part of that study. Similarly, on page 17 we read '*However it is essential to bear in mind that when dormice are not recorded in tubes, it does not necessarily mean that they are not present.*'.

¹ Chanin, P. & Woods, M. 2003. Surveying Dormice using nest tubes. Results and experiences from the South West Dormouse Project. *English Nature Research Report* No. 524.

Situations such as these have occurred in Cardiff, whereby surveys using nest tubes have failed to detect dormice, but surveys using other methods, such as using nest boxes or searching for hazelnut shells that have been nibbled by dormice, have revealed their presence. Therefore it is considered best practice that surveys for dormice in Cardiff employ at least two of the following methods:

- Nest tubes
- Nest boxes
- Searching for characteristically-nibbled hazelnuts

It may also be the case that where natural nesting opportunities are abundant, such as in ancient semi-natural woodland, dormice do not use artificial nesting sites such as nest tubes or boxes. Therefore, where dormouse surveys in mature woodland or ancient semi-natural woodland using artificial nesting sites fail to detect this species, then any conclusion that they are likely to be absent for that site, will be treated with caution.

Whilst it is acknowledged that in behavioural terms, Dormice may seek to cross roads, there is no evidence as to the degree to which they are successful in this, nor to the impact that any roadkill may be having on Dormouse populations in the long term. Therefore it is essential that, where roads do interrupt habitat connectivity, there are a range of measures in place to ensure that this break in connectivity is not detrimental to the long term maintenance of Dormouse FCS. These measures could include:-

- Retention of habitat
- Use of planting to create buffers
- Road narrowing
- Widening of the hedgerow or connectivity feature which is to be broken
- Dormouse 'bridges' and green bridges
- Sensitive lighting schemes

1.5.3 Great Crested Newts (GCN)

Policy EN7: Priority Habitats and Species

GCNs are European Protected Species, so the EPS procedure should be applied.

This species occurs in several locations throughout Cardiff, and its life cycle depends upon breeding ponds surrounded by terrestrial habitat. Generally, most newts are found within 500m of the breeding pond, though they can disperse much further than this.

Not all ponds in Cardiff support this species, so the County Ecologist should be consulted for advice as to whether consideration of this species is required for developments within 500m of a pond.

Where development is proposed within 500m of a known breeding pond, an assessment of the impact of the proposed development upon this species, will be required. This may entail further survey of the pond to determine the likely population size class.

Generally, surveys can only be undertaken between mid-March and mid-June, so prospective planning applicants should be made aware of this potential timing constraint.

Survey and mitigation work should accord with the most recent good practice guidelines. Currently these are the English Nature 2001 GCN Mitigation Guidelines, but these are likely to be replaced by Guidelines issued by Scottish Natural Heritage during 2016.

Mitigation of the impacts of development upon this species should focus on maintaining and enhancing habitat connectivity between populations. This may involve the construction of additional ponds, and managing terrestrial habitat for the benefit of this species.

Where it is unavoidable that a GCN pond is lost due to development, compensatory ponds should be constructed, at a ratio of three ponds installed for each GCN pond lost.

In all cases, mitigation and compensation should demonstrate that a strategic view of the viability of GCN metapopulations at a landscape scale, has been taken.

1.5.4 Otters

Policy EN7: Priority Habitats and Species

Otters are European Protected Species, so the EPS procedure should be applied.

Otters are found throughout Cardiff but are closely associated with the rivers Taff, Ely, Rhymney, the Nant Fawr stream, coastal areas, and waterbodies such as Cardiff Bay and the Llanishen and Lisvane Reservoirs. Any plan or project which may affect these habitats, either directly or indirectly, may need to consider the presence of this species. This consideration may include the need to survey for their breeding dens (known as Holts), or their lying-up or resting areas in dense vegetation close to the waterbody concerned.

As well as protecting their breeding sites and resting places, it is important that habitat connectivity is maintained to allow normal foraging and dispersal of Otters. Connectivity along linear features such as rivers can be interrupted by noise, lighting and human disturbance associated with development, so any potential impact in this respect must be taken into account considering a planning application.

Otters require good riparian vegetation cover for movement along riverbanks, and for the provision of habitat for laying-up sites. Therefore, where development, including the provision of access, is planned for sites adjacent to

rivers, public pathways should meander away from the river bank and back towards it along the route. This will allow significant areas of dense cover to be created, whilst allowing for viewing points across the river.

1.5.5 Birds

Policy EN7: Priority Habitats and Species

Cardiff Council has a duty in relation to wild birds following the 2012 amendment to the Habitats Regulations:-

- Cardiff Council is required to take such steps in the exercise of our functions as we consider appropriate to secure the *preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds* so far as lies within our powers.
- Cardiff Council must take such steps in the exercise of our functions as we consider appropriate to contribute to the achievement of the *preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds*
- In exercising any of its functions Cardiff Council must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds.

The law specifically relates this duty to functions under Town and Country Planning Acts.

Habitats of wild birds referred to above includes those parts of buildings used by house-nesting birds, such as House Martins, Swifts and Swallows.

Guidance on the implementation of this duty has been produced by DEFRA in collaboration with Welsh Government:-

<http://gov.wales/docs/desh/publications/160223-birds-guidance-wg-overview-en.pdf>

<https://www.gov.uk/guidance/providing-and-protecting-habitat-for-wild-birds>

This guidance will be observed in relation to any development which may affect wild bird habitat.

Where there is vegetation management or tree removal proposed, or where buildings or any other structure which may support nesting birds are to be removed, then we should attach the following condition to protect nesting birds. Certain parts of Cardiff offer suitable opportunities for ground-nesting birds, such as Lapwing or Skylark, and this condition would apply equally to those species. The County Ecologist should be consulted for advice on which species are likely to be affected.

Condition: No site clearance/demolition of (*relevant features*) to take place between 1st March and 15th August unless otherwise approved in writing by the Local Planning Authority. This approval will be granted if a consultant ecologist can evidence that there are no birds nesting in this these features immediately (48 hrs) before their removal.

Reason: To avoid disturbance to nesting birds which are protected under the Wildlife and Countryside Act 1981: Part 1, 1(1)(b), it is an offence to intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built.

Enhancement measures for house-nesting birds such as Swallows, Swifts and House Martins should be incorporated into new buildings in accordance with the 'Enhancements' paragraphs of the Ecological Impact Assessment section (Section 1.4.1) of this TGN.

Where a Heronry may be affected by proposed development, an earlier time limit such as 1st February to 15th August may be applied to this condition, in order to reflect the earlier onset of breeding which is typical for this species.

1.5.6 Reptiles

Policy EN7: Priority Habitats and Species

Reptile Survey and Mitigation Guidelines for Cardiff

Widespread reptile species are protected against intentional killing or injury under the Wildlife and Countryside Act 1981 (as amended). A defence against a potential prosecution is that the action which caused death or injury was the incidental result of an otherwise lawful operation that could not reasonably be avoided. Therefore, to allow activities which might otherwise cause harm to these species, reasonable avoidance of that harm needs to be demonstrated. In order to achieve this, firstly there must be an adequate assessment of the potential impact of any scheme, which should itself be based upon an accurate, appropriate and up-to-date survey. Secondly, the mitigation hierarchy should be applied to demonstrate reasonable avoidance. In practice, this may often mean trapping and translocation of these animals to a suitable receptor site.

Widespread reptile species in Cardiff include Slow-worms, the Grass Snake, Adders and Common Lizards. Other species native to Britain, the Sand Lizard and the Smooth Snake, do not occur in Cardiff. Also, this section does not deal with sea turtles, which sometimes occur off the coastline of Cardiff, nor does it deal with non-native species such as the Red-eared Terrapin.

In the absence of definitive guidance on reptile survey and mitigation techniques, I refer to the following documents:-

- Froglife Advice Sheet 10 (FAS 10),

- National Amphibian and Reptile Recording Scheme – Reptile Survey Guide (NARRS)
- Reptiles: Guidelines for Developers (EN2004)
- Design Manual for Roads and Bridges Vol. 10, Section 4, Part 7, Ch. 6 (DMRB)
- HGBI Evaluating local mitigation/translocation programmes 1998 (HGBI)
- Protected Reptiles and Build Development – Kent Reptile and Amphibian Group and Kent Wildlife Trust October 2003 (KRAG 2003)
- Edgar, P., Foster, J. and Baker, J. (2010). Reptile Habitat Management Handbook. Amphibian and Reptile Conservation, Bournemouth (RHHM 2010)
- Survey protocols for the British Herpetofauna Version 1.0. Sewell D., et al. March 2013 (Sewell 2013)
- Natural England Technical Information Note TIN102. Reptile mitigation guidelines (TIN102) – Withdrawn.
- Survey Guidelines for the Widespread British Reptiles by Howard Inns (Inns) in Reptile Survey Methods, Foster & Gent (Eds) 1996.
- Evaluation of Reptile Survey Methodologies. EN Research Report No. 200. Reading CJ, 1996. (Reading)

Should formal and authoritative national guidelines on reptile survey and mitigation methods be produced, then the information below would be superseded by those guidelines.

Those undertaking reptile survey and mitigation should be able to demonstrate, if asked, that they meet the knowledge, skills and practical experience competency criteria, as set out in the CIEEM Technical Guidance Series '*Competencies for Species Survey: Reptiles*'.

Those undertaking reptile survey and mitigation should apply and adapt their knowledge, skills and experience to individual situations. However, any deviation from the above sources of guidance should be accompanied with a reasoned justification which can be considered in the context of that guidance.

Where this reasoned justification is not forthcoming or is not acceptable, there will be reduced confidence in the results of the survey, which may lead to a more precautionary approach to mitigation.

Surveys

Combination surveys involving both direct observation and use of artificial refugia are the most effective at detecting the presence of reptiles (e.g. DMRB, NARRS). Therefore, combination surveys should be undertaken and the results of both types of survey set out in a report.

All sources of guidance listed above recommend using a range of materials for refugia surveys, not just roofing felt on its own. Corrugated metal is regarded as being the best material (e.g. NARRS, Reading), but it is recognised that this can be impractical sometimes. A combination of at least two of the following materials is recommended; roofing felt, corrugated bituminised roofing sheets such as Onduline or similar, corrugated metal roofing sheets, carpet tiles or wooden boards. Where there are existing refugia on site, such as logs, stones or rubbish, these should be incorporated into refugia surveys.

The minimum size of refugia recommended is 0.5m² (e.g. FAS 10, DMRB). Note that Krag and NARRS interpret this as about 0.7m x 0.7m (or 1m x 0.5m), not 0.5m x 0.5m (see e.g. Krag 2003), although Sewell 2013 does recommend a minimum 0.5m x 0.5m. Inns suggests 1m x 1m, and Reading suggests about 0.76m x 0.65m, although this is for corrugated sheet steel. Smaller refugia may not be as effective at detecting larger animals such as adult Grass Snakes (e.g. DMRB). A range of sizes is likely to be most effective (DMRB), so it is recommended that either a range of sizes, or roughly equal numbers of two different sizes, are used.

Normally refugia should be left to 'bed in' for about 2 weeks for reptiles to find them and become used to using them. DMRB recommends a minimum of a week before 1st inspection, although RHHM 2010 states:- *'There is some evidence that refuges are more attractive to reptiles if they are left to 'bed in' for*

several weeks. At low population densities, it can take weeks or months for animals to start using refuges.'

A report on a reptile survey should give the numbers of artificial refugia used in order to demonstrate that the survey was adequate in this respect. Normally at least 10 refugia per hectare is recommended (e.g. FAS 10, DMRB), although INNS suggest using 3 to 8 per hectare. On very large site with substantial areas of suitable habitat, it may be acceptable to sample smaller areas of representative habitat and extrapolate those data to the site as a whole, based on the suitability of the habitat.

A report on a reptile survey should give details of the location of artificial refugia, demonstrating that refugia have been placed appropriately. This is important as refugia incorrectly placed may not be effective at detecting reptile species.

The minimum number of survey visits to establish likely absence of reptiles from a site is 7 visits on separate days during which no reptiles are found, in suitable conditions (FAS10). Where reptiles are found, more visits than this will be needed to indicate abundance or relative population size. Sewell recommends 7 visits unless it can be demonstrated that refugia have been in place for a long time or that reptile detectability is known to be high, in which case 4 to 5 visits may suffice.

The timing of the survey should be appropriate for the species being surveyed. Whilst it is true that some individual reptiles may be seen at any time of year, the accepted peak months for reptile surveys are March, April, May and September (DMRB, KRAG 2003, FAS10). Whilst ambient temperatures outside of these months may be within the recommended ranges, endogenous circannual rhythms may lead to reduced activity, and therefore reduced detectability. Surveys conducted entirely within the month of October are unlikely to be acceptable.

Weather conditions should be appropriate for survey work, and the prevailing conditions of temperature, wind, precipitation and sunshine should be recorded

for each survey visit. The generally accepted temperature ranges are 9 to 18C (FAS 10, DMRB, Inns) or 10 to 20 C (NARRS, RHMH, TIN 102).

Mitigation

In 2005 the then Countryside Council for Wales (CCW) produced draft mitigation guidelines for common reptile species. In the absence of any formal mitigation guidelines, the following text is adapted from those draft guidelines.

For any development site which supports reptiles, or which contains habitats with the potential to support reptiles, detailed survey at an early stage is recommended. Where suitable survey information is unavailable, however, or where there is insufficient time to carry out the necessary surveys, it should be assumed that any habitats on the site which are suitable for reptiles do indeed support reptiles, and mitigate accordingly.

It is not necessary to obtain a licence to carry out works which affect reptiles, but it is always advisable to seek guidance in any case where a development could potentially cause impacts to reptiles. Advice regarding what would constitute 'reasonable' mitigation should also be sought, although it is ultimately up to the developer to decide what is 'reasonable' (and to accept any consequences which may ensue). In most cases, the services of an appropriately qualified and experienced reptile consultant will be required.

Wherever possible, reptiles should be accommodated within the site, or on one or more adjacent or nearby site. The translocation of reptiles to a different site which lies at a distance from the development site should only be undertaken as a last resort. Where reptiles cannot be accommodated within the site, a suitable receptor site should be identified in advance and surveyed for suitability. If a reptile population already exists on the receptor site, then advance enhancement works to increase the 'carrying capacity' of the receptor site may be necessary. Adequate time should be allowed in the development programme for the safe clearance of reptiles ahead of any potentially harmful works using suitable means, which may vary from site to site.

If reptiles are confirmed as being present (or are assumed to be present, for example from habitat assessment) then measures should be put in place to avoid or minimise the killing and injuring of reptiles as a result of development operations. Ideally, a 'Reptile Mitigation Strategy' should be drawn up for the site by a suitably qualified person, and agreed in advance with the County Ecologist.

Selection of Suitable Receptor Site.

The HGBI document 'Evaluating local mitigation/translocation programmes 1998' provides some guidelines in section 4.2 as to the selection of receptor sites. Suitable receptor sites may be easier to identify for more generalist species such as Slow-worms, but conversely species such as Adders can have specific habitat requirements which require much more detailed consideration. **It should be noted that Cardiff Council cannot always be relied upon to provide suitable receptor sites for translocated reptiles.** Where a suitable receptor site cannot be identified, it may be necessary to refuse a planning application on the basis that harm to reptiles cannot reasonable be avoided. Normally habitat management for translocated populations should continue for between 5 and 25 years, in accordance with an agreed mitigation management plan, depending upon the size of population and number of species involved. Where the receptor site is on Council-owned land, his habitat management should be funded by a commuted sum or similar mechanism.

Reptile Clearance Methodology

More detailed advice on a suitable reptile clearance methodology can be provided on request, but above all a methodology should be used which minimises the risk of harm to individual reptiles.

Timing of Works

It should be noted that the clearance of reptiles from a site can only be

undertaken when the reptiles are active (i.e., during the spring, summer and autumn months) and should never be attempted during the winter hibernation period (which runs approximately from November to February/March inclusive). This constraint may lead to conflict with other issues — the presence of nesting birds, for example - which will also need to be taken into account and mitigated for accordingly. Clearance operations are less desirable later in the summer, since after about June there is the chance that juvenile animals will also be present, which as well as being more difficult to see and catch, may also significantly increase the number of animals on the site.

Post-development Monitoring

In addition to the above, the developer of a given site should be encouraged to put in place a scheme to monitor the effects of the development on the reptiles and to see if the mitigation has been successful. The design of any monitoring exercises should be discussed in advance with the County Ecologist. It may be the case that remediation measures should be incorporated into a mitigation scheme, which are implemented if monitoring reveals that mitigation measures are failing. Normally monitoring of translocated populations should continue for between 5 and 25 years, depending upon the size of population and number of species involved.

1.5.7 Invasive Non-native Species (INNS)

Policy KP18 – Natural Resources

Invasive Non-native Species of animal and plant are a substantial economic and environmental threat to Wales, and there is legislation in place controlling the release of these species or any activity which could cause them to grow in the wild. In considering the effects of a proposed development upon nature conservation interests, it may be necessary to ascertain the presence of INNS on a development site and ensure that these species are controlled. If a Preliminary Ecological Appraisal discovers INNS plants on a site, a programme

for their treatment and eradication should be required as part of Cardiff Council's general duty towards conserving biodiversity.

Of the INNS species, Japanese Knotweed is the most common and most serious in economic and environmental terms in Cardiff, so where it has been identified on the site, we should attach the standard condition as below. There may be other invasive non-native plant species on site which are listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), such as Himalayan Balsam and Giant Hogweed. The applicant should be reminded that it is an offence to plant or cause these plants to grow in the wild.

Condition: Prior to the commencement of development, a detailed scheme for the treatment and disposal of soils affected by Japanese Knotweed shall be submitted to and approved in writing by the Local Planning Authority. Such a scheme shall accord with most recent guidance issued by the relevant statutory authority. Thereafter the development shall be carried out in accordance with the approved scheme.

Reason: To ensure the safe destruction and prevention of spread of Japanese Knotweed.

1.5.8 Brownfield Sites

Policy EN7: Priority Habitats and Species

Brownfield sites or previously developed land can often be richer in biodiversity than heavily improved or intensively cultivated 'greenfield sites'. Very often, the poor and shallow soils of brownfield sites allow a greater range of flowering plants to develop, compared with the monoculture of rye grass that can predominate in heavily improved agricultural land. A diverse range of flowering plants will support more insects, and subsequently birds and other animals. In addition, the warm microclimates that occur in the open mosaic habitats of brownfield sites can be of value to insects and reptiles.

Therefore, an assessment of the nature conservation value of a brownfield site should be undertaken objectively, and should in no way be prejudiced by the previous land-use of that site.

Section 4.9.1 of Planning Policy Wales states, in relation to the preference for the re-use of land, that the Welsh Government recognises that not all previously developed land is suitable for development. This may be, for example, because of its location, **the presence of protected species or valuable habitats** or industrial heritage, or because it is highly contaminated. For sites like these it may be appropriate **to secure remediation for nature conservation**, amenity value or to reduce risks to human health.

Therefore the habitats, species, and ecosystems of a brownfield site should be assessed, where that site is the subject of a planning proposal, and remediation in the form of mitigation or compensation measures secured if planning consent is granted. Surveys should seek to determine whether the UK Biodiversity Action Plan (UKBAP) habitat known as '*Open Mosaic Habitat on Previously Developed Land*', which is characterised by a diverse invertebrate and plant fauna, is present on site. Furthermore, any assessment should consider whether the site qualifies as a wildlife site (Site of Importance for Nature Conservation - SINC) in accordance with Section H18 (Post-industrial Land) of the Guidelines for the Selection of Wildlife Sites in South Wales 2004.

Where a site is identified as supporting a UKBAP habitat, or as qualifying as a SINC as above, then guidance elsewhere in this TGN relating to UKBAP habitats and SINC's should be consulted.

In accordance with Section 5.5.3 of Technical Advice Note (TAN) 5, the conservation and enhancement of locally designated sites (such as SINC's) is an important contribution to the implementation of Biodiversity Action Plans and to the management of features of the landscape of major importance for wild flora Developers should avoid harm to those interests where possible. Where harm is unavoidable it should be minimised by mitigation measures and

offset as far as possible by compensation measures designed to ensure there is no reduction in the overall nature conservation value of the area or feature.

1.5.9 Ancient Semi-natural Woodland

Policy EN7: Priority Habitats and Species

Ancient Semi-natural Woodland (ASNW) comprises all woodland sites with historical evidence of woodland cover since the year 1600. This definition includes woodland sites which have been clearfelled and re-planted, which are known as Planted Ancient Woodland Sites (PAWS). The value of ASNW and PAWS sites lies not just in the trees themselves, but also in their understorey and ground flora, rides and glades, and the mammals, birds, invertebrates, fungi, microorganisms etc., that they support. These habitats are particularly rich in biodiversity, as well providing other ecosystem services such as carbon capture and storage, flood risk management, recreation, and natural beauty. As such, these habitats are considered irreplaceable, and require special consideration in the planning system. This is reflected in PPW section 5.2.9., wherein:-

‘Ancient and semi-natural woodlands are irreplaceable habitats of high biodiversity value which should be protected from development that would result in significant damage.’

The definition of ‘*significant damage*’ will be considered on a case-by-case basis.

Where development is proposed on sites adjacent to ASNW, there is the potential for harm to the woodland edge to arise from construction activities and from inappropriate management during occupation of the development.

The Forestry Commission’s Standing Advice for Ancient Woodland and Veteran Trees, updated April 2014, states:-

‘Buffer Zones: Development must be kept as far as possible from ancient woodland, with a buffer area maintained between the ancient woodland and any development boundary. An appropriate buffer area will depend on the local circumstances and the type of development. In a planning case in West Sussex the Secretary of State supported the arguments for a 15m buffer around the affected ancient woodland, but larger buffers may be required’.

In Cardiff, the term ‘*Ecotone*’ is preferred, as this better reflects a more natural woodland edge, with canopy trees grading into shorter understorey species, through scrub habitats, and into rough grassland. Therefore, the provision and management of a 15 metre-wide ecotone around woodland sites will normally be required. Domestic gardens should be excluded from this ecotone, as the creation of gardens backing directly onto woodland is likely to lead to conflict between occupants and the woodland, leading to inappropriate tree management. This in turn may have negative impacts upon species supported by these trees, such as bats, nesting birds and dormice.

Further guidance relating to trees, woodlands, landscaping and soils is provided in separate sections of the Green Infrastructure SPG.

1.5.10 Coastal, Estuarine and Marine Habitats

Policy EN7: Priority Habitats and Species

National planning policy in relation to development management and the coast is set out in sections 5.8.1 to 5.8.4 of PPW.

Some areas of Cardiff's coastline are important for wildlife and are designated as SINCs. Other areas, such as the Gwent Levels and the Severn Estuary itself, are designated as SSSIs. Furthermore, the estuary and parts of the coastline receive protection at an international level. Works which may affect these designations, even if they do not take place within the boundaries of those

designations, may need a Habitats Regulations Assessment. The designations concerned are:-

Severn Estuary Special Area of Conservation (SAC)

This is part of the European Union 'Natura 2000' network of sites and is designated for habitats such as Estuary, sandbanks, mudflats, sandflats, saltmarsh and reefs, as well as certain migratory fish species.

Severn Estuary Special Protection Area (SPA)

SPAs are also part of the European Union 'Natura 2000' network and are classified for the protection of birds. In this instance, assemblages and species overwintering and migratory wildfowl are the focus of this designation.

Severn Estuary Ramsar Site

Ramsar sites are a non-statutory designation for as Wetlands of International Importance. The Severn Estuary Ramsar site is listed on account of the habitats and species for which the SAC and SPA are designated/classified.

Typical effects which may arise from development along the foreshore and which may impact upon these designations include (but are not limited to):-

- Direct loss of habitat such as vegetated shingle or saltmarsh
- Visual or noise disturbance to overwintering and migratory birds
- Direct impacts upon overwintering and migratory birds by features such as wind turbines
- Mobilisation of existing ground contaminants by works such as piling etc. which may then leach into the estuary
- Deposition of airborne contaminants arising from traffic and industrial processes

1.5.11 Habitats Regulations Assessment (HRA) Procedure

Policy EN5 - Designated Sites

Under Regulation 61(1) of the Conservation of Habitats and Species Regulations 2010 as amended, referred to as the 'Habitats Regulations', a competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which...

- a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and
- b) is not directly connected with or necessary to the management of that site,

...must make an appropriate assessment of the implications for that site in view of that site's conservation objectives. These conservation objectives will be as set out in the most recent advice from Natural Resources Wales. In relation to the Severn Estuary European Marine Site (EMS), this advice is issued jointly with Natural England under Regulation 37 of the Conservation of Habitats and Species Regulations 2010 (as amended).

The process of establishing whether there is likely to be a significant effect upon a European Site, and if so undertaking an 'appropriate assessment', is known as a Habitats Regulations Assessment or HRA.

When a planning application is submitted for a proposal which might affect a European Site, Cardiff Council will have to consider whether a HRA is required.

The European Sites in Cardiff are the Severn Estuary Special Area of Conservation (SAC), the Severn Estuary Special Protection Area (SPA) and the Cardiff Beech Woods SAC. However, the impacts of a development, such as contamination by air-borne pollutants, may be felt further afield than Cardiff. Clearly it would be impossible to assess the impacts of a development upon all European Sites in the UK and in the EU, so a perimeter of 15Km around Cardiff

has been established with CCW and subsequently NRW through the Review of Consents Process and the HRA of the Cardiff Local Development Plan.

The additional sites within this perimeter which may need to be considered in a HRA process are currently:-

Aberbargoed Grasslands SAC,
Blackmill Woodlands SAC,
River Usk SAC,
River Wye SAC.

As a matter of Welsh Government policy, Ramsar sites (sites listed under the Ramsar convention as wetlands of international importance) should be treated in the same way as SACs and SPAs, including in particular in relation to the consideration of plans and projects likely to affect them. Therefore following a procedure analogous to Regulation 61 in relation to the Severn Estuary Ramsar Site would also help ensure adherence to WG policy.

Projects will be assessed in accordance with the following documents:-

- Assessing Projects under the Habitats Directive - *Guidance for Competent Authorities*. David Tyldesley and Associates for Countryside Council for Wales. September 2008.
- Managing Natura 2000 Sites - The provisions of Article 6 of the 'Habitats' Directive 92/43/CEE. 2000.
- Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC. November 2001.

Screening

The following criteria will be used to screen plans, projects or programmes for relevance to the HRA process:-

1. A HRA will be required for any plan, project or programme which results in an activity which is known to affect a European site.
2. A HRA will be required for a plan, project or programme which:-

Steers a quantum or type of development towards or encourages development in, an area that includes a European site or an area where development may indirectly affect a European site.

The 'area' referred to above will include:-

- Any area within the boundary of the European site
- All land within 1000m of the boundary of the European site
- All land or any area of watercourse in hydrological connectivity (tributaries, ground water etc.) with a European site, to include those within 1000m (provisional) of the boundary of watercourses upstream and downstream of the European site
- All land within 3km of a European site for industrial developments, larger housing developments and minerals consents including those requiring an EIA
- All land within distance criteria set out in paragraphs 2 and 3 of Appendix 2 to Annex XVII of Part B of the General Guidance Manual on Policy and Procedures for A2 and B Installations.

Under Regulation 61(2), a person applying for any such consent, permission or other authorisation must provide such information as the competent authority may reasonably require for the purposes of the assessment or to enable them to determine whether an appropriate assessment is required. In effect, this may mean that additional survey work of species or habitats which are the features of the European Site, may be needed. An applicant should be made aware that in some circumstances, such survey work can only take place at

certain times of the year, and that more than one survey season may be needed in order to provide adequate data.

There is no statutory requirement to formally consult NRW at the initial screening stage or at the test of likely significance stage. However, if an 'appropriate assessment' is undertaken, the competent authority must for the purposes of the assessment consult NRW and have regard to any representations made by them within such reasonable time as the authority specify.

The HRA process is normally undertaken by the County Ecologist within Cardiff Council, who will provide a report on the HRA to the case officer dealing with the planning application concerned. In certain circumstances, it may be acceptable for the planning applicant to commission a draft HRA and submit it in support of a planning application. If this draft HRA is found to be acceptable, then it can be adopted by Cardiff Council for the purposes of its duty under Regulation 61(1).

1.5.12 SSSI Procedure

Policy EN5 - Designated Sites

There are 17 Sites of Special Scientific Interest in Cardiff, and Cardiff Council has statutory duties in relation to these sites under the Wildlife and Countryside Act 1981 as amended.

A general duty under Section 28G of that Act is to take reasonable steps, consistent with the proper exercise of the authority's functions, to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is of special scientific interest. An authority to which this section applies is referred to as a '*Section 28G authority*'.

In practice, this means that where any Cardiff Council functions, including the consideration of planning applications, may affect a SSSI, the County Ecologist should be contacted for advice as to how to proceed. It is likely that NRW should be consulted on any such activity.

A more specific duty is set out in section 28I of the CRow Act, which states that before granting planning (or any other) consent for operations likely to damage any of the features for which a SSSI has been designated, a section 28G authority, in this case Cardiff Council, must give notice of the proposed operations to NRW.

Operations which may affect the features of a SSSI in this way require consent from NRW. However, where that operation also requires planning consent, then rather than operate the SSSI consent procedure in parallel with the planning consent procedure, NRW will instead provide comment on the planning application to the Cardiff Council Planning Service. If those comments are incorporated into the consideration of the planning application, then SSSI consent will be deemed to have been granted if planning consent is granted.

Where notice of a proposed operation has been given to NRW, they must then be given 28 days to respond, and when they do, their advice must be taken into account.

If NRW advise against granting consent, but this advice is not taken into account, then consent must not be granted until 21 days after this advice is received from NRW.

1.5.13 SINC Procedure

Policy EN5 - Designated Sites

The use of Sites of Importance for Nature Conservation (SINCs) is indicated in Section 5.3.11 of PPW 2016 and Section 5.5 of TAN5. Section 5.5.3 of TAN5, states:-

‘The conservation and enhancement of locally designated sites is an important contribution to the implementation of Biodiversity Action Plans and to the management of features of the landscape of major importance for wild flora and fauna. Developers should avoid harm to those interests where possible. Where harm is unavoidable it should be minimised by mitigation measures and offset as far as possible by compensation measures designed to ensure there is no reduction in the overall nature conservation value of the area or feature.’

As a precedent we use the Planning Inspectorate’s comments on the Monmouthshire Unitary Development plan, wherein:- *‘The Council will assess sites proposed for development to ascertain whether they fulfil the criteria for designation and may request information from applicants to assist in that process. If a site satisfies the criteria it will, for planning purposes, be treated as if it were a SINC.’* In other words, even if a site has yet formally to be designated as a SINC, if it meets the qualifying thresholds, it should be treated as a SINC for planning purposes.

The qualifying criteria for SINC designation are set out in the Guidelines for the Selection of Wildlife Sites in South Wales.

Therefore, where a SINC or land which could be designated as a SINC is likely to be affected by development, survey work should be undertaken to establish the features of importance for nature conservation for which the SINC has or could be designated. Subsequently, mitigation and compensation measures may be needed. Where there is the potential for significant adverse effects upon the features of a SINC, the following condition should be attached to any planning consent:-

Condition: No materials, waste, arisings or plant shall be stored or operated within the (XXX) SINC, outside the site boundary identified within the planning application, or allowed to fall, be washed or blown into it.

Reason: To protect the features of interest for nature conservation for which the (XXX) SINC has been designated.

A map showing SINC in Cardiff is available on the Cardiff Council mapping portal, or from the County Ecologist, who can also provide SINC designation sheets, which describe the SINC and their special interest. These can be forwarded to planning applicants.

1.5.14 Biodiversity and Resilience of Ecosystems Duty (BRED)

EN7: Priority Habitats and Species

EN6: Ecological Networks and Features of Importance for Biodiversity

The Biodiversity and Resilience of Ecosystems Duty (BRED) as set out in the Environment (Wales) Act 2016 states that public bodies such as Cardiff Council must seek to maintain and enhance biodiversity in the exercise of their functions, and in so doing promote the resilience of ecosystems, so far as is consistent with the proper exercise of those functions. In complying with this duty we will have to take account of the resilience of ecosystems, in particular the following aspects—

- (a) diversity between and within ecosystems;
- (b) the connections between and within ecosystems;
- (c) the scale of ecosystems;
- (d) the condition of ecosystems;
- (e) the adaptability of ecosystems.

Under Section 7 of the Environment (Wales) Act 2016, Welsh Ministers must prepare and publish a list of the living organisms and types of habitat which in their opinion are of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. The species and habitats on this list may be taken to be the focus of Cardiff Council's duty under Section 6, as above.

Cardiff Council has to consider the implications of a proposed scheme upon the habitats and species in the published Section 7 list, and any loss of habitat or fragmentation of habitat that supports them. Clearly it would be unreasonable to require a planning applicant to survey for all species and habitats on those lists which might be found within the immediate area of this application. Correspondingly, it would be impossible for Cardiff Council accurately to assess the impacts of the proposed scheme upon all of those habitats and species.

Instead, where it is unavoidable that areas of semi-natural habitat will be lost to a proposed development, robust assumptions should be made as to which Section 7 habitats and species are likely to be affected. Subject to other protected species/habitat controls, loss of these habitats may be tolerable, provided there remains sufficient habitat connectivity through and around the proposed development site to allow the normal movement, dispersal, migration, foraging and adaptation to climate change of any relevant species which may be present.

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Appendix 1.A Planning Officers Checklist

The following checklist can be used as an aid firstly to guide Planning officers in considering the impact of a planning application upon biodiversity, and secondly to remind prospective planning applicants of the information that they may need to provide with their application. This checklist is adapted from that provided by the Biodiversity Planning Toolkit <http://www.biodiversityplanningtoolkit.com/default.asp>

Planning Officers Checklist	Yes ✓ No x
General	
1. Has the decision been based upon up-to-date information about the environmental characteristics of the area?	
2. Has the decision sought to maintain and enhance biodiversity and in doing so promoted the resilience of ecosystems, as required under s7 of the Environment (Wales) Act 2016?	
3. Even if a development site is not statutorily protected, does it nevertheless contribute to a network of natural habitats which, because of their linear and continuous structure, or their functions as stepping stones, are essential for migration, dispersal and genetic exchange?	
4. Will the proposal maintain, enhance, restore or add to biodiversity and geological interests within the wider community as required by PPW and TAN5?	
5. Would the proposal lead to the loss or deterioration of ancient woodland? If so are the benefits of the proposal sufficient to outweigh this loss or deterioration?	
Protected sites	
1. Is the development site subject to an international, national or local designation? Has reference been made to the designation in the decision?	
2. Does the development site fall within, adjacent to or near a European site (Special Protection Area, Special Area of Conservation, candidate Special Area of Conservation), an international site (Ramsar Site) or a potential Special Protection Area?	
3. If so, have the following tests been applied, as required under the Habitats Regulations:	
a. Is the proposal directly connected with or necessary for the management of the protected site?	
b. If not, can it be objectively determined that it would be unlikely, alone or in combination with other plans and projects, to have a significant effect on the protected site?	
c. If not, has an appropriate assessment (AA) been undertaken?	
d. Does the AA establish that the development would not adversely affect the integrity of the protected site?	
e. If not, can the adverse effects be minimised or avoided by imposing appropriate conditions or through a valid S106 obligation?	
f. If not, are there alternative solutions which would have no or a lesser effect on the integrity of the protected site?	

g. If not, are there imperative reasons of overriding public interest to justify permitting the development?	
h. If so, can all necessary compensatory measures to ensure the overall coherence of the network of internationally protected sites (Natura 2000) be put in place?	
4. If the proposal site could potentially have an impact on a nationally designated site e.g. Site of Special Scientific Interest (SSSI), is the proposal likely to damage the protected site's special interest features? If so are the benefits of the proposal sufficient to outweigh this harm?	
5. If the proposal would have an impact on Site of importance for Nature Conservation (SINC) would it significantly undermine the intrinsic scientific interest of the protected site and/or reduce the opportunity it provides for contact with and enjoyment of nature and a resource for learning about the natural world? If so are the benefits of the proposal sufficient to outweigh the harm?	
Protected species	
1. Is there evidence to suggest that there is a reasonable likelihood of protected species (PS) being present on or near the site and is there a risk they may be adversely affected by the proposal?	
2. If so, has a survey been undertaken (recently)? If not, the application can be refused on the grounds that it will not be possible to ascertain the likely impact on the species.	
3. If a survey has been undertaken, can it be determined that the proposal would not have an adverse effect on the PS?	
4. If it would potentially have an adverse impact could this be overcome by any proposed mitigation measures?	
5. Can such measures be secured through the imposition of conditions or has a valid section 106 obligation been submitted which would ensure such measures are implemented?	
6. If you have concluded that the proposal would result in a breach of the protection afforded to European Protected Species (EPS), have you had regard to the 3 tests that the licensing authority must consider in deciding a licence application?	
7. If you propose to grant planning permission, are you satisfied that there are sufficient grounds to justify this? Are these grounds clearly expressed in the decision? In particular, if there would be harm to the PS/EPS does the decision identify how this would be mitigated? If it cannot be mitigated have you clearly identified the overriding reasons for granting planning permission?	

Ecology and Biodiversity TGN Part 2 – The Cardiff Resource

CONTENTS

PART 2

- 2.1 Introduction
- 2.2 International/European Sites in Cardiff
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Appendices to Part 2

- 2.A List of Priority Species and Habitats in Cardiff
- 2.B Cardiff Modifications to Guidelines for the Selection of Wildlife Sites in South Wales
- 2.C Map of Nature Conservation Sites in Cardiff

2.1 Introduction

2.1.1 This Technical Guidance Note (TGN) relates to policies concerning ecology and biodiversity in existing development plans for Cardiff. It applies to all categories of development for which planning permission is required and includes comprehensive guidance on matters relating to ecology and biodiversity.

2.1.2 This TGN outlines:

- In Part 1 - how the Council will implement development plan policies relating to ecology and biodiversity, including how it will assess planning applications which could have an impact on ecology and biodiversity interests, the information applicants will need to provide to enable this, and the legislative framework within which the Council must operate.
- In Part 2 - the biodiversity/nature conservation² resource of Cardiff, sets out factual details of designated sites and biodiversity priorities.

2.1.3 The Welsh Assembly Government supports the use of SPG to set out detailed guidance on the way in which development plan policies will be applied in particular circumstances or areas. SPG must be consistent with development plan policies and national planning policy guidance and may be taken into account as a material planning consideration in planning decisions. The policy context is given in section 1.2 of this document.

² For the purposes of this document, 'biodiversity' (short for biological diversity) is taken to have the same meaning and be interchangeable with 'nature' or 'wildlife'.

2.2 International/European Designated Sites in Cardiff

SITE NAME	CENTRAL GRID REF.	COMMUNITY	YEAR FIRST DESIGNATED
Cardiff Beech Woods Special Area of Conservation (SAC)	ST118824	Pentyrch, Radyr and Morganstown, Whitchurch and Tongwynlais.	2004
Cardiff Beech Woods contains one of the largest concentrations of beech forests in Wales, and represent the habitat close to the western limit of its past native range in both the UK and Europe. The woods show mosaics and transitions to other types, including more acidic Beech woodland and Oak and Ash woodland. Characteristic and notable species in the ground flora include Ramsons, Sanicle, Bird's-nest Orchid and Yellow Bird's-nest.			
Severn Estuary Special Area of Conservation (SAC)	ST321748	Splott, Rumney, Trowbridge, Butetown	2007
The Severn Estuary is the largest coastal plain estuary in the UK with extensive mudflats and sandflats, rocky shore platforms, shingle and islands. Saltmarsh fringes the coast, backed by grazing marsh with freshwater and occasionally brackish ditches. The estuary's classic funnel shape is a factor causing the Severn to have the second highest tidal range in the world at more than 12 metres. This tidal regime results in plant and animal communities typical of the extreme physical conditions of strong flows, mobile sediments, changing salinity, high turbidity and heavy scouring.			
Severn Estuary Special Protection Area (SPA)	ST368818	Splott, Rumney, Trowbridge, Butetown	2005
The Severn Estuary SPA consists of intertidal mudflats and sandflats, saltmarsh, shingle and rocky shoreline. These habitats support internationally important populations of regularly occurring Bewick's Swan, an internationally important assemblage of wintering waterfowl and internationally important populations of Shelduck, Dunlin, Redshank, European White-fronted Goose and Gadwall.			

SITE NAME	CENTRAL GRID REF.	COMMUNITY	YEAR FIRST DESIGNATED
Severn Estuary Ramsar Site	ST368818	Splott, Rumney, Trowbridge, Butetown	1995
<p>The Severn Estuary has been designated a Ramsar site because it is important for migratory birds during passage periods in spring and autumn and regularly supports over 20 000 waterfowl in winter. The site also regularly supports, during the same period, internationally important populations of five species of waterfowl. The Severn Estuary is also important for the run of migratory fish between the sea and rivers. Other unique features include an immense tidal range affecting physical environment and biological communities, unusual estuarine communities, reduced species diversity and high productivity.</p>			

2.3 Sites of Special Scientific Interest in Cardiff

Site name	Grid Ref.	Community	Year First Designated
Castell Coch Woodland and Road Section	ST130827	Tongwynlais	1972
<p>A biological and geological SSSI. Ancient semi-natural Beech woodland which although intensively managed in the past maintains its ancient nature, with county rarities such as Bird's-nest Orchid, Greater Butterfly Orchid and Yellow Bird's-nest. Forms part of the Cardiff Beech Woods Special Area of Conservation (SAC). Geological exposures present at Castell Coch Road Section show a sequence of rocks that includes the Devonian Old Red Sandstone and the younger Carboniferous Limestone.</p>			
Coed y Bedw	ST111826	Pentyrch	1982
<p>A diverse, north-facing, 17 Ha broadleaved woodland with Oak, Birch, Beech, Ash and Alder all occupying distinctive areas in the reserve. Lime-rich springs found in the southwest meet an acidic stream running eastward, while a small pond sits in the centre of the woodland, overlooked by coppiced Alder.</p>			
Fforestganol a Chwm Nofydd	ST147835	Rhiwbina/Tongwynlais	1985

Site name	Grid Ref.	Community	Year First Designated
An area of mixed deciduous woodland with Beech plus old, orchid-rich pasture, Alder woodland and calcareous flushes. One flush contains the nationally rare plant <i>Rivularia biasoletiana</i> . Woodland areas contain Solomon's Seal, Yellow Bird's-nest, Bird's-nest Orchid and Wood Goldilocks. Herb Paris and Adder's Tongue Fern have been recorded. Forms part of the Cardiff Beech Woods SAC.			
Ely Valley	ST114764	St Fagans, Ely	1959
The best station in Wales for Monk's-hood. This rare plant has a population alongside several miles of the River Ely, occurring mainly in ditches, wetlands and woods immediately adjacent to the river. The majority of this site falls within the Vale of Glamorgan, with only a small amount within Cardiff.			
Flat Holm	ST222649	Butetown	1972
A biological and geological SSSI which forms part of the Severn Estuary SAC, SPA and Ramsar site. Carboniferous limestone island dominated by coarse grassland and scrub with a maritime sward in the low western cliffs. There is a range of plant species adapted to chalky soil, and this is one of the few stations in Wales for the Wild Leek. Herring and Lesser Black-backed Gulls also nest here. The south western shoreline demonstrates rocks of the Flat Holm Limestone of the Birnbeck formation.			
Garth Wood	ST125821	Radyr	1979
Mixed Beech-Ash woodland of uneven age, with Beech growing near the western limits of its natural range. Exhibits a well-developed understorey and is one of the few county locations for Bird's-nest Orchid. Badgers are also present. A population of <i>Porrhomma rosenhaueri</i> (a cave dwelling spider) is found within Lesser Garth Cave. Forms part of the Cardiff Beech Woods SAC.			
Glamorgan Canal/Long Wood	ST139809	Whitchurch	1982
An artificial wetland ecosystem adjoining river terrace beech woodland of considerable age. There is a range of habitats from open water, Alder carr, scrub and deciduous woodland. Includes important invertebrate species, birds and plants such as Arrowhead.			
Gwent Levels - Rumney and Peterstone	ST350800	Rumney, Trowbridge	1993
Supports a number of important plant species including Flowering-rush, Brackish Water-crowfoot, Frog-bit and Hair-like Pondweed. The aquatic invertebrate fauna is very diverse and contains many rare and notable species.			

Site name	Grid Ref.	Community	Year First Designated
Lisvane Reservoir	ST190822	Llanishen	1982
A stream-fed reservoir of importance for birds, which makes a useful refuge on the northern outskirts of Cardiff for overwintering Mallard, Teal, Tufted Duck, Pochard, Coot, Divers, Grebes and passage migrants.			
Argloddiau Cronfeydd Dwr Llanisien a Llys-Faen - Llanishen and Lisvane Reservoir Embankments	ST185822	Llanishen	2005
An important site for grassland fungi, supporting 28 species of Waxcaps <i>Hygrocybe spp.</i>			
Penylan Quarry	ST198787	Roath	1982
Geological SSSI. Exposure of the Wenlock Series of Silurian mudstones. Important fossil collections have come from this site and have been used worldwide in comparative dating of similar rocks.			
Rhymney River Section	ST209789	Rumney	1981
Geological SSSI: The most complete exposure of the Silurian strata containing the local Wenlock succession, Rumney Grit, Ludlow Series and Old Red Sandstone. There is some fossil significance.			
Rumney Quarry	ST215788	Rumney	1972
Geological SSSI: Rumney Quarry is a small disused quarry situated in a residential area of east Cardiff. It is a very important site for the interpretation of the disposition of land and sea in mid-Silurian times. This site provides the best exposure of the Silurian Rumney Grit, which is considered to belong to the oldest part of the Homeric Stage of the Wenlock Series.			
Severn Estuary		Splott, Rumney, Trowbridge, Butetown	1952
One of the largest and most important tidal estuaries in Britain with mudflats, sand banks, rocky platforms and saltmarsh. This SSSI forms part of the Severn Estuary SAC, SPA and Ramsar site. The estuarine fauna includes: internationally important populations of waterfowl, invertebrate populations of considerable interest, and large populations of migratory fish, including the nationally rare and endangered Allis Shad (<i>Alosa alosa</i>).			
Ty Du Moor	ST107792	Creigiau & St Fagans	1999

Site name	Grid Ref.	Community	Year First Designated
This site is of special interest for its base enriched fen meadow vegetation, which is associated with a range of marshy grassland, flush, swamp and carr communities. Also of special interest is the population of Broad-leaved Cottongrass <i>Eriophorum latifolium</i> .			
Caeau Blaen-Bielly	ST101825	Pentyrch	2010
Caeau Blaen-Bielly are a series of enclosed pastures with a south to south-easterly aspect, separated by hedgerows. These fields are of special interest for their species-rich neutral grassland and marshy grassland, some of which is species-rich 'fen-meadow'.			
Cwarrau Ton Mawr a Ffynnon Taf – Ton Mawr and Taffs Well Quarries	ST119822	Pentyrch, Radyr	2012
Geological SSSI: The site is of special interest for the several phases of spectacular mineralization exposed in the quarry walls. The limestone rocks that are being quarried are Carboniferous in age (approximately 340 to 350 million years old), but the mineralization is much younger. The presence of spectacular calcite minerals, coupled with the opportunity to study the history of mineralization, make these quarries nationally important for the study of mineralogy.			

2.4 Designated Local Nature Reserves in Cardiff

SITE NAME	GRID REF.	COMMUNITY	YEAR DESIGNATED
Flat Holm	ST222649	Butetown	1977
Carboniferous limestone island dominated by rough grassland and scrub with a maritime sward on the low western cliffs. Flat Holm supports a gull breeding colony and a large range of plant species which prefer chalky soil. The site is also part of the Severn Estuary SSSI, SPA & Ramsar Site.			
Glamorgan Canal	ST139809	Whitchurch	1981
An artificial wetland ecosystem adjoining river terrace beech woodland of considerable age. A range of habitats exist from open-water, Alder carr, scrub and deciduous woodland. The site is also a SSSI.			

Hermit Wood	ST137797	Radyr	1985
Semi-natural Oak/Ash/Alder woodland with diverse ground flora including Toothwort.			
Howardian	ST205789	Roath	1991
An area of semi-natural Oak woodland with grassland, marshland and pond habitats which have been created on a reclaimed landfill site. The site supports Broad-leaved Helleborine, Bee Orchid, Southern Marsh Orchid and Grass-leaved Vetchling, together with a large population of Dormice			
Fforest Ganol & Cwm Nofydd	ST144836	Tongwynlais, Rhiwbina	1995
An area of ancient semi-natural woodland with Beech as the dominant species together with orchid rich pasture, Alder carr and calcareous flushes with a number of locally rare species such as Solomon's Seal, Bird's-nest Orchid and Wood Goldilocks.			
Cardiff Bay Wetland & Hamadryad Park	ST188740	Butetown	2010
Created in 2002 to compensate in part for the loss of the mudflats when the barrage was completed which had been submerged by the rising water levels. The reserve is an important site for over-wintering and breeding birds, and other wildlife.			

2.5 Sites of Importance for Nature Conservation (SINCs) in Cardiff

Note that some SINCs occur in more than one ward. No SINCs have been identified in the Adamsdown ward.

SINC Name by Ward	Area (Ha)	Grid Reference	Year Designated / Last Reviewed
Butetown			
Beach Sidings	2.90	ST205740	2011
Cardiff Bay Wetland Reserve	10.14	ST188740	2004
Cardiff Heliport Fields	3.18	ST211750	2010
Ocean Park South	2.57	ST205753	2006
River Taff	90.44	ST17 & ST18	1995
Tidal Sidings	3.20	ST207755	2006

Caerau			
Caerau Wood	13.46	ST131750	2006
Canton Common Ditch	0.76	ST161756	2006
Leckwith Woods Viaduct	0.25	ST154757	2009
River Ely	34.99	ST17	2006
Sweldon Wood	5.32	ST128749	2006
Canton			
Canton Common Ditch	0.76	ST161756	2006
Leckwith Woods Viaduct	0.25	ST154757	2009
River Ely	34.99	ST17	2006
Cathays			
Blackweir & Dock Feeder	17.73	ST171776	2007
Cathays Cemetery	34.41	ST181785	2009
River Taff	90.44	ST17 & ST18	1995
Creigiau & St Fagans			
Afon Clun	0.27	ST071826	2008
Cadoxton & Trehafod Branch Line	17.29	ST081820	2006
Castell-y-Mynach Wood	6.44	ST082806	2005
Coed Gwernybwlau	7.99	ST085795	2005
Coed Tre Wern	12.58	ST106807	2008
Coedbychan	14.87	ST125777	2004
Coed-y-Creigiau	8.53	ST084821	2009
Coed-y-Glyn	5.17	ST110802	2008
Coed-y-Goetre	6.20	ST118799	2006
Coed-y-Gof	14.39	ST124791	2008
Coed-y-Trenches	8.19	ST117797	2008
Craig-y-Sianel	3.33	ST088812	2009
Craig-y-Parc	18.75	ST093806	2009
Creigiau Railway Fields	7.53	ST079823	2012
Ely Northwest	4.88	ST120764	2009
Ffynnon-Dwym Wood	10.57	ST087815	2009
Former Llantrisant No. 1 Branch Line	17.87	ST120790	2008
Former Penhros Branch Line	17.08	ST110784	2010
Former St. Fagans Branch Line	3.47	ST114767	1995
Glan Ely Wood	2.42	ST130772	2006
Groes Faen Fen Meadow	2.12	ST073802	2012
Groes Faen Wood	7.73	ST076806	2004
Gwern-y-Cegyrn	5.59	ST115800	2006

Henstaff Rhos Pasture	1.82	ST080804	2012
M4 Junction 33 Spoil Tip	1.49	ST091796	2006
Maes Mawr Wood	2.62	ST076812	2009
Michaelston Marsh & Woods	9.41	ST114763	2006
Nant Coslech	1.68	ST080813	2010
Nant Dowlais	1.81	ST105787	2010
Nant Henstaff	6.98	ST082802	2005
Nant Rhydlafer	0.95	ST110794	2010
Nant-y-Cesair	0.13	ST076827	2010
Nant-y-Glaswg	5.86	ST100790	2010
Pant y Gored Wet Woodland	2.98	ST088809	2009
Pencoed Wood	5.44	ST091799	2008
Pentrebane Cottage Ponds	0.12	ST119788	2008
Plymouth Great Wood	25.37	ST126769	2006
River Ely	34.99	ST17	2006
Slanney Woods & Garn	18.24	ST112784	2004
St Fagans	30.17	ST112772	2012
Tre Wern Field, Pentyrch	8.89	ST104806	2008
Tydu Marsh	2.81	ST109796	2006
Tyn-y-coed Complex	73.16	ST086829	2009
Waterhall Plantation & Pond	8.99	ST128786	2008
Cyncoed			
Discovery Wood	0.97	ST189801	2007
Llanedeyrn Woodlands Complex	28.95	ST204807	2008
Llanishen Brook (South)	0.74	ST183804	2011
Llanishen Reservoir Grassland and Scrub	4.97	ST184817	2006
Nant Fawr Community Woodlands	4.04	ST185807	2009
Nant Fawr Meadows	5.50	ST190816	2007
Nant Glandulais	2.51	ST197825	2010
Rhyd-y-Pennau Complex	4.51	ST188812	2012
Roath Brook	4.77	ST206783	2011
Roath Park Lake	12.52	ST185796	2011
Roath Park Wild Gardens	3.48	ST185802	2007
Scott Wood	0.90	ST189802	2007
Swan Mear Wood	1.02	ST192800	2007
Ely			
Michaelston Marsh & Woods	9.41	ST114763	2006
Nant-y-Plac Complex	0.92	ST114754	2011
Plymouth Great Wood	25.37	ST126769	2006
River Ely	34.99	ST17	2006
Riverside Wood	1.68	ST134769	2006

Fairwater			
Fairwater Park	1.42	ST140779	2012
Former Llantrisant No. 1 Branch Line	17.87	ST120790	2008
Glan Ely Wood	2.42	ST130772	2006
River Ely	34.99	ST17	2006
Waterhall Plantation & Pond	8.99	ST128786	2008
Gabalfa			
Blackweir & Dock Feeder	17.73	ST171776	2007
Gabalfa Woods	5.77	ST165783	2007
River Taff	90.44	ST17 & ST18	2011
Grangetown			
Cogan Spur Viaduct	0.83	ST176729	2011
Grangemore Park	18.10	ST173737	2008
Leckwith Pond & Marsh	2.39	ST166742	2011
River Ely	34.99	ST17	2006
River Taff	90.44	ST17 & ST18	2011
Heath			
Cathays Cemetery	34.41	ST181785	2009
Heath Wood & Pond	9.49	ST176799	2012
Lisvane			
Airshaft No. 4 Spoil Tip	0.19	ST177848	2009
Castell Mor Craig Wood	1.95	ST161843	2009
Cefn Onn Amenity Grassland	1.14	ST176843	2012
Coed Transh yr Hebog	20.90	ST174847	2009
Coed-ty-Llwyd	3.08	ST186822	2009
Coed-y-Felin	6.73	ST181829	2012
Coed-y-Graig	2.92	ST195850	2009
Coetgaepengam	2.45	ST186827	2009
Coetgae-sych	3.76	ST190826	2012
Craig Llanishen	14.16	ST169846	2010
Craig-Llwyn Road Wood	2.40	ST194837	2011
Foxfield	0.95	ST194845	2009
Lisvane Reservoir Wood	1.00	ST189823	2009
Llwyn-y-Pia Marsh	3.12	ST189834	2005

Nant Fawr (north section)	1.80	ST179840	2010
Nant Glandulais	2.51	ST197825	2010
Nant Transh yr Hebog	0.26	ST179843	2010
Nant Ty-draw	0.86	ST194832	2009
Nant Ty-draw Fach	0.88	ST189841	2009
Nant-y-Draenog	0.31	ST199826	2010
Nant-y-Felin	0.42	ST193841	2009
Parc Cefn Onn	12.54	ST178841	2009
Springmeadow	1.47	ST192842	2009
Springmeadow Wood	3.91	ST192844	2010
Ty Llwyd Meadows	2.65	ST189823	2009
Wern Fawr South	8.44	ST182839	2009
Llandaff			
Radyr Community Woodlands	6.33	ST136797	2008
River Taff	90.44	ST17 & ST18	2011
Llandaff North			
Hailey Park	8.20	ST142796	2009
River Taff	90.44	ST17 & ST18	2011
Llanishen			
Coedcochwyn	4.70	ST171819	2012
Coedifanbychan/Coedtirhwnt	11.18	ST168832	2009
Coed-y-Caeau	6.45	ST176811	2006
Gwern-y-Bendy	1.71	ST183817	2008
Lisvane Reservoir Wood	1.00	ST189823	2009
Lisvane Station Wood	2.98	ST178832	2012
Llanishen Brook (North)	1.30	ST171828	2010
Llanishen Brook (South)	0.74	ST183804	2011
Llanishen Reservoir	23.88	ST187818	2011
Llanishen Reservoir Grassland and Scrub	4.97	ST184817	2006
Llwyn-crwnganol Wood	1.44	ST177832	2012
Thornhill Primary School Pond	0.13	ST174381	2007
Llanrumney			
Coed-y-Cwar	4.07	ST214801	2012
Fishpond Wood	1.64	ST218806	2012
Lower Rookery Wood	1.87	ST218809	2012
Rhymney River Valley Complex	30.35	ST208793	2008

River Rhymney	42.24	ST 27 & ST28	2011
Pentwyn			
Blaen Buellai Complex	40.37	ST104827	2011
Cadoxton & Trehafod Branch Line	17.29	ST081820	2006
Llanedeyrn Woodlands Complex	28.95	ST204807	2008
Nant Glandulais	2.51	ST197825	2010
Rhymney River Valley Complex	30.35	ST208793	2008
River Rhymney	42.24	ST 27 & ST28	2011
Pentyrch			
Caerau Lane Fields	10.16	ST104814	2008
Coed Rhiw'r Ceiliog	10.40	ST115836	2007
Coed Tre Wern	12.58	ST106807	2008
Coedgae Basset	11.38	ST096839	2004
Coedgae Fawr	5.68	ST114809	2004
Coed-y-Creigiau	8.53	ST084821	2009
Craig y Sianel	3.33	ST088812	2009
Cwmrhyddgoed	12.56	ST114820	2010
Former Penhros Branch Line	17.08	ST110784	2010
Llys-y-Coed	5.94	ST102813	2011
Nant Cwmllwydrew	0.53	ST117829	2010
Nant-y-Glaswg	5.86	ST100790	2010
Pentyrch Drove Track	0.55	ST111813	2012
River Taff	90.44	ST17 & ST18	2011
The Garth	113.97	ST106838	2008
Tre Wern Field, Pentyrch	8.89	ST104806	2008
Tyn-y-coed Complex	73.16	ST086829	2009
Penylan			
Llanedeyrn Woodlands Complex	28.95	ST204807	2008
Rhymney River Valley Complex	30.35	ST208793	2008
River Rhymney	42.24	ST 27 & ST28	2011
Roath Brook	4.77	ST206783	2011
Plasnewydd			
Roath Brook	4.77	ST206783	2011
Pontprennau & Old St Mellons			

Cefn Mably Woods	31.91	ST214841	2004
Coed-y-Llan	1.75	ST204836	2006
Druidstone Road	1.34	ST232825	2009
Malthouse Wood	5.44	ST209832	2006
Nant Glandulais	2.51	ST197825	2010
Nant Mwlán Wood	1.54	ST230833	2006
Nant-y-Draenog	0.31	ST199826	2010
Pontprennau Wood	7.11	ST213820	2008
River Rhymney	42.24	ST 27 & ST28	2011
St Julian's Forge Fields	2.14	ST219826	2008
Tyla Farm Wood	2.15	ST239825	2004
Radyr & Morganstown			
Coed Pant Tawel/Coedgae-fach	14.16	ST116810	2008
Coed-y-Goetre	6.20	ST118799	2006
Cwm Farm Pond & Streamside Copse	1.08	ST124818	2007
Former Penhros Branch Line	17.08	ST110784	2010
Goitre-Fawr Ponds	6.25	ST116806	2012
Gwern-y-Cegyrn	5.59	ST115800	2006
Maerdy Woods	8.41	ST121805	2012
Mynydd Woods	6.08	ST129813	2007
Radyr Community Woodlands	6.33	ST136797	2008
Radyr Cricket Ground and Fields	18.67	ST139801	2008
River Taff	90.44	ST17 & ST18	2011
Rhiwbina			
Briwnant Footpath Field	1.21	ST160832	2007
Briwnant Wood	14.05	ST157836	2008
Briwnant-Isaf Wood	7.54	ST158830	2006
Coed-y-Briwnant	16.67	ST154837	2005
Craigbriwnant field	1.99	ST161832	2008
Cwm Nofydd Grasslands	1.02	ST147838	2008
Nant Nofydd	1.76	ST148827	2009
Nant-y-Briwnant	3.42	ST160838	2009
Nant-y-Briwnant Complex	10.26	ST159826	2006
Pant Mawr Cemetery	4.31	ST144816	2011
River Taff	90.44	ST17 & ST18	2011
Twmpath Fields	2.33	ST152821	2012
Twynau Gwynion Field	1.15	ST153837	2005
Wenallt Farm Fields	4.52	ST152840	2008

Wenallt Rd North Fields	1.98	ST155842	2009
Wenallt Road Field, Rhiwbina	2.24	ST155827	2009
Whitchurch Golf Course Pond	0.08	ST150811	2004
Riverside			
River Taff	90.44	ST17 & ST18	2011
Rumney			
Lamby North	1.78	ST213782	2008
Lamby Salt Marsh	4.14	ST220775	2011
Lamby Way	0.33	ST220784	2009
Rhymney Grassland East	3.10	ST212784	2009
Rhymney River Valley Complex	30.35	ST208793	2008
River Rhymney	42.24	ST 27 & ST28	2011
Splott			
Ocean Park South	2.57	ST205753	2006
Pengam Moors	22.04	ST216769	2006
River Rhymney	42.24	ST 27 & ST28	2011
Tidal Sidings	3.20	ST207755	2006
Trowbridge			
Cath Cobb Wood	4.05	ST234811	2012
Hendre Lake	4.85	ST245805	2011
Hendre Lake West	4.19	ST243802	2009
Hendre Road	26.18	ST235797	2009
Marshfield	4.98	ST253809	2009
Rumney Great Wharf	59.98	ST244786	2011
Wentloog Industrial Park	0.68	ST233792	2009
Whitchurch & Tongwynlais			
Blaengwynlais Quarry Fields	6.51	ST144843	2008
Coryton Heronry Wood	2.99	ST140811	2005
Coryton Interchange	7.46	ST139816	2008
Fforest-fach/Graig-goch	2.10	ST145832	2011
Fforest-fawr	69.48	ST136833	2010
Greenmeadow Wood	29.06	ST139822	2011
Melingriffith & Melingriffith Feeder	3.42	ST131806	2007
Nant Nofydd	1.76	ST148827	2009

Nant-y-Fforest	1.93	ST135827	2009
River Taff	90.44	ST17 & ST18	2011
Tongwynlais Oldfield Rd	5.07	ST144820	2009
Whitchurch Green Fields	7.84	ST141808	2008

2.6 Protected Species in Cardiff

The habitats, known distribution and legal protection of protected species in Cardiff.

