Trees, Planning and Development A Guide for Delivery

Issue 1.1/2023

This guide is frequently updated. For the latest version see: tdag.org.uk

Appendix:

Urban forest sustainability performance Indicators for the UK

Trees & Design Action Group

Primary Partners

RTPI Royal Town Planning Institute

RIBA Architecture.com

Landscape Institute Inspiring great places

tcpa

Institute of Chartered Foresters

Arboricultural Association trees.org.uk

Introduction

The indicators in this appendix are to help assess progress in delivering the intentions set out the in the strategic plan and to identify where and to what extent improvements are needed.

All the Indicators will not be relevant in all cases – some may be deleted, some added and some removed or adapted according to local circumstances – they indicate what could be monitored and are not intended to be a rigid list of what 'should' be done.

Development of the Indicators

Clark and Matheny developed the original indicator model based on the work of Miller. This was adapted and added to by Kenny and van Wassenaer and further adapted in the preparation of the *Birmingham Urban Forest Masterplan* demonstrating that the criteria and indicators methodology is intended to be adapted and built on locally.

References

Leff, M (2016) *Sustainable Management of the Urban Forest.* https://www.itreetools.org/documents/175/Sustainable_Urban_Forest_Guide_14Nov2016.pdf

Birmingham Urban Forest Masterplan (2021). http://birminghamtreepeople.org.uk/birminghams-urban-forest-master-plan/

Kenney, WA, van Wassenaer, PJE and Satel, AL (2011). *Criteria and Indicators for Strategic Urban Forest Planning and Management.* Arboriculture & Urban Forestry 37(3): 108–117. www.isa-arbor.com/events/conference/proceedings/2013/VAN_WASSENAER_article_AUF_%20May_2011.pdf

Clark, JR, Matheny, NP, Cross, G and Wake, V (1997) *A model of urban forest sustainability.* J. Arboric. 23, 17–30. www.researchgate.net/publication/254202799_A_model_of_

Miller, Robert W., Hauer, Richard J and Werner, P (1987) *Urban Forestry: Planning and Managing Urban Greenspaces*

Contents

How to use this section

The trees: tree and woodland resource Indicators (T)

For assessing the extent, characteristics and health of the local urban forest

T1 Tree canopy cover

Objective: To reach a canopy cover of 20% for inland urban areas and 15% for coastal ones (Doick et al, 2017), 30% as per the 3-30-300 rule or any other appropriate place-specific canopy cover target(s), both across the entire area* and within each individual neighbourhood. This can only ever be a guideline. There will be areas where 15-20% is unachievable or inappropriate. Equally, areas where more than 20% is viable.

Why it matters: Tree canopy cover refers to the area of leaves, branches, and stems of trees covering the ground, across a given area, when viewed from above. Although it is only a two-dimensional metric, tree canopy cover is a good (limited though in terms of benefits provided) proxy for the benefits a local tree population provides. See also *Trees Planning and Development: A Guide for Delivery: Section One*, page 45.

Suggested Performance Indicators:

Low	Overall canopy cover is ≤50% of desired.
Fair	Overall canopy cover is 50–75% of desired.
Good	Overall canopy cover is ≥75% of desired.
Optimal	Canopy cover is >75% of desired – both at individual neighbourhood level as well as for the overall local area*.

Note: *For local authorities featuring extensive rural areas, canopy cover measurements should focus on settlements only.

References
Doick, KJ, Davies, HJ, Moss, J, Coventry, R, Handley, P, Vaz Monteiro, Rogers, K and Simpkin, P (2017) *The canopy cover of England's towns and cities: baselining and setting targets to improve human health and well-being*. In Proceedings of the Trees, People and the Built Environment III - Urban Trees Research Conference 5-6th April 2017.
www.charteredforesters.org/forestry-arboriculture-resources

T2 Tree age diversity (size class distribution)

Objective: To provide for the ideal age distribution of trees within the overall tree population.

Why it matters: Having trees at all stages of life ensures that there is always an urban forest. It is key for the continued provision of benefits to local people and wildlife.

Suggested Performance Indicators:

Low	Distribution highly skewed from the one recommended by Richards where >60% of managed trees have DBH <20cm or<3% of trees have DBH >60cm.
Fair	Uneven overall distribution where 50–60% of managed trees have DBH <20cm or 3–5% have DBH >60cm.
Good	Distribution close to one recommended by Richards where <50% of managed trees had DBH <20 cm and >5% had DBH >60 cm.
Optimal	Distribution close to one recommended by Richards for managed trees considered both across the whole area and at neighbourhood level.

