TREE MANAGEMENT PRINCIPLES 2019 -2024

Contents

1. INTRODUCTION

1.1. The Purpose of this Plan

Plymouth City Council (PCC) is directly responsible for the many trees across Plymouth growing on Council owned land such as highway verges, parks, open spaces and woodlands. The Council also has responsibilities in respect of trees owned by others, such protected trees (TPO's and trees within conservation areas), trees potentially affected by development and privately owned trees which might interact with the public domain.

This year PCC developed its Plan for Trees, which sets out Plymouths vision for its trees across the city:

> *'Trees and woodlands within Plymouth will be valued and cared for so they can play a fundamental role in the City's future. Everyone will have more opportunities to experience the positive benefits of trees and woodlands, which enhance the beauty and unique nature of Plymouth.'*

This Management Strategy will enable Plymouth City Council to deliver against this vision. The purpose of this Strategy is to review and update PCC's management approach to the trees within its ownership to ensure they have a positive impact on communities, this could include pruning and in certain circumstances felling and replanting. This Strategy will set out criteria for tree management practices including defining when felling is appropriate and how replacements will be delivered.

The Strategy will be reviewed every 3 years to measure achievements and respond to new challenges and opportunities.

Further advice and information about trees in Plymouth is available at: https://www.plymouth.gov.uk/planningandbuildingcontrol/treesandhedges

2. OUR APPROACH

2.1. Aims & Objectives

The overall aim of this Tree Management Principles document is:

- to protect PCC's tree asset through appropriate management and re-stocking;
- meet our legal obligations around tree risk and safety in relation to our own tree stock,
- maintain and encourage biodiversity,
- respond to risks including climate change, diseases, etc.
- reduce maintenance cost by replacing tree stock following the principle of the right tree, in the right place with the right infrastructure (further detail will be available in PCC's Tree Design Guide that will be available online by Summer 2019), and
- enhance Plymouth's tree cover

The above aims will be achieved through our own management of trees within highway verges, parks, open spaces and woodlands. The council will work directly, across teams, and within available resources, to deliver the above set out aims.

The above aims will be delivered through:

- providing sufficient mitigation for trees requiring felling
- Ensuring replacement trees are, where appropriate, UK sourced and grown and species selection follows the principle of the right tree, in the right place with the right infrastructure (for further detail see PCC's Tree Design Guide),
- Meeting our legal obligations as a tree owner around tree safety and property damage, as well as our other statutory responsibilities and policies as Local Highways Authority;
- Increasing value for money through reasonable risk management, by moving towards a defendable proactive tree risk management programme of inspection and through the implementation of tree replacement schemes to reduce long term maintenance costs and potential trees complaints, and increase the benefits of our tree stock.
- After considering each case carefully, undertaking works to our own trees only if they are dead, dying, diseased or dangerous, or may become so, and carrying out such work according to good arboricultural practice;
- Being clear about how tree management decisions are made to keep our customers well informed.

2.2. Practices & Processes

2.2.1. Our duties

We will maintain our tree canopy by:

- proactively inspecting and risk-assessing our trees in our busiest sites first, followed by other sites as resources allow;
- inspecting trees we own and about which residents have expressed concern, although we are unlikely to undertake tree surgery work for reasons of shade, interference with TV or satellite signals, blocked views, overhanging gardens or any other non-legal reason;
- felling or pruning trees which are dead, dying or dangerous as a quickly as possible;
- promptly responding to any insurance claim relating to one of our trees once we have thoroughly examined the circumstances;
- removing branches which obstruct free passage of roads and pavements or cause a danger, and clearing street lights, traffic signs and signals, sightlines and crossings when a problem is reported;
- following best practice in managing our trees, and capturing and storing our tree and risk management data in our tree management database to provide a robust record;
- Trees, which require felling, will be replaced where they have been removed unless where this does not accord with best practice, current PCC policy and/or motions and will result in future maintenance concerns. In these instances PCC will take a cross-departmental approach and will liaise with

residents to ensure trees can be replanted as close as possible to where they have been lost (e.g. within the same street or park) and where necessary we will seek other locations as close as possible to where trees have been lost to ensure there is no reduction in tree cover. We will aim to replant the following planting season after felling.

- Trees which are being removed as part of woodland maintenance works or due to necessary ecological management will not require replacement, unless the felling is necessary to create mitigation habitat for other works.
- The top priority for tree management is public safety. We carry out regular risk assessments of trees that we own. This tells us where harm is most likely to occur and helps us decide what we need to do to keep people and property beneath our trees reasonably safe. We prioritise our surveys, dealing firstly with trees in busier areas, such as highways and parks. We target any time we have left at the remaining sites we own.

2.2.2. Trees within or adjacent to the public highways

PCC as the highways authority under the Highways Act 1980 has to ensure that trees do not interfere with pedestrians or road users. As Highways Authority for the Plymouth, PCC has a duty to maintain the highways infrastructure in a safe and useable condition by removing danger and managing use, as well as minimising disruption caused to traffic by works on the highway.

In response to the duties outlined above, PCC Parking, Marine and Highways Policy Service has developed a Highways Management Trees Policy (see appendix A), which deals with damages caused to the highway by tree growth. The Tree Management Strategy provided below builds on the principles set out in this policy document and aims to provide further clarification on long term management of pavement heave and replanting.

a) *Root damage to footways and roads:*
As set out in the Highways Management Trees Policy tree roots can cause damage to pavements, kerbs and carriageway by roots pushing upwards. Where the damage results in rocking slabs, trips and undulations greater than 20mm, the damage is considered a safety defect and action has to be taken in accordance with the Highway Management Trees Policy. However no tree should be felled prior to appropriate mitigation being secured unless the tree is dead, dying or dangerous.

Where this type of damage occurs to more than 50% of the trees along the street a holistic PCC cross-departmental[1] approach has to be taken to address the issue permanently without causing detriment to the amenity of the area or creating future maintenance issues. In streets where pavement issues have resulted in the loss of trees over time, the lost trees will be counted as trees causing damage.

This approach will endeavour to retain or re-create the aesthetic of the street, whilst building in resilience for the future and will look at the problem holistically and the site specific constraints including but not limited to:

[1] Cross departmental working for trees will most likely involve the following stakeholders: PCC Natural Infrastructure Team, Street Services and Highways. However other partners might be involved depending on the location of the trees affected by the works.

