Lichfield District

Trees, Landscaping & Development

Supplementary Planning Document 2016

Lichfield district council
www.lichfielddc.gov.uk

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1. **Executive Summary**

Executive Summary

1.1 This Supplementary Planning Document (SPD) is one of several produced by Lichfield District Council. Our SPDs are intended to provide helpful guidance for developers, applicants and other parties involved in the development process and to supplement the policies and aims of the Council's Development Plan -'Lichfield District Local Plan: Strategy'.

1.2 The National Planning Policy Framework (NPPF) (March 2012) advises that SPDs should be used where they can help applicants make successful applications or aid infrastructure delivery. The National Planning Practice Guidance (February 2014) advises that SPDs should build upon and provide more detailed advice or guidance on the policies in the Local Plan.

1.3 The focus of this SPD is on trees, woodlands, hedgerows and other landscape features or habitats where trees and shrubs play an important part - such as orchards, parks and gardens, amenity spaces and green infrastructure.

1.4 The first three sections of the SPD address the retention, protection and incorporation of trees, hedgerows and woodlands as part of a sustainable development. The final section of the SPD deals with the provision of new trees, hedgerows, woodlands and shrub planting as part of the design of a development and its landscaping scheme.

1.5 We recommend that you also refer to the council's Sustainable Design Supplementary Planning Document as this gives further information on the role and provision of green infrastructure in sustainable development. The council's Historic Environment Supplementary Planning Document also provides a summary of the evolution of the historic environment of which trees, woodland and hedgerows form a part and gives more information on landscape and the design components of new development.

1.6 The assessment of existing non-wooded habitats and landscape features, such as the district's important lowland heathlands, grasslands or rivers, and their protection, incorporation or creation as part of sustainable development is outside the scope of this SPD. Please refer to the council's Ecology Officers and our Biodiversity Supplementary Planning Document for further details.

1. Introduction

Purpose of this Supplementary Planning Document

1.1 The intention of this Supplementary Planning Document (SPD) is to help you to fully consider and justify your development proposals with regard to trees, landscaping and sustainable development. This document is intended as guidance and expansion of several policies within Lichfield District Council's Local Plan. You can find a list of the relevant policies at appendix A.

1.2 The purpose of this Supplementary Planning Document is to:

- Promote best practice for the incorporation of existing trees and landscaping within developments and their integration into the design process at the earliest stage.
- Guide the provision of new high-quality landscaping.
- Demonstrate clear procedures for the retention and protection of existing landscape features.
- Increase the provision and diversity of green infrastructure, particularly tree and woodland provision, for its benefits in urban cooling, health and well-being, and conserving and enhancing biodiversity
- Use existing and new landscaping to assist in the provision of homes, workplaces, open spaces and communities that are resilient and able to adapt to the expected changes in climate.
- Maintain distinctive character areas within the district and create a desirable place in which to live and invest.

1.3 This document is a material consideration when considering planning applications. Lichfield District Council will use this document as part of its assessment of your planning application.

The role of trees and landscaping in sustainable development

1.4 The changing climate and need to move towards a low-carbon future mean that our neighbourhoods and towns need to adapt to the conditions expected in the future. Ways to help achieve this through sustainable development are woven into the council's Local Plan policies.

1.5 The retention of existing trees and landscaping on a development site and the provision of new, well designed landscaping is an effective response.[1] In particular, tree canopy cover can contribute to urban cooling and should be an important part of the landscaping or green infrastructure element of your development (Core Policies 3 and 14, development management policy NR4).

1.6 In recognising the role that trees have to play in helping the district to adapt to climate change and fostering a low carbon economy, the council aspires to increase large tree provision to achieve at least 20% tree canopy cover in urban areas, including Lichfield, Burntwood, Fazeley, Fradley and new Strategic Development Allocation sites by mid-century.[2]

[1] National Planning Practice Guidance: Climate Change March 2015

[2] Based upon "Adapting Cities for Climate Change: The Role of the Green Infrastructure" Gill, S. E. et al Built

1.7 Your development proposals should therefore contribute by making space for existing trees and vegetation and considering new tree planting and landscaping early in the design and layout of your site. By doing this you can design-out potential conflicts with the built form whilst designing in opportunities for long-term provision of these sustainable development essentials [3]

- Shade and shelter
- Cooling
- Flood reduction
- Reduction of airborne pollution
- Habitat linkages and refuges for animals and plants

1.8 Well thought out tree cover and soft landscaping can also:

- Increase house and property values, typically between 5-18%[4]
- Lower air-conditioning costs and carbon emissions
- Encourage walking and cycling
- Improve physical and mental health
- Increase consumer activity in retail areas and productivity and job satisfaction of employees in industrial areas. [5]
- Attract higher levels of inward investment for commercial and urban areas[6]

1.9 More information on green infrastructure, including trees and landscaping can be found in the government's Planning Practice Guidance: 'Design' published in conjunction with the National Planning Policy Framework and Lichfield District Council's Sustainable Design SPD. These should be read in conjunction with this Supplementary Planning Document.

Importance for nature conservation

1.10 Trees and wooded habitats are important for nature conservation and are addressed in the National Planning Policy Framework (NPPF) (2012) as they form priority habitats. Priority habitats are those that are listed as Habitats of Principal Importance in England in accordance with section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. Five woodland types including lowland mixed deciduous woodland and wet woodland as well as hedgerows, traditional orchards, wood pasture and parkland are included in this list as habitats of principle importance. Descriptions of each of these habitats can be found in the UK Biodiversity Action Plan (BAP) Priority Habitat Descriptions[7].

1.11 Ancient Woodland and veteran and 'aged' trees are further identified in para 118 of the NPPF as 'irreplaceable habitat'. Within the district there is a below-average ancient woodland resource at 1.04% of land area compared to a UK average of 2.5%. Therefore it is particularly important that it is protected and that expansion is allowed through natural regeneration and long-term management and that the maintenance of existing links and the creation of new links between

Env. Vol 33 n.1. 2007, Lichfield District Strategic Partnership Carbon Reduction Plan (2011/12-2012/13) and desktop tree canopy cover survey of Lichfield

[3] "Trees in the Townscape': A Guide for Decision Makers" Trees and Design Action Group 2012 and Forest Research (2010) 'Benefits of Green Infrastructure'.

[4] 'The Case for Trees: in Development and the Urban Environment' Forestry Commission 2010

[5] The Case for Trees: in Development and the Urban Environment' Forestry Commission 2010

[6] The Case for Trees: in Development and the Urban Environment' Forestry Commission 2010

[7] UK Biodiversity Action Plan; Priority Habitat Descriptions. BRIG (ed. Ant Maddock) 2008. (Updated Dec 2011) Joint Nature Conservation Council (JNCC)

woodlands are considered as part of sustainable development.

1.12 Links between woodland, hedgerows, copses, individual trees - including veteran and aged trees - form ecological networks of, and between, priority habitats and are important assets for biodiversity.[8] Maintaining, creating and enhancing these links help to provide a resilient landscape that is better able to respond to the changing climate and provide refuges and corridors for wildlife.

1.13 Locally the Staffordshire Biodiversity Action Plan (SBAP) works at a landscape level to focus conservation efforts on the areas within the county that will result in optimum benefit for ecological networks, habitats and species and allow for greater resilience to climate change. It includes ecosystem and habitat management plans and objectives of which trees, woodland and hedgerows form a part.

Importance for landscape and heritage

1.14 The importance of trees and wooded habitats for wildlife often reflects their purpose and management over centuries. These features are important contributors to a living landscape that has evolved through time and help to give distinction and a sense of place to both the settlements and rural areas of the district.

1.15 Older patterns of land use, ownership and industry can be seen, for example, in the different hedgerow patterns between the long-settled farmlands to the north and east of the district and the later enclosures of heathlands or areas associated with mining. Some of our hedgerows still demarcate old lanes and routes through the countryside and medieval parish boundaries. Wood pasture, parkland and designed features such as tree-lined avenues, views and vistas also occur within the district and provide links to former manors and other estate lands.

1.16 Trees, hedgerows, woodland and the planned landscape, such as parks and gardens, are also features within built areas and often associated with our Conservation Areas and as settings of our heritage assets.

1.17 High quality new landscaping can play an important role in the conservation and enhancement of an area's historic environment and heritage assets and in turn enhance their unique sense of place.

1.18 Our Historic Environment SPD gives an introduction to the evolution of the landscapes and townscapes of the district. Further information can be found in the National Character Area Profiles produced by English Nature, Staffordshire County Council's 'Planning for Landscape Change' Supplementary Planning Guidance and the Historic Environment Assessments produced by Staffordshire County Council.

1.19 These can be used to help you understand and assess existing features for their contribution to the wider landscape and the historic environment and assist in the design and placement of new landscaping.

How this Supplementary Planning Document can help you

1.20 Trees and landscaping are more than decorative additions to a development; they should be considered

[8] Local Plan Policy NR6 Linked Habitat Corridors and Multifunctional Greenspaces

a vital and functional part of the infrastructure - just like drainage, energy or roads. The guidance in this SPD can help you get the best from the existing and potential landscaping on your site and assist you in meeting the requirements of our Local Plan's Core and Development Management Policies when submitting a planning application.

- Part 1 of this SPD provides the information you need to consider, and may need to provide, at each stage of your planning proposal

1.21 Whether the development is large or small, trees and landscaping must be given high priority at the earliest stage of your design process in order that they can be properly integrated into the development. This includes relationships to buildings, existing natural features, the character and use of the site, water management and the potential for creating habitat linkages and refuges for plants and animals.

- Part 2 will help you consider how existing and new landscaping fits in with the design of other parts of your development.

1.22 Trees and shrubs have basic needs that must be met for them to survive during site development or become established after planting. Therefore as part of your planning application the council requires that you demonstrate how the needs of existing and new landscaping will be met.

- Part 3 of this SPD contains the methods that the council requires you to use in order to protect existing trees and vegetation during construction

- Part 4 addresses new landscaping; in particular trees, woodlands, hedgerows and shrub planting.

2. Part 1: Existing Trees on Development Sites

2.1 In order to successfully integrate trees into a development it is essential to allow enough space in the design to allow trees to mature and flourish and to implement protection measures during the entire construction phase. Therefore our Planning Application Local Validation Requirements and Local Plan policies require you to consider existing trees and hedgerows at the earliest design stage to allow them to be successfully integrated into your development.[9]

2.2 The council advocates the recommendations given in British Standard: 5837: 2012 'Trees in Relation to Design, Demolition and Construction - Recommendations' and future editions. This is a key document for trees and development. It gives recommendations and guidance to achieve a satisfactory juxtaposition of structures with trees, shrubs and hedgerows.

2.3 The British Standard includes a number of plans and documents relating to trees and development that we may require you to submit to support your planning application. Figure 1 shows the British Standard documents in relation to the stages of a planning application. The chart identifies the step by step process of integrating trees successfully into a development from initial land survey to first occupancy.

2.4 Dependent upon the nature of your application you will be required to provide some or all of the following documents at the time of application, to support your application or to fulfil conditions attached to a planning consent. The information that the council requires as part of a planning application is given in the council's "Planning Application Local Validation Requirements". This document is reviewed, and where necessary updated, on a regular basis. We recommend that you refer to the edition of our "Planning Application Local Validation Requirements" that is current at the time of making your application to determine the information that the council requires. You will find a copy of the validation requirements on the council's website.

2.5 The current list of local validation requirements includes several documents that are related to trees and landscaping. This SPD therefore seeks to give further guidance and explanation of the information required by the current local validation requirements. Some are mandatory for all sites that contain trees or hedgerows or where there are off-site trees within 15m of the site boundary, all sites in Conservation Areas and where there are trees protected by a Tree Preservation Order.[10] Dependent on the form and scale of development the following may be required:

- Tree survey comprising a tree schedule and plan (section 2.6 – 2.10)
- Topographical survey (section 2.11)
- Plan showing trees to be retained and those to be removed (section 2.12 – 2.15)
- Tree constraints plan (section 2.16 – 2.18)

[9] Local Plan Policies NR4, BE1 and Lichfield District Council's Planning Application Local Validation Requirements 2015.

[10] In accordance with Lichfield District Council Planning Application Local Validation Requirements 2015. As this document is reviewed and, where necessary, updated on a regular basis we recommend that you refer to the version that is current at the time of your application.

- Tree protection plan (section 2.19 – 2.22)
- New landscaping provision (section 2.23- 2.25 and Part 4)
- Heritage statement for hedgerows[11] (section 3.47 – 3.49)

The remainder of Part 1 of this SPD gives you more information on each of the documents. More information on national and local planning application validation requirements can be found on the council's website.

The Tree Survey: Tree Schedule and Plan

2.6 The council's current planning validation requirements require you to submit a tree survey with your planning application. [12]The survey must be carried out in accordance with BS 5837: 2012 by a qualified arboriculturalist. If you are seeking pre-application advice from the council you may also find a tree survey beneficial.

2.7 If you do not include a suitable tree survey and schedule with your planning application your application may not be registered.

2.8 The tree survey is vital and should be the first step in your design process. The survey gives important information that will inform your tree constraints plan (sect. 2.16 – 2.18) and your subsequent design and layout.