References
Richards, NA (1983). *Diversity and stability in a street tree population*. Urban Ecol. 7, 159–171

T3 Tree species diversity

Objective: To establish a diverse tree population at the local authority and neighbourhood levels on public and, where possible, private land.

Why it matters: A tree population needs to achieve widespread distribution across family, genus, species and varieties for increased resilience to climate change, pests, pathogens and other biotic threats. This is particularly relevant in the case of street trees where single species choices and potential losses can be catastrophic to the quality of place. Oak example: Family (*Fagaceae*), Genus (*Quercus*), Species (*Robur*).

Suggested Performance Indicators:

Low	Any species represents ≥10% of population, any genus ≥20% or any family ≥30%.
Fair	No species represents >10% of population, no genus >20% or no family >30%.
Good	No species represents >5% of population, no genus >10% or no family >15%.
Optimal	At least as diverse as 'Good' rating (5/10/15) area-wide, and at least as diverse as 'Fair' (10/20/30) at the neighbourhood level.

Note: There are several theoretical models, none as yet scientifically proven.

- Barker (1975) no given species should account for more than 5% of the total tree population
- Smiley et al. (1986) and Miller and Miller (1991) recommend that the maximum share of any species should be less than 10% of the population
- Grey and Deneke (1986) one species should not amount to more than 10–15% of the total population
- Moll (1989) recommends that no species should exceed 5% of a city's tree population and that no genus should exceed 10%

*Santamour-no species should represent more than 10%, no genus more than 20% and no family more than 30% of the population

References

Santamour, FS (1990) *Trees for urban planting: diversity, uniformity and common sense.* In Proceedings of the 7th Conference Metropolitan Tree Improvement Alliance (METRIA). Lisle IL: The Morton Arboretum, 57–65

T4 Tree species suitability

Objective: To establish a tree population suited to their local environment, especially the local climate both now and in the future.

Why it matters: All tree species have evolved characteristics and tolerances which enable them to thrive in their native range. This led to tree species having their inherent hardiness to cold temperatures and tolerance to hot temperatures, different soil types, shaded conditions, drought and waterlogging. Coupling all these known tree species traits with a knowledge of the environmental conditions of an area now and in the future can provide useful guidelines as to species choice.

Suggested Performance Indicators:

Low	Fewer than 50% of all trees are from species considered suitable for the area.
Fair	>50%-75% of trees are from species suitable for the area.
Good	More than 75% of trees are suitable for the area.
Optimal	Virtually all trees are suitable for the area.

References

Hirons, Andrew D and Sjöman, Henrik (2018) *Tree Species Selection for Green Infrastructure: A Guide for Specifiers.* https://www.tdag.org.uk/tree-species-selection-for-green-infrastructure.html

Forest Research:
Research by Duncan Ray on climate impacts. https://www.forestresearch.gov.uk/staff/duncan-ray/

Regional changes in England in tree species suitability resulting from climate change. https://www.forestresearch.gov.uk/research/climate-change-impacts/climate-change-impacts-and-adaptation-in-englands-woodlands/regional-changes-in-england-in-tree-species-suitability-resulting-from-climate-change/

Madalena Vaz Monteiro, Phillip Handley and Kieron J. Doick (2019) *An insight to the current state and sustainability of urban forests across Great Britain based on i-Tree Eco surveys.* Vaz Monteiro, M., Handley, P., and Doick, K. J. (2019). Forestry, 93(1), 107-123. https://www.forestresearch.gov.uk/publications/an-insight-to-the-current-state-and-sustainability-of-urban-forests-across-great-britain-based-on-i-tree-eco-surveys/

T5 Tree condition

Objective: To provide for a healthy tree population.

Why it matters: Tree condition largely determines the amount of benefits the urban forest can deliver. It is also a good indicator of its vulnerability to pests, pathogens and other biotic threats.

Suggested Performance Indicators:

Low	≤50% trees have more than 10% of dieback.
Fair	50% to 75% trees have less than 10% of dieback.
Good	50% to 75% trees have less than 10% of dieback and no neighbourhood have more than 5% trees that have more than 75% dieback.
Optimal	≥75% trees had less than 10% of dieback and no neighbourhood have more than 5% trees that have more than 75% dieback.