- Changes to how the highway is laid out
- Changes to how the highway functions.
- Felling and replanting

The aim is to ensure tree canopy is retained without causing future maintenance concerns. Wherever this approach is taken local residents will be consulted. Overall where it is concluded felling is the only viable option, the number of trees to be replanted will follow a ratio of 3 to 1[2] (with at least one tree being planted in close proximity to the location of the tree lost unless evidence can be provided this is not feasible or desirable from a maintenance perspective or where this would not comply with current PCC motions or policy, every tree planted will refer to PCC's tree design guide for specific guidance on the specification required). The selection and implementation of the chosen approach will be dependent on available budgets, but no tree shall be felled without appropriate mitigation being secured. We will proactively secure S106 funding in line with the SPD to support the delivery of the above set-out approach in order to provide PCC with a resilient tree canopy. Section 106 funding will not be used to mitigate the impact of highway driven projects e.g. projects which are **not** instigated by tree issues. We will also proactively look for other sources of funding to ensure the deliverability of the set out management principles.

b) *Obstruction of footway by tree*

As set out in the Highways Management Trees Policy, tree growth can obstruct pedestrians by reducing the width of available footway. Once the available footway width is less than 1.2m a risk assessment needs to be carried out to decide on the course of action.

Where more than 50% of the trees along the street cause this type of obstruction, the same holistic PCC cross-departmental approach as set out above for root damage will need to be taken.

We will proactively secure S106 funding in line with the SPD to support the delivery of the above set-out approach in order to provide PCC with a resilient tree canopy. Section 106 funding will not be used to mitigate the impact of highway driven projects e.g. projects which are **not** instigated by tree issues. We will also proactively look for other sources of funding to ensure the deliverability of the set out management principles.

c) *Overhanging Trees*

Under the Highways Act (as amended) responsibility for trees, hedges and shrubs that adjoin the public highway are the responsibility of the owner. The landowner is required to make sure that vegetation from their property does not:

- overhang the pavement/road so as to obstruct pedestrians or vehicles;
- pose an unreasonable health and safety risk to pedestrians or vehicles;

[2] This ratio is differs from the requirements set out in the SPD as the tree loss here would occur as an upgrade to the existing tree stock to make it fit for purpose, whilst the SPD deals with mitigation to make development acceptable in line with JLP policies.

- obstruct or interfere with traffic signals, road signs, or the light from a street light;
- block drivers' or pedestrians' sightlines, view or crossings.

Where we identify an issue and we do not own the tree, we will advise the land owner or occupier. If the owner/occupier does not take corrective action within a reasonable and specified time limit we may issue a formal notice under Section 154 of the Act for the work to be undertaken. If the notice is not complied with we may carry out the work and recoup our cost of doing so from the owner. In all cases we will try to liaise constructively from the outset and offer advice.

To provide adequate clearance from the highway we will follow accepted best practice to achieve:

- for pedestrians, a minimum vertical headroom of 2.3m for pedestrians;
- for carriageway and a distance of 0.45, immediately adjacent to it, a minimum vertical headroom of 5.2m.

In relation to PCC tree stock, where the above guidelines result in cyclical pollarding of more than 50% of the trees along a specific street a long term more sustainable solution will need to be found, however as this is a risk which can be managed by pruning, the implementation of this long term solution will be dependent on budget availability. The annual cost to the council on annually pollarding could be reduced by felling and replanting following the principles of the right tree in the right place with the right infrastructure. Where it is decided to fell trees, replanting will have to re-create the aesthetic of the street without causing similar maintenance issues. To ensure the newly planted trees have sufficient space the following might be required:

- Changes to how the highway is laid out
- Changes to how the highway functions.
- Felling and replanting

Wherever this approach is taken local residents will be consulted. The number of trees to be replanted will follow a ratio of 3 to 1 (with at least one tree planted in close proximity to the location of the tree lost unless evidence can be provided this is not feasible or desirable from a maintenance perspective or where this would not comply with current PCC motions or policy, every tree planted will refer to PCC's tree design guide for specific guidance on the specification required) and no tree shall be felled until appropriate mitigation has been secured.

We will proactively secure S106 funding in line with the SPD to support the delivery of the above set-out approach in order to provide PCC with a resilient tree canopy. Section 106 funding will not be used to mitigate the impact of highway driven projects e.g. projects which are **not** instigated by tree issues. We will also proactively look for other sources of funding to ensure the deliverability of the set out management principles.

2.2.3. Ageing tree stock

PCC will take a proactive approach to managing its ageing tree stock. Many of the tree planting within streets and parks within Plymouth date back to Victorian times and

consist of a limited number of species. Many of these trees are now reaching maturity. To prevent areas from losing their tree stock all at once a proactive approach will be taken to re-stock those areas with young trees and prevent further decay of the canopy cover of those areas. The re-stocking will follow the principle of the right tree, in the right place with the right infrastructure and with the right care (for further detail see PCC's tree Design Guide).

Re-stocking will occur in those areas where more than two directly linked streets are planted with the same species and within our parks dating back to Victorian times. We will develop a tree re-planting programme for each area depending on available budgets and will consider the re-planting holistically e.g. taking account of any other occurring issues (highways, services, etc.) and policies. Where re-stocking is to take place in our parks, 'Friends of'-groups will be consulted.

We will secure S106 funding in line with the SPD to support the delivery of the above set-out approach in order to provide the city of Plymouth and its inhabitants with a resilient tree canopy. Section 106 funding will not be used to mitigate the impact of highway driven projects e.g. projects which are **not** instigated by tree issues. We will also proactively look for other sources of funding to ensure the deliverability of the set out management principles.

2.2.4. Responding to severe weather incidents

The Council has in place Business Continuity Plan. The Plan details the operational response by Street Services to adverse weather situations within Plymouth, which includes extreme wind events which may cause tree failures and disruption to the transport network.

2.2.5. Tree Risk Management

Plymouth City Council will instigate a cyclical pruning programme for trees within its ownership or management as part of the City's Tree Risk Assessment and Inspection Programme in accordance with the Council's Tree Risk Management Plan (see Appendix B) and according to available resources. Control measures will be taken to reduce risk to an acceptable level, and our tree and risk management data will be retained in our tree management database to provide a robust record.