2.9 The tree survey must include all:

- Trees, hedgerows and shrub masses on the site whether or not you intend to remove them
- Off -site trees and hedges within 15m of the site boundary, including street trees, as off-site trees may be affected by your proposal.

2.10 The survey is usually presented as a tree survey plan and an accompanying schedule. To allow for the full appraisal of the trees on and off the site by both the developer and the council it must include the following information:

Tree Survey Schedule

- Tree reference number
- Species
- Height
- Height of crown clearance
- Crown spread of each tree (in relation to all four compass points)
- Diameter of the trunk measured at 1.5m above ground on single stem trees. For multi-stemmed trees and low forking trees see BS5837:2012
- Age class (e.g. young, middle age, mature, over mature, veteran)
- Assessment of the structural and physiological condition including trunk, crown and roots
- Tree management recommendations
- Trees to be felled as part of development proposal.
- British Standard retention category grading
- Root Protection Area

[11] In accordance with Lichfield District Council's Planning Application Local Validation Requirements 2015. As this document is reviewed and, where necessary, updated on a regular basis we recommend that you refer to the version that is current at the time of your application.

[12]In accordance with Lichfield District Council 'Planning Application Local Validation Requirements' 2015. As this document is reviewed and, where necessary, updated on a regular basis we recommend that you refer to the version that is current at the time of your application.

Tree Survey Plan must show the

- Position of all trees accurately plotted and numbered
- Crown of each tree correctly plotted at the four cardinal points
- Extent of the root protection area of each tree
- BS 5837: 2012 retention category for each tree
- North point and be to a recognised and workable scale

The Topographical Survey

2.11 Where levels vary or are proposed to be altered, a topographical survey should be submitted with your tree survey. It details the physical features of the site. Results from this survey are important for tree retention and are used to inform the design, layout and implementation of the development proposal.

Tree Categorisation: Identifying trees suitable for retention and removal

2.12 The council's current planning validation requirements require that trees identified for retention or removal should be clearly shown on the plans submitted with your planning application. [13]

2.13 Trees should be assessed and categorised for their suitability for retention in accordance with BS 5837: 2012. It is important that the categorisation is done before drawing-up the desired site layout. This is because the trees suitable for retention should inform the final site layout, rather than the other way around. The council expects that all trees that are protected by a tree preservation order or classified as retention category A or B in a BS 5837: 2012 survey will be retained on the site. If you propose the removal of a significant tree we may ask you to alter your design or show how this is necessary for your proposal and the mitigation you will provide. It should not be assumed that C category trees that constrain development may be removed. We will consider each site individually, giving consideration to the surrounding landscape and existing tree canopy cover.

2.14 In Conservation Areas[14] removal of category C trees should be avoided unless sufficient land for replacement tree planting has been reserved on the site to ensure that there is no net loss of tree provision. The cumulative effect of tree loss on key views should be considered before proposing tree removal. This is in order to protect the character of Conservation Areas (Core Policy 14 and Policies BE1 and NR4)

2.15 All lowland broadleaved woodland, native hedgerows and traditional orchards should be retained wherever possible as they are priority habitats in England. More information on priority habitats can be found in section 3.38 – 3.52.

The Tree Constraints Plan

2.16 We recommend that you submit a Tree Constraints Plan with your planning application for all sites that contain, or are adjacent to, protected trees (protected trees are trees that are included in a tree preservation order

[13] In accordance with Lichfield District Council 'Planning Application Local Validation Requirements' 2015 . As this document is reviewed and, where necessary, updated on a regular basis we recommend that you refer to the version that is current at the time of your application.

[14] Conservation Areas are areas of the district that have been designated by the council for their special architectural or historic interest. Trees form part of the special setting of a Conservation Area and restrictions on their pruning or removal apply. More information on trees within a Conservation Area can be obtained from our Arboricultural Officers.

(TPO) or growing within a Conservation Area). This is in order to demonstrate that you have fully considered the impacts of your design upon the long-term retention of the trees. We may also require a tree constraints plan for other sites where we consider important trees (such as A or B category trees from your tree survey) may be affected by proposed development.

2.17 The Tree Constraints Plan must show:

- The Root Protection Area (RPA) – this is the area around each retained tree that must be kept free of development in order to ensure that the tree's roots are not damaged (calculated from your Tree Survey) More information on the RPA can be found in section 3.12 – 3.15
- The Crown Protection Area - the area around each retained tree that must be kept free of development in order to ensure that the tree's branches are not damaged (measured from your Tree Survey).
- A simple shadow-path, showing where trees will cast shade (measured from your Tree Survey)
- The 'buffer zones' that allow for tree growth (section 3.27 – 3.28)

2.18 The Tree Constraints Plan will help you:

- Show where buildings, garages, roads and underground services can be accommodated.
- Position buildings and gardens in order to receive daylight and sunlight, and can show where additional windows may need to be located.
- Show where open spaces may be best located – to incorporate retained trees as focal points and features of the development.
- Identify areas that can be used for site accommodation, storage etc. during construction without harming trees

The Tree Protection Plan

2.19 Tree protection is needed during the period of construction to provide a construction exclusion zone for each tree. This zone ensures that construction activity, materials and equipment do not damage the trees. A Tree Protection Plan should be prepared at the time of application for all sites containing, or adjacent to, trees and hedgerows. Dependent upon the type of application we may require this plan before your application is determined or as part of a planning condition.

2.20 The Tree Protection Plan must be in accordance with BS 5837: 2012 showing the retained trees in relation to the final layout. It should show the position of all barriers, ground protection and any other methods to be used to protect the trees.

2.21 In order to help the successful establishment of new landscaping we may require areas of proposed soft landscaping and tree planting to be enclosed with fencing or ground protection to BS 5837: 2012 during the period of development. If so, this should be shown on the Tree Protection Plan. This is to prevent soil compaction and contamination during development.

2.22 Part 3 of this SPD gives more information on tree protection plans and protection methods.

New landscaping

2.23 Most new development will incorporate new landscaping. Our local planning application validation

requirements states that all planning applications (excluding Householder, Listed Building Consent, Advertisements and change of use) or where a development effects the setting of a designated heritage asset, should be accompanied by hard and soft landscaping details.[15] More guidance on the information required can be found at section 5.33 of this SPD. In some cases we may agree that the detailed location and selection of plants can be successfully agreed as part of the conditions relating to your planning consent. However you should still consider how landscaping will be incorporated into your site at an early stage.

2.24 For all Strategic Development Allocation sites, Broad Development Locations identified in the Council's Local Plan Strategy and other significant major development sites[16] we require a coherent and comprehensive landscape / green infrastructure strategy as part of a master plan to be submitted as part of the planning application. This is in order to ensure that the landscaping forms an integral part of the design of the development, that future detailed landscaping schemes deliver the overall vision for the site and that landscaping is integrated with the provision of sustainable drainage systems. Further information can be found in the concept statement for each strategic development allocation site within the Council's Local Plan Strategy.

2.25 Please refer to Part 4 of this SPD for further detail on landscaping. More information on Green Infrastructure can be found in the council's Sustainable Design Supplementary Planning Document and individual Strategic Development Allocation policies and concept statements within the local plan.

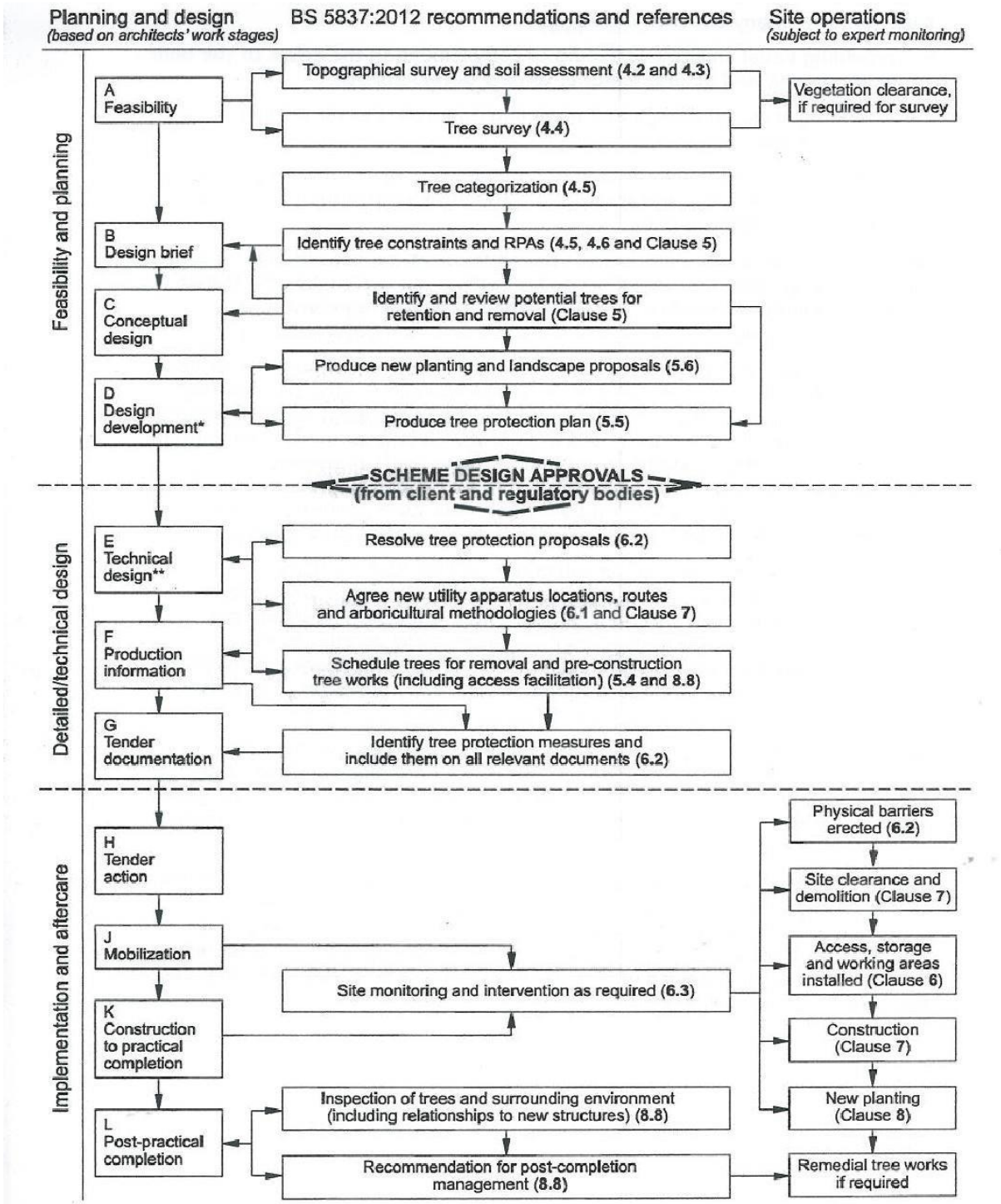
Permitted Development

2.26 Some forms of development do not normally require planning permission. However if there are trees protected by a tree preservation order on or close to the site you may need consent from the council to work near the trees. If the site is within a Conservation Area you may need to give the Council 6 weeks written notification of any proposed pruning, root pruning or tree removal. This is because the development might damage the trees or their roots. If you intend to carry out permitted development the Council recommends that you discuss your proposal with one of its Arboricultural Officers. Unauthorised removal, pruning or root pruning of protected trees as part of permitted development could result in prosecution.

[15] In accordance with Lichfield District Council 'Planning Application Local Validation Requirements' 2015. As this document is reviewed and, where necessary, updated on a regular basis we recommend that you refer to the version that is current at the time of your application.

[16] strategic major sites comprising 200+ dwellings or over 4ha site area or more than 10,000 m² gross floor area

Figure 1: The planning, design and construction process for tree care.
(Numbers relate to sections of BS 5837: 2012)



** The design development stage D in particular is an iterative process, responding to and resolving constraints as they emerge but, once completed, there needs to be a high level of certainty for proposed outcomes.*

3. Part 2: Site Layout & Design

3.1 In order to meet the policies[17] in our Local Plan the design and layout of your site should integrate retained trees and vegetation and incorporate new planting so that they:

- Have a satisfactory long-term spatial relationship with buildings and other infrastructure
- Make a positive visual contribution to the area
- Provide the maximum benefits for canopy cover, health and well-being, urban cooling and the adaptation of the site and the neighbourhood to climate change
- Provide wildlife links and habitat enhancement

3.2 Our Local Plan Policy NR4 states 'potential long-term conflicts between retained trees, hedgerows and built form will be designed out at the planning stage'. If the council considers your layout and design has not taken existing trees and vegetation and new landscaping sufficiently into account it may ask you to redesign your proposal. In order help us determine your application quickly you should consider trees and landscaping early in the design and layout stage.

3.3 When considering the layout of your development, trees and hedgerows must be integrated into the overall design concept with sufficient space to allow retained trees and hedgerows to flourish. Space must be allocated to allow the planting of new large trees or groups of trees in key visual locations and as canopy cover provision. Particular care must be given to natural assets such as woodland, native hedgerows and veteran trees.

3.4 You should attempt to place existing large trees, hedgerows and trees with significant growth potential in public open space. Placing them in private gardens where they may be less appreciated and cause amenity problems can often lead to their eventual removal.