References

Nowak, DJ, Crane, DE, Stevens, JC, Hoehn, RE, Walton, JT and Bond, J (2008) A ground-based method of assessing urban forest structure and ecosystem services. *Arboricult. Urban For.* 34, 347–358

T6 Woodland accessibility

Objective: To provide accessible woodland close to where people live.

Why it matters: Good access to woodlands provides unique benefits to people and wildlife alike, especially in urban environments.

Suggested Performance Indicators:

Low	Less than 70% of the local population has access to at least 20 hectares of accessible woodlands within 4km of their home.
Fair	At least 20% of the local population has access to of at least 2ha within 500m of their homes, and at least 70% has access to a wood of at least 20ha within 4km of their homes.
Good	At least 33% of the local population has access to of at least 2ha within 500m of their homes, and at least 90% has access to a wood of at least 20ha within 4km of their homes.
Optimal	At least 50% of the local population has access to of at least 2ha within 500m of their homes, and at least 90% has access to a wood of at least 20ha within 4km of their homes.

References

Woodland Trust (2017). *Space for people: Targeting action for woodland Access*, Grantham: The Woodland Trust. www.woodlandtrust.org.uk/media/1721/space-for-people-woodland-access.pdf

The community: community setting Indicators (C)

For assessing the degree of involvement of and collaboration among local stakeholders around urban forest issues and goals

C1 Cross-departmental collaboration

Objective: For all departments in all tiers of local government to advance goals related to urban forest issues and opportunities.

Why it matters: Lack of cross-departmental coordination has been identified as one of the biggest obstacles to the creation of sustainable urban forests. Trees span jurisdictions both in terms of the benefits they can provide and the landownership they fall into. Collaboration is key to leveraging adequate resources and identifying suitable space for resilient tree growth.

Suggested Performance Indicators:

Low	Different tiers of local government and within each tier, different departments, and associated arm's length management organisations (ALMOs), take actions impacting the urban forest with no coordination or consideration of the urban forest resource.
Fair	Different tiers of local government and different departments in each tier and associated ALMOs recognise potential conflicts and reach out to urban forest managers on an ad hoc basis and vice versa.
Good	Key urban forestry principles and goals are embedded within key strategies and plans across tiers of government and departments, especially those with responsibility for planning and development management, highways and mobility, drainage, housing education and public health. Local government departments and ALMOs communicate regularly and collaborate on a project-specific basis.
Optimal	Key urban forestry principles and goals embedded within strategies and plans across tiers of government and departments – especially those with responsibility for planning and development management, highways and mobility, drainage, housing education and public health. Formal arrangements are in place enabling interdepartmental/interagency working teams on all municipal projects.

References

Ordóñez, C et al (2019). Decision-making of municipal urban forest managers through the lens of governance, *Environmental Science and Policy* 104 (2020) 136–147. www.fullerlab.org/wp-content/uploads/2020/01/Ordóñez-et-al-2020.pdf

Van der Jagt, APN, and Lawrence, A, (2019). Local government and urban forest governance: insights from Scotland, *Scandinavian Journal of Forest Research*, Vol. 34, No. 1, 53-66. https://www.tandfonline.com/doi/epub/10.1080/02827581.2018.1532018?needAccess=true

Locke, DH, Grove, JM; Galvin, M, O'Neil-Dunne, JPM; and Murphy, C (2013) Applications of Urban Tree Canopy Assessment and Prioritization Tools: Supporting Collaborative Decision Making to Achieve Urban Sustainability Goals, *Cities and the Environment* (CATE): Vol. 6: Iss. 1, Article 7. https://digitalcommons.lmu.edu/cate/vol6/iss1/7

C2 Utilities cooperation

Objective: For all utilities, above and below ground, to employ best management practices and cooperate with the local authority to advance goals and objectives related to the urban forest.

Why it matters: Conflicts or lack of coordination with utilities leads to damage to utilities and trees. It also imposes limitations to the space available for new tree planting and healthy tree growth.

Suggested Performance Indicators:

Low	Utilities take actions impacting urban forest with little consideration for the urban forest resource. Tree-related issues are not covered in how the local authority communicate with and coordinate utilities.
Fair	Utilities demonstrate awareness of best management practices (Streetworks UK, BS, WRc), recognise potential conflicts with public trees, and consult urban forest managers on an ad hoc basis and vice versa.
Good	Utilities adhere to best management practices (Streetworks UK, BSI, WRc). Utilities are included in informal municipal teams that communicate regularly and collaborate on a project-specific basis. Development management policies emphasise the importance of tree/utilities coordination and encourages the use of shared utility corridors.
Optimal	Utilities help advance urban forestry goals and objectives by adhering to best management practices (Streetworks UK, BS, WRc), participating in formal interdepartmental/ interagency working groups and reflecting local tree-related objectives in their own workplans and policies. The integration of trees and utilities is well addressed across all policy documents (eg Local plan development management policies, design guide, transport/ infrastructure plan and surface drainage plan) and coordination of trees and utilities is well implemented on all municipal projects.