Tree surveys will be undertaken to meet our duty of care. The Council's trees will be inspected in line with the Tree Risk Management Plan (Appendix B) which implements the National Tree Safety Group guidance 'Common Sense Risk Management of Trees', published December 2011[3]. Priority will be given to areas with the highest use areas, which are Council-maintained highways, parks and other open spaces and children's play areas. Available resources thereafter will be targeted at the remaining sites we own or

[3] https://www.forestry.gov.uk/pdf/FCMS024.pdf/$FILE/FCMS024.pdf

manage, such as neighbourhood open spaces, outdoor sports facilities, woodlands, footpaths, conservation areas and green corridors.

A report of a dangerous tree may be received from any of a wide range of sources, and is treated as an emergency, and usually relates to a tree or branch which has fallen during a severe weather event, but might relate to other aspects of tree condition. Our approach to risk management of our tree stock is set out in Appendix B.

The Council manages the annual risk of death or significant harm from trees within the Health & Safety Executive's 'Tolerability of Risk Framework', by assessing risk and recommending control measures that reduce that risk as low as reasonably practicable, and below the 1 in 10,000 threshold of Tolerable Risk. The Tree Risk Management Plan adopts the Quantified Tree Risk Assessment methodology to assess the risk of harm from trees, which includes a formal inspection, with detailed inspections carried out as necessary.

Any remedial tree surgery work required will be carried out in line with the Council's Arboricultural Services Framework.

Our tree management database will be used to capture and store tree asset data (such as location, height, condition) as well as our assessment of risk and the remedial tree surgery work carried out. Data collected can be analysed and collated to give a history of inspection and works. This will become invaluable for insurance cases where proof of management is required. In addition, the data collected allows management decisions and predictions to be made that will improve the delivery of the Arboricultural service.

2.2.6. Trees within schools

Decisions regarding the general management of existing trees and the planting of new trees remain with the school Managers. However, the Council's Arboricultural Officers will seek to provide whatever advice they are able to help secure a healthy and growing population of trees within the grounds of Plymouth's schools.

2.2.7. Tree-related enquiries from the public

The Council will only undertake work to its own trees at the request of a third party if a tree is dead, dying, diseased or dangerous or will soon become so, or if otherwise required by law.

In 2018 the Council received around 1123 enquiries from the public relating to trees under our management, of which just over 173 were treated as emergencies.

Protecting and enhancing the environment, combined with limited resources means that decisions must be made on the priority of work we carry out to our trees. Work to a tree identified as being hazardous will be treated as a priority. Other urgent work includes trees that are dead, dying or dangerous, trees implicated in legal claims or which are obstructing the highway.

Non-urgent work includes work to trees to prevent future problems, such as them becoming hazardous or to continue previous management techniques such as pollarding. These types of works will be addressed through a cyclical pruning programme which is currently being agreed and will be available online by Summer 2019.

Any other requests for non-essential work to our trees will be considered on a case-by-case basis, but will be at our discretion. **We are not legally obliged to prune or fell trees to increase light levels or improve a view, to respond to tree debris such as fruit, leaves, seed or honeydew, to improve TV reception, or because of a fear that a tree is too large.**

a) *Overhanging vegetation*

Although the Council aims to be a considerate neighbour, we are unlikely to fell or prune our trees for the reason that they are encroaching over a boundary, unless causing an 'actionable' nuisance – a nuisance in legal, not common usage i.e. where actual damage to property is occurring. We will, however, consider each request and advise a neighbour what options may be available to them.

b) *Right to light*

The Council will not fell or prune a tree to increase the light levels to a property or to reduce shade to a garden.

A common complaint with regard to trees in the built environment is the effect they have on loss of light to properties and the shade they cast onto gardens.

In most cases it is very rare that the tree is the only obstruction to light. Often there are built structures nearby, which contribute to the shading, or the house may be north facing. Pruning for light is often counter-productive and costly, as the trees will require re-pruning at regular intervals. Any unnecessary pruning is invasive and the resultant wound may invite decay and weaken the tree. With most tree species, pruning results in vigorous re-growth which can result in an even greater level of shading and higher ongoing maintenance costs for the Council. For these reasons careful consideration will always be given to the reasons for undertaking tree work and where thought inappropriate, works will not be undertaken. It should be pointed out that there is no automatic legal right to light as far as broadleaf trees are concerned, as they are slow growing and therefore do not make an instant impact to light loss.

c) *Television and satellite reception*

The Council will not fell or prune trees for the reason that they are interfering with television or satellite signals.

Trees can have an adverse effect on television and satellite receptions. This is worse when the trees are in full leaf, or when there is heavy rain or strong winds. In the winter, when broadleaf trees have lost their leaves, the effect the trees have on TV and satellite reception is reduced.

Often, a problem can be rectified by repositioning the aerial or satellite dish. Where this is not possible, there are booster devices available which can improve the efficacy of aerials. These options are far less destructive, and less expensive than the pruning or felling of trees.

The TV licence is a permit to operate a television receiver. It does not guarantee a reception. However, help and advice can be sought from BBC Reception Advice.[4]

d) Minor nuisances

The Council will not fell or prune Council-owned trees to alleviate problems caused by minor natural processes and phenomena.

Trees are living organisms that provide many benefits, but there are a number of natural processes and phenomena that are sometimes considered a nuisance. These problems would include leaf, blossom, fruit and seed fall, bird droppings, insects and honeydew. The use of hot soapy water helps remove honeydew from vehicles and paths. However when considering re-planting or planting new trees concerns such as listed above will be considered to ensure the level of minor nuisances is kept to a minimum.

e) Tree Related Insurance Claims

The Council will only remove or prune Council-owned trees that are proven, on the balance of probabilities and through sufficient investigations as prescribed in the Claims Procedure, to be causing damage to built structures if it is the most appropriate solution. Alleged tree root damage insurance claims will be considered on a case by case basis by Plymouth City Council.

2.2.8. Undertaking work to Council-owned trees

a) Quality of Works

The Council will endeavour to maintain high standards of tree work by ensuring that all tree works are properly specified and that works are carried out to British Standard BS3998: 2010 Tree work - Recommendations. Quality of work and compliance with the Council's specification will be monitored by the Council's Arboricultural Officers.