Species	Habitats	Distribution in Cardiff	Legal Protection (see below for abbreviations)
Great Crested Newt <i>Triturus cristatus</i>	Breeds in ponds; forages in adjacent grassland and woodland.	Mainly in the west between the M4 and River Ely, but scattered records across the city	CR, WCA Sch 5 (full)
Otter <i>Lutra lutra</i>	Breeds in riverbanks; forages extensively along watercourses and other water bodies.	Present on the rivers Ely, Taff and Rumney; also occurs on tributaries and other water bodies.	CR, WCA Sch 5 (full)
Dormouse <i>Muscardinus avellanarius</i>	Woodland and scrub	Modern records all to the north and east of the city, but historic record in Roath.	CR, WCA Sch 5 (full)
Bats (all species) <i>Rhinolophidae</i> and <i>Vespertilionidae</i>	Breeding sites include trees, buildings and underground voids depending on the species, hibernation roosts may be in different locations.	Some species such as Pipistrelles are widespread across the county, other are very localised.	CR, WCA Sch 5 (full)

Water Vole <i>Arvicola terrestris</i>	Breeds in riverbanks; forages on marginal vegetation adjacent to water courses and water bodies.	Gwent Levels, and North Cardiff either side of the Coryton area	WCA Sch 5 (sec9[4])
Badger <i>Meles meles</i>	Breeding Setts usually in woodlands; forages mostly in woodland and grasslands	Widespread in the north of Cardiff	Protection of Badgers Act 1992
Adder <i>Vipera berus</i>	Heathland, scrub and rough grassland	Mostly north of the M4	WCA Sch 5 (sec 9 [1&5])
Grass Snake <i>Natrix natrix</i>	Grassland and scrub near waterbodies	Recorded from Gwent levels, Lisvane Reservoir and Forest Farm, but widespread in suitable habitat	WCA Sch 5 (sec 9 [1&5])
Slow-worm <i>Anguis fragilis</i>	Grasslands, scrub, allotments, gardens, railway embankments and brownfield sites.	Widespread including urban locations	WCA Sch 5 (sec 9 [1&5])
Common Lizard <i>Zootoca vivipara</i>	Grasslands, scrub, railway embankments and brownfield sites.	Formerly probably widespread now much more localised to the north of the City.	WCA Sch 5 (sec 9 [1&5])
Barn Owl <i>Tyto alba</i>	Breeds in buildings, trees and quarries; forages over grassland	Gwent levels and north Cardiff	WCA Sch 1

Peregrine <i>Falco peregrinus</i>	Breeds on buildings and in quarries; forages widely.	Mainly north Cardiff	WCA Sch 1
Kingfisher <i>Alcedo atthis</i>	Breeds in river banks; forages on watercourses and lakes.	Widespread along watercourses	WCA Sch 1
Cetti's Warbler <i>Cettia cetti</i>	Willow, usually adjacent to reeds.	Gwent levels	WCA Sch 1
Childing Pink <i>Petrorhagia nanteuilii</i>	Dry grassland	Only one site on Cardiff Docks	WCA Sch 8

Abbreviations

CR – Conservation of Habitats and Species Regulations 2010 (as amended) (which implement the European Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC) which is referred to in the Regulations as the “Habitats Directive”).

WCA – Wildlife and Countryside Act 1981 (as amended).

Sch 5 (full) – Schedule 5 – full protection.

Sch 5 (sec9[1&5]) – in respect of section 9 paragraphs 1 and 5 only. Protection for reptiles under section 9(1) extends to intentional killing and injury only.

Sch 5 (sec9[4]) – in respect of section 9 paragraph 4 only.

Sch 1 – Schedule 1 (birds protected by special penalties)

Sch 8 – Schedule 8 (Plants)

Note: Animals which are protected by the Wildlife and Countryside Act 1981 (as amended) in respect of Schedule 9, section 5 (sale) **only** are not listed. Also most birds and their nests and eggs are protected. The Schedule 1 birds listed receive additional protection in respect of disturbance during the breeding season.

2.7 Invasive Non-Native Species

Many non-native species of plants and animals have been introduced to the UK. Some of these have become very prolific and caused problems for native flora and fauna. Schedule 9 of the Wildlife and Countryside Act makes it an offence to introduce certain animals or cause certain plants to grow in the wild. These include Japanese Knotweed. This is an abundant species in Cardiff, particularly in the river valleys and on disturbed ground such as brownfield sites. A standard condition for its treatment and removal is usually attached to planning applications where the species is present (see Appendix 1.D). Other problematic non-native species which occur in Cardiff are also listed on Schedule 9, which was amended to include further species in April 2010. Development proposals should consider the impact of these species upon local biodiversity and remove them where possible.

The following Invasive Non-native Species are known to occur in Cardiff, but other species may be discovered in the future:-

- American Mink (*Mustela vison*)
- Canada Goose (*Branta canadensis*)
- Canadian Waterweed (*Elodea canadensis*)
- Evergreen Oak (*Quercus ilex*)
- False Acacia (*Robinia pseudoacacia*)
- Floating Pennywort (*Hydrocotyle ranunculoides*)
- Giant Hogweed (*Heracleum mantegazzianum*)
- Giant Rhubarbs (*Gunnera* species)
- Harlequin Ladybird (*Harmonia axyridis*)
- Himalayan Balsam (*Impatiens glandulifera*)
- Hottentot Fig (*Carpobrotus edulis*)
- Japanese Knotweed (*Fallopia japonica*)
- Japanese Rose (*Rosa rugosa*)
- Killer Shrimp (*Dikerogammarus villosus*)
- Least Duckweed (*Lemna minuta*)
- Montbretia (*Crocsmia x crocosmiifolia*)

New Zealand Flatworms (*Kontikia* spp)
New Zealand Pigmyweed (*Crassula helmsii*)
Parrot's Feather (*Myriophyllum aquaticum*)
Quagga Mussel (*Dreissena rostriformis*)
Red-eared Terrapin (*Trachemys scripta elegans*)
Rhododendron (*Rhododendron ponticum*)
Russian-vine (*Fallopia baldschuanica*)
Signal Crayfish (*Pacifastacus leniusculus*)
Three-cornered Leek (*Allium triquetrum*)
Turkey Oak (*Quercus cerris*)
Water Fern (*Azolla filiculoides*)
Zebra Mussel (*Dreissena polymorpha*)

APPENDIX 2.A: Section 7 List for Cardiff

This is a list of the living organisms which have been detected in Cardiff and which occur on the Section 7 list for Wales. The Section 7 list, as set out in the Environment (Wales) Act 2016, is a list of species which in the opinion of Welsh Ministers are of principal importance for the purpose of maintaining and enhancing biodiversity in relation to Wales. The data below were accessed on 26th September 2016 by the South East Wales Biodiversity Records Centre (SEWBRc). Should a more recent species list be required, then SEWBRc should be contacted. The list provided here relates to the extant Section 7 list at that time. It should be noted that the Section 7 list may be amended by Welsh Ministers. Past records of presence of a species do not guarantee continued occurrence; absence of records does not imply absence of a species, merely that no records are held at SEWBRc. SEWBRc cannot guarantee the accuracy of supplied data, and copyright of records remains with the original recorder.

Scientific Name	Common Name	Number of Records	Last Date Recorded
<i>Acronicta rumicis</i>	Knot Grass	376	2016
<i>Anguis fragilis</i>	Slow-worm	206	2016
<i>Anthus trivialis</i>	Tree Pipit	317	2016
<i>Arctia caja</i>	Garden Tiger	71	2016
<i>Bufo bufo</i>	Common Toad	339	2016
<i>Chiasmia clathrata</i>	Latticed Heath	32	2016
<i>Chiroptera</i>	Bats	895	2016
<i>Chroicocephalus ridibundus</i>	Black-headed Gull	2178	2016
<i>Coenonympha pamphilus</i>	Small Heath	120	2016
<i>Cuculus canorus</i>	Cuckoo	236	2016
<i>Ecliptopera silaceata</i>	Small Phoenix	275	2016
<i>Emberiza schoeniclus</i>	Reed Bunting	845	2016
<i>Erinaceus europaeus</i>	West European Hedgehog	458	2016
<i>Falco tinnunculus</i>	Kestrel	773	2016
<i>Larus argentatus</i>	Herring Gull	2142	2016
<i>Linaria cannabina</i>	Linnet	733	2016
<i>Lutra lutra</i>	European Otter	232	2016
<i>Lycia hirtaria</i>	Brindled Beauty	110	2016
<i>Malacosoma neustria</i>	Lackey	557	2016
<i>Motacilla flava</i>	Yellow Wagtail	536	2016
<i>Natrix natrix</i>	Grass Snake	109	2016
<i>Nyctalus noctula</i>	Noctule Bat	307	2016
<i>Passer domesticus</i>	House Sparrow	1705	2016
<i>Perizoma albulata</i>	Grass Rivulet	2	2016

Scientific Name	Common Name	Number of Records	Last Date Recorded
<i>Phylloscopus sibilatrix</i>	Wood Warbler	362	2016
<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	1943	2016
<i>Pipistrellus pygmaeus</i>	Soprano Pipistrelle	1711	2016
<i>Plecotus auritus</i>	Brown Long-eared Bat	90	2016
<i>Prunella modularis</i>	Dunnock	1428	2016
<i>Pyrrhula pyrrhula</i>	Bullfinch	730	2016
<i>Rhinolophus ferrumequinum</i>	Greater Horseshoe Bat	29	2016
<i>Rhinolophus hipposideros</i>	Lesser Horseshoe Bat	85	2016
<i>Spilosoma lubricipeda</i>	White Ermine	108	2016
<i>Spilosoma lutea</i>	Buff Ermine	983	2016
<i>Sturnus vulgaris</i>	Starling	1506	2016
<i>Triturus cristatus</i>	Great Crested Newt	286	2016
<i>Turdus philomelos</i>	Song Thrush	1623	2016
<i>Tyria jacobaeae</i>	Cinnabar	452	2016
<i>Vipera berus</i>	Adder	54	2016
<i>Xanthorhoe ferrugata</i>	Dark-barred Twin-spot Carpet	114	2016
<i>Acanthis cabaret</i>	Lesser Redpoll	240	2015
<i>Acronicta psi</i>	Grey Dagger	44	2015
<i>Agrochola helvola</i>	Flounced Chestnut	8	2015
<i>Agrochola lychnidis</i>	Beaded Chestnut	42	2015
<i>Alauda arvensis</i>	Skylark	634	2015
<i>Allophyes oxyacanthae</i>	Green-brindled Crescent	95	2015
<i>Apamea remissa</i>	Dusky Brocade	106	2015
<i>Atethmia centrargo</i>	Centre-barred Sallow	67	2015
<i>Bombus (Thoracobombus) humilis</i>	Brown-banded Carder-bee	22	2015
<i>Botaurus stellaris</i>	Bittern	172	2015
<i>Caradrina morpheus</i>	Mottled Rustic	425	2015
<i>Celaena leucostigma</i>	Crescent	2	2015
<i>Centaurea cyanus</i>	Cornflower	13	2015
<i>Ceramica pisi</i>	Broom Moth	17	2015
<i>Cirrhia icteritia</i>	Sallow	87	2015
<i>Coccothraustes coccothraustes</i>	Hawfinch	365	2015
<i>Dendrocopos minor</i>	Lesser Spotted Woodpecker	746	2015
<i>Diarsia rubi</i>	Small Square-spot	190	2015
<i>Emberiza citrinella</i>	Yellowhammer	87	2015
<i>Ennomos fuscantaria</i>	Dusky Thorn	147	2015
<i>Ennomos quercinaria</i>	August Thorn	135	2015
<i>Ficedula hypoleuca</i>	Pied Flycatcher	395	2015
<i>Hemistola chrysoprasaria</i>	Small Emerald	59	2015
<i>Hepialus humuli</i>	Ghost Moth	73	2015
<i>Hipparchia semele</i>	Grayling	79	2015
<i>Hordeum marinum</i>	Sea Barley	25	2015
<i>Hydraecia micacea</i>	Rosy Rustic	92	2015
<i>Lepus europaeus</i>	Brown Hare	18	2015
<i>Leucania comma</i>	Shoulder-striped Wainscot	44	2015
<i>Limosa lapponica</i>	Bar-tailed Godwit	429	2015
<i>Locustella naevia</i>	Grasshopper Warbler	136	2015
<i>Melanchra persicariae</i>	Dot Moth	468	2015
<i>Melanthia procellata</i>	Pretty Chalk Carpet	37	2015
<i>Muscardinus avellanarius</i>	Hazel Dormouse	740	2015
<i>Muscicapa striata</i>	Spotted Flycatcher	402	2015
<i>Mustela putorius</i>	Polecat	39	2015
<i>Numenius arquata</i>	Curlew	1872	2015

Scientific Name	Common Name	Number of Records	Last Date Recorded
<i>Pluvialis apricaria</i>	Golden Plover	173	2015
<i>Poecile palustris</i>	Marsh Tit	242	2015
<i>Satyrus w-album</i>	White-letter Hairstreak	30	2015
<i>Scotopteryx chenopodiata</i>	Shaded Broad-bar	62	2015
<i>Tholera decimalis</i>	Feathered Gothic	25	2015
<i>Turdus torquatus</i>	Ring Ouzel	55	2015
<i>Vanellus vanellus</i>	Lapwing	1761	2015
<i>Zootoca vivipara</i>	Common Lizard	82	2015
<i>Boloria selene</i>	Small Pearl-bordered Fritillary	19	2014
<i>Charadrius hiaticula</i>	Ringed Plover	1206	2014
<i>Circus cyaneus</i>	Hen Harrier	37	2014
<i>Eulithis mellinata</i>	Spinach	34	2014
<i>Melanitta nigra</i>	Common Scoter	308	2014
<i>Microglossum olivaceum</i>	Olive Earthtongue	12	2014
<i>Orthonama vittata</i>	Oblique Carpet	4	2014
<i>Perdix perdix</i>	Grey Partridge	79	2014
<i>Salmo salar</i>	Atlantic Salmon	12	2014
<i>Salmo trutta</i>	Brown/Sea Trout	30	2014
<i>Sciurus vulgaris</i>	Eurasian Red Squirrel	7	2014
<i>Timandra comae</i>	Blood-Vein	65	2014
<i>Watsonalla binaria</i>	Oak Hook-tip	24	2014
<i>Amphipoea oculatea</i>	Ear Moth	11	2013
<i>Caprimulgus europaeus</i>	Nightjar	49	2013
<i>Coeloglossum viride</i>	Frog Orchid	3	2013
<i>Euxoa nigricans</i>	Garden Dart	24	2013
<i>Lasiommata megera</i>	Wall	80	2013
<i>Poecile montana</i>	Willow Tit	235	2013
<i>Barbastella barbastellus</i>	Western Barbastelle	2	2012
<i>Hoplodrina blanda</i>	Rustic	392	2012
<i>Linaria flavirostris</i>	Twite	32	2012
<i>Pipistrellus pipistrellus</i> agg.	Pipistrelle	127	2012
<i>Scotopteryx bipunctaria</i>	Chalk Carpet	1	2012
<i>Scotopteryx bipunctaria</i> subsp. <i>cretata</i>	Chalk Carpet	12	2012
<i>Amphipyra tragopoginis</i>	Mouse Moth	81	2011
<i>Anguilla anguilla</i>	European Eel	66	2011
<i>Erynnis tages</i>	Dingy Skipper	9	2011
<i>Streptopelia turtur</i>	Turtle Dove	170	2011
<i>Vicia orobus</i>	Wood Bitter-vetch	1	2011
<i>Arvicola amphibius</i>	European Water Vole	27	2010
<i>Branta bernicla</i> subsp. <i>bernicla</i>	Dark-bellied Brent Goose	78	2010
<i>Cygnus columbianus</i> subsp. <i>bewickii</i>	Bewick's Swan	3	2010
<i>Lullula arborea</i>	Woodlark	11	2010
<i>Crex crex</i>	Corncrake	38	2009
<i>Gymnadenia conopsea</i>	Fragrant Orchid	13	2009
<i>Liparis loeselii</i>	Fen Orchid	2	2009
<i>Oenanthe fistulosa</i>	Tubular Water-dropwort	43	2009
<i>Cetorhinus maximus</i>	Basking Shark	1	2008
<i>Lucanus cervus</i>	Stag Beetle	16	2008
<i>Micromys minutus</i>	Harvest Mouse	5	2008
<i>Epirrhoe galiata</i>	Galium Carpet	8	2007
<i>Litoligia literosa</i>	Rosy Minor	34	2007
<i>Motacilla flava</i> subsp. <i>flavissima</i>	Yellow Wagtail	20	2007
<i>Orthosia gracilis</i>	Powdered Quaker	43	2007
<i>Passer montanus</i>	Tree Sparrow	204	2007

Scientific Name	Common Name	Number of Records	Last Date Recorded
Cupido minimus	Small Blue	9	2006
Entoloma bloxamii	Big Blue Pinkgill	4	2006
Eugnorisma glareosa	Autumnal Rustic	9	2006
Tholera cespitis	Hedge Rustic	5	2006
Anser albifrons	White-fronted Goose	100	2005
Cygnus columbianus	Bewick's Swan	40	2004
Euxoa tritici	White-line Dart	1	2004
Hygrocybe spadicea	Date Waxcap	3	2004
Rhizedra lutosa	Large Wainscot	20	2004
Bombus (Thoracobombus) muscorum	Moss Carder-bee	7	2003
Bombus (Thoracobombus) sylvarum	Shrill Carder Bee	17	2003
Ennomos erosaria	September Thorn	4	2003
Perizoma albulata subsp. albulata	Grass Rivulet	4	2001
Martes martes	Pine Marten	1	2000
Clorismia rustica	Southern Silver-stiletto	3	1999
Euphydryas aurinia	Marsh Fritillary	51	1999
Hieracium radyrense	Hawkweed	13	1998
Meotica anglica	Shingle Rove Beetle	5	1998
Argynnis adippe	High Brown Fritillary	22	1997
Chesias legatella	Streak	24	1997
Endocarpus adscendens	Endocarpus adscendens	9	1997
Euphrasia officinalis subsp. pratensis	Eyebright	2	1997
Diloba caeruleocephala	Figure of Eight	3	1996
Galeopsis angustifolia	Red Hemp-nettle	4	1996
Varicellaria hemisphaerica	Varicellaria hemisphaerica	1	1995
Lipsothrix nervosa	Crane-fly	3	1994
Lipsothrix nervosa	Southern Yellow Splinter	3	1994
Monotropa hypopitys subsp. hypopitys	Bird's-nest	3	1994
Hydnum spongiosipes	Velvet Tooth	1	1993
Ranunculus arvensis	Corn Buttercup	4	1993
Monotropa hypopitys	Yellow Bird's-nest	19	1991
Acrocephalus paludicola	Aquatic Warbler	5	1990
Polystichum lonchitis	Holly-fern	3	1990
Sterna dougallii	Roseate Tern	6	1990
Pyrgus malvae	Grizzled Skipper	6	1986
Agrochola litura	Brown-spot Pinion	6	1985
Bembidion (Oxydromus) testaceum	Pale Pin-palp	41	1985
Stilbia anomala	Anomalous	1	1983
Macaria wauaria	V-Moth	6	1978
Cosmia diffinis	White-spotted Pinion	1	1976
Graphiphora augur	Double Dart	5	1976
Alosa fallax	Twaite Shad	1	1975
Emberiza calandra	Corn Bunting	6	1975
Ranunculus tripartitus	Three-lobed Crowfoot	9	1973
Monotropa hypopitys subsp. hypophegea	Bird's-nest	2	1972
Salsola kali subsp. kali	Prickly Saltwort	2	1971
Bupleurum tenuissimum	Slender Hare's-ear	16	1969
Lanius collurio	Red-backed Shrike	29	1950
Anania funebris	White-spotted Sable	15	1945
Boloria euphrosyne	Pearl-bordered Fritillary	7	1945
Galeopsis speciosa	Large-flowered Hemp-nettle	1	1938
Silene gallica	Small-flowered Catchfly	11	1938
Carex divisa	Divided Sedge	2	1937
Cossus cossus	Goat Moth	6	1933
Lampronia capitella	Currant Shoot Borer	4	1932

Scientific Name	Common Name	Number of Records	Last Date Recorded
<i>Austropotamobius pallipes</i>	Freshwater Crayfish	3	1930
<i>Chesias rufata</i> subsp. <i>rufata</i>	Broom-tip	4	1930
<i>Fumaria purpurea</i>	Purple Ramping-fumitory	2	1930
<i>Carabus</i> (<i>Morphocarabus</i>) <i>monilis</i>	Necklace Ground Beetle	4	1929
<i>Andrena</i> (<i>Poliandrena</i>) <i>tarsata</i>	Tormentil Mining Bee	2	1925
<i>Lagopus lagopus</i>	Willow Ptarmigan	2	1925
<i>Viola lactea</i>	Pale Dog-violet	2	1922
<i>Adscita statices</i>	Forester	2	1921
<i>Apamea anceps</i>	Large Nutmeg	2	1921
<i>Brachylomia viminalis</i>	Minor Shoulder-knot	3	1921
<i>Cirrhia gilvago</i>	Dusky-lemon Sallow	2	1921
<i>Mniotype adusta</i>	Dark Brocade	5	1921
<i>Lampetra fluviatilis</i>	River Lamprey	2	1918
<i>Aporophyla lutulenta</i>	Deep-brown Dart	4	1917
<i>Chesias rufata</i>	Broom-tip	1	1917
<i>Meloe proscarabaeus</i>	Black Oil-beetle	2	1915
<i>Plebejus argus</i>	Silver-studded Blue	2	1912
<i>Platanthera bifolia</i>	Lesser Butterfly-orchid	10	1910
<i>Chamaemelum nobile</i>	Chamomile	5	1908
<i>Clinopodium acinos</i>	Basil Thyme	2	1908
<i>Gentianella campestris</i>	Field Gentian	2	1908
<i>Limenitis camilla</i>	White Admiral	3	1906
<i>Phocoena phocoena</i>	Common Porpoise	1	1900
<i>Cyclophora pendularia</i>	Dingy Mocha	2	1899
<i>Lophopus crystallinus</i>	Crystal Moss-animal	2	1891
<i>Orcinus orca</i>	Killer Whale	1	1891
<i>Melittis melissophyllum</i>	Bstard Balm	2	1886
<i>Pulicaria vulgaris</i>	Small Fleabane	2	1886
<i>Scandix pecten-veneris</i>	Shepherd's-needle	2	1886
<i>Stellaria palustris</i>	Marsh Stitchwort	2	1886
<i>Trollius europaeus</i>	Globeflower	3	1886
<i>Pyrrhocorax pyrrhocorax</i>	Chough	1	1880
<i>Dianthus armeria</i>	Deptford Pink	1	1876
<i>Hyperoodon ampullatus</i>	Northern Bottlenose Whale	1	1868

Appendix 2.B: Cardiff Modifications to the Guidelines for the Selection of Wildlife Sites in South Wales

The 'Guidelines for the Selection of Wildlife Sites in South Wales' produced in August 2004, provide a framework within which Local Authorities are free to refine their own detailed criteria for the selection and designation of Wildlife Sites (SINCs) within their administrative boundaries.

Within Cardiff, the modifications to these criteria are as follows:-

- 1) Part 2 Section H1 Woodlands on page 21, the paragraph:-

'No minimum threshold of indicator species is given because this could vary significantly depending on the type of woodland under consideration. However, the aim should be to demonstrate the presence of a significant assemblage of such species. The figure required for significance will vary greatly due to circumstance, and is best judged by local experts in a case by case or Unitary Authority by Unitary Authority basis.'

...is removed, and replaced with:-

'In Cardiff, a woodland will qualify for SINC designation as an Ancient Semi-Natural Woodland if it contains 12 or more species listed on Table 1. Woodlands will also qualify if any species or combination thereof on Table 1 forms a 'carpet' of ground flora that covers 25% or more of the woodland. These thresholds have been tested in woodlands in Cardiff and found to correspond accurately with sites which have already been selected as SINCs.'

- 2) **S2 Birds**

The regional guidelines identify the following criteria:

- sites supporting breeding populations, of any size, of species marked with an A in Table 9

- sites supporting wintering or passage refuelling populations, of any size, of species marked with an A in Table 10
- sites supporting an agreed number (to be agreed by the LBAP partnerships) of those species that are marked B in Tables 9 & 10, or identified as additions to the tables by the LBAP partnership, that collectively designate a site and/or contribute towards its designation
- any site with 100 or more bird species recorded in the previous five years

On Table 9 (Pages 66 to 69), Sand Martin and Redstart are moved from the 'B' list to the 'A' list, and the Grey Heron is added to the 'A' list. Sand Martin and Heron are included on the A list because their breeding sites are concentrated in colonies. Redstart is an extremely scarce breeding species in Cardiff.

The selection criteria for assemblages of contributory species should also include a threshold for numbers of birds, so that sites which support significant populations are selected. Therefore the following site selection criterion is added:

- *'Sites which regularly support a population of *waterfowl (excluding Mallard) which exceeds 200 individuals.'*

**The term waterfowl includes divers, grebes, cormorants, herons, swans, geese, ducks, waders, rails and their allies.'*

3) Section S3 Reptiles Page 70, there is inserted:-

The regional guidelines identify the following criteria:-

- Sites supporting three or more reptile species
- Sites supporting good populations of any reptile species

‘Reptiles in general are under-recorded in Cardiff, so SINC’s will be designated as and when data becomes available.’

In order to reflect the widespread distribution of slow-worms in Cardiff, including on brownfield sites, the following point:-

- *‘Sites supporting good populations of any reptile species’*

...is replaced with:-

- *‘Sites supporting good populations of Adders, Grass Snakes or Common Lizards.’*

...and the following point is added:-

- *‘Sites supporting exceptional populations of Slow-worms.’*

4) Section S4 Amphibians – Great Crested Newt, page 72.

The regional guidelines identify the following criteria

- sites supporting ‘good populations’ of Great Crested Newt defined here as 10 or more individuals

Of the 5 breeding populations of this species in Cardiff, none qualify as ‘Good’, in that 10 or more individuals have not been detected at these sites during recent surveys. However, these populations are still important in the context of the biodiversity of Cardiff,

The regional criterion is substituted with:-

- *‘Sites supporting breeding populations of Great Crested Newt.’*

In light of the above, the following text is deleted:-

‘Preference should be given to sites supporting ‘good’ populations of Great Crested Newts rather than all sites, bearing in mind that the species and its habitats are per se afforded full statutory protection by the Wildlife & Countryside Act 1981. ‘Good populations’ are here defined as sites that support 10 or more individuals. ‘

...and the paragraph:-

‘The occurrence of Great Crested Newts, in whatever numbers, should be considered a supporting reason for selection of a site, which also qualifies under other guidelines (i.e. on habitat grounds or for species other than Great Crested Newts)’

...is replaced by:-

‘The occurrence of Great Crested Newts, whether breeding or not, should be considered a supporting reason for selection of a site, which also qualifies under other guidelines (i.e. on habitat grounds or for species other than Great Crested Newts).’

5) Section S5 Fish,

Additional criteria

- *‘Significant spawning grounds for coarse fish.’*

This reflects the importance of some areas of the River Taff and Cardiff Bay in sustaining coarse fish populations.

6) Section S7 Vascular Plants (Page 78) after the second paragraph there is inserted:-

'In Cardiff, some species may be moved from the list of Contributory Species to the list of Primary Species on the basis of currently available data and on advice from the county botanical recorder. Regard will be had to regionally and nationally declining species'

Following initial review, Green-winged Orchid, Marsh Helleborine and Autumn Gentian are moved from the list of Contributory Species to the list of Primary Species, in order to reflect the rarity of these species in Cardiff.

7) Community Value Selection Criteria

The criteria for the selection of wildlife sites do not include any criteria relating to the community or social importance of wildlife. The following section will therefore be included in the Cardiff modifications to these criteria:-

'Some sites which have significant biodiversity interest, but which narrowly fail to qualify under species and habitat criteria, may nonetheless be important sites for local communities to enjoy wildlife. These sites may be designated as SINCs if, in the opinion of the County Ecologist, they have substantial community value as well as being of significant biodiversity interest. In this instance, one or more of the following features will be considered in determining whether a site is of 'substantial community value' for wildlife.

Social Features:

- *Close proximity (less than 500 metres) to significant residential areas (more than 1,000 households).*
- *High level of public access on the site.*
- *Active involvement of local community.*
- *Used as educational resource or for raising public awareness*

Biodiversity Features:

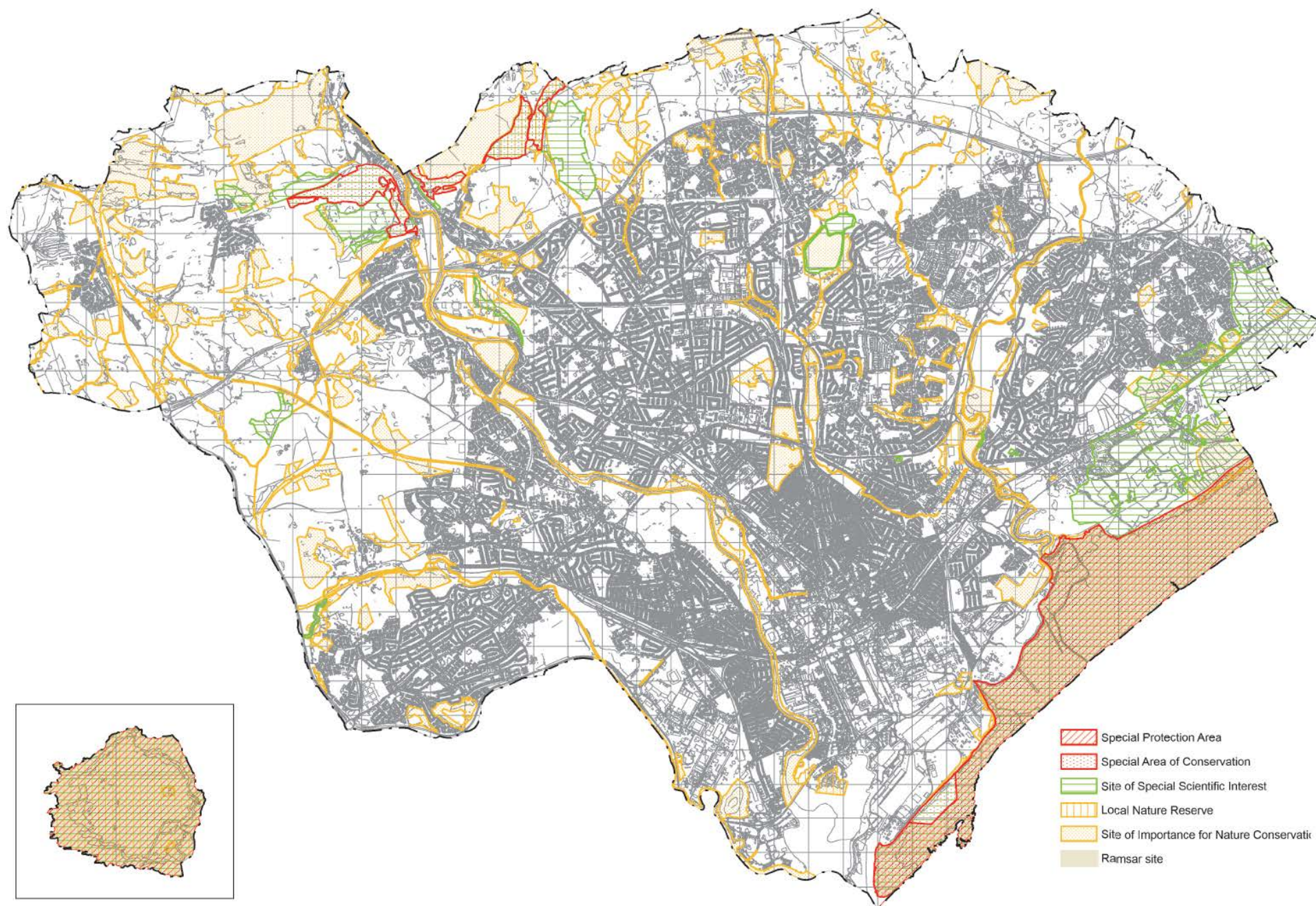
- *In an area with a lack of other semi-natural habitats.*
- *Managed for nature conservation.*
- *Forms part of a wildlife corridor - a largely continuous area of semi-natural habitats, which can facilitate the dispersal of flora and fauna.*
- *Supports significant habitats or species identified as a priority in any formally adopted local nature plan for Cardiff.*
- *Supports significant habitats or species identified as priorities in any Section 7 list published by the Welsh Government under the Environment (Wales) Act 2016.'*

8) Ecosystem Features

The following section will be included in the Cardiff modifications to the wildlife sites criteria:-

- *'Areas which are identified as being of strategic importance for ecosystems and ecosystem services should be considered for designation. Such areas will be identified by analysis of evidence-based geographical data, including remote-sensing data.'*

APPENDIX 2.C: Map of Nature Conservation Sites in Cardiff



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Cardiff Green Infrastructure SPG

Trees and Development

Technical Guidance Note (TGN)



November 2017

Cardiff Green Infrastructure SPG: Trees and Development Technical Guidance Note November 2017

Mae'r ddogfen hon ar gael yn Gymraeg/This document is available in Welsh



TREES AND DEVELOPMENT

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APPENDIX

1.0 INTRODUCTION

This Technical Guidance Note (TGN) supplements policies in the adopted Cardiff Local Development Plan (LDP) relating to trees, and is part of the Supplementary Planning Guidance for Green Infrastructure. This is one of a series of Technical Guidance Notes which provide detailed information about the retention and provision of green infrastructure elements in new developments as follows:-

- Ecology and Biodiversity TGN
- Open Space TGN
- Public Rights of Way and Development TGN
- River Corridors TGN
- Soils and Development TGN
- Trees and Development TGN

Welsh Government supports the use of Supplementary Guidance (SPG) to set out detailed guidance on the way in which development plan policies will be applied in particular circumstances or areas. SPG must be consistent with development plan policies and national planning policy guidance. SPG helps to ensure certain policies and proposals are better understood and applied more effectively. They do not have the same status as the adopted development plan but are a material consideration in the determination of planning applications

This Note is likely to be of particular benefit to those considering development proposals which either involve the loss of trees or which propose additional tree planting. It enables developers, landowners and potential objectors to understand how the Council considers development proposals and the standard of provision sought.

Cardiff has been described as Britain's '**undisputed tree capital**' (Ref. 1). The foresight of previous generations combined with a temperate, maritime climate and productive soils, has allowed visitors and residents to enjoy the benefits of a diverse

urban forest, including many **champion** trees that are the biggest representatives of their type in Britain.

Tree planting has had an enormously positive impact on Cardiff, and is a key factor shaping its development, but there are many threats to established and newly planted trees in Cardiff, including: -

- Increasing building density due to high land values.
- Road widening, installation of bus-lanes, re-surfacing and utility repair and installation.
- Flood prevention schemes.
- Poor specification, implementation and lack of aftercare.
- Natural decline.
- Climate change.
- Pests and diseases.
- Limited maintenance resources and income.

Maintaining and enhancing a diverse urban forest will ensure Cardiff remains both attractive and liveable, particularly in the context of climate change, which will see the development of a less temperate climate and increased pressure on fragile soil resources. Maintaining and enhancing a diverse urban forest in **river corridors** will be especially important in helping to reduce the risks of flooding.

This **Technical Guidance Note (TGN)** provides guidance on the protection and planting of trees as part of development, in the interests of **maintaining and enhancing a diverse urban forest**.

2.0 TREE PROTECTION AND PLANTING IN PLANNING POLICY

Section 197 of the Town & Country Planning Act 1990 (Ref. 2) states that it: -

‘...shall be the duty of the local planning authority to ensure, whenever it is appropriate, that in granting planning permission for any development adequate provision is made, by the imposition of conditions, for the preservation or planting of trees’.

Planning Policy Wales (Ref. 3) adds that: -

‘Trees, woodlands and hedgerows are of great importance, both as wildlife habitats and in terms of their contribution to landscape character and beauty. They also play a role in tackling climate change by trapping carbon and can provide a sustainable energy source. Local planning authorities should seek to protect trees, groups of trees and areas of woodland where they have natural heritage value or contribute to the character or amenity of a particular locality. Ancient and semi-natural woodlands are irreplaceable habitats of high biodiversity value which should be protected from development that would result in significant damage’, and: -

‘...planning authorities should, as appropriate, make full use of their powers to protect and plant trees to maintain and improve the appearance of the countryside and built up areas’.

Technical Advice Note 5 - Nature Conservation (Ref. 4) advises that requiring the protection and planting of trees by planning conditions can contribute to biodiversity conservation.

Key policy 15 (Climate Change) of the Cardiff Local Development Plan (Ref. 5) advises that new trees and shrubs be provided by developers wherever possible, and that: -

‘Carbon sinks act as a means of off-setting carbon emissions by natural means. Trees and soils act as substantial reservoirs of carbon, sequestering atmospheric carbon,

and contributing substantially to soils, which accrete carbon faster under tree cover than other forms of vegetation. This stored carbon will usually be emitted as a greenhouse gas if trees are removed or damaged...’, and: -

‘As far as practicable, trees should be retained and protected, and land kept as functioning vegetated soil open to the fall of organic matter, with new trees and shrubs provided by developers wherever possible. Where trees and shrubs cannot be surrounded by open soil, hard surfaces should not be used unless there is an overriding need, and areas that are not needed for pedestrian or vehicle use should be retained for soft landscape. Cardiff’s open spaces, trees and soils play a crucial role in mitigating the effects of climate change at the local level. Open vegetated soils absorb rainfall and runoff’.

Detailed policy EN8 Trees, Woodland and Hedgerows states that: -

‘Development will not be permitted that would cause unacceptable harm to trees, woodlands and hedgerows of significant public amenity, natural or cultural heritage value, or that contribute significantly to mitigating the effects of climate change’.

With regard to new planting, EN8 advises that: -

‘Where trees are lost, new planting will be sought that is provided with sufficient usable soil volume, aeration and irrigation to support healthy long term growth’, and: -

‘Proposals that create spaces for larger tree species to grow to maturity will be favoured over proposals for scattered smaller trees’.

The Infill Sites Supplementary Planning Guidance (2011) (Ref. 6) states that: -

‘New trees and landscaping will be encouraged on development sites, even when there is no loss of existing trees...’, and: -

‘Any new landscaping should incorporate species that will provide long term benefits to visual amenity, biodiversity and to minimising the effects of climate change. The

planting of species that are considered well adapted to climate regimes likely to prevail in the near future will be supported’.

The Planning Obligations Supplementary Planning Guidance (SPG), which relates to policy KP7 (Planning Obligations) sets out the Council’s approach to planning obligations when considering applications for development in Cardiff. It also sets out the mechanisms for securing survey, assessment, mitigation, compensation and enhancement of Cardiff’s tree resource as part of the Green Infrastructure of the City.

3.0 DESIGNING WITH TREES – 10 FUNDAMENTAL RULES

1. **Trees, existing and proposed, should be considered from the start of the planning and design process.** Too often trees are seen as an add-on, to ‘prettify’ development and help achieve planning permission, rather than as important components of high quality, sustainable design.
2. **Existing high quality trees should be retained wherever possible.** A newly planted semi-mature tree is not equivalent to a 60 year old mature tree. If the newly planted tree survives its first few years, it will take a generation to achieve the size and impact of the existing mature tree. It is cheaper to protect an existing tree than to plant and maintain a new one.
3. **Robust protection should be provided for existing trees.** Tree protection should never be a ‘tick box’ exercise. Once agreed it should be implemented until development is complete. Failure to protect trees may undermine their health or stability, and the quality of development.
4. **Trees are complex ‘engineering’ structures requiring assessment by specialists.** Arboriculturists and Landscape Architects should be involved in planning and design from start to finish, ensuring that trees are successfully integrated into development.
5. **Rather than proposing large numbers of small species trees in confined spaces, development should provide for fewer trees, but of larger growing species, in spaces designed to support their growth.** Larger growing, long-lived tree species will provide the greatest landscape and environmental benefits in the long-term, and should be the priority in the design and costing of development.
6. **Ensure trees and buildings are not in conflict.** As a minimum this usually means locating buildings outside of **Root Protection Areas**, **current and likely ultimate branch spreads**, and areas of **gross shading**.

- 7. Plant trees into soft landscape rather than hard landscape.** Growing conditions in soft landscape are invariably better than those for hard landscape, where **compacted soil, reflected heat, and limited water availability**, can impair health, although trees planted in hard landscape can offer significant benefits in terms of **microclimatic amelioration** and **water management**. Trees grow best in soft landscape that mimics a natural environment – e.g. mulched beds and shrubs, rather than amenity grass, which can out-compete young trees and lead to slow or sickly growth.
- 8. Plan tree planting at the same time as utilities, highway infrastructure, lighting and CCTV.** Failure to consider these elements at the same time can result in the loss of new trees, or restrictions on their ultimate size, degrading the quality of development.
- 9. Application is as important as design.** Specification and design is irrelevant if it is ignored on implementation. Site managers and contractors should be fully briefed on what is required, and Arboriculturists and Landscape Architects should be employed to ensure that the agreed details are implemented.
- 10. Proposed trees should be depicted with branch spreads corresponding to their likely mature dimensions.** Plans depicting trees as uniformly sized ‘green blobs’ in ill-defined spaces, are unhelpful. Plans should show the proposed tree at its estimated mature dimensions in terms of branch spread, and illustrative drawings should show trees at their estimated mature, not ‘as planted’ size, in terms of girth and spread.

4.0 RETENTION OF EXISTING TREES

4.1 TREE ASSESSMENT

Trees within and/or adjoining a development site should be assessed in accordance with **British Standard 5837 (Ref. 7)**, or any Standard that replaces it. This requires the sequential production of the following, by an **Arboriculturist**: -

- Tree Survey (TS).
- Tree Constraints Plan (TCP).
- Arboricultural Impact Assessment (AIA).
- Arboricultural Method Statement (AMS).
- Tree Protection Plan (TPP).

It is important that the sequence described in BS 5837 is followed and used to **inform design**. This means that the TS and TCP should be produced **before** a layout is designed, and the AIA, AMS and TPP only **after** the design has been finalised.

Paragraph 4.3 of BS 5837 requires the production of a **soil assessment**. This assessment should be carried out in accordance with the **Soils and Development TGN**, except in relation to foundation design, in which case an Arboriculturist should liaise with Geotechnical and Structural Engineers to develop foundations that satisfy engineering requirements without compromising important trees.

The TS should be supported by a scaled plan based on a submitted **topographical site survey plan**, showing plotted positions of the surveyed trees.

The TCP should be based on the same topographical site survey plan as the plan supporting the TS. It should be annotated to depict the effects of trees in terms of: -

- Root Protection Areas (RPAs).
- Current branch spread.
- Likely ultimate branch spread.
- Shading.

Circular depictions of RPAs may not always be a true reflection of the distribution of roots in reality, and whilst rooting patterns can be difficult to predict accurately, particularly in heterogeneous urban environments, where there is a strong probability that roots are not distributed evenly circular depictions should be replaced by **polygonal** depictions. An example of this is a tree adjoining a heavily engineered highway and a more lightly engineered footway and garden, with roots growing wholly beneath the footway and garden, but not the highway (**Fig. 1**).

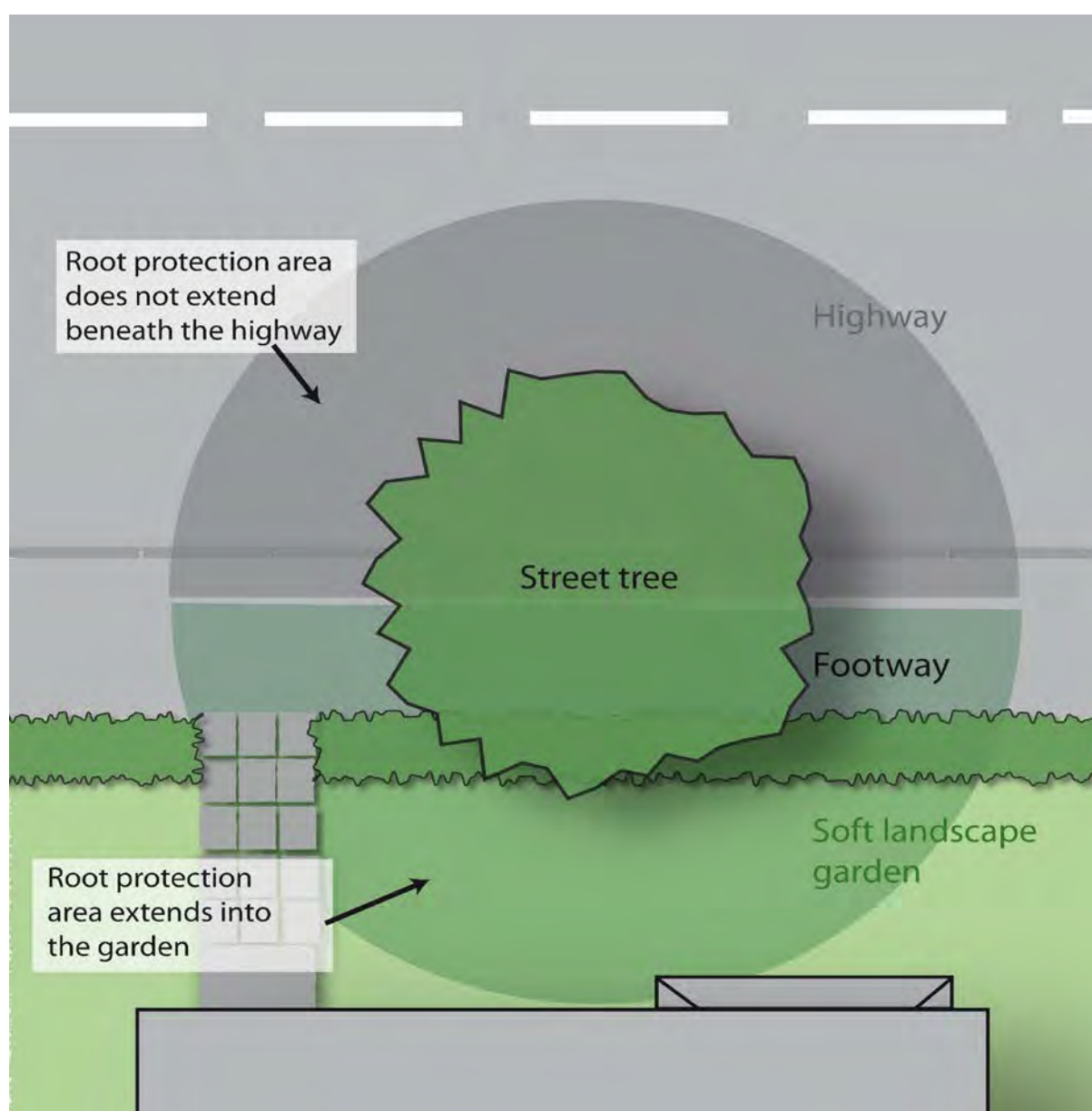


FIG. 1 ROOT PROTECTION AREAS

Trees achieving '**A**' (**high quality and value**) or '**B**' (**moderate quality and value**) categorisation following a TS should be retained and design adapted to protect them from unacceptable harm. This means that development should not incur into their RPA, or their current or likely ultimate branch spread. Where incursions are proposed, the **Arboriculturist** should explain how it will not result in unacceptable harm.

Direct, unacceptable harm to trees will occur where they suffer damage to or pruning of roots or branches, such that they are physiologically, structurally or aesthetically damaged to an irrecoverable level.

Direct, unacceptable harm to trees will also occur where the functionality of soil within an RPA is compromised to an irrecoverable level by: -

- Compaction.
- Contamination
- Cultivation.

Indirect, unacceptable harm to trees will occur where changes in their growing environment make them more vulnerable to structural damage. For example, where a tree growing at the edge of woodland without significant constraint suffers the incursion of a building close to its branch spread, wind may be funnelled between the tree and building, or drop over the building and create eddies between the tree and building, increasing the risks of branch failure.

Whilst the perception of nuisance varies between individuals, large trees close to dwellings can cause symptoms of **anxiety**, **depression**, **fear** and **claustrophobia**, particularly amongst the **elderly** and those of **reduced mobility**. Development should avoid placing trees in positions where they might be perceived as an **unreasonable nuisance**. As a minimum, this should usually mean locating buildings outside of RPAs, **current** and **likely ultimate branch spreads** and areas of **gross shading**.

Special rules apply to some trees due to their particular characteristics. For example, some trees support large populations of **aphids**, whose **honeydew** can cover

surrounding surfaces with a sticky veneer that is slippery when wet and that encourages the development of moulds that can stain surfaces. Consequently, even if the RPA and branch spread of such trees is respected, the nuisance caused by honeydew may be overriding.

Where it can be shown satisfactorily that there are overriding design considerations necessitating their removal, and that their loss can be successfully mitigated by new planting, the removal of 'A' and 'B' category trees may be acceptable.

Mitigating the loss of mature, high quality trees takes a generation, so should always be a **last resort**. To demonstrate how such losses will be mitigated, it will be necessary to show how the new trees will have access to sufficient above and below ground growing space to support their healthy, unconstrained future growth.

In all cases it should be demonstrated how the development will contribute to the enhancement or preservation of a **sustainable urban forest**. The best way to achieve this is to provide for a **mixed age range** of trees across a site, rather than removing all mature trees and planting new trees, or retaining all mature trees whilst planting no new trees.

Once a development layout has been drawn up, including all proposed services, and as informed by the TS and TCP, the **Arboricultural Impact Assessment** should be prepared to explain the direct and indirect effects of the proposed development on trees.

In turn, an **Arboricultural Method Statement** and **Tree Protection Plan** should be prepared to explain how the development will be implemented to avoid unacceptable harm to retained trees and areas designated for **structural landscaping**. In some cases, there may be no requirement for an AMS, other than a statement explaining that development will be carried out in accordance with an approved TPP.

The TPP should be superimposed on a site layout plan, which itself is based on a topographical site survey plan.

The AMS should describe any **special construction measures** to be used to prevent unacceptable harm to retained trees. This may include ‘**no-dig**’ construction (**Fig. 2**), hand tool excavations and ‘**mini-pile**’ foundations, but the use of special construction measures within RPAs should be a last resort, with the default position that all development is located outside of RPAs.