References

NJUG Guidelines Volume 4 issue 2 (2007) Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees. http://streetworks.org.uk/resources/publications/

C3 Large private and institutional landowners

Objective: For all Large landowners to embrace and advance local urban forest goals and objectives by implementing specific resource management plans.

Why it matters: As a large proportion of land within cities is owned by private individuals, organisations and/or institutions, enlisting their help in protecting and enhancing the urban forest is paramount.

Suggested Performance Indicators:

Low	Large private landholders are generally uninformed of urban forest issues and opportunities.
Fair	Municipality conducts outreach directly to landholders with educational materials and technical assistance, providing clear goals and incentives for managing their tree resource.
Good	Landholders develop comprehensive tree management plans (including funding strategies) that advance municipality-wide urban forest goals.
Optimal	As described in 'Good' rating, plus active community engagement and access to the property's forest resource.

C4 Residents involvement and neighbourhood action

Objective: To involve the community in the development, implementation and management of the urban forest plan.

Why it matters: The allocation of resources to integrate trees into the urban environment are more likely to succeed with the support and participation of communities who are the beneficiaries of a healthy urban forest.

Suggested Performance Indicators:

Low	Little or no citizen involvement or neighbourhood action.
Fair	Some neighbourhood groups engaged in advancing urban forest goals, but with little or no overall coordination with or direction by municipality or its partnering NGOs.
Good	Many active neighbourhood groups engaged across the community, with actions coordinated or led by municipality and/or its partnering NGOs.
Optimal	Proactive outreach and coordination efforts by municipality and NGO partners resulting in widespread citizen involvement and collaboration among active neighbourhood groups engaged in urban forest management.

C5 Cross-boundary collaboration

Objective: To achieve cooperation and interaction on urban forest plans with neighbouring local authorities and regional authorities.

Why it matters: Urban forests, as other natural assets, span administrative boundaries. Sound planning and management requires coordination.

Suggested Performance Indicators:

Low	Municipalities have no interaction with each other or the broader region. No regional planning or coordination on urban forestry.
Fair	Some neighbouring municipalities and regional agencies share similar policies and plans related to trees and urban forest.
Good	Some urban forest planning and cooperation across municipalities and regional agencies.
Optimal	Widespread regional cooperation resulting in development and implementation of regional urban forest Strategy.

C6 General appreciation of trees as a community resource

Objective: Stakeholders from all sectors and constituencies within municipality – private and public, commercial, and non-profit, entrepreneurs and elected officials, community groups and individual citizens – understand, appreciate, and advocate for the role and importance of the urban forest as a resource.

Why it matters: A sustainable urban forest relies heavily on the shared vision and objectives held by community members – as most trees are on private land. Positive perceptions from local communities will also likely result in the election of local officials who promote greater investment in urban forest sustainability.

Suggested Performance Indicators:

Low	General ambivalence or negative attitudes about trees, which are perceived as neutral at best or as the source of problems. Actions harmful to trees may be taken deliberately.
Fair	Trees generally recognised as important and beneficial.
Good	Trees widely acknowledged as providing environmental, social, and economic services – resulting in some action or advocacy in support of the urban forest.
Optimal	The urban forest is recognised as vital to the community's environmental, social, and economic well-being. Widespread public and political support and advocacy for trees, resulting in strong policies and plans that advance the viability and sustainability of the entire urban forest.

The management: governance, management, funding (R)

For assessing the data, plans, policies and practices shaping how the urban forest is looked after

Data

R1 Knowledge of public trees (public tree inventory)

Objective: To have a current, accurate tree inventory.

Why it matters: Understanding the existing tree population is a critical starting point for effective decision-making.

Suggested Performance Indicators:

Low	Lack of up-to-date data.
Fair	Partial data with inadequate detailed information of tree stock.
Good	Full detailed inventory of all publicly owned trees.
Optimal	Full inventory mapped for use across all departments and the public.

