



Urban Tree and Woodland

20

Foreward

In Flintshire we are fortunate enough to have many wooded parks such as Wepre, Bailey Hill and Greenfield Valley, situated within easy walking distance of our homes and offering easy access to exercise, reconnect with nature and find oneself.

The benefits that urban trees and woodlands provide are numerous and diverse, it is my own experience that tree lined streets are immeasurably more pleasant than treeless ones.

Scientists tell us that walking through a woodland or landscape with trees has a positive effect on our mental and physical health. One of my favourite pastimes is to walk my dogs along a disused railway near my home which has been planted with trees for community benefit. Over the years I have witnessed them grow tall and flourish. When I look up at their canopies, over the path, I feel more relaxed and the stresses of everyday working life dissipate away.

I welcome this Urban Tree and Woodland Plan because it aspires to achieve greater urban tree cover through smarter working. The plan is inclusive, encompassing partnerships, community involvement and stakeholder consultation, whilst identifying sources of funding for tree planting; at a time where council resources are severely constrained. It also makes good use of detailed information on urban tree cover recently published by Cyfoeth Naturiol Cymru/Natural Resources Wales who are a main partner in the plan

Identifying sites and planting trees is only the first step. For urban tree cover to increase it is necessary to ensure that they are cared for and nurtured, so that they grow to mature specimens. To address this, the plan also focusses on how to manage trees sustainably and cost effectively.

Unfortunately, tree pests and diseases are becoming more prevalent and there is ever increasing pressure for land to be developed. However, one of the biggest risks might be taking our trees for granted and not taking action to safeguard them. I hope, more than anything else, that the Urban Tree and Woodland Plan will address this point because a greater appreciation and understanding of urban trees, by everyone, will make its target more achievable.



Councillor Carolyn Thomas

Cabinet Member for Streetscene and Countryside

March 2018

Executive summary

This Urban Tree and Woodland Plan sets a target of achieving an urban canopy cover of 18% by 2033 from the current 14.5% (2013), the seventh lowest in Wales.

At a time where the responsibility to look after the environment has been incorporated into law by the Welsh Government and ever increasing concerns about the effect humans are having on the environment, the plan has come at an opportune time.

Trees are emblematic of the natural world because of the critical role they play in mitigating climate change, habitat creation and increasing biodiversity.

From a human perspective it is widely accepted that trees have a positive effect on our mental and physical health, particularly in urban areas.

There is also a sound economic argument to plant trees because of the many and varied benefits they afford.

The plan uses the findings of recent research into urban trees carried out by Cyfoeth Naturiol Cymru/Natural Resources Wales. This research has provided the council with invaluable baseline information about the nature and distribution of urban tree cover across various land uses and critically where tree cover is low and could be increased.

The council is a major landowner and as our towns become increasingly urbanised it is necessary to ensure undeveloped land, under its control, is effectively used to provide space for people to enjoy and wider public amenity.

In its capacity as the Local Planning Authority the council is responsible for controlling development ensuring that, where it does occur, it is integrated with the surroundings and safeguards environment features, such as trees. Increasingly, Local Planning Authorities also have a role encouraging green infrastructure in recognition of the wider benefits that schemes of tree, shrub and hedge planting provide, traditionally referred to as soft landscaping.

The plan's target is accompanied by a vision and five objectives with the main objective to increase tree planting. This objective, on its own, will not deliver the 18% cover target, if existing tree cover is inadequately safeguarded and therefore the second objective explains how the council will manage existing tree cover sustainably.

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1.0 | Why is an urban tree and woodland plan necessary?

The Well-being of Future Generations (Wales) Act 2015¹ contains well-being goals that public bodies, including local authorities, must work to achieve. One of the seven well-being goals is to maintain and enhance biodiversity and ecological resilience.

More recently, the Environment (Wales) Act 2016² has put in place the legislation needed to plan and manage Wales' natural resources in a more proactive, sustainable and joined-up manner.

The planting and sustainable management of urban trees clearly meets with these Acts and the Welsh Government's overarching goal of taking care of the environment. This Urban Tree and Woodland Plan provides a method for managing trees and woodlands more sustainably to meet the Welsh Government's and Council's aspirations.

The plan examines the opportunities for tree planting, how this will be done and provides a best practice approach to the management of existing trees.

The plan clearly fosters the Welsh Government's Well-being goal of A Resilient Wales of;

'A nation which maintains and enhances a biodiverse natural environment with healthy functioning ecosystems that support, social, economic and ecological resilience and the capacity to adapt

These Acts guide the policies, plans and strategies of the council. One of the five key priorities for the emerging Flintshire Council Plan (2017-23)³ is for a Green Council that enhances the natural environment and promotes access to green spaces.

The presence of urban trees and the benefits they provide must not be taken for granted. Climate change, the emergence of new pest and diseases, development and an under appreciation of their value threaten to undermine trees as the principal green component of urban landscapes.

This plan sets out an integrated approach to tree planting on all types of council land and recognises that communities who make use of public land should be engaged in the decision making process, and have the opportunity to participate in tree planting.

Through planning policies and working in partnership the council can promote tree planting on land it does not own and where expedient protect trees so that they cannot be removed.

The plan will last for 15 years. This period is relatively short in the lifespan of a tree but a relatively long time in terms of how rapidly Flintshire's towns are changing and policies supporting a sustainable environment are evolving. The period for the plan is the same as that used for the emerging Flintshire Local Development Plan and is long enough for trees to become established, so that their contribution is recognised.