3.5 Your planning application should therefore demonstrate that you have considered, and sought to design-out, possible conflicts between trees and landscaping and the built form. You should also be able to demonstrate that you have maximised the benefits provided by existing trees and landscaping and have made sufficient provision for significant new soft landscaping.

3.6 This could be demonstrated in your planning application through a:

- Design and Access Statement (section 3.56 – 3.57) with sufficient additional tree and landscape information or,
- Arboricultural Impact Assessment[18] (section 3.57) or,
- Site layout plan clearly showing all trees, hedgerows and other vegetation to be retained and removed in relation to the proposed layout, the location, design and details of any hard surfacing proposed within the root protection area of the trees, the location of proposed street lighting, CCTV cameras and underground services and the areas available for new planting.

[17] In particular Local Plan Policies BE1, NR3, NR4, NR6, Core Policies 3, 13, 14

[18] An arboricultural impact assessment is carried out by your arboricultural consultant. This assesses your preferred development layout and its possible effects on retained trees and proposes the design or construction solutions that may be needed. For more information see BS5837:2012

Sustainable Design and Layout

3.7 We will consider how your proposed development may affect existing or proposed trees and landscaping over the expected life of the development. Good design and layout takes account of buildings, spaces and people. It also assesses how the area will be used throughout its expected lifetime.

3.8 The largest components of most sites are buildings, highways and landscaping or green infrastructure. Good design should seek to create and provide for a long-lasting sustainable relationship between these elements. Large trees, hedgerows and woodland are a major component of green infrastructure whose significance may not be limited to the site. For additional information on green infrastructure please refer to our Sustainable Design Supplementary Planning Document.

3.9 On a local scale, the physical size of a tree can dominate a building if the relationship between the two has not been properly considered. This can lead to fears about tree safety, lack of light or physical damage to structures and ultimately pressure for unsightly pruning or tree removal.

3.10 Unlike built forms, trees and soft landscaping change over time – both seasonally and as they grow. They are living systems that have basic requirements for water, air and space above and below ground. Your development must provide for these needs if it is to be considered sustainable.

3.11 To be a sustainable development your design and layout must consider:

- Tree roots including hard surfaces (section 3.12 – 3.21)
- Light and shade (section 3.22 – 3.26)
- Buffer zones: Future growth and perceived threat (section 3.27 – 3. 28)
- Seasonal changes and the features of types of trees (section 3.29 – 3.30)
- Ancillary development, services and utilities (section 3.31 – 3.34)
- Sustainable urban drainage (section 3.35)
- Streets, site access and sightlines (section 3.36)
- Retention of groups of trees (section 3.37)
- Protecting natural assets: woodlands, veteran trees, hedgerows, traditional orchards and protected species (section 3.38-3.52)
- Landscaping provision, canopy cover and climate change (section 3.53 – 3.55)
- Protecting and enhancing the historic environment and heritage assets (section 3.48 - 3.49, 3.54 and 5.12 - 5.14)

Guidance on each of these is given below.

Tree roots

3.12 Roots are vital to the stability, health and growth of trees but because they are hidden underground it is easy to overlook damage to them. Tree roots can be damaged by construction in many ways, for example:

- Placing structures or underground services too close to trees resulting in root severance;
- Placing hard, non-permeable surfaces over the root area and so preventing air and water reaching them; or
- By designing a layout that cannot be practically implemented

without causing damage to retained trees, such as requiring temporary site access through a group of trees.

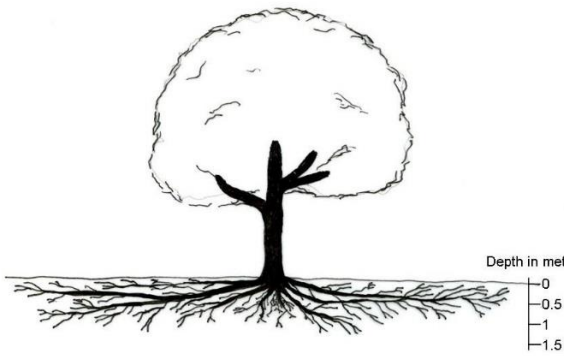


Figure 2: Typical Rooting Structure of a Tree

Protecting Roots

3.13 Root damage is the most common cause of damage to trees on development sites. To ensure the survival of trees BS 5837: 2012 recommends the allocation of a Root Protection Area (RPA) for each tree on the site. The RPA is an area surrounding a tree that contains sufficient rooting volume to ensure the tree's survival. The RPA for each tree is determined by your tree survey.

3.14 Figure 2 shows the typical rooting pattern of a tree. You will see that:

- 90% of a tree's roots are usually located in the top 1m of soil
- Roots spread well beyond the branch canopy
- The majority of trees do not have deep central tap roots.

3.15 Therefore, works are rarely allowed within the Root Protection Area. Even a small trench 0.5 metres deep to accommodate a cable or drain may lead to the loss of a tree and could be unacceptable.

Placing development to avoid root damage

3.16 You should show how the root areas of retained trees have been addressed in the design of your development by:

- Adherence to the Root Protection Areas(RPA) determined by your initial tree survey and tree constraints plan and designing your layout with reference to these protection areas. Low impact uses: You should design the site creatively to only place uses close to trees that have little impact on tree roots. Low impact uses do not require excavation, changes in levels or change the surface around the tree. Examples could include open spaces, non-dig footpaths and gardens.

- Avoiding the placement of new hard surfaces such as footpaths, car parking, drives and roads within the Root Protection Area of existing trees unless agreed with the Planning Officers. (See section 3.17 – 3.21)

- Retaining existing hard surfaces close to retained trees to prevent root damage during the removal of the existing hard surfaces. A method statement may be required prior to the determination of your application if any hard surfaces are to be removed within the Root Protection Area of existing trees.

- Retaining boundary treatments: Existing hedges, trees and shrubs along site boundaries and

internal boundaries should be retained and incorporated into the development. However, we recommend that hedgerows are placed within open space rather than used to form private boundaries so that they are not eroded. Where the hedgerow has not been maintained, or where it contains semi mature or mature trees, the minimum distances to development should be as given in BS 5837: 2012. Walls and dwarf walls should not be located within the Root Protection Area of trees or outgrown hedges or within 2m of maintained hedges. This distance will be greater for species-rich or historic hedgerows (see 3.47) Fencing or railings may be permitted within the Root Protection Area of trees or alongside existing hedges. A method statement will be required to demonstrate how this is to be installed without damaging tree roots.

- Avoiding the placement of basements, undercroft parking, retaining walls, steps and swimming pools within the root protection areas of retained trees as they result in direct root severance. Adequate allowance must be made for additional excavation, shuttering and backfilling and these areas must also be outside the root protection areas.

- Grouping trees: Wherever possible individual trees should be grouped together and retained as such, preserving the area between them as construction free or for light uses only.

- Foundations: Traditional strip foundations are not appropriate within the Root Protection Area. We recommend that structures requiring foundations are placed outside the RPA. If you propose foundations within an RPA we may require that your foundation design is included with your planning application in order that you can show that your proposal will not damage the trees and that the installation of the foundations is achievable. Further design guidance and special engineering for foundations can be found in BS5837:2012

Hard surfacing close to trees and no-dig construction methods

3.17 We recommend that all new hard surfacing is placed outside the root protection area of trees. If you intend to incorporate hard surfacing within this area you will need to demonstrate that this is unavoidable and show how you will minimise adverse effects upon the tree. All areas of hard surfacing agreed within the Root Protection Area must be permeable to air and water. Only permeable' no-dig' construction methods, such as 3D cellular confinement systems[19], will be permitted. However, as we assess the likely effects of hard surfacing on a case by case basis, and depending upon the site, the trees and your proposal we may ask you to redesign this element of your site.

[19] A 3D cellular confinement system rests on the existing soil surface and is built upwards, rather than traditional construction which excavates and compacts the soil before laying a sub-base. Excavation and compaction of the soil severs tree roots and damages the soil's structure.

3.18 Any proposal that incorporates hard surfacing within the Root Protection Area (RPA) should include the location of the feature, its construction method and materials on the site layout plan. We recommend that this is submitted with your planning application. This is because the inclusion of a 'no-dig' surface may affect other elements of your design and therefore may not be able to be agreed by conditions after planning consent is granted. Proprietary 3D cellular confinement systems are available and if used should be specified on your plans. Design recommendations for permanent hard surfacing within the RPA can be found in BS5837:2012.

3.19 You should bear in mind that you will need to account for the increase in levels caused by 'no-dig' construction when tying in to finished floor levels.

3.20 In many cases underground services cannot be laid beneath 'no-dig' surfaces because of the materials used. You should reserve sufficient space elsewhere at the layout stage for underground services.

3.21 Some no-dig construction methods may not be suitable for adoption by the highways authority. We recommend that you relocate the feature or demonstrate - at the time of submitting your application - that the no-dig solution offered is acceptable to the highways authority or that an alternative maintenance scheme is available.

Light and shade

3.22 Your development should utilise existing trees and new tree planting to provide a choice of shade and shelter as part of meeting its sustainable development goals.

3.23 The opportunities and benefits of shade must be considered in regard to the reduction of solar gain and overheating of buildings in the summer months, the provision of shaded car parking, shade and shelter for seating in open spaces and the provision of shaded shopping areas and pedestrian and cycle routes.

3.24 Shade tree planting is a passive method that can reduce the need for air conditioning in existing and new homes. When planted strategically, trees can reduce the fuel demand for heating and cooling buildings.

3.25 Shade cast by trees and the combination of shading from trees with shade from proposed buildings must be carefully considered, particularly in relation to gardens. Gardens may need to be larger or the orientation of the houses altered if trees cast shade over a large proportion of the ground. This is in order to give residents 'usable' garden space and to avoid conflict with retained trees. Shade areas should be demonstrated in the Tree Constraints Plan submitted with your application.

Orientation of houses and principle windows for sunlight and daylight

3.26 The physical presence of tree canopies too close to windows can cause the trees to feel 'oppressive' or reduce the amount of daylight received by rooms. Your application should demonstrate how the placement of windows relates to retained trees, consider the internal layout of buildings, and adhere to the buffer zone distances given below regarding sufficient space for future growth.

Buffer zones: Including sufficient space for the future growth of tree canopies

3.27 Trees are living systems and will increase in size to their maturity. The future growth of the canopies of the

trees on the site, in relation to the lifespan of the buildings, must be taken into account when laying out a site. The buffer zones also allow separation between trees and buildings that reduce the perceived threat that trees may fall or damage the property.

3.28 Local Plan Policy NR4 requires that sufficient space is reserved within developments for the planting and sustainable growth of trees. You should aim to achieve the following distances between the current outer edge of the canopy of the tree and the closest part of the house, commercial or retail building. Closer distances may be acceptable for buildings that are ancillary to dwellings, such as garages or stores. Roads, Sustainable Drainage Systems (SuDS), pathways, landscaping and other ancillary features may be suitable within the buffer zones:

- Young and proposed small ornamental trees (e.g. Cherry, Silver Birch) the expected crown spread at 20 years.
- Young and proposed large trees (e.g. Oak, Sycamore) the expected crown spread at 50 years.
- Semi-mature large trees (e.g. Oak, Sycamore) the expected crown spread at 100 years.
- For all mature trees of large species (such as Oak) a distance of 4m between the edge of the canopy of the tree and any dwelling, retail or office building (or further if the root protection area is larger than the canopy spread).
- The requirements for veteran and 'aged' trees will need to be individually assessed. Early consultation with the council's arboricultural officers is recommended.

Seasonal changes and the features of types of trees

3.29 Different species of trees have different properties and this may affect the use of the area close to the tree.

- Seasonal changes, such as leaf and fruit fall, may affect the use of the spaces immediately around the tree.

- Differences in light levels in summer and winter caused by the presence or absence of foliage may influence the orientation of windows.

- Growth habits such as large surface roots may displace hard surfacing. Weeping trees may obscure sightlines or block footpaths.

3.30 Your layout should reflect the character of the trees on the site and aim to minimise unsuitable uses close to particular varieties of trees.

Ancillary development, services and utilities

3.31 The ancillary structures and utilities associated with a development can damage trees if insufficient thought is given to their placement at the design and layout stage.

3.32 Layouts should show that there is space for the provision of the necessary infrastructure and its intended use, without the need for tree removal, pruning or root pruning at a later date. The Council may require this information prior to the determination of your application. You should consider the following:

- Street lighting and signing, CCTV, sightlines, overhead service placement. Engineers should plan these elements of infrastructure with reference to the existing trees and expected landscaping constraints of the site. Failure to do so can lead to long term conflict between the growth of the tree and the infrastructure. Services should be placed so that there will not be a repeated need for tree pruning. Consideration should be given to the recommendations in 'Secured by Design' in respect of public safety, property security, CCTV, lighting and surveillance.[20] More information on secure design and new landscaping can be found in section 5.16.

- Underground services including drains, soakaways and certain types of Sustainable Drainage Systems (SuDS) should be located at a sufficient distance from trees to prevent root damage when services are installed or repaired. Where tree planting will be undertaken in locations where there will be a high concentration of underground services such as streets and plazas, sufficient space underground must be reserved at the initial site design stage to ensure that underground services and tree planting can both be accommodated. Dedicated service runs and dedicated tree root areas must be incorporated within the design. Any root barriers used to separate services from new tree planting should provide the largest possible root area, and should not be used as a method to bring services close to newly planted trees.