References

östberg, J (2013) *Tree inventories in the urban landscape – methodological development and new applications*. https://pub.epsilon.slu.se/10299/1/ostberg_j_130426.pdf

R2 Knowledge of woodlands

Objective: To have detailed understanding of the ecological structure and function off all woodlands as well as usage patterns.

Why it matters: It is not possible to make good decisions about how to manage a publicly accessible natural area without a solid understanding of the nature, condition and use of that area.

Suggested Performance Indicators:

Low	No or incomplete information about the location or extent of publicly owned woodlands.
Fair	All publicly owned woodlands are mapped and subject to a 'woodland condition survey' or similar document monitoring ecological conditions of the sites.
Good	As in 'Fair', but survey document also tracks level and type of public use in publicly owned woodlands.
Optimal	In addition to usage patterns, ecological structure and function of all publicly owned woodland are also assessed and documented.

References
Woodland Condition Survey. https://woodlandwildlifetoolkit.sylva.org.uk/assess

R3 Knowledge of private trees

Objective: To have an understanding of extent, location, and general condition of privately owned trees across the urban settlements.

Why it matters: The extent, composition and conditions of the privately-owned tree population is important to understand the characteristics of the whole tree population and guide management decisions.

Suggested Performance Indicators:

Low	No information about privately owned trees.
Fair	Aerial, point-based assessment of trees on private property, capturing overall extent and location (ie i-Tree Canopy, BlueSky, Lidar).
Good	Sample-based assessment of trees on private property (i-Tree Eco), as well as basic aerial view (as described in 'Fair' rating).
Optimal	Sample-based assessment on private property (i-Tree Eco), as well as detailed canopy cover mapping of the entire urban forest (using remote sensing).

References
i-Tree Canopy. https://canopy.itreetools.org

i-Tree Eco V6 Sample inventory. www.itreetools.org/tools/i-tree-eco/i-tree-eco-sample-inventories

R4 Knowledge of hedgerows

Objective: To have detailed understanding of the location, character, attributes, condition of hedgerows and maximising the potential for wider connectivity.

Why it matters: Hedgerows are important for landscape character and wildlife across the UK, contributing to the benefits provided by local tree populations in towns, cities and the countryside. Understanding the location, composition, structure and condition of hedgerows enables informed decisions can be made for their management, long-term protection and connectivity potential.

Suggested Performance Indicators:

Low	No hedgerow survey available.
Fair	Sample based hedgerow survey available.
Good	Comprehensive hedgerow survey available.
Optimal	Comprehensive hedgerow survey available and integrated into the local authority or landowners mapping system.

References
Defra (2007). *Hedgerow Survey Handbook: A standard procedure for local surveys in the UK*, second edition. Defra: London

Planning and resources

R5 Canopy cover assessment and goals

Objective: Urban Forest policy and practice driven by accurate, high-resolution, recent assessments of existing and potential canopy cover, with comprehensive goals authority wide and at neighbourhood or smaller management/land ownership levels.

Why it matters: To be valuable and effective, canopy cover assessments should be maintained and repeated at intervals.

Suggested Performance Indicators:

Low	No assessment or goal.
Fair	Low-resolution and/or point-based sampling of canopy cover using aerial photographs or satellite imagery – and limited or no goal-setting.
Good	Complete, detailed, and spatially explicit, high-resolution Urban Tree Canopy (UTC) assessment based on enhanced data (such as LiDAR) – accompanied by comprehensive set of goals by land use and other parameters.
Optimal	As described for 'Good' rating – and all utilized effectively to drive urban forest policy and practice municipality-wide and at neighbourhood or smaller management level.

R6 Strategy for planning the urban forest

Objective: To develop and implement a comprehensive, action-oriented tree and woodland Strategy addressing the whole tree population.

Why it matters: An adopted strategic plan for the urban forest provides a place specific, collaborative, delivery-oriented, formally adopted plan for enhancing the sustainability of the local tree populations to deliver the desired benefits now and into the future.

Suggested Performance Indicators:

Low	No Strategy.
Fair	Existing Strategy limited in scope and implementation.
Good	Recent comprehensive plan developed and implemented for publicly owned forest resources, including trees managed intensively (or individually eg street trees) and those managed extensively, as a population (eg trees in woodlands and natural areas).
Optimal	Strategic, multi-tiered plan with built-in adaptive management mechanisms developed and implemented for public and private forest resources.

R7 Urban forestry funding

Objective: To develop and maintain adequate funding to implement a Strategy for the urban forest.

Why it matters: The Strategy is unlikely to succeed without the resources to implement and operate it.