It is essential that a high standard of tree work is achieved, so that the existing tree stock can be maintained in a reasonable condition. Poorly pruned Council-owned trees can not only send out a negative message but may also reduce the life expectancy of a tree, possibly even leading to the tree becoming hazardous.

Tree surgery is specialised and skilled work. Contractors and staff involved in this work are required to be suitably qualified to ensure that all work is carried out to the appropriate industry best practices and standards. Contractors engaged to undertake works to Council trees will be vetted for competence and certification, and have appropriate insurance cover.

b) Consultations/notifications

When undertaking significant tree work schemes, other than routine maintenance or emergency works, we will consult and/or notify local residents, Councillors and other interested groups who we believe will be affected by the work. Where possible, we will give four weeks' notice either by letter, email and/or site notice,

[4] BBC Reception Advice, Television Centre, Wood Lane, London, W12 7RJ. Tel: 0870 0100 123 (national call rate). http://www.bbc.co.uk/reception/

and consider the opinions of the local community. The level of consultation required will follow government guidelines.

People care about what is happening to the trees around them, so it is important for us to keep interested parties informed as to what is happening and give them an opportunity to comment.

c) *Street works notices*

When tree works are to be undertaken adjacent to a highway, which will require temporary control or restriction of traffic and pedestrians, a street works notice will be submitted to our highways department.

Plymouth City Council, as the highway authority, is responsible for maintaining roadside trees to ensure safe passageway for road users. However, the New Roads and Street Works Act 1991 creates a duty for the Council to co-ordinate street works: in the interests of safety and to minimise inconvenience to all street users. Our own need to carry out tree work will be co-ordinated with other street works, of all types, being carried out on our highways.

d) *Tree valuation*

Where it is appropriate to place a monetary value on Plymouth City Council trees, the CAVAT system or a similar system will be used. We view our tree resource as being a considerable asset to Plymouth and its residents. In order to facilitate management decisions on trees it is possible to assign a monetary value to these assets. This enables the Council to negotiate mitigation for tree removal on development sites or compensation for tree damage by third parties. It also informs decisions on tree management as well as determining the level of investigation required on potential subsidence claims where Council trees are implicated.

Capital Asset Valuation for Amenity Trees (CAVAT) is a nationally recognised and widely used system to put a financial value on publicly owned trees[5].

e) *Protected Species*

With respect to nesting birds, any tree works will, wherever possible, be completed outside of the breeding bird season (which is generally considered to be March to August inclusive). Should there be a need for any tree works within the nesting season, this work would be supervised by an ecologist to check for nesting birds, immediately prior to the work being carried out. If it is necessary to carry out tree works during the bird nesting season, where possible these trees would be netted prior to commencement of the bird nesting season, to prevent use by nesting birds.

In the event that an active bird's nest is recorded, a buffer/exclusion zone (species dependent but likely to be a minimum of 5 m radius) would be clearly demarcated around the nest. No works would be undertaken within this area until the young birds have fledged (to be advised by the ecologist).

[5] http://urbanwater-eco.services/project/capital-asset-value-for-amenity-trees-cavat/

Trees with the potential to support roosting bats will be 'soft felled', where any sections of the tree identified as having bat roost potential will be lowered carefully using ropes to ground level. Each section will be laid on the ground with holes and cracks facing upward for as long as possible (at least 24 hours under suitable weather conditions is preferable); this gives any bats a chance to vacate the tree. Cutting through cavities will be avoided.

2.2.9. Managing and improving our woodland asset

Our woodlands will be managed so as to meet the objectives laid out in their individual management plans and surveys. The Council will work with other agencies to gain external funding where available.

2.2.10. Working with partners

PCC is keen to proactively work with partners to deliver tree planting across the city. If you are a community group or organisation wanting to plant trees within PCC owned land, please contact PCC with details of your scheme to trees@plymouth.gov.uk . PCC is keen to help local community groups improve their living environments and will endeavour to provide technical support. As tree planting projects can be complex (especially within streets) and might require input and approval of various PCC departments, we would recommend you contact us as early as possible within the process.

APPENDIX A:

PCC's Highways Management Trees Policy

1. Introduction

Plymouth City Council recognises the value of its tree population and understands that there are social, environmental, health and economic benefits:

Social
- Trees provide a sense of place and community
- Trees provide seasonal interest, flowers, autumn colour

Environmental
- Trees reduce the "urban heat island effect" by absorbing radiation which would otherwise be stored and emitted by urban infrastructure increasing local temperatures
- Trees absorb and store greenhouse gases such as carbon dioxide

Health
- Trees help to improve air quality by removing pollutants
- Trees have a positive effect upon mental health and sense of wellbeing

Economic
- The presence of trees can increase the value of properties
- Trees can make areas more attractive to prospective property purchasers

Plymouth City Council must also exercise its duty, as the Highway Authority, to ensure the safe passage of all highway users.

This policy will provide direction and ensure a consistent approach to managing trees that have caused damage to the highway.

2. Aims and Objectives

This policy sets out a framework for maintenance works to rectify damages caused by trees to the public highway (Highways Maintainable at Public Expense or HMPE) – typically footways ("pavements"), kerbs and carriageways ("roads").

This policy will provide direction and ensure a consistent approach to the management of trees.

This policy has been designed to be as comprehensive as possible, however, we acknowledge it does not cover every situation. Plymouth City Council reserves the right

to exercise discretion in application of this policy when to do so would be in the best interests of the Council.

Plymouth City Council's Tree Management Principles document, should be referred to for the management of trees.

3. Tree Damage

Trees can cause damage to footways and carriageways either through time (growth) or during exceptional weather circumstances (uprooting).

This policy will only deal with damages caused to the highway by tree growth; damages caused by trees uprooting will be dealt with in accordance with Plymouth Highways' set procedures for emergency response.

Many of the trees planted within the footways across the city have outgrown their environment and is causing damage to the highway. Root growth, over long periods, exerts upward and sideways force on its surroundings that can result in "bulging" of the footway and carriageway surfacing and kerb displacement.