3.33 Root barriers should not be incorporated unless a proven need is demonstrated. This is to allow maximum rooting volume for the tree and the free movement of water in the soil. Section 4 gives more information on tree planting and tree pits.

3.34 Any works to underground services within the root protection area of trees must be undertaken in accordance with the National Joint Utilities Group recommendations.[21]

Sustainable Drainage Systems (SuDs)

3.35 Sustainable drainage systems (SuDS) are an increasingly important part of the district's green infrastructure. SuDS minimise surface water run-off and flood risks in an environmentally friendly way by mimicking natural water systems such as ponds, swales and basins. SuDS can involve various 'green' options such as rain gardens, green roofs and infiltration trenches in order to slow water flow rate to reduce flood risk. They also can manage pollutants on site. Woodland, trees, vegetation and soils have a role to play in SuDS by aiding in water interception, storage and infiltration while increasing evapo-transpiration. SuDS offer attractive opportunities to incorporate tree planting and other vegetation, such as reed beds, within them. We support multi-functional SuDS features that include opportunities for landscaping,

[20] Policy BE1. More information on incorporating new landscaping and infrastructure can be found in 'Secured by Design: New Homes' Association of Chief Police Officers 2010

[21] National Joint Utilities Group Vol. 4 'NJUG Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees'

biodiversity and play whilst helping to ensure local adaptation to climate change. Opportunities for incorporating new trees and landscaping within SuDS should be sought and further information on the incorporation of SuDS into your development can be found in our Sustainable Design Supplementary Planning Document and sustainable drainage best practice guidance.[22]

Streets, site access and sightlines

3.36 Trees in, or adjacent to, the highway are highly visible and contribute greatly to the character and distinctiveness of an area. They also filter out the particulate components of vehicle exhaust pollution [23] and provide shade and interest for pedestrians and cyclists. Tree planting can also be used for traffic calming. The provision of site access, roads and driveways should be placed to minimise the need to remove trees and hedges for sightlines. Developers should follow the guidance in 'Manual for Streets' and 'Manual for Streets 2' [24] to provide creative solutions that reduce the extent of sightlines and to incorporate street tree planting. More information on street design and street tree planting can be found in section 5.56 – 5.60 and 'Trees in Hard Landscapes: A Guide for Delivery' Trees and Design Action Group 2014.

Retention of groups of trees

3.37 Layouts should retain groupings of trees and not fragment them. This can be important for the long- term safety of the trees, as groups of trees shelter each other in high winds. Linear groups of trees and hedgerows may be important navigational aids for bats. In general, no breaks greater than 10m should be proposed without discussion with our Ecology Officers.

Caring for our natural resources

3.38 The landscape of gently rolling land and relatively flat river valleys of the district relies heavily on woodlands, hedgerows and trees to give character to the majority of the landscape and to our settlements. Therefore all these components should be protected and opportunities for enhancement included in your development proposals.[25]

3.39 The assessment of existing heathland and other non- woodland type habitats such as grasslands and watercourses and the creation of new non-woodland type habitats is outside the scope of this SPD. Please refer to the council's Ecology Officers for further details.

<u>Copses and woodlands including Ancient Woodlands</u>

3.40 Veteran or 'aged' trees and Ancient Woodlands[26] are afforded protection in the 'National Planning Policy Framework' 2012' which states that 'planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including Ancient Woodland and the loss of aged or veteran trees

[22] 'The SUDS Manual' 2007 CIRIA (C697) and later editions

[23] Forest Research (2010) 'Benefits of Green Infrastructure'

[24] 'Manual for Streets' Department of Transport 2007 and 'Manual for Streets 2 – Wider Application of the Principles' Chartered Institute of Highways and Transportation (2010)

[25] Policy NR4

[26] Ancient Woodland, as defined by Natural England, is land that has had continuous woodland cover since 1600 AD and may be: Ancient Semi-natural Woodland – ancient woodland sites that have retained the native tree and shrub cover that has not been planted, although it may have been managed by coppicing or felling and allowed to regenerate naturally or Ancient Replanted Woodland or plantation on Ancient Woodland sites – ancient woodland sites where the original native tree cover has been felled and replaced by planting, usually with conifers, and usually this century.

found outside Ancient Woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss.'[27] Our Local Plan Strategy policy NR4 states 'In the case of ancient woodland and veteran tree(s), development will be resisted as mitigation for these unique assets cannot be achieved'. The Forestry Commission and Natural England have produced standing advice for Ancient Woodland and veteran trees for the purpose of the planning system. This is often updated and should be referred to as it is a material planning consideration. [28] If your proposed development is near an ancient woodland we recommend that you also refer to the Forestry Commission's 'Ancient Woodland and Veteran Trees: Assessment Guide to Potential Impacts in relation to Planning Decisions'. Ancient wood pasture and historic parkland should be treated as ancient woodland.[29] Our Local Plan also includes other types of woodland, trees and tree landscapes, traditional orchards and hedgerows as they are important nationally and locally as priority habitats.[30]

3.41 All Native Broadleaved Woodlands are priority habitats[31], in addition to those woodlands that are Ancient Woodland. Existing woodlands require a landscape buffer of at least 50m[32] (this may be greater for Ancient Woodlands or designated sites of nature conservation) to protect the root systems of the trees, allow the natural cycle of regeneration and decay, reduce disturbance and light pollution and to protect the biodiversity value of the habitat. In some circumstances, where the health and stability of the trees and the function of the woodland habitat would be uncompromised informal open space or pedestrian/cycle routes may be placed within the landscape buffer, however lighting may need to be agreed with the council's Ecology Officer owing to the potential affects on wildlife. Existing woodland should not be fragmented. Layouts must consider the provision of planted native species links (with trees and shrubs of local provenance, ideally from the site itself) between existing groups of trees, hedgerows and woodland on the site to the wider area to provide links for wildlife and as part of green infrastructure provision.[33]

<u>Open Space Provision of Natural and Semi-Natural Green Space</u>

3.42 In addition to being valuable for nature conservation, woodland and other natural or semi-natural green space is an important element of open space provision. Local plan policy HSC1 gives more information on improving the quality, quantity, variety and accessibility of these natural and semi-natural green spaces as part of your development and the size and siting relevant to our population.

3.43 New and improved public access woodland is particularly appropriate within and adjacent to the Forest of Mercia, Cannock Chase Area of Outstanding Natural Beauty and

[27] Section 118, National Planning Policy Framework 2012

[28] 'Ancient Woodland and Veteran Trees: Protecting them from Development' Natural England and the Forestry Commission Oct 2015 (and amendments)

[29] Ancient Woodland and Veteran Trees: Protecting them from Development' Natural England and the Forestry Commission Oct 2015 (and amendments)

[30] listed as habitats of principal importance in England in accordance with section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and UK Biodiversity Action Plan (England) (UK BAP) and see Policy NR3,

[31] UK Biodiversity Action Plan (England) (UK BAP)

[32] 'Impacts of Nearby Development on the Ecology of Ancient Woodlands' Woodland Trust Report 2008

[33] Local Plan Policy NR6: Linked Habitat Corridors and Multi-functional Greenspace

National Forest areas, and as part of Strategic Development Allocation sites.

3.44 Other habitat and landscape types may also be suitable in these areas, particularly lowland heathland - and the incorporation of wetlands may be suitable within the area of the Central Rivers Initiative, for example. We recommend therefore that you refer to the guidance available for these areas of the district so that your development can contribute to the local distinctiveness of each area and provide additional appropriate benefits for biodiversity. More information may be obtained through the following, which may assist you in integrating appropriate green infrastructure into your development:

- Forestry Commission West Midlands: West Midland Forestry Framework and West Midlands Woodland Opportunities (England) maps[34]
- National Forest: Guide for Developers and Planners[35]
- Cannock Chase AONB: Management Plan 2014-2019 and future documents[36]
- Central Rivers Initiative[37]
- Forest of Mercia[38]
- Staffordshire Biodiversity Action Plan: Ecosystem Action Plans[39]

3.45 Woodland creation or management as part of green infrastructure provision should be designed and managed in accord with the UK Forestry Standard and Natural England's Accessible Natural Greenspace Guidance.[40]

Veteran and 'aged' trees

3.46 Veteran and 'aged' trees are afforded protection via the 'National Planning Policy Framework' 2012 (see section 3.40). Veteran trees are trees that have features that form a valuable wildlife habitat, such as dead wood, trunk hollows, bark loss, tears and scars. An 'aged' or ancient tree is a tree that is old for its species. [41] Layout and design for a site with a veteran or 'aged' tree must address the requirements of veteran and ancient trees and their management.[42] Veteran or 'aged' trees are often associated with Wood Pasture and Parkland which are both priority habitats[43].

Hedgerows

3.47 Native hedgerows are priority habitats in England[44]. Therefore layouts must retain these features and seek to enhance them through supplementary planting and linkages to other hedgerows, water features, woodlands and trees on and off-site. Hedgerows should be incorporated within linear open spaces to ensure their continued protection, because using them as

[34] Available at Forestry Commission website www.forestry.go.uk
[35] Available at the National Forest website www.nationalforest.org
[36] Available at the Cannock Chase AONB website www.cannock-chase.co.uk
[37] Central Rivers Initiative led by Staffordshire Wildlife Trust www.staffs-wildlife.org.uk
[38] Forest of Mercia website www.forestofmercia.com
[39] Staffordshire Biodiversity Action Plan (SBAP) www.sbap.org.uk
[40] United Kingdom Forestry Standard (UKFS). Forestry Commission 2011 and 'Nature nearby': Accessible Natural Greenspace Guidance' Natural England 2010
[41] For a more detailed definition and surveying method of veteran and ancient trees see 'Defining and Surveying Veteran and Ancient Trees' Fay, N 2007
[42] As given in 'Veteran Trees: A Guide to Good Management' English Nature 2000 and 'Ancient and other Veteran Trees: Further Guidance on Management.' ed. Lonsdale, D. 2013.
[43] listed as habitats of Principal Importance in England in accordance with section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and see UK Biodiversity Action Plan (England) Priority Habitat
[44] listed as habitat of Principal Importance in England in accordance with section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and see UK Biodiversity Action Plan (England) Priority Habitat

residential boundaries could lead to their erosion and loss. Existing gaps in hedgerows should be used before proposing new gaps. Species-rich and/ or historic hedgerows will require a buffer of at least 5ms either side of the hedgerow and its associated features. This may be greater if the hedgerow contains trees. Footpaths, cycle routes and landscaping features may be permissible within the buffer zone, however lighting will need to be agreed with the council's Ecology Officer owing to the potential affects on wildlife.

3.48 Hedgerows are also a key part of the historic landscape. The removal of a hedgerow as part of a development proposal may require a Heritage Statement as part of your planning application where it forms part of a significant historic landscape or area of archaeological potential.[45] More information on Heritage Statements can be found in the council's Planning Application Local Validation Requirements and our Historic Environment Supplementary Planning Document.

3.49 Information on the historic landscape of the district can be found in the Historic Environment Assessments produced by Staffordshire County Council and our Historic Environment Supplementary Planning Document. The Hedgerows Regulations 1997 gives information on the identification of historic hedgerows for the purposes of the regulations and can help you identify important hedgerows. Local tithe maps, enclosure plans, parish, estate and manorial records, plans of land at auction and railway and canal plans are some sources of information that can help to identify historic hedgerows - many of these are held by the Staffordshire Record Office.

Traditional Orchards

3.50 Although Lichfield District does not have widespread fruit production, traditional orchards do occur within the district and should be protected on development sites where they occur. This is because traditional orchards are a priority habitat. The minimum size of a traditional orchard is 5 trees with crown edges less than 20m apart. Smaller numbers of fruit trees in gardens should also be considered for retention in the interests of future crop diversity and local distinctiveness.[46]

Protected Species and Species of Principal Importance

3.51 No tree or hedgerow works or removal should contravene the Wildlife and Countryside Act 1981 (Section 1) as amended by Countryside & Rights of Way Act 2000 (CROW Act) and must take into account any protected species including bats and nesting birds. Further information can be obtained from the council's Ecology Officers.

3.52 Where ecological site surveys indicate that trees, hedgerows or other landscape features are important for protected species or species of principal importance, these features must be retained on the site and advice sought from the council's Ecology Officers. Any tree, group of trees or hedge that is scheduled to be removed as part of the layout should be assessed for its importance for protected species and species of principal importance. This

[45] In accordance with Lichfield District Council 'Planning Application Local Validation Requirements' 2015. As this document is reviewed and, where necessary, updated on a regular basis we recommend that you refer to the version that is current at the time of your application.

[46] Traditional orchards habitat description: UK Biodiversity Action Plan: Priority Habitat Descriptions (BRIG) (ed. Ant Maddock) 2008

may include flowering plants, invertebrate animals, mosses, lichens and fungi that are associated with woodland, utilising veteran or aged trees or the land in which the trees are situated.

Landscaping Provision, Canopy Cover and Climate Change

3.53 The design and layout or your development should incorporate sufficient space for new tree planting and landscaping that is relevant to the visual amenity of the site and its locality, contributes to climate change adaption for the site and tree canopy cover. See the Introduction to this SPD for our canopy cover aspiration and section 4.