Suggested Performance Indicators:

Low	Funding available sufficient only for emergency, reactive management.
Fair	Funding sufficient for some proactive management based on priorities defined in the Strategy.
Good	As in 'Fair', with funds coming from more than one source, including ring-fenced planning receipts.
Optimal	As in 'Good', with funding from multiple sources in both the public and private sectors.

References

Defra (2007). *Hedgerow Survey Handbook: A standard procedure for local surveys in the UK*, second edition. Defra: London

R8 Local authority human resources

Objective: To maintain sufficient well-trained personnel and equipment, whether in-house or through contracted or volunteer services, to implement the local tree and woodland Strategy.

Why it matters: The Strategy will benefit from sufficient human resources.

Suggested Performance Indicators:

Low	Personnel and equipment inadequate to handle planning-related needs, arboricultural management issues for public trees and wider urban forestry planning and coordination needs. No capacity to take on any new, proactive initiative.
Fair	Personnel is just sufficient to handle tree-related planning caseloads and management issues arising from public trees. Some limited capacity to undertake wider urban forestry planning and coordination or to deliver short-lived new projects.
Good	Adequate personnel and equipment to handle tree-related planning caseloads, arboricultural management and wider urban forestry planning and coordination. There is capacity to deliver a portfolio of projects going beyond 'routine' on an on-going basis.
Optimal	As 'good', with profiles among the team including a diversity of disciplines and backgrounds.

Establishment

R9 Suitability of planting sites

Objective: Assess the constraints of all planting sites and modify as far as is possible to improve planting success.

Why it matters: Without site examination and modification planting success is likely to be reduced.

Suggested Performance Indicators:

Low	Trees selected and planted with limited consideration of site conditions.
Fair	Site conditions and constraints are used to inform species choice.
Good	Guidelines in place for the improvement of planting site conditions and selection of suitable species.
Optimal	Achieving the optimum planting conditions possible for each individual site.

References

Trowbridge, Peter and Bassuk, Nina (2004) *Trees in the Urban Landscape: site assessment, design and installation* Wiley & Sons

R10 Public tree establishment

Objective: To have a comprehensive and effective tree planting and establishment program is driven by canopy cover goals and other considerations according to plan. Establishment rates are recorded with the reasons for failure examined and used to inform future planting programmes.

Why it matters: It is important to know planting and establishment success rates to inform future decision-making with regard to planting methodology and species selection.

Suggested Performance Indicators:

Low	Little or no tree planting; tree establishment is ad hoc.
Fair	Some tree planting and establishment occurs, but with limited overall local authority-wide planning and post-planting care.
Good	Tree planting plan is guided by local authority-wide goals, with some post-planting establishment care.
Optimal	Comprehensive tree establishment plan is guided by needs derived from canopy and other assessments, maintains species and age diversity, includes both planting and young tree care.

Protection

R11 Safeguarding existing significant, mature and maturing trees

Objective: To secure adequate retention and protection of significant (mature, maturing and high value) existing trees throughout the urban realm.

Why it matters: The benefits delivered by the urban forest primarily come from mature trees. It takes 20 to 50 years depending on species for trees to reach that stage, so any loss of mature trees will create a deficit in benefits provided that new plantings will not compensate for a long time. High value tree stock such as ancient or veteran trees are irreplaceable.

Suggested Performance Indicators:

Low	No safeguarding in place.
Fair	Partial safeguarding in place.
Good	Comprehensive safeguarding in place.
Optimal	Comprehensive safeguarding in place endorsed by council or local landowner's policy.

References

LTOA Joint Mitigation Protocol. www.ltoa.org.uk/resources/joint-mitigation-protocol

LTOA (2017) Suggested standard wording for planning conditions. LTOA: London. www.ltoa.org.uk/planning/274-ltoa-planning-conditions/file

TDAG (2021) *Trees, Planning and Development: A Guide for Delivery.* London: Trees and Design Action Group Trust. www.tdag.org.uk/trees-planning-and-development.html

Woodland Trust (2019) Planning for Ancient Woodland: Planners' Manual for Ancient Woodlands and Veteran Trees. Woodland Trust: Gratham. www.woodlandtrust.org.uk/media/3731/planners-manual-for-ancient-woodland.pdf

R12 Protecting trees during development

Objective: To prevent the unnecessary loss of existing trees identified for retention during the development process.