Plymouth City Council, as the Highway Authority, must exercise its duty to maintain the public highway (HMPE) (Highways Act 1980 Subsection 41 (1). This may in turn allow for a robust defence against litigation (Highways Act 1980 Section 58).

4. Highway Maintenance

4.1 Footways

The upward force caused by the growth of the tree roots can cause uneven paving slabs or varying degrees of undulation on a bitumen macadam surfacing. Rocking slabs, trips and undulations greater than 20mm will constitute to a Safety Defect. Where possible, the existing surfacing material will be removed and bitumen macadam (with a 6mm aggregate) will be used to ramp over the offending tree roots. The gradient of the ramp must be no greater than 8% (ref Department for Transport "Inclusive Mobility"). Should a ramp not be possible, the tree will be felled and the stump and roots will be removed. The area will then be reconstructed and finished with a material sympathetic to the area where reasonably practicable.

There are instances where the growth of a tree causes an obstruction to pedestrians by reducing the available width of the footway. This can force pedestrians to walk along the carriageway. According to the Department of Transport "Inclusive Mobility" the minimum width required for a wheelchair user and an ambulant person side by side is 1500mm. The minimum width required for a visually impaired person being guided is

1200mm. Plymouth City Council has taken the position of two people walking side by side as being more common place therefore will adopt this as the intervention level. Therefore should the growth of a tree reduce the footway width to below 1200mm, a risk assessment will be undertaken to determine whether the tree should be felled and the area made good.

4.2 Kerbs

Kerbs can be displaced in both a vertical and horizontal plane by the force exerted by tree roots. Though kerbs are technically part of the footway and are subject to the same intervention levels, a risk based approach should be made to determine the course of action. Options open, but limited to, are the removal of kerbs and replacement with a slim line kerb (for horizontal movement) and ramping off with sand/cement (for vertical movement). It may also be possible to reset a displaced kerb by cutting back the offending tree roots, though advice must be sought from Tree Officer prior to the works commencing.

4.3 Carriageway

Tree root damage to carriageways occur far less than footway damage but the maintenance principles remain the same. Advice will be sought from Tree Officers to determine if the offending roots can be cut back for the area to be reconstructed, failing this, bitumen macadam will be used to ramp over the damage; should neither of these options be feasible, the tree will be felled and the area will be reconstructed following removal of the root system.

4.4 Tree Preservation Orders

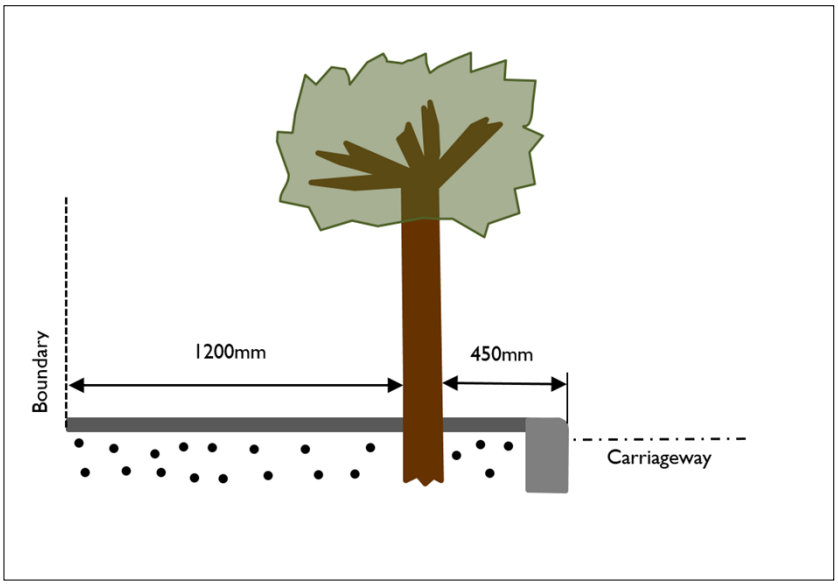
Special precaution must be taken when dealing with trees that hold protection orders though it's not commonplace to find protected trees within the highway. Advice and guidance must be sought from Plymouth City Council Natural Infrastructure Officers.

4.5 Conservation Areas

Conservation areas are normally paved with natural materials and extra sensitivity will be given when working in such areas. There will be occasions where a bitumen macadam surfacing will be used to ramp over tree roots. Should the tree be felled, a like for like natural stone paving slab will be reinstated should it still be available on the market place. Trees within a conservation area are eligible to be felled without special permission from Plymouth City Council's Natural Infrastructure Officers.

4.6 Tree Replacement

It may be possible to replant trees on a footway following removal but must be in accordance to the following highway specification:



The minimum width of 1200mm is derived from section 4.1 which takes into account of the Inclusive Mobility guidelines. All footway furniture/installations should be at least 450mm offset from the face of the kerb.

Where the width of the footway does not allow for the replanting of trees, consideration may be given to the construction of carriageway buildouts to provide a planting area. This will be subject to safety and financial feasibility on a case by case basis. Consideration will be given to plant trees elsewhere in the nearby area should it not be possible to build such a planting area within that street.

The London Tree Officers Association (LTOA) "Surface materials around trees in hard landscapes" should be referred to for new tree installations as it provides best practice for the ergonomic relationship between tree pits and pedestrians. See Appendix B for further details.

5. Risk Management Procedure

All footways and carriageways are subject to cyclic safety inspections. Should a Category 1 safety defect be identified, Plymouth City Council will have 5 days to rectify the defect in accordance with the Highway Inspection Policy. Due to the relatively short time frame in which the defect must be corrected, it can mean that a repeat visit is required to fully address and prevent any further damages caused by tree growth. This can include, but not limited to, looking at the entire street to determine whether additional proactive works could be included to provide best value and drive efficiency. Where a

"whole street" approach is to be taken, the following criteria will be used to evaluate its priority against other similar streets across the city.