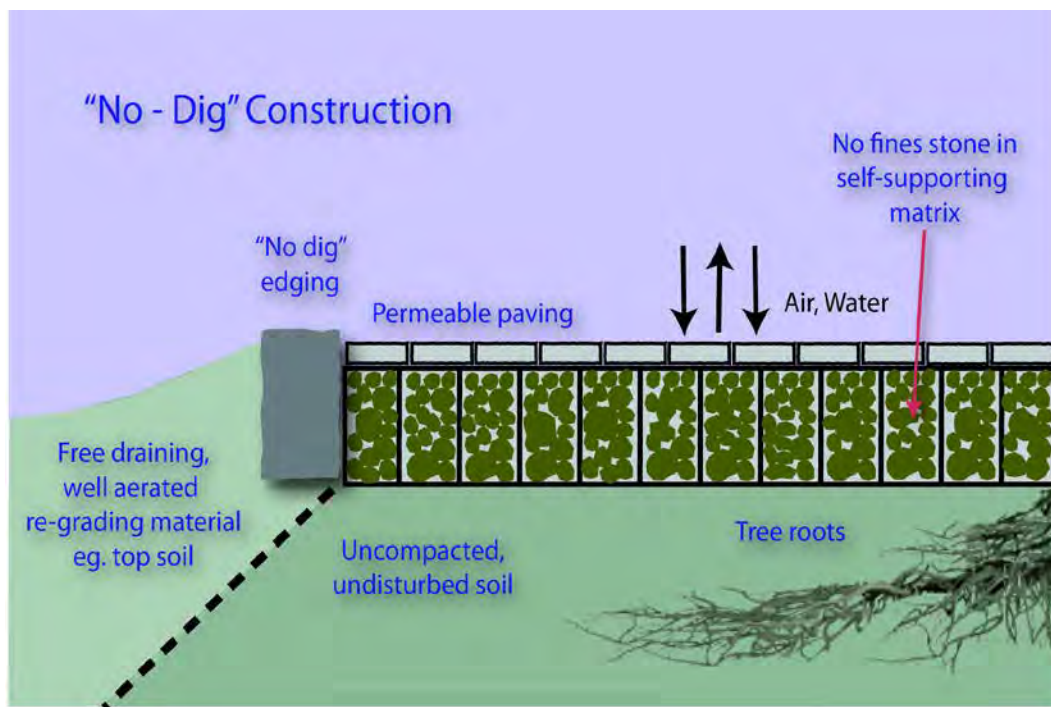


FIG. 2 'NO-DIG' CONSTRUCTION

Critical to the success of tree protection is an **auditable system of arboricultural site monitoring**. The system to be used should be described within the AMS, but as a minimum should provide for the following: -

- A pre-development site meeting with the developer and contractors to explain the tree protection measures required.
- Sign off of physical tree protection measures such as barriers, boxes and ground protection.
- Sign off of pre-development tree work.
- Supervision and sign off of all work within RPAs including special construction measures.

- Regular site monitoring at an agreed frequency dependent on the nature or intensity of development.
- Sign off of the removal of physical tree protection measures upon completion of development.
- Specifying remediation as necessary and signing off.
- Submission of regular site monitoring reports to the Local Planning Authority that demonstrate compliance with the approved AMS and TPP.

Where the implementation of development does not adhere to an approved AMS and TPP it may be subject to enforcement action, including prosecution where protected trees are damaged or destroyed.

4.2 DEVELOPMENT ADJACENT TO WOODLAND

Where development adjoins woodland, an **ecotone** should be allowed to develop, or planted, to provide a gradual transition between **forest** trees such as oak, ash and beech, **woodland edge trees** such as birch, hawthorn, rowan and willow, **woodland edge shrubs** such as blackthorn, dogwood, elder, hazel and wayfaring tree, **herbaceous vegetation** and **gardens** (Fig. 3).

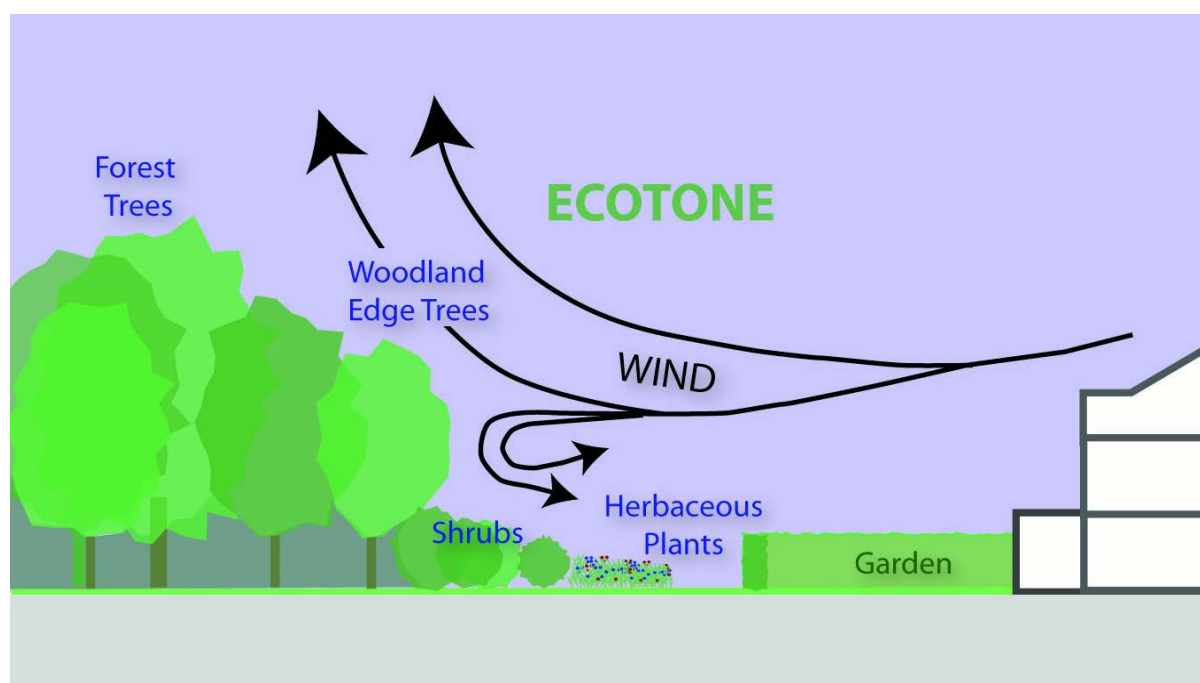


FIG. 3 ECOTONE

An ecotone provides a number of benefits: -

- Minimises nuisances associated with shading and the fall of organic matter.
- Minimises hazards associated with the failure of trees or branches.
- Avoids the need for frequent and unsuitable pruning of trees overhanging gardens that can disfigure them.
- Minimises the risks of damaging wind tunnel effects and eddies in gardens backing onto woodland.
- Minimises the risks of garden waste and litter being thrown into woodlands, where it can allow invasive plants to establish and impact detrimentally on tree health.
- Allows wind to flow more smoothly over woodland.
- Increases habitat diversity.

An appropriate default width for a woodland ecotone is **15 metres wide**, measured from the centre of the trunk of the largest forest tree species growing closest to the edge of the existing woodland. This figure represents a typical mature height for a woodland edge tree species and the capping figure for RPAs calculated in accordance with BS 5837:2012. Greater widths may be necessary for ecologically or structurally vulnerable woodlands. Reductions in the default width are only likely to be acceptable where assessment of the woodland demonstrates satisfactorily that the development and woodland will co-exist harmoniously.

4.3 HEDGEROWS

Hedgerows within and bounding a development site should be assessed in accordance with the **Hedgerows Regulations 1997**. The assessment may form part of an **Archaeological or Ecological Impact Assessment**, but in all cases it should be clear where the assessment has been placed within the submissions that form part of a planning application.

Hedgerows found to be important in accordance with the Hedgerows Regulations 1997 should normally be retained and incorporated into the design of development, so that the characteristics that render them important are maintained or enhanced. Where overriding design considerations necessitate the removal or translocation of important hedgerows, it must be clear within the submitted **Green Infrastructure Statement**, how the loss will be mitigated through new planting and/or a **translocation** methodology.

4.4 TREE PRESERVATION ORDERS

Where trees on or adjoining development sites are found to be of significant public value, or are likely to become so in time (e.g. newly planted trees or trees required to be planted as a condition of planning permission), the expediency of protecting them by the service of a **Tree Preservation Order (TPO)** may be considered.

The expediency of serving TPOs will be assessed by using a recognised system of amenity tree evaluation to give a point score for the tree(s) in question that then categorises them as follows: -

- Do not apply TPO.
- TPO indefensible.
- Does not merit TPO.
- TPO defensible.
- Definitely merits TPO.

Factors that will be taken into account include: -

- The health and structural condition of the tree(s).
- The life expectancy of the tree(s).
- The visibility of the tree(s) from public places.
- Special factors such as value to wildlife and cultural heritage.
- The level of threat to the tree(s).

5.0 HOW SHOULD TREE PLANTING BE DESIGNED INTO DEVELOPMENT?

Successful tree planting as part of development depends on: -

- Co-operation between the developer and Local Planning Authority (LPA).
- Space designed specifically to support the growth of trees.
- Appropriate specifications.
- Correct implementation and aftercare.

5.1 TREE PLANTING LAYOUT

Physical constraints to planting should be established following: -

- A Topographical Survey.
- A Utilities Survey in accordance with PAS 128:2014 (Ref. 8), or any specification that replaces it.
- Definition of utility easements.

Assessment of service constraints should be made as early as possible and at the most detailed level practicable, to avoid unforeseen problems during the design of planting.

In some cases physical constraints to planting will also need to be understood following consideration of: -

- A Tree Constraints Plan in accordance with British Standard 5837:2012, or any Standard that replaces it.
- A Geotechnical/Geo- environmental assessment.
- A Soil Assessment carried out in accordance with the Soils and Development TGN.

Planting layouts should be designed at the same time as, not after the imposition of constraints such as: -

- Visibility splays.
- CCTV.
- Lighting.
- Highway infrastructure.
- Drainage infrastructure.
- Service corridors.
- Residential layouts.

Services and trees need not always be mutually exclusive. Service corridors can provide valuable rooting space and liaison between service providers, Engineers, Landscape Architects and Arboriculturists may allow for co-existence.

Development providing for a small number of well-spaced, large species, long-lived trees in wide, continuous, **soft landscape** is preferred to that providing for larger numbers of small, short-lived trees in narrow planters, hard landscape, or leftover space (**Fig. 4**).



FIG. 4 PLANTING LAYOUT

Where planting is restricted to hard landscape, openings of minimum **1.5m x 1.5m** should be provided (**Fig. 5**). The larger the opening the better trees will grow.

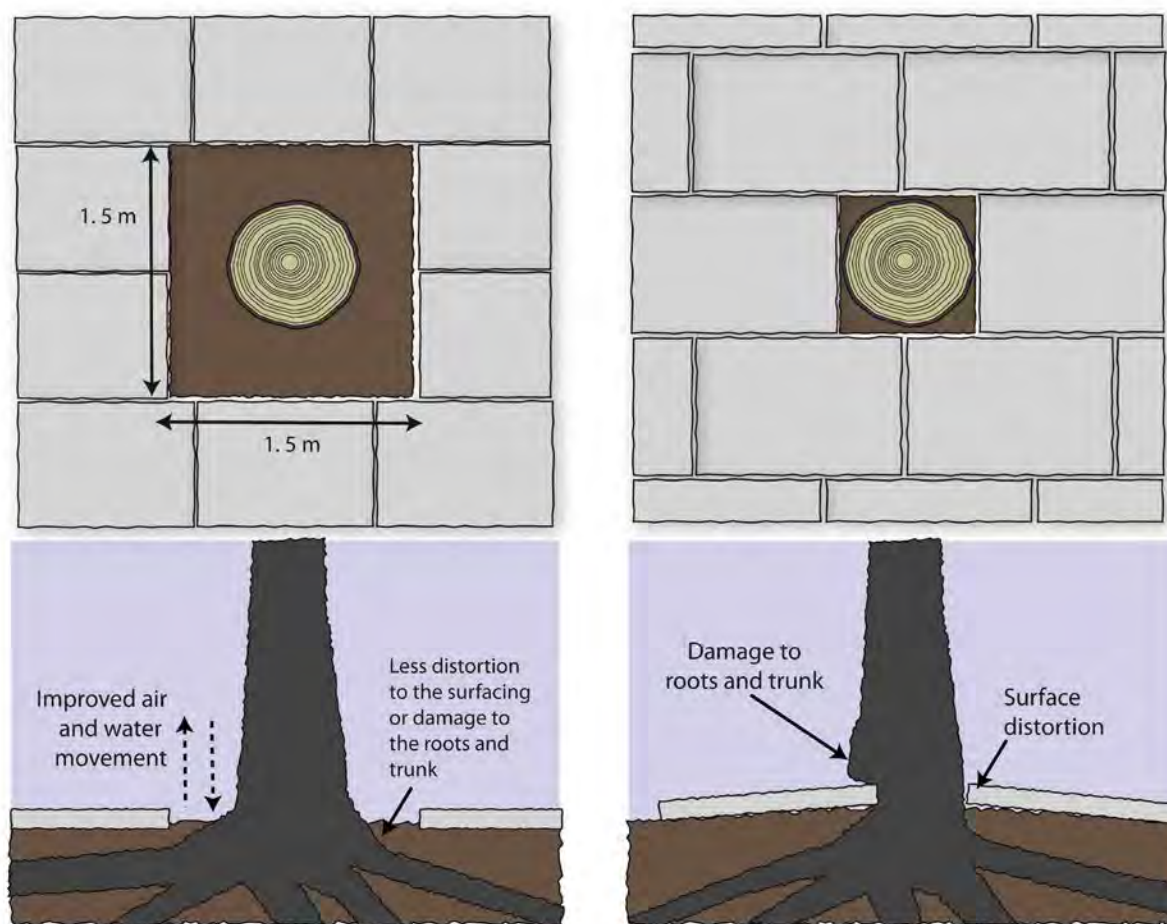


FIG. 5 TREE PIT OPENING SPACE

Trees planted in companionship are likely to grow better than those in isolation. **Canopy** and **under-storey** planting that is appropriately spaced to avoid **mutual suppression** (Fig. 6), represents the optimal layout to avoid the development of structural weaknesses.

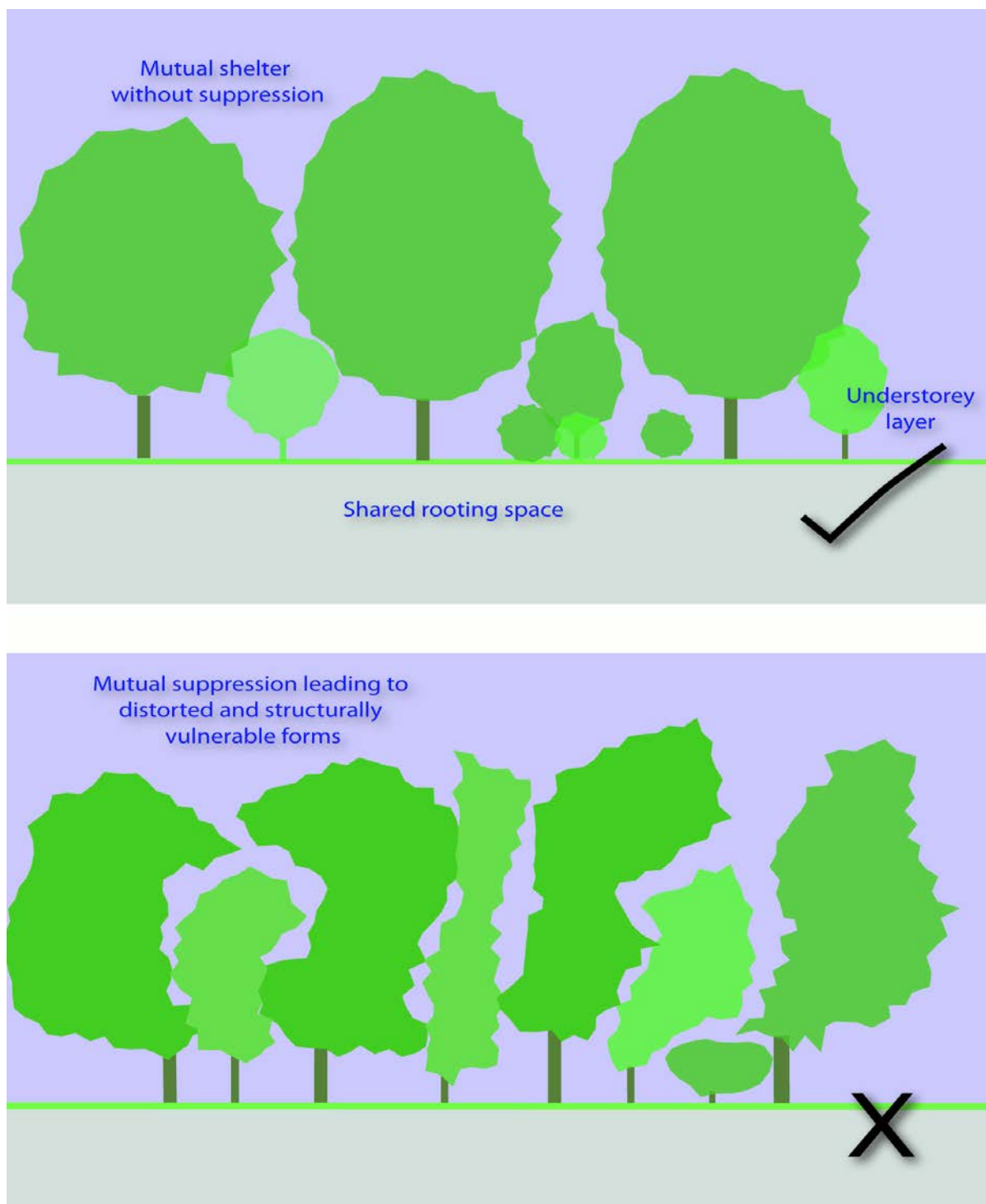


FIG. 6 MUTUAL SHELTER AND SUPPRESSION

Wherever possible, tree-lined **avenues** should be provided, with **staggered** rather than **linear** layouts, where benefits will result to the streetscape or microclimate (**Fig. 7**).

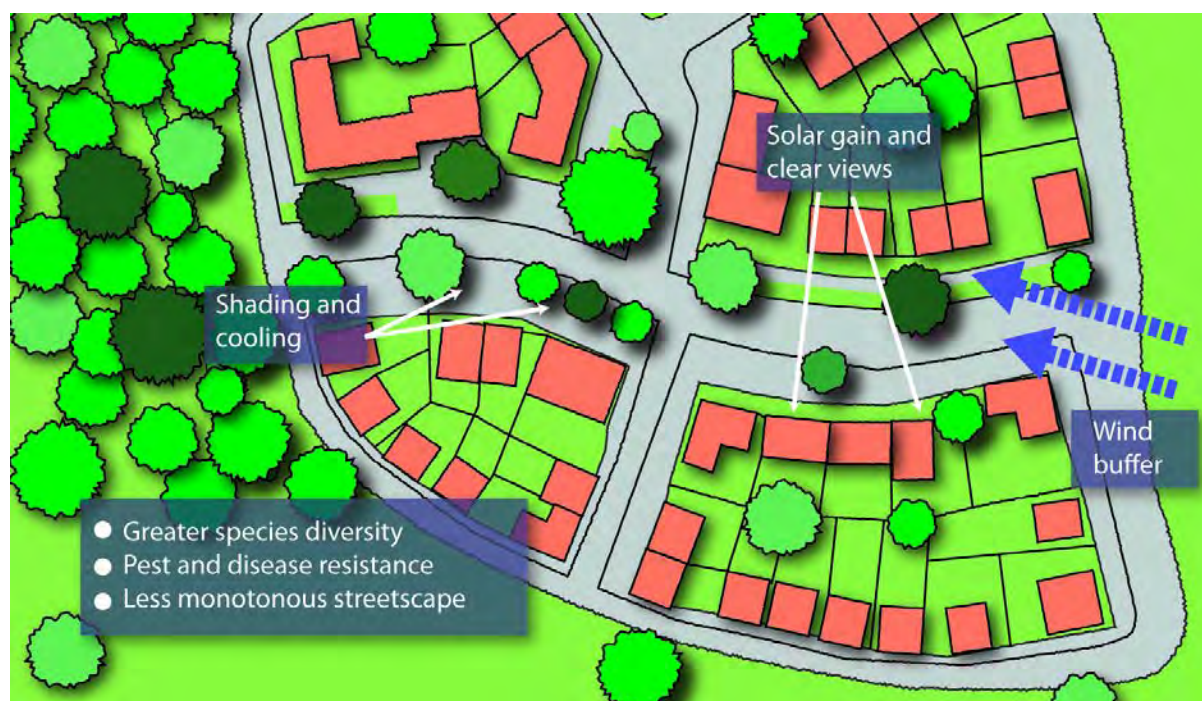


FIG. 7 STAGGERED LAYOUTS USING DIFFERENT SPECIES

Staggered planting using **build- outs**, **central reservations** and **roundabouts** can help to avoid **wind tunnel** effects, and can allow the planting of large trees where verges are otherwise too constrained.

Tree planting can provide shade, cool the air and give shelter, but can also shade to the extent that living or working conditions are oppressive, and central heating is needed more regularly. **BRE Digest 209 (Ref. 9)** and **Forestry Commission Research Note 012 (Ref. 10)** provide guidance on design to maximise the microclimatic benefits trees provide.

Highway sections should show how safe vehicle and pedestrian movement, services and trees will co-exist. Trees planted close to a highway should have sufficient space to prevent conflict with the **kinematic envelope** of the largest vehicle likely to use the highway. The kinematic envelope is the outline of a moving vehicle affected by tilt, slope, adverse camber etc. (**Fig. 8**).

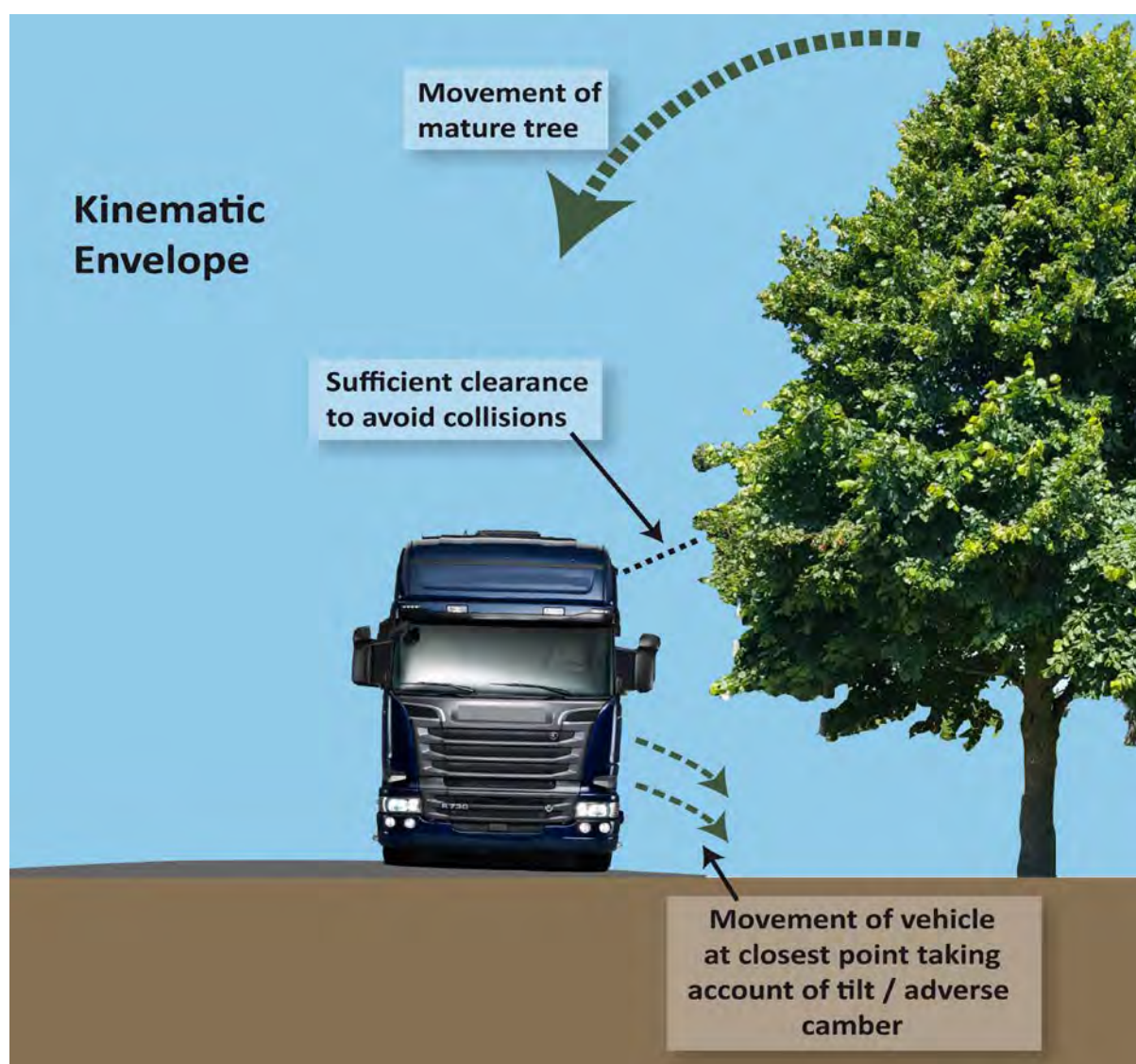


FIG. 8 KINEMATIC ENVELOPE

Avoiding conflict with the kinematic envelope does not mean that all trees planted close to roads must be small or columnar, since large, spreading trees can develop up and above the highway, whereas smaller trees may grow directly into the highway. Careful species selection, and where necessary, provision for formative pruning, can help to prevent conflict.

Planting that creates **lurking space** or otherwise encourages anti-social behaviour should be avoided, but the presence of trees in a development in general terms is likely to discourage crime.

5.2 ROOT AVAILABLE SOIL VOLUME (RASV)

Tree planting soils should be specified in accordance with the **Soils and Development** section of this SPG.

Root Available Soil Volume (RASV) is the volume available to roots due to its physical accessibility and suitable conditions of **aeration**, **irrigation** and **fertility**.

Target, minimum RASV should be provided as follows:

- **30m³** for individually planted large-medium trees.
- **20m³** per large-medium tree when planted as a group of two or more with shared RASV.
- **10m³** for individually planted small trees of approximately 6m height and 3m diameter branch spread after 25 years.
- **5m³** per small tree when planted as a group of two or more with shared RASV.

Rather than depicting a **planting hole** and opening, landscaping drawings should show the RASV for each tree or planting situation, in plan-view and with sections expanded to show not only the treatment of the planting hole and opening, but also the soil and any openings surrounding the planting hole.

Various products, including **structural soils**, **Amsterdam tree sands**, and void forming **soil crates** and **rafts**, can extend RASV beneath engineered surfaces (**Fig. 9**). These products should only be specified where RASV, for example within gardens or verges, is otherwise unavailable, but they can also provide a link between soft landscape and hard landscape tree pits.

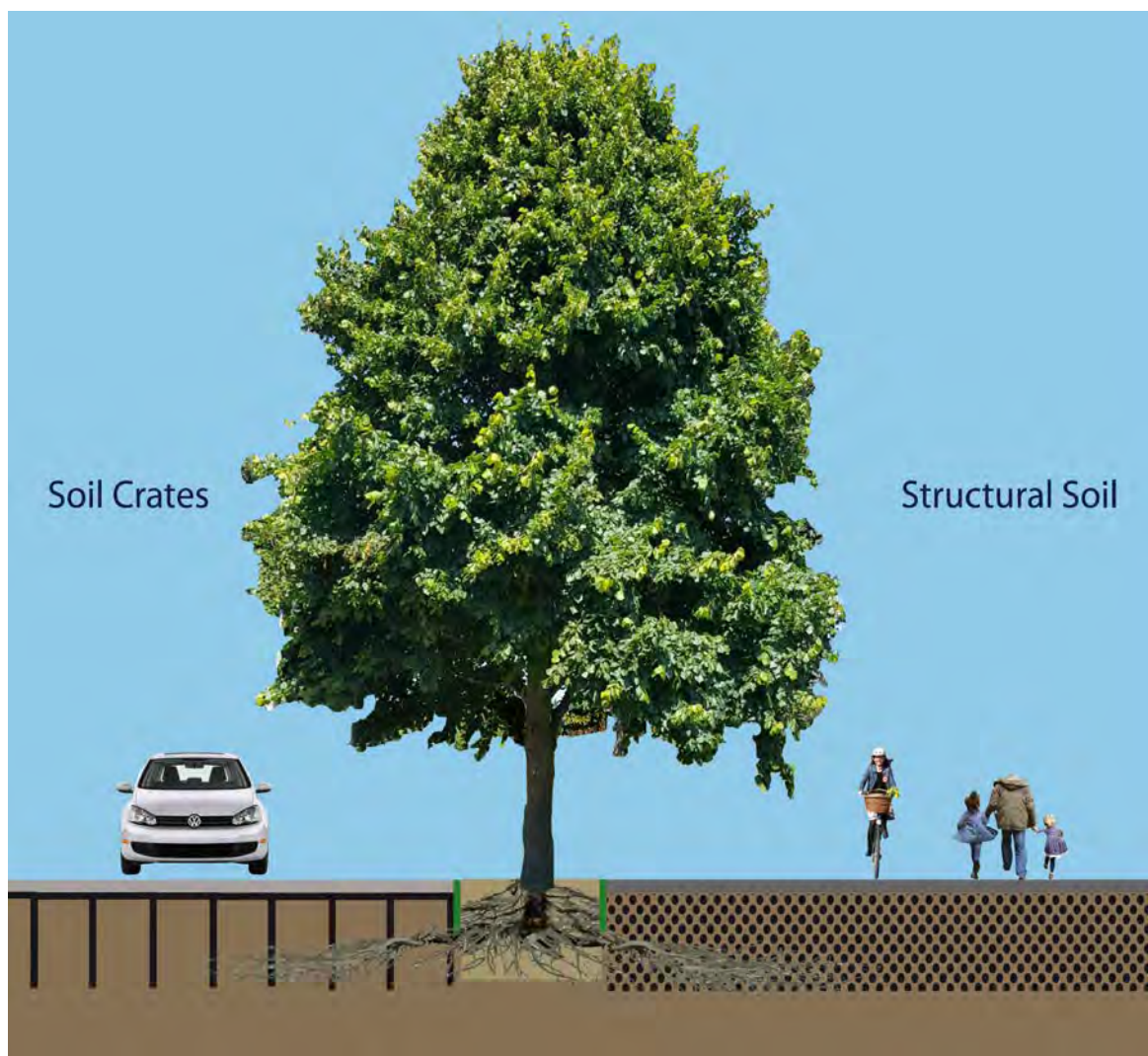


FIG. 9 SOIL CRATES AND STRUCTURAL SOIL

Site specific product supplier specifications should demonstrate how RASV will be provided for, including plan view drawings and details of **irrigation, aeration and drainage**.

Since structural soils and Amsterdam tree sands typically require large volumes of stone or sand to give them physical strength, they may have less ‘nutritious’ soil per unit volume compared with ‘natural’ soils. A stone based structural soil may need to be applied at volumes **five times** greater than a ‘natural’ soil, to provide an equivalent ‘nutritious’ soil volume. Consequently, when specifying RASV, it will be necessary to have regard to the particular product being used, since 5m³ of structural soil is not equivalent to the same volume of ‘natural’ soil.

The use of **site-won** and where this is not available or unsuitable, **imported soils** to backfill crates or rafts is supported in principle, but the fitness for purpose of the soils should first be demonstrated following physical and chemical analysis by a Soil Scientist, and their placement overseen by a Soil Scientist, or other suitably qualified landscape professional. Poor soil specification or placement, such as excessive compaction, excessive topsoil depth, or a failure to '**key in**' topsoil and subsoil interfaces, may result in soils that are poorly drained and not well aerated, so that any theoretical benefit over structural soils in terms of 'nutritious' soil volume, is lost.

The **pH** of Amsterdam tree sands, structural soils and soils to back-fill crates/rafts must be known and appropriate to the tree species planted. Excessive alkalinity is typically more common than excessive acidity, and may be problematic where soils at the top end of the pH scale are used and this is then exacerbated by soil ameliorants or the breakdown of soil constituents.

Wherever Amsterdam tree sands, structural soils or soil crate/raft systems are proposed, it must be clear that they are fit for purpose in terms of the intended site use – i.e. that they **can support the heaviest anticipated vehicular loads whilst maintaining un-compacted soil in the rooting zone.**

Adequate **soil aeration** is essential to the effective functioning of Amsterdam tree sands, structural soils and soil crates/rafts and it should be clear how this will be provided for. **Voids** and **pipe** and **vent** systems can help in this regard, but there should be a sufficient number and extent, and provision to prevent them becoming blocked. **A minimum of two aeration inlets per tree, or per 5m³ of soil, is considered appropriate.**

Subject to engineering advice, bespoke designs can extend RASV. For example, **root paths** and **trenches** are drained subgrade tunnels containing soil compacted to a level that does not prevent root growth, bridged by reinforced concrete or similar (**Fig. 10**).

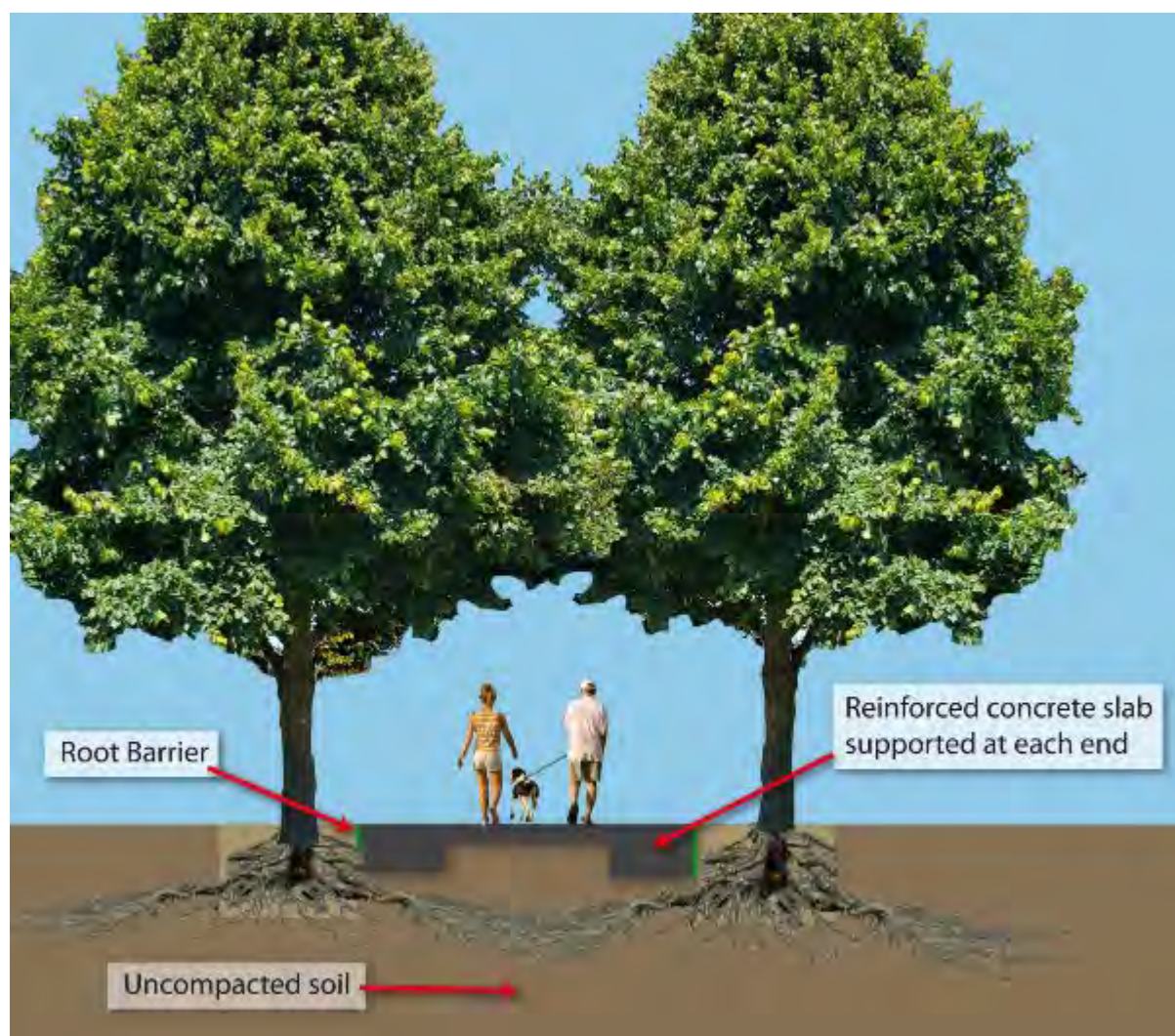


FIG. 10 ROOT TRENCH

5.3 TREE PIT OPENINGS

Functionality in terms of supporting healthy tree growth and usability in the streetscape should be placed above aesthetics, and it should be clear why a particular treatment is proposed.

- **Open soil (Fig. 11)** – encouraging a build-up of leaves, twigs etc., may protect against soil compaction, erosion and temperature extremes. Fine textured root-ball soil may lose structure if compaction occurs during transplantation and this may then be exacerbated by rain-drop impacts, **stem-flow**, foot traffic and limited biological activity outside of the **rhizosphere**.



FIG. 11 OPEN SOIL

- **Organic mulch (Fig. 12)** – irrigation requires careful application to ensure underlying soil is wetted and mulch may need to be contained to avoid displacement. Composted mulch should comply with **Landscape Institute** specifications (**Ref. 11**). **Shredded hardwood bark** is preferred as it interlocks well but should be applied no deeper than **50-75mm**, without a **filter fabric** and avoiding burying the **root flare**. Mulch should not be applied until soils damaged by compaction have been ameliorated by cultivation using hand tools only to avoid damaging roots and trunk.

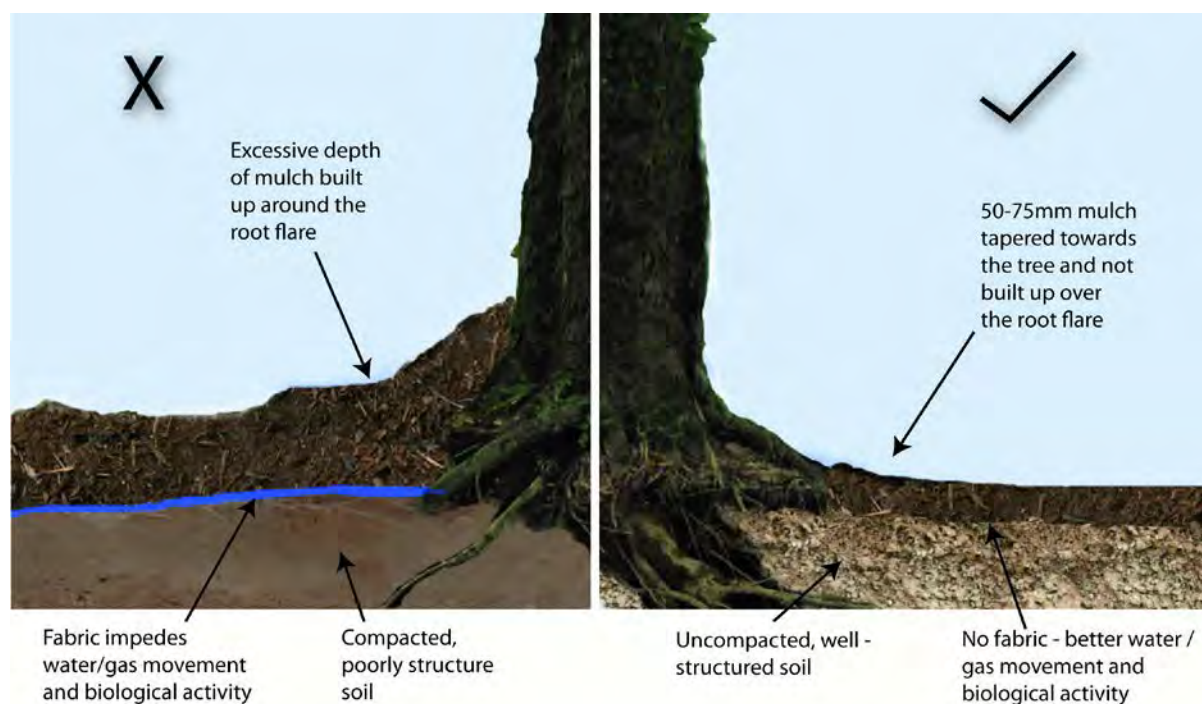


FIG. 12 ORGANIC MULCH

- **Groundcover planting – perennials** and grasses are cheap and low maintenance. Repeated **annual** planting is more costly and may damage roots through repeated soil disturbance, but could encourage deeper rooting that helps to prevent roots damaging pavers and other surfacing materials. Above ground barriers may be required to protect plants and only openings greater than **1.5m** are suitable to support viable planting.
- **Inorganic mulch – low fines** stone and rubber chippings provide protection against soil compaction, erosion and temperature extremes. Can be used as fill between rigid surfacing and stems or between gaps in grilles. The same principles in terms of application apply as per organic mulch.
- **Resin bound gravels (Fig. 13b)** – may crack or require maintenance to ensure permeability. A minimum **150mm** collar of loose gravel should be provided around stems, but the collar dimensions will depend on the tree species to be planted. **Settlement** damage due to soil shrinkage may result if laid at the same time as planting. Specialist contractors should be used for installation. **Pre-cast**

resin bound gravels (**Fig. 13a**) may avoid installation problems but may be more costly.



FIG. 13a PRE-CAST RESIN BOUND GRAVEL



FIG. 13b RESIN BOUND GRAVEL

- **Rubber crumb (Fig. 14)** – may require maintenance to ensure permeability. A minimum **150mm** collar of loose rubber chippings should surround stems, but the collar dimensions will depend on the tree species to be planted. **Settlement** damage due to soil shrinkage may result if laid at the same time as planting. Specialist contractors should be used for installation.



FIG. 14 RUBBER CRUMB

- **Self-binding gravel** – only appropriate when the fines content is low enough to maintain reasonable permeability. Requires compaction on installation which may also reduce permeability. Compaction due to footfall may be reduced by forking or air-spade treatments, but re-settling may occur.

- **Coarsely graded bitmac** – only appropriate for treatments around established trees where it is not applied directly onto roots, where a gap is left around the trunk and where a protective sand layer of approximately **50mm** is applied between the bitmac and ground. Where a walkable surface is required around the tree, a rubber crumb product should be used as an alternative.
- **Grilles (Fig. 15)** – can have attractive, bespoke designs, but commonly become displaced and a trip hazard, trap litter and damage trees when their removal or adjustment is not built into aftercare specifications. Simple designs with adjustable/removable sections that allow for a large gap between the trunk and grille are preferred, and when used in combination with inorganic mulch they offer an effective treatment that protects soil from compaction where there is heavy foot traffic.



FIG. 15 TREE GRILLE

6.0 WHAT SPECIES SHOULD BE PLANTED?

Important factors to consider before drawing up a tree planting palette are: -

- Soil characteristics.
- Above and below ground constraints.
- Ultimate height and spread.
- Wildlife value.
- Ornamental qualities.
- Tolerance to exposure and climatic extremes.
- Resistance to pests and diseases.
- Nursery availability.

The **Appendix** provides a colour coded list of trees considered appropriate for planting in different contexts as part of development in Cardiff. It is intended to be a 'rough guide' rather than definitive or exhaustive, to help inform the design of planting. Certain genera (e.g. *Fraxinus* & *Larix*) have been excluded due to major, current pest and disease threats, whereas some species that don't typically feature in nursery catalogues have been included based on their potential to perform well in the context of climate change, where periods of drought and periodic inundation may be more frequent. The database can be amended over time as such threats come and go, as research develops and as new species or cultivars become more widely available.

6.1 WILDLIFE

Wildlife value depends not only on **native** or **exotic** status, but also **context**. An avenue of oaks linking to woodland is likely to be of greater value to wildlife than the same number of trees growing in isolation (**Fig. 16**).

Some trees have the potential to spread rapidly by seed dispersal or suckering, and where this may threaten the viability of an ecologically sensitive site, alternative less invasive species should be used.

Six of the trees listed in the appendix are included within a list of '**critically ranked terrestrial taxa**' in **ref. 12**, meaning that their spread may pose a significant risk to the viability of ecological features. They are: -

- ***Pinus nigra***
- ***Prunus lusitanica***
- ***Quercus cerris***
- ***Quercus ilex***
- ***Quercus rubra***
- ***Robinia pseudoacacia***
- ***Thuja plicata*** (listed in the '**urgent ranked terrestrial taxa**').

These trees should not be discounted for planting in all cases, as they have considerable landscape and cultural value, with *Quercus ilex* and *Pinus nigra* forming an important component of the mature tree population in Cardiff, but careful consideration should always be given to their use, and whether or not less invasive alternatives could be planted.

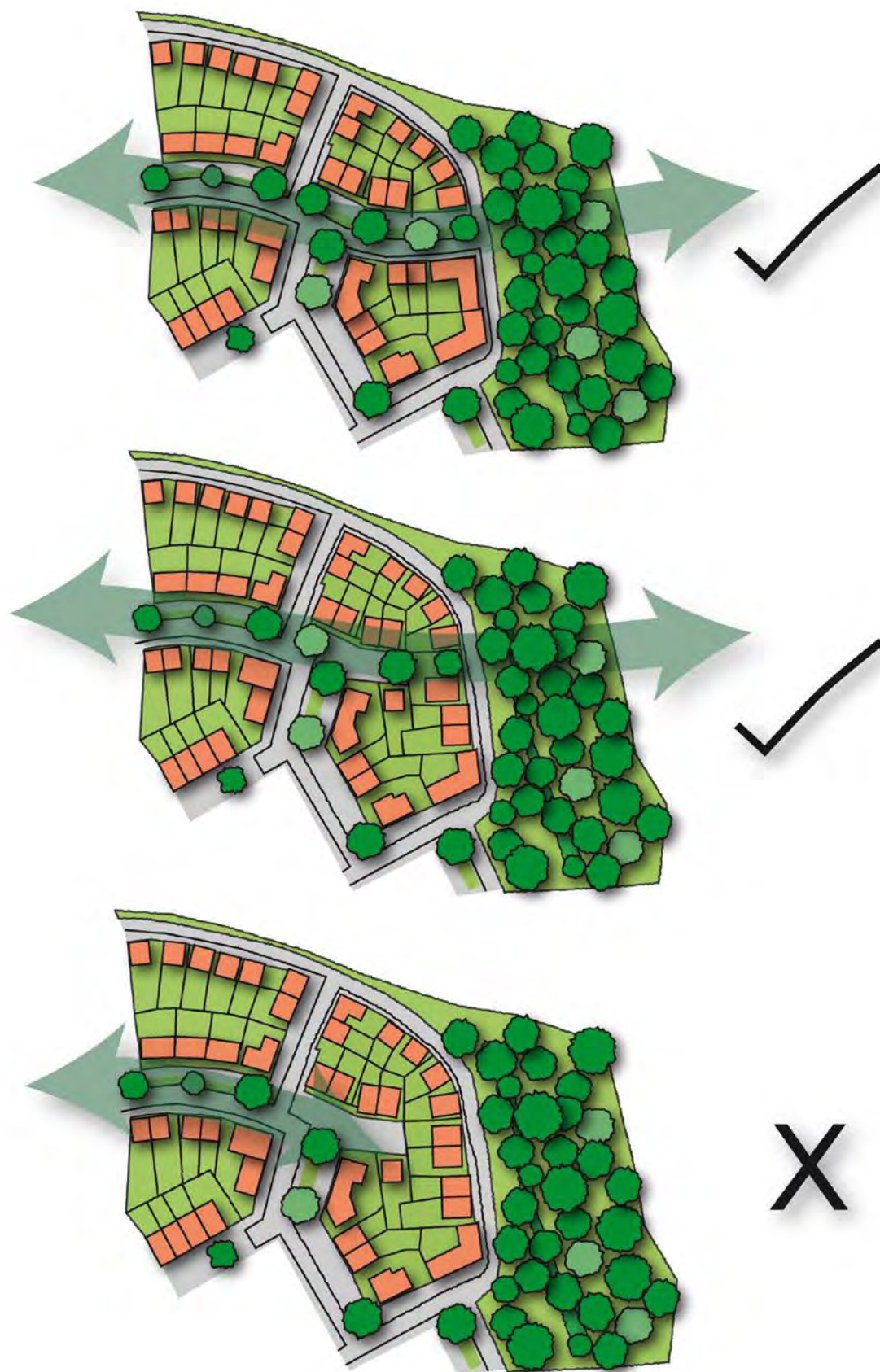


FIG. 16 WILDLIFE CORRIDORS

Whilst some trees like the native birches and oaks are good 'all-rounders' in terms of wildlife, others have more specialised value and examples are given below.

- **Scots pine** – supports a diverse community of **mycorrhizal** fungi and invertebrates and its seeds are an important source of food to some birds.
- **Beech** – supports a diverse community of fungi and bark **epiphytes**.
- **Limes** – important nectar source for **pollinators**.
- **Sallows & Willows** – support a diverse community of invertebrates and are an important, early season source of nectar and pollen.
- **Sycamore** – supports diverse **endomycorrhizal** fungal communities and bark epiphytes and a large **invertebrate biomass**.

Tree **pollen**, **nectar**, **sap**, and **honeydew** excreted by aphids, are important forage for invertebrates, including **bees**, **wasps** and **flies** and including some **natural enemies** of **plant pests**. Planting with this in mind will benefit them and their role in **pollination** and **biological control**.

The **British Beekeepers Association** provide a guide to important sources of nectar and pollen:- [.http://www.bbka.org.uk/learn/gardening_for_bees](http://www.bbka.org.uk/learn/gardening_for_bees)

6.2 ORNAMENTAL QUALITIES

Ornamental qualities and growth characteristics are best understood by field study. **Field-guides**, **nursery catalogues** and the **internet** are helpful, but trees may not always conform to the ideals presented in catalogues. For example, trees sold as having an upright or columnar form typically become more spreading once planted outside of a nursery.

A tree planting palette should have a clear **design rationale**. Species that complement each other visually and ecologically (e.g. Scots pine and silver birch) are preferred to random admixtures.

An **evergreen** component including broad leafed evergreen's, should be included wherever possible, since they offer year-round visual interest, screening, pollution absorption and shelter for humans and wildlife.

Planting palettes that seek, within the constraints of a site, to continue the long tradition in Cardiff, of adventurous and experimental tree planting, will be preferred to those that rely on a small number of 'tried and tested' trees, but that will result in visual monotony as part of development.

6.3 CLIMATE CHANGE

The **Forest Research Right Trees for Changing Climate Database** <http://www.richtrees4cc.org.uk/> and **Royal Horticultural Society** page at <http://apps.rhs.org.uk/advicesearch/Profile.aspx?pid=712> provide information about trees appropriate in the context of **climate change**.

Climate change is likely to result in more extremes in terms of temperature, storms and rainfall. In urban environments where there may be sub-optimal soils and high air and surface temperatures, adaptable tree species that have evolved to cope with extreme, disturbed and ephemeral environments may be required, whereas more demanding species that have evolved to grow in more stable environments may need to be restricted to more substantial green corridors, urban woodlands and parks.

6.4 PESTS AND DISEASES

Information on current pest and disease threats to trees can be found at <http://www.forestry.gov.uk/pestsanddiseases> and from the **Natural Resources Wales Tree Health Division** treehealth@naturalresourceswales.gov.uk

The global trade in plants and plant based products has resulted in a steady increase in the number of pest and disease threats to trees. Pests and diseases that are introduced from countries far from Britain are likely to be very destructive, since our native trees are unlikely to have evolved strong natural defences to combat them. Wherever new tree planting is proposed it is essential that the stock has been subject to stringent biosecurity checks, at all stages of its life up till planting. Wherever possible, locally sourced trees should be planted that are known to be free of pest and disease problems.

To avoid destructive pest or disease outbreaks and visual monotony, a useful rule of thumb is to plant: -

No more than 10% of any species, 20% of any species within a genus and 30% of any species within a family.

This does not preclude the planting of single species groups or short avenues where overriding design considerations apply, but extensive planting of the same or closely related genera should be avoided.

6.5 HONEYDEW

Some trees, but particularly the native **limes** and **oaks**, **Norway maple**, **sycamore** and **tulip-tree** can support large numbers of **aphids**. The honeydew excreted by feeding aphids **vaporises** and creates a sticky and when wet, slippery veneer to pavers and other surfaces. Large numbers of flies and wasps feed on the honeydew and can present a social nuisance. Dark pigmented '**sooty moulds**' colonise the honeydew and can stain surfaces. Care should therefore be taken when specifying trees for heavily built up areas to minimise nuisance problems associated with honeydew. Limes should not be discounted from planting schemes for heavily built up areas, since several species and cultivars are not heavily colonised by aphids.

6.6 ECOLOGICAL CHARACTERISTICS

Ecological characteristics are often neglected when specifying trees, but successful tree planting needs to have regard to the likely capacity of a proposed tree to establish and grow well in the planting environment proposed, based on its typical growing environment in nature, and the likely environmental conditions that will prevail during its lifetime. Shoe-horning trees that are preferred for aesthetic reasons, into environments that are not well-suited to their evolved traits, can result in costly failures and stunted trees that never achieve their true potential.

Examples of the sorts of ecological considerations that should be taken into account are given as follows: -

- Does the tree in nature grow in a disturbed, ephemeral or early successional environment, e.g. some species in the genera ***Alnus***, ***Betula***, ***Fraxinus***, ***Gleditsia***, ***Pinus***, ***Populus***, ***Robinia*** and ***Salix***. Trees from such genera may grow quickly, making use of mutualistic fungi and bacteria to exploit scarce resources, but may be short-lived.
- Does the tree in nature colonise fine textured, poorly drained soils such as those derived from glacial till, e.g. some species in the genera ***Alnus***, ***Populus*** and ***Salix***, or does it colonise coarse grained, free draining sandy soils derived from glacial outwash, e.g. some species in the genera ***Betula*** and ***Pinus***.
- ‘Late successional’ trees such as ***Fagus sylvatica*** and ***Quercus robur*** may be less vigorous or more likely to succumb to pests and diseases where they are not growing in optimal conditions similar to those found in climax woodland.

Conditions conducive to the growth of late successional trees should be provided for wherever possible, since they are likely to bring long lasting benefits to amenity and the environment, but this is not always practicable, and reliance should not be placed on a limited palette of native or exotic trees that may be vulnerable as environmental conditions change. Instead, the focus should be on planting a diverse range of trees with known ecological traits likely to allow them to grow well in the prevailing environment.

6.7 POISONOUS TREES

Consideration should be given to the toxicity or other potentially harmful characteristics of trees proposed for planting, particularly where children or animals will have free access to them.

The **retailer's code of practice for potentially harmful plants (2000)** http://www.kew.org/science/ecbot/HTA_code_list.pdf, provides details of toxic or otherwise harmful plants, including trees.

6.8 NURSERY AVAILABILITY

Early discussion should take place with supplying nurseries to ensure availability at the optimum size. Supply and demand has its role in what is available, and in the context of climate change and emerging pest and disease threats, the demand side should focus on encouraging nurseries to provide a diverse range of trees, of known provenance and biosecurity status, rather than relying on a restricted palette of tree species, or an ever changing array of cultivars that may differ very little in their growth characteristics.

7.0 WHAT SIZE AND FORM OF TREE SHOULD BE PLANTED?

Plant schedules and specifications should include details of the size and nursery production method of the tree to be planted following the guidance in: -

- **British Standard 3936: Part 1:1992 (Ref. 13)**
- **British Standard 8545:2014 (Ref. 14)**

Most trees planted as part of development will have been produced by one of the following nursery production methods: -

- **Bare root** – field-grown young trees are lifted when dormant with roots not surrounded by soil. Roots are protected from drying until planting.
- **Root-ball** – field-grown trees are lifted with roots surrounded by a ball of soil that is wrapped and bound to enable transportation to the planting site.
- **Containerizing** – field-grown trees are lifted into containers full of a growing medium, allowed to grow for one full season and sold for immediate planting.
- **Container-grown** – trees are grown in a planting medium in a container and moved to progressively larger containers until they are sold for planting.

Each production system has advantages and disadvantages, but whichever system is used to supply trees for planting as part of development, no tree should be accepted for delivery or planting unless it meets the criteria set out in **Table 1 of BS 8545:2014**. Key features of a good quality tree aside from it being in excellent health and free of pest and disease problems include: -

- Clearly defined and straight leader.
- Balanced branching framework with lateral branches subordinate to the leader.
- Clearly defined stem taper and proportionate, balanced height/stem girth ratio appropriate to the species.
- No crossing or co-dominant branches.
- Evenly spaced lateral roots with minimum four major laterals.

- Evenly spaced, well developed fibrous roots.
- An intact root-ball with the root-flare clearly visible.

The use of small, bare-rooted trees with a well-developed fine root system is especially recommended for sites with restricted soil volumes or heavier soils likely to self-compact under the weight of larger root-balled or container trees.

Large container, bare-root and root-balled trees are sensitive and demanding, and likely to fail where soil conditions, RASV and aftercare are sub-optimal. Failure is especially likely where container grown trees have spiralling roots and where bare-root or root-ball trees lack well developed fibrous and lateral roots.

Trees grown using self-pruning '**spring-ring**' pots (otherwise known as '**air-pots**') with an 'egg box' structure encouraging fibrous radial rooting into the open ended cusps of the 'egg box', may establish more quickly because of their large volume of fine, feeding roots. Similarly, trees grown using air permeable bags with white exterior and black interior have good fine root development and fewer problems with spiralling as the roots grown downwards, away from the light.

Most trees planted as part of development will fit into one of the following size categories: -

Standard – 8-10cm girth, 250-300cm height, 175-200cm clear stem, 25-45 litre container, 300mm minimum root-ball diameter and height.

Selected Standard – 10-12cm girth, 300-350cm height, 175-200mm clear stem, 45-65 litre container, 300mm minimum root-ball diameter and height.

Heavy Standard – 12-14cm girth, 350cm minimum height, 175-200cm clear stem height, 45-65 litre container, 400mm minimum root-ball diameter, 300mm minimum root-ball height.

Extra Heavy Standard – 14-16cm girth, 350cm minimum height, 175-200cm clear stem height, 45-100 litre container, 450mm minimum root-ball diameter, 300-350mm minimum root-ball height.

Size is less important than the quality of the stock, planting and aftercare, but **bigger is not necessarily better** and trees planted at small size may establish more quickly and outstrip the growth of trees planted at large size for ‘instant impact’.