Why it matters: To secure adequate retention and protection of significant (mature, maturing and high value) existing trees throughout the urban realm can result in extensive tree loss that is often not effectively replaced, resulting in a net loss of tree benefits over time. High quality existing trees are in place and delivering benefits now, so their retention can avoid the need to wait decades before newly planted trees can match their contribution. Keeping high quality trees now pays big dividends in the future.

Suggested Performance Indicators:

Low	No specific tree protection planning conditions, resulting in weak tree protection on site, and low levels of successful tree retention.
Fair	Weak tree protection planning conditions, and weak enforcement.
Good	Weak tree protection planning conditions, and effective enforcement.
Optimal	Strong tree protection planning conditions and effective enforcement, resulting in strong tree protection on site, and a high level of successful tree retention.

References

LTOA (2017) *Suggested standard wording for planning conditions.* https://www.ltoa.org.uk/planning/274-ltoa-planning-conditions/file

Barrell Tree Consultancy (2020) *Site Guidance Notes for managing trees on development sites.* https://www.barrelltreecare.co.uk/resources/technical-guidance/

Management and governance

R13 Public tree management

Objective: To ensure that all publicly owned and managed trees are well maintained for optimal health and condition.

Why it matters: Well managed and maintained trees are likely to live longer, grow better and deliver the benefits associated with the urban forest.

Suggested Performance Indicators:

Low	No maintenance of publicly owned trees, or on a reactive basis only.
Fair	Publicly owned trees receive only periodic inspection and maintenance.
Good	Publicly owned trees are inspected and proactively maintained on a cyclical basis.
Optimal	All publicly owned, intensively managed trees are routinely and thoroughly maintained on ongoing basis according to comprehensive management plan.

R14 Highway tree management

Objective: To reduce the unnecessary removal of highway trees, and to optimise tree planting on highway land.

Why it matters: Highways are an acknowledged source of harm to adjacent communities through excessive noise and pollution, and nearby trees mitigate that harm through absorbing pollutants and reducing noise right where it is needed most. Screening roads with trees and hedges significantly reduces adverse transport impacts on local communities.

Suggested Performance Indicators:

Low	Historic and ongoing presumption to remove and not replace highway trees and hedges, evidenced by obvious lack of roadside greening and abundant open space.
Fair	Highway tree management processes being reviewed in the emerging climate and nature emergency, and an increasing awareness that trees are important.
Good	Passive acknowledgement of the need to optimise tree cover on highway land, and working towards a formal published policy, but process not yet completed.
Optimal	Proactive management of existing trees, and identification of planting spaces, with adopted policy documents to optimise the tree and hedge stocking on all highway land.

References
Highways Act 1980 (England and Wales). https://www.legislation.gov.uk/ukpga/1980/66
Highway Authorities have powers to plant trees under Section 96 (eg powers of highway and local authorities to plant trees, lay out grass verges), Section 62 subsection 3 (e) and Section 64. Section 79 gives Highway Authorities powers to require the removal of trees, vegetation and other structures that obstruct views at corners. Section 141 provides powers to require the removal of trees and hedges planted within 15 feet of the centre line of a carriageway.

Roads (Scotland) Act 1984. https://www.legislation.gov.uk/ukpga/1984/54/content

Well Managed Highway Infrastructure (UK). https://content.tfl.gov.uk/well-managed-highway-infrastructure.pdf

R15 Tree risk management (trunk and branch failures)

Objective: To periodically and proactively check trees that could cause foreseeable harm through failures within the wider tree management framework, and to manage them taking proper account of the benefits that they provide.

Why it matters: Unnecessary and premature removal of trees for spurious safety reasons significantly erodes the climate adaptation benefits for local communities and the wider population.

Suggested Performance Indicators:

Low	No formal checking regime or periodic, proactive management.
Fair	Some formal checking and management, but on an irregular basis, and not within a formally defined or adopted regime.
Good	Periodically and proactively checked and managed, but not within a formally defined and adopted regime.
Optimal	Periodically and proactively checked and managed within a formally defined and adopted regime.

References
HSE (2013) *Management of the risk from falling trees or branches*. https://www.hse.gov.uk/foi/internalops/sims/ag_food/010705.htm#Appendix -

National Tree Safety Group (2011) *Common Sense Tree Risk Management.* http://www.forestry.gov.uk/pdf/FCMS024.pdf/$FILE/FCMS024.pdf

Jeremy Barrell (2021) *The implications of recent English legal judgments, inquest verdicts, and ash dieback disease for the defensibility of tree risk management regimes.* https://www.tandfonline.com/doi/full/10.1080/03071375.2020.1854996?src=

R16 Tree conflict management (harm to structures and prospects)

Objective: To manage the pressures to remove trees or reduce tree planting because of conflicts arising from root growth (trip hazards and structural damage), and harm to prospects, eg, shading, adverse screening, falling debris, pests, by fully accounting for the value of tree benefits as well as the harm that trees may cause.