- Percentage of trees causing a Category 1 safety defect:
    - Score 1 if less than 33% of trees in a street have caused safety defects
    - Score 2 if between 33% and 66% of trees
    - Score 3 if more than 66% of trees
- Footway Category (as defined in the Highway Inspection Policy):
    - Score 1 for local access footway
    - Score 2 for link footway
    - Score 3 for secondary walking route
    - Score 4 for primary walking route and prestige area
- Local amenities. This takes into account local amenities such as, but not limited to, hospitals, clinics, schools and nursing homes.
    - Score 1 for linking footways to a single amenity
    - Score 2 for linking footways to multiple amenities
    - Score 3 for footways adjacent to a single amenity
    - Score 4 for footways adjacent to multiple amenities
- Insurance claims:
    - Score 1 for single historic claim
    - Score 2 for multiple historic claims

APPENDIX B:

PCC TREE RISK MANAGEMENT PLAN

1. SUMMARY

This Tree Risk Management Plan explains how Plymouth City Council will meet its legal duty and responsibilities in the management of our trees. We will:

- Use the Quantified Tree Risk Assessment (QTRA) method to assess the risk from our trees.
- Identify the areas within the city that have a high level of use, and carry out inspections of trees growing there at a frequency informed by the initial and subsequent inspections.
- Carry out remedial work to trees to reduce the risk to acceptable levels according the Health & Safety Executive's guidance.
- Record our tree risk management decisions, so that we can demonstrate we are acting reasonably according to our legal 'duty of care' and the public's expectations.

2. INTRODUCTION

2.1. The Council is responsible for many thousands of trees which grow along our highway verges, in our public parks and open spaces and in our woodlands. They provide us with a wide range of direct and indirect environmental, social and economic benefits, such as cooling the air and shading us from heat, improving air quality by removing pollutants, providing a home to wildlife and increasing biodiversity, and intercepting rainfall to reduce flooding.[6]

2.2. Trees are living organisms that can grow to a large size. They can be damaged by the weather and weakened by pests and diseases. They can fall over or branches can fall to the ground. Where people, traffic or structures are nearby there is the potential for injury or damage, and so as tree owner we are expected to keep this risk at a reasonable level.

2.3. **It is important to remember, however, that the Council cannot, and is not expected to, guarantee that a tree is safe. We have only to take reasonable care such as could be expected of the reasonable and prudent landowner. Doing more would cause an unacceptable loss of the many benefits trees provide.**

[6] Forestry Commission England have produced a useful summary 'The Case for Trees' available to download at http://www.forestry.gov.uk/forestry/infd-87yek2

2.4. The Health and Safety Executive (HSE) concludes that the risk of being struck and killed by a falling tree is '*extremely low*'[7]. The purpose of this plan is to show that we have a process in place for considering the risk from our trees which is proportionate to this level of risk.

3. OUR LEGAL RESPONSIBILITIES FOR TREE SAFETY

3.1. **The council seeks to allocate its finite resources to ensure it reasonably meets its duty of care and other legal responsibilities by demonstrating a defendable, proactive tree management regime.**

3.2. Like any landowner, the Council has a duty of care to take reasonable care to avoid acts or omissions that cause a reasonably foreseeable risk of injury to persons or property[8].

3.3. As an employer, the Council has a duty to ensure, '*so far as is reasonably practicable*', that, employees, contractors and members of the public are not put at risk. We are also required to '*make a suitable and sufficient assessment of the risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking*'[9]. This requires us to undertake a risk assessment of the tree stock on our land.

3.4. Therefore, it is our fundamental responsibility, in taking reasonable care as a reasonable and prudent landowner, to consider the risks posed by our trees. The HSE states that: '*for trees in a frequently visited zone, a system for periodic, proactive checks is appropriate*'.[10]

3.5. Should harm occur, it is for the Courts to decide whether or not the Council has discharged its duty of care. In reaching its decision, a Court will ask whether or not we have taken a reasonable and proportionate approach to the management of tree safety.

4. THE NATIONAL TREE SAFETY GROUP

4.1. This tree risk management plan seeks to implement the new National Tree Safety Group guidance 'Common Sense Risk Management of Trees', published December 2011[11].

4.2. The National Tree Safety Group (NTSG)[12] was convened in August 2007 to develop a nationally-recognised approach to tree safety management and to provide guidance that is proportionate to the actual risks from trees.

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[7] Sector Information Minute 01/2007/05 'Management of the risk from falling trees', HSE, 2005 (Guidance for HSE Inspectors and local authority enforcement officers)
[8] The Occupiers' Liability Act 1957 & 1984.

[9] The Health and Safety at Work etc. Act 1974

[10] Health and Safety Executive (2007). Management of the risk from falling trees. HSE Sector Information Minute, SIM 01/2007/05.

[11] http://ntsgroup.org.uk/wp-content/uploads/2016/06/FCMS024.pdf

[12] http://ntsgroup.org.uk

4.3. The NTSG released its guidance '*Common Sense Risk Management of Trees*' in December 2011. This is the first national guidance on tree risk management available to tree owners, and followed extensive industry and government consultation.

4.4. The NTSG's guidance states that tree owners should take a balanced and proportionate approach to tree management that forms the basis of a tree safety strategy which covers three essential aspects:

- Zoning: appreciating tree stock in relation to people or property
- Tree inspection: assessing obvious tree defects
- Managing risk at an acceptable level: identifying, prioritising and undertaking safety work according to level of risk.

4.5. The NTSG's guidance requires that areas of land are defined according to levels of use, prioritising the most used areas. High use zones are areas used by many people every day, such as busy roads, other well-used routes, car parks and children's playgrounds, or where property may be affected. Trees in areas of high public use require a regular inspection regime. Trees in areas with low public use require less frequent inspection. The risk of death or serious injury from trees in infrequently-used areas is so low that it is reasonable that these should receive no formal inspection or visual check. However, owners may need to respond to any reports of problems.

5. MANAGING RISK AT AN ACCEPTABLE LEVEL – RISK TOLERABILITY

5.1. **This tree risk management plan seeks to balance the generally very low risk of harm from trees with the many benefits that trees bring to the community, and the desire to avoid unnecessary tree loss. The Council will manage the annual risk of death or significant harm from trees within the Health & Safety Executive's '*Tolerability of Risk Framework*', by assessing risk and recommending control measures that reduce that risk as low as reasonably practicable, and below the 1 in 10,000 threshold of Tolerable Risk.**

5.2. When assessing a tree, owners and managers need to judge whether the management measures they adopt will fulfil society's reasonable expectations and therefore their legal obligations.