3.54 The importance of Lichfield's tree canopy to the skyline and setting of the city must be reflected in the existing and new landscape provision for sites within the city. New development should seek to preserve and enhance the skyline views through large tree planting. [47] In addition, there should be no net loss of trees on sites within our Conservation Areas in order to retain the important tree canopy cover.[48]

3.55 Developers should be aware that some landscaping schemes, such as those within hard surfaces, may require supplementary irrigation throughout the life of the development. Provision of supplementary irrigation should therefore be designed into the layout of the site and/or the design of buildings, drainage and surfaces. The requirements for the irrigation of the landscaping scheme should be considered early in the design process. More information on tree planting, hard surfaces and irrigation can be found in section 4 of this SPD.

Design and Access Statement

3.56 The Design and Access statement submitted with a planning application should include how the design principles and layout of the proposal has taken account of the opportunities and constraints afforded by on and off site trees and vegetation as part of the context of the site, the manner by which these have been addressed and utilised and the provision of new landscaping. Further information on Design and Access Statements can be found in Lichfield District Council's Local Validation Requirements.

3.57 It is recommended that the Design and Access statement is supported by an Arboricultural Implications Assessment (AIA) to BS 5837: 2012. An Arboricultural Implications Assessment is a study undertaken by an arboriculturalist to identify, evaluate and, where appropriate, mitigate the direct and indirect impacts on existing trees that may arise by the implementation of your site layout proposal. This may include proposals for special engineered surfaces close to trees, foundation design or construction method statements. Further details on the AIA may be found in BS 5837: 2012.

Tree Valuation

3.58 In order to preserve the tree canopy cover and visual amenity of our settlements where a development proposal requires or results in the removal of trees on public land Lichfield District Council will value the trees using the CAVAT[49] asset evaluation method. The council may seek compensation for trees removed to facilitate development based on the CAVAT value of the removed trees plus the cost of

[47] Core Policy 14

[48] Policy NR4, Core Policy 14

[49] "Capital Asset Valuation for Amenity Trees" London Tree Officers' Association 2010

replacement trees and their maintenance for three years.

4. Part 3: Tree Protection on Development Sites

4.1 Trees and hedgerows can easily be damaged during construction work. Therefore it is vital to ensure that trees and hedgerows scheduled for retention are protected during the construction of a development in order to preserve the valuable green assets of the site. We look carefully at the practical implementation of your development proposals during the assessment of your planning application. Often temporary protective measures such as fencing, careful site management during construction and arboricultural supervision will be sufficient to allow development to be undertaken. However, proposals that cannot be practically implemented without damaging the trees or hedges that are scheduled for retention may need to be redesigned.

4.2 We require you to demonstrate how retained trees and hedges will be protected during development. In order to do this it is important to understand how and why they can be damaged by construction.

How trees and hedges can be damaged during construction

4.3 Soil Compaction: When soil is compacted the soil structure is damaged. This prevents air, water and nutrients reaching the roots of the tree. Alternatively compacted ground may alter soil drainage, resulting in the ground becoming waterlogged and killing the roots. The storage of materials, including bricks, soil, gravel and cement, and the movement of vehicles can cause compaction. One vehicle movement can cause sufficient compaction to damage a tree.

- Storage of materials and the movement of vehicles will not be permitted within the Root Protection Areas (RPAs) of trees.

4.4 Excavations within the Root Protection Area are likely to sever roots. This can reduce the tree's ability to take up water and nutrients, allow decay to enter and may compromise the tree's stability.

- In exceptional circumstances, some minimal excavation may be justified within the Root Protection Area. This will need to be agreed with the council prior to any work. The use of hand digging and a method statement will be required. (See also section 3.17 -3.21)

4.5 Ground level changes: Both reduction and raising of soil levels can be detrimental, even if this is only by a few centimeters. Reducing ground levels may sever roots, and can change the drainage of a site. Raising ground levels can cause compaction and suffocate roots.

- The raising or lowering of ground levels within Root Protection Areas (RPAs) will not be permitted.

4.6 Impact damage: This can be caused by machinery and includes torn branches, and damage to bark and trunk. Damaged areas of trees can allow the entry of decay fungi and reduce vigour. Surface roots can be crushed by the passage of vehicles.

- Machinery and equipment will not be permitted within Root Protection Areas (RPAs).

4.7 Soil contamination is caused by the spillage of oil, fuel and chemicals, mixing cement or other materials in or near the rooting area. All chemicals should be kept in a safe storage area downhill from trees and at least 10m

from the tree trunk, to prevent them leaching through the soil.

- The mixing, disposal or storing of materials, including cement, will not be permitted within Root Protection Areas (RPAs).

4.8 Fires: Heat as well as flames will damage the tree's tissues under the bark - even if the bark does not appear burnt.

- No fires should be lit within 10m of the crown of any tree. Ideally no fires should be lit anywhere on the site as the potential for damage is severe.

Methods to protect trees during construction

Tree Protection Plan

4.9 Lichfield District Council's local validation requirements requires a Tree Protection Plan to be submitted with your planning application for sites that contain trees and hedgerows or where there are off-site trees within 15 m of the site boundary including conservation areas and trees protected by tree preservation orders.[50] The Tree Protection Plan may contain some or all of the following tree protection methods.

- Temporary protective fencing (section 4.12 – 4.15)
- Temporary ground protection (section 4.12 -4.15)
- Site layout and agreed working areas (section 4.11)
- Arboricultural Method Statement (section 4.16 - 4.17)
- Pre-commencement tree surgery and schedule of tree works (section 4.18 - 4.20)
- Arboricultural supervision (section 4.21 - 4.23)

4.10 The tree protection plan must be in accordance with BS 5837: 2012 (and future amendments) showing the retained trees in relation to the final layout. It should show the position of all temporary protective fencing or barriers, ground protection and any other methods to be used to protect the trees.

4.11 On larger sites, or sites with trees protected by tree preservation orders or particular constraints, the Tree Protection Plan may also need to show other details such as site accommodation, temporary car parking, storage and mixing areas and access / haul routes for vehicles and plant.

Temporary protective fencing and ground protection

4.12 Temporary protective fencing and ground protection must be installed before any works, including demolition, begin on site. The fencing and ground protection must remain intact for the period of development and should only be removed once all site construction has been completed.

4.13 The temporary protective fencing must meet the specification given in BS 5837: 2012 (and future amendments) as shown in Appendix B.

4.14 Temporary protective fencing may be required to enclose areas designated for new landscaping, in order to preserve the soil structure and thereby promote the successful establishment of new planting. You should therefore bear in mind that proposed landscaping areas may not be available for site accommodation or storage during the construction process.

[50] In accordance with Lichfield District Council 'Planning Application Local Validation Requirements' 2015 . As this document is reviewed and, where necessary, updated on a regular basis we recommend that you refer to the version that is current at the time of your application.

4.15 Further information on protective fencing, fencing within root protection areas and ground protection can be found in BS 5837: 2012.

Arboricultural Method Statement

4.16 Where it is absolutely necessary that limited construction takes place close to trees, the Tree Protection Plan should include an arboricultural method statement to show how you will minimise the impact upon the trees. An arboricultural method statement is a detailed description of work, timing of works and construction techniques designed to minimise direct and indirect damage to trees. The advice of an arboricultural consultant should be sought when preparing a statement.

4.17 Planning consent or the discharge of conditions may be delayed without an arboricultural method statement, if requested.

Pre-commencement Tree Surgery

4.18 Facilitation pruning and pruning for health and safety should be undertaken prior to the start of any other work on site. Works to trees in addition to that agreed in your planning consent may be restricted by a planning condition attached to the planning consent - requiring that pruning works must be agreed in writing with the council. All work must be undertaken to BS 3998: 2010 by a qualified tree surgeon.[51]

4.19 Damage to retained trees when removing others is to be avoided by dismantling the trees to be removed. In order to protect rooting areas, stumps within the root protection area of trees that are to be retained should be ground out, not dug or pulled out.

4.20 It is the responsibility of those on site to ensure that all protected species checks (e.g. bats) are undertaken and the work and timing of works is compliant with the relevant acts.

Arboricultural Supervision

4.21 On sites where there are trees protected by a tree preservation order or other significant trees and sites requiring careful construction close to trees, arboricultural supervision may be required under the planning conditions. Prior to the commencement of work on site, you are advised to engage the services of an Arboricultural Consultant[52] to monitor the erection of protective fences and ensure all work undertaken in proximity to the trees complies with the tree protection plan and the method statements agreed with the council. The Arboricultural Consultant should also give a pre-commencement briefing on tree protection to the site manager and senior site staff. Confirmation should be given to the council as part of discharging any conditions relating to arboricultural supervision.

4.22 Dependent upon the site and work programme we advise that your Arboricultural Consultant visits on a regular programmed schedule, but should be available to visit and assist you as and when required or when unforeseen problems arise.

[51] The Arboricultural Association independently assesses tree surgeons. More information on Arboricultural Association Approved Contractors can be found at the Arboricultural Association's website www.trees.org

[52] The Arboricultural Association holds a list of registered Arboricultural Consultants and the Institute of Chartered Foresters holds a list of Chartered Arboriculturalists. More information can be found on the websites of each organisation, www.trees.org and www.charteredforesters.org respectively.

4.23 Your Arboricultural Consultant should record visits and recommendations on a monitoring form. The council may request sight of forms to ensure compliance with the Tree Protection Plan and associated Method Statements.

Demolition

4.24 Trees may require protection during demolition from impact damage, root damage, fires and other works. The above measures should be used to ensure they are not damaged. When demolition is to be undertaken within the Root Protection Area (RPA) or crown spread of a tree an arboricultural method statement should be submitted with the tree protection plan showing how this is to be achieved.

5. Part 4: New Landscaping Provision

5.1 For many people the trees and landscaping in their garden, street and park is their main daily connection to the natural world. Large trees and areas of natural space help to enhance the built environment and give it character – which increases public amenity and helps the district stay an attractive location to live and invest. Health and well-being is improved by having a leafy environment that includes access to parks and other natural areas for exercise. The effects of the changing climate can be adapted and responded to with the help of creative landscape design.

5.2 This SPD addresses the provision of new trees, woodland, hedgerows and shrubs as part of a landscaping scheme. However, other habitats and soft landscape features, such as heathland, ponds and species-rich grassland, may be appropriate and should be considered. This depends upon the location, setting and nature of your development, the intended final uses of the landscaped area and the wider biodiversity and landscape context of the development. The council's Greens and Open Spaces Strategy Manager and our Ecology Officers can assist you in the identification, incorporation and creation of appropriate habitats. The council's Biodiversity SPD and Sustainable Design SPD may give you further information.

New Landscaping and the Local Plan

5.3 Your new landscaping scheme can help you meet the requirements of our Local Plan policies. Our Local Plan recognises and promotes the integral role that high quality landscaping plays in good development. In particular policy BE1: High Quality Development promotes a high quality sustainable built environment which

- Includes effective hard and soft landscaping, including tree planting, integrated into the built form (section 5.5 – 5.11)
- Respects the character of surrounding areas (section 5.12 – 5.15)
- Has a positive effect on public safety, (section 5.16 – 5.17)
- Has a positive effect on health and reducing inequalities (section 5.18 – 5.22)
- Optimises sustainable travel opportunities (section 5.21)
- Makes use of green corridors for people and biodiversity (section 5.25-5.32)

Other Local Plan policies (see Appendix A) include landscaping, sustainable development and climate change (section 5.18 – 5.24) and enhancing biodiversity (section 5.25 - 5.32)

Landscape plans and planning applications

5.4 Depending upon the size and nature of your planning application, we may require one or all of the following landscape documents:

- Green infrastructure layout as part of a master plan including a landscape strategy and landscaping design code (section 5.7 and Sustainable Design Supplementary Planning Document)
- Landscape plan and specification (section 5.33)
- A landscape maintenance schedule, including watering and irrigation (section 5.33 – 5.41)
- Design and construction details such as tree pit design, hard surfaces and designing for street

trees (section 5.33 and 5.42 – 5.60)

More information on the council's planning application validation requirements in respect to landscaping can be found in Lichfield District Council's 'Planning Application Local Validation Requirements'.[53] The current version of the validation requirements can be found on the council's website.

High quality and integrated landscaping

5.5 Relevant to location: Your new landscaping proposal should relate to the wider setting of your site. The design should address the function of the planting, the views within and out of your site and the views of the site from neighbouring land and the public realm. We consider that boundary treatment is particularly important. The design guidance given in Part 1 of this SPD can also help you consider how to incorporate new planting into your development that is appropriate to its location in your site.

5.6 There should be a clear rationale for the choice of species of tree. A large site, for example, may require a hierarchical landscape plan whereby the broad structure is defined by larger species and the more intimate spaces planted with more ornamental trees and shrubs.

5.7 Phasing of planting: On larger sites and sites delivered by multiple agents we require early strategic planting prior to the commencement of development or phased planting to be completed with each section of development. This is to reduce the visible impact of the development and provide visual amenity and recreational opportunities for occupiers of the early stages of the development. Areas of strategic planting should be indicated on your development masterplan and you should provide details of the phasing of the planting and species mixes.