Why it matters: Trees are unnecessarily and prematurely being removed because decision-makers are not factoring tree value into the management equation.

Suggested Performance Indicators:

Low	No formal protocol for dealing with tree conflicts.
Fair	No formal protocol for dealing with tree conflicts, but a general awareness that tree value should be accounted for.
Good	Passive acknowledgement of the need to factor tree value into conflict management, and working towards a formal published policy, but process not yet completed.
Optimal	Published policy ensuring that tree value is properly accounted for in conflict management, and is implemented across all departments within the wider organisation.

References

LTOA (2010) *Risk Limitation Strategy for Tree Roots Claims.* https://www.ltoa.org.uk/documents-1/risk-limitation-strategy-for-tree-root-claims

LTOA (2010) *Joint Mitigation Protocol.* https://www.ltoa.org.uk/documents-1/joint-mitigation-protocol

R17 Management of publicly owned woodlands

Objective: To ensure that the ecological integrity of all publicly owned woodlands is protected and enhanced, while accommodating public use and community woodland group involvement in management where appropriate.

Why it matters: Woodlands provide a valuable resource for both people and nature.

Suggested Performance Indicators:

Low	No woodland management plan in place.
Fair	All publicly owned woodlands have a partial management plan in place.
Good	All publicly owned woodlands have an up-to-date management plan and community groups are involved where available.
Optimal	All publicly owned woodlands have an up-to-date management plan. Where relevant, management plans are compliant for the relevant statutory authorities (ie Forestry Commission, Scottish Forestry, Natural Resources Wales and the NI Forest Service), and where relevant, management is UK Forest Standard certified. Most sites involve community woodland groups in management. The long-term impacts of woodland management are being monitored at most of the sites. Commercial woodland opportunities from the woodlands are fully taken advantage off.

R18 Biosecurity

Objective: To avoid the introduction, establishment and spread of harmful pests and pathogens.

Why it matters: Without measures in place to prevent the introduction of new pests and diseases to the UK from abroad our tree populations are at risk.

Suggested Performance Indicators:

Low	No biosecurity policy in place.
Fair	The council has a biosecurity policy in place.
Good	As in 'fair'. The council and its contractors adhere to recognised and published guidance. Biosecurity is included in the Local Plan. Development proposals are required to demonstrate that adequate measures are in place to ensure that all planting stock and associated materials are supplied free of pests and diseases.
Optimal	As in 'good', but all engaged in the design, planting and supply of material are Plant Healthy certified. The council and its tree contractor are signed up to Forest Research's Plant Health Alert.

References

Cox, S and Robert, J (2018). *Application of Biosecurity in Arboriculture. Guidance Note 2*. Stonehouse, Gloucestershire: Arboricultural Association. https://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&pubid=4cfe59b6-6eec-411e-b305-0a2ce0d99e73

Landscape Institute (2019). *Plant Health and Biodiversity: The Landscape Consultant's Toolkit. LI Technical Guidance Note 01/19*. London: Landscape Institute. https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2019/04/tgn-2019-01-biosecurity-toolkit.pdf

UK Biosecurity Risk Register. https://secure.fera.defra.gov.uk/phiw/riskRegister/

Plant Healthy. https://planthealthy.org.uk/

Benefits

R19 Tree equity/environmental justice

Objective: Ensure that the benefits of urban forests are made available to all, especially to those in greatest need of tree benefits.

Why it matters: The aim is to achieve as equal a distribution of canopy cover as possible to provide wider tree benefits. Too often areas of lower canopy cover may also be areas of higher social deprivation.

Suggested Performance Indicators:

Low	Tree planting and outreach is not determined equitably by canopy cover or need for benefits.
Fair	Planting and outreach include attention to low canopy neighbourhoods or areas.
Good	Planting and outreach targets neighbourhoods with low canopy and a high need for tree benefits.
Optimal	Equitable planting and outreach at the neighbourhood level is guided by strong residents' engagement in those low-canopy/high-need areas.

References

Friends of the Earth. https://policy.friendsoftheearth.uk/insight/mapping-english-tree-cover-results-ranking-and-methodology

Trees & Design Action Group

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