For all planting schemes the reasons for selecting a particular size or nursery production method for trees should be clear – e.g. time of year of planting, nursery availability, aesthetics, below ground constraints. Whilst planting to give ‘instant impact’ is not unacceptable in principle, it can only be justified where the growing conditions and aftercare specifications will support healthy long-term growth.

8.0 HOW SHOULD TREES BE PLANTED?

The following method is generally applicable, but will vary slightly dependent on the planting situation, stock size, soil etc. A site specific tree planting methodology should be drawn up including tree pit section and plan views for different site situations.

8.1 BASIC METHOD OF TREE PLANTING (FIGS. 17 & 18)

- 1) During stable weather remove any existing vegetation in the planting position. Dig a hole that is widest at the top with gently sloping, scarified sides to comfortably accommodate the width, but of no greater depth than the roots or root-ball. For root-balled trees the hole may be slightly shallower than the root-ball (approximately 2.5-5cm), in anticipation of soil settlement. For container-grown trees the hole may need to be 4-6cm shallower. **Do not mix the excavated soil.**
- 2) Place the tree in the centre of the hole and backfill in layers of approximately 15cm depth, gently tamping each layer except the final one, to remove large voids and to reinstate the pre-existing soil profile. Excessive compaction will result in poor aeration and drainage whilst excessively loose, poorly structured soil may settle excessively. **Do not bury the root flare.**
- 3) Apply water gradually until the roots or root-ball is thoroughly soaked along with the backfill soil. **Do not over-water to cause waterlogging and apply water gradually through a seep hose or similar to prevent damage to soil structure.**
- 4) Apply a thin (50-75mm) layer of organic mulch (e.g. shredded hardwood bark) but do not build up around the root flare.

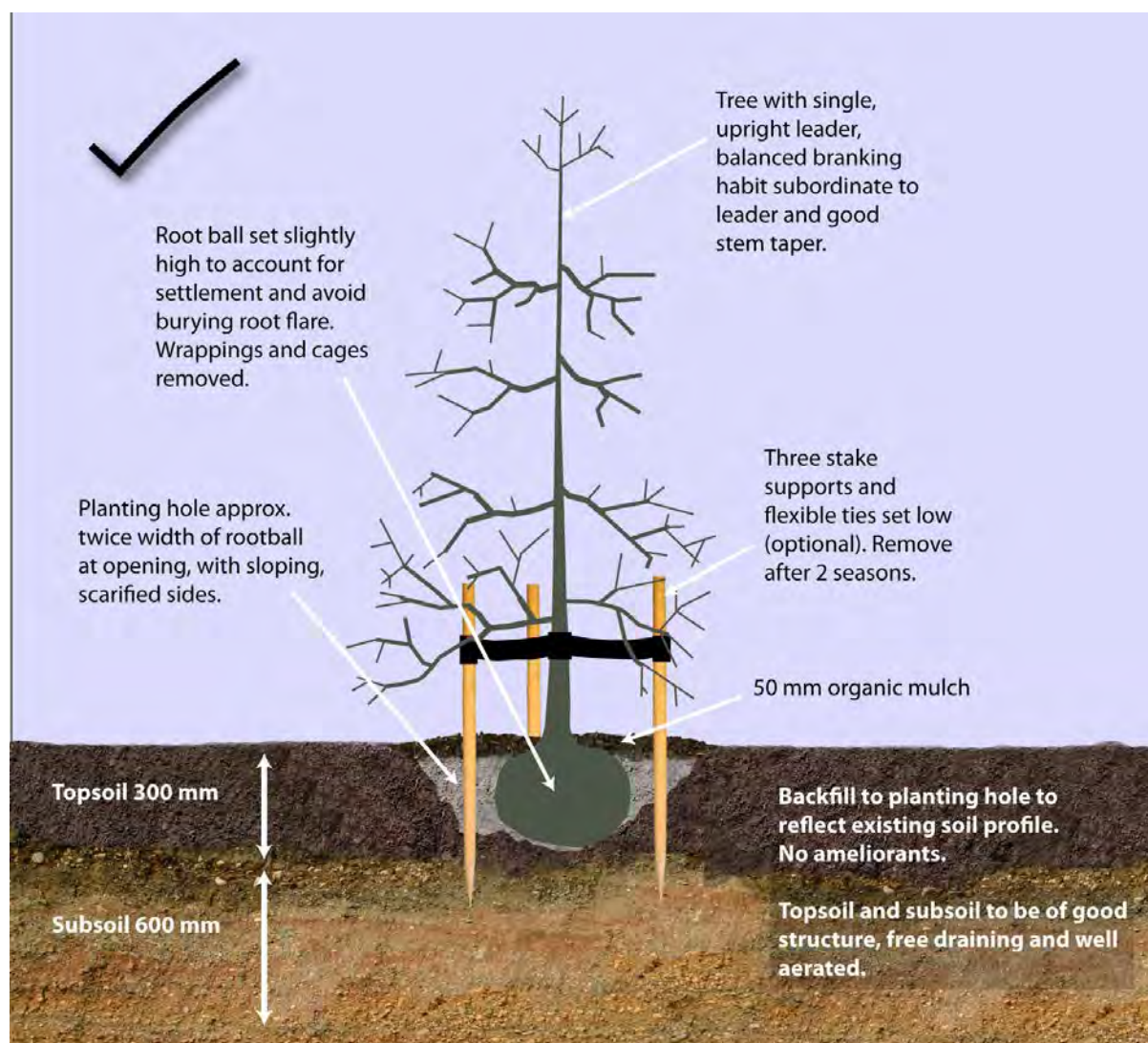


FIG. 17 HOW TO PLANT A TREE

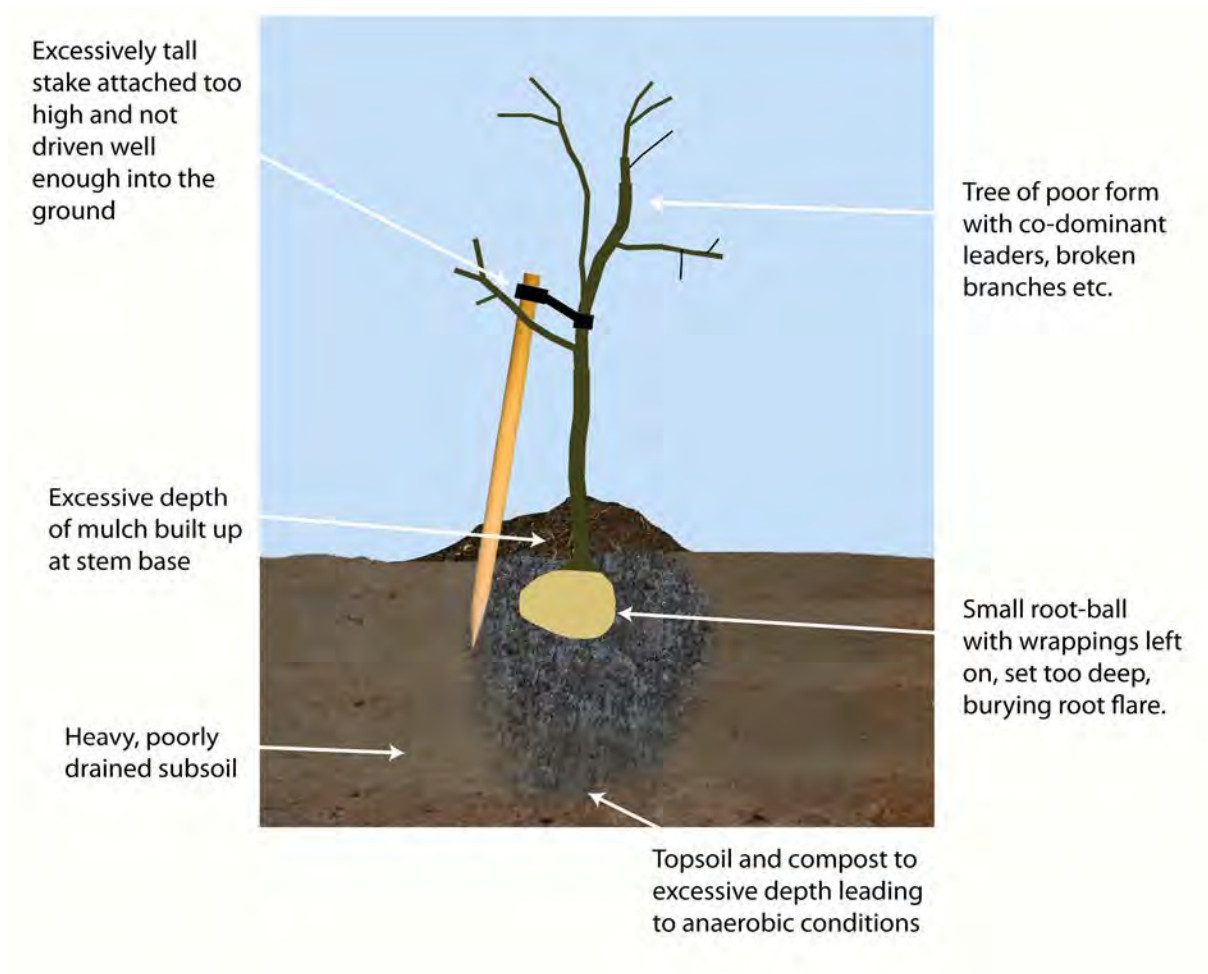


FIG.18 HOW NOT TO PLANT A TREE

8.2 WRAPPINGS AND CONTAINERS

Containers including fabric bags and synthetic wrappings for root-balls should be removed prior to planting. If practicable, biodegradable wrappings, wires, ropes and cages enclosing root-balls should be removed once the tree is in position. Otherwise any wires or ropes around cages or wrappings should be removed and the upper third of biodegradable wrappings or cages cut and peeled back.

8.3 BACKFILLING

Backfills should not be ameliorated with composts or fertilizers unless specifically required following soil analysis, and under no circumstances should 'enriched' backfills surround root-balls at depths below 300mm, where lack of aeration is likely to result in the development of anaerobic soil conditions and the decline or death of the tree.

Backfilled soil should reflect a natural soil profile without sharp interfaces between different layers that may result in ponding and perched water tables.

Where large root-balled or container trees (Extra Heavy Standards and larger) are proposed, consideration should be given to supporting the root-ball on a 150mm-400mm layer (depending on the size of the tree and ground conditions) of **washed sand** to maintain aeration and free drainage and help to support the tree, and prevent the weight of the root-ball causing compaction damage to surrounding soils. If poor drainage is a problem, appropriate washed stone drainage soakaway layers and piped drainage should be built in to the tree pit design, below planting soil layers and following consultation with a **drainage engineer** or **soil scientist**.

8.4 STAKING AND SUPPORT

Larger bare-root and root-balled trees lacking well developed lateral roots, container trees with spiralling roots and evergreens, can be particularly vulnerable to poor anchorage, especially on exposed sites and in poorly structured soils that inhibit root growth. The movement of such trees can damage fine roots, compact soil, or more rarely can result in them falling over or growing at an angle. In these circumstances supports such as stakes and ground anchors may be required, but the need for such should be considered on a case by case basis and **should never be used to help justify the planting of sub-standard trees or a sub-standard soil specification**.

Aftercare specifications should always provide for the adjustment of supports and in the case of stakes and ties, **their removal after one or two growing seasons**. Supported trees that have failed to anchor at this stage should normally be replaced, but **only after consideration of the likely reasons for failure and changes to the planting specification as necessary**.

The most effective supports are those that support the tree **on all sides** and **as low down** as practicable (stakes should not be more than one-third clear stem height), to allow for **maximum stem movement** and thereby **strengthening of the stem base and roots**. Three untreated wooden stakes driven well into the ground with

biodegradable fabric ties, set low on the stem, or biodegradable ground anchors such as untreated timber planks (**Fig. 19**), set over the root-ball, are good options.



FIG. 19 BIODEGRADABLE ROOT ANCHOR USING UNTREATED TIMBER

Wherever possible supports should be avoided as they commonly do more harm than good by restricting stem movement or root growth and the consequent strengthening of the stem base and major roots. Very commonly stakes and ties are not adjusted or removed, resulting in chafing, girdled stems and poorly anchored trees (**Fig. 20**).

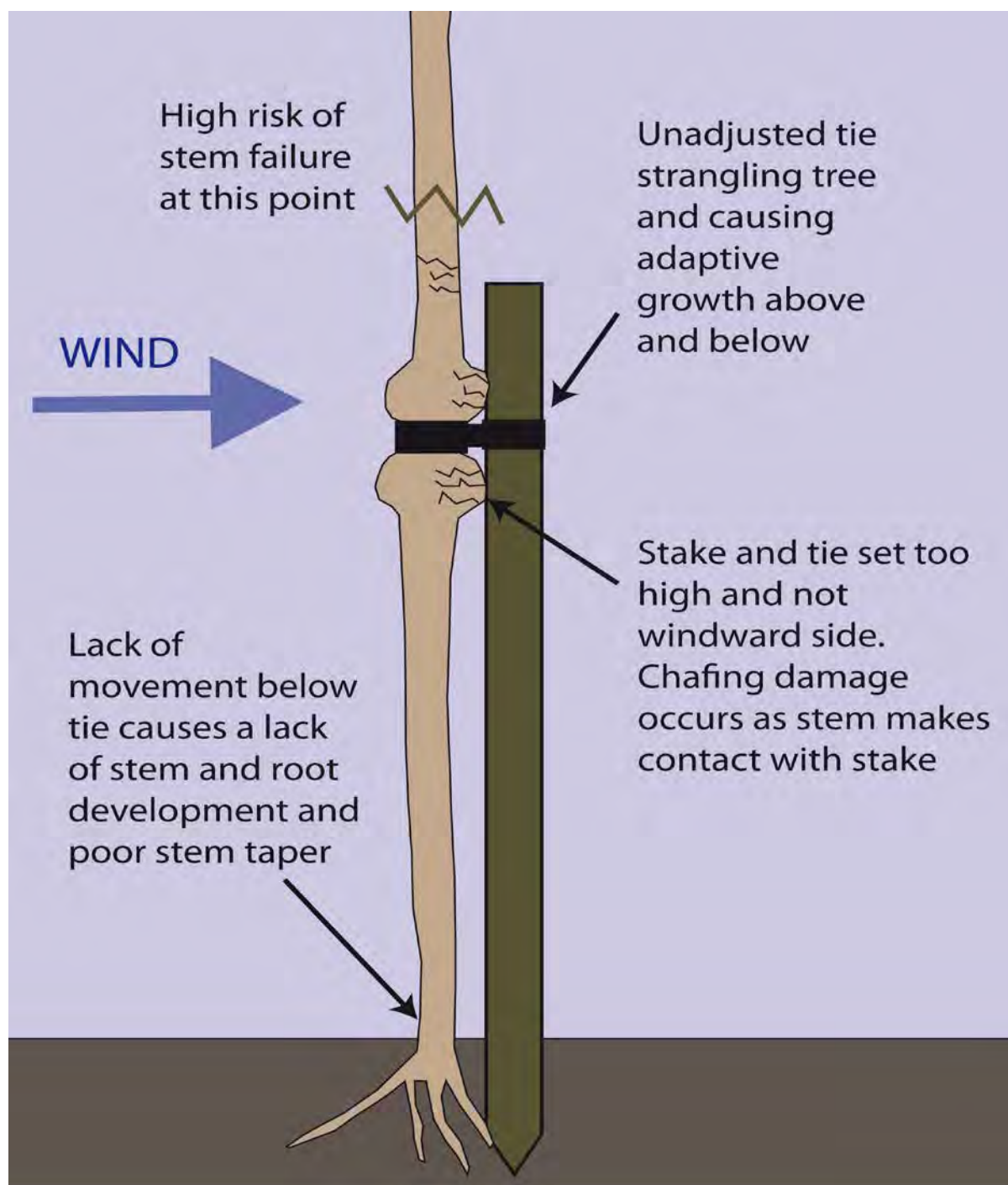


FIG. 20 HOW NOT TO STAKE A TREE

8.5 GUARDS

The use of guards to protect trees from vandalism, mammals, strimmer damage and UV rays, should be considered on a site by site basis. Simple solutions such as plastic mesh and bamboo mat stem guards (**Fig. 21**) can be effective, and the maintenance of mulch beds around stem bases will help to prevent strimmer damage. In some

cases heavy duty guards can't be avoided, but maintenance specifications should make provision for their adjustment and removal as necessary, or they will do more harm than good.



FIG. 21 BAMBOO MAT GUARD

The use of supporting stakes as vandal deterrents may be appropriate in some cases, but any benefit this confers may be lost if stakes are excessively tall, are not adjusted, or are retained for more than two growing seasons.

8.6 IMPLEMENTATION AND AFTERCARE

Tree planting will be at high risk of failure if implementation or aftercare is to a poor standard, is ignored or is insufficient.

All developments that include tree planting should include a detailed, site specific, planting and aftercare methodology, prepared by an Arboriculturist or Landscape Architect.

All tree planting and aftercare as part of development should be undertaken by a professional landscape contractor, and in the case of formative pruning, a professional arboricultural contractor.

The key elements of a tree planting and aftercare specification are as follows: -

- Tree planting to be undertaken only following approval of planting soils in accordance with the Soils and Development TGN and approval of tree stock in accordance with BS 8545:2014.
- Irrigation of tree planting in accordance with an irrigation plan, prepared in accordance with the recommendations in sections 11.3, F.1.6 and G.2 of British Standard 8545:2014 that provides for sufficient but not excessive watering.
- Adjustment of and removal of stakes, guards, and tree grilles as necessary.
- Maintenance of mulch beds until trees have fully established, to suppress competing vegetation and help prevent strimmer/mower damage.
- Formative pruning in accordance with British Standard 3998:2010 (Ref. 15) to maintain a good branching habit and prevent conflict with highways or structures.

A **5-year chronological matrix** of aftercare tasks is helpful in presenting different elements of the aftercare specification, clearly and concisely.

The project Arboriculturist or Landscape Architect, should agree a programme of site monitoring for tree planting implementation and aftercare that includes the **submission of a report** to the LPA upon successful completion of each stage.

The programme should allow for site monitoring of the first tree(s) planted demonstrating accordance with the agreed specification; confirmation within three growing seasons post-planting that stakes and ties have been adjusted and removed

as necessary; confirmation that irrigation has been undertaken in accordance with the irrigation plan; confirmation that mulch beds have been maintained and confirmation within 5 years post-planting that formative pruning has been carried out as necessary. Where failures occur within 5 years post-planting, the reasons for failure should be investigated and a programme of replacement proposed, including amendments to the specification as necessary.




9.0 REFERENCES

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- (15) British Standards Institution. 2010. BS 3998:2010. Tree work – Recommendations.

Tree Planting Guide

Species		Situation						Characteristics										
Native																		
Scientific name	Common name	Calcareous soil	Acid soil	Dry soil	Wet soil	Coastal	Shade	Deciduous	Evergreen	Small	Medium	Large	Upright	Spreading	Autumn colour	Flowers	Fruit	Wildlife
<i>Acer campestre</i>	Field Maple								N/A									
<i>Acer campestre</i> 'Streetwise'									N/A									
<i>Acer campestre</i> 'Louisa Red Shine'									N/A									
<i>Acer campestre</i> 'William Caldwell'									N/A									
<i>Alnus glutinosa</i>	Common Alder								N/A									
<i>Betula pendula</i>	Silver Birch								N/A									
<i>Betula pendula</i> 'Tristis'									N/A									
<i>Betula pendula</i> 'Swiss Glory'									N/A									
<i>Betula pubescens</i>	Downy Birch								N/A									
<i>Carpinus betulus</i>	Hornbeam								N/A									
<i>Carpinus betulus</i> 'Frans Fontaine'									N/A									
<i>Crataegus laevigata</i>	Midland Hawthorn								N/A									
<i>Crataegus laevigata</i> 'Paul's Scarlet'									N/A									
<i>Crataegus monogyna</i>	Hawthorn								N/A									
<i>Crataegus monogyna</i> 'Stricta'									N/A									
<i>Fagus sylvatica</i>	Common Beech								N/A									
<i>Fagus sylvatica</i> 'Dawyc'									N/A									
<i>Ilex aquifolium</i>	Holly							N/A							N/A			
<i>Ilex aquifolium</i> 'Handsworth New Silver'								N/A							N/A			
<i>Ilex aquifolium</i> 'J C Van Tol'								N/A							N/A			
<i>Juniperus communis</i> 'Hibernica'	Irish Juniper							N/A							N/A			
<i>Pinus sylvestris</i>	Scot's Pine							N/A							N/A			
<i>Pinus sylvestris</i> 'Fastigiata'								N/A							N/A			
<i>Populus nigra</i> var. <i>betulifolia</i>	Black Poplar								N/A									
<i>Populus tremula</i>	Aspen								N/A									
<i>Populus tremula</i> 'Erecta'									N/A									
<i>Prunus avium</i>	Wild Cherry								N/A									
<i>Prunus padus</i> 'Albertii'									N/A									
<i>Quercus petraea</i>	Sessile Oak								N/A									
<i>Quercus petraea</i> 'Eastcolumn'									N/A									
<i>Quercus robur</i>	Pedunculate Oak								N/A									
<i>Quercus robur</i> 'Fastigiata Koster'									N/A									
<i>Salix alba</i> 'Limpde'	White Willow								N/A									
<i>Salix alba</i> 'Sericea'	Silver Willow								N/A									
<i>Salix pentandra</i>	Bay Willow								N/A									
<i>Sorbus aria</i> 'Magnifica'									N/A									
<i>Sorbus aucuparia</i>	Rowan								N/A									
<i>Sorbus aucuparia</i> 'Streetwise'									N/A									
<i>Sorbus domestica</i>	True Service Tree								N/A									
<i>Sorbus torminalis</i>	Wild Service Tree								N/A									
<i>Taxus baccata</i>	Yew							N/A							N/A			
<i>Taxus baccata</i> 'Fastigiata'	Irish Yew							N/A							N/A			
<i>Tilia cordata</i>	Small-Leaved Lime								N/A									
<i>Tilia cordata</i> 'Streetwise'									N/A									
<i>Tilia platyphyllos</i>	Broad-Leaved Lime								N/A									
<i>Tilia platyphyllos</i> 'Streetwise'									N/A									
<i>Ulmus glabra</i>	Wych Elm								N/A									

KEY

-  Conditions to which a species/genus is particularly well suited or attributes which a species or genus is particularly known for.
-  Conditions to which a species/genus is suited to at a sub-optimal level or attributes which a species/genus displays, but is not particularly known for.
-  Conditions to which a species/genus is not well suited to or attributes which it does not display or is not known for.

Species		Situation							Characteristics									
Non-native																		
Scientific name	Common name	Calcar eous soil	Acid soil	Dry soil	Wet soil	Coastal	Shade	Decid uous	Ever green	Small	Mediu m	Large	Uprig ht	Sprea ding	Autu mn colour	Flowe rs	Fruit	Widitf e
<i>Abies cephalonica</i>	Grecian Fir							N/A							N/A			
<i>Abies homolepis</i>	Nikko Fir							N/A							N/A			
<i>Abies koreana</i>	Korean Fir							N/A							N/A			
<i>Abies numidica</i>	Algerian Fir							N/A							N/A			
<i>Abies pinsapo</i>	Spanish Fir							N/A							N/A			
<i>Acer buergerianum</i>	Trident Maple								N/A									
<i>Acer capillipes</i>	Red Snake-Bark Maple								N/A									
<i>Acer davidii</i>	Père David's Maple								N/A									
<i>Acer x freemanii</i> 'Armstrong'									N/A									
<i>Acer grandidentatum</i>	Big Tooth Maple								N/A									
<i>Acer griseum</i>	Paperbark Maple								N/A									
<i>Acer lobeli</i>	Lobel's Maple								N/A									
<i>Acer monspessulanum</i>	Montpelier Maple								N/A									
<i>Acer opalus</i>	Italian Maple								N/A									
<i>Acer pensylvanicum</i>	Moosewood								N/A									
<i>Acer platanoides</i>	Norway Maple								N/A									
<i>Acer platanoides</i> 'Deborah'									N/A									
<i>Acer platanoides</i> 'Emerald Queen'									N/A									
<i>Acer pseudoplatanus</i>	Sycamore								N/A									
<i>Acer pseudoplatanus</i> 'Brilliantissimum'									N/A									
<i>Acer pseudoplatanus</i> 'Leopoldii'									N/A									
<i>Acer rubrum</i>	Red Maple								N/A									
<i>Acer rufinerve</i>	Grey Snake-Bark Maple								N/A									
<i>Aesculus flava</i>	Yellow Buckeye								N/A									
<i>Aesculus indica</i>	Indian Horse Chestnut								N/A									
<i>Albizia julibrissin</i>	Silk Tree								N/A									
<i>Alnus incana</i> 'Aurea'									N/A									
<i>Alnus incana</i> 'Laciniata'									N/A									
<i>Alnus x spaethii</i>	Spaeth's Alder								N/A									
<i>Amelanchier x grandiflora</i> 'Robin Hill'	Serviceberry								N/A									
<i>Amelanchier lamarckii</i>	Snowy Mespil								N/A									
<i>Araucaria araucana</i>	Monkey Puzzle							N/A							N/A			
<i>Arbutus x andrachnoides</i>	Hybrid Strawberry Tree							N/A										
<i>Arbutus menziesii</i>	Madrona							N/A							N/A			
<i>Arbutus unedo</i>	Strawberry Tree							N/A							N/A			
<i>Betula utilis</i> ssp. <i>albo-sinensis</i>	Chinese Red-Barked Birch								N/A									
<i>Betula ermanii</i>	Stone Birch								N/A									
<i>Betula ermanii</i> 'Grayswood Hill'									N/A									
<i>Betula lenta</i>	Cherry Birch								N/A									
<i>Betula maximowicziana</i>	Monarch Birch								N/A									
<i>Betula nigra</i> 'Heritage'	River Birch								N/A									
<i>Betula nigra</i> 'BNMTF' (= 'Dura Heat')	River Birch								N/A									
<i>Betula papyrifera</i>	Paper Birch								N/A									
<i>Betula utilis</i> ssp. <i>jacquemontii</i>	Kashmir Birch								N/A									
<i>Betula</i> 'Edinburgh'									N/A									
<i>Calocedrus decurrens</i> 'Columnaris'	Incense Cedar							N/A							N/A			
<i>Castanea sativa</i>	Sweet Chestnut								N/A									
<i>Catalpa bignonioides</i>	Indian Bean Tree								N/A									
<i>Catalpa speciosa</i>	Western Catalpa								N/A									
<i>Celtis australis</i>	Southern Nettle-Tree								N/A									
<i>Celtis occidentalis</i>	Hackberry								N/A									

KEY



Conditions to which a species/genus is particularly well suited or attributes which a species or genus is particularly known for.



Conditions to which a species/genus is suited to at a sub-optimal level or attributes which a species/genus displays, but is not particularly known for.



Conditions to which a species/genus is not well suited to or attributes which it does not display or is not known for.

<i>Cercis siliquastrum</i> 'Bodnant'	Judas Tree									N/A								
<i>Cercis canadensis</i> 'Forest Pansy'	American Redbud									N/A								
<i>Cordylone australis</i>	Cabbage Tree									N/A						N/A		
<i>Corylus colurna</i>	Turkish Hazel									N/A								
<i>Crataegus x lavalleyi</i> 'Carrièrei'	Hybrid Cockspur Thorn									N/A								
<i>Crataegus x prunifolia</i> 'Splendens'	Broad-Leaved Cockspur Thorn									N/A								
<i>Cupressus arizonica</i> 'Glaucia'	Smooth Arizona Cypress									N/A						N/A		
<i>Cupressus macrocarpa</i>	Monterey Cypress									N/A						N/A		
<i>Cupressus sempervirens</i>	Italian Cypress									N/A						N/A		
<i>Cupressus sempervirens</i> 'Green Pencil'										N/A						N/A		
<i>Davidia involucrata</i>	Dove Tree									N/A								
<i>Eucalyptus pauciflora</i> ssp. <i>debeuzevillei</i>	Jounama Snow Gum									N/A						N/A		
<i>Eucryphia x intermedia</i> 'Rostrevor'	Rostrevor Eucryphia									N/A						N/A		
<i>Eucryphia x nymansensis</i> 'Nymansay'	Nymans Eucryphia									N/A						N/A		
<i>Genista aetnensis</i>	Mount Etna Broom									N/A								
<i>Ginkgo biloba</i>	Maidenhair Tree									N/A								
<i>Ginkgo biloba</i> 'Princeton Sentry'										N/A								
<i>Gleditsia triacanthos</i> 'Draves Street Keeper'	Honey Locust									N/A								
<i>Gleditsia triacanthos</i> 'Imperial' (= 'Impcole')	Honey Locust									N/A								
<i>Hippophae salicifolia</i> 'Streetwise'	Willow Leaved Sea Buckthorn									N/A								
<i>Ilex x altaclarensis</i> 'Golden King'	Highclere Holly									N/A						N/A		
<i>Ilex x koehneana</i> 'Chestnut Leaf'	Sweet Chestnut-Leaved Holly									N/A						N/A		
<i>Juglans nigra</i>	Black Walnut									N/A								
<i>Juglans regia</i>	Common Walnut									N/A								
<i>Juniperus scopulorum</i> 'Blue Arrow'	Rocky Mountain Juniper									N/A						N/A		
<i>Koelreuteria paniculata</i>	Golden Rain Tree									N/A								
<i>Ligustrum lucidum</i> 'Variegata'	Chinese Privet									N/A						N/A		
<i>Liquidambar orientalis</i>	Oriental Sweetgum									N/A								
<i>Liquidambar styraciflua</i>	Sweet Gum									N/A								
<i>Liquidambar styraciflua</i> 'Lane Roberts'										N/A								
<i>Liriodendron tulipifera</i>	Tulip Tree									N/A								
<i>Liriodendron tulipifera</i> 'Aureomarginatum'										N/A								
<i>Luma apiculata</i>	Chilean Myrtle									N/A						N/A		
<i>Magnolia grandiflora</i>	Southern Magnolia									N/A						N/A		
<i>Magnolia kobus</i>	Kobushi									N/A								
<i>Malus baccata</i> 'Street Parade'	Siberian Crab Apple									N/A								
<i>Malus hupehensis</i>	Hubei Crab Apple									N/A								
<i>Malus trilobata</i>	Maple-Leaved Crab Apple									N/A								
<i>Maytenus boaria</i>	Maiten									N/A						N/A		
<i>Mespilus germanica</i>	Medlar									N/A								
<i>Metasequoia glyptostroboides</i>	Dawn Redwood									N/A								
<i>Metasequoia glyptostroboides</i> 'Goldrush'										N/A								
<i>Metasequoia glyptostroboides</i> 'Sheridan Spire'										N/A								
<i>Morus</i> spp.	Mulberries									N/A								
<i>Nothofagus nervosa</i>	Rauli									N/A								
<i>Nothofagus obliqua</i>	Roblé Beech									N/A								
<i>Nothofagus dombeyi</i>	Coigüe									N/A								
<i>Nyssa sylvatica</i>	Tupelo									N/A								
<i>Ostrya carpinifolia</i>	Hop Hornbeam									N/A								
<i>Parrotia persica</i> 'Vanessa'	Persian Ironwood									N/A								
<i>Paulownia tomentosa</i>	Foxglove Tree									N/A								
<i>Phillyrea latifolia</i>	Phillyrea									N/A						N/A		
<i>Picea omorika</i>	Serbian Spruce									N/A						N/A		
<i>Picea orientalis</i>	Oriental Spruce									N/A						N/A		
<i>Picea pungens</i> f. <i>glauca</i>	Blue Colorado Spruce									N/A						N/A		
<i>Pinus brutia</i>	Calabrian Pine									N/A						N/A		
<i>Pinus halepensis</i>	Aleppo Pine									N/A						N/A		
<i>Pinus cembra</i>	Arolla Pine									N/A						N/A		
<i>Pinus heldreichii</i>	Bosnian Pine									N/A						N/A		

KEY



Conditions to which a species/genus is particularly well suited or attributes which a species or genus is particularly known for.



Conditions to which a species/genus is suited to at a sub-optimal level or attributes which a species/genus displays, but is not particularly known for.



Conditions to which a species/genus is not well suited to or attributes which it does not display or is not known for.

<i>Pinus nigra</i> ssp. <i>austriaca</i>	Austrian Pine								N/A							N/A			
<i>Pinus nigra</i> ssp. <i>laricio</i>	Corsican Pine								N/A							N/A			
<i>Pinus muricata</i>	Bishop Pine								N/A							N/A			
<i>Pinus peuce</i>	Macedonian Pine								N/A							N/A			
<i>Pinus pinaster</i>	Maritime Pine								N/A							N/A			
<i>Pinus pinea</i>	Stone Pine								N/A							N/A			
<i>Pinus thunbergii</i>	Japanese Black Pine								N/A							N/A			
<i>Pittosporum tobira</i>	Tobira								N/A							N/A			
<i>Platanus x hispanica</i>	London Plane								N/A							N/A			
<i>Platanus orientalis</i>	Oriental Plane								N/A							N/A			
<i>Prunus lusitanica</i>	Portugal Laurel								N/A							N/A			
<i>Prunus sargentii</i> 'Rancho'	Sargent's Cherry								N/A							N/A			
<i>Prunus</i> 'Spire'									N/A							N/A			
<i>Prunus</i> 'Sunset Boulevard'									N/A							N/A			
<i>Prunus</i> 'Tai Haku'	Great White Cherry								N/A							N/A			
<i>Pyrus calleryana</i> 'Chanticleer'	Chanticleer Pear								N/A							N/A			
<i>Quercus agrifolia</i>	Coast Live Oak								N/A							N/A			
<i>Quercus bicolor</i>	Swamp White Oak								N/A							N/A			
<i>Quercus canariensis</i>	Mirbeck's Oak								N/A							N/A			
<i>Quercus castaneifolia</i>	Chestnut Leaved Oak								N/A							N/A			
<i>Quercus cerris</i>	Turkey Oak								N/A							N/A			
<i>Quercus faginea</i>	Portuguese Oak								N/A							N/A			
<i>Quercus frainetto</i>	Hungarian Oak								N/A							N/A			
<i>Quercus ilex</i>	Holm Oak								N/A							N/A			
<i>Quercus libani</i>	Lebanon Oak								N/A							N/A			
<i>Quercus palustris</i>	Pin Oak								N/A							N/A			
<i>Quercus pubescens</i>	Downy Oak								N/A							N/A			
<i>Quercus rotundifolia</i>	Ballota Oak								N/A							N/A			
<i>Quercus rubra</i>	Red Oak								N/A							N/A			
<i>Quercus suber</i>	Cork Oak								N/A							N/A			
<i>Robinia pseudoacacia</i> 'Bessoniana'	False Acacia								N/A							N/A			
<i>Robinia x slavini</i> 'Hillieri'									N/A							N/A			
<i>Sequoia sempervirens</i>	Coast Redwood								N/A							N/A			
<i>Sequoiadendron giganteum</i>	Giant Sequoia								N/A							N/A			
<i>Styphnolobium japonica</i> (= <i>Sophora japonica</i>)	Japanese Pagoda Tree								N/A							N/A			
<i>Sorbus intermedia</i>	Swedish Whitebeam								N/A							N/A			
<i>Sorbus latifolia</i> 'Henk Vink'									N/A							N/A			
<i>Taxodium distichum</i>	Swamp Cypress								N/A							N/A			
<i>Tamarix gallica</i>	Tamarisk								N/A							N/A			
<i>Thuja plicata</i>	Arborvitae								N/A							N/A			
<i>Tilia americana</i> 'Redmond'	American Lime								N/A							N/A			
<i>Tilia mongolica</i>	Mongolian Lime								N/A							N/A			
<i>Tilia tomentosa</i> 'Brabant'	Silver Lime								N/A							N/A			
<i>Trachycarpus fortunei</i>	Chusan Palm								N/A							N/A			
<i>Tsuga canadensis</i>	Eastern Hemlock								N/A							N/A			
<i>Tsuga heterophylla</i>	Western Hemlock								N/A							N/A			
<i>Ulmus</i> 'Columella'									N/A							N/A			
<i>Ulmus</i> 'New Horizon'									N/A							N/A			
<i>Zelkova serrata</i> 'Green Vase'	Keaki								N/A							N/A			

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Cardiff Green Infrastructure SPG

Public Rights of Way and Development

Technical Guidance Note (TGN)



November 2017

City of Cardiff Council

**Green Infrastructure Supplementary Planning Guidance
(SPG):**

Public Rights of Way Technical Guidance Note (TGN).

November 2017

Mae'r ddogfen hon ar gael yn Gymraeg/This document is available in Welsh

1.0 Introduction

1.1 Purpose of this document

1.1.1 The purpose of this Technical Guidance Note (TGN) is to provide guidance on the range of policies in the existing Local Development Plan for Cardiff relating to public rights of way. It forms part of the Green Infrastructure SPG, alongside other subject areas, as follows:-

- Ecology and Biodiversity TGN
- Open Space TGN
- Public Rights of Way and Development TGN
- River Corridors TGN
- Soils and Development TGN
- Trees and Development TGN

1.1.2 This TGN provides advice on:

- How to identify whether a proposal for development affects a public right of way;
- When existing paths should be retained and situations where diversions may be acceptable;
- When new paths are needed and how they should be located within a development;
- Issues to consider when designing paths and the surrounding area.

1.1.3 It is especially relevant for new housing developments but equally relevant to other kinds of development if these are likely to affect an existing public right of way or increase potential usage in the adjacent area.

1.1.4 In any development where rights of way have been identified or proposals to create new paths is being considered, it is advised to liaise directly with the Public Rights of Way Team for advice, design considerations and timescales for legal orders where appropriate at an early stage.

1.1.5 The relevant sections of the Highways Act 1980 apply to all public maintained highway be that a Public Right of Way or Adopted Highway. Guidance is provided in section 3.0 Pre-Planning Considerations for Rights of Way and licenses required prior to works being undertaken.

1.2 Planning / Policy

- 1.2.1 The Welsh Assembly Government supports the use of SPG to set out detailed guidance on the way in which development plan policies will be applied in particular circumstances or areas. TGN must be consistent with development planning policy and national planning policy guidance. It may be taken into account as a material consideration in planning decisions.
- 1.2.2 Planning Policy Wales sets out the Welsh Assembly Government's planning policies and reinforces the need for this guidance. It states that authorities should promote specific measures to assist pedestrians including the provision of safe, convenient and well-signed routes.

2.0 Definitions

2.1 Definitive Map and Statement

- 2.1.1 The need to identify recorded and unrecorded rights of way paths within a proposed development is crucial during the pre-planning application stage to ensure the public's right to use and enjoy the network is retained (Section 130, Highways Act 1980).
- 2.1.2 There are approximately 170 km of public rights of way in the City and County of Cardiff and below define the types of rights of way.

Recorded Rights of Way Types	
Type	User
Footpath	For use by walkers only
Bridleway	For use by walkers, horse riders and cyclists
Byways Open to All Traffic (BOATs)	For use by walkers, horse riders, cyclists and vehicular rights
Restricted Byways (RBs)	For use by walkers, horse riders, cyclists and non-motorised (i.e. horse drawn) vehicles.
Other Types of Rights of Way	
Permissive Paths	Formal or informal access given by landowner's consent. These may be under condition for a period of time or simply by word of mouth/signed.
Unrecorded rights of way	Acquired historical rights over 20 year usage by the public

- 2.1.3 The rights of way network in Cardiff is managed and maintained by Cardiff Council which is also responsible for the Definitive Map and Statement of Rights of Way. These are a legal record of all the rights of way that exist within the City and County of Cardiff. As the Highway Authority for the area, Cardiff Council is legally responsible for keeping the map and statement up to date.
- 2.1.4 The Definitive Map does not include unrecorded rights of way paths or anomalies which can cause developers considerable difficulties. Local residents may have used a route through a development site for some considerable time and may wish to claim a right of way. These should be identified early on in the process by a request to the Council's Rights of Way Team.
- 2.1.5 The Definitive Map and Statement are conclusive proof as to the existence, status, width and position of a public right of way. It can be changed but only by a confirmed legal event such as a diversion order. The fact that a legal right of way is shown on the definitive map but does not physically exist on the ground is not evidence that no right of way exists.
- 2.1.6 The Definitive Map and Statement can be viewed online www.cardiff.gov.uk or available to the public to view at:

City of Cardiff Council
County Hall, Public Rights of Way Team
Atlantic Wharf, Cardiff Bay, Cardiff CF10 4UW

3.0 Pre-Planning Considerations for Rights of Way

3.1 Rights of Way within a Development

3.1.1 At the pre-application stage the developer should give due consideration to whether any paths/rights of way cross the development site. The identification of a right of way at a late stage can cause significant delays and may even halt a development or make properties unsaleable. Obstructions to the rights of way network, even in ignorance, may lead to enforcement action, prosecution and blighted property. The Council's Rights of Way Section can offer specific advice on the status and significance on any paths within the development site.

3.1.2 If it is determined that public safety will be at risk to allow continued access on the right of way crossing the site during development then the developer will need to provide an equally commodious alternative route for the public to use. This will require the developer to:

- Liaise with PROW Officers for approval of the alternative route and suitability
- If approved by PROW, developer to apply to the Network Management Team for a temporary closure of the site and appropriate signage installed to clearly waymark the alternative route.
- Temporary Closures on Public Rights of Way administered by Network Management are only valid for a maximum period of six months. Any extension period must be applied for by Welsh Government.
- Excavation and/or installation of apparatus into the right of way requires a Section 50 license and an opening up notice which can be applied for by Network Management.

3.1.3 The Rights of Way Review Committee Practice Guidance Note 1: Code of Practice on Consultation over changes to rights of way states; "...attention is drawn to paragraphs 1-2 of Department of the Environment Circular 2/93 (Welsh Office 5/93), which stress the need for adequate consideration of the rights of way before the decision on planning applications is taken, and the requirement that development affecting public rights of way must be advertised in a local newspaper and by posting on site. It recommends that consultees be sent a copy of such applications at the same time and a copy of the guidance note together with a suggested list of consultees can be found in Appendix C. This list is not exhaustive and will be reviewed annually.

3.2.1 When should existing paths be retained?

3.2.1 The Council has a duty to protect the public rights of way network (Highways Act 1980 Section 130). For this reason, the first option should be to retain paths on the existing alignment, especially if the path:

- Provide a convenient well used route to local facilities;
- Link areas of open space and the wider countryside;
- Are used for recreational reasons;
- An unrecorded right of way is clearly defined and should be acknowledged by the developer/landowner.

3.2.2 The developer should always survey the land to determine if there are any existing unrecorded rights of way which the public have been using and also liaise with the Public Rights of Way Team to confirm if any applications have been requested within the site boundary or nearby. Obstruction of any unrecorded right of way may trigger the public to apply to the Local Authority to acknowledge the path by historic and user based evidence in order to modify the Definitive Map and Statement and record the way by unhindered 20 year usage.

Welsh Government Guidance is available in section 5.18 Modifying the Definitive Map and Statement under the '*Guidance for Local Authorities on Public Rights of Way*'; Published August 2016.

3.3.1 When might a diversion be acceptable?

3.3.1 The developer would need to demonstrate why retaining the existing network would prejudice an otherwise acceptable development or layout. A diversion may be acceptable if an equally convenient route can be found. In some cases, it may be possible to create a more convenient route as a result of a development or to enhance the quality of a route particularly on large sites. These opportunities should be taken even if it means diverting a right of way. The public rights of way network should be considered in a comprehensive manner and as part of the network of off road routes for moving round the site, and linking it with surrounding communities and countryside.

- 3.3.2 The Town and Country Planning Act 1990 (TCPA 1990) gives Local Authorities the power to divert or extinguish footpaths, bridleways or restricted byways. The TCPA 1990 also enables orders to include the provision for the creation of an alternative highway or improve an existing right of way for use as a replacement to one being stopped up or diverted, however, an order should not be made simply because planning permission has been granted.
- 3.3.3 Welsh Government's '*Guidance for Local Authorities on Public Rights of Way 2016*' advises that if a path is diverted it should not usually be on the footway or carriageway of an estate road to ensure that the character of the public right of way is maintained as far as possible and that the route remains legible to users, when the development is completed.
- 3.3.4 The granting of planning permission does not give a developer any right to interfere with, obstruct or move a public right of way (Welsh Office Circular 5/93).
- 3.3.5 Local Authorities have the power to make public path orders under Section 257 of the Town & Country Planning Act 1990 for the stopping up or diversion of footpath and bridleways when necessary to enable a planning consent to be implemented.
- 3.3.6 It is essential that consultations between developers and the Council's Development Control and Rights of Way Sections take place at the earliest opportunity. Where a stopping up or diversion order are required it is likely to take up to a year to come into effect. Until that time the original definitive line must be kept open at all times.
- 3.3.7 When determining an application for a diversion or stopping up order, the Council will need to be satisfied that it is necessary (not just desirable or preferable) for the path to be altered in order for the planning permission to be carried out. The granting of planning permission cannot be conditional upon a path being stopped up or diverted and neither does the granting of planning permission constitute permission to close or divert a public right of way.
- 3.3.8 As Highway Authority, Cardiff Council can only use the powers of section 257 of the Town & Country Planning Act 1990 while the development is taking place, thereafter any changes can only be made under the Highways Act 1980 legislation. Where it is agreed that a diversion or stopping up order is necessary the full cost of making the order will be borne by the developer.
- 3.3.9 Temporary Diversions/Stopping up orders can be applied for, to Cardiff Council, to allow works to be undertaken or prevent a danger to the public. This restriction is only temporary and the route must be reopened. These orders cannot be used in lieu of a permanent order

and again the developer will be expected to pay the costs of producing and implementing the order.

3.4 When are new paths needed?

- 3.4.1 New paths may be needed to supplement the existing network. This is especially relevant for new housing developments where new path links will be required where they are necessary to create convenient access to work, services, leisure, through public open space and countryside primarily for those who live on the site. Such paths should be permanent and made up to adoptable standard i.e constructed to conform to the requirements of Cardiff Council's Highway Standards Manual.

4.0 Design Considerations

4.1 Where should paths be located within a development?

- 4.1.1 Where a need to realign a path or creation of a new path is identified, the following principles should be taken into account (Note: This is not all inclusive as each site will have various competing elements to consider):
- Avoid the need for people to make unduly long circuitous routes to destinations within the site, or in adjacent areas (shops, schools, play areas);
 - Seek to ensure wherever possible nobody has a walk of over 5 minutes (400 metres) to reach a bus stop or a play area;
 - Where possible utilise any open space on the site, and any other natural or historic features of interest being retained or created. This will provide a more pleasant route and will help avoid paths being located close to property boundaries;
 - Public rights of way paths, by law, must be accessible at all times. For example, if a new development is creating public open space and there is a right of way which crosses it, the park cannot be locked at any time;
 - Paths being realigned or created in an ecologically sensitive area will need to consider technical guidance and the Green Infrastructure SPG to minimise any impact on biodiversity. For example, a site survey may highlight informal routes which are already being used by the public and by formalising and upgrading the surface condition of one or two of the routes will protect the flora and fauna in surrounding area;

- Avoid risk of crime and nuisance to users and neighbours (see Section 4.2 below);
- Facilitate access by all members of the community including the elderly, wheelchair users, people with prams and pushchairs, and other people with special access requirements. The '*BT Countryside for All, A Good Practice Guide to Disabled People's Access in the Countryside*' is a useful publication for understanding the requirements of disabled users';
- Where possible footpaths should run alongside other routes (cycle/vehicle) to maximise surveillance;
- They should be located where their entrances can be overlooked by the active rooms of neighbouring buildings.

4.2 Design to avoid crime and nuisance

4.2.1 Public Spaces Protection Orders (PSPOs) were introduced by the Anti-Social Behaviour, Crime and Policing Act 2014 which came into force on 20 October 2014 and have replaced Gating Orders and Dog Control Orders. The Act and the regulations made under the Act apply in both England and Wales. PSPOs can be used to prevent public access to certain classes of highway, including public rights of way, as well as to wider areas of open space. Public rights of way restricted by a PSPO do not cease to be regarded as a highway. Currently within Cardiff requests are being made to close lanes/paths due to incidents of crime and anti-social behaviour on developments which have been constructed more than 20 years ago. The legal processes required to 'stop up' such lanes are not supported by the Public Rights of Way Team as they would remove the public's right to use them and the legal order would most likely be objected to.

Further guidance is available within the publication, '*Anti-social Behaviour, Crime and Policing Act 2014: Reform of anti-social behaviour powers- Statutory guidance for frontline professionals*' published by the Home Office.

4.2.2 It is often difficult to resolve conflicts between the needs of path users and the problems, both real and perceived, to those who live near paths. However, by taking account of the following principles in the design of new schemes, unnecessary problems can easily be avoided:

- Avoid unnecessary paths which allow casual intrusion by non-residents;
- Ensure paths are as short as possible, direct, open to view, well lit and clear of hiding places;

- Paths should be set in a landscaped strip of sufficient width either side of the path to avoid nuisance to neighbours (see section 4.9 below);
- The number of footpaths should not exceed the local needs and use, in order to ensure regular activity and increased safety;
- Where possible, paths should be overlooked by the frontages of active rooms and kept away from the sides and rear of houses;
- Footpaths should not provide access to cul de sacs, compromising the security of the design.

4.3 Detailed design of paths

- 4.3.1 All paths whether existing or new should be designed to accommodate their intended use and to minimise the risk of disturbance to neighbours and opportunities for crime. Further guidance is set out in *Planning Policy Wales 2016 Technical Advice Note 12: Design*.

4.4 Surfacing and drainage

- 4.4.1 Paths within urban areas (both existing rights of way and new paths) including path links on housing estates should be surfaced and drained to the same standard as the pedestrian footways which form part of the highway. Paths through areas of open space should usually be hard surfaced in tarmac. Other forms of surfacing such as loose aggregates may on occasions be appropriate subject to the intensity, type and level of use. Bridleways and byways should be surfaced in a way which is appropriate for equestrian and cycle use conforming to British Horse Society and Sustrans guidelines.
- 4.4.2 The likely increase in their use and role as part of the off road network means that unsurfaced paths will rarely be acceptable unless the anticipated use will be very light. Unsurfaced paths which may be passable in summer can become boggy quagmires in winter even with light use. Where possible gradients should conform to the '*BT Access for All*' guidelines.

4.5 Lighting

- 4.5.1 In order to make paths safe to use it is essential they are adequately lit. Paths which create part of the key links for communities to shops, schools, and transport. Paths which are being considered for upgrading to an adoptable standard will require street lighting. Other paths, which are in an ecologically sensitive area, may not be suitable for street lighting and will need to refer to Protection and Provision of Open Space and Ecology and River Corridors

TGNs. Landscape should be creating around a path to ensure there is adequate natural light and preventing dark corners where possible to create a safe and enjoyable path for public access.

4.6 Width

- 4.6.1 Depending on the level of use and status, the actual path should be between 2 and 3 metres wide with a landscaped strip on each side of reasonable width to afford a sense of security and encourage use. A width of 3-5 metres will be required for a bridleway and more for a byway. New paths which are not currently rights of way but are intended for shared use will need to be 4 metres wide or more. Consideration should also be given to segregating the path where shared usage is planned and where appropriate consideration given to providing barrier protection.

4.7 Fences and walls

- 4.7.1 Paths should not be placed in narrow alleyways between high fences which will deter use. However, where housing adjoins the highway appropriate robust and secure boundary treatment will be required to provide security and privacy.

4.8 Landscaping

- 4.8.1 The type of planting will depend on the length, width and setting of the footpath. Planting should be designed to provide a pleasant natural, informal, setting.
- 4.8.2 Planting alongside urban paths between buildings should not unduly enclose or narrow the path or create hidden areas. Low growing shrubs or grass are therefore often preferable.
- 4.8.3 Where paths lie next to housing it may be sensible to use thorny shrubs to provide security and deter ball games.
- 4.8.4 The appropriate maintenance arrangements and agreements will need to be put in place for all areas of landscaping abutting paths. The approval of the Council's Parks Services should be sought for any soft landscape proposals.
- 4.8.5 Development schemes will be expected to provide details on all of the above matters at the earliest opportunity to ensure appropriate consultation.

5.0 Developer Contributions

5.1 Section 106 Contribution

5.1.1 There may be occasions when the Council would require a financial contribution from a developer for offsite works. This would be to ensure that proposed improvements and enhancements within a development site link effectively with the existing network of routes and are constructed to an appropriate standard for the increased use likely to result from the completion of the development.

5.1.2 Where paths contain an adjoining soft landscape area this strip will require a commuted sum for ongoing maintenance if it is to be transferred to the Council.

5.1.3 LDP Policy KP7 relates to planning obligations, and The Planning Obligations Supplementary Planning Guidance (SPG) sets out the Council's approach to planning obligations when considering applications for development in Cardiff. It also sets out the mechanisms for securing survey, assessment, mitigation, compensation and enhancement of green infrastructure, including public rights of way.

6.0 Summary

6.1 For best practise, following the checklist below is advised:

- Take account of National and Local Planning Guidance.
- Check if a Public Right of Way, pending claim or existing features of access affects the development site. There is potential the public may claim unrecorded paths due to a new development.
- Consider if a new Public Right of Way can be incorporated into the site.
- Design the layout to take account of any existing Public Rights of Way and retain them within green corridors.
- Leave sufficient time to apply for required licenses, install temporary diversions where approved and apply for legal orders where a path alignment is proposed to being permanently changed..
- Most importantly, talk to the Council's Rights of Way Team at an early stage to ensure that the correct legal procedures can be processed in line with development schedule.

Appendix A: Rights of Way Review Committee Practice Guidance Note

1.0 Consultation over changes to Rights of Way Introduction

1.1 It is now the view of most authorities with powers to make orders affecting public rights of way that the time, cost and possible conflict involved in processing such orders can be reduced if informal consultation is carried out with interested parties prior to the orders being made.

1.2 The Rights of Way Review Committee has therefore prepared the following code of practice on consultation. The code is advisory. Failure to comply with the code will not invalidate any subsequent order, neither does compliance with the code discharge order-making authorities from fulfilling the statutory requirements on the notification of the making and subsequent stages of the orders.

2.0 Application of Code

2.1 The code applies to proposals made by local authorities (county and district councils, unitary authorities, London borough councils, and national park authorities) for:

- a. Side roads orders made under section 14 or 18 of the Highways Act 1980.
- b. Creation agreements made under section 25 of the Highways Act 1980, especially where these are part of a package also involving public path diversion or extinguishment orders.
- c. Public path and rail crossing orders under sections 26, 118, 118A, 119 and 119A of the Highways Act 1980.
- d. Applications by local authorities to magistrates' courts under section 116 of the Highways Act 1980 for the stopping up or diversion of highways.
- e. Modification and reclassification orders made under sections 53 and 54 of the Wildlife and Countryside Act 1981, and to which Schedule 14 and/or Schedule 15 to the Act apply.
- f. Extinguishment orders made under section 32 of the Acquisition of Land Act 1981, section 294 of the Housing Act 1985 or section 258 of the Town and Country Planning Act 1990.
- g. Traffic regulation orders made under section 1 of the Road Traffic Regulation Act 1984 to restrict or regulate use of footpaths, bridleways or unsurfaced carriageways (including those shown as byways or RUPPs on definitive maps).
- h. Orders made under section 257 of the Town and Country Planning Act 1990 to divert or extinguish a public footpath or bridleway to enable development to be carried out in accordance with planning permission.

3.0 Rights of way affected by planning permission for development

3.1. Under section 257 of the Town and Country Planning Act 1990, an order can be made to divert or extinguish a public footpath or bridleway to enable development to be carried out in accordance with planning permission. In view of the need to process planning applications quickly and within strictly defined time limits, it is not proposed that the code of practice should apply to planning applications which will, if granted, give rise to such orders. Nevertheless, attention is drawn to Welsh Government's 'Guidance for Local Authorities on Public Rights of Way' which stresses the need for adequate consideration of the rights of way before the decision on planning applications is taken, and the requirement that developments affecting public rights of way must be advertised in a local newspaper and by posting a notice on site. It is recommended that consultees be sent a copy of such applications at the same time.

4.0 Consultees

4.1 The organisations to be consulted will vary, not only between authorities but within them also. It is therefore suggested that a list of consultees should be compiled for each local authority district and that this be sent annually to those included on it for amendment and updating.

4.2. Organisations to be included on such a list are:

- a. Other local authorities, including the parish or community council, or chairman of the parish meeting, and national park authorities.
- b. Statutory undertakers.
- c. Prescribed organisations (see Annex in WG, Guidance for LA for PRoW, AUG 2016) and Annex of this note 6.0 References). Authorities should note that the interests of vehicular users, including four wheel-drive organisations, are being looked after by ACU which has delegated the nomination of its local representatives to LARA.
- d. Local organisations. Such local bodies as appear to the authorities to have an interest in public rights of way in the area concerned.
- e. The Countryside Agency and the Countryside Council for Wales. The Highways Act 1980 requires these bodies to be consulted prior to the making of any order under sections 118 and 119 of that Act with respect to any part of a footpath or bridleway in a national park.

4.3 The owner and occupier of any land affected by a proposal should be consulted unless the proposal has originated from him or he is otherwise given notice of the proposal. In cases where such an owner or occupier is not known to the authority, representative organisations of farmers and landowners should be asked to assist. Authorities should bear in mind that a proposal may have

an effect on owners and occupiers other than those over whose land the path(s) or way(s) in question run(s) or will run as a result of the proposal and should be prepared to consult accordingly.