5.8 Robust over time: Your landscaping plans must provide for a robust succession of planting over time. This means that a scheme that relies heavily on short lived ornamental trees such as Birch or Cherry is unlikely to be acceptable.[54] A mix of species to include longer-lived trees like Oak, Lime and Sweet Chestnut is likely to be more acceptable. Consideration must be given to the future growth of trees and hedges and the particular characteristics of the chosen species over time to reduce future conflict between trees and other infrastructure.

5.9 Diverse: We recommend that all planting schemes incorporate trees and shrubs from a range of families. This is in order to reduce the risk of pests or disease destroying the majority of the scheme. In addition it is not yet clear which plant species will thrive in a changing climate and a range of species will insure the scheme against climate-related loss. This is to improve the long-term resilience of your planting scheme.

5.10 Quality: The landscaping scheme provided with your development depends upon good quality, robust plants that are fit for purpose and, particularly with trees, will be of good health and mechanical soundness to provide long-lasting benefits. We may

[53] In accordance with Lichfield District Council 'Planning Application Local Validation Requirements' 2015 . As this document is reviewed and, where necessary, updated on a regular basis we recommend that you refer to the version that is current at the time of your application.

[54] Policy NR4 'The removal of large mature species and their replacement with smaller short lived species will be resisted'.

require trees with bark included at major branch unions or obvious girdling roots or damaged by poorly maintained stakes and ties to be replaced during the landscape maintenance period included in your planning condition. This is because these defects could shorten the safe life expectancy of the tree, the loss of which will erode the landscaping scheme. To increase successful establishment we recommend that all trees are supplied container grown[55] . Lichfield District Council will only accept container trees on sites that are to be offered to the council for adoption. Wherever possible trees should be planted into natural ground or a proprietary system, without the use of root-barriers or deflectors and with a mulch, ground cover or shrub planted base within the first 2m of the trunk.

5.11 Free from disease and compliant with plant health regulations You should ensure that your proposed planting scheme does not include species that are currently restricted in England, and that at the time of planting your scheme is compliant with all current plant health regulations and precautions. The Forestry Commission (FC), The Food and Environment Research Agency (FERA) and the Department for the Environment, Food and Rural Affairs (DEFRA) produce regular updates on plant health regulations and can give you current information. If any of the plants or species used in your planting scheme fail due to pests or disease or become identified by one or all the above bodies as a plant health risk during the maintenance period attached to your planning consent we will require that you follow the current guidance. This may mean that you will be required to inspect your planting scheme for a particular pest or disease, or remove the named species and plant an alternative species.

Respecting the character of the area

5.12 Historic landscape and townscape: Soft landscaping within or close to historic buildings, gardens or conservation areas should aim to enhance the heritage asset and/or its setting. The age or historic use of the site or its locality can give direction to your planting scheme and species choice.[56] We welcome the restoration and management of historic landscape features such as views and vistas, tree planted avenues, specimen planting, parkland and other designed landscape features and the management and creation of new traditional features such as orchards, wood pasture / parkland, woodland and copses, hedgerow boundaries and hedge laying. More information on the historic landscape and heritage assets of the district can be found in our Historic Environment SPD and we recommend early consultation between the council's Principal Conservation and Design Officer and your historic environment specialist and landscape architect.

5.13 Tree planting near ancient monuments or on sites of archaeological interest may be restricted. We recommend early consultation with the County Archaeologist.

5.14 Hard landscaping: Paving, street furniture, public art and other elements of hard landscaping should be designed to provide a scheme harmonious with the soft landscaping and local setting.

[55] British Standard 3936-1:1992 'Nursery Stock: Specification for Trees and Shrubs' and British Standard 8545;2014 ' Trees; from Nursery to independence in the landscape'

[56] More information on our historic landscapes can be found in the Historic Landscape Characterisation and Historic Environment Character Areas in the ' Historic Environment Character Assessment Final report for Lichfield District Council' Staffordshire County Council 2009.

Where a scheme includes public space, or is within a town centre, Conservation Area or close to a Listed Building early consultation with the council's Conservation and Design Officer is recommended.

5.15 Hard landscaping associated with tree pits should comply with our tree pit guidance in section 5.42 – 5.55. Trees within a hard landscaped environment, such as a retail area, car park or street are valuable assets providing shade and cooling, reducing glare from glazing and work in harmony with good building design to create a sense of place. We consider that concerns over minor infrastructure damage by tree roots at an unspecified time in the future should be balanced against the benefits that a healthy tree can provide in a well used or populated area.

Positive for public safety and crime prevention

5.16 Designing out crime: You should consider using secure by design principles [57] to have a positive effect on the reduction of crime and to promote personal safety across your development. This includes

- Planting large single-stemmed standard trees that have been pruned in the nursery to give 2m clear trunk in road verges to give unobstructed sightlines and ease of pedestrian movement, and when planted close to footpaths for ease of surveillance. We recommend planting trees of 25cm trunk girth or larger. Trees of this size are more able to resist vandalism
- Providing and demarcating 'defensible' space to the front of properties through hedge or shrub planting
- Use of climbing plants, hedging or shrubs on blank walls to deter graffiti
- Using suitable species for each location - such as thorny plants for boundary hedging or low-growing shrubs next to a footpath
- Producing integrated landscaping, CCTV and lighting plans.

5.17 Rail safety: Where your development site is adjacent to land owned by Network Rail or the operational railway there may be restrictions on the type of plants that can be used close to the rail network. This is in order to reduce risk to rail lines, passengers and overhead infrastructure. Please contact Network Rail for advice. Network Rail also requests that you contact their Asset Protection Team with a risk assessment and method statement prior to undertaking any tree or root pruning, or tree or stump removal adjacent to the operational railway. This is to ensure that the works do not result in railway land foundations being de-stabilised and to prevent tree branches falling onto the operational railway.

Positive for Climate Change, Sustainability and Health and Well-being

5.18 Climate change and sustainability features: We recognise that innovative landscape design will be needed in planning and planting for climate change. You should ensure that your landscaping proposals take account of the requirement to contribute to canopy cover[58], shade, urban cooling, sustainable drainage systems (SuDS)

[57] 'Secured by Design: New Homes' Association of Chief Police Officers 2010 and associated guidance.

[58] The council aspires to increase large tree provision to achieve at least 20% tree canopy cover in urban

and incorporate sustainable water use and promote low-carbon solutions.[59] Designs that include shade, passive cooling for buildings, street tree provision, habitat links, sustainable water use and the creation of wooded areas are encouraged. All landscaping schemes should positively target planting in locations within the site that that will most benefit from landscaping provision, rather than placing landscaping in 'left over' areas of the development.

5.19 Furthermore, consideration of appropriate tree planting and landscaping is essential on sites adjacent to or protected by flood defences. Earth embankments can become fractured and damaged via the root action of certain established vegetation. Planting strategies adjacent and on such features will need to be agreed with the Environment Agency to ensure the long term sustainability of communities and protection against climate change. Planting within 8 meters of a main river or within the floodplain may require a flood defence consent from the Environment Agency

5.20 Health and Well-being: Particular consideration should be given to new landscaping where your development relates to members of our community who are more vulnerable to the health affects of climate change[60] such as the elderly and children or developments in areas of the district where current tree cover or green space provision is low. This is in order to reduce health inequalities, improve access to attractive open spaces for exercise and mental well-being and to promote healthy lifestyles.

5.21 Reducing car use:[61] Street and verge tree planting are encouraged to provide shaded pedestrian and cycle links to encourage walking and cycling as an alternative to car use. Street and verge tree planting can also reduce air pollution. Detailed guidance on street and verge tree planting can be found in section 5.56 – 5.60)

5.22 The following principles can assist in incorporating new trees into a development site to assist with climate change adaptation and mitigate the adverse health effects of climate change:

- Large, long-lived trees such as London Plane and Lime are more effective in mitigating temperatures than smaller trees such as Cherry or Silver Birch.
- Trees with wide canopy forms are preferable to narrow or fastigiated (upswept) forms for shade and cooling. Trees planted to the west side of buildings are most effective in reducing solar gain to buildings.
- Using passive cooling such as shading, rather than active cooling through air conditioning, is a more environmentally sustainable option and is not affected by rising energy costs, which helps lower-income or vulnerable households.[62]
- Deciduous trees (trees that drop their leaves in autumn) are

areas, including Lichfield, Burntwood, Fazeley, Fradley and new Strategic Development Allocation sites by mid-century. See introduction to this Supplementary Planning Document

[59] Core policies 3 and 10

[60] 'Health Effects of Climate Change in the UK 2012' Health Protection Agency

[61] Core Policy 5 :Sustainable Transport, and Development Management Policy ST1:Sustainable Travel

[62] 'Health Effects of Climate Change in the UK 2012'Health protection Agency – Section 2 temperature effects on health: adaptation strategies

preferable to evergreen or conifer trees close to a building, as they allow light to reach the building in the winter and shade it in summer. This can help us move towards a low-carbon future, as less energy will be needed for air-conditioning in summer or heating in winter.

- Planting trees in groups, lines or avenues is more effective in shading and cooling than planting scattered individual trees.

- Introducing shaded outdoor seating areas in public spaces and providing shade in children's play areas

- Introducing trees to areas of hard surfacing and sites with a high proportion of hard vertical surfaces, such as car parks and public spaces, retail, industrial and commercial developments and higher density residential areas will reduce the locally high temperatures [63]that can be uncomfortable for people. Trees also reduce UV radiation reflection and scattering from concrete and other building materials[64] . The use of trees within hard surfaces can increase rain and stormwater interception and retention. Proprietary integrated tree pit and storm water management systems are available.

More information on the provision of green infrastructure and its role in sustainable development can be found in the Council's Sustainable Development Supplementary Planning Document.

Prudent use of water resources

5.23 The majority of Lichfield District is situated on light, free-draining sandy soils (though your Landscape Architect should determine the local conditions for your site). Newly planted areas therefore require substantial and frequent irrigation during establishment and careful water management. The need for frequent watering during the growing season is likely to be increased by the predicted decrease in summer rainfall and increase in drought periods as a result of climate change. Your development proposals should consider incorporating the following measures to promote sustainable water use:

- Using soft landscaping instead of hard surfaces wherever possible to reduce rain run off into drains.

- Constructing permeable drives and paving that allow rainwater to recharge the soil nearby and become available to plants. This also reduces the run-off burden on drains and reduces flooding.

- Using a proportion of drought tolerant grass mixes, turf, trees and shrubs within your scheme.

- Using rainwater harvesting as a source of water for irrigation of the landscaping. This method may be particularly appropriate as supplementary irrigation for

[63] Current research by the University of Manchester indicates that trees can reduce the surface temperature of concrete by 14C, to that of air and grass and can lower air temperature by 5-7 C.

[64] 'Thin or broken cloud cover may increase ocular (eye) exposure [to UV radiation] due to light scattering, as may many of the surfaces and materials described below. Skin exposure to UVR occurs when the skin is directed towards the sun on a clear day. However reflecting surfaces such as … some building wall materials and concrete paving can also lead to increased exposure.' 'Health Affects of Climate Change in the UK 2012' Health Protection Agency

trees planted in hard landscaping. Rainwater harvesting may be incorporated as part of a larger SuDS system. More information on incorporating supplementary irrigation can be found in section 5.38 – 5.41.

- Good preparation of the areas to be landscaped by using protective fencing to protect the soil from compaction during construction and/or the use of bulky organic matter to improve the water retention properties of the soil prior to planting. More information on protecting areas to be landscaped can be found in Part 3 of this SPD.

- Planting between autumn and spring and avoiding planting in late spring and summer. This results in better establishment of the plants, reduces the likelihood of loss through drought and leads to a more prudent use of water.

- Good aftercare for newly planted landscaping, including a watering regime. This will encourage the development of deep roots, making the plants less susceptible to drought once the period of maintenance is over. More information on watering is given in section 5.35 – 5.37

- The use of mulch and an adequate replenishment regime to help keep moisture in the soil and suppress weeds that compete with the trees and shrubs for water.

5.24 In flood plains and adjacent to water courses periodic water logging of the soil may occur. Tree species should be selected that are able to cope with periodic waterlogging and large fluctuations in soil moisture.

Good for wildlife and green linkages

5.25 Habitat creation and enhancement: Opportunities for habitat creation, enhancement and linking should be exploited whenever possible. The creation of new heathland, species-rich grassland, woodland and copses as part of open space provision within new development is particularly encouraged as an alternative to grassed amenity areas.

5.26 On smaller sites hedges, orchards, roof gardens and green roofs provide new habitats for insects and birds, increasing biodiversity particularly in towns.

5.27 Hedge planting Native hedgerows are a priority habitat nationally and within Staffordshire and we encourage their creation and improvement whenever possible. In addition to rural areas, hedging is appropriate boundary treatment in urban areas and is preferable to fencing as it has wildlife and visual benefits.

5.28 Native hedging: The species choice and percent composition of native hedging will vary for each hedge and the purpose to which it is intended. A suggested species list and percentage mix is available from the council on request. Single species native hedging such as Holly, Yew, Beech or Hawthorn may be particularly appropriate in relation to historic buildings and their settings.

5.29 Non-native hedging: In urban areas non-native hedging may be appropriate. Care must be given to the selection of species that will not quickly outgrow their location and lead to the overshadowing of adjacent properties.