5.3. People are exposed to risks throughout their daily lives, and we each make decisions whether those risks are acceptable to us. We might decide to find a safer place to cross the road, make a change to our lifestyle to improve our health, or enjoy the thrill of rock-climbing or skiing.

5.4. The HSE advises that each year between 5 and 6 people in the UK are killed when trees fall on them. The HSE concludes that the risk of being struck and killed by a falling tree is extremely low.

5.5. The National Tree Safety Group (NTSG) have identified that the overall estimated risk of death per year from falling or fallen trees and branches in the UK is about 1 in 10 million,

whereas the annual risk of death in a road accident is about 1 in 16,800. So far as non-fatal injuries in the UK are concerned, the number of A&E cases attributable to being struck by trees (about 55 a year) is exceedingly small compared with the roughly 2.9 million leisure-related A&E cases per year, such as footballs (262,000) and children's swings (10,900).

5.6. If the Council tried to achieve absolute safety from trees, the loss of trees would be unacceptable to the community. Therefore, the NTSG guidance advises that the reasonable approach of a tree owner is to balance risk from trees with their many benefits by using a broad threshold of '*acceptable risk*'. The HSE propose that '*For members of the public who have a risk imposed on them 'in the wider interest' HSE would set this limit at 1/10,000 per annum*'[13].

5.7. The HSE have developed the Tolerability of Risk Framework which has been incorporated into the NTSG guidance. Risks above 1/10,000 per annum are unacceptable, and risk should be controlled. Risks between 1/10,000 and 1/1,000,000 per annum are tolerable, but should be managed 'as low as reasonably practicable' (ALARP). Risks above 1/1,000,000 are broadly acceptable and require no further action.

5.8. The threshold can be considered on a case-by-case basis. For example, for a tree of low or insignificant value, risk control measures might be implemented at a risk lower than 1 in 10,000. A tree of very high landscape, cultural or biodiversity value might justify a risk greater than 1 in 10,000.

6. QUANTIFIED TREE RISK ASSESSMENT

6.1. **This tree risk management plan adopts the Quantified Tree Risk Assessment methodology to assess the risk of harm from trees, which includes a formal inspection, with detailed inspections carried out as necessary.**

6.2. Quantified Tree Risk Assessment (QTRA©) is a probabilistic method of assessing the risk of harm posed by trees. Its output is a combined measure of the likelihood and the consequence of tree failure considered in terms of the loss, within the coming year, of a human life, something of comparable value or a proportion of that.

6.3. The QTRA methodology[14] applies established risk management principles in a robust way, and is based in part on published academic research, guidance from the Health and Safety Executive and other government bodies, and UK government statistics.

6.4. In summary, the tree inspector assesses three aspects of risk: the target (who or what might be harmed), the size of the part that might fall (impact potential), and the likelihood of that failure.

6.5. The 'targets' (people and property) onto which a tree could fall is assessed first, and quantified within broad ranges. For example, these could be the frequency of pedestrians

[13] Health and Safety Executive (2007). Management of the risk from falling trees. HSE Sector Information Minute, SIM 01/2007/05. (Guidance for HSE Inspectors and Local Authority enforcement officers).

[14] See QTRA Practice Note V4.02 (Nov 2011) for a more detailed explanation of the methodology, available at http://www.qtra.co.uk/cms/index.php?section=25

along a footpath, or vehicles along a road. This '*target range*' allows us to decide whether or not and to what degree of rigour a survey or inspection of the trees is required.

6.6. If necessary, the Visual Tree Assessment (VTA) process described by Mattheck & Breloer [15] is then used to identify if a tree displays any defects which might lead to failure. The VTA method is widely published, including by Lonsdale[16], and used by UK arboricultural professionals.

6.7. If a significant defect is observed, the size of the part that would fall (impact potential) is assessed, and then the probability of failure occurring is estimated.

6.8. The three values derived from the assessment are combined to calculate the probability of significant harm occurring.

6.9. The system recognises that trees cannot be labelled simply as '*safe*' or '*unsafe*'. Instead, QTRA quantifies the risk of significant harm from tree failure, so that the degree of uncertainty around future tree failure can be maintained within the HSE's limits of tolerable and broadly acceptable risk.

7. INSPECTION ZONES

7.1. Zone analysis

7.1.1. The focus of QTRA on land use directs the council to dealing firstly with trees in busier areas and according to the value of who or what might be harmed or damaged. This initial 'target' analysis is achieved by placing sites within common categories of target value and occupation. The following list identifies the order in which inspections of our trees will be carried out.

7.1.2. In meeting the guidance of the NTSG, the Council must 'zone' the City. This means identifying how frequency of use of our sites, where the potential for harm is greatest, and assessing tree risk in these areas first before moving down to less frequented sites.

7.1.3. Our zoning exercise tells us that transport routes need to be assessed first and according to traffic volume data. A high priority will also be given to school sites, because children are considered more vulnerable and less skilled than adults at recognising risk. At same time our busiest parks will be surveyed. Available resources will then be targeted at the remaining sites we own.

7.1.4. The order in which we will assess our sites is:

1) **Transport routes** – These are our most used sites, and are used in all but the most extreme weather conditions. We have many trees in falling distance of carriageways, and tree failure has a high likelihood of causing harm because of the speed of impact. Structural and health defects are more likely in highways trees because of a historic

[15] Mattheck, C. and Breloer, H. (1994) The Body Language of Trees: A handbook for failure analysis. The Stationery Office, London.

[16] Lonsdale, D. (1999) Principles of Tree Hazard Assessment and Management, Forestry Commission, The Stationery Office, London

lack of detection and intervention. Traffic census data will be used to prioritise roads which carry the highest rate of traffic flow.

2) **Formal Parks and Public Gardens and children's play spaces** – At these sites tree are usually a key feature and attraction for visitors. At these sites a good deal of management is likely to have been carried out over the years. Like schools, identification and reporting of more obvious risks is likely to be good. This might be done by the public, council officers, grounds maintenance staff and Friends' groups. The probability of harm from tree failure may still be high, and people may spend extended lengths of time beneath trees in good weather.

3) **Neighbourhood open spaces, outdoor sports facilities and play spaces** – prioritised equally.