4.4 Regional managers of the Ministry of Agriculture are also able to comment where agricultural interests are affected and authorities may wish to consult them in appropriate cases.

4.5 Authorities may not be aware of all the organisations in their area with an interest in rights of way. It would therefore be advisable for authorities to advertise in local newspapers at intervals of, say, four years, to explain that a list of consultees exists and to invite applications for inclusion on the list from organisations with an interest. This should not preclude local authorities from adding organisations to the list at any time but it would give authorities the protection of having invited and responded to requests so made.

4.6 For proposals affecting a national trail, the appropriate regional office of the Countryside Agency or Natural Resources Wales should be notified so that they may consider whether it is necessary to make a related order to vary formally the line of the approved route. Organisations representing users of the route such as Offa's Dyke Association or the South West Way Association should also be consulted.

5.0 Procedure

5.1 The letter to consultees requesting comments on a proposed change should include:

- a. A plan or map, to a scale of not less than 1:10,000 in rural areas or 1:2,500 in built-up areas. It should show the Ordnance Survey grid and references. It would also be helpful to quote the Definitive Map public right of way number.
- b. A statement of reasons for the change.
- c. Where appropriate, details of any limitations or conditions to which any proposed new route would be subject, or of any works which would be carried out on such a route.
- d. The date by which comments should be received by the authority. This should be at least 28 days from the date of the letter and offer the option of more time if needed.
- e. An indication of whether consultees are permitted to inspect the line of any proposed new route without further request or the name, address and telephone number of the person or organisation from whom such permission should be sought.

5.2 Consultees should be requested to acknowledge consultations as they are received from the order-making authorities.

6.0 Reference

6.1 Welsh Government 'Guidance for Local Authorities on Public Rights of Way, August 2016

NB: The Rights of Way Review Committee brings together a wide range of bodies and organisations concerned with public rights of way in England and Wales. It is an informal, non-statutory committee set up to review matters relating to public rights of way in England and Wales with the aim of agreeing, by consensus, proposals for action.

6.2 The following bodies are represented on the Rights of Way Review Committee: Association of National Park Authorities, British Driving Society, British Horse Society, Byways and Bridleways Trust, Central Council of Physical Recreation, County Surveyors' Society, County Landowners' Association, Countryside Agency, Natural Resources Wales, Cycling UK, Institute of Public Rights of Way, Land Access and Recreation Association, Local Government Association, National Association of Local Councils, National Farmers Union, Open Spaces Society, Ramblers' Association, Welsh Local Government Association. Observer Status: Department of the Environment, Transport and the Regions, Ministry of Agriculture, Fisheries and Food, National Assembly for Wales.

Organisation	Proposals/orders for which consultation is required	Address to which pre-order consultation papers should be sent	Address to which the statutory notices should be sent on making of order
Ramblers Association: Cardiff Group	All cases	Local representative as notified to the Authority	Local representative as notified to the Authority
Open Spaces Society	All cases in those areas where the Society has notified Authorities of their interest	hq@oss.org.uk	hq@oss.org.uk Open Spaces Society 25A Bell Street Henley on Thames Oxon RG9 2BA
British Horse Society	All cases	Local representative as notified to the Authority	
S.A.F.E.	All cases	Local representative as notified to the Authority	
Local Access Forum	All cases	Local representative as notified to the Authority	Local representative as notified to the Authority
Cycling UK	All cases except those involving only footpaths not being upgraded for additional access rights	Local representative as notified to the Authority	planning@cyclinguk.org
Auto Cycle Union	All cases, except those affecting footpaths	admin@acu.org.uk	admin@acu.org.uk

	over which no public vehicular rights are claimed or suspected to exist		
Byways and Byways Trust	All cases	notices@bbtrust.org.uk	notices@bbtrust.org.uk BBT, PO Box 117 Newcastle- upon-Tyne NE3 5YT
Peak and Northern Footpath Society	All cases in the area for which the Society is prescribed to receive orders	1 Nelson Street Hazel Grove Stockport SK7 4LR	15 Parkfield Drive Tyldesley, Manchester M29 8NR
Chiltern Society	All cases in the area for which the Society is prescribed to receive orders	Local representative as notified to the Authority	The Chiltern Society, Rights of Way Group, Hankley House Whitehall Lane Checkendon Reading RG8 0TN
Welsh Trail Riders Association	Cases where vehicular rights are affected	Local representative as notified to the Authority	WTRA 28 Porthkerry Rd Rhoose, Vale of Glamorgan CF62 3HD (except where otherwise notified to the authority)
British Driving Society	Cases involving reclassifications, RUPPs and byways	2 Dugard Place Barford, Warwick CV35 8DX	2 Dugard Place Barford, Warwick CV35 8DX

Cardiff Green Infrastructure SPG

River Corridors

Technical Guidance Note (TGN)



November 2017

**Cardiff Green Infrastructure:
River Corridors Technical Guidance Note
November 2017**

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1. Introduction

- 1.1 This guidance note supplements Policy EN4 of adopted Cardiff Local Development Plan (LDP), which provides a planning framework within which the Council can protect, promote and enhance the features of the river corridors whilst also facilitating sustainable access and recreation opportunities together with achieving its aims with regards to the river corridors.
- 1.2 Technical Guidance Note (TGN) supplements policies in the adopted Cardiff Local Development Plan (LDP) relating to river corridors in Cardiff, and is part of the Supplementary Planning Guidance for Green Infrastructure. This is one of a series of Technical Guidance Notes which provide detailed information about the retention and provision of green infrastructure elements in new developments, as follows:-
- Ecology and Biodiversity TGN
 - Open Space TGN
 - Public Rights of Way and Development TGN
 - River Corridors TGN
 - Soils and Development TGN
 - Trees and Development TGN
- 1.3 Welsh Government supports the use of Supplementary Guidance (SPG) to set out detailed guidance on the way in which development plan policies will be applied in particular circumstances or areas. SPG must be consistent with development plan policies and national planning policy guidance. SPG helps to ensure certain policies and proposals are better understood and applied more effectively. They do not have the same status as the adopted development plan but are a material consideration in the determination of planning applications
- 1.4 This Note is likely to be of particular benefit to those considering development proposals which may affect a river corridor in Cardiff. It enables developers, landowners and potential objectors to understand how the Council considers development proposals and the standard of provision sought.

EN4: RIVER CORRIDORS

The Natural Heritage, character and other key features of Cardiff's river corridors will be protected, promoted and enhanced, together with facilitating sustainable access and recreation.

- 1.5 The Policy helps to deliver LDP objectives relating to social needs and natural environment together with according with Planning Policy Wales (Para 5.1, 5.4 and 5.5) which values the importance of the natural heritage of Wales including non-statutorily designated sites and seeks to conserve and enhance this heritage in ways which bring benefits to the local community. It will also help deliver the Capital Ambition Report, which outlines the Council's vision for Cardiff.
- 1.6 This guidance note seeks to provide guidance to applicants on how planning applications located within the River Corridors identified on the LDP Proposals Map will be assessed and importantly what factors will need to be taken into account when submitting a planning application within such areas.
- 1.7 Cardiff contains the four river corridors of the Taff, Ely, Rhymney and Nant Fawr (see Map at Appendix 1). They make a unique contribution to the character and form of the city providing continuous green corridors between the Severn Estuary and the countryside beyond the urban edge. The watercourses and adjoining open spaces possess high recreational, biodiversity, historic, cultural and landscape value. Additionally, they are located close to local communities and offer excellent opportunities for off-road access routes that can provide part of the wider strategic recreational routes and everyday network of routes.
- 1.8 The extent of Cardiff's river corridors within the urban area are illustrated on the Proposals Map and Plan 1. They include the rivers together with adjoining open space and other predominantly open land that together form the strategically important corridor of mixed open spaces that run through the heart of the urban area. The Policy also applies to the river corridors outside the urban area (as defined by the settlement boundaries). Such land is protected from inappropriate development through other Policies. However, this Policy will also apply and aims to ensure the strategic role played by the river corridors is continued from the urban area, through the surrounding countryside up to the County boundary. In this respect it is considered inappropriate to designate an arbitrary boundary to a notional river corridor running through

farmland. Any proposals will be assessed to ensure the aims of this Policy are met and not prejudiced.

- 1.9 Importantly, the Policy is not intended to prevent any development in the designated area. The key point is to ensure development proposals respect key features/factors that are referred to in this guidance.

2 River Corridors Overview

- 2.1 This section provides a brief description of each of the four river corridors in Cardiff. This helps give a high-level context, in which development proposals can be assessed.

River Rhymney and Nant Fawr

- 2.2 Outside Cardiff - The River Rhymney previously formed the boundary between Glamorgan and Monmouthshire and is sourced on the Southern edge of the unspoilt landscapes of the Brecon Beacons. The river steeply descends into the town of Rhymney in Caerphilly, which was founded with the establishment of the Bute Ironworks in 1802. Steam coal pits were starting to open in the mid-19th Century and the iron works eventually closed in 1891. Before the Industrial Revolution and the development of the Welsh coal mining industry much of the valley was rural and farmed. The river also travels through the former coal mining communities of New Tredegar, Bargoed, Ystrad Mynach, Bedwas and Machen. As the name Ystrad suggests the southern end of the Rhymney Valley is wide and flat.
- 2.3 As the river enters Cardiff it is predominantly rural in character passing by the parish of Llanedeyrn before reaching the urban areas of Llanrumney to the East and Pentwyn to the West. The river passes by the 15th Century Church St Edeyrn named after the Celtic Saint of the same name. The open space of the Valley floor narrows as it is occupied by the A48 and residential buildings. Downstream of Llanrumney High School the Rhymney trail lies on top of the river's man-built levees alongside playing fields and open space.
- 2.4 Immediately after the Riverside playing fields the river meanders signalling the early stages of the formation of oxbow lakes. To the East of the river at this point is the attractive Rumney Hill Gardens, a popular council-owned local park that includes tennis courts and a bowling pavilion. On the other side of the river is the Howardian Nature Reserve. Previously a refuse tip in the early 1970's it now contains a range of habitats including woodland, wildflower meadow, ponds and reed beds. Entrance to the nature reserve can be found on Hammond Way and Ipswich Road. The management and enhancement of this site is enthusiastically supported by Friends of Howardian.

- 2.5 The Valley floor narrows considerably as it meets the western end of Rhymney Hill. Small cliffs have formed as the river meets the mass of the hill revealing some of the oldest rock in Cardiff and this has been designated as a Site of Special Scientific Interest for its geological importance. As the river passes around Rumney Hill, there is a major highway crossing interrupting the previously extreme flood plain. Before this 'pinch point', the Rumney Trail leaves the flood plain and passes over Rumney Hill, through Rumney Hill Gardens and then passes down the other side to Tredelech Park which was officially opened and named in March 2003. In 2001 a 4 hectare lake was created which is now home to an array of fish and includes a boardwalk. The park was designed with an emphasis on conservation and wildlife. Between Tredelech Park and the coast lies the Lamby Way landfill site, a major landfill facility nearing the end of its operational life. It occupies a large area, and forms a locally prominent hill with wide views over the surrounding area and estuary.
- 2.6 Rhymney Foreshore – The Rhymney River is the only tidal river in Cardiff, flowing into the Severn Estuary which has the second largest tidal range in the world. At low tide the Rhymney foreshore reveals mud flats; a habitat that comes under the UK's Biodiversity Action Plan and is important for migratory birds. This area includes four designations: Site of Special Scientific Interest; Special Protection Area; Special Area of Conservation; and Ramsar. There are also two salt-marsh SINC's (Site of Importance for Nature Conservation). Adjacent to the foreshore are the Wentloog Levels, an area designated as a Site of Special Scientific Interest due to its unique habitat and associated wildlife. The Wentloog Levels are protected by a sea wall and drained by a network of reens that are a haven for rare species. Cardiff Council is currently working with local partnerships and landowners to input, oversee and progress a route along the coastline of Cardiff as part of the Welsh Government's initiative to improve coastal access.
- 2.7 Nant Fawr Corridor – The Nant Fawr Corridor stretches from the Caerphilly Ridge north of Lisvane and flows into the River Rhymney just downstream of Howardian LNR. The Corridor contains a wide variety of different habitats such as woodlands, grassed areas, streams, marshes and meadows. The Nant Fawr Community Woodlands occupy part of the corridor and its name derives from the Nant Fawr stream that flows through the woodlands and the majority of the corridor. The Nant Fawr Woodlands together with the many open spaces provide an invaluable wildlife corridor between Roath Park and the open countryside beyond the reservoirs.

- 2.8 The two reservoirs, Lisvane and Llanishen, are highly valued by the local community and provide an aesthetic and recreational resource. Both reservoirs are of great importance for a diverse range of wildlife. Lisvane reservoir has been designated a Site of Special Scientific Interest (SSSI) since 1972 due to its importance for migratory birds. The embankments of both Lisvane and Llanishen reservoirs have been designated their own SSSI due to the presence of importantly diverse grassland fungi.
- 2.9 Roath Park is situated further south along the Nant Fawr Corridor and is one of Cardiff's most popular parks which includes a 30 acre lake. The lake was formed with the damming of the Nant Fawr stream and offers a habitat for a diverse range of wildlife as well as being a recreational resource for fishing and water sports. Within the park there is a varied range of habitats that attracts a variety of wildlife and islands within the lake also act as safe nesting sites.
- 2.10 Roath Brook connects Roath Park to Roath Mill Gardens and Waterloo Gardens and has been designated a Site of Interest for Nature Conservation due to its importance to wildlife. The gardens are located in a Conservation Area that seeks to preserve and enhance the distinct character of the park and the surrounding Edwardian housing. The brook continues for just under a mile through a commercial area but does not contain a high degree of public visibility or access. The Roath Flood Scheme illustrates how the river corridor is being managed to mitigate against flood risk.
- 2.11 The Landscape Study of Cardiff (May 1999) undertaken by the Council and Countryside Council for Wales (now Natural Resources Wales) undertook a landscape assessment of Cardiff and identified the following key positive and negative attributes relating to the River Rhymney Corridor.

Positive Attributes

- 2.12 The following key attributes contribute positively to the character, value and sense of place of the River Rhymney Corridor. Wherever possible, they should be maintained and strengthened as part of land management, landscape enhancement or development activity.

- *Important open water, riparian and woodland habitats associated with the River Rhymney;*

- *Areas of ancient semi-natural and planted woodland;*
- *Generally rural, agricultural character to north and east of river corridor;*
- *Relict features of parkland landscape at Cefn Mably, including blocks of woodland, mature parkland trees and areas of pasture;*
- *'Green; riparian character of the river corridor,·*
- *Remnant small-scale pastures and lines of mature trees along riverside;*
- *Sparse, dispersed pattern of farms and dwellings within river corridor, despite the proximity to the urban area;*
- *Northern section of important 'green corridor' of open spaces through urban area, linking inland areas with the coast;*
- *Historic features, including medieval villages and remnants of ancient woodland cover.*
- *Drainage and conversion of small-scale pastures to intensively managed, larger-scale arable land or improved grassland in the valley floor, with associated loss of hedgerows, trees and wetland vegetation; and*
- *Gradual erosion of parkland character at Cefn Mably with loss of pasture to arable, loss of parkland trees and poor maintenance of walls and other boundaries.*

Negative Attributes

2.13 The following attributes currently detract from the distinctive character, value and sense of place of the River Rhymney Corridor. Wherever possible, management, enhancement or development activity should seek to mitigate or remove, rather than compound, such negative influences.

- *The Rhymney/ Nant Fawr has urban pressures on the physical environment which are likely to impact biodiversity, connectivity and water quality;*
- *Localised visual intrusion from stark or poorly integrated built development in adjoining areas and noise from main roads;*
- *Some localised degradation of farmland and valley floor greenspaces, including localised fly-tipping, vandalism, weed infestation and 'horsiculture';*
- *Drainage and conversion of small-scale pastures to intensively managed, larger-scale arable land or improved grassland in the valley floor, with associated loss of hedgerows, trees and wetland vegetation;*
 - *Gradual erosion of parkland character at Cefn Mably with loss of pasture to arable, loss of parkland trees and poor maintenance of walls and other boundaries;*

- *Fragmentation of river corridor by roads and lack of cohesive landscape character throughout; and*
- *Localised intrusion of electricity pylons.*

River Taff

- 2.14 From this overview it is clear that the River Taff is of outstanding importance in every respect- its regional value, historic, landscape, biodiversity, recreational, regeneration and tourism importance. Many of Cardiff's most well-known landmarks are located within or adjacent to the corridor including Castell Coch, Llandaff Cathedral, Cardiff Castle and the Millennium Stadium. Additionally, the Taff Corridor provides a highly accessible asset running through the middle of the city that links up areas and is close to local communities.
- 2.15 Outside Cardiff- The northernmost reaches of the Taff extend right into the heart of the remote and unspoilt upland landscapes of the Brecon Beacons sitting below the area's highest peak, Pen-y-Fan. Numerous reservoirs are located in this area and are used to supply drinking water for the region. From this point, the Taff and its many tributaries form steep sided valleys as they descend through the former heart of the South Wales Valleys mining area. At Quakers Yard, the Taf Bargoed and Cynon merge with the Taff and slightly further downstream the Nant Clydach joins. At Pontypridd, the Rhondda merges and the valley further broadens out and runs through Treforest towards Cardiff in the lower reaches of the South Wales Valleys landscape. This relatively small catchment area within steep valleys produces fast run off and subsequent river levels downstream in Cardiff rapidly reflect conditions upstream. The Taff Trail, a strategic footpath/ cycleway, follows the Taff valley into the Brecon Beacons and continues along minor roads via Talybont to finish at Brecon.
- 2.16 Taff Gorge- As the river reaches Taffs Well, it dramatically breaks through the southern rim of the valleys coalfield forming a narrow gorge between large wooded hills on either side. The community of Gwaelod y Garth (much of which is a Conservation Area) extends to the west of the river overlooking the valley with Garth Mountain rising steeply behind to a thousand feet in height. To the south of the village lies Lesser Garth, a significant hill containing an operational limestone quarry, before the land slopes down to the coastal plain containing the Cardiff's urban area. The eastern side of the gorge is punctuated by the famous Castell Coch that stands above the village of Tongwynlais. The surrounding countryside is of high biodiversity and

landscape value with very good public access. The Cardiff Beech Woods are designated as having European importance (Special Area of Conservation) and there are numerous other sites of high local value including the Coed y Bedw Wildlife Trust Reserve and many SINC's (Sites of Importance for Nature Conservation) covering a variety of habitats. At the bottom of the valley the floodplain is wide enough to support some farmland including Gelynis Farm that now produces fruit and contains a vineyard. The Taff Trail passes through Tongwynlais then giving users a choice between a high level route over Fforest Fawr or low level passing alongside Taffs Well.

- 2.17 Forest Farm- Immediately below the M4 the valley floor is relatively wide with distinctly steep slopes forming a definite edge to the west and east. The slopes have developed rich biodiversity value in the form of woodlands which link well with adjoining habitats on the valley floor. The eastern side of the valley contains part of the old Glamorgan Canal that used to link Cardiff to the valleys and also the feeder canal running from Radyr Weir to the former Melingriffith Tinplate works. The land between is largely open with the former Forest Farm buildings a focus for considerable voluntary activity in the area. The Friends of Forest Farm Group has been formed in this area and has been active working with the public to implement projects such as pond creation, habitat management and the provision of interpretation facilities. Within this landscape setting lies an employment area containing a number of significant employers. The Taff Trail continues along the eastern side of the river along a tarmac surface.
- 2.18 Radyr Woods, Melingriffith and Hailey Park- This section of the corridor is bisected by the river and two railway lines creating distinct areas of greenspace. To the west is a steep wooded slope with meadows and ponds at the base providing a valued local amenity that is supported by the Friends of Radyr Woods. The adjacent large area of former railway sidings is being redeveloped for housing. Between this area and the river lies a wide floodplain, the majority of which is semi-improved grassland. To the east of the river the Taff Trail passes alongside new housing developments occupying the former Melingriffith Tinplate works before entering into Hailey Park, a well used recreation area. The land between Hailey Park and Melingriffith is a more informal area of open space that does not contain pitches.
- 2.19 Llandaff- The historic centre of Llandaff, a Conservation Area containing a wealth of historic and architectural interest, forms a distinctive section of the corridor south of Hailey Park. There are particularly distinctive views across Llandaff Weir towards the Cathedral. Access is available

along both sides of the river with the Taff Trail following along the eastern side. Llandaff Rowing Club, also hosting the University Rowing Club, is based just above the weir and uses approximately 1Km of the river upstream. Llandaff with its historic interest and other land uses such as the Cardiff Metropolitan University Campus, Cathedral School and thriving centre provides a place of notable importance adjoining the corridor.

2.20 Pontcanna, Bute Park and Cardiff Castle- Cardiff is fortunate to possess such high quality and extensive parklands right in the heart of the city. The combination of Llandaff Fields, Blackweir, Pontcanna, Sophia Gardens and Bute Park provide an impressive combination of open space, woodland and specimen trees. Access is excellent within the parkland area and pitches cater for the needs of a wide surrounding area. Other facilities include the Welsh Institute for Sport, Glamorgan County Cricket Ground, Cardiff Riding School, allotments and a playground. At the southern end of the parkland, access is directly available to the city centre adjacent to Cardiff Castle that looks northwest up the Taff Corridor and on other sides to the city centre. The Taff Trail runs along the eastern side of the river below Western Avenue and crosses the river over the bridge at Blackweir, continuing then along the western side through Pontcanna and Sophia Gardens.

2.21 City Centre to Cardiff Bay - The impressive Millennium Stadium dominates the river after it passes below Canton Bridge. The atmosphere immediately becomes more urban but the scale of the river still provides a significant natural feature that effectively forms the western edge of the city centre. Below the Wood Street Bridge, a small strip of open space extends along the western banks providing an attractive amenity also accommodating the Taff Trail. The eastern side of the river is being transformed as regeneration initiatives seek to replace older industrial units backing onto the river with new development that more fully respects and takes advantage of the riverfront setting. Below Clarence Road Bridge the river gradually widens and enters Cardiff Bay which has been the catalyst for the major regeneration of the area. The Bay itself provides an excellent visual and biodiversity resource as well as a top class recreational facility that is well used by water sport groups. Access around the Bay edge is not yet 100% complete but already provides good quality access linking the Oval Basin (the starting point of the Taff Trail) to the Wetland Reserve, Hamadrayad Park and the Norwegian Church. Cardiff Bay barrage represents the point at which the Taff passes into the Severn Estuary with sluice gates and regulating the movement of water. Fish passes and locks allow for the movement of fish and vessels.

2.22 The Landscape Study of Cardiff (May 1999) undertaken by the Council and Countryside Council for Wales (now Natural Resources Wales) undertook a landscape assessment of Cardiff and identified the following key positive and negative attributes relating to the River Taff Corridor.

Positive Attributes

2.23 The following key attributes contribute positively to the character, value and sense of place of the River Taff Corridor. Wherever possible, they should be maintained and strengthened as part of land management, landscape enhancement or development activity.

- *Semi-rural and 'green' riparian character of the river corridor;*
- *Important open water, wetland, riparian and woodland habitats associated with the River Taff and Glamorgan Canal;*
- *River terrace beech woodlands and other linear belts of trees alongside the river, railway and roads;*
- *Small-scale pattern of well-managed remnant pastures with thick hedgerows in parts of valley floor;*
- *Dramatic 'gateway' of Taff Gorge;*
- *Views of Castell Coch as prominent landmark on hillside above the valley;*
- *Important green corridor through urban area/with sense of seclusion and escape from the city, and important resource for formal and informal recreation;*
- *Sparse pattern of buildings and roads within the valley floor, and*
- *Historic features/ including evidence of medieval mill and leat, eighteenth century iron and tin plate works and potential for discovery of archaeological features buried in alluvium.*

Negative Attributes

2.24 The following attributes currently detract from the distinctive character, value and sense of place of the River Taff Corridor. Wherever possible, management, enhancement or development activity should seek to mitigate or remove, rather than compound, such negative influences.

- The Taff has urban pressures on the physical environment which are likely to impact biodiversity, connectivity and water quality;
- *Localised visual intrusion of development on the urban fringe;*
- *Visual intrusion and noise from main roads and railway;*
- *Some localised degradation of farmland and valley floor greenspaces, including localised fly-tipping, vandalism, neglect of management and 'horsiculture'; and*
- *Fragmentation of river corridor by roads and built development and lack of cohesive landscape character throughout.*

River Ely

- 2.25 Outside Cardiff- The source of the river is located approximately 12 miles outside the city, just to the north of Tonyrefail. It has a relatively narrow catchment due to the proximity of other rivers and topography. After breaking out the South Wales Valleys at Talbot Green, the river enters the more rolling countryside of the Vale of Glamorgan and enjoys a predominantly rural setting before entering Cardiff.
- 2.26 St Fagans- For approximately a mile and a half, the river retains its countryside setting and sits within a gently sloping valley of high landscape value. The floodplain reduces in size as the urban edge approaches but still retains a rural character. The village of St Fagans and Museum of Welsh Life occupy part of the gently sloping northern slopes whilst the edge of urban area runs close to the top of the steeper slopes of the southern valley sides. A good mix of fields, hedgerows and woodlands minimise the impact of the main rail line that runs along the valley floor.
- 2.27 Ely & Fairwater- For the next mile, the open spaces alongside the river narrow as the communities of Fairwater and Ely occupy the adjoining higher land. Access to the valley is limited as the northern edge is formed by the main rail line and much of the southern edge is formed by an inaccessible steep embankment. An important footbridge links the two communities at Birdies Lane. Arjo Wiggins & Trelai Park- Immediately after Ely Bridge on the east bank is located the Arjo Wiggins site, a major brownfield redevelopment area. Proposals are being worked up for an urban village that will open up the river in contrast to its industrial past. Currently the site has outline permission subject to signing a Section 106 Agreement for the development of 900 housing units plus open space and other facilities. This straight section

of river has an attractive belt of trees along its sides with extensive areas of open space behind; Trelai Park to the west and the former Civil Service Grounds to the east.

- 2.28 Leckwith- In this section, the river is located in a narrow, straight corridor between the Link Road to the east and bottom of the Leckwith escarpment to the west. A car recovery operation extends over a large area on the west bank. South of Leckwith Bridge a new section of the Ely Trail has just been constructed along the east bank of the river for about a mile to Penarth Road. The extensive Leckwith Woods form an impressive green backdrop along the whole of this section.
- 2.29 Grangemore Park, ISV & Cardiff Bay- Just before Penarth Road, the river reverts to its original meandering course. Grangemore Park, a former landfill site, forms an attractive area of open space adjacent to the river. Opposite, a narrow section of unused open space and woodland extends between the river and rail line. To the south of Grangemore Park is the ISV (International Sports Village), a major regeneration project that has seen the development of a wide range of activities overlooking the River Ely and Cardiff Bay. The Penarth Marina regeneration project on the opposite bank shows the successful transformation of this area including full pedestrian access alongside the river. The river flows into Cardiff Bay, a large freshwater lake and major hub for the wider regeneration of the area and an important recreational and biodiversity resource in its own right.
- 2.30 The Landscape Study of Cardiff (May 1999) undertaken by the Council and Countryside Council for Wales (now Natural Resources Wales) undertook a landscape assessment of Cardiff and identified the following key positive and negative attributes relating to the River Ely Corridor.

Positive Attributes

- 2.31 The following key attributes contribute positively to the character, value and sense of place of the St Fagan's Lowlands and Ely Valley. Wherever possible, they should be maintained and strengthened as part of land management, landscape enhancement or development activity.

- *Complex, undulating landform;*

- *Large-scale mosaic of pastures and woodland with strong network of hedgerows and trees around larger fields;*
- *Strong parkland or well-managed estate character with regular-sided planted oak/ash/beech woodlands and distinctive row of mature horse chestnut trees along roadside;*
- *Small remnants of semi-improved and marshy grassland, semi-natural woodland, ponds and other valley-side habitats along the River Ely;*
- *Woodland habitats and calcareous vegetation associated with dismantled railway line;*
- *Rural agricultural and generally unspoilt character;*
- *Sparse pattern of settlement outside of St Fagan's village;*
- *Surviving historic features, particularly medieval villages, buildings and field systems at St Fagan's and Michaelston-super-Ely, Civil War battle site and listed historic gardens and display of Welsh buildings at Museum of Welsh life.*

Negative Attributes

2.32 The following attributes currently detract from the distinctive character, value and sense of place of the St Fagan's Lowlands and Ely Valley. Wherever possible, management, enhancement or development activity should seek to mitigate or remove, rather than compound, such negative influences.

- The Ely in parts has the same urban pressures as the Rhymney/Nant Fawr and the Taff. However, it also has agricultural pressures on the water environment;
- *Agricultural intensification in parts of area, including the improvement of pastures, the conversion of grassland to arable, loss of woodlands and the poor maintenance or removal of field boundaries;*
- *Localised visual intrusion of development on the urban fringe;*
- *Some localised degradation of farmland, including localised fly-tipping and 'horsiculture'; and*
- *Localised noise intrusion from traffic on busy minor roads.*

3 Guidance for Developers

- 3.1 This section seeks to provide guidance to applicants on how planning applications located within the River Corridors will be assessed by identifying the range of key factors which will need to be taken into account when submitting a planning application within these areas. Proposals for development within the river corridors will also be assessed against other relevant policies in the Plan (See Appendix 2).

Access and recreational routes

- 3.2 Policy T8 of the adopted LDP states that a strategic network of recreational routes will be maintained and developed to link Cardiff's coast, river corridors, open spaces, countryside, and the regional network of routes, facilitating access to them by local communities, and forming an integral part of the wider cycling and walking network in Cardiff. Part of this core strategic network includes the Taff, Ely, Rhymney and Nant Fawr trails and given this it is important that any development proposals within the River corridors do not have an overall adverse impact on existing areas of public access and trails and where appropriate promote the improvement of these trails so opportunities for sustainable access and recreation are improved.
- 3.3 All new developments should seek to improve visual and physical public access to and along the river corridors. In order to ensure this developments should provide a direct, safe and clear access for pedestrians and cycles to and along the river corridor. They should provide a joined up approach to river access, considering access and uses up and down stream as well as across the river channel. Development should promote uses and activities along the river-side routes to help provide safe public spaces and balance ecological protection and public access and consider carefully where access may be restricted for ecological gains.
- 3.4 Development proposals should also consider guidance set out in the Public Rights of Way Technical Guidance Note and the Council's Walking and Cycling Strategy.

Recreation

- 3.5 The river corridors contain areas of linear strategic open space linking the inner areas of the city to the surrounding countryside providing a corridor for recreational routes and wildlife. They also offer opportunities for sport and recreation and provide areas of visual amenity. In this context, rivers and space around them can have positive ecological values as well as providing health and recreation benefits to people living and working nearby. They can also make important contributions to landscapes, can contribute to the setting of built development, and are an important component in achieving sustainable development. Given this it is important that existing open space is taken into account when planning new development.
- 3.6 Development proposals should also consider guidance set out in the Open Space Technical Guidance Note and the Council's Parks and Green Spaces Strategy.

Public Realm

- 3.7 New developments should be designed efficiently so that successful public spaces can be created as an integral part of the development. Public spaces should be designed so that they positively respond to the context of the river and provide visual and physical connections to the river.
- 3.8 Boundary treatments proposed as part of specific schemes should be tailored to reflect the river environment ranging from highly urbanised to a natural one.
- 3.9 The provision of public art and artistic features should form an integral part of developments, particularly in prominent locations or where works of art would make a significant impact on the physical environment. Wildlife/ecological boards or other means of interpretation should be considered.
- 3.10 The provision of public art should be discussed with the Council at the concept stage and should be developed through a transparent process that involves community engagement and consultation at an early stage in the process, as appropriate.
- 3.11 Development proposals should also consider guidance set out in the Planning Obligations Supplementary Planning Guidance relating to public art.

Biodiversity

3.12 River corridors provide an important biodiversity resource and new developments should preserve or enhance local biodiversity by including the following measures:

- Providing appropriate landscaping that respects existing vegetation of value;
- Establishing less disturbed, low maintenance, riverside areas;
- Providing habitat for a range of species that is appropriate to the area, including shade and shelter;
- Ensuring appropriate lighting is used to avoid a negative impact on species;
- Enhancing green networks that link sites;
- Managing and seeking to eradicate invasive species such as Japanese Knotweed, Himalayan Balsam and Giant Hogweed; and
- Employing biodiversity measures and procedures to reduce the risk of introducing or spreading invasive non-native species (and other harmful organisms such as diseases) in the wild.

3.13 Development proposals should also consider guidance set out in the Ecology and Biodiversity, and the Trees and Development, Technical Guidance Notes.

Historic & Cultural Environment

3.14 The river corridors make a significant historic and cultural contribution to city and it is important that development proposals within or adjoining the river corridors ensure that archaeological remains, historic buildings and historic landscapes are preserved and protected.

3.15 In order to ensure this the impact of the proposed development on the historic environment must be assessed by the applicant.

Landscape

- 3.16 Development proposals should take into account the character attributes for each of the river corridors set out in Section 2 and provide landscaping to provide visual, accessible and safe amenities and riverside routes should be undertaken. When sites are being landscaped, only appropriate species should be used and sites should be designed to be low maintenance and should consider appropriate bio-security measures and procedures to reduce the risk of introducing or spreading invasive non- native species (and other harmful organisms such as diseases) in the wild.

Surface Water Drainage

- 3.17 The networks of river corridors can provide opportunities to provide integrated water cycle management. Surface water drainage should consider the potential benefits of slowing the flow of water. Surface water arising from a developed site should as far as practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development, while reducing the flood risk in the site itself and elsewhere, taking climate change into account. This should be demonstrated as part of the Flood Consequences Assessment (FCA). Certain works and activities within the river corridors may require a flood risk activity permit (FRAP) which are issued by NRW. Further information is available from: <https://naturalresources.wales/permits-and-permissions/flood-risk-activities/?lang=en>

- 3.18 Development proposals should also consider guidance set out in the SuDS Supplementary Planning Guidance Notes.

Floodplain

- 3.19 The river corridors provide for the natural storage of flood water and are as much part of the river as the channel, which carries normal flows. Given this development proposals will need to ensure that the extent of the flood plain is not reduced when providing compensatory storage elsewhere to avoid increased flooding problems downstream.

Water Quality and Pollution Prevention

- 3.20 The ecosystem of the river depends on the quality of the water. Improving the water quality and preventing pollution are paramount and measures to improve the water quality of the rivers should be carried out wherever possible. Development proposals will need to consider pollution prevention as a priority measure and this will need to be addressed from the very beginning of the development process. Developments that could create a potential threat of pollution will not be granted planning permission without appropriate conditions to avoid such risks or without measures either in place or proposed which may be subject to S106 agreements. Development proposals should also take account of the requirements of the Water Framework Directive and the River Basin Management Plans. Further information is available on NRW's website at:

<https://naturalresources.wales/evidence-and-data/research-and-reports/water-reports/river-basin-management-plans-published/?lang=en>
<http://waterwatchwales.naturalresourceswales.gov.uk/en/>

Safety

- 3.21 Safety is critical to how people use the environment. People will only use the river for recreation if it is perceived as safe. Developments that are designed with windows and public routes to overlook the river environment can help with perceived and actual safety.

Litter

- 3.22 Litter carried by the river, litter dropped on site and fly tipping can have serious negative effects on the amenity value of the corridor and is recognised as a significant issue. This being the case, litterbins should be provided near to areas frequented by the public and designed so that rubbish does not blow out of the bins. It is preferable that people are encouraged to be responsible and take their litter home. Signs should also be displayed to discourage illegal dumping. Development proposals should also consider guidance set out in the Waste Collection and Storage Facilities Supplementary Planning Guidance Note.

Education

- 3.23 Where possible, the educational value of river corridors should be recognised and organisations should be encouraged to use rivers as an educational tool providing it is appropriate and safe to do so where it will not be to the detriment of safeguarded habitats.

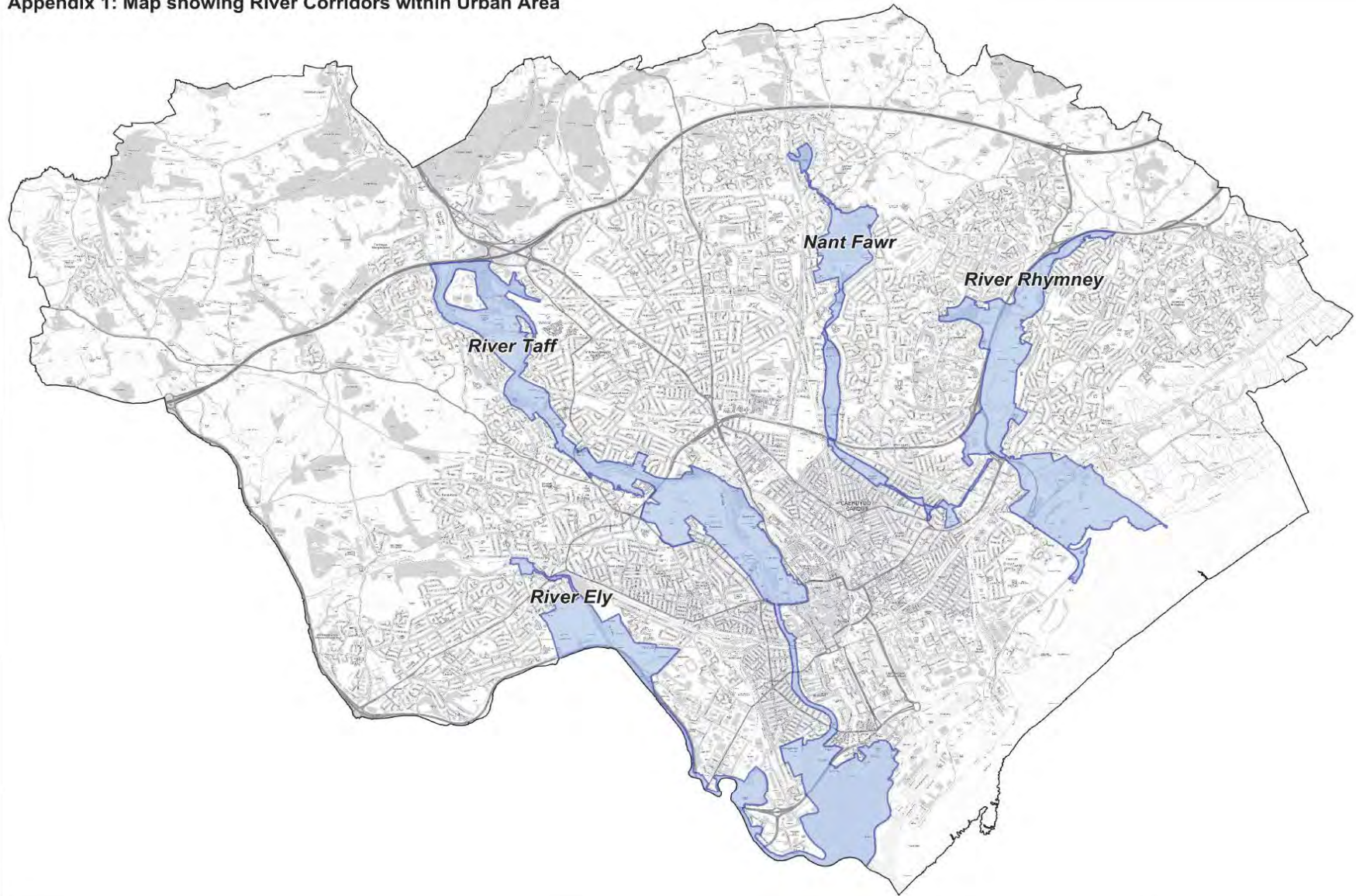
Management and Maintenance

- 3.24 On-going management and maintenance arrangements should be considered as part of any development. Enhancements and improvements should be designed to be as low maintenance as possible. Management should consider appropriate bio-security measures and procedures to reduce the risk of introducing or spreading invasive non- native species (and other harmful organisms such as diseases) in the wild.

Planning Obligations

- 3.25 River Corridor Action Plans were prepared (2006 – 2009) for each of the four areas. These identified a series of topic based actions and key priorities aimed at protecting and enhancing these corridors. These actions have been taken forward in the Green Infrastructure Implementation Programme. New development within, or adjacent to the river corridors may be required to contribute to projects identified within these Action Plans and where appropriate and can demonstrate meeting the Community Infrastructure Levy (CIL) tests, planning obligations may be required in accordance with Policies relating to the provision of new infrastructure. Further guidance can be found in the Planning Obligations SPG.

Appendix 1: Map showing River Corridors within Urban Area



Appendix 2: Related LDP Policies

KP4: Masterplanning Approach

KP5: Good Quality and Sustainable Design

KP7: Planning Obligations

KP8: Sustainable Transport

KP14: Healthy Living

KP15: Climate Change

KP16: Green Infrastructure

KP17: Built Heritage

KP18: Natural Resources

EN1: Countryside Protection

EN3: Landscape Protection

EN5: Designated Sites

EN6: Ecological Networks and Features of Importance for Biodiversity

EN7: Priority Habitats and Species

EN8: Trees, Woodlands and Hedgerows

EN9: Conservation of Historic Environment

EN10: Water Sensitive Design

EN11: Protection of Water Resources

EN14: Flood Risk

T1: Walking and Cycling

T8: Strategic Recreational Routes

C3: Community Safety/Creating Safe Environments

C4: Protection of Open Space

C5: Provision of Open Space, Outdoor recreation, Children's Play and Sport

C6: Health

W2: Provision of Waste Management Facilities in Development

Cardiff Green Infrastructure SPG

Protection and Provision of Open Space in New Developments

Technical Guidance Note (TGN)



November 2017

Cardiff Green Infrastructure: Protection and Provision of Open Space in New Developments

Technical Guidance Note

November 2017

This document is available in Welsh / Mae'r ddogfen hon ar gael yn Gymraeg

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- Appendix 3 Guidance on the design layout and maintenance of children's play provision**
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1.0 Introduction

1.1 Purpose of this document

1.1.1 This Technical Guidance Note (TGN) for provision and protection of open space should be read in conjunction with the Supplementary Planning Guidance for Green Infrastructure. This is one of a series of Technical Guidance notes that provide detailed information about the retention and provision of green infrastructure elements in new developments.

1.1.2 The Guidance explains the Council's approach towards safeguarding existing areas of open space which contribute to the recreational, amenity or nature conservation resources of the city. It sets out the basis upon which open space provision for new housing developments are assessed, including how much open space is to be provided and what type of provision will be sought.

1.1.3 The Guidance is likely to be of particular benefit to those considering development proposals, which either involve the loss of open space or propose additional housing. It enables developers, landowners and potential objectors to understand how the Council considers development proposals and the standard of provision sought.

1.2 Consultation

1.2.1 The Green Infrastructure Supplementary Planning Guidance and accompanying Technical Guidance Notes has been the subject of consultation as outlined in the main Green Infrastructure SPG, which identifies the comments received, and the changes or otherwise made in response to those comments.

1.3 Status of this document

- 1.3.1 The Welsh Assembly Government (WAG) supports the use of Supplementary Guidance (SPG) to set out detailed guidance on the way in which development plan policies will be applied in particular circumstances or areas. SPG must be consistent with development plan policies and National Planning policy guidance. It may be taken into account as a material planning consideration in planning decisions.
- 1.3.2 This TGN supplements policies in the Cardiff Local Development Plan 2006-2026 relating to Open Space. Policies in the Local Development Plan to which this SPG relates are identified in section 2.
- 1.3.3 This TGN incorporates the findings of the latest assessment of open space within the County (2017) (see Section 3.0) and replaces the previous Open Space SPG adopted by the Council in May 2008.
- 1.3.4 This Guidance applies to all open space within or immediately adjacent to the urban area. The full Open Space Assessment Report shows the location of areas of open space within the city and is available as a separate background document.

1.4 Definitions

- 1.4.1 For the purposes of this document, the following definitions apply:

Open space	The following definition of open space is taken from TAN16: Open space is defined in the Town and Country Planning Act 1990 as land laid out as a public garden, or used for the purposes of public recreation, or land which is a disused burial ground. For the purposes of this guidance, open space should be regarded as all open space of public value, including not just land, but also areas of water such as rivers, canals, lakes and reservoirs which offer important opportunities for sport, recreation and tourism, and can also act as a visual amenity, and may have conservation
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	<p>and biodiversity importance.</p> <p>Areas which are privately owned may have amenity value, although access will not be possible without the agreement of the land owner. Areas like domestic gardens are relevant, since places without or with few gardens, are likely to be more reliant upon the provision of public spaces.</p>
Public open space	<p>The term public open space is often used interchangeably with the term open space and in legal terms, the definition is the same (see above).</p> <p>Public open space in the ownership of the local authority is held under either:</p> <ul style="list-style-type: none"> (a) the purpose of section 164 of the Public Health Act 1875 (pleasure grounds); or (b) in accordance with section 10 of the Open Spaces Act 1906 (duty of local authority to maintain open spaces and burial grounds) <p>Any disposal of public open space must conform to the requirements of the Local Government Act 1972 and any subsequent amendments.</p>
Functional open space	<p>Functional open space is open space that is capable of defined recreational use or multiple uses.</p> <p>These uses will include formal and informal sport and recreation, children's play and provision for teenagers although the balance of defined uses may change with time according to local demand.</p>
Formal recreation	<p>Formal outdoor sports activities such as football and cricket. Land designated for formal recreation can include artificial turf and 3G pitches, greens, courts and athletic tracks, including dedicated ancillary facilities such as floodlighting, changing rooms and associated parking.</p> <p>Formal recreation does not include golf courses, indoor sports and leisure centres.</p>
Informal recreation	<p>Informal open space uses such as walking, jogging, cycling, informal ball games, and general leisure. Land provided for informal recreation can include green corridors that can be used for active recreation due to presence of a permanent hard surfaced footpath. The open space may contain water features or SuDS where it is demonstrated that these serve a recreational function.</p>
Amenity land	<p>Amenity land does not have a defined formal or informal use but may enhance the setting of the development.</p>

	Amenity areas will not be included in the overall functional open space calculation.
Children's play	Areas specifically designed for children's play with fixed play activities such as swings, slides or multi-units and / or more natural play environments.
Teen facilities	Areas designed for teen use including Multiuse Games Areas (MUGAs), skate parks, outdoor fitness equipment and shelters.
Allotments	Land that is designated for growing purposes to be administrated under the Allotment Acts. Designation of land as statutory allotment land would be undertaken by the Local Authority
Community growing	Land that is designated for growing purposes, but not administered as allotment land under the Allotment Acts.

2.0 Planning / other policy

2.1 Introduction

- 2.1.1 This section outlines the policy content with regards to how areas of open space are protected and how development proposals which involve the loss of open space are assessed. It takes account of advice in the Wales Spatial Plan (WSP), Planning Policy Wales (PPW), Technical Advice Note 16, (TAN16), and the provisions of Policy C4 of the Cardiff Local Development Plan 2006 – 2026 (LDP).
- 2.1.2 This section also outlines the policy content incorporated with regard to how the open space provision on new housing developments is assessed. It takes account of advice in PPW, TAN 16, and the provisions of KP4 and C5 of the LDP.
- 2.1.3 The **Wellbeing of Future Generations Act 2015** also provides a high level legislative framework for the protection and provision of open space in new developments, recognising how decisions made in the present have long term impacts for the future. The seven wellbeing goals and four ways of working outlined within the Act should underpin any considerations of open space provision.
- 2.1.4 The **Public Health (Wales) Act 2017** requires Local Authorities to undertake health impact assessments in order to reduce national levels of obesity. Provision of recreational open space contributes to improved access to a healthy lifestyle. The objectives of the act are supported within the Planning for Health and Wellbeing SPG.

2.2 The Wales Spatial Plan

- 2.2.1 People, Places, Futures, the Wales Spatial Plan (WSP) provides the context and direction of travel for Local Development Plans and sets out a strategic framework to guide future development and policy interventions across the Principality. The WSP

highlights the Welsh Assembly Government (WAG) commitment to high quality, sustainable and well connected communities within the Capital Region of south east Wales, which is focussed on the two cities of Cardiff and Newport. In particular, paragraph 19.37¹ (Valuing our environment) states:

‘The Capital Region has much to offer in terms of a first-class quality of life and this needs to be protected and enhanced by:

- *Getting the best of both high quality urban living and close proximity to stunning countryside, making the most of the unique dispersed low-density, metropolitan development and green spaces in the Area*

2.3 Planning Policy Wales

2.3.1 **Protection of open space:** Planning Policy Wales², edition 9, (PPW) provides guidance on the protection of open space in chapter 11, Tourism, Sport and Recreation. The guidance displays a commitment by WAG to support the development of sport and recreation. The policies in PPW outline the planning system’s role to provide recreational space for both formal and informal sport and recreation, which will meet the community’s need. Paragraph 11.1.10 of PPW² states:

‘The planning system should ensure that adequate land and water resources are allocated for formal and informal sport and recreation, taking full account of the need for recreational space and current levels of provision and deficiencies, and of the impact of developments related to sport and recreation on the locality and local communities. The role of surface water bodies in flood risk management also needs to be recognised.’

¹ WSP 2008 update

² PPW edition 9, November 2016

2.3.2 The policy content of PPW also displays a commitment by WAG to protect open spaces from development. Paragraph 11.1.11² of PPW states that:

‘Formal and informal open green spaces, including parks with significant recreational or amenity value, should be protected from development, particularly in urban areas where they fulfil multiple purposes, not only enhancing the quality of life, but contributing to biodiversity, the conservation of nature and landscape, air quality and the protection of groundwater. Such open spaces also have a role in climate protection and in enabling the adaptation of urban areas to the impacts of climate change, for example by contributing to flood management and helping to reduce urban heat island effects.’

2.3.3 The WAG guidance also encourages planning authorities to protect all playing fields, paragraph 11.1.12² states:

‘All playing fields whether owned by public, private or voluntary organisations, should be protected from development except where:

- facilities can best be retained and enhanced through the redevelopment of a small part of the site;*
- alternative provision of equivalent community benefit is made available; or*
- there is an excess of such provision in the area.’*

2.3.4 **Provision of new open space:** PPW recognises that housing developments should provide open space and that plans should include policies making clear what provision for open space is expected. Paragraph 11.1.8² states that:-

‘Planning authorities should provide the framework for well-located, good quality tourism, sport, recreational and leisure facilities. The areas and facilities provided in both rural and urban areas should be sensitive to the needs of users, attractive, well-maintained, and protected from crime and vandalism. They should be safe and accessible, including to deprived or disadvantaged communities and to people whose

mobility is restricted, by a variety of sustainable means of travel, particularly walking, cycling and public transport. Long-distance routes, rights of way, disused railways and waterways are important tourism and recreation facilities, both in their own right and as a means of linking other attractions.'

2.3.5 Paragraph 11.1.10² states:

'The planning system should ensure that adequate land and water resources are allocated for formal and informal sport and recreation, taking full account of the need for recreational space and current levels of provision and deficiencies, and of the impact of developments related to sport and recreation on the locality and local communities. The role of surface water bodies in flood risk management also needs to be recognised'.

2.3.6 Consideration of open space provision should also take account of the need to satisfy other functions as part of the green infrastructure network. This will ensure that any open space provided is of an appropriate size and in a suitable location to be accessed by the intended catchment population. Paragraph 11.2.6 states:

'The development plan should encourage the multiple use of open space and facilities, where appropriate, to increase their effective use and reduce the need to provide additional facilities. It should ensure that open spaces and built facilities are, where possible, sited, designed and maintained as integral parts of existing and new developments so as to encourage their use and minimise crime and vandalism.'

2.4 Planning Guidance

2.4.1 **Protection of open space:** Planning Guidance (Wales) Technical Advice Note 16 Sport and Recreation³ (TAN16) provides detailed guidance on planning for sports and recreation uses and appropriate levels of provision. It recommends a minimum

³ TAN 16, 2008 edition

standard for outdoor playing space of 2.4 hectares (6 acres) per 1,000 population. This is in accordance with the guidelines set by Fields in Trust (FIT, formerly the National Playing Fields Association).

2.5 Local Development Plan

2.5.1 **Protection of open space:** Policy C4 of the LDP states:

Development will not be permitted on areas of open space unless:

- i) It would not cause or exacerbate a deficiency of open space in accordance with the most recent open space study; and*
- ii) The open space has no significant functional or amenity value; and*
- iii) The open space is of no significant quality; or*
- iv) The developers make satisfactory compensatory provision; and, in all cases;*
- v) The open space has no significant nature or historic conservation importance.*

2.5.2 The supporting text to Policy C4, states that the various types of open space in Cardiff will be listed and explained in detail in the Supplementary Planning Guidance. For the purposes of this policy functional green space includes land that can accommodate formal and / or informal recreational uses including sporting use and children's play. The policy applies equally to land whether in public or private ownership. It also applies to educational playing fields and these will be protected except where facilities can be retained and enhanced through the redevelopment of a small part of the site, an alternative provision of equivalent community benefit is made available or there is an excess of such provision in the area. The policy applies to all existing areas of open space in or adjacent to the urban area.

2.5.3 **Provision of new open space:** Policy KP4 of the LDP (Masterplanning Approach) provides a set of principles to deliver a masterplanning approach to strategic development sites identified within the LDP. This is intended to provide an overarching context for more detailed design and implementation work to follow.

This Policy relates to all strategic sites and any other major new developments which may emerge over the Plan period. Within major new developments, Principle 8 within the policy requires that:

‘Multi-functional and connected green open spaces form strategically important links to the surrounding area to provide routes for people and wildlife and open spaces for sports, recreation and play.’

- 2.5.4 Policy KP2 provides details of the strategic sites identified within the LDP, including specific requirements for open space, outdoor recreation, children’s play and sport that should inform the development of the green infrastructure and open spaces within these developments.

- 2.5.5 Policy C5 of the LDP (Provision for Open Space, Outdoor Recreation, Children’s Play and Sport) states that:-

‘Provision for open space, outdoor recreation, children’s play and sport will be sought in conjunction with all new residential developments. This policy is aimed at securing the provision or improvement of open space and other appropriate outdoor recreation and sport in conjunction with all new residential developments over 8 units and on site provision of functional open space in conjunction with all new residential developments over 14 units. The appropriate amount of multi-functional green space is based on a minimum of 2.43 hectares of functional open space per 1,000 projected population. All other open space provision will be in addition to the provision of multi-functional green space.’

- 2.5.6 Policy C5 sets out the basis upon which the open space provision within new developments is assessed. It applies to sites which are identified in the City of Cardiff Local Development Plan and all new development sites, which may emerge over the plan period. This policy provides the base-line level of open space needed for functional recreation purposes, including children’s play, sport and community

growing purposes. Developers are required to ensure that future occupiers will have access to open space commensurate with their needs.

2.5.7 Planning Obligations

Policy KP7 (Planning Obligations) specifies that planning obligations will be sought to mitigate any impacts directly related to the development. These will be calculated on an individual development basis and the criteria for these are set out within the Planning Obligations Supplementary Planning Guidance which should be read in conjunction with this document.

2.6 **Local Green Space standard**

- 2.6.1 PPW does not prescribe specific standards of open space provision, but encourages Local Authorities to develop their own local standards based on the information generated from the Open Space Assessment.
- 2.6.2 The Cardiff standard is based on quantitative, qualitative and accessibility criteria based on the FIT '*Benchmark Standard*' of 2.43 hectares of functional open space per 1,000 projected population.
- 2.6.3 Table 1 details the breakdown quantities of open space provision within the standard. Further detail about the provision and calculation of new or compensatory provision of open space is provided within the Planning Obligations Supplementary Planning Guidance.

Table 1: Cardiff Open Space Standard

Type	Quantity	Straight line catchment
Open space (functional green space) comprising a mix of:	2.43 ha per 1000 population	Dependent upon type of provision made (see below)
<ul style="list-style-type: none"> Level land suitable for formal sport 	1.2 ha per 1000 population (see Appendix 2)	1000m
<ul style="list-style-type: none"> Children's play 	Designated area dependent on type. Minimum area of dedicated children's play provision is 0.25 ha per 1000 population (see Appendix 3)	Should be provided within 400m of homes
<ul style="list-style-type: none"> Teen facilities <ul style="list-style-type: none"> BMX MUGA Teen shelters Skateboard parks 	Designated area dependent upon type minimum area 0.3 ha per 1000 population (see Appendix 4)	Should be provided within 600m of homes and located to prevent any negative impact of their use on adjacent properties.
<ul style="list-style-type: none"> Allotment / growing provision Strategic sites only – additional to open space provision. Non-strategic sites, provision may be made within the 2.43ha per 1000 population with agreement. 	One 40 plot allotment site per 1800 properties ⁴ , increasing pro rata according to the size of the development - strategic sites only. (See Appendix 5)	No distance criteria

⁴ Cardiff Council LDP

3.0 Open Space Standards and Assessment

3.1 Open Space Study 2017

- 3.1.1 Cardiff as a whole has a reputation as a green city, with a wide variety of open space types under various ownerships. A full assessment of all open space in Cardiff is undertaken at regular intervals and the latest was completed in 2017. Open spaces across the city are assessed and classified to provide a central data set that can be easily updated which will provide the baseline data for all future open space analysis and assessment.
- 3.1.2 The assessment provides a range of different classifications for open space to aid comparisons with past data and for future use and analysis. Table 2, overleaf, summarises the total quantities of different types of open space across the city based on the TAN 16 typology⁵ and also shows how these quantities relate to the other definitions used within the Open Space Study. These classifications are described in more detail below.
- 3.1.3 The Open Space Study will be reviewed and updated at regular intervals to provide up-to-date information.