Conifer hedging such as Lawson's Cypress or Leyland Cypress should be used sparingly and its use in preference to other species must be justified.

5.30 Landscaping within or close to designated nature conservation sites and habitats of existing value: Where planting is proposed on or close to sites of wildlife importance or other habitats of existing value such as heathland, wetland or species-rich grassland, the advice of Lichfield District council's Ecology Officer should be sought.

5.31 Invasive species such as *Rhododendron ponticum,* Cherry Laurel *(Prunus laurocerasus),* and Snowberry *(Symphoricarpus alba)* should not be used within rural hedgerows, designated sites or within 250 ms of Ancient Woodland, Sites of Special Scientific Interest or Sites of Biological Importance. [65]

5.32 In the Little Aston Conservation Area and its surrounding area *Rhododendron* is used as boundary hedges and planted within, or close to, protected woodland. *Rhododendron* is an integral feature of this landscape, however we seek to reduce the use of *Rhododendron* in the district owing to its invasive nature, its negative effect on woodland and its role as a host for serious tree diseases. Within the Little Aston Conservation Area you should utilise alternative species such as holly for evergreen hedging and introduce other species for spring colour. Elsewhere within the District the use of *Rhododendron* should be avoided in or close to woodland or significant trees or important landscapes. More information on *Rhododendron* and its risks to plant health can be obtained from the Forestry Commission.

Landscape proposals, plans and maintenance

5.33 In accordance with Lichfield District Council's 'Planning Application Local Validation Requirements'[66] all landscape proposals submitted to the Council with a planning application or to discharge a landscaping condition must include a

landscaping plan showing the:

- Position of each individual specimen tree
- Outline of the areas to be shrub / whip / hedgerow planted, together with a breakdown of the species to be used within each shrub / whip / hedgerow area.
- Location of any root barriers or hard surfacing
- Proposed location of underground services, lighting and CCTV provision
- Tree pit design for any trees to be planted in hard landscaping (section 5.52 – 5.55)

landscape specification giving:

- The name of each species to be planted
- The number of plants (or percentage number of plants within a mix) of each species to be used
- Whether supplied container grown, root-balled or bare-rooted
- Size of plants to be supplied

[65] "Impacts of Nearby Developments on the Ecology of Ancient Woodlands" Woodland Trust Report 2008 and the requirements should be met of section 14 of the Wildlife and Countryside Act 1981 in respect of o the species in schedule 9 of part II of the act regarding invasive species

[66] In accordance with Lichfield District Council 'Planning Application Local Validation Requirements' 2015 . As this document is reviewed and, where necessary, updated on a regular basis we recommend that you refer to the version that is current at the time of your application.

landscape maintenance regime including:

- Watering regime and irrigation method (section 5.35 – 5.37)
- Tree support method
- Mulching and weeding
- Protection from mower and strimmer damage for specimen trees
- Rabbit, vole or deer protection where needed
- A method statement for any landscaping works within the root protection area of retained trees in order to avoid damage.

5.34 You should also consider how the landscaped area will be managed after the initial establishment phase is completed, who will have the ownership of, or responsibility for, the landscaped area and how this will be funded. We recommend early discussion with the council's Planning Officers and Greens and Open Spaces Strategy Manager.

Watering regime and irrigation method

Watering regime

5.35 We require a watering regime to be included with your landscape plans for all landscape schemes, or parts of schemes, that are within hard surfaced areas or contain trees (whether in soft or hard surroundings) or are to be adopted by the council. This is because inadequate watering is likely to result in the failure of trees and shrubs.

5.36 If your planting scheme fails as a result of poor watering during the landscape establishment period set out in your planning application or planning conditions we may require you to replace some, or all, of the planting scheme. This can result in increased costs for developers, so we recommend you ensure your scheme is adequately watered.

5.37 You should check the local conditions of your site to determine the appropriate regime. However the following watering regime - based on our experience of planting in the district- is suggested for trees throughout the first 3 years of the maintenance period set by the landscape planning conditions.
Last week in March – 1 visit
April – September (inclusive) 3 visits each month with more in dry conditions as required
Early October – 1 visit
We may require an extended watering period (to five years) on some sites.

Supplementary irrigation method

5.38 Supplementary irrigation may be required past the establishment period and for the duration of the scheme where trees are

- Located within hard surfaced areas, or
- In locations where reflected temperatures from buildings is likely to be high, or
- Where water movement is restricted by the use of root barriers.

5.39 Supplementary irrigation should be considered early in the layout and design of the site and buildings. Where tree planting is shown indicatively on layout drawings, particularly in hard surfaces, you should address how the planting will receive sufficient water throughout the lifetime of the development.

5.40 Solutions may be as simple as an automated watering system with or without rainwater harvesting. However on larger schemes linking up SuDS water management, storm water management, tree planting and landscaping should be undertaken

whenever possible. Proprietary integrated storm water management and tree planting / irrigation systems are available and if used should be specified by name in your proposals.

5.41 We may require supplementary irrigation information before determining your application. This is because the irrigation may require alterations to the engineering or design of the buildings or layout in order to accommodate it. Early consultation with a landscape architect and the council's Planning Officers and Arboricultural Officers is strongly recommended

Planting within hard landscaping

Tree pit design

5.42 We require a tree pit design to be submitted with your landscaping scheme for all trees to be placed within hard surfaced areas. This is because planting within hard surfaced areas requires careful planning if it is to be successful and provide a place where a tree can flourish. In some instances we may request that the tree pit design is provided before planning consent is granted in order to ensure tree pits and hard areas such as paving or car parking can be successfully integrated. Attempting to retrofit tree pits into hard surfaces or to reroute or protect services can be costly and therefore we advise that you take account of these as part of your site design process.

5.43 Hard surfaced areas are a harsh and un-natural environment for a tree, and it is essential that the basic needs of the tree are met. Without this, a tree is unlikely to thrive and may die within a few years. This results in an erosion of the original vision for the site with the overall development poorer as a result or in costly replacement planting. More information and guidance on the successful design and incorporation of trees within hard surfaces can be found in 'Trees in Hard Landscapes: A Guide for Delivery'.[67]

Designs will need to demonstrate that the pits provide:

5.44 Adequate space and volume underground for the initial and future growth of tree roots: Failure to do so can lead to early tree death, stunted trees, poor anchorage and wind resistance, root girdling and increased likelihood of paving being disturbed by surface roots.

5.45 Formulas are available for the calculation of tree pit sizes in hard surfaces.[68] As the substrate in streets or under hard surfaces can be inhospitable to tree growth the tree pit needs to be large enough to support the tree's requirements for many years. It must be remembered that small tree pit size can lead to the early loss of the trees unless the roots can have unimpeded access to other areas such as gardens or grass verges. A greater volume will be required if root barriers are incorporated.

5.46 Where a line or group of trees is to be planted, tree pits should be linked underground to provide a larger rooting space.

5.47 The use of raised planters for tree planting or wholly surrounding a tree pit with a root barrier is discouraged.

5.48 Provision for air and water: Tree roots require air and water in order to live and therefore any hard surface placed over the tree pit must be

[67] 'Trees in Hard Landscapes: A Guide for Delivery' Trees and Design Action Group 2014 and amendments

[68] Lindsey, P and Bassuk N. 1991 ' Specifying Soil Volumes to meet the needs of Urban Street Trees and Trees in Containers' Journal of Arboriculture 17.6 141-148

permeable to air and water. Hard surfacing can be laid over a tree pit, if a suitable load-bearing tree pit substrate (a structural soil) or mechanical support (modular root cell system) is used. The soil on some brownfield sites or under existing hard surfaces is unlikely to be suitable for tree growth and therefore you will need a new rooting substrate in your tree pit. Proprietary structural soils, soil mix ratios and mechanical supports are available and should be specified by name in the landscaping plans.
Any sand, gravel or other materials used in the construction of the pit or the paving must be of no fines material and lime-free. This is because over time the fines wash into the air spaces in the soil and effectively suffocate the tree. Material containing lime should be avoided as lime can kill tree roots.

5.49 Watering and drainage: For the initial 1 – 3 years after planting a tree will require watering and may require long-term supplementary irrigation
The tree pit must incorporate a suitable method for watering through the establishment period, drainage and, where appropriate, supplementary irrigation measures for the life-time of the scheme. Poor irrigation may result in the formation of surface roots.

5.50 Tree support and protection:
A suitable means of support, such as underground guying, must be provided. Underground guying should follow BS 4043: 1989 'Recommendations for Transplanting Root-Balled Trees' or use a proprietary system. If a proprietary system is to be used it should be named on your plan.

5.51 Tree grills and guards may be included depending upon the needs of the site and the design. The design of these should relate to other nearby street furniture in order to provide a harmonious street scene.

5.52 No contamination: Cement and de-icing salt are poisonous to tree roots. The tree pit and associated hard surfacing must be constructed to ensure contamination cannot occur.

5.53 Root deflectors and barriers:
Concerns regarding the potential uplift of hard surfaces (or other damage) by roots can be minimised by providing the largest possible planting area underground, locating underground services away from trees and using an appropriate species. Research on the long-term effectiveness of root barriers and deflectors is inconclusive and no long-term evidence is available to indicate that root deflectors do not adversely affect tree stability.[69] Therefore, root deflectors and barriers should not be incorporated unless a proven need is demonstrated. This is to allow maximum rooting volume and water movement in the soil. Only exceptionally will approval be granted for landscaping schemes where individual tree pits are enclosed on all sides by a barrier.

5.54 Underground services outside the tree pit should be placed in a trench contained within a barrier if concerns about root damage can be justified. Where this is not possible the service areas and dedicated root runs should be separated by a root barrier as close to the services as possible to provide the maximum rooting area.

5.55 Use of suitable species and stock: The above tree pit design guidance should assist in minimising tree failures and potential root problems. Careful consideration should be given to

[69] 'Trees in Hard Landscapes: A Guide for Delivery' Trees and Design Action Group 2014

select trees that are able to withstand the increased temperatures caused by reflected heat from hard surfaces, the reduction in available water and that are not prone to produce large surface roots. We strongly recommend that all trees planted in hard surfaced areas are supplied container grown to maximise successful establishment.

Street design: Street trees, root barriers and underground services

5.56 Streets provide an opportunity to incorporate large trees into the heart of a development, delivering all the benefits to the local community where they are most needed. Street tree planting is an essential part of green infrastructure and should be provided in any development that incorporates new roads. Trees should be used creatively to enhance the street scene, reduce flooding, promote traffic calming and be incorporated into highway design. More information can be found in 'Manual for Streets' [70] and 'Trees in Hard Landscapes: A Guide for Delivery'.[71]

5.57 In order to incorporate trees into streets sufficient space underground should be reserved at the initial site design stage to ensure that underground services and tree planting can both be accommodated. Dedicated service areas and dedicated tree root runs should be incorporated within the design and may be separated by the use of a root barrier[72]. The positioning of the root barrier should reserve as much area as possible underground for the root system of the tree.

5.58 On larger sites[73] we require cross sectional plans of typical street layouts as part of the landscape strategy and masterplan, including overground and underground sections. This is to ensure sufficient space is available underground for the placement of services and the growth of tree roots and for the growth of tree branches as the trees mature. More information on below ground design can be found in 'Trees in Hard Landscapes: A Guide for Delivery'.[74]

5.59 Whenever possible street trees should be planted in grassed or soft landscaped verges. In certain shared surfaces where no footpath is provided underground services may be located in grassed service margins, within which tree planting may not be possible. Additional verge space will therefore be required to incorporate tree planting within these locations, or trees will need to be located within adequately sized front or rear gardens. You should consider how street trees are to be incorporated into your design at an early stage as this may affect fundamental design principles such as the provision and size of front gardens and width of roads and verges.

5.60 Tree species selection should avoid species or varieties with known tendencies such as the likelihood of root sucker growth, basal sucker growth, persistent large fruit, large surface roots or brittle branches. The council's arboricultural team can provide guidance on species selection.

Design and maintenance requirements for land adoption

5.61 New public parks, play areas, informal open spaces and amenity areas

[70] 'Manual for Streets' Department of Transport 2007
[71] 'Trees in Hard Landscapes: A Guide for Delivery' Trees and Design Action Group 2014 and amendments
[72] 'The Case for Trees' Forestry Commission: England. July 2010
[73] Strategic Development Allocation sites and Broad Development Area sites as given in the Council's Local Plan and major sites comprising 200+ dwellings or over 4 ha site area or more than 10,000 m² gross floor area
[74] 'Trees in Hard Landscapes: A Guide for Delivery' Trees and Design Action Group 2014 and amendments

are occasionally offered to the council for adoption. Early consultation with the council's development management team and Greens and Open Spaces Strategy Manager is advised if you are considering offering land to the Council for adoption, as you may need to consider alternative models for the long-term management of these areas.

5.62 The requirement to provide landscaping for these areas is usually incorporated within the planning conditions attached to the planning consent. However with larger developments Lichfield District Council may require the landscaping scheme or the landscaping design code to be submitted with the planning application. A pre-application consultation is advised.

5.63 We need to be sure that the landscaping that we inherit as part of the adoption is fully established, healthy and able to be maintained in a cost effective manner. Therefore any landscaping to be offered for adoption should meet our basic design and maintenance requirements. By bearing in mind our requirements when designing your site layout, and later the planting plans, the handover of land can be undertaken with greater efficiency. The design and maintenance requirements for adoptable land can be found in Appendix C.