4) **Woodlands, conservation areas & green corridors.**

8. INSPECTION REGIME

8.1. Inspection and assessment

8.1.1. The Health and Safety Executive states that: '*Given the large number of trees in public spaces across the country, control measures that involve inspecting and recording every tree would appear to be grossly disproportionate to the risk.*'[17]

8.1.2. Instead, the Council's Tree Officer Team will apply the QTRA methodology, summarized below. This allows us to determine whether the relationship between targets and trees, and the condition of the trees, warrants assessment individually or as groups.

8.1.1. It is critical to the defendability of this tree risk management plan that all Officers carrying out regular tree inspections and QTRA risk assessments must be (and currently are) licensed and competent users of the QTRA system. Officers who carry out regular inspections will also have a Level 3 professional arboricultural qualification as a minimum (such as BTEC National Diploma or Technician's Certificate in Arboriculture). They will also have relevant professional work experience, and take part in Continuing Professional Development (CPD) through membership of a relevant professional body, such as the Arboricultural Association. Other staff with up to date QTRA training and/or relevant experience eg: tree surgeons, Natural Infrastructure Officers, will be expected to use their knowledge of trees and their management to assist as and when required by the needs of the service.

8.1.2. Where, on occasion, a tree management decision is beyond the expertise or professional experience of the Council's Tree Officer Team, the required expertise must be sought from an external arboricultural consultant. Independent external advice might also be desirable when a tree management decision will be contentious.

8.2. Walk-over and drive-by surveys

[17] Sector Information Minute 01/2007/05 'Management of the risk from falling trees', HSE, 2005 www.hse.gov.uk/foi/internalops/sectors/ag_food/1_07_05.pdf

8.2.1. Inspections and surveys will be carried out by the council's trained, competent and qualified Tree Officers. Following the most recent revision of the QTRA methodology, each identified zone will be the subject of a 'walk-over' or 'drive-by' survey, at a frequency to be determined following the initial and subsequent assessments to identify the type of tree population and its relationship with significant targets.

8.2.2. The QTRA methodology allows the inspecting officer to establish whether or not, and at what degree of rigor the assessment of trees is required. Where data on frequency of people or value of property is not readily available, or is only available at a cost which is disproportionate to the risk, the judgment of the competent inspecting officer is considered to be the most reasonably practicable approach.

8.2.3. Trees identified as posing an 'unacceptable' risk of harm will be recorded and may require an 'individual tree risk survey'. Alternatively, where an inventory of trees is also the desired outcome of an inspection, all trees may be recorded individually.

8.3. Individual tree risk surveys

8.3.1. The individual tree survey will inform management options to reduce the 'risk of harm' to within acceptable limits. Risks approaching and exceeding 1 in 10,000 will be considered for remedial action. The individual survey will use the Visual Tree Assessment (VTA) process described by Mattheck & Breloer.

8.3.2. In summary, VTA proceeds in three phases:

1) Visual assessment for signs and symptoms of defects and vitality, from the ground and using binoculars as an aid if necessary. If there are no signs of a problem, then the investigation ends.

2) If symptoms lead the inspector to suspect a hidden defect, its presence or absence is confirmed by examination. Mallet and probe are standard tools to assist in the detection and assessment of defects. A further climbing aerial inspection might be required.

3) If an internal decay defect is suspected or confirmed and has potential to present a significant risk of harm, internal decay investigation techniques such as Resistograph or Picus Tomograph may be carried out to help inform the risk assessment.

8.3.3. The information gathered during the inspection(s) are then used to complete the QTRA risk assessment, which together are used to reach an intervention decision.

9. DOCUMENTATION

9.1. The identified target zones, survey dates and data (including the risk of significant harm), and records of remedial work carried out, will be recorded within the tree management system.

9.2. The Council's tree management database will be used in the field and office to capture and store the tree asset data (such as location, height, condition), the inspection date, the QTRA risk assessment and any intervention decision.

9.3. The database is the record that this Plan has been implemented, and will allow the Council to defend claims of liability.

10. PROPORTIONATE INTERVENTION

10.1. Intervention decisions will be made where the probability of harm from trees has been assessed, and exceeds an acceptable limit. Examples of intervention include: removing the 'target' (such as redirecting a path or fencing off access); carrying out tree pruning work; felling a tree. In particular, modification of targets will be considered first where intervention could otherwise significantly degrade the value of trees. Unless the tree constitutes an imminent danger no tree will be felled until mitigation for its loss has been agreed. Where more than 50% of trees within 1 street are exceeding the acceptable level of risk a solution will need to be found which addresses the street holistically, retains/re-creates the aesthetic of the street and limits the potential of future maintenance risk by following the principles of the right tree, in the right place with the right infrastructure. This approach will require collaboration between various stakeholders.

10.2. The HSE suggests that an appropriate limit for a risk imposed on the public should be set at 1 in 10,000 per annum.

- Risks above 1/10,000 per annum are unacceptable, and intervention must take place.
- Risks between 1/10,000 and 1/1,000,000 per annum are tolerable. Intervention will only take place when the risk is not 'as low as reasonably practicable' (ALARP). This depends on a calculation of whether the projected cost of intervention would be grossly disproportionate to the risk, when considered in addition to the tree-related benefits that will be lost and the risks to tree workers from implementing the risk control measure.
- Risks above 1/1,000,000 are broadly acceptable and no intervention will take place.

10.3. Where an unacceptable risk is identified for tree(s) owned or managed by the Council, one of the following actions will be taken by the Tree Officer team:

- In an emergency the public will be isolated from imminent hazards and remedial work carried out urgently.
- High risks will be remedied as soon as practicable.
- Lower-risks will be addressed as part of a planned schedule of work for the road or site which will allow for other restrictions on working at the site, such as access arrangements, weather conditions and intervention priorities elsewhere.
- In all cases, completion of the work will be confirmed with the contractor and recorded.

10.4. All tree works will be specified and carried out in accordance with BS3998 British Standard Recommendations for Tree Work (2010) (and any subsequent revisions). The quality of work and compliance with the Council's specification will be monitored by the Council's Tree Officers.

11. MONITORING AND REVIEW

11.1. A frequency for tree inspection and risk assessment has not yet been imposed or specified in English law. Instead, the frequency of reassessment will be determined by the initial and subsequent assessments on a site by site basis.

11.2. The process will be monitored during Tree Officer Team meetings and issues discussed and resolved as necessary.