3.2 Open space classification

3.2.1 TAN 16 typology

The TAN 16 typology is used to classify all open spaces in Cardiff, irrespective of ownership. The classification is slightly ambiguous as some categories are essentially broad (e.g. parks and gardens), whereas others are more specific (e.g. outdoor sports facilities) which may form part of a broader definition. For this reason, within the Open Space Study, all open spaces have been classified as having a primary and secondary type.

⁵ Based on January 2017 assessment date

3.2.2 Planning categories

Previous Supplementary Planning Guidance documents for Cardiff have defined open space within the following categories, which are the only categories that would be adopted as open space by the council:

- formal recreation
- informal recreation
- children's play space
- amenity space

This breakdown has been provided to provide comparison with older data, however there is a significant amount of land within the city that does not fall into any of these categories, particularly since the traditional adoption route is no longer the only means of sustaining open space provision.

3.2.3 Functional / visual open space

Functional open space is open space that is capable of defined recreational use or multiple uses as opposed to visual open space which is generally inaccessible.

3.2.4 Accessible natural green space

Natural Resources Wales have developed a Green Space Toolkit to assist local authorities to plan and improve natural green spaces for people in towns and cities. The Accessible Natural Green Space Standards form part of the Toolkit and provide guidance on ensuring that local authorities make a balanced provision of green space within reach of local people to keep their citizens healthy.

The Cardiff Open Space study will provide the data to inform the development of the local Accessible Natural Greenspace map prepared by NRW.

3.3 Open space quality

3.3.1 An assessment of the quality and value of existing open space owned and managed by the local authority has been carried out by the Parks Service who can supply details of the methodology on request. The quality value scores for all existing open

spaces will be mapped as part of the Open Space Study, although this data will not be available until 2018.

- 3.3.2 The mix of new open space provision will be determined by the type of development and the availability of existing facilities within the vicinity of the development. The assessment process is described in Section 4.0.

Table 2: Open space types, quantities and definitions

TAN 16 Typology definition (Primary category ⁶)	Area (ha) (2017 assessment)	Multi functional green space (Functional / visual)	Area (ha) (2017 assessment)	Planning categories Definitions used in open space study calculations	Area (ha) (2017 assessment)	Accessible natural green space (does not relate to other categories)	Area (ha) (2017 assessment)
Parks & Gardens TAN 16 definition includes urban parks and formal gardens. Parks and gardens can contain other uses including outdoor sport, children's play, teen facilities and amenity land. The figure given includes all land with a primary definition of parks and gardens. Country parks have been excluded within the Cardiff assessment.	909.55	Functional green space All formal and informal areas of parks & gardens, outdoor sports facilities, play / teen provision and green corridors.	3246.83	Informal recreation All parks and gardens (excluding formal sport and play areas), green corridors and some amenity space)	202.43	Total area across all types	2,957.49
Green corridors Linear open spaces within the urban frame including river and canal banks, footpaths, cycle ways, bridleways, disused railway land and rights of way; these may link different areas within and between urban areas. They may also form part of a network which links urban areas, or links them to the surrounding countryside.	117.14						

⁶ See 3.2.1

TAN 16 Typology definition (Primary category ⁶)	Area (ha) (2017 assessment)	Multi functional green space (Functional / visual)	Area (ha) (2017 assessment)	Planning categories Definitions used in open space study calculations	Area (ha) (2017 assessment)	Accessible natural green space (does not relate to other categories)	Area (ha) (2017 assessment)
Outdoor sports facilities Areas with natural or artificial surfaces, publicly or privately owned - including tennis courts, bowling greens, sports pitches, golf courses, athletics tracks and other outdoor sports areas. <u>(Cardiff definition excludes school and other institutional playing fields)</u>	273.50 (an additional 174.57 hectares of open space are used for outdoor sport but already counted within parks and gardens)			Formal recreation provision All formal sport and teen court provision (MUGAs) but excluding golf courses	209.44		
Provision for children and young people including play areas, areas for wheeled play, including skateboarding, outdoor kickabout areas (MUGAs, and other less formal areas (e.g. 'hanging out' areas, teenage shelters)	3.05 (an additional 11.30 hectares of open space are used for children's play but already accounted for within parks and gardens)			Children's play All fixed equipment play provision	10.87		
Amenity green space	284.61	Areas of amenity		Amenity	3005.37		

TAN 16 Typology definition (Primary category ⁶)	Area (ha) (2017 assessment)	Multi functional green space (Functional / visual)	Area (ha) (2017 assessment)	Planning categories Definitions used in open space study calculations	Area (ha) (2017 assessment)	Accessible natural green space (does not relate to other categories)	Area (ha) (2017 assessment)
(most commonly, but not exclusively in housing areas) - including informal recreation spaces (private or open to the public), roadside verges, greenspaces in and around housing and other premises e.g. hospitals, schools and colleges, industrial and business premises and village greens <u>(Domestic gardens excluded from Cardiff definition)</u>		space are identified as functional if they contain a path or are otherwise accessible or useable.		Allotments included in amenity space Natural and semi natural areas included within amenity space			
		Visual green space All other amenity spaces are defined as visual	780.23				
Allotments and community growing areas	81.38	n/a					
Natural and semi natural green space including woodland, urban forestry, scrub, grasslands, open access land (e.g. mountain, moor, heath, downland, common land and meadows) wetlands, wastelands and derelict open land and rocky areas (e.g. cliffs, quarries and pits), and coastal land	961.24	n/a					
Water	309.62	n/a		Water	332.61		

TAN 16 Typology definition (Primary category ⁶)	Area (ha) (2017 assessment)	Multi functional green space (Functional / visual)	Area (ha) (2017 assessment)	Planning categories Definitions used in open space study calculations	Area (ha) (2017 assessment)	Accessible natural green space (does not relate to other categories)	Area (ha) (2017 assessment)
	(an additional 22.99 hectares of water is accounted for within parks and gardens)						
Cemeteries and churchyards	87.13	Closed churchyards may be defined as functional open space. Functioning churchyards and cemeteries will be n/a		Cemeteries and churchyards included in amenity space			
Accessible countryside Accessible areas outside the urban frame	734.88	n/a		Not included within assessment			
Civic space	12.15	n/a		Urban spaces	12.15		
Educational open space Included within formal provision in TAN 16	n/a			Education	254.19		
Total	3,774.27		4,027.06		4,027.06		2,957.49

4.0 Protection of open space

4.1 Assessment of development proposals

4.1.1 This section provides detailed guidance on the way in which the Council assesses development proposals which involve the loss of open space. The main factors against which proposals are assessed are:-

- i) Existing local provision of open space(4.2)*
- ii) The functional or amenity value of the open space (4.3)*
- iii) The quality of the open space (4.4)*
- iv) Any significant nature or historic conservation importance of open space which may be lost (4.5)*
- v) Any compensatory provision for loss of open space (4.6)*

4.2 Assessment of existing local provision (i)

4.2.1 Functional open space is defined in section 1.8. It may be in public or private ownership, but must be available for public use for formal / informal recreation, for children's play or for use by teenagers. Functional open space includes equipped children's play areas, informal play spaces and formal recreation areas, such as pitches, greens, athletic tracks, courts and educational land where it is laid out to accommodate formal recreation.

4.2.2 The assessment process considers how a development proposal affects the provision of functional open space in the local area and also the wider implications of whether it would cause a city-wide deficiency of open space.

4.2.3 Local Area assessment is undertaken by using a set of straight line distances, for different categories of recreational open space, to achieve a local catchment area that would be affected by the loss of open space. The straight line distance is taken

from the centre of the open space and provides a radius within which the provision of functional open space can be examined. The straight line distances that are used for the different categories of recreational open space are shown below in Table 3.

- 4.2.4 Assessments must be adjusted to accommodate any barriers to movement that exist, such as major roads, railways and rivers. In all instances, it must be demonstrated that local access to a range of functional open spaces is not impaired by the development.

Table 3: Straight Line Distances for analysis of local provision of functional open space.

Category of Functional Open Space	Straight Line Distance from centre of site
Equipped Children's Play Areas Includes play areas with fixed play activities such as swings and slides and grassed or surfaced play space and areas designed for play purposes using natural land form and other features.	600 metres
Teen provision Areas designed for teen use including multi-use games areas (MUGAs), skate parks, outdoor fitness equipment and shelters.	1,000 metres
Informal Recreational Open Space Includes those areas although not specifically marked and laid out for formal active recreational activities but can accommodate informal active recreation and children's play.	1,000 metres
Formal Recreational Open Space Includes areas of open space marked and laid out for formal active recreation purposes and available to the public, such as pitches, greens, courts and athletic tracks.	1,500 metres

- 4.2.5 Functional open space is examined against the minimum standard of 2.43 hectares per 1,000 population as set out in Policy C5 of the Local Development Plan (see Section 2.3.3).
- 4.2.6 The population of a selected catchment is established by adding together the output areas which contain the best fit within the catchment radius. The result for a particular category of recreational open space is calculated by adding together all the open space of that type within the radius.

- 4.2.7 The Cardiff Open Space Study, described in section 3.2, provides the background to this assessment and is available as a separate document.
- 4.2.8 An evaluation of the open space within the catchment of a new development can be produced by comparing the amount of a particular type of open space, to the minimum amount of that type of open space that is recommended in the open space standard.
- 4.2.9 The population within the radius is found by adding together the best fit enumeration districts within the catchment area.

4.3 The functional or amenity value of existing open space

- 4.3.1 Assessment of the functional value of open spaces is an inherent part of the assessment of open space provision described in 4.2.
- 4.3.2 The assessment process will also examine whether a development proposal affects the city-wide provision of recreational and amenity open space. Some areas of recreational open space have city-wide importance because they have more than a local recreational function or because of their particular characteristics. Open spaces of city wide importance include those which contain a large number of pitches performing a wider than local role and “specialist” facilities such as artificial pitches and athletics stadiums, which are limited in number and cater for the whole city. These areas will be afforded protection as it is considered that the loss of such areas would have a significant adverse impact on the overall provision of recreational open space. In circumstances where a new city-wide recreational facility is to be provided which has an equivalent, improved or increased provision of recreational facilities, then a case may be made for the replacement of existing facilities. In these instances there would be no adverse impact on the overall provision of city-wide recreational open space.

4.3.3 Some open spaces have particular value to the amenity of an area, even though they may not obviously provide multi-functional benefits. These can include:

- Woodlands
- Allotments
- Ornamental gardens
- Cemeteries
- Water bodies
- Golf facilities
- Urban spaces

4.3.4 The characteristics of these open spaces can vary considerably and their particular amenity value may be based on different factors. The basis of assessing the amenity value of an area, whether recreational or amenity open space, will relate to:

- a) **Visual Amenity** - For a site to possess visual amenity value, it must be located where the general public can gain significant “visual access”. It must contribute to the visual character and environmental quality of the surrounding area. There will be an objection to proposals which would adversely affect the appearance of open spaces which significantly contribute to the visual appearance of an area.
- b) **Leisure Amenity** - Areas of woodland, allotments, ornamental gardens and public rights of way, by definition are not considered suitable for active sports and recreation. However, such amenity open spaces can provide an important informal open space resource for local people and accommodate passive activities such as walking, dog exercise and nature studies. The importance of such areas is heightened if there are limited alternative areas of recreational and amenity open space in the locality or if the areas make a contribution to the city-wide provision of open space. Proposals which would cause unacceptable harm to areas of leisure amenity value will be opposed.

4.3.5 The amenity value of some areas of open space is important both locally and in the context of the whole city, including major parks like Roath Park and Bute Park and the designated Country Parks at Forest Farm and Parc Cefn Onn.

4.3.6 The river corridors of the rivers Ely, Taff, Rhymney, Nant Fawr and Nant Glandulais provide continuous corridors of open space linking the urban area with the countryside. These areas although not all publicly accessible create features of city-wide importance and have potential for further improvements. Proposals which could cause unacceptable harm to the integrity of these areas will be opposed. The River Corridors SPG provides further information about this.

4.4 Open space quality

4.4.1 A quality value assessment tool is in use by the Parks Service to assess the comparative condition and value of existing open spaces within their type. Proposals that affect open spaces of high quality and / or high value will be opposed.

Details of the assessment tool and up to date average scores can be provided on request.

4.5 Heritage or Nature Conservation Value of open space

4.5.1 Where built heritage exists within open space (including scheduled ancient monuments, listed buildings or structures and registered historic parks and gardens), an assessment of these will be required in order to be able to determine the impact of the development on the heritage value of the site.

4.5.2 The Technical Guidance Note for Ecology & Biodiversity outlines how development proposals which affect nature conservation interests will be assessed and enlarges upon the statutory policy framework. In summary, an assessment requires the

submission of sufficient detail to establish whether a development would harm the nature conservation value of the site. It will establish the acceptability of any proposed compensatory measures and whether the proposal can be conditioned to cause no harm to nature conservation interests during site development.

- 4.5.2 It is recommended that the Technical Guidance Note for Ecology & Biodiversity is referred to if a development proposal may affect, either directly or indirectly, nature conservation interests.
- 4.5.3 The Technical Guidance Note for Trees provides information on the impacts of development of new housing right up to the perimeter of woodland in existing areas of open space and how detrimental impacts can be mitigated. It will not be acceptable to propose structures or gardens so close to woodland that the edge trees require repeated pruning to make them acceptable to residents.
- 4.5.4 If adjacent woodland is Council-owned or is to be transferred to the Council under a planning agreement, there will be a presumption in favour of the Council taking over responsibility for any buffer zones provided to mitigate against the impact of the development on the woodland area, subject to commuted payments, but only if the layout of the development means that this is unavoidable. If the woodland is privately owned and is to remain in private ownership, it will not be appropriate for the buffer strip to transfer to the Council and in these circumstances the developer will be required to make alternative arrangements for the management and maintenance of the strip to the satisfaction of the planning authority. Appropriate accesses for management will be needed.

4.6 Compensatory Facilities

- 4.6.1 Where a development proposal involving the loss of open space would cause or exacerbate a local or city-wide deficiency of recreational open space, compensatory

open space or an alternative provision of equivalent community benefit may be acceptable. Details of this are provided within the Planning Obligations SPG.

5.0 Provision of open space in new developments

5.1 Standards of provision

- 5.1.1 This section is intended to provide developers with a clear set of guidelines for the provision and layout of open space, reinforced by more detailed information provided as appendices to this document. Each site will require an individual design solution but many of the guidelines remain applicable and should be followed.
- 5.1.2 The main aim of the design should be to create high quality open spaces of a meaningful size, which provide opportunities for active recreational use, contribute positively to the appearance and functioning of the development, provide biodiversity and other environmental benefits, and can be maintained in viable condition, adapting over time to the needs of the residents.
- 5.1.3 The quantity, quality and accessibility of new open space provision will be assessed against the standards determined in section 3.3. Detailed information of this assessment is provided in the Planning Obligations SPG.

5.2 Functional open space

- 5.2.1 The guidance relates primarily to design of functional open space (open space that is capable of providing a range of recreational use), which may include formal and informal sport, recreation, children's play and provision for teenagers although the balance of defined uses may change with time according to local demand.
- 5.2.2 On-site functional open space will normally be sought on development sites of more than 14 units. Areas of minimum size 0.08ha may be accepted as functional open space, although the Council will not normally adopt areas less than 0.2 hectares. Further details of this can be found in the Planning Obligations SPG.

5.3 Other types of open space provision

- 5.3.1 Functional open spaces should be complemented by other areas of amenity or visual open space, which do not serve an active recreational function but provide ecological, visual amenity and many other benefits for the overall development. The aim should be to create a connecting network of green spaces throughout a development.
- 5.3.2 Open space provision on new residential development must meet the needs of future occupiers and the particular characteristics of the site. For example, if family housing is proposed, equipped children's play space will be required along with formal and informal functional open space for youths and adults. The aim should be to ensure that everyone has easy local access, by means other than the car, to formal and informal recreational facilities and open space.
- 5.3.3 In recent years, new open spaces provided as a result of new developments have reflected the positive and negative characteristics outlined in Table 4 below. A lack of new formal recreational provision in development has led to increasing reliance on existing areas of formal recreation which has increased the pressures on existing facilities.

Table 4: Positive and negative characteristics of new open space

Positive characteristics	Negative characteristics
<ul style="list-style-type: none"> Improved interconnectivity between open spaces Good provision of play areas for younger children 	<ul style="list-style-type: none"> Small or narrow open spaces offering limited recreational value Very few large open spaces capable of supporting multi-functional use Limited provision of formal recreation (spaces not large enough to support pitches, and little consideration given to the type of sport being provided, indoor or outdoor) Lack of new allotment provision Lack of teen provision and facilities for older children

5.4 The design and layout of open space

5.4.1 All new open spaces should be designed by a qualified landscape architect, with the technical knowledge to understand:

- how the open space will serve the projected population
- the physical characteristics of the site and its impact on the design
- what measures will be required to protect the existing green infrastructure to be retained
- the technical design of each element, both hard and soft landscape
- the long term management and development of the open space over time.

5.4.2 The design principles laid out in Table 5, below should be used as a guide to achieve a successful open space development.

Table 5: Design principles for successful open space layout

1. Integrated design

Green infrastructure and open space should be integrated into the design process from the start, prior to determining layout of buildings.

2. Accessible location

Unless otherwise dictated by natural site features, the main open space should be positioned centrally or with easy access from all parts of the new development (and where appropriate other neighbouring developments), making it a central focal point. This will encourage use by the whole community and help orientate visitors.

3. Appropriate size

The main open space should be large enough to accommodate a range of recreational functions within an attractive landscape, enabling active recreation to take place at a sufficient distance from properties to minimise disturbance.

4. Good surveillance

Open spaces should be designed with a number of houses facing onto them to provide good natural surveillance to create a sense of ownership and safety. Areas that are tucked away in the corner of the site, or are behind housing should be avoided as this leads to long term problems of anti-social behaviour. Open spaces that are out of sight and difficult to access are seen as a threat rather than a positive asset by residents.

5. Intuitive layout

Within an open space the most active areas (eg play areas, teen areas, seating) should be in visible locations, but at a sufficient distance from properties to minimise disturbance (see notes on individual design elements). Open spaces should be designed to utilise desire lines, aligning footpaths to key routes, whilst seeking to retain usable space between footpaths. It should also be accessible for maintenance vehicles.

6. Multifunctional use

Open space should be multi-functional and flexible to take into account the differing needs of those living, working and visiting the area. The layout may evolve over time to reflect the changing needs of the population. For example, an area designated for formal recreation and pitches may become a more informal space as demand changes with time. Wherever possible an open space should provide a range of activities and benefits. Well-designed open space should seek to provide a valuable resource for improving health and wellbeing.

7. Resilience and mitigation

Design of open space should seek to maximise opportunities to increase biodiversity, through the protection of existing habitat and development of new habitat where appropriate, and seeking to strengthen wildlife corridors and habitat connectivity to other open space, in line with the Ecology & Biodiversity TGN

Open space may build in resilience to climate change, providing flood mitigation for extreme events to protect surrounding buildings and infrastructure. The primary function of the open space however should remain as a space that can be used actively for recreation, with well drained ground conditions allowing good drainage and recovery after extreme weather events. Design should ensure that water should not discharge from the open space into adjacent properties after rainfall.

8. Integration of existing features

Wherever possible the open space should seek to retain and integrate the natural features and characteristics of the site in order to achieve a more character, whilst still being able to meeting the recreational requirements.

9. Sustainability

Open space should be designed so it can be maintained to a high standard, without requiring expensive and time consuming operations. It should be designed using sustainable materials both in terms of sourcing and their durability over time, and have access for maintenance vehicles.

10. Access for all

Open space should cater for the requirements of people with disabilities or other special requirements through appropriate and / or alternative provision. It should also cater for a wide variety of ages, to include provision for older people (e.g. appropriate seating) and children and young people (e.g. formal and informal play provision)

5.4.3 Size of Open Spaces

On new developments of over 50 houses, one open space should be sufficiently large to accommodate a range of recreational functions within an attractive environment, in preference to a number of small areas which can offer only limited recreational value.

As a general guide the type of functions that need to be accommodated within an open space should dictate the minimum area of space required. For example a formal recreational space needs to consider size of pitches including runoff, circulation space, footpath access, planting / screening, other ancillary items such as changing rooms and parking. An open space containing a play area needs to consider not only the play area, but circulation space, planting, buffer zones to houses and other informal opportunities for play.

- 5.4.4 Detailed information about the design and layout of open spaces can found in the appendices as follows:

Appendix 1: Design and layout of open space

Appendix 2: Design and layout of formal sports provision in open space

Appendix 3: Design and layout of children's play provision in open space

Appendix 4: Design and layout of teen provision in open space

Appendix 5: Design and layout of allotment and community growing provision in open space

6.0 Planning submission requirements for open space

6.1 Submission documents

6.1.1 Open space information submitted for planning consent should include the following

- Survey drawings and documents
- Layout drawings
- Detailed landscape drawings, including sections where required
- Levels information

Where Council adoption is to take place the following will also be required

- Technical construction drawings
- Specifications and bills of quantities / schedules where required
- Other supporting information, including technical details from suppliers, health and safety information where required

6.2 Detailed information required

6.2.1 As part of the planning application, detailed information will be required on the following where there is existing or proposed open space or green infrastructure:-

- Removal and retention of existing site features
- Ground levels and preparation ⁷
- Drainage
- Soft Landscape Works
- Hard Landscape Works
- Timescale for implementation
- Management and Maintenance

⁷ Information should form part of the soil resource plan. See additional information in Soils and Development Technical Design Note.

The amount of information and stage of delivery will depend on the type of application, with outline applications requiring less information than full, hybrid or reserved matters applications.

A detailed checklist is provided in Appendix 8 to assist with compiling the required information.

7.0 Aftercare of open space

7.1 Options for aftercare

7.1.1 Three options exist for aftercare of open space and green infrastructure:

- **Adoption** and maintenance / management of open space / green infrastructure by the Council

The ownership of the land will be transferred along with a commuted sum to pay for managing and maintaining the land for a set period of time, after which the responsibility for funding the aftercare will rest with the council.

- Maintenance / management of open space / green infrastructure by a **Private Management Company**

The land remains in the ownership of the developer or another party and a private profit based business is appointed by the landowner, usually funded from a residents' service charge

- Maintenance / management of open space / green infrastructure by a **Community Land Trust** established for that purpose.

Ownership of the land is transferred to a trust or not-for-profit organisation set up to manage a site in perpetuity, managed by a board of trustees, along with Council representatives, ward members, residents and other stakeholders. Funding may come from a variety of sources, including an initial endowment

fund or residents' service charge, with additional funding derived from community events etc.

7.1.2 Within each of these options there may be variations in the way that management / maintenance is carried out, but in principle, option 1 would mean that ownership and responsibility for the land would be wholly vested with Cardiff Council. Options 2 and 3 would mean that the Council did not have ownership or responsibility for the land, but the Council would still retain responsibility for dealing with any planning issues arising from subsequent land use and overseeing drainage issues.

7.1.3 The aftercare arrangements for open space arising from new developments must take account of:

- a) **Maintenance** - day to day physical operations to retain the environment in a clean usable condition
- b) **Management** – both short term - dealing with public issues, e.g. pitch bookings, anti-social behaviour, working with residents, statutory authorities and local elected members; and long term investment to improve places/facilities over time in response to public need and changing priorities
- c) **Infrastructure Investment** – repair, replacement and upgrading of assets e.g. play areas or key drainage components requiring larger capital sums of money

7.2 Key criteria for aftercare arrangements

7.2.1 Any aftercare arrangements for open space must satisfy the criteria outlined in Table 6, below.

Table 6: Criteria for aftercare arrangements

Aftercare arrangements must:
1. Cover all the elements within the open space including : <ul style="list-style-type: none"> Sustainable drainage systems (SUDS)

<ul style="list-style-type: none"> • Open space, including play areas, teen facilities, sports pitches and changing facilities, allotments and community growing • Other green infrastructure (woodlands, hedges, grassland, managing protected species and other biodiversity) • Managing public rights of way • Highways landscapes, e.g. street tree planting and verges • Other assets that may be included e.g. public art, other public realm (e.g. hard landscaped squares), permanent water features, seating, lighting, signage, bins and other site furniture
<p>2 Address all three essential levels of operational investment</p> <ul style="list-style-type: none"> • Maintenance of assets to retain them in a clean, functioning and usable condition • Management of assets <ul style="list-style-type: none"> ○ managing public events, anti-social behaviour, issues relating to trees or drainage, encroachment, liaison with sports clubs. ongoing liaison with police, statutory authorities, Local Members and the electorate. (These roles have traditionally carried out by Parks, Drainage and other Council service areas) ○ long term development and improvement of the asset over time, in conjunction with the local community, to allow open spaces to reach their full potential and respond to the changing needs of the population • Infrastructure investment over time through additional investment (e.g. play equipment, footpaths, tree replacement, drainage equipment) to ensure the open spaces continue to function at an optimum and safe level as equipment reaches 'end of life'.
<p>3. Cater for community involvement, through the guidance of a community ranger or land manager, whose role would involve liaison with the community, and physical involvement of community groups, to influence how green infrastructure develops and is used over time)</p>
<p>4. Permit open public access rather than areas being 'owned' by local groups who may be funding their maintenance and not wish to see others use the open space areas</p>
<p>5. Be financially sound, with sufficient long term financial resources and planning to carry out all the above functions in perpetuity</p>

7.3 Adoption by the Council

7.3.1 Appendix 6 provides detailed information about the process for Council adoption of open space.

7.4 Alternative arrangements for aftercare of open space

- 7.4.1 If either the Private Management Company or Community Trust model is proposed for aftercare, a secure funding mechanism and a number of legal safeguards will need to be put in place.
- 7.4.2 **Funding** – a hybrid funding mechanism consisting of resident levy for maintenance, with a commuted sum paid by the developer for larger infrastructure projects would be preferable. Reliance on a resident levy for all funding could result in high and unpredictable costs for residents for replacement of infrastructure in future years.
- 7.4.3 Any funding mechanism, whether resident levy or commuted lump sum, needs to be protected should the company fail, rather than being lost as an asset to an appointed Administrator. The money needs to be available to employ another company or pay the Council to take on the work. In a similar way the land must be protected from passing to the Crown Estate in the event of company failure.
- 7.4.3 **Legal safeguards** - A legal mechanism will be required to provide step-in rights for the Council or residents in the event of failure of a management company / trust to survive financially or perform to a sufficiently high standard.
- 7.4.4 The financial and legal obligations for aftercare will be set out in the section 106 documents for each scheme. These will include the following details to be submitted to Cardiff Council for approval

Details required from developer on management and maintenance:

1. Management scheme and type of organisation to be appointed

Management Scheme demonstrating how the long term management and maintenance of each open space will be delivered and the type of organisation (management company, community trust, community interest company or other entity) that will be designated to carry out the management / maintenance.

2. Financial standing of appointed organisation

Demonstration that such organisation has sufficient financial standing to perform the obligations required to maintain the open spaces

3. Proposals in the event of default

Proposals for default in the event of such Management Scheme failing to become operational or being properly maintained in perpetuity

4. Standard of maintenance

The standard to which each open space will be maintained

5. Access to open spaces

Provision for access to each open space by

- residents in the development and the public at large
- Cardiff Council in order to inspect and monitor the standard to which it is being managed

6. Named contact

Details of a named manager responsible for liaising with Cardiff Council, residents and other parties including Ward Members

7. Details of service and other charges

Details of service charges, management or additional charges to be levied on buildings / residents within the development for the management and maintenance of the open spaces and the sustainable drainage system where applicable. This needs to clearly distinguish between charges attributable to the open spaces and the sustainable drainage system.

8. Potential requirement for master-share membership or other instrument by the Council

Where it is proposed that a third party is to manage the open spaces or SuDS the constitution, articles or other governing documents shall provide for (if required by Cardiff Council) a master share membership or other instrument to be dormant and activated only in the event of default by the third party of its management or maintenance obligations once the open space or SuDS scheme is transferred to it

9. Step-in rights in the event of default

Step-in rights for Cardiff Council in the event of default by the owners / developer or their agents appointed to manage or properly maintain the open spaces, with the cost of so doing being a debt due to Cardiff Council on demand

Once the transfer has been completed to the appointed organisation responsible for management and maintenance, the following will be required :

1. a covenant to allow access to the public at all times and to manage the open spaces in accordance with the terms of the Management Scheme.
2. an obligation to grant appropriate easements in respect of the SUDS
3. an appropriate land registry restriction which shall appear on the title to the Open Space, to safeguard that any successors in title to the Open Space are required to enter into a deed of covenant with Cardiff Council to observe and perform the terms of the approved Management Scheme

8.0 Management of construction works affecting open space and green infrastructure on development sites

8.1 Planning the construction phase

8.1.1 The aim of the construction and management process is to translate the details agreed at planning stage through to delivery on site, both in terms of protecting existing green infrastructure, soils, trees and other elements, through to construction of new hard and soft landscape to the standard required for long term adoption or maintenance.

8.1.2 This process needs to take into account the significant change in personnel from the Planning to Construction phase. Information needs to be communicated clearly to the site manager of the principal contractor at pre-commencement stage (including demolition), and a structure put in place to enable this information to be passed to the other personnel involved in the construction process. This will also involve regular inspections, guidance and submission of monitoring reports as required from a consultant soil scientist, arboriculturist, ecologist and landscape designer / clerk of works, to overcome issues on site and demonstrate compliance with the planning documentation through. The process should also be monitored by Council inspectors.

8.1.3 Unless this process is carried out in a structured and effective way, the aims of the planning process in delivering open space and green infrastructure to the required standard are rarely achieved.

8.2 Monitoring of construction work

8.2.1 Monitoring will be required throughout the construction process and in particular at key stages :

- To approve setting out of tree and other green infrastructure protection measures, prior to demolition and construction work (followed by ongoing monitoring)
- At setting up of site compounds and haul roads
- At the beginning of each new phase of the development
- On completion of subsoiling works on each open space and prior to top-soiling
- On commencement and completion of planting
- At practical completion of each open space
- At final completion and handover of each open space.

8.3 Key Documents

8.3.1 Construction Environmental Management Plan (CEMP)

This document should set out the management of the site during construction, including an implementation programme, traffic management, details of compound and plant/material storage, construction drainage scheme, and green infrastructure construction protection plan. A CEMP should be in accordance with any method statement / other documents approved for a European Protected Species (EPS) licence, or equivalent legislation.

8.3.2 Green Infrastructure Construction Protection Plan (GICPP)

This drawing or series of drawing should show the measures required on site during construction for protection of ecological, arboricultural, landscape, soil, open space, and SUDS, including existing elements and those proposed to be created and enhanced. The GICPP should accord with the approved Arboricultural Impact Assessment, Arboricultural Method Statement and Tree Protection Plan. A development should be carried out in full conformity with these unless otherwise agreed in writing with the Council. Further information on this requirement is provided within the Trees and Development Technical Guidance Note. A GICPP should be in accordance with any method statement / other documents approved for an EPS licence, or equivalent legislation.

8.3.3 Soil Resources Survey and Plan

Open space schemes that involve protection, removal, movement, storage or amelioration of soils require submission of a soil resource survey (SRS) and soil resource plan (SRP). This should accord with the “Construction Code of Practice for the Sustainable Use of Soils on Construction Sites” (Defra 2009 or any subsequent updates). For further information see Soils and Development Technical Guidance Note.

8.3.4 Strategic Green Infrastructure Management Strategy (SGIMS)

This document should set out details of the delivery, establishment and ongoing management, monitoring of green infrastructure.

8.4 Site Protection

- 8.4.1 Areas of existing green infrastructure including open space or protected habitats should be fenced off by the developer during construction works unless the developer receives prior consent of the Council. This should be set out in the Green Infrastructure Construction Protection Plan (GICPP) and the Construction Environmental Management Plan.

8.5 Locating of Site Compounds

- 8.5.1 The location of site compounds, parking and storage areas on land designated for open space or other retained green infrastructure areas leads to long term problems with compaction and damage to soil structure, which often prove difficult and expensive to alleviate. This results in long term drainage issues and difficulty establishing trees and other vegetation.
- 8.5.2 On greenfield sites it is of major benefit to retain land for new open space in its original ‘agricultural’ form where a soil profile and drainage has been built up over a

considerable length of time, rather than stripping topsoil, compacting the site and then seeking to rebuild it, which can be expensive, time consuming and often unsuccessful. Locating compounds and haul roads on areas which will end up as hard construction (housing or roads) is the preferred option.

8.5.3 Unless agreed in writing with the Council, the developer should avoid locating the builders compound, storage area, parking area or access road on any part of the green infrastructure, including land designated for building open space where it is already formed from topsoil, subsoil or laid to soft landscape. Should construction be permitted on the above areas, a detailed specification demonstrating how the area can provide free draining open space will be required, in accordance with the soil resources plan.

8.5.4 Where land designated for building open space is currently laid to a hard surface or building foundations, the same applies once the hard surfacing and or foundations have been removed and construction of the open space has commenced, including preparation for subsoiling.

8.6 Protection of Council-owned trees on or adjacent to the development site

8.6.1 Trees owned by the Council within or adjacent to the site which could be impacted by the development must be given suitable protection in accordance with the Tree Protection Plan and other documents. This should include the following:

- Inclusion of Council owned trees in any Arboricultural Impact Assessment, Arboricultural Method Statement and Tree Protection Plan, with details of monitoring during construction by an arboriculturist or suitably qualified person until final completion. This should demonstrate how the approved tree protection measures have been complied with
- Notification to the Parks or Tree Protection Officer that Council owned trees may be impacted by the development

- Prior to any work including demolition, commencing on site the developer shall meet with a Tree Officer from the Council having served a minimum seven days' notice period to agree tree protection measures set out on site
- Builders' compound, temporary buildings, storage area, parking area or access road shall not be located within the agreed root protection area or other area specified within the Tree Protection Plan during construction, unless otherwise agreed in writing with the Council.

8.6.2 If in the opinion of the Council, the Developer fails to comply with the obligations set out in the approved Arboricultural Method Statement and Tree Protection Plan and pre-start tree protection meeting, resulting in damage to Council Trees on or adjacent to the site, the Council may provide a written assessment of the damage and costs of rectifying this based upon the CAVAT method, with the cost of doing so being due from the Developer to the Council on demand.

8.7 Invasive non-native species on development sites

8.7.1 Invasive non-native species are those that have been introduced to the UK, are well suited to the conditions available, and having few or no control mechanisms, spread rapidly, causing economic, social or ecological problems in many locations.

8.7.2 Invasive species are designated under the Wildlife and Countryside Act 1981 (Part II of Schedule 9 and any subsequent updates) and include Japanese Knotweed, Himalayan Balsam, Giant Hogweed, Ragwort and *Rhododendron ponticum*. A current list of Invasive species is available from the INNS (Invasive non-native species) website⁸.

8.7.3 Correct disposal and management of plant material from invasive species in accordance with the current best practice is vital in order to:

⁸ NNNS www.nonnativespecies.org

- a) Prevent spread within the site and avoid long term contamination of public/private spaces
- b) Prevent spread beyond the site

8.7.4 If in doubt the developer should always contact the relevant agency for advice on current requirements for disposal and treatment (including chemical control, composting, burning, burial on site, transfer and disposal of materials including ash to licenced landfill sites). There are also a number of key publications that are referenced below⁹.

8.7.5 Japanese knotweed in particular has the potential to create long term issues both physically on site and in terms of adversely affecting sale of properties unless the correct measures are put in place.

8.7.6 Detailed information about treatment of invasive non-native plant species is provided in Appendix 7.

8.8 Services and easements within open space

8.8.1 The following services and / or easements shall not pass over, under, upon or through the open space / green infrastructure without the written consent of the Council

⁹ Useful guidance on invasive weed control is available from

1 PCA Guidance Note "Legislation and Policy for Invasive Non-native Plant Species including Japanese Knotweed"

2 Welsh Government "Species Control Provisions" January 2016 (currently draft code of practice)

Treatment of Japanese Knotweed should be carried out in accordance with the following documents:

1 "The Control of Japanese Knotweed in Construction and Landscape Contracts" (Welsh Government 2011 - download available from www.wales.gov)

2 "Japanese Knotweed and Residential Property" (RICS 2012 - download available from www.rics.org for RICS members)

3 Property Care Association "Code of Practice for the Management of Japanese Knotweed"

Treatment of Himalayan Balsam should be carried out in a accordance with the following documents:

1 Property Care Association "Guidance Note on treatment of Himalayan Balsam"

2 Kelly, Maguire and Cosgrove (2008) Best practice Guidelines Himalayan Balsam"

Treatment of Giant Hogweed should be carried out in a accordance with the following documents:

1 Property Care Association "Guidance Note on treatment of Giant Hogweed"

2 Kelly, Maguire and Cosgrove (2008) Best practice Guidelines Giant Hogweed"

Other info is available from NRW (Natural Resources Wales) and RICS (Royal Institute of Chartered Surveyors)

- The route of any pipe, sewer, drain, watercourse, cable, wire or other conduit for the provision of electricity gas, water, telecommunications, or drainage for the development
- Easement or wayleave for the provision, maintenance or replacement of any services

8.8.2 Where installation of services or a wayleave are approved by the Council the following information will be required:

- The method of working and programme of works to be utilised in providing maintaining or replacing the services
- The method of reinstatement of land to its original condition or better following completion of works
- The Developer will need to contact the Council to establish whether a licence or permit to work is required

8.8.3 All works in involved in providing maintaining and or replacing services shall be carried out expeditiously and with as little damage as possible. The open space or green infrastructure should be reinstated without delay and to the complete satisfaction of the Council.

Appendices

- Appendix 1 Additional guidance on the design and layout of open space**
- Appendix 2 Guidance on the design, layout and management of new sports provision**
- Appendix 3 Guidance on the design layout and maintenance of children’s play provision**
- Appendix 4 Guidance on provision for teenagers and older children**
- Appendix 5 Guidance on provision of allotments and community growing areas**
- Appendix 6 Adoption process for open space**
- Appendix 7 Treatment of invasive non-native plant species on development sites**
- Appendix 8 Planning Checklists**

Appendix 1: Additional guidance on the design and layout of open space

A1.1 General

This Appendix provides supplementary information about the general design and layout of open space under the following headings:

A1.2 Footpaths and surface treatments

A1.3 Fences and boundaries

A1.4 Seats

A1.5 Litter bins

A1.6 Ground modelling and drainage

A1.7 Soft landscape

A1.2 Footpaths and surface treatments

a) Generally:

Footpath design should consider access by maintenance vehicles, as well as pedestrians, ensuring that paths designed to carry vehicular movement are of correct construction depth and width.

b) Shared use

Footpaths designed for dual use for pedestrians and cyclists should be designed and laid out to maximise safety and avoid traffic clash

c) Recommended path widths

On busy routes, passing places are particularly important. Where appropriate these may also provide seating. Paths alongside buildings should be designed to take account of windows that open outwards.

Type	Maintenance access required along path	Minimum width (preferred width)	Access for all
Footpath	No	1.2m (1.8m)	2.0m allows room for 2 wheelchairs, or two

Type	Maintenance access required along path	Minimum width (preferred width)	Access for all
Footpath	Yes	2.2m (2.5m)	people, side by side. 1.5m allows room for 1 wheelchair plus 1 pedestrian alongside. 1.0m allows room for 1 wheelchair with no room alongside
Shared use path	Yes	3m (4m on busy routes)	

d) Footpath materials

Surface materials for paths and hard surfaces should be carefully chosen to ensure safe and comfortable access. Path surfaces should be well constructed to give a firm, non-slip (when wet or dry), level access.

Tarmac, resin-bound or resin-bonded gravel, paving slabs and textured concrete provide a solid surface. Loose or uneven materials, such as gravel, stonedust, cobbles, uneven pavements should not be used for main circulation routes.

Surface type	Positive attributes	Negative attributes
Tarmac / bitmac	Cost effective and durable	Not particularly attractive
Resin bound gravel	Durable and decorative	Relatively expensive to lay
Resin bonded gravel	Durable and decorative	Relatively expensive to lay (less expensive than resin bound gravel but reduced durability)
Stonedust	Low key and inexpensive	Prone to erosion and weed growth, requires regular topping up, unsuitable for areas of wear or damp

Surface type	Positive attributes	Negative attributes
Hoggin or self binding gravel	Low key and relatively inexpensive, more durable than stonedust	Similar to stonedust

e) Footpath edging

All footpaths should be designed with a retaining edge or kerb. This provides long term strength and durability to the footpath structure. Pin kerb and brick edging are the preferred option. Timber edging is cheaper but less durable and requires more regular replacement.

f) Access for people with a disability

To achieve a good standard of inclusive design, wherever possible, paths should be designed to be accessible to people with sensory impairments and limited mobility. These notes are intended as a basic guide and not as detailed specifications. It is essential that any design conforms to current Building Regulations.

Gradients, camber and steps can impact on users with limited mobility.

Gradients are potentially hazardous and exhausting:

- 1:15 - recommended maximum gradient
- 1:20 - preferred maximum gradient.

A gradient of 1:12 is the maximum given in the British Standards, but in practice this gradient is too steep for many people, particularly older people and wheelchair users with limited upper body strength. The gradient and length of slope must be considered together.

At times, a slightly steeper gradient over a shorter distance may be more acceptable than a gentler one over a long distance. Sustained gradients of more than 1:20 must be interrupted by level resting platforms (approximately 1.8m long) at maximum intervals of 30m.

Handrails may be required for steeper slopes

The **camber** of paths can make them awkward to use:

- 1:50 - recommended maximum
- 1:100 - preferred maximum

Cambers present difficulties for both wheelchair users and people with visual impairments.

Steps are difficult for many people with disabilities and usually impossible for wheelchair users. However for some people steps are preferable to ramps. Careful design of steps is important to ensure that they are as accessible as possible. Steps should be uniform within a series, with consistent risers and treads. Single steps should be avoided as these are easily overlooked. Ramped or angled steps are difficult for most people to use. It is essential that any design meets current Building Regulations.

A1.3 Fencing and boundaries

a) Generally

Clear differentiation is required between public and private space through well designed boundary treatments. Fencing should be appropriate for the purpose for which it is installed.

All fencing adjacent to grass or planting should have a minimum 300mm wide mowing trim (concrete or block paved) to reduce maintenance input

b) Types of fencing and boundary treatment

Type	Purpose of fence	Height of fence	Detail available
Vertical bar railings	Secure perimeter fence for open space	1.8 – 2.1m	Yes

Type	Purpose of fence	Height of fence	Detail available
Steel post and rail (two and three bar fences) Timber post and rail may be acceptable in some sites, depending on potential level of vandalism	Barrier perimeter fence for unsecured open space	1.0 – 1.5m	Yes
Steel bowtop fence	Play area surround	1.2m	Yes
Coated Weldmesh fence	Play area surround	1.2m	Yes
Coated Weldmesh boundary fence	Used where security is important or fence is designed to be unobtrusive	1.8 – 2.4m	Yes
Palisade security fence – galvanised or coated finish. Green coated finishes preferable to plain galvanised but depends on location	Used where security is important (e.g. around allotments) Style of pale to be appropriate to location and function of fence	1.8 – 3m	Yes
Knee rails (steel only to be used on sites to be adopted)	Vehicle prevention around unsecured open space	Up to 500mm	Yes

c) Fixes and Finishes

Anti-tamper fixings should be used to reduce the risk of removal of individual elements.

d) Paint Finishes

Paint finishes used on railings, equipment or other structures must be durable to prevent the need for regular repainting. These include factory applied powder coated paint systems. Detailed specifications for durable paint finishes are available from the Parks Service on request.

e) Hedges and planted boundaries

The use of the centreline of existing or new hedgerows to demarcate public / private property boundaries should be avoided as this rarely results in successful retention of the hedge and frequently causes disputes over the exact line of the property boundary after the development has been completed.

Retained hedges should be fully incorporated into the open space layout and given adequate space to ensure they can be maintained in good condition.

f) Gates

Pedestrian and maintenance access to an open space must be considered from an early stage in the design process.

A vehicle access gate should be minimum 3.5m – 4.5m wide depending on ease of access and type of vehicle, to enable vehicles to enter without damage. Gates should be lockable (e.g. with sliding bolt and padlock loop) to prevent unauthorised vehicle access. Access off a pavement or road will require drop kerbing. Where vehicles are required to park at the entrance, or on wet ground, ground reinforcement should be installed, particularly on wet sites.

The alternative for vehicle access is use of drop bollards. Again these should be lockable to prevent unauthorised access and be located adjacent to a drop kerb.

Gate design for pedestrian access may vary depending on the site. Consideration should be given to access by pushchairs and mobility vehicles. For gates in play areas see design section on play provision.

Control of bikes and motorbikes onto open space is often an issue. Most barriers designed to prevent motorbike also prevent wheelchair access, so should be

used with care. A chicane type design will still allow access but slow down any bikes or motorbikes entering an open space.

A1.4 Seating

a) Selection of seating

In addition to appearance, factors to consider when choosing seats include durability, usability in different weather conditions (wet, dry or hot), ease of maintenance and repair and accessibility for people with disability. Seating with backs and armrests will be more appropriate for older and less mobile users. Bench seating may attract younger users.

b) Seating materials

Material	Positive attributes	Negative attributes
Galvanised painted steel	Long lasting and resistant to vandalism	Can be hot in very exposed sunny locations
Galvanised painted steel and timber	Attractive and can be durable given correct choice of timber	Less durable and more vulnerable to vandalism than steel only
Timber	Attractive and can be durable given correct choice of timber	Not suitable in locations subject to significant vandalism
Recycled plastic	When well designed and constructed can be attractive and durable	Recycled plastic without steel core subject to warping. Can be vulnerable to arson
Stone or concrete	Long lasting and resistant to vandalism	Can be uncomfortable for long periods of sitting. Prone to graffiti

c) Location of seating

Although seating adjacent to paths will be the most accessible location, seating should also be considered in other parts of the open space to provide choice of a less public and busy location

d) Installation of seating

Seats or benches should be placed on a hard surface extending minimum 0.6m in front of the bench to avoid ground erosion and allow access in wet conditions. Any surfacing around the seat should connect to any adjacent path or hard surface. The seat base should also extend 1.5m to one side to accommodate wheelchair users and pushchairs, if the seat is in an accessible location.

e) Other styles of seating

Picnic benches are a useful addition within the open space and play areas, encouraging group use and wider use of the open space.

A1.5 Litter bins

a) Generally

In order to avoid littering within open spaces, a sufficient number of bins in key locations are required to allow easy disposal of waste by public. Litter bins should allow the use of a plastic disposable liner to allow use for both litter and dog waste. Separate dog waste bins are not required.

b) Location of bins

Bins should be placed in locations that can be easily accessed by collection vehicles, to reduce maintenance times and manual handling. Preferred locations are adjacent to entrances or along footpaths wide enough to take maintenance vehicles. Bins placed in the highway directly outside open spaces should also be considered.

Litter bins located directly adjacent to seating cause nuisance, particularly in summer due to insects and odour. Bins should be placed at least 1m from seating.

Litter bins within play areas provide an important role but must be accompanied by additional bins within the main open space to discourage dog waste being placed within play areas where it can cause a health issue

c) Size and style of litter bins

Bins should be of sufficient capacity (90 litres or more) to reduce the frequency of emptying. Covered bins are preferred to prevent unwanted littering by birds or squirrels. The Council can provide a specification for the standard bins used within Cardiff parks.

d) Installation of litter bins

For ease of maintenance and avoidance of damage by mowers, bins should be placed on a hard surface extending a minimum 75mm beyond the perimeter of the bin.

e) Recycling

Recycling bins within open spaces may become increasingly important but will only be effective if collection methods allow segregation of materials.

A1.6 Ground Modelling and Drainage in Open Spaces

a) Ground modelling

The levels and contours of an open space need to be considered in detail during the design and construction process. This is to provide an open space that can be used by the public, enable maintenance to be carried out easily and safely and

avoid discharge of water from the open space into adjacent properties at a lower level

Both levels within the open space and those of adjacent properties/roads being constructed need to be considered in tandem. Open spaces should not be used to make up any variations resulting from incorrect levels on housing or highway areas. This can result in open space with banking, increased gradients or absence of a level area, which can adversely affect its use for recreation, as well as leading to increased drainage problems.

When constructing banks and other features on gradients it is important to consider the maintenance implications of such designs. Based on current legislation and experience the following are general rules for maximum gradients on banks using different types of machinery.

Tractor mowers and ride-on mowers - 15 degrees

Pedestrian mower and strimming – 30 degrees

Slopes over 30 degrees requires a side arm flail or remote control mower

b) Drainage

Good drainage, allowing use of an open space throughout the year (except in very wet conditions) is essential. On a number of sites, particularly those with heavy soil, capping over contaminated material or compacted subsoil due to site operations, lack of drainage can create many problems, making the area unusable for large parts of the year. With potential of open space for SUDS use the balance between open space and drainage is even more critical.

A design should ensure that

- footpaths remain free from regular flooding, being raised if required
- play areas are set at a level that prevents safety surfacing (and timber equipment) being regularly saturated, leading to deterioration and need for regular replacement

- where pitches or grass kickabout areas are to be laid, the developer should provide a field drainage system of a design approved by the Council unless the site is known to be free draining
- a mechanism is put in place to allow water to be drained from the main open space, through piped drainage to an outlet, discharge to an existing stream or collection within a SUDS basin. Drainage from open space to a highway drainage system via a gully will not be accepted due to problems this creates with Welsh Water adoption.

A1.7 Soft Landscape in Open Spaces

a) Generally

All landscape soft works should be designed by a landscape architect and carried out in accordance with the following British Standards or updated versions

BS 4428:1989 Code of Practice for general landscape operations

BS 8545 : 2014 Trees: from nursery to independence in the landscape

BS 3936 -1:1992 - Nursery stock : Specification for trees and shrubs

BS 3936 -2:1990 - Nursery stock : Specification for roses

BS 3936 -9:1998 - Nursery stock : Specification for bulbs, corms, tubers

BS 3882 : 2015 Specification for Topsoil

b) Soil Depths for Planting

Soiling for planting and seeding shall be in accordance with Soil Resources Plan for scheme and the Council's Technical Guidance Note on Soils.

Soils should be derived from existing soils on site, or imported. For use and amelioration of existing soils, and importation of new soils, see Council's Technical Guidance Note on Soils. All imported topsoil should comply with BS3882 and BS4428 and be approved by the soil scientist or landscape architect.

General guidance for topsoil and subsoil depths given below:

Type of planting	Recommended soil depths
Tree planting	<ul style="list-style-type: none"> • 300mm topsoil over 600mm subsoil •
Shrub and herbaceous planting, hedges	<ul style="list-style-type: none"> • 300mm topsoil over 300mm subsoil
Amenity Grass and Bulb areas	<ul style="list-style-type: none"> • 150mm topsoil over 150mm subsoil
Wildflower meadow	<ul style="list-style-type: none"> • 300mm subsoil, or 150mm low fertility topsoil over 150mm subsoil

c) Timing for landscape operations

Planting Times

- Deciduous trees and shrubs: Late October to late March.
- Conifers and evergreens: September/ October or April/ May
- Herbaceous plants : September/ October or March/ April
- Container grown plants: Any time if ground and weather conditions are favourable. Ensure that adequate watering and weed control is provided if planted out of season
- Dried bulbs, corms and tubers: September/ October, except Colchicum (crocus): July/ August
- Green bulbs: After flowering in spring

Works to be carried out when soil and weather conditions are suitable. Do not plant during periods of frost, waterlogging or strong winds.

d) Planting plans and implementation

All planting to be set out in a detailed scaled planting plan with plant schedule, showing species, sizes, container size/type, planting distance or density. Whenever possible this should be designed as part of the main planning

application. Any proposed substitutions of plant species or specification to be approved prior to planting

All shrub planting beds to receive 75mm depth amenity bark mulch applied after watering. Finished level of mulch to be 30mm below adjacent grassed or paved areas. Plants to be watered after planting and during dry periods until established.

Where adoption by the Council is due to take place notice shall be given at setting out, delivery of plants and trees, and completion of planting to allow a site inspection to be made.

All planting to be adopted by the Council shall be maintained for a minimum of twelve months prior following planting, with any defective plants replaced prior to adoption.

e) Tree planting in open spaces

For information about tree planting see Trees and Development Technical Design Note. On sites to be adopted by the Council liaison should take place with the Parks Tree or Design sections.

Appendix 2: Guidance on the design, layout and management of new sports provision

A2.1 General

This Appendix is intended to provide developers with a clear set of guidelines for formal sports provision in new developments.

A2.2 The rationale for provision

The opportunity to participate in sport is an important component of a sustainable community and the needs of sport should be given appropriate consideration and significant weight in the development process.

New development will generate increased and varied demands for sport which will need to be accommodated through the enhancement of existing facilities or the provision of new ones. Existing facilities will also require protection. Given the areas of land involved, attention to sport in the early master planning and design of developments is essential to secure the required level of provision and achieve a good level of public participation in sport.

A2.3 Types of sports provision

Sporting provision may comprise of the following:

- Formal indoor facilities, such as leisure centres (Council, private or community run), or shared school / club facilities (providing opportunities for gyms, exercise classes, badminton, squash etc.)
- External grass pitches (including football, rugby, hockey, cricket, baseball, rounders, lacrosse)
- Artificial outdoor sports facilities i.e. 3G or 4G pitches
- Other facilities e.g. tennis courts, MUGAs, bowling greens, basketball, fitness equipment

New developments will need to provide sporting opportunities through a combination of significant areas of land set aside for pitches, combined with artificial

pitches that can cater for higher intensity use, and potential for indoor facilities, either community based or commercially run.

A2.4 Principles for successful sporting provision in new developments

The table below sets out principles for successful sports provision in new developments

Good sports provision should:	
1. Meet the needs of the whole local community	Provision should offer a wide range of facilities, both indoor and outdoor within the locality
2. Be based on local need	Provision of new sporting facilities or upgrading of existing should be based on a detailed assessment of existing sporting provision and an assessment of the facilities required to serve the new population.
3. Be well located	Sports facilities should be located in prominent positions in the new development, raising awareness of their existence, inspiring people to use them and ensuring they can become focal points for the community and social interaction. They should be physically accessible for a wide range of people through sustainable transport, with good pedestrian, cycle and public transport access
4. Be located in multi-sport hubs or clusters to allow sharing of facilities	Multiple sports, recreation and other facilities should be co-located together whenever possible to create a multi-sport hub, to allow a choice of activity in one location, and promote the efficient shared management of facilities. Alternatively they may be located with other actively used destinations, such as schools or other community facilities. Where parking is required attempts should be made to share facilities with other uses.
5. Be integrated into the wider network of green space	Formal pitches should be integrated within a broader landscape framework to create an attractive open space providing a variety of formal and informal recreational functions. A site should satisfy a number of physical requirements in order to achieve its full potential : avoiding very exposed windy locations, be reasonably level or with space

Good sports provision should:	
	to create a level surface, have suitable ground conditions – stable, uncontaminated, good depth of soil, good drainage or potential for a drainage system; availability of services where lighting or changing rooms are required.
6. Be located to take account of adjacent residents	Location of formal sports and leisure facilities needs to be considered in relation to adjoining residential areas in order to minimise noise, light spillage from floodlighting and increased traffic volumes, whilst maximising positive features such as natural surveillance. Any potential conflicts of users with adjoining properties should be appropriately managed and avoided through good design.
7. Be fit for purpose	Sports facilities need to be fit for purpose and be designed to accord with appropriate best practice (with reference to guidance from Sport England, National Governing Bodies of Sport and other organisations such as Fields in Trust).
8. Requirements for changing rooms and other facilities	Provision of any sports facility should consider the requirements for changing rooms, storage for equipment, lighting and accompanying social facilities. For example adult senior pitches will require changing rooms
9. Be viable in terms of long term maintenance and management	Viability, management and long-term maintenance of any sporting facility needs to be demonstrated, considering issues such as retaining grass pitches in a good condition, particularly if subject to flooding, and the capital investment required to ensure that sporting facilities remain in a good condition over a long period, and where this funding will be sourced from.

A2.5 Dual Use Facilities

Opportunities may exist for joint use of facilities with schools or private sports clubs, through negotiation of a Community Use Agreement to make them available to the general public. But in order to be considered as providing part of the formal recreational allocation for any new development, there has to be certainty that facilities located within the school or club will be available for community use in perpetuity (or as long as the school or club is present) and will be maintained in a good condition.

a) The benefits of dual use facilities

Developing sites with dual sports facilities has many benefits for all parties. School sports facilities and playing fields can be designed to enable use by pupils in schools hours and by the wider community in the evenings and weekends. This can be achieved when designing new schools, or improving existing ones.

Avoidance of the need to construct and maintain two sets of facilities can result in a significant cost saving, through:

- reduced land take, releasing land for other uses such as housing or open space
- reduced construction costs whilst being able to invest in higher quality facilities
- reduced maintenance costs

For the school or club, dual use has a number of potential benefits

- Improved facilities due to greater investment
- The potential to generate an income stream for the school or club
- Specifically in the case of schools
 - Improved health of pupils and staff resulting from facilities
 - A reduction in the risk of vandalism and anti-social behaviour after school hours through indirect supervision of people using the facilities

b) Dual use facilities in Cardiff schools

There are a number of barriers to the use of dual facilities in Cardiff schools:

- The need to maintain a secure environment (particularly in primary schools)
- The difficulty in guaranteeing long term availability if schools opt out of local authority control or a new head teacher declines to support the dual use approach
- Threat of school expansion leading to sporting facilities being built on.
- Costs of opening school facilities for a longer period to allow dual use often seen as prohibitive to schools / clubs without additional funding.