Tree Preservation orders and new Landscaping

5.64 Significant trees within a landscaping scheme may be incorporated within new tree preservation orders. This means that if they die through any cause - whether natural or because of insufficient maintenance or watering - a new tree must be planted. Failure to do so is a breach of the Town and County Planning Act 1990 and may incur penalties.

Appendix A: Local plan policy context

The Trees, Landscaping and Development Supplementary Planning Document provides guidance that relates to many of the policies within the Local Plan. In addition to the policies that address trees, woodland or landscaping specifically, there are several policies that also include a tree, landscaping or green infrastructure component. You can find a summary of these policies below. These should be read in conjunction with Lichfield District Council's Local Plan.

General Policies

Core policy 3 delivering sustainable development

- Maximise opportunities to protect and enhance biodiversity, geodiversity and green infrastructure and utilise opportunities to facilitate urban cooling

Core policy 10 healthy and safe lifestyles

- Integration of green infrastructure
- Measures to reduce the urban heat island effect
- Encouraging shading
- Maintenance of air quality

Core policy 13 our natural resources

- Safeguarding of ecological networks, linking, restoration and creation including tree and woodland planting
- Designated sites, non-designated priority habitats, historic landscapes and townscapes to be protected and enhanced

Core policy 14 our built and historic environment

- Conservation and enhancement of landscapes that form the setting to the built and historic environment
- No net loss of trees in conservation areas
- Protection of tree canopy of Lichfield city as part of the distinctive skyline of the city
- High-quality design, tree planting, landscaping and green spaces required as part of new development to improve quality of place, reduce the urban heat island effect and contribute to the Forest of Mercia and the National Forest
- Environmental improvement schemes in new development and regeneration including green linkages, tree planting and effective landscaping to assist the health and well-being of the community and reduce health inequalities.

Development management policies

SC 2 renewable energy

- Impacts on ancient trees and ancient woodlands

HSC1 open space standards

- Standard for natural and semi natural greenspace, including woodlands and amenity greenspace, including parks and gardens

NR3 biodiversity, protected species and habitats

- Provisions for United Kingdom biodiversity action plan (UK BAP) priority habitats

NR4 trees, woodlands and hedgerows

- Trees and woodland to be retained and protected from damage
- Development of that affects ancient woodland or veteran trees to be resisted, provision of sufficient space for veteran trees and ancient woodland including expansion
- Removal of large mature species on development sites and

replacement with smaller short lived species resisted
- Improve tree canopy cover provision
- Sufficient space reserved within developments for planting and sustainable growth of large trees
- Design out at planning stage any potential long-term conflict between retained trees, hedgerows and built form

NR6 linked habitat corridors and multifunctional green spaces

NR7 Cannock Chase special area of conservation
- Provision of alternative natural green space and improvement of existing facilities

BE 1 high-quality development
- Impact on historic environment including historic landscapes, conservation areas and skylines, historic built and natural features
- Effective hard and soft landscaping including tree planting required and should be implemented in an integrated manner
- Has a positive effect on public safety, health, reducing inequalities and sustainable travel opportunities
- Green corridors for movement of people and for biodiversity

Place Policies

Lichfield and Burntwood

Lichfield 1 Lichfield environment
- Green infrastructure links

Burntwood 1 Burntwood environment
- Improved green infrastructure and connections to the wider countryside

Burntwood 3 Burntwood economy town centre
- Improvements to its environmental quality and public realm

Policies and concept statements relating to strategic development allocations: These policies and concept statements include landscaping and green infrastructure provision. This includes the retention of hedgerows, significant trees and their incorporation to the landscape and allowance for significant tree canopy cover and street tree provision through new planting. Also refer to Infrastructure Delivery Plan July 2012 and the individual concept statements.

Rural locations

Frad 1 Fradley environment

Arm 1 Armitage with Handsacre environment
- Protection of Conservation Area

Arm 2 Armitage with Handsacre services and facilities.
- Improvements to green infrastructure and additional amenity green space

Alr 1 Alrewas environment
- Protection of Conservation Area

Faz 1 Fazeley Mile Oak and Bonehill environment
- Improvements to green infrastructure including additional amenity green space

Vision for Shenstone
- The range of trees which contribute to the heavily wooded nature of the centre of the village will be recognised through continued protection and enhancement

Shen 1 Shenstone Environment
- Protection of Conservation Area

Shen 2 Shenstone Services and Facilities
- Provision of additional amenity green space

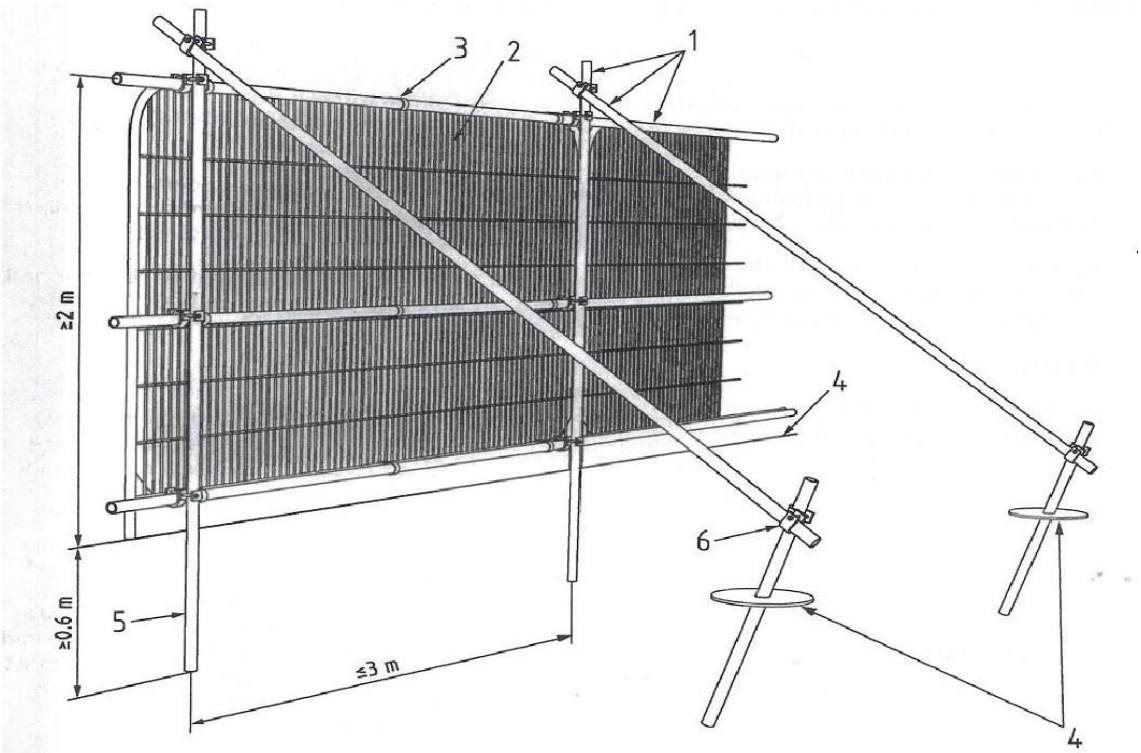
Whit 1 Whittington Environment
- Protection of Conservation Area

Whit 4 Whittington Housing
- The quality of the built and natural environment to be enhanced and protected

Appendix B: Specification for protective barrier

The Trees, Landscaping and Development Supplementary Planning Document requires adequate temporary protective fencing to be provided to protect retained trees on a site during development.

British Standard 5837 : 2012 'Trees in Relation to Design, Demolition and Construction Recommendations' provides the following guidance for a suitable specification. Further information on protective measures are available within the British Standard.



Key

1 Standard scaffold poles
2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
3 Panels secured to uprights and cross-members with wire ties
4 Ground level
5 Uprights driven into the ground until secure (minimum depth 0.6 m)
6 Standard scaffold clamps

Appendix C: Guidance on design and maintenance requirement for land adoption

General requirements

Early consultation with the Council's Greens and Open Spaces Strategy Manager is recommended. All landscape plans should comply with Lichfield District Council's Local Plan and the guidance in the Trees, Landscaping and Development Supplementary Planning Document.

We require

- The new landscaping to be maintained for 3 to 5 years after planting, depending upon the site and species (or until the scheme is fit for adoption, if longer).
- A copy of the maintenance schedule to be agreed prior to the discharge of planning conditions.
- A watering schedule as part of the regime. Our requirement is a minimum of;
  Last week in March – 1 visit
  April – September (inclusive) 3 visits each month with more in dry conditions as required.
  Early October – 1 visit
  Watering to be undertaken to soil saturation. In periods of heavy rain this may be waived with the agreement of the Council for trees in grass areas or shrub beds, however trees in hard landscaping should be watered.
  We may require an extended watering period (to five years) on some sites.
- Trees to be supported with underground guys. If stakes and ties are used for trees whose small rootball means underground guying is likely to be less effective, any trees that have been damaged by tree stakes or ties will be rejected before adoption and replacements required that are suitably supported.

The selection and sourcing of trees must usually be agreed with the Council immediately after planning consent has been granted. This may involve the Council's nominated officer and a representative of the applicant visiting and selecting trees growing at an agreed nursery at the applicant's expense.

Any plant that dies during the period of maintenance should be replaced by a plant of the same species located as close as is practicable to the original plant at the next planting season.

All plant health restrictions and guidance should be followed.

Design

The design requirements are not intended to be proscriptive and individual schemes can be discussed, however the following general principles should be considered:

- Opportunities for habitat creation, enhancement and linking should be exploited whenever possible.
- Woodland creation and copse planting are welcomed as part of a diverse open space provision
- Native hedges are encouraged as boundary features and to provide wildlife links. Trees should be planted within hedgerows rather than beside them as this is easier for maintenance. Heathland and waterside habitats within landscaping schemes may be considered.
- Designs should seek to consolidate planting areas, larger areas being generally more efficient to maintain than scattered small areas.
- Planting areas should mix standard trees with shrubs which act as a natural weed and grass suppressant, require less watering and are more beneficial for wildlife.
- Wildflower and meadow areas are encouraged, particularly around groups of trees as this reduces maintenance costs
- To accommodate mowing individual trees should be planted at least 2m from boundaries, hard

surfaces or features, and with at least 2ms between them.
- Anticipated desire lines should be designed into the scheme to reduce damage to planted areas.

Designs should avoid:

- Trees that require regular pruning in order to keep their intended design appearance, such as pleached, mop-headed or globular top worked trees and trees or shrubs that require regular coppicing. Native hedges however are encouraged.
- Trees in raised planters
- Herbaceous beds and borders
- Ivy ground cover
- The use of vigorous plants close to footpaths, especially those bearing thorns, unless agreed as part of a 'secure by design' planting scheme.
- Scattered individual trees in grass – incorporate wildflower and meadow mixes to consolidate the area, or place within shrub beds
- Placing boundary fence posts within grass areas, these should be set into adjacent hard surfacing

Species choice

Parks and open spaces are an opportunity to incorporate large long – lived trees into a neighbourhood, with all the benefits for climate change, health and wildlife this brings. Therefore, Lichfield District Council favours the use of larger long- lived trees over smaller short lived ornamentals - where space and neighbouring land use allows.

In urban areas a mixture of native and non-native trees and shrubs is welcomed, as the changing climate means that we cannot be certain which species will thrive in the future. However, where wildlife concerns are paramount, or in the creation of woodlands and copses or in sensitive rural or historic areas, native trees and shrubs should be used. The council's Ecology Officer or Arboricultural Officer can give advice on suitable species and design.

Unless part of a formal avenue designs should avoid relying upon trees of the same species or family. This is because a pest or disease outbreak could result in the loss of some or all of the trees.

Trees with known pest and disease, structural or maintenance problems should be avoided. The Council's Arboricultural Officers can assist with tree species selection for adoptable open spaces.

Plant sizes and specification

Native hedging whips may be supplied bare root

Shrubs, other than hedging material, should be pot grown

Broadleaved trees

- Below 10 – 12 cm girth standard or half standard may be root-balled or bare root
- 10-12 cm girth to 16 – 18 cm girth trees must be container grown
- Above 18 – 20 cm girth trees must be container grown. The council may request that any trees specified of this size or greater are inspected by one of its Arboricultural Officers prior to planting.

All conifers and any trees to be planted in hard surfaced areas must be container grown.

Specifications to be in accordance with BS3936: part 1: 1992 and part 10: 1989 and subsequent guidance.

Tree planting

Trees at 10-12 cm girth or above will require support. In order to reduce vandalism, reduce maintenance and damage from stakes and ties we require standard trees to be underground guyed following BS 4043: 1989 'Recommendations for Transplanting

Root-Balled Trees' or using a proprietary system.

In hard surfaced areas the minimum prepared tree pit size should be agreed with the Council's Arboricultural Officers at the design stage. Where a number of trees are to be planted in a hard surfaced area tree pits should be linked underground.

All trees of size 10-12 cm girth and above should be provided with watering tubes.

Established trees and hedgerows

Any work that has been specified and agreed for existing trees and hedgerows as part of the planning consent must be completed prior to adoption. All tree works must be undertaken to BS 3993 - 2010 by a qualified tree surgeon.