In Cardiff the current policy approach is to consider school dual use provision as an 'add-on' to open space, not a replacement for it.

If provision of sport for community use is made within a school this will not result in a reduction in the Education contribution. Any additional requirements arising from sharing of a sports facility (e.g. parking, changing facilities, funds for additional maintenance) have to be funded separately.

If this position changes in future or a dual use design is employed in a school, the following considerations should be taken into account.

c) **Designing for dual use**

When opening up school facilities for community use it is essential that both the needs of the users and the school are considered. Clubs and groups need to gain access easily and feel welcome, and at the same time schools need to be able to maintain their security and ability to deliver their core business¹⁰.

- The level, type and size of sports facilities that will be required by the school and general community

¹⁰ Further useful information on this subject can be found on the Sport England website – <https://www.sportengland.org/media/4363/planning-bulletin-16.pdf> and <https://www.sportengland.org/media/4468/successful-management-of-dual-use-cricket-and-football-sites-12256.pdf>

- The design and construction methods that will produce durable high quality facilities for both sets of users
- The design of changing facilities for joint use
- How the security of the school can be managed
- How the facilities can be grouped to achieve better separation between the community users and the school population
- How the facilities can be designed for inclusive use

The table below provides design requirements for dual use facilities in schools or clubs.

Design requirements for dual use sports facilities	
Site entrance	<ul style="list-style-type: none"> • Clear signage • Safe and well-lit routes for pedestrians, cyclists and cars
Reception	<ul style="list-style-type: none"> • A welcoming space with area to answer queries and monitor security • Logical routes from reception to changing rooms
Changing rooms	<ul style="list-style-type: none"> • Clean and comfortable • Cubicle showers and access to lockers • Outdoor changing with direct access to sports pitches and courts • Accessible changing space. • Flexible changing suites to allow use for team changing at certain times as well as individual male and female changing.
Zoning	<ul style="list-style-type: none"> • Cluster community facilities together • Ensure the ability to isolate security, heating and lighting systems.
Clubs	<ul style="list-style-type: none"> • Separate team and official changing rooms for competitions • Access to a meeting/coaching room • Secure storage for equipment • Noticeboard or area to promote their sessions.
Spectators/viewing	<ul style="list-style-type: none"> • Suitable space for parents/spectators to meet and spectate
Safety	<ul style="list-style-type: none"> • Practical spaces that are clutter and equipment free • Easy to clean - especially sports floors and outdoor surfaces • Well maintained services (lighting and equipment).

Design requirements for dual use sports facilities	
Efficient/running costs	<ul style="list-style-type: none"> • Energy saving design (automatic lighting, flexible use of spaces, use of renewable technologies etc) • Recycling waste points • Clear signage to encourage community users to save energy.

A2.6 Sporting Hubs

Community sporting hubs provide an integrated home for sport, often bringing a number of different sports together. They are usually based around a sport centre, community centre, school, or playing field pavilion. In some cases a community sport hub combines a number of these places in one location, or it may centre on a single-venue hosting many clubs.

The sporting hub provides a sustainable community-led environment for local sport. When associated with a strong club structure, this can also provide a key focal point for a community, both sporting and social. This is particularly valuable in creating a sense of identity and community within a new development, therefore it is important that potential organisations/clubs and locations for sport are involved at an early stage in the development process.

A2.7 Outdoor pitch provision

The table below provides general information on requirements for outdoor pitch provision.

Outdoor pitch provision requirements	
1. A level site	<p>Maximum gradient 1:80-1:100 lengthways, or 1:40-1:50 across the pitch</p> <p>Although a slight gradient can encourage surface water to run off and improve drainage (especially on clay or silt soil), pitches should be located on reasonably level ground</p> <p>More steeply sloping pitches makes it difficult for players. The</p>

Outdoor pitch provision requirements	
	problem is best avoided by selecting a suitable site at the outset, or by using cut and fill to create terracing, although this is a more expensive option.
2. Good drainage	<p>Pitches should be located on well drained ground, capable of supporting use twice a week during winter without significantly deteriorating.</p> <p>Drainage plays a major role in the quality of surface and reasonable drainage is an essential requirement for natural turf. If on a flood plain the area should be subject to a flood risk of 1:100 years or less. A drainage scheme may be required to remove excess water from the surface or to lower a water table. Drainage types include pipe, slit or blanket. The type of drainage scheme will depend on many factors including intensity of use, underlying substrate and topsoil/subsoil type, and should be designed by a suitably qualified person and in conjunction with the soil resource plan. Further information can be obtained from organisations such as Sport England or the Sports and Play Construction Association.</p>
3. Pitch Orientation	<p>Recommended playing direction for pitches is approximately north (between 285° and 20°) / south</p> <p>This will minimise the effect of a setting sun on the players</p>
4. Ground reinforcement	<p>Reinforcement of areas of wear</p> <p>If the pitches are to be marked out in the same place year on year, consideration should be given to some type of ground reinforcement so that wear of heavily used areas in the winter months can be managed.</p>

A2.8 Outdoor sports pitch sizes

The table below shows the range of playing pitch sizes for different sports. The sizes shown are for Recreational facilities. For sizes of Club and County / Regional pitches other guidance should be sought from sporting governing bodies.

Football (soccer) pitch sizes ¹¹					
Age Grouping	Team size	Recommended Dimensions without runoff Length x width	Min / Max Dimensions without runoff Length x width	Recommended Dimensions including runoff Length x Width	Max / min Dimensions including runoff Length x Width
Mini-Soccer U7/U8	5 v 5	37 x 27m	Min 27.45 x 18.3m Max 45.75 x 27.45m	43 x 33m	
Mini-soccer U9/U10	7 v 7	55 x 37m	Min 45.75 x 27.45m Max 54.9 x 36.6m	61 x 43m	
Youth U11/U12	9 v 9	73 x 46m	Min 68.25 x 42m Max 82 x 50.77m	79 x 52m	Min 71.91 x 49.12m Max 88 x 56.77m
Youth U13/U14	11 v 11	82 x 50m	Min 72.8 x 45.5m Max 91 x 56m	88 x 56m	Min 76.46 x 49.16m Max 97 x 62m
Youth U15/U16	11 v 11	91 x 55m	Min 82.3 x 45.5m Max 100.6 x 64m	97 x 61m	Min 85.96 x 49.16m Max 106.6 x 70m
Youth U17/U18	11 v 11	100 x 64m	Min 90 x 45.5m Max 120 x 90m	106 x 70m	Min 93.66 x 49.16m Max 126 x 96m
Adult	11 v 11	100 x 64m	Min 90 x 45.5m Max 120 x 90m	106 x 70m	Min 93.66 x 49.16m Max 126 x 96m

Rugby Football Union pitch sizes ¹²		
Age Grouping	Recommended Dimensions without runoff but including in-goal area Length x width	Recommended Dimensions including in-goal area and runoff Length x Width
Mini Rugby U7/U8	60 x 30m	70 x 40m
Mini Rugby U9/U10	60 x 35m	70 x 45m

¹¹ Information from FA website: <http://www.thefa.com/my-football/football-volunteers/runningclub/yourfacilities/technicalstandards>

¹² Information from WRU website: <http://www.wru.co.uk/downloads/GrassPitches.pdf>

Midi rugby U11/U12	70 x 43m	80 x 53m
Senior and adult	144 x 70m	154 x 80m

Cricket Table and outfield sizes¹³

Age Grouping	Size	Recommended Dimensions Recreational Cricket	Recommended Dimensions Club Cricket
Adult (Recreational)	6 pitch	111.56 x 106.69m	111.56 x 106.69m
Adult (Recreational)	9 pitch	111.56 x 115.84m	111.56 x 115.84m
Adult (Recreational)	12 pitch	111.56 x 128.04m	111.56 x 128.04m

Other sports pitch sizes¹²

Age Grouping	Recommended Dimensions without runoff Length x width	Recommended Dimensions including runoff Length x Width
Hockey		
Mini-Hockey (7 v 7)	55 x 43m	63 x 50.7m
Senior Hockey (11 v 11)	91.4 x 55m	101.4 x 63m
Lacrosse		
All ages	100 x 55m (Men) 100 x 50m to 122 x 60m (Women)	106 x 61m (Men) 106 x 56m to 128 x 66m (Women)
Baseball		
U13	21.34 x 21.34m	73.16 x 73.17m
U16	24.38 x 24.38m	88.4 x 88.4m
Adult	27.43 x 27.43m	115.82 x 115.82m
Basketball		
All ages	26 x 14m min 28 x 15m preferred 13 x 14m Half Court	30.1 x 18.1 x 7m min 32.1 x 19.1 x 7m preferred
Tennis		
All ages	23.77 x 10.97m	34.75 x 17.07m min

¹³ Information from Sport England website: <https://www.sportengland.org/media/4444/comparative-sizes-outdoor.pdf>

Other sports pitch sizes ¹²			
Age Grouping	Recommended without runoff Length x width	Dimensions	Recommended including runoff Length x Width
			36.57 x 18.29m preferred

A2.9 Provision for football (soccer)

In the past, football pitches have been marked out using the maximum and minimum pitches sizes as outlined in the football laws. Consequently the size of pitches varies tremendously and is often adapted to fit the space available. The Football Association have now produced national pitch sizes for mini soccer, 9v9, Youth football and Adult football which are given in the table above and in FA guidance information¹⁰.

Specific design requirements for football provision are detailed in the table below.

Design requirements for football provision	
Pitch layout	<ul style="list-style-type: none"> For pitch layouts (including marking out) see FA Guide for further details¹⁰. Further information on goalposts and line marking is also provided in the FA Guide.
Run off areas	<ul style="list-style-type: none"> Run-off areas (beyond the pitch) should be free of any obstacle (including dugouts and floodlight columns) to ensure players and officials do not injure themselves by running into any fixed object Run-offs should be surfaced with exactly the same surface as the playing area.
Providing spectator areas	<ul style="list-style-type: none"> See FA Respect Programme¹⁴ which provides information about designated spectators areas, introduced in 2008. These involve zones that are designed to deter spectators from standing on the touchline or infringing

¹⁴ Information available from the FA website – see Referees Guide at <http://www.thefa.com/get-involved/more/respect/respect-resources>

Design requirements for football provision	
	onto the pitch.
Layout of multiple pitches	<ul style="list-style-type: none"> • See FA Guide for examples • There should be a minimum of six metres of clearance (three metres run-off from each pitch) between pitches to avoid player injuries. • If a spectator area is added, then this is in addition to the six metres runoff.
Junior pitches	<ul style="list-style-type: none"> • Junior (mini and midi) pitches should be laid out in multiples of two to achieve maximum use. • One adult football pitch can accommodate two mini pitches orientated across the main pitch. • Mini pitches do not require changing facilities.

A2.10 Provision for cricket

Although cricket pitches within open spaces may be provided, to be successful and sustainable the preference is for cricket facilities to be associated with a school or local cricket club, with design being carried out in conjunction with them. Stand-alone pitches within open space need to be associated with other facilities and be capable of being maintained to the required level.

Detailed guidance for requirements can be obtained from ECB guidance or the cricket club concerned, Clubs will usually require one or two pitches providing nine or preferably twelve strips to allow a full season of matches to be played on each (to sizes shown in the table). The outfield will need to be well drained, enabling cricket in the summer and other sporting activities such as football during the winter (squares themselves must be reserved solely for cricket). Other requirements may include an artificial (non-turf) strip for junior matches, cricket nets, club house with changing and social facilities, car parking, storage for equipment and machinery.

A2.11 Other Outdoor Sports Facilities

Design of certain specific sports facilities requires involvement of specialist companies from an early stage in order to determine the best technical approach and ensure preparation of a clear and comprehensive brief. It is much more likely to result in a well-designed and constructed facility that meets the needs of its users and can be easily maintained.

Information can be obtained from the relevant governing bodies and specialist organisations for the following sports:

- Tennis courts¹⁵
- Cricket¹⁶
- Bowling greens¹⁷
- Athletics¹⁸

A2.12 Changing Facilities

Whenever possible, changing facilities should be integrated into multi-functional buildings, such as schools or leisure centres. Changing rooms can also be integrated into a community building that provides a social function for a club and wider community. Stand-alone changing facilities are more expensive to build and manage. They are also more prone to vandalism as a result of lack of use during prolonged periods.

The number of changing rooms required will vary depending on the number of pitches and sports being served, with a referee's room for team sports.

A2.13 Installation of artificial 3G, 4G and subsequent generations of artificial turf pitches

¹⁵ Lawn Tennis Association (LTA)

¹⁶ England and Wales Cricket Board (ECB)

¹⁷ Sport and Play Construction Association (SAPCA)

¹⁸ The International Association of Athletic Federations (IAAF)

The technological advances in artificial grass in recent years has led to the widespread use of artificial grass surfaces for training and competitive play in rugby league, football, hockey and rugby union.

Definitions of these surfaces are provided in the table below.

3G pitch surface	In 3G turf, the pile (artificial grass 'blades') is supported by a thin base layer of sand, and by an infill of rubber crumb. The pile height ranges from 40mm to 65mm depending on which primary sport is to be played on the surface.
4G pitch surface	4G artificial grass combines the newest and most revolutionary yarn and tuft design technology to create exceptionally high quality, low maintenance pitches that meet the highest standards. 4G pitches are laid onto a shockpad and do not require sand or rubber infill.
5G pitch surfaces	5G sport surfacing is currently (2016) only a marketing tool being used by football leagues saying they have the newest 5G synthetic turf. These are usually modified from 4G or 3G pitches, but there is no defined construction method for these surfaces.

Selecting the right surface can be difficult as each sport has its own specific performance requirements and subsequent testing criteria, and the picture is further complicated by the wide range of different artificial grass products that have specialised playing characteristics. It is not possible to provide a surface that can meet the needs of all sports. Therefore it is essential that the right artificial grass surface is selected to maximise the benefit from the investment.

Given the rapidly advancing nature of artificial turf technology it is strongly recommended that an artificial turf pitch specialist is employed to assist with the design and implementation process.

Construction should be carried out by a suitably qualified company with a proven track record of pitch construction to ensure that pitches are installed to the required quality.

Technical Advice Note 16 Sport and Recreation (1998), and any subsequent revision, provides additional guidance on the planning issues related to sport and recreational facilities and the ancillary requirements that these generate.

Technical Advice Note 11 Noise (1997) provides guidance on consideration of the impact of noise generated from recreational facilities.

A2.14 Design considerations for artificial turf pitches

a) Selection of pitch type

In order to determine the most appropriate type of pitch, a number of key questions will need to be answered to determine the best location and type of construction:

- Which sports been identified as a priority for pitch use and why?
- What standard of use is proposed for each sport – casual, recreational, school / club use or regional?
- Will the artificial pitch facility replace or supplement existing provision nearby?
- Are there any long term realistic plans and aspirations for the sport or local clubs that need to be considered?
- Are there particular sites that have been identified for particular sports use and why?
- How much use will the pitch be expected to receive, in terms of frequency and total number of hours per week / month / year?

A specialist artificial pitch consultant will be able to advise on the most suitable type of pitch for the circumstances.

b) Pitch location

The design and cost of a new artificial turf pitch will be greatly influenced by the site on which it is to be built and it should be recognised that some sites are not cost effective to develop. The table below outlines the criteria that need to be considered for pitch location.

Artificial turf pitches should be located:	
Close to changing accommodation	<ul style="list-style-type: none"> Pitches require supporting facilities to be viable
On relatively flat ground	<ul style="list-style-type: none"> To reduce construction complexity and costs Will also prevent contamination of the playing surface from run-off from adjacent banking, etc.
In a sheltered location	<ul style="list-style-type: none"> Away from exposed terrain to maximise the longevity of the playing surface
Close to services (electricity and drainage)	<ul style="list-style-type: none"> Installation of services is essential and can be prohibitively expensive
With good vehicular access	<ul style="list-style-type: none"> Easy access for maintenance and emergency vehicles is essential
Away from trees	<ul style="list-style-type: none"> Roots and leaf litter can cause on-going structural and maintenance issues
Where access is good for players and spectators	<ul style="list-style-type: none"> Players, spectators and maintenance equipment should be able to access the pitch without crossing natural turf areas Mud, debris and other contaminants will all contribute to the deterioration of the playing surface
With correct orientation to the sun	<ul style="list-style-type: none"> The main playing direction is approximately north (between 285° and 20°) / south as this will minimise the effect of a setting sun on the players The inability to achieve this orientation need not preclude the construction of a pitch.

c) Other design considerations

The following table indicates other design considerations for the construction of artificial pitch facilities.

Other design considerations for artificial turf pitches:	
Boundary fence	<ul style="list-style-type: none"> FA recommended fence height on all sides of the artificial pitch is 4.5m
Gates	<ul style="list-style-type: none"> Single gate access and at least one pair of double gates should be provided to allow maintenance and emergency vehicle access. The furthest section away from the spectator entrance should have an additional single gate to aid ball retrieval
Spectators	<ul style="list-style-type: none"> Viewing areas should be included on all artificial pitches, located minimum 3m away from the touchline.
Access path	<ul style="list-style-type: none"> The access pathway to the pitch should be wide enough to ensure that players avoid bringing debris onto the playing surface.
Line marking	<ul style="list-style-type: none"> The main pitch and training lines should be tufted in during the manufacturing process
Floodlighting	<ul style="list-style-type: none"> Floodlights can extend hours of use, especially during winter months and should be considered during the design process. Design proposals should be accompanied by a lighting spill plan for the site and surrounding area, as lighting should not impact on local residents.. Conditions can be attached to planning permission to restrict hours of operation. Floodlights of 4m or over will require planning approval. Independent specialist technical advice should be sought regarding the choice and performance of the lighting system, the illumination requirements for the specific sports that will be catered for, and the management of the lighting system. In general four floodlights should be installed, one at each corner. Where pitches are illuminated, the installation of amenity lighting along access routes should be considered to increase safety for people leaving the facility after dark.

A2.15 Maintenance

Correct maintenance of artificial turf pitches is crucial to ensure longevity and the health and safety of users. All pitches have in place a maintenance schedule in line with that recommended by the manufacturer.

Pitch rejuvenation

If a surface is neglected and becomes heavily contaminated it will over compact and the drainage will be affected, reducing the performance characteristics and life of the pitch. In some circumstances the infill may need replacing through a rejuvenation process.

Floodlight Maintenance

Maintenance will need to extend to the floodlighting system, and it is suggested that following the completion of the defects liability period, a specialist floodlighting contractor is retained to maintain the system.

A2.16 Replacement Fund (Sinking Fund)

Artificial grass pitches have a life span of approximately seven to ten years depending on factors such as pitch type and quality, usage and maintenance, therefore an allowance needs to be made for replacement of the surface within this timeframe. The FA strongly recommends that a sinking fund is established for the future replacement of the surface. It is suggested that an allowance of £25,000 per annum is placed into a 'ring-fenced' sinking fund account to cover these future costs (based on 2013 prices)¹⁹.

¹⁹ Information from FA: The FA Guide to 3G Football Turf Pitch Design Principles and Layouts 2013 (Download from Google)

Appendix 3: Guidance on the design layout and maintenance of children's play provision

A3.1 Generally

This Appendix is intended to provide developers with detailed guidance on provision of well- designed and good quality play environments.

A3.2 The rationale for provision

Play is essential to children and young people's physical, social and cognitive development. Outdoor play is particularly valuable as it provides unique opportunities to experience the elements and because of the sense of well-being and enjoyment that being outdoors can bring. Access to the outdoors also gives children opportunities to move freely and run around, in contrast to the 'virtual reality' world experienced by many children today.

Play spaces also have particular social value for parents and carers of young children, as places for both adults and children to meet informally, taking away some of the pressure of individual childcare responsibilities.

A3.3 Play in the wider environment

Wherever they live, all children and young people should have easy, free access to spaces and facilities where they can play freely. Play opportunities should be located within 400m of homes, with provision of better access to and management of the public realm as important as the provision of play areas.

Play space needs to be of high quality and good design to attract children and families. Poor quality, unimaginative space in the wrong location will not be valued by the local community and is likely to fall in to disuse and disrepair.

Play space should be integrated sensitively into the wider design of the public realm, including streets designed for safe play, open space, fixed equipment playgrounds, supervised play centres, the wider countryside, and private gardens.

A3.4 The design of dedicated play space

Play space should be designed specifically for its location, using a design-led approach where the play value, landscaping, equipment and features are all embedded in the designer's thinking from the start.

This approach will produce play environments that are landscape schemes containing play equipment and features rather than more conventional 'playgrounds' dominated by equipment and bounded by fencing.

Involvement of a professional designer experienced in designing play spaces is critical to this approach. Good technical skills in landscape design and an understanding of play are both essential.

The aim in designing play spaces is not to abandon the use of manufactured play equipment but to design in a way that uses the equipment creatively, and with a keen understanding of the different ways that children need play.

A3.5 Principles for successful play area design

The table below sets out principles for successful design of playgrounds²⁰

²⁰ Adapted from Play England

A good playground should:	
1. Be designed to enhance its setting	Play equipment and features should be selected for the way they can complement and enhance their setting as well as for their play value. Knowledge of the local area should provide inspiration.
2. Be located in the best possible place	Located where children would want to play naturally – away from dangerous roads, noise and pollution, but on well used routes. Children like to feel they are away from adult oversight but there is a fine balance between pleasant seclusion and being remote and hidden away.
3. Be close to nature	Access to the natural environment is important – grassy mounds, boulders and nearby planting all add to the playful environment
4. Allow children to play in different ways	Imagination and creativity are important so include elements with no defined function
5. Allow children to play together	Successful play spaces allow children with disabilities to play alongside their non-disabled peers, while accepting that not everything is accessible to everyone
6. Be loved by the community	Successful play spaces meet the needs of both children and their communities.
7. Allow children of different ages to play together	Good play spaces avoid segregation, allowing different patterns of use throughout the week
8. Provide appropriate risk and challenge	Children need to be able to test their own abilities and skills, having opportunities to experience challenge and excitement in their play
9. Be maintained for play value and environmental sustainability	Long term maintenance and sustainability are vitally important but these should not overshadow play value
10. Evolve as the children grow	The location and layout should be considered carefully to allow the site to change as time passes.

A3.6 Cardiff Playground Provision

The Council's Draft Playground Strategy 2013-2018 uses a simple two category approach to playground classification. Developers will be guided at planning stage which level of provision is required.

- Local Playgrounds**

Equipped children's playgrounds that are provided to accommodate the needs of the local community within 400 metres of the facility. Local playgrounds will vary in scale

according to the nature of the development and include the LAP, LEAP and NEAP categories of playground defined within the FIT standard²¹. The purpose of using this wider definition is to ensure that playgrounds provided are designed less to a prescriptive formula and more to suit the needs of local children.

Provision will be assessed on the range of activities offered within the playground (or combination of playgrounds), the age appropriateness of the facility, the range of abilities catered for and the opportunities for children to play both alone (which can suit children who experience difficulties with socialising) and in groups of mixed ability.

- **Destination Playgrounds and Large Playgrounds**

Equipped playgrounds that serve local need but have enhanced features that attract users from further afield and are part of a wider range of attractions at the location. Destination playgrounds offer greater variety and choice of play opportunities and are located within accessible parks or open spaces with other family friendly recreational facilities and will be suited to large scale developments where there is a central, large scale open space provided.

A3.7 Design brief for new dedicated play spaces

Design submissions shall be for either destination or local play spaces, as advised at master-planning stage or during subsequent planning negotiations.

Play spaces should be designed and equipped to enable children of different ages and abilities to play together. They should ideally include natural site features for play combined with selected items of traditional equipment to enhance play value.

Where more than one playground is provided within a development, the playgrounds should be designed to provide variety and complimentary activities across the

²¹ FIT (Fields in Trust) Children's Play Space Standard

development, whilst ensuring that each location satisfies the minimum requirements described.

a) Location of play provision

Play provision should be located so as to be visible from surrounding properties, roads, or other users. It should not be located in an isolated area or behind properties, where it cannot be overlooked - this leads to anti-social behaviour, vandalism and can often result in the play area being removed over time.

The play area should be located within the open space in a location that minimises nuisance to local residents, in accordance with the buffer zones shown.

b) Area / extent of play provision

The size and extent of playgrounds will depend upon the age groups catered for and the number of range of play facilities within a development. The table below indicates the area / extent of playgrounds catering for different age groups.

Age range	FIT equivalent	Activity zone ²² area	Minimum distance from nearest property boundary
Local play areas			
Under 3 and 3-8	LEAP	400m ²	20m
Under 3, 3-8 and 8-14	NEAP	1000 – 1500m ²	30m
Destination play areas			
All the above	n/a		Over 30m

Where the land allocated for a new playground is very small (areas for very young children) and close to property boundaries, the developer must ensure that

²² The activity zone is the area within which the equipment is located. It should not include any grass areas for free play, but may include areas of natural play provision.

residents of surrounding properties are made aware of the proposals at outline design stage and are in agreement with its development.

c) Design

Preference will be given to imaginative designs which maximise play opportunities for children and minimise long-term maintenance implications. The design should provide a wide range of different opportunities for play, social and developmental learning, curiosity and discovery, providing an opportunity for children to use their imagination when playing, rather than being simply formulaic equipment

Site characteristics such as sloped areas and existing vegetation should be incorporated into the layout of the facility to avoid expensive alterations at a later date. Where appropriate, playgrounds should be located within a space of sufficient size to accommodate other open space functions including footpaths, seating and informal grassed kickabout space.

d) Play equipment

A wide range of play equipment serving many different ages is available. The selection of equipment will depend on location, type and age range of play area, but all equipment should:

- Be EN 1176 compliant (or appropriate equivalent standard)
- Be robust, withstanding significant use over a long period
- Be easily maintained with availability of spare parts
- Provide good play value in association with other equipment
- Have anti-tamper external fittings
- Avoid being over complex

Certain items of equipment have particular issues or cause specific maintenance problems and should be avoided or specified in a particular way to avoid future problems:

- Swings should have anti-wrap bearings to avoid future damage caused when the chains are wrapped around the frame
- Aerial runways or cableways are very popular but require a high level of maintenance input to keep them running (the bearings wear very quickly and may need replacing every 6 months)
- Flush fitted roundabouts should be avoided due to complexity and expense of repairs
- Timber equipment is not suitable for the majority of playgrounds in Cardiff due to the damp climate. Where timber equipment is used, it should be fitted with steel shoes for ground installation. If the playground is to be adopted by the council and the use of timber equipment has been agreed, a higher commuted sum will be charged to reflect the need for more frequent replacement

The Council can provide advice on individual items of equipment that have proved to have a good track record in terms of play value, durability and ease of maintenance.

e) Natural play

The use of ground modelling and natural materials (for example boulders, logs, felled trees) can add to the play value of playgrounds, but this will not replace the use of fixed equipment unless there is good evidence to support the proposal. Long term maintenance and durability always need to be considered when designing or utilising natural play features.

f) Surfacing

A number of different playground surfaces are available:

- sand-dressed safety carpet systems
- rubber wetpour
- rubber tiles
- grass matting
- play bark
- sand
- grass.

Any surfacing used must be compliant with the relevant fall heights for the equipment under which it is installed and must comply with BS EN 1177.

In order to minimise costs of repair and maintenance of safety surfacing, the selected surface is best limited to within the approved safety zone of the equipment, unless larger repair budgets are available. The Council will not adopt large continuous areas of safety surfacing.

In order to facilitate repair and maintenance of equipment and safety surfacing, the selected surface should only be used within the approved safety zone of the equipment. Large areas of safer surfacing tend to be difficult to patch repair and are costly to replace so new play spaces should avoid large continuous expanses of proprietary surfacing which generate excessive repair costs and significant long term maintenance problems for the Council. Within play areas hard surfacing is required to connect equipment as grass is subject to rapid wear. Ground graphics can be used on hard surfacing to provide added play value.

A summary of the different safety surface systems and their use is provided in the table below:

Surface type	Suitability	Pros	Cons
Sand-dressed safety carpet systems with VHAF underlays and shock pads	All equipment	<ul style="list-style-type: none"> • Attractive • Durable • Non fading • Easy to patch and repair • Ground graphics can be used 	<ul style="list-style-type: none"> • Expensive • Needs annual topping up with sand
Wetpour rubber	Not suitable – apart from under rotating items. Use only black with coloured fleck if to be adopted by Council. Use L-section precast edge to minimise shrinkage problems	<ul style="list-style-type: none"> • Can be attractive when first laid 	<ul style="list-style-type: none"> • Limited durability (probably linked to local climate) • Expensive • Shrinkage issues around joints • Repairs difficult to match • Expensive to replace • Ground graphics are problematic (shrinkage)
Rubber tiles	Not suitable	<ul style="list-style-type: none"> • None 	<ul style="list-style-type: none"> • Not durable • Shrinkage • Poor adhesion and lifting over time.
Grass matting	Use only on established turf – good for alongside or tops of embankment slides	<ul style="list-style-type: none"> • Cost effective • Unobtrusive • Good for erosion control 	<ul style="list-style-type: none"> • Not suitable for areas of high wear (eg under swings, moving items)
Bark and chippings	Presumption against use but may be appropriate in certain situations. Good vehicle access required for topping up.	<ul style="list-style-type: none"> • Attractive and versatile • Cheap to install 	<ul style="list-style-type: none"> • High level of maintenance required (removal of contaminants eg glass, needles etc) • Not suitable under moving equipment
Sand	As for bark	<ul style="list-style-type: none"> • Attractive and versatile • Cheap to install 	<ul style="list-style-type: none"> • High level of maintenance required (removal of contaminants eg glass, needles etc) • Not suitable under moving equipment
Grass	Only suitable under low equipment (refer to BS EN 1177)	<ul style="list-style-type: none"> • Cheap to install 	<ul style="list-style-type: none"> • Not suitable in areas of high wear • Requires regular maintenance (cutting and repair of worn areas)

Based on Council experience from existing play schemes the sand-dressed safety carpet system has provided the most durable, cost effective and easily

maintained surface. Although widely used, wetpour rubber has proved to have a number of problems, with surfacing often requiring replacement in less than five years, particularly on wet sites.

g) Perimeter Fencing

All or part of the play space may be fenced or un-fenced, depending on the location. Consideration should be given to whether or not the playground needs to be fenced and what the purpose of erecting a fence would be. The decision to fence or not should take into account the following factors:

- The location of the play space within the park or green space
- The proximity of the playground is close to highways and / or busy cycle routes
- Area of heavy use that are likely to attract children to cross in front of moving equipment
- Whether or not dogs are likely to detract from the use of the playground (for example - if the park is known or likely to be popular with dog walkers)

If a fence is not considered necessary, the design needs to take account of issues such as dog control or movement of children in relation to surrounding areas. In general younger children's play areas are more likely to benefit from fencing due to the added feeling of security it gives.

If a fence or barrier is considered necessary, the fencing or barrier should be selected to be low maintenance, durable, to compliment the setting and (where possible) provide play value to the site.

The table below outlines the types of fencing and barrier that can be used within playgrounds. Care should be taken to ensure that the selected boundary type complies with BS EN 1176 – paying particular attention to entrapment issues.

Type	Use	Pros	Cons
Flat top steel bar fencing	Playground boundary (dog proof) painted or galvanised finish	Attractive and durable	Expensive Needs regular repainting
Bow top steel bar fencing	Playground boundary (dog proof) painted or galvanised finish	Tried and tested Attractive and durable	Expensive Needs regular repainting
Steel post and weldmesh	Playground boundary (dog proof) various finish types (painted, galvanised, plastic coated)	Economic to install Attractive systems available	
Strained post and weldmesh (timber uprights)	Playground boundary (dog proof) galvanised with timber uprights	Cheap to install	Will require frequent replacement if timber posts are used.
Hedging	Boundary (possibly combined with post and wire fence). Non spiny non-poisonous species only. .	Natural looking Adds to play value	Expensive to maintain Will require gapping up and ongoing replacement
Log paling	Not appropriate for use (unsuitable for damp climate)	Attractive and natural looking	Rots easily Expensive to maintain and replace
Tubular barrier	Proprietary swing barriers or other barriers within the playground to prevent running in front of moving equipment	Proprietary items available	Can become a problem if attractive as a play item

h) Gates for playgrounds

If the playground is fenced consideration should be given as to how the entrances are controlled. All gates and other entrance types must be provided and installed in line with BS EN 1176 and BS EN 1177.

At least two gates should be provided for fenced playgrounds and these should open outwards from the playground to provide a means of escape in the event of bullying on the playground.

Self-closing gates must be fitted to provide a controlled closing time of 6-7 seconds to prevent slamming/crushing. Pre-fabricated self-closing gates are more durable than self-closure mechanisms added to standard gates. Gates should be a contrasting colour to the fencing to make them fully visible for all users.

Maintenance access needs to be provided for all fenced playgrounds in the form of a locked double maintenance gate for vehicular access to undertake repair or replacement of equipment. These need to be a minimum of 3m wide.

i) Planting and play

Incorporating existing mature trees and other vegetation into a play environment or providing new planting (trees, shrubs, bulbs and wildflowers), can create added play value, give an increased sense of place, and help integrate a play area into its surroundings. New planting will need robust protection to allow establishment. Positioning of planting should be carefully considered to avoid leaf litter and other debris adversely affecting safety surfacing.

j) Site Furniture

The following furniture will need to be included as part of the play area design.

- Seating – 2 no 1.8m long seats or equivalent seating for 6 people

- Litter bins – covered bins. Must be accompanied by other bins within the open space to allow disposal of dog waste away from the play area where it can cause a hazard
- Cycle racks – minimum 2
- No dogs sign – displayed at each entrance to fenced play areas
- Site information sign – giving details of site management, including name and address of playground, emergency telephone number and telephone number to contact maintenance personnel

A3.8 Inclusive play

Play spaces should feel welcoming to all children. Often social barriers to access greater than physical ones; it is important to develop an all-welcoming atmosphere. Footpaths should be constructed from a hard surface that enables access for all children throughout the year.

There are now a number of specially designed pieces of ‘accessible’ equipment popular with children of all abilities, however equipment which is specially designed for disabled children can encourage segregation so should be used with care.

Equipment that allows flexible use by a range of different abilities includes basket swings, wide slides, spring rockers with supportive seating and certain types of rotating equipment.

Equipment that can be used flexibly and is ‘non-prescriptive’ in its use will encourage a wide range of users.

A3.9 Assessing the design of playgrounds

The play area should provide a wide range of play opportunities for children, both in terms of types of play value the equipment provides (rocking, spinning, rotating etc.) and the play environment. Additional guidance is available from Fields in Trust, Play England and other play providers/companies.

Play value should be assessed for:

- (a) Site features
- (b) Equipment features
- (c) Access for all and play co-operation

The design submission should show the play area layout in simple 2D plan format, including how the new playground will be located within the public park and/or residential setting.

The following tables provide a list of activities / features that could be included.

SITE FEATURES
• Visual appeal and sense of place
• Site layout and the way it works, avoiding potential traffic clash between equipment
• Informal supervision e.g. the site is well overlooked from front doors of housing or adjacent to a well-used footpath
• Ground contouring and sculpturing
• Internal hard surfaced footpaths linking items or equipment
• Child seat (or group of seats)
• Adult seat (or group of seats)
• Appropriate safety surface(s) under equipment with forced movement
• Pedestrian self-closing gate(s) for an activity zone within a continuous fenced boundary
• Minimum 2.4m high clearance for vehicular maintenance access gate to a MUGA with a continuous high boundary fence
• Minimum 3.0m wide clear opening for vehicular maintenance gates to an activity zone with a continuous boundary fence
• Sign advising on dog control and site management, to include name and address of playground, emergency telephone number and telephone number to contact maintenance personnel
• Bicycle resting points that enable locking of bicycles
• Covered litter bins (must be seagull proof)

SITE FEATURES	
	<ul style="list-style-type: none"> Shelter e.g. a roof structure for rain or sun protection – this may be incorporated within one or more items of equipment
EQUIPMENT FEATURES	
ITEM	
	<ul style="list-style-type: none"> Rocking, per user position
	<ul style="list-style-type: none"> Springing and bouncing
	<ul style="list-style-type: none"> Rotating, single or twin user item
	<ul style="list-style-type: none"> Rotating, multi-user item
	<ul style="list-style-type: none"> Sliding, conventional slide
	<ul style="list-style-type: none"> Sliding, hand-grip, eg. fireman's pole
	<ul style="list-style-type: none"> Single swinging, per seat
	<ul style="list-style-type: none"> Gliding, e.g. aerial runway
	<ul style="list-style-type: none"> Group swinging, e.g. single point suspension swing
	<ul style="list-style-type: none"> Balancing
	<ul style="list-style-type: none"> Jumping
	<ul style="list-style-type: none"> Climbing and agility e.g. scramble nets, traversing walls, climbing boulders, rock stacks or fallen trees
	<ul style="list-style-type: none"> Agility bridges e.g. clatter, totter or suspension
	<ul style="list-style-type: none"> Crawling and hiding, e.g. short tunnels, tubes and dens
	<ul style="list-style-type: none"> Problem solving
	<ul style="list-style-type: none"> Role play
	<ul style="list-style-type: none"> Viewing e.g. platforms, towers and tumps
	<ul style="list-style-type: none"> Ball play
	<ul style="list-style-type: none"> Wheel play, e.g. space for bicycles and skate boards

ACCESS FOR ALL AND PLAY CO-OPERATION	
ITEM	
• All ability equipment e.g. nest swing, spinning bowl, high contrast colours	
• Items promoting curiosity	
• Items promoting a play challenge	
• Educational or learning feature	
• Sandpit or sandbox	
• Sand play or item to assist sand play	
• Social / group play elements e.g. group of child seats and table, group play elements on a multi-unit	
• Thermoplastic ground graphics e.g. hopscotch	
• Items generating or reflecting sound e.g. wind pipes and dendrophones	
• Tactile elements	

A3.10 Provision of informal play opportunities

Whilst the formal provision of play space is essential, it is also important to make the general environment child friendly by the provision of informal play opportunities where possible. These can range from pedestrian and child friendly street layouts

that allow children to play close to home, to incidental landscape features and the use of landscape design (for example through earth mounding, rocks and surface materials) that stimulate a sense of fun and playfulness in the general environment.

A3.11 Inspection and maintenance of children's play provision

The safety of children on their playgrounds does not depend solely upon the initial design of the site and the selection of equipment. Continued management and provision of high quality inspection and maintenance programmes are essential if play facilities are to be preserved. There is no specific legal obligation to provide inspection and maintenance for playgrounds, but the manager responsible for the site has a duty of care towards children using the playground.

New playgrounds and equipment should be carefully checked and certified post installation by an appropriately skilled registered Play Inspector for compliance with manufacturer's installation instructions and appropriate standards before being accepted. Evidence of this will be required if the site is to be adopted by the council.

Regular inspections and maintenance operations should be carried out in accordance with BS EN 1176, part 7 and in line with the manufacturer's recommendations as applicable.

Further information about the playground inspection process is provided on the RoSPA website²³.

²³ <http://www.rospa.com/play-safety/advice/inspection-maintenance/>

Appendix 4: Guidance on provision for teenagers and older children

A4.1 General

This Appendix is intended to provide developers with a clear set of guidelines for the provision and design of outdoor facilities for teenagers and older children within open spaces. It includes detailed advice on specific elements, including multi-use games areas (MUGAs), BMX and skateboard, fitness equipment, parkour and teen shelters.

A4.2 The rationale for provision

Children under the age of 12, and particularly those under 8, are usually well catered for through provision of play areas in new developments. Playgrounds add value to a development, without creating any adverse issues.

However provision for older children and teenagers is also important. Teenagers collect together and learn to relate to each other away from direct adult supervision. A group of teenagers hanging out together is often viewed with suspicion and can intimidate people, however unless places are provided for this to take place in a safe and planned environment teenagers will meet in unsuitable locations leading to a number of problems. The provision of teen facilities helps to draw young people away from unsuitable locations and it reduces opportunities for anti-social activity.

Providing places for older children can potentially be unpopular with residents, so it is important that locations are well planned and identified clearly before properties are sold. Liaison with local police and youth workers will help to determine the best locations for this type of provision and also secure commitment to the facilities.

A4.3 Types of provision

Teenage provision is often focused on ball games areas and wheeled play, which are almost exclusively used by boys. Careful design, including provision of different types of seating around the perimeter, will create a variety of social spaces for everyone to use. The types of provision covered in this guidance are:

- Teen shelters
- Multi use games areas (MUGAs)
- BMX tracks
- Skateboard parks
- Fitness equipment
- Parkour

The following paragraphs describe the range of facilities that can be provided within open spaces for teenagers.

A4.4 Teen Shelters

Teen shelters are purpose-built heavy duty outdoor seating areas which can provide a place for teenagers to meet in safety, whilst still having their own space. They often work best located adjacent to other facilities making users feel less conspicuous.

The table overleaf outlines a number of factors that should be considered when designing, installing and managing teen shelters.

Factors for consideration in the design, installation and management of teen shelters:	
Location	<ul style="list-style-type: none"> • Visible - ideally from roads (allowing supervision by police if required), but also footpaths or housing • Located a minimum of 30m from nearby residential properties • Located adjacent to other facilities (e.g. MUGAs, skateboard parks, BMX tracks, fitness equipment) • Located in a neutral area not dominated by one particular group where others may not feel welcome • Located away from young children's play areas • Use of landscape features to provide shelter from exposure (trees, mounds etc)
Lighting	<ul style="list-style-type: none"> • Sufficient ambient light should be available to allow users to see and be seen • Routes to and from the shelter should also have sufficient light • Use of existing lighting may be a way of achieving this (street lighting, car park lighting) • Shelters with inbuilt solar lighting are available but the ongoing

Factors for consideration in the design, installation and management of teen shelters:	
	running cost needs to be considered.
Accessible	<ul style="list-style-type: none"> • Connected to the footpath network • Year round accessibility is required
Surfacing	<ul style="list-style-type: none"> • Hard, easily maintained surfacing beneath shelter • Accessible to all users
Litter	<ul style="list-style-type: none"> • Large and robust litter bins nearby • Emptied regularly
Design of shelter	<ul style="list-style-type: none"> • Attractive to teenagers • Robust and well built • Can be refurbished • No timber or plastic components • Modify 'off the peg' designs with local teenagers
Artwork	<ul style="list-style-type: none"> • Collaborative artwork with users • Good for gaining a sense of ownership • Potential to reduce damage to the structure
Management and involvement	<ul style="list-style-type: none"> • Proactive management arrangements with local police, PSCOs and youth workers • Prompt reactions to anti-social behaviour are important

A4.5 Multi Use Games Areas (MUGAs)

A MUGA is a fenced, non-turf surfaced area, marked out, and an adequate size for, at least two of the following sports: tennis, netball, basketball and five-a-side football²⁴. By definition, a MUGA is used for more than one sport and the performance of the facility has to satisfy the often conflicting demands of the various sports

A MUGA can operate on a managed or unrestricted basis. Managed facilities must be pre-booked, while unrestricted ones operate on a first come, first served basis. Open access facilities are more likely to attract informal use for young people providing a place for them to congregate, whereas other facilities may focus on providing a place

²⁴ Definition from Sport England

for organised sport. Therefore critical to the success of any facility is an initial assessment of the likely use.

This guidance does not focus on larger, artificial turf sports facilities. Further information on these can be found in Appendix 2.

Not all MUGAs require planning permission as they can be installed in Council owned parks/ open spaces as an ancillary use²⁵ MUGAs proposed for non-parks land are considered as development and do require planning permission. The erection of fencing over 2.5m and / or floodlighting over 4m would not constitute permitted development and would also require planning permission. Where MUGAs do not require planning permission, it is advisable to consult Pollution Control on the protection of residential amenity (noise and lighting) and Highways where larger facilities with several pitches have the potential to attract more traffic.

a) Design and installation considerations

The following table provides a bulleted list of factors that should be considered in the design and installation of a MUGA in open space.

Factors for consideration in the design and installation of MUGAs:	
Type of MUGA	<ul style="list-style-type: none"> • Need to undertake an initial assessment of likely use: <ul style="list-style-type: none"> ○ Can the location meet the strategic and local needs? ○ What sports will be provided for? ○ What standard of performance is being catered for? ○ What are the priorities for different types / standards of use? • Thorough assessment of proposed management and operation of the facility will be required • The final proposal may not satisfy all needs, but should demonstrate that it provides the best option for the site

²⁵ Class A, Part 12, Schedule 1 of the General Permitted Development Order.

Factors for consideration in the design and installation of MUGAs:	
Location / siting	<ul style="list-style-type: none"> • Will depend on the requirements identified in the assessment: <ul style="list-style-type: none"> ○ Within school site²⁶ ○ Adjacent to Leisure / Community centres ○ Alongside car parks ○ Within parks • Must be located to deter anti-social behaviour <ul style="list-style-type: none"> ○ Good natural surveillance ○ Do not locate in hidden or inaccessible locations ○ Consideration should be given to surrounding the MUGA with a clear 'sterile area' to eliminate potential hiding places and to maintain good sightlines. • Must not cause nuisance to nearby properties <ul style="list-style-type: none"> ○ Locate at least 30m from residential property boundaries (larger sized MUGAs with more than one pitch should be further away). ○ Use landscape and mounding to limit noise, floodlight impact and create physical or symbolic boundaries • Must not be located in areas of steeply sloping or exposed ground
Access	<ul style="list-style-type: none"> • MUGAs should be well connected to access roads / footpaths so that users of all abilities can access without having to cross muddy or waterlogged areas • Access roads must be wide enough to allow maintenance and emergency vehicle access. • Where a level approach is not available, a ramp of maximum gradient 1:15 (and associated handrail) will enable access for people with pushchairs or wheelchairs.
Opening hours	<ul style="list-style-type: none"> • May have to consider restricted opening if floodlit or near to residential properties – this may be conditioned within planning consent
Fencing enclosure /	<ul style="list-style-type: none"> • MUGAs may be single or dual ended depending upon type and space available (single ended MUGA facilities tend to be used for goal practise) • Should be enclosed by durable welded fencing between 1 and 4 metres depending on surrounding use to retain balls within the enclosed area. Where play areas or residential properties are nearby the fencing should be at least 3m in height at the goal ends. • Single ended MUGA facilities may not require fencing if their use does not cause nuisance in the surrounding area. • Fencing should be visually permeable to allow surveillance and spectators.

²⁶ See Appendix 2, A2.5 Dual use facilities

Factors for consideration in the design and installation of MUGAs:	
	<ul style="list-style-type: none"> • MUGAs for 5 aside football use should have rebound fencing. Other sports may require specialist designs. • The use of rubber damping pads within the fencing should be considered in noise sensitive areas. • The colour of fencing should be selected to enhance the local environment
Gates / entrances	<ul style="list-style-type: none"> • At least 2 pedestrian gates should be provided, minimum width 1.2m, opening outwards. Alternatively chicane type access points can be used. • Double maintenance gates should be provided with a width of at least 3m. These should be wide and high enough to allow sweeping machinery and maintenance vehicles to access the playing area. • Maintenance gates should be lockable
Playing surface	<ul style="list-style-type: none"> • Surface selection with depend upon the types of sport being accommodated and whether or not any shock absorbency is required. • Standard MUGA construction would be a porous engineered macadam comprising two layers of open textured bituminous macadam on a graded stone foundation. Porous macadam surfaces may be colour coated with an approved coating system to improve aesthetics and the playing environment. • Macadam surfaces should be capable of supporting vehicles and plant during construction without causing deformation of the surface. • Synthetic turf systems may be used – these should be installed by a specialist installer²⁷. • The installation of lines should be considered carefully to avoid confusion between different sports.
Drainage	<ul style="list-style-type: none"> • MUGA surfaces should be porous and free draining to enable surface water to be removed at a rate which will prevent accumulation of water and to enable them to be used intensively, thereby reducing pressure on grass pitches • Surface run off from MUGAs must be managed to avoid exacerbating drainage on surrounding land • Construction levels should ensure that water cannot drain onto the MUGA from adjacent surfaces. • Where ground conditions are suitable, MUGA surfaces should be drained via sustainable drainage techniques.
Floodlighting	<ul style="list-style-type: none"> • Floodlights can extending hours of use, especially during winter months and should be considered during the design process. Lighting should not impact on local residents.

²⁷ See Appendix 2, A2.9 Installation of artificial 3G, 4G and subsequent generations of artificial turf pitches

Factors for consideration in the design and installation of MUGAs:	
	<ul style="list-style-type: none"> • Design proposals should be accompanied by a lighting spill plan for the site and surrounding area. • Conditions can be attached to planning permission to restrict hours of operation. • Floodlights of 4m or over will require planning approval. • Independent specialist technical advice should be sought regarding the choice and performance of the lighting system, the illumination requirements for the specific sports that will be catered for, and the management of the lighting system. • In general four floodlights should be installed, one at each corner. • Where MUGAs are illuminated, the installation of amenity lighting along access routes should be considered to increase safety for people leaving the facility after dark.
Trees	<ul style="list-style-type: none"> • Trees roots can threaten the facility itself by distorting or cracking the surface. Impact can be reduced by use of root barriers²⁸. • Overhanging branches resulting in dripping water, leaf sap and bird droppings can create a hazardous playing surface and decreased porosity. • Trees should not be located where they may compromise lighting.

b) Size of MUGA facilities

Due to the use of rebound fencing, MUGAs are generally smaller than open grass kickabout spaces. The size of MUGAs is partly dictated by location but also the likely demand and the activities accommodated. Very small MUGAs, including the use of single end facilities, may not provide sufficient recreational space in popular locations and will limit the number of people able to use them at any time.

The table overleaf illustrates the range of sizes for MUGAs based on successful facilities in Cardiff. These sizes do not include single ended facilities.

²⁸ Refer to Tree SPG

Type of MUGA	Size	Comments
Small single pitch MUGA	21 x 15m	Smallest size for dual ended facility
Medium single pitch MUGA	34 x 18m	Preferred minimum size for effective use
Large multi pitch MUGA	40 x 34m	Multi court area
3G training area	60 x 37m	Formal sport training area for comparison

c) Maintenance and management of MUGAs

The quality of management and maintenance can impact upon the success of the completed facility. Continued maintenance of a facility is important if a MUGA is to retain users and not decline, particularly its surface and lighting. The MUGA should be subject to regular inspection to ensure that it is in a safe condition.

When designing and costing a MUGA sufficient funds are required to meet the on-going costs of routine maintenance of the facility, together with the cost of replacement of the surface or other elements at the end of life. The manufacturer of the surface will be able to advise on the likely lifetime of the surface, provided it is properly maintained. Similar information should be obtained in respect of the floodlighting installation, fencing and other equipment.

Both a maintenance fund and an asset renewal fund should be established as soon as the new facility is in use, in order to ensure that sufficient funds are available to replace the surface when necessary.

Maintenance of surface

The maintenance of any synthetic sports surface is of vital importance if it is to remain consistent in play, good to look at, permeable (if appropriate) and long

lasting. The contractor upon completion of the project should provide full maintenance instructions. The contractor's guarantee will usually be conditional on the recommended maintenance requirements being carried out with reasonable diligence.

The precise maintenance requirements will vary according to the type of surface and the particular product and guidance should be sought from the contractor/manufacturer²⁹.

Floodlighting Maintenance

The maintenance of the floodlighting installation is of vital importance if it is to continue to meet the performance standards set at the design stage over its working life. The maintenance will include routine work on all the associated electrical services, cleaning of fittings and the correct adjustment of them to maintain the 'aiming angles' set up during final commissioning.

A4.6 BMX Tracks

BMX racing is a type of off-road bicycle racing on purpose-built off-road single-lap race tracks. There are two types of BMX track - Race Tracks and Pump Tracks. Full size BMX race tracks will usually be 300-400 metres long and are beyond the scope of this design guide.

Pump Tracks are non-racing tracks that are designed and built for small areas or for those on a tight budget. A pump track is a progressive bike course that can take many shapes or sizes, that uses an up and down 'pumping' motion to propel the bicycle forward instead of pedalling. They are typically shorter and narrower than standard BMX race tracks with a circuit of rollers, berms (banked corners) and jumps, that usually forms a circuit so that riders can keep on going.

²⁹ Detailed maintenance guidelines for MUGA surfaces are included in the Codes of Practice for the Maintenance of Sports Surfaces, published by the Sports and Play Construction Association and available on their website, www.sapca.org.uk.

BMX Pump Tracks are ideal for beginners and are safe to ride for all ages and skill levels. They can be used to start building up BMX biker skills, and the circuits can often be used with skateboards, rollerblades, scooters and mountain bikes.

Design and construction of BMX tracks is a specialist skill and a suitably qualified BMX designer should be employed in order to produce a track that is both safe and works effectively. RoSPA has written a definitive guide to the installation and maintenance of BMX tracks³⁰.

The table overleaf provides information about the factors that need to be considered when designing or installing a BMX pump track facility.

Factors for consideration in the design and installation of BMX pump tracks:	
Location / siting	<ul style="list-style-type: none"> • Tracks may be located within or adjacent to school premises, leisure or community centres, car parks or within parks. • They must be located in a position that allows good natural surveillance in order to deter anti-social behaviour. Inaccessible or hidden locations with little surveillance should be avoided. • The location of a BMX tracks within parks should be sympathetic to the surroundings and any adjacent infrastructure, particularly residential development. • Due to noise and visual disturbance they should be located they should be located at least 30m, preferably more, from the boundary of the nearest residential property.
Access	<ul style="list-style-type: none"> • BMX tracks are used primarily by young people and should be located to allow them to be reached on foot or other sustainable forms of transport. • Provision should be made for emergency vehicles to gain access relatively close to the facility
Track surface	<ul style="list-style-type: none"> • Track surface to be constructed with a compacted stone sub bases with limestone or tarmacadam surfacing. • Use of tarmacadam surfaced berms and start hills reduces wear and decreases rainwater erosion, resulting in a lower level of maintenance. • The track may be contoured to fit the lie of the land and to blend in with the landscape. •

³⁰ BMX Tracks Safety and Planning Guide available from <http://www.rospa.com/play-safety/resources/publications/>

Factors for consideration in the design and installation of BMX pump tracks:	
Health and safety	<ul style="list-style-type: none"> • Tracks should be designed for single direction use and be ROSPA compliant. • Following completion the track should be inspected by a qualified safety inspector, such as ROSPA, to ensure it reaches the required safety standards. • Signage giving safety and other information should be located close to the track.
Maintenance	<ul style="list-style-type: none"> • Although simple in design, frequent track maintenance is still needed to provide for a safe operation. • BMX tracks can rapidly deteriorate if regular maintenance is not carried out

A4.7 Skateboard Parks

A skateboard park can vary in scale from a few pieces of individual equipment to a larger integrated facility. The aim of any design is to create a challenging and exciting environment from beginners to experienced skateboarders.

Design and construction of skateboard parks is a specialist skill and only a specialist skateboard company should be employed in order to produce a facility that is both safe and works effectively. A professionally designed skatepark that meets the needs of the community, rather than an “off the shelf” solution, is the best way to ensure a skatepark meets the demand and remains a well-used recreational facility over a long period. Liaison should also take place with potential users during the design process.

A good skate park is in a location that is easy to find, is known for its specific design characteristics and provides good place for social interaction.

The table below provides information about the factors that need to be considered when designing or installing a skate facility³¹.

³¹ Further information on the design, installation and management of skate parks can be found from <http://www.skateparkguide.com> and <http://publicskateparkguide.org>

Factors for consideration in the design and installation of skate parks:	
Location siting	<ul style="list-style-type: none"> • Skate park facilities are best located in central and visible locations, combined with other facilities such as leisure centres, MUGAs, fitness areas, or adjacent to schools and car parks. • The location of a skateboard park should be sympathetic to its surroundings and any adjacent infrastructure, particularly residential development. • Due to noise and visual disturbance they should be located at least 30m from the boundary of the nearest residential property, preferably more. • ROSPA recommends that noise levels at surrounding properties should not exceed 55 decibels. • Skate parks should be separate from other play areas, and with sufficient space around to avoid risks to the general public • Individual skaters often use a skate park for long periods, therefore location near facilities such as toilets and refreshment outlets would be beneficial. • Access for emergency vehicles should be available.
Materials	<ul style="list-style-type: none"> • A skate park, made up of individual ramps (fabricated from wood, steel or other materials) should only be considered for locations such as unused basketball or tennis courts - these types of ramp structures are for short term use only. • A concrete park offers a permanent and virtually maintenance-free solution which the majority of skaters prefer.
Size	<ul style="list-style-type: none"> • Minimum size for an integrated purpose built skate park is 1000m², preferred size 1500m² • Smaller skate parks with lots of interest and challenge will be more popular than an unimaginative large skate park
Users	<ul style="list-style-type: none"> • Skate park facilities can attract a lot of people and may need to operate at a high capacity, particularly during peak hours after school and during summer. • Facilities should be designed to meet all skill levels • There should be an area within the skate park where users can leave their belongings
Design	<ul style="list-style-type: none"> • Skate park design should combine a mix of street elements (e.g. stairs, rails) and transition elements (e.g. half pipes, bowls) • Each skate park should have a unique, signature element – the defining characteristic that users can use to identify the facility as a unique, one-of-a-kind facility. Design should only be carried out by a specialist.
Surveillance	<ul style="list-style-type: none"> • It should be easy to see the activity happening within the skate

Factors for consideration in the design and installation of skate parks:	
and spectators	<p>park from certain vantage points.</p> <ul style="list-style-type: none"> • Seating should be provided within the perimeter of the skating area for people using the park and outside the active area for spectators
Fencing and boundaries	<ul style="list-style-type: none"> • Boundary treatments should be considered on a site by site basis. Fencing should be avoided if possible
Health and safety	<ul style="list-style-type: none"> • Injuries usually are caused by unexpected falls or due to collisions between high-speed and low-speed, or experienced and non-experienced users in common areas. These can be minimised through use of specialist designers. • Following completion of construction a post installation inspection from a suitably qualified body such as RoSPA should be obtained to ensure that all safety standards are met. • Skateboard parks will require regular maintenance (minimum once a week) and an independent annual inspection of the site.
Maintenance	<ul style="list-style-type: none"> • Good maintenance is essential to keep the skate park safe and welcoming. • Regular litter removal is essential

A4.8 Outdoor fitness equipment

Well located and appropriate outdoor fitness equipment can be extremely well used and an important addition to an open space. With fitness being increasingly important, outdoor fitness equipment can play a significant role and provides a healthy outdoor alternative to an indoor gym.

There are two types of equipment; fixed and moving. Examples of fixed equipment include parallel bars, sit up benches, chin-up bars. Examples of moving gym equipment include 'lat' pull down and chest press, rowing machine, cross trainer, bike.

The table below provides information about the selection and layout of fitness equipment in open spaces.

Factors for consideration in the selection and installation of outdoor fitness equipment:	
Location / siting	<ul style="list-style-type: none"> • Fitness equipment can be sited to form a trail along a recreational route, or grouped together with a cluster of outdoor exercise stations forming an outside gym. • Individually sited pieces of equipment are rarely successful. • Fitness equipment is best linked to other recreational facilities eg adjacent to pitches, or other facilities such as skateboard parks or MUGAs. • When sited with teen shelters or more challenging equipment, fitness equipment can provide a good focus for teenage users.
Materials	<ul style="list-style-type: none"> • Equipment needs to be robust, built from heavy gauge steel. • Visual appearance is important to attract people to use the equipment.
Surfacing	<ul style="list-style-type: none"> • Fitness equipment should be installed on a durable surfacing as the area receives considerable wear. • When placed directly onto grass rutting and erosion occur, often making the equipment inaccessible.
Users	<ul style="list-style-type: none"> • Fitness equipment is usually intended to be used by people over the age of 14 and over 1.4m in height. • Products of this type are not suitable for children, although there is some equipment specifically designed for younger users. • Unless designed for children, fitness equipment should not be installed inside an area that is dedicated for play by children under the age of 12 years.
Health and safety	<ul style="list-style-type: none"> • Fitness equipment should comply with EN16630:2015 the standard for 'Permanently Installed Outdoor Fitness Equipment'. This supersedes DIN79000 and PAS888. • Signage should be installed to instruct the users how to use the equipment effectively and safely.
Maintenance	<ul style="list-style-type: none"> • Fixed equipment requires very limited maintenance. • Moving equipment needs to be well designed and built by companies with a good track record able to supply replacement parts (durability is vital; equipment that breaks down regularly is rarely used).

A4.9 Parkour

Parkour or free-running, is an activity that uses a combination of running, jumping, vaulting and climbing to move freely from A to B as efficiently, quickly and safely as

possible, with help from obstacles in the environment. It focuses on developing the fundamental attributes required for such movement, including strength, fitness and balance. Parkour involves a number of movements, including precision jumping, landing, swinging and rotating, vaulting and wall-running.

Parkour can be practiced by people of all levels of ability providing everything from simple balance and coordination challenges though to high end complex movement. It is seen as an activity which requires a lot of skill. There are growing numbers of organised parkour groups across the country and it is seen to offer many benefits.

Parkour uses elements found in the environment eg walls, fences, posts and other obstacles. Specifically designed prefabricated parkour units, usually fabricated from concrete and steel, may be used to create a parkour training facility which can make a positive use of an existing space.

Design and construction of a parkour training facility requires input from a company or organisation with specialist knowledge of parkour, in order to achieve a suitable layout, with the right level of challenge and safety³².

The table below provides information about the development and layout of parkour in open spaces.

Factors for consideration in the selection and installation of parkour equipment:	
Location / siting	<ul style="list-style-type: none"> • Specific parkour facilities can be designed into an open space. • Locations next to schools or other teen facilities (MUGAs, shelters, fitness areas, skateboard parks) will help to maximise use and improve informal surveillance. • Locating parkour where teenagers can use the facility to demonstrate their ability, alongside other challenging equipment and seating can add to creating a hub for teenage provision.

³² For further information about parkour visit <http://www.freemove.co.uk/>

Factors for consideration in the selection and installation of parkour equipment:	
Surfacing	<ul style="list-style-type: none"> • Surfacing under Parkour should comply with BS EN 1177 • For exact specification please refer to the relevant British Standards and individual supplier information. • Playground safety surfacing may be used for tall elements – but attention should be paid to the height of the equipment (maximum 3m)
Health and safety	<ul style="list-style-type: none"> • There is currently no specific standard for Parkour Training Facilities (although a British Standard for Parkour is proposed (BS10075), but the recommendations within BS EN 1176 and 1177 can be used as guidelines for all surfacing specifications and freespaces. • Signage needs to be located close to the equipment to provide basic instruction and safety information.

Appendix 5: Guidance on provision of allotments and community growing areas

A5.1 Generally

This Appendix is intended to provide developers with a clear set of guidelines for the provision and design of allotments and community growing areas on new development sites.

A5.2 The rationale for provision

Growing food has a wealth of benefits for both physical good health and mental well-being. In recent years there has been a resurging interest in growing as an activity to promote health and wellbeing and to provide a source of locally grown food. New developments provide an opportunity to create new provision, ranging from statutory allotment provision to community growing sites, which can both have a positive impact on general population health and wellbeing as well as developing a sense of local community in the new development.

A5.3 Types of growing provision

a) Allotment sites

Allotments are areas of dedicated growing land divided in to small plots that are leased to local people for growing purposes. Most allotment sites in Cardiff are owned by Cardiff Council, although private allotment sites have existed in the past and some local Community Councils also manage their own allotments.

Plot holders pay a rental payment for an annually renewable tenancy for their plot. Allotment legislation provides a legal framework for the management of allotment sites, which can be statutory (acquired for the purpose of allotment growing) or non-statutory / temporary (acquired for another purpose but in use for allotment growing). The implications of allotment legislation are set out in recent Welsh Government Guidance on allotments and community growing³³

³³ <http://gov.wales/docs/dra/publications/160321-guidance-allotments-gardening-projects-en.pdf>

In Cardiff, the waiting list for council run allotment sites is managed in a single database for the whole city. Most allotment sites have a local Allotment Association. These are voluntary bodies that represent the individual plot holders. Some Associations in Cardiff have taken a degree of management responsibility from the Council for allotment management, in return for a payment of part of the income from their site. This allows small scale repairs and day to day management of the site to be run at a local level, whilst the major repair work and more strategic issues are dealt with across the city by the Allotment Service.

The National Allotment Society provides additional information about setting up and managing allotment sites³⁴.

The table below outlines the design and management considerations that need to be taken into account when developing a new allotment site.

Factors for consideration in the development of new allotment provision:	
Level of allotment provision	<ul style="list-style-type: none"> • Strategic development sites only – one 40 plot allotment should be provided per 1800 housing units. • Non-strategic sites – if provision is made the allotment will form part of the overall open space allocation within the development. This will need to be agreed with the Council at an early stage of planning the development.
Area of site and plots	<ul style="list-style-type: none"> • As a guide, a 40 plot allotment site would be around 1 hectare in area • A range of plot sizes should be provided as follows: <ul style="list-style-type: none"> ○ 15% 250 square metre plots (full size) ○ 75% 125 square metre plots (half size)

³⁴ <http://www.nsalg.org.uk/>

Factors for consideration in the development of new allotment provision:	
	<ul style="list-style-type: none"> ○ 10% of the site should be laid out as raised beds no wider than 2m with a 1.5m path between each bed. <p>The majority of plots need to be at least 125m² in order to allow for good horticultural practise with a proper crop rotation. Very small plot sizes (under 125 square metres) allow new allotment holders and people with disabilities to experience allotment gardening but most first time gardeners request a larger plot after one or two seasons.</p>
Accessibility	<ul style="list-style-type: none"> • The allotment site should be level and accessible • The site should be located with good access to public transport • Accessible parking should be available on or off the site, but not adjacent to individual plots • Provision should be made for cycle parking within the allotment site boundary • Internal access to plots should be provided through hard surfaced access (tarmac construction) minimum 3m width with appropriate measures taken to ensure drainage from roadways does not impact on the rest of the allotment site. These are primarily for pedestrian access to plots and the layout should discourage car use within the allotment site.
Quality of provision	<ul style="list-style-type: none"> • All plots should be topsoiled to a minimum depth of 450mm with Grade 1 topsoil supplied in accordance with BS3882: 2015 (or most recent update) • The allotment site should be free from invasive non native species (see Appendix 7) • All plots should be free from shading by adjacent

Factors for consideration in the development of new allotment provision:	
	trees/ building / hedges etc
Security	<ul style="list-style-type: none"> • The allotment site should be secured with galvanised or powder coated steel palisade security fencing, minimum 1.8m high, or an alternative such as vertical bar or weldmesh fencing where this provides sufficient security. • Access to the site should be via a lockable vehicle access gate with a restricted profile padlock • Access to the site should be via a lockable vehicle access gate with a restricted profile padlock • The number of keys to the padlock should be double the number of plots on site
Facilities	<ul style="list-style-type: none"> • A community building or store should be provided • Water supply should be provided to a single stand pipe close to the community building • Composting toilet facilities should be provided <p>Sheds on plots are usually provided by the allotment holders and removed after their tenancy has elapsed. Centrally managed sheds are difficult to manage and would not be advised.</p>
Management and aftercare	<ul style="list-style-type: none"> • Appropriate measures should be put in place to manage the allotment site after completion.

b) Community growing sites

Community growing projects are set up and run by local people who want to grow food for their own use and benefit the wider community. These are normally managed collaboratively and there is no single model for laying out or managing such facilities. Most community growing sites are open to anyone who wants to join and they do not have waiting lists.

Details of how to set up and manage a community growing site can be obtained through the Community Land Advisory Service³⁵ or the Federation of City Farms and Gardens³⁶.

Land that has been allocated for community growing purposes is often difficult to develop while a new development is being implemented. Community growing areas may be allocated as part of the overall open space allocation, but if these do not materialise the land should be incorporated back into the open space layout to avoid open space deficiency in the future.

³⁵ <http://wl.communitylandadvice.org.uk/>

³⁶ <https://www.farmgarden.org.uk/your-area/wales>

Appendix 6: Adoption process for open space

A6.1 Generally

The detailed layout of open space to be adopted by the Council should be agreed with the Parks Service as part of the planning process to ensure an efficient adoption can take place.

A6.2 Early adoption of green space

Early adoption of green space within developments will be encouraged to avoid the problem of over compaction due to use of the green space area for storage / compound during development and increase the attractiveness of the development for potential purchasers.

Early adoption will require a basic layout to be completed by the developer to the satisfaction of the Council with subsequent funding at a later stage of the completion of the development to be transferred to the Council to allow completion the open space layout in line with the needs of the newly established community.

A6.3 Adoption process

a) Open space layout

The following applies to all open spaces and areas of green infrastructure to be adopted by the Council. Where the land is not to be adopted, and will instead be maintained by a management company, trust or other body many of the same principles will apply, although compliance with the requirements will be the responsibility of the successor body.

All works to open space should be carried out in accordance with the approved details and, if dedication of the open space to the Council is to be sought, to the satisfaction of the Council's Parks Services Division. Where no specification is provided for a specific operation, the relevant British Standard should apply.

Where the Council has agreed in principle, to accept the adoption of an open space or GI, the developer will obtain the written approval of Parks Services for the works carried out. Failure to notify the Council and obtain written approval may result in abortive works and the requirement for operations to be repeated.

The Developer should notify the Council at commencement of the open space works and both commencement and completion of the stages listed below. The Council will provide written approval for each stage once works have been completed to a satisfactory standard.

- site clearance and regrading
- ploughing/ripping and installation of drainage
- top soiling
- final cultivation and seeding
- completion of planting
- hard landscape construction
- play area construction

The owner should obtain all the necessary consents for laying-out of the GI / POS and will carry out the work in accordance with the consents and any requirements of current Health and Safety Legislation including but not limited to the Construction (Design and Management Regulations)

b) Practical Completion

Once construction of each phase of the open space has been substantially completed the developer should arrange for the Council to inspect the site and agree implementation of any remedial works required to achieve compliance with the drawings and specifications.

Following inspection the Council will issue a Certificate of Practical Completion or provide a written schedule of defects and matters outstanding to the

developer. Once satisfied that all works have been completed to the agreed standard the Council will issue a Certificate of Practical Completion.

In some circumstances the Council may provide a Certificate for part of the open space or individual elements.

c) Maintenance Period

The developer should maintain the open space and other green infrastructure to the standards set out in the specification and Green Infrastructure Management Plan/Strategy for a minimum period of twelve months from the date of the Certificate of Practical Completion. This will include regular maintenance and repair / rectification of all defects arising due to vandalism, breakage, defects in materials and construction

During this period the developer should ensure that open space is available to the public at all times unless these are properly closed off for health and safety reasons during the carrying out other work on the development.

d) Final Completion and Transfer

On completion of the twelve month maintenance period the developer will arrange for the Council to inspect the open space and other green infrastructure and agree implementation of any remedial works required to achieve compliance with the drawings and specification, to ensure that it is suitable for transfer

Once any defects identified by the Council have been completed the Council will re-inspect the site. Once satisfied that these have been completed to the agreed standard the Council will issue a Certificate of Final of Completion subject to receipt of the following:

- Payment of the agreed commuted sum updated for RPI from the date of the original calculation

- Provision of 3 copies of a site plan at 1:1250 scale with north point and a red line delineating the boundaries of the site, and identifying ownership and responsibility for maintenance of all boundary structures. No boundary structure, fence or obligations to repair these should be included unless the boundary structure is built for the exclusive use of the open space.
- Provision of the following to enable the Council to create an asset record for the Open Space for maintenance purposes
 - As built plans, technical details and design specifications for all elements in Autocad and PDF format and three paper copies. As built plans to be based on survey of site following completion of scheme.
 - Suppliers details, maintenance schedules and health and safety information where relevant for play equipment, site furniture and other structures
 - A schedule of quantities for hard surfaced areas, grass, trees and other planting, play equipment, site furniture, fencing and other elements to allow asset records to be created by the Council
 - Existing and proposed services above and below ground level within or adjacent to the area being adopted
 - A conveyancing plan showing all areas of Public and Private land ownership within the development including grass, hedges and trees clearly identifying responsibility for maintenance

e) Non-completion or Delayed Completion of new Open Space

Any new open space or other green infrastructure works should be carried out by the developer to the timescales agreed within the Section 106 Agreement or Planning Conditions unless otherwise agreed in writing.

Should the developer fail to complete the open space or other green infrastructure works in accordance with the specifications and drawings approved by the Council by the deadline for completion of work, the Council

may give reasonable notice to the developer of two months after the deadline has passed requiring the work to be completed.

In the event of the developer failing to carry out the remedial works agreed the Council may access the land with contractors and carry out any remedial works with the cost of doing so including fee time being due from the developer to the Council on demand.

Appendix 7: Treatment of invasive non-native species on development sites

A7.1 Generally

For any planning application, and prior to the commencement of development or remediation, the developer must carry out the following.

1. Site Assessment

- A detailed survey of all invasive species on site. This should extend beyond the site boundary by 10-20m wherever possible if it is suspected that invasive species are present that may spread onto the main site. Treating invasive species on a development site is of limited benefit if contamination from neighbouring sites is likely to cause the problem to reoccur.
- For Japanese Knotweed, the survey must include the rooting zone (up to 7m) around a Knotweed stand (measured from the perimeter above ground stems).

Given its invasive nature and potential impact on properties a knotweed survey should extend 20m into adjacent sites. This is particularly important on developments adjacent to river banks and open space.
- The survey should be carried out by an appropriately qualified holding accreditation, such as those listed below.

2. Invasive Species Management Plan

The survey should be submitted to the Council along with an Invasive Species Management Plan. This should include;

- A detailed plan showing location and extent of invasive species
- A written proposal for the treatment and disposal of contaminated soil and vegetation from invasive species, including type, frequency and period of treatment (a programme of treatment).
- Details of the contractor carrying out treatment work, The contractor must be some or all of the following :

- accredited under the Basis Advanced Contractor Certification Scheme (BACCS) (essential)
- A certified member of the Amenity Assured Scheme (essential)
- Property Care Association (PCA) approved Invasive Weed Group (optional)

For Japanese Knotweed additional information is required including:

- A detailed plan showing location within the site and on adjacent sites
- A detailed plan showing areas of treated or buried Knotweed, including any removed stems
- Confirmation of location for off-site disposal of knotweed in accordance with the Environmental Protection Act 1990 disposal of controlled waste
- Detailed treatment programme for knotweed, including type and frequency of treatment, and period treatment is to be carried out on or adjacent to the site, including proposals to control spread of any invasive species identified in the survey that could impact on the sale of the developers houses

3. Implementation of Invasive Species Management Plan

The developer or their approved contractor should notify the Council of prior to commencement of the weed control of invasive species carried out in accordance with the approved programme, to enable liaison between the contractor and Council inspector. Where Council involvement is required a fee may be charged.

Where a developer or their appointed contractor fails to carry out weed control in accordance with the Invasive species Management Plan, the period of control will be extended. In exceptional circumstances the Council may step in to carry out weed control and obtain costs from the developer.

For any land due to be adopted by the Council, the developer remains responsible for control of invasive weeds until final adoption has been completed, or beyond in the case of measures set out in the invasive species

management plan. By certifying that the agreed treatment will be carried out, this should avoid delays in adoption.

4. Additional Notes on treatment of Japanese Knotweed

If knotweed is identified growing within 7m of a property it is likely that a mortgage lender may refuse funds without an approved 10 year insured guarantee and treatment plan by an accredited invasive weed control contractor.

Where there is Japanese Knotweed on site, no land (including open space, highway landscape or other green infrastructure) will be adopted by the Council for maintenance without provision of a 10 year treatment plan meeting the above requirements. The same is applicable to treatment of knotweed on Council land within 20m of the development boundary and identified in the invasive species management plan where it has a potential impact on houses. The developer will remain responsible for carrying out (or arranging a qualified contractor to carry out on their behalf) treatment of knotweed over this period. Treatment should include:

- a treatment period of 3 years in order to bring knotweed under control
- a further period of 2-3 years to revisit the site in order to treat any regrowth
- the remaining part of the 10 year contract requiring the weed control contractor to attend site to carry out treatment following contact from a resident.

This is to ensure that residents buying or selling properties can obtain a mortgage.

The developer shall provide the Council with contact details and a copy of the contract with the approved contractor prior to adoption. The Council will not accept for adoption any land containing buried knotweed, unless otherwise agreed in writing

Where knotweed is located on Council owned land adjacent to the development site, the developer shall provide written evidence that an appropriate membrane has been installed in accordance with approved guidance to prevent spread of knotweed into the development site.

A7.2 Pesticide use generally

The Council's requires the use the safest pesticides currently available and only those pesticides which are listed in the publication –The UK Pesticide Guide which is updated annually and lists all the approved pesticides and details how and where they can be used.

Appendix 8: Planning Checklists

The following checklists can be used as an aid primarily to guide Planning officers in considering the design of the elements listed below but may also be used to remind prospective planning applicants of the information that they may need to provide with their application.

- Open space protection
- Open space provision
- Design and layout of open space
- Design, layout and management of formal sports provision
- Design layout and maintenance of children's play provision
- Design layout and maintenance of teen provision
- Design layout and maintenance of allotments and community growing areas

Planning Officer's Checklist – Open Space Protection	Yes	No	n/a
1. Is the proposed development likely to result in a loss of existing functional open space			
2. Has an assessment of existing amounts and types of functional open space within 1500m of the site been carried out			
3. Has an assessment of existing population within 1500m of the site been carried out			
4. What are the characteristics of the open space to be lost. Do they have : <ul style="list-style-type: none"> city wide importance local importance in terms of functional provision and what type visual, leisure or other amenity benefits listed in 4.3.3 heritage or nature conservation value arboricultural value 			
5. Has a quality value assessment been carried out on the open space			
6. Have compensatory facilities been considered and what characteristics will these provide			

Planning Officer's Checklist – Open Space Provision	Yes	No	n/a
General			
1. Is there a requirement for functional open space as part of this development			
2. Is functional open space being provided on site or an off-site contribution being made in line with the Planning Obligation SPG			
3. Based on the number of dwellings, what quantity and type of open space provision is required (or off-site contribution), calculated from the figures set out in the Planning Obligation SPG			
4. Has an assessment of functional open space within 1500m of the site boundary been carried out to establish existing levels and quality of the formal, informal and play provision			
5. Has an assessment been made of the types and amount of open space provision needed to serve the new population (taking into account			

Planning Officer's Checklist – Open Space Provision		Yes	No	n/a
existing provision off-site)				
6. Does the amount, type and location of the functional open spaces being proposed meet the requirements above				
Planning Officer's Checklist – Open Space Design and Layout (Page 1)		Yes	No	n/a
Design and Layout of Open Space				
1. Use of Landscape Architects and other qualified personnel				
Have suitably qualified landscape architects (along with arboriculturists, soil scientists, ecologists as required) been employed from an early stage to advise on the location and design of open spaces				
2. Key design elements for open space				
Have the following elements been considered				
<ul style="list-style-type: none"> Open space design integrated from the start, prior to determining layout of buildings, to establish best locations of a suitable size 				
<ul style="list-style-type: none"> Central or visible position, or most suitable location in terms of topography and surrounding land use, allowing open space to form to a focal point and allow good access by sustainable transport 				
<ul style="list-style-type: none"> Large enough and of a suitable shape to accommodate a range of recreational functions and required buffer zones to houses. Able to offer multi-functional use with sufficient space for formal recreation, informal recreation, younger children's play and teen provision as required 				
<ul style="list-style-type: none"> Forms part of a green network of interconnecting spaces, avoiding isolated spaces surrounded by roads 				
<ul style="list-style-type: none"> Front of houses face onto open space, providing good surveillance, avoiding spaces hidden by tall back garden boundaries 				
<ul style="list-style-type: none"> Key functions e.g play and teen areas, sport, footpaths following desire lines, placed in best locations, taking into account design characteristics and surrounding land uses 				
<ul style="list-style-type: none"> Resilience to climate change, with primary focus on providing recreation, with flood mitigation and SuDS functions secondary 				
<ul style="list-style-type: none"> Retention and integration of natural site features to provide character 				
<ul style="list-style-type: none"> Sustainable design, using durable materials and avoiding expensive maintenance operations. Access for maintenance vehicles provided 				
<ul style="list-style-type: none"> Designed to be accessible and to cater for a number of age groups and people with disabilities 				
3. Other design features for open space				
Have design features been considered in accordance with Appendix 1				

Planning Officer's Checklist – Open Space Provision		Yes	No	n/a
• Footpath widths, materials and gradients fit for purpose, in accordance with section A1.2				
• Use and design of fencing and gate fit for purpose, in accordance with section A1.3				
• Sufficient seating provided to allow use of open spaces by residents in accordance with section A1.4				
• Number, location and type of bins in accordance with section A1.5				
• Planting details provided in accordance with section A1.7				
• Levels and contours of proposed open space and surrounding properties / roads designed to achieve open space which is both usable and can be maintained, in accordance with section A1.6				
Planning Officer's Checklist – Open Space Design and Layout (Page 2)		Yes	No	n/a
• Open space designed to be free draining with areas for discharge of water as necessary, and to avoid issues with flooding of infrastructure, in accordance with section A1.6				
4. Other information to be considered during design process				
Has consideration been given to the following				
• Are there any Council owned trees within or adjacent to the site that are likely to be affected by the (section 8.6)				
• Has the required assessment and protection measures for these been set out, and mechanisms put in place to monitor protection of trees during construction				
• Have surveys for non-native invasive species been carried out, both within the site and on neighbouring sites, in accordance with advice set out in section 8.7 and Appendix 7				
5. Information to be provided by applicant on proposed open spaces				
Has the information below been provided for planning purposes (where appropriate)				
a) Survey information				
• Arboricultural Assessments and tree protection plans				
• Ecological surveys				
• Soil Resource Survey and Plan				
b) Removal and retention of existing site features				
• Vegetation including trees to be removed				

Planning Officer's Checklist – Open Space Provision	Yes	No	n/a
<ul style="list-style-type: none"> • Presence of any non-native invasive species on or within 10-20m of the site, including details of treatment / disposal 			
<ul style="list-style-type: none"> • Protection details for vegetation to be retained during development - trees, woodlands, hedgerows, grassland and the open space as a whole during the construction period (as part of the Green Infrastructure Construction Protection Plan (GICPP)) 			
<ul style="list-style-type: none"> • Details of existing hard landscape elements (fences, walls, paving, bridges, buildings etc.) to be retained 			
<ul style="list-style-type: none"> • Materials and structures including foundations to be removed from the open space, if appropriate 			
<ul style="list-style-type: none"> • Environmental remediation works necessary to make the open space suitable for public use, including treatment of contaminated areas, if appropriate 			
<ul style="list-style-type: none"> • Existing and proposed services plus the full extent of the associated easements or wayleaves 			
c) Ground levels and preparation			
<ul style="list-style-type: none"> • Ground modelling, with existing and proposed levels of the open space along with that of adjacent housing or highways, including sections where appropriate 			
Planning Officer's Checklist – Open Space Design and Layout (Page 3)	Yes	No	n/a
<ul style="list-style-type: none"> • Details of topsoiling, cultivation and horticultural works 			
<ul style="list-style-type: none"> • Details of ground preparation including ripping and subsoiling to achieve free draining open space suitable for regular functional use (in accordance with Soil Resource Plan where provided) 			
d) Drainage to provide free-draining open space			
<ul style="list-style-type: none"> • Details of mechanisms for drainage of excess water from an open space to an external drainage point or collection within a SuDS system, including installation of a land drainage system where required to allow both winter and summer use of the open space 			
e) Soft Landscape Works			
<ul style="list-style-type: none"> • Details of tree, shrub and other planting, seeding or turfing, including layout, species, sizes, planting distances, ground preparation and planting details 			
<ul style="list-style-type: none"> • Details of enhancement of wildlife habitats and green infrastructure 			
f) Hard Landscape Works			
<ul style="list-style-type: none"> • Layout of hard surfacing and enclosure, including footpaths and car parking, fencing, knee rails and pedestrian / vehicle access gates 			
<ul style="list-style-type: none"> • Construction details of hard surfacing and enclosure (only on sites to be Council adopted) 			
<ul style="list-style-type: none"> • Details of site furniture and other amenity features : seats, litter bins 			

Planning Officer's Checklist – Open Space Provision	Yes	No	n/a
picnic benches signs, artwork, other landscape structures			
<ul style="list-style-type: none"> Detailed design and construction of children's play areas and teen areas, including equipment and surfacing 			
g) Proposed Services or easements			
<ul style="list-style-type: none"> Existing or proposed services or easements identified within the proposed open space 			
h) Timescale for implementation			
<ul style="list-style-type: none"> Phasing and timescale of works, with a programme for laying out the open space within each phase to ensure that the open space is completed within the timescales set out in planning agreement or S106 document On large schemes - a phased green infrastructure master plan showing location, amount and type of the green infrastructure that is to be included within each phase of the development 			
i) Management and Maintenance			
<ul style="list-style-type: none"> Details of management and maintenance arrangement to be put in place for the new open spaces, i.e. Council adoption, private management company, community trust. See list in section 7.4.4. May be provided as part of S106 requirements 			
<ul style="list-style-type: none"> A Green Infrastructure Management Plan (or Strategic Green infrastructure Management Strategy – SGIMS on large sites) for ongoing management and maintenance of existing and new green infrastructure including measures for managing protected species and habitats (sites containing open space and green infrastructure only), and highway landscapes 			

Planning Officer's Checklist – Open Space Design and Layout (Page 4)	Yes	No	n/a
<ul style="list-style-type: none"> Detailed information on management and maintenance of hard landscape, play, sport and other features 			
<ul style="list-style-type: none"> Mechanism for funding : <ul style="list-style-type: none"> Maintenance of new open spaces, green infrastructure, SuDS Management of new open spaces, green infrastructure, SuDS Asset renewal / infrastructure improvement of new open spaces and green infrastructure over time 			
i) Construction considerations and information			
<ul style="list-style-type: none"> Have site compounds, storage and haul roads been located away from proposed areas for open space and root protection areas 			

Planning Officer's Checklist – Open Space Design and Layout (Page 4)		Yes	No	n/a
Have the following documents been provided (as required)				
<ul style="list-style-type: none"> Construction Environmental Management Plan (CEMP) or equivalent, setting out management of site during construction 				
<ul style="list-style-type: none"> Green Infrastructure Construction Protection Plan (GICPP) or equivalent 				
Planning Officer's Checklist – Formal Sports Provision (Page 1)		Yes	No	n/a
General				
1. Is there a requirement for formal sporting provision as part of this development				
2. Has an assessment of existing sports provision within 1500m of the site boundary been carried out to establish existing levels and quality of the following : <ul style="list-style-type: none"> External grass pitches (including football, rugby, hockey, cricket, baseball, rounders, lacrosse) – adult and junior Artificial outdoor sports facilities i.e. 3G or 4G pitches Other facilities e.g. tennis courts, MUGAs, bowling greens, basketball, fitness equipment Indoor sports facilities 				
3. Are there any sports clubs or community groups in the area that could form a focus for provision in the new development				
4. Based on the number of dwellings, what quantity of formal provision is required calculated from the figures set out in the Planning Obligation SPG				
5. Has an assessment been made of the types of sporting provision needed to serve the new population – adult and junior, grass pitches and artificial surfaces				
6. Has consideration been given to the optimum location of sporting facilities <ul style="list-style-type: none"> Prominent, physically accessible location, with good transport links A number of sports located together to form a multi-sport hub or located with schools and other community facilities Facilities linked to a wider network of green spaces 				
Outdoor Pitch Provision				
1. Does the area allocated for grass pitches satisfy the following <ul style="list-style-type: none"> Sports pitches grouped together, avoiding single isolated pitches 				

Planning Officer's Checklist – Open Space Design and Layout (Page 4)	Yes	No	n/a
<ul style="list-style-type: none"> Designated site large enough to accommodate full sized pitches with runoff and ancillary features, including car parking if required Does the site have the right physical characteristics to allow regular use <ul style="list-style-type: none"> level or with room for cut and fill well drained (naturally or with a suitable drainage scheme) and with a flood risk of 1:100 or less reasonably sheltered location not subject to significant wind exposure Are the facilities shown on plan the required size, based on the Open Space TGN or other current guidance (Section A2.8) Where adult pitches are to be provided where will changing rooms be located If cricket pitches are being provided have discussions taken place with a local club to maximise benefit 			

Planning Officer's Checklist – Formal Sports Provision (Page 2)	Yes	No	n/a
Artificial Pitches			
1. Has the location been chosen taking into account the best long term use and management of the facility			
2. Has the location chosen taken into account impact on nearby properties and other users			
3. Has consideration been given to the type of sport and standard of use being provided for			
4. Has a specialist been employed to assist with the design and implementation process			
5. Has the design of the artificial pitch taken into account fencing, gates, viewing areas, hard surfaced access			
6. Is floodlighting to be used, and has consideration been given to impact on neighbouring properties and the need to retain dark corridors for wildlife			
7. Is construction of the pitches being carried out by a suitably qualified company with technical expertise			
8. Has the long term management of the facility been considered			

Planning Officer's Checklist – Formal Sports Provision (Page 2)		Yes	No	n/a
9. Has the long term renewal / replacement of the pitches been considered, with financial mechanisms put in place				
General Design of Sporting Facilities				
1. Have sporting facilities been designed in accordance with the Technical Guidance Note and best practice guidance from National Sporting Bodies				
2. Have specialist companies been employed from an early stage to determine the best technical approach and ensure preparation of a clear comprehensive brief				
3. Are changing facilities integrated into multi-functional buildings, rather than being stand- alone				
4. If dual use facilities within a school are being considered has an assessment based on the guidelines within the Open Space TGN been followed				
Planning Officer's Checklist – Children's Play Provision (Page 1)		Yes	No	n/a
General				
1. Is there a requirement for play provision as part of this development				
2. Has an assessment of existing play provision within 1000m of the site boundary been carried out to establish existing levels and quality of the following : <ul style="list-style-type: none"> • Play provision for younger children (8 years and under) • Play provision for older children (8-14 years) 				
3. Based on the number of dwellings, what quantity of play provision is required calculated from the figures set out in the Planning Obligation SPG				
4. Has an assessment been made of the types and amount of play provision needed to serve the new population to provide play opportunities within 400m of homes for younger and older children				
5. Does the size and location of the development make provision of a Destination Playground a reasonable requirement				
6. Has consideration been given to the optimum location of play areas <ul style="list-style-type: none"> • Prominent, visible, physically accessible location • In a location that is not subject to waterlogging or frequent flooding • Minimum 20m buffer to property boundaries for younger children's local play area (equivalent to LEAP); Minimum 30m buffer to property boundaries for older children's local play area (equivalent to NEAP); 				

Planning Officer's Checklist – Formal Sports Provision (Page 2)		Yes	No	n/a
Over 30m buffer to property boundaries for destination play area				
<ul style="list-style-type: none"> Within a large enough open space to provide a variety of play and other recreational opportunities, along with the required buffer zones 				
Design				
1. Has a landscape architect or other specialist designer been employed to design each play area				
2. Have the principles for successful playground design been considered Appendix A 3.5				
3. Have the following detailed design elements been considered				
<ul style="list-style-type: none"> Type of play equipment to be used, taking into account durability, play value, projected lifespan and ease of maintenance Types of surfacing taking into account long term durability, projected lifespan, ease of maintenance and frequency/costs of replacement Amount of safety surfacing required, along with other hard surfaces The need for fencing and gates, and type if used Whether the play area has some elements of inclusive play Have natural play elements been included 				
4. Has the playground been scored in accordance with the Play Value Assessment				
5. Does the playground meet or exceed the required standards				

Planning Officer's Checklist – Children's Play Provision (Page 2)		Yes	No	n/a
6. Has provision been made for formal inspection of the playground by RoSPA or an equivalent organisation at completion				
7. Has the long term management of the play area been considered				
8. Has the long term renewal / replacement of the play area been considered, with financial mechanisms put in place				
Planning Officer's Checklist – Teen Provision (Page 1)		Yes	No	n/a
General				
1. Is there a requirement for teen provision as part of this development				

Planning Officer's Checklist – Children's Play Provision (Page 2)		Yes	No	n/a
2.	Has an assessment of existing teen provision within 1500m of the site boundary been carried out to establish type and quality (MUGAs, BMX, Skateboard Parks, Teen Shelters, Fitness Equipment, other provision)			
3.	Based on the number of dwellings, what quantity of teen provision is required based on the figures set out in the Planning Obligation SPG (0.3ha per 1000 population)			
4.	Has an assessment been made of the types of teen provision needed to serve the new population, taking into account existing provision			
5.	Has consideration been given to the optimum location of teen facilities <ul style="list-style-type: none"> Prominent, physically accessible location, with good transport links Part of a multi-sport hub, larger open space with other play provision, located with schools, community facilities or other well-used areas Visible allowing a high level of supervision, with lighting to enable safe use Accessible by hard-surfaced footpath, with lighting as required Minimum 30m from properties and away from younger children's play areas Vehicle access for cleansing and emergency vehicles 			
General Design Principles				
1.	Is the size of the facility sufficient to support the anticipated level of use			
2.	Is the facility integrated into the surrounding environment and accompanied by seating, bins and signage			
3.	If lighting is to be used, has consideration been given to impact on neighbouring properties and the need to retain dark corridors for wildlife			
4.	Has the long term management of the facility been considered			
5.	Has the long term renewal / replacement been considered, with financial mechanisms put in place			
Teen Shelter				
1.	Does the size and location of the development make provision of a teen shelter a reasonable requirement			
2.	Have teen shelters been included within the design of the development			
3.	Is the design robust, with shelter placed on a hard easily maintained surface			
4.	Does the location and choice of shelter satisfy the design guidance given in the Appendix A 4.4			
5.	Has discussion taken place with local police and youth workers to identify best location and a long term management approach put in place			

Planning Officer's Checklist – Children's Play Provision (Page 2)	Yes	No	n/a
Planning Officer's Checklist – Teen Provision (Page 2)	Yes	No	n/a
Multi-Use Games Area			
1. Does the size and location of the development make provision of a MUGA a reasonable requirement			
2. Has one or more MUGAs been included within the design of the development			
3. Is the MUGA designed to be managed or have open informal access			
4. What sports and level of use will the MUGA cater for, with size reflecting this			
5. Has the MUGA been located on a level area with enough space to enable the ball to be retrieved without impacting on adjacent uses			
6. Does the location and design satisfy the guidance given in Appendix A 4.5			
7. Has the MUGA been designed to be robust with sufficient height fencing to avoid problems for adjacent users, with at least two pedestrian entrances and vehicular maintenance gate, seating and bins, and suitable surfacing			
BMX Tracks			
1. Does the size and location of the development make provision of a BMX track a reasonable requirement			
2. Has a BMX track been included within the design of the development			
3. Has a specialist company been employed to design the track,			
4. Does the location and design satisfy the guidance given in the Appendix A 4.6			
Skateboard Parks			
1. Does the size and location of the development make provision of a skateboard park a reasonable requirement			
2. Has a skateboard park been included within the design of the development			
3. Has a specialist company been employed to design the skateboard park, with a purpose built facility of the required size and variety to support a high level of use			
4. Is the skateboard park located with access to toilets and other facilities			
5. Does the location and design satisfy the guidance given in the Appendix A 4.7			
Outdoor Fitness Equipment			
1. Does the size and location of the development make provision of outdoor fitness equipment a reasonable requirement			
2. Has fitness equipment been included within the design of the development			
3. Does the location and choice of equipment satisfy the design guidance given in the Appendix A 4.8.			

Planning Officer's Checklist – Children's Play Provision (Page 2)	Yes	No	n/a
Parkour			
1. Has Parkour been included within the design of the development			
2. Has a particular demand been established for Parkour in the area			
3. Does the location and choice of equipment satisfy the design guidance given in the Appendix A 4.9.			

Planning Officer's Checklist – Allotment and Community Growing	Yes	No	n/a
General requirement and location			
1. Does the site meet the requirement for allotment provision (Strategic development sites only). Allotment provision may be provided on other sites but this is at the discretion of the developer and will form part of the open space allocation			
2. Has a suitable site been allocated for allotment provision <ul style="list-style-type: none"> • Relatively level and accessible • Large enough to accommodate the number of required plots at the sizes and ratios shown in Appendix 5 • Good access to public or other sustainable transport • Some available parking on or off site (away from plots) • Free from significant shading • Free from invasive non-native species • Free from contamination, with good depth (450mm) topsoil already available or capacity to accommodate it 			
Design			
1. Does the allotment have the following design and facilities <ul style="list-style-type: none"> • Securely fenced site – fence minimum 1.8m high • Lockable vehicle gate, wide enough to allow deliveries • Secure cycle parking • Community building or store • Stand pipe providing water supply • Composting toilet facilities 			
Community Growing			
1. Is there a demand for community growing in the area, with existing groups already in place			
2. Are there suitable potential sites for community growing available on site, which satisfies a number of the requirements for allotments			

Cardiff Green Infrastructure SPG

Soils and Development

Technical Guidance Note (TGN)



November 2017

Cardiff Green Infrastructure SPG: Soils and Development Technical Guidance Note November 2017

Mae'r ddogfen hon ar gael yn Gymraeg/This document is available in Welsh



SOILS AND DEVELOPMENT

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1.0 INTRODUCTION

This Technical Guidance Note (TGN) supplements policies in the adopted Cardiff Local Development Plan (LDP) relating to climate change, green infrastructure, biodiversity and trees, and is part of the Supplementary Planning Guidance (SPG) for Green Infrastructure. It is one of a series of Technical Guidance notes that provide detailed information about the retention and provision of green infrastructure elements in new developments as follows:-

- Ecology and Biodiversity TGN
- Open Space TGN
- Public Rights of Way and Development TGN
- River Corridors TGN
- Soils and Development TGN
- Trees and Development TGN

Welsh Government supports the use of Supplementary Guidance (SPG) to set out detailed guidance on the way in which development plan policies will be applied in particular circumstances or areas. SPG must be consistent with development plan policies and national planning policy guidance. SPG helps to ensure certain policies and proposals are better understood and applied more effectively. They do not have the same status as the adopted development plan but are a material consideration in the determination of planning applications

This Note is likely to be of particular benefit to those considering development proposals which involve works to soils. It enables developers, landowners and potential objectors to understand how the Council considers development proposals and the standard of provision sought.

2.0 WHAT IS SOIL?

The top layer of the earth's crust formed by varying quantities of mineral particles, organic matter, living organisms, air and water.

Soil may take thousands of years to develop but be destroyed in seconds by development, so in human terms it is a **non-renewable resource**.

A typical **soil profile** consists of variably well-defined **topsoil** and **subsoil** layers of differing volumes over **parent material** which might be **bedrock** or **superficial deposits** of glacial or alluvial origin (**Fig. 1**).

Where a new soil profile is constructed after earthworks operations such as '**cut and fill**', topsoil and subsoil layers are usually placed over an engineered **formation layer (Fig. 1)**.

Topsoil

Landscaping topsoil should be suitably drained and aerated and provide a sufficient source of water, nutrients, organic matter, soil fauna and flora to enable healthy, sustained growth by plants.

The majority of fine, feeder roots and their associated mycorrhizal fungi that are important in providing water and nutrients, grow in topsoil, with a proportion of larger, structural roots providing anchorage and storing resources.

Topsoil usually contains a higher quantity of organic matter, microbes and nutrients (e.g. nitrogen & sulphur) than subsoil, and is therefore particularly important to plant nutrition.

Subsoil

Landscaping subsoil has a number of key functions important to healthy plant growth:

- Acts as a reservoir during dry periods.
- Absorbs surplus water percolating down from topsoil.
- Provides anchorage for roots of large shrubs and trees.
- Provides a reserve of plant nutrients (e.g. potassium, magnesium & calcium).
- Provides an 'ecosystem service' attenuating water during periods of high rainfall.



TOPSOIL

SUBSOIL

**PARENT MATERIAL
or FORMATION LAYER**

Figure 1. Typical soil profile

3.0 SOILS AND DEVELOPMENT

Development requires soils to be **stripped, shaped, compressed** and **sealed** to provide a base for construction. Unfortunately these processes can seriously damage the functionality of soils in other respects.

When soils are considered as part of design and precautions taken to protect them during development, the extent of their loss and damage is reduced and the quality and sustainability of development enhanced.

This **Technical Guidance Note (TGN)** provides guidance on the **assessment, protection, handling, placement** and **amelioration** of soils to enhance the quality and sustainability of development. It does not cover **agricultural land quality, geo-environmental** or **geotechnical** aspects of soils and development.

4.0 SOILS AND PLANNING POLICY IN WALES

European Union directives on **Environmental Impact Assessment (EIA) (Ref. 1)** and **Strategic Environmental Assessment (SEA) (Ref. 2)** establish the requirement for consideration of the impacts on soils where development needs an EIA or SEA.

Planning Policy Wales (Ref. 3) states that one of the Welsh Government's objectives for the conservation and improvement of natural heritage is to: -

'....promote the functions and benefits of soils, and in particular their function as a carbon store.'

Technical Advice Note 5 Nature Conservation (Ref. 4) advises that for non EIA development, applicants **'may find it useful'** to prepare and submit a soils report: -

'....demonstrating how and when the soils that may be affected by the development proposals will be moved, stored, used and conserved.'

An objective of the **Cardiff Local Development Plan (LDP) (Ref.5)** is to: -

'....protect, manage and enhance Cardiff's natural environmental assets, including....the best soils.'

The supporting paragraphs for LDP **Key policy 15 (Climate Change)** emphasise the role of soils in storing carbon and sustainable drainage: -

'....Trees and soils act as substantial reservoirs of carbon, sequestering atmospheric carbon, and contributing substantially to soils, which accrete carbon faster under tree cover than other forms of vegetation. This stored carbon will usually be emitted as a greenhouse gas if trees are removed or damaged, or soils removed, covered or disturbed (by compaction or contamination) during the construction process.'

'...As far as practicable, trees should be retained and protected, and land kept as functioning vegetated soil open to the fall of organic matter, with new trees and shrubs provided by developers wherever possible. Where trees and shrubs cannot be surrounded by open soil, hard surfaces should not be used unless there is an overriding need, and areas that are not needed for pedestrian or vehicle use should be retained for soft landscape. Cardiff's open spaces, trees and soils play a crucial role in mitigating the effects of climate change at the local level. Open vegetated soils absorb rainfall and runoff.

The Planning Obligations Supplementary Planning Guidance (SPG) sets out the Council's approach to planning obligations when considering applications for development in Cardiff. It also sets out the mechanisms for securing survey, assessment, mitigation, compensation and enhancement of Green Infrastructure interests, which include soils.

5.0 SOIL ASSESSMENT

Baseline information about soils on development sites should be provided by submitting a: -

- Soil Resource Survey (SRS) *and a*
- Soil Resource Plan (SRP).

The SRS and SRP should be prepared in accordance with the **DEFRA Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (2009) (Ref. 6)**, or any updated version of this Code.

The SRS and SRP should be prepared before site clearance, preparation or development that may result in damage to in-situ soils through compaction, contamination, excavations and vegetation removal.

Planning conditions may be applied requiring submission of an SRS and SRP and examples are given as follows: -

1) *No development shall take place until the following has been submitted to and approved in writing by the Local Planning Authority: -*

A Soil Resource Survey (SRS) prepared by a qualified soil scientist in accordance with the 2009 DEFRA Construction Code of Practice for the Sustainable Use of Soils on Construction Sites that delineates, characterises and quantifies all re-usable topsoil and subsoil resources on the site.

Reason: To ensure that usable soil resources are fully utilised within the development and any surplus soil is identified for off-site use.

2) *No development shall take place until the following has been submitted to and approved in writing by the Local Planning Authority: -*

A Soil Resource Plan (SRP) prepared by a qualified soil scientist in accordance with the 2009 DEFRA Construction Code of Practice for the Sustainable Use of Soils on Construction Sites that has been informed by a Soil Resource Survey carried out in discharge of condition (). The SRP shall set out the methods and equipment to be used for the protection, recovery, storage, re-use and disposal of all site topsoil and subsoil and shall include details of an auditable system of site monitoring by a qualified soil scientist to ensure correct implementation of the SRP.*

Reason: To ensure that all usable soil resources are appropriately recovered and protected, and not lost, damaged or sterilised during the construction process.

Descriptions of soils within an SRS should conform to the criteria defined in the:

- Soil Survey Field Handbook (Ref. 7) *or*
- BS EN ISO 25177:2011 (Ref. 8).

Soil testing as part of an SRS should accord with: -

- BS 3882:2015 - Table 1 (Ref. 9) *and*
- BS 8601:2013 - Table 1 (Ref. 10) *or* any updated versions of these Standards.

The SRS and SRP should be prepared by a **Soil Scientist**. The **British Society of Soil Science** www.soils.org.uk provides details of Soil Scientists.

So long as they conform to the Code and are prepared by a Soil Scientist, it is appropriate to include an SRS and SRP as part of a: -

- Geo-environmental assessment *and/or*
- Geotechnical assessment *and/or*
- Agricultural Land Classification Survey (ALCS).

Geo-environmental or geotechnical assessments may show irreremediable levels of soil contamination, negating the requirement for an SRS and SRP, but should not replace an SRS and SRP.

An ALCS may provide useful information about soils, but this is focused on functionality in supporting agriculture, not re-use for landscaping as part of development, so an ALCS should not replace an SRS and SRP.

Information provided by **Soils and their Use in Wales (Ref. 11)**; the **Soilscapes** viewer at <http://www.landis.org.uk/soilscapes/> and the **Soils Site Reporter** at <http://www.landis.org.uk/services/sitereporter.cfm> should supplement, not replace assessment in accordance with the Code.

For small sites, or sites where existing garden or other soft landscaping soils are to be retained and protected in situ, and used for new planting, an SRS and SRP is unlikely to be required. However, a basic soil assessment by a Soil Scientist, Environmental Scientist, Arboriculturist, Horticulturist or Landscape Architect, based on the preparation of trial pits, is appropriate. Soil physical characteristics should be recorded, photographed and submitted as evidence of the suitability of the soil for its intended end use, and a strategy for soil handling, storage and placement prepared, that accords with the principles set out in BS 3882:2015, BS 8601:2013 and the DEFRA Code.

The **Soil Survey Field Handbook** and **BS EN ISO 25177:2011** give guidance on examining soils in the field and a photographic field guide to preparing soil pits and assessing the physical characteristics of soils is provided by the **Environment Agency Think Soils Manual (Ref. 12)**.

For small scale developments such as domestic extensions, where little disturbance to existing garden soils is proposed, a soil assessment is not likely to be required.

6.0 SOIL PROTECTION

Development should be designed to protect the largest possible volume of the best **in situ** soils – i.e. ***those that are likely to perform the greatest number of functions to enhance the quality and sustainability of development.***

Where in situ soils are to be retained, soil protection up to the point of completion of built development and implementation of landscaping should comprise a **physical barrier** and/or **ground protection** to prevent **compaction** and **contamination**.

Barriers and ground protection should accord with **BS 5837:2012 (Ref. 13)**, or any updated version of this Standard, and their positions be shown on a plan submitted as part of an SRS.

Soils to be protected may coincide with the **Root Protection Area** of retained trees or areas of proposed structural landscaping. In these cases there should be concordance between the SRS and the **Arboricultural Method Statement** and **Tree Protection Plan**, submitted in accordance with BS 5837:2012.

7.0 SOIL STRIPPING AND STORAGE

Where soil stripping and storage is unavoidable, strict adherence to an approved SRP should prevent irremediable loss of functionality due to compaction, contamination, loss of structure, loss of organic matter and loss of biodiversity.

Key considerations to ensure that soil stripping and storage do not cause an irremediable loss of functionality include: -

- Use of fit for purpose equipment that minimises compaction.
- Stripping to defined depths to avoid mixing topsoil and subsoil.
- Adherence to an approved stripping plan showing soil types to be stripped, haulage routes and phasing.
- Avoiding multiple handling and avoiding handling during or following wet weather.
- Stockpiling for the shortest possible period of time and to a depth and method appropriate to the characteristics of the soil, including its wetness.
- Stockpiling different soil types separately.
- Ensuring the angle of repose for stockpiles is less than 40 degrees, or 25 degrees where stockpiles are to be seeded and maintained.
- Ensuring that stockpiles to be stored for over 6 months are seeded with a grass or clover mix to minimise erosion, reduce weed development and maintain biological activity.

All stages of soil stripping and storage as part of development should be overseen by a Soil Scientist, to ensure compliance with the approved SRP. Auditable site monitoring reports should be prepared by the Soil Scientist and submitted to the Local Planning Authority upon satisfactory completion of each stage.

8.0 SOIL PLACEMENT

Only soils that have been handled in accordance with an approved SRP and/or where appropriate, tested, certified and found to be fit for purpose by a Soil Scientist in accordance with **BS 3882:2015** and **BS 8601:2013**, or updated versions of these Standards, should be emplaced as part of development.

Soil placement should only take place where the receiving substrate is fit for purpose and under the supervision of a Soil Scientist. For example, where large container or root-balled tree planting is proposed, topsoil should not be emplaced onto compacted, poorly drained sub-soil, or soil compacted to **bulk densities** that will impede root growth. To ensure root growth is not impeded, bulk densities should be provided that accord with those reported in Watson *et al.* (**Ref. 15**) as follows: -

- Sands & loamy sands: <1.60g cm⁻³ ideal. >1.80g cm⁻³ will restrict root growth.
- Sandy loams & loams: <1.40g cm⁻³ ideal. >1.80g cm⁻³ will restrict root growth.
- Sandy clay loams & clay loams: <1.40g cm⁻³ ideal. >1.75g cm⁻³ will restrict root growth.
- Silts & silt loams: <1.30g cm⁻³ ideal. >1.75g cm⁻³ will restrict root growth.
- Silt loams & silty clay loams: <1.10g cm⁻³ ideal. >1.65g cm⁻³ will restrict root growth.
- Sandy clays, silty clays, some clay loams (35-45% clay): <1.10g cm⁻³ ideal. >1.58g cm⁻³ will restrict root growth.

- Clays (>45% clay): <1.10g cm⁻³ ideal. >1.47g cm⁻³ will restrict root growth.

The method of placement should be described in the SRS, but the most appropriate method generally is **loose tipping** by machine as described in the **DEFRA Code**, during weather conditions that will not result in the soil becoming sticky, amorphous or **self-compacting**.

Some soils, such as well-structured sandy loams, are more 'tolerant' of handling than soils with high clay or silt content, and lose less of their functionality on placement. One of the important functions of an SRS therefore, is to identify soils with different 'tolerances' in relation to handling and placement.

As a rule of thumb, topsoil and subsoil depths for different planting types should be as follows: -

- Trees – 300mm topsoil over 600mm subsoil.
- Shrubs – 300mm topsoil over 300mm subsoil.
- Amenity grassland – 150mm topsoil over 150mm subsoil.

Over-specification of topsoil and **under-specification of subsoil** should be avoided. Topsoil functionality below 300mm is impeded and excessive depths can increase the risks of anaerobic soil conditions developing and resulting in planting failures.

9.0 SOIL AMELIORATION

Where soils are found to be degraded, every effort should be made to recycle constituents that can be used in the manufacture of soils to be re-used on site. Where soil manufacturing is proposed, full details of the process and end product specification should be provided by a Soil Scientist within an SRP.

Soil ameliorants such as **compost** and **fertiliser** should only be proposed if deficiencies of composition or structure are shown by the SRS or testing in accordance with BS 3882:2015 and BS 8601:2013, or updated versions of these Standards.

The type and extent of soil amelioration should be specified by a Soil Scientist within an SRP.

The use of machinery to break up subsoil and relieve compaction does not guarantee good aeration and drainage thereafter and may result in significant damage to soil biota.

Ripping and other forms of machine cultivation should only be used as a last resort, where other less invasive forms of amelioration are not available, or will not be effective. Ripping may not be effective for soils with high silt content, or soils with high clay content but that are poorly structured. In all cases, the method and equipment to be used should be specified by a Soil Scientist.

Where more sensitive planting types such as large trees are proposed, the importation of well-aerated, freely draining subsoil may be more appropriate than machine cultivation in ensuring good soil functionality.

The following documents provide useful guidance on soil amelioration in relation to landscaping: -

- DEFRA Construction Code of Practice for the Sustainable Use of Soils on Construction Sites.

- The Impact of Subsoil Compaction on Soil Functionality and Landscape (Ref. 16).
- Forest Research Best Practice Guidance for Land Regeneration Notes 3, 4, 5 and 19 (2014) (Refs. 17, 18, 19, 20).
- BS 4428:1989 Code of practice for general landscape operations (excluding hard surfaces) (Ref. 21).
- BS 7370: Part 4: 1993 Grounds Maintenance Part 4: Recommendations for maintenance of soft landscape (other than amenity turf) (Ref. 22).
- BS 3998:2010 Tree work – Recommendations (Ref. 23).
- BS 8601:2013 Specification for subsoil and requirements for use.
- BS 8545:2014 Trees: from nursery to independence in the landscape – Recommendations.
- BS 3882:2015 Specification for topsoil.

10.0 IMPORTED SOILS

Where existing soils or manufactured soils using local resources cannot be used and importation of topsoil and subsoil is proposed, a **soiling plan and specification** should be submitted giving details of proposed topsoil and subsoil types, profiles and extents. This information should be supported by certification for all proposed soils in accordance with **BS 3882:2015** and **BS 8601:2013**, or updated versions of these Standards, and by an **interpretive report** prepared by a **Soil Scientist**, demonstrating that the proposed soils will be fit for purpose.

Different planting types such as root-balled and container tree planting, bare-root, transplant and whip planting, amenity grassland, sports pitches and wildflower grassland, have differing requirements of the soil. A '**one size fits all**' or '**multi-purpose BS 3882 soil**' soil is therefore unlikely to be appropriate in many cases, and particularly not for sensitive functions such as large tree planting, where optimal conditions of aeration and drainage to depth are critical to successful establishment; or sports pitches where regular, intensive footfall may result in damage to soil functionality.

Where large tree planting is proposed, soils meeting the '**sandy loam**' textural range in the British Standards should be used as a default, but meeting British Standards alone, will not guarantee good functionality in this regard, particularly for soils that are at the top end of the textural range limits in terms of silt and clay content. Wherever possible, specifications that exceed British Standards and are designed specifically for their intended end use should be used.

The use of specialist soils for landscaping, such as **Amsterdam tree sands**, **structural soils** and '**hybrid**' topsoil-subsoils should be supported by site specific product manufacturer's specifications that demonstrate fitness for purpose.

All imported soils should also be assessed in terms of potential contaminants, not only in terms of plant health, but also human health. As such, conditions are

likely to be attached to planning permissions requiring that any imported topsoil or subsoil, natural or manufactured, must be assessed for chemical or other potential contaminants in accordance with a scheme of investigation submitted to and approved in writing by the Local Planning Authority, in advance of its importation.

11.0 REFERENCES

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