¹ HMSO, 2015. Well-being of Future Generations (Wales) Act 2015¹

² HMSO, 2016. Environment (Wales) Act 2016

³ Flintshire County Council. Flintshire Council Plan. Unpublished

Detailed information regarding the distribution of urban canopy cover in Flintshire's urban areas has been published in a study by CNC/NRW⁴. The study is a valuable resource in understanding current tree canopy cover and the opportunities for increasing it. The report underpins the plan and is the initial step in managing trees strategically and sustainably in Flintshire.

Trees and woodlands are an integral part of green infrastructure. This is a phrase used to describe green and blue natural and semi-natural spaces in urban areas that includes parks, private gardens, fields, hedges, trees and woodland regardless of ownership, condition or size⁵. Green infrastructure provides a natural, appealing, landscape with multiple benefits similar to tree canopy cover. The benefits are greatest where green infrastructure is connected across urban land uses.

The plan is targeted at trees and woodlands in urban areas that provide the greatest benefits and where over 80% of people in Wales live.

⁴ Cyfoeth Naturiol Cymru/Natural Resources Wales, 2013. Tree Cover in Flintshire

⁵ Cyfoeth Naturiol Cymru/Natural Resources Wales. The State of Natural Resources Report: Assessment of the Sustainable Management of Natural Resources. Acronyms and Glossary of terms. Available at: <https://naturalresources.wales/media/679406/annex-acronyms-abbreviations-glossary-final-for-publication.pdf> [Accessed 26 October 2017]

2.0 | A key indispensable natural asset?

The benefits trees provide to people and the environment are diverse and many fold⁶. As well as moderating air temperatures, reducing flooding, locking up carbon dioxide and improving air quality, trees have a positive effect on our mental and physical health (Figure 1).

A Manchester study⁷ found the impact of climate change will be greatest in urban areas and that green infrastructure, such as trees, will be key to mitigating the worst effects of climate change. In particular the study states that mature trees will be very important because they provide shade and intercept rainfall.

A discussion paper⁸ by the Woodland Trust cites various pieces of research into the effects that trees have on improving urban air quality. It is estimated that poor air quality reduces UK life expectancy by 7 to 8 months and costs an estimated £9-19 billion a year.



⁶ Trees and Design Action Group, 2010. No Trees, No Future

⁷ Gill, S.E. et.al, 2007. Adapting Cities for Climate Change: The Role of the Green Infrastructure. Built Environment Volume 33. No.1

⁸ Woodland Trust, 2012. Discussion Paper: Urban air quality. Woodland Trust

Figure 1. Trees are a powerful and versatile natural assets (Credit – CNC/NRW)

The worst affected areas are situated along main roads and areas lacking green infrastructure. The evidence suggests that urban trees remove large amounts of air pollution and that, where there are street trees, the incidence of asthma in children is lower.

Trees afford amenity by softening the harsh lines of the built environment, denote the changes of season, with flowers, fruit and autumn colour, and passing of time as they grow. Trees create a sense of place and are a rich biodiverse ecosystem supporting, animal, fungi, lichen and other plant species.

They promote better mental and physical health and are part of a 'Nature's health service'. A briefing document published by Forestry Commission, England⁹ cites research into the provision of green spaces and the positive effects that this has on encouraging increased physical activity, reducing stress, anti-social behaviour and even levels of crime.

Recent research has quantified the varied multiple benefits trees provide. A study found that the annual benefits provided by London's 8.4 million trees is £132.7 million pounds¹⁰ far exceeding the cost of maintenance and other liabilities. A Wrexham study estimated that the annual ecosystem benefits, that the town's urban trees provide, is £1.44m¹¹. In financial terms the benefits are immense.

⁹ Forest Research. 2005. Trees and woodlands, Nature's health service. HMSO

¹⁰ Treeconomics, 2015. Valuing London's Urban Forest

¹¹ Cyfoeth Naturiol Cymru/Natural Resources Wales, 2016. Wrexham's Urban Trees – an amazing resource benefiting us all

3.0 | An overview of Flintshire's urban trees and woodlands

A 2016 study¹² published by CNC/NRW looked at urban canopy cover across Wales' towns and cities. Urban canopy cover is classed as the amount and distribution of urban land under tree or woodland cover when assessed using aerial photographs. The study was the first ever country-wide survey of its type in the world and found that the average canopy cover for Wales was 16.3% in 2013 and down from 17.0% in a previous 2009 survey.



Plate 1. Mold aerial photograph from 2009

The study found that Flintshire's urban canopy cover was 14.5% in 2013 and the seventh lowest in Wales. Despite this low figure Flintshire was one of only two counties to increase canopy cover between 2009 and 2013. Connah's Quay, the largest of the 14 urban areas surveyed in Flintshire and the tenth largest in Wales, has a canopy cover of 15.7%. This is slightly greater than the urban canopy cover for the rest of the county but is still less than the Wales average.

Caergwrle has the greatest urban canopy cover (29.7%) in the county, probably as a result of the wooded slopes to the castle and the woodland areas along the River Alyn which bisect the settlement.

In comparison Broughton (5.3%) and Saltney (5.5%) have the lowest canopy covers in the county. There does not appear to be a single reason why these two settlements have the lowest canopy.

¹² Cyfoeth Naturiol Cymru/Natural Resources Wales, 2016. Tree Cover in Wales' Town and Cities

Despite the wooded Bailey Hill, Mold has a canopy cover slightly below the average for Wales (15.3%) and similar to Flint (14.2%). Perhaps the slightly lower canopy cover in these two towns recognises their origins as compact market towns.

Nationally, Cardiff has below average (11%) canopy cover and towns with very low canopy cover include Rhyl (6%) and Holyhead (7%). Welsh towns with relatively high canopy cover include Treharris (30%) and Abertillery (27%).

The standard methodology used to assess urban canopy cover allows comparisons to be made with towns and cities across the world.

The study focussed on trees within urban areas and a narrow buffer around them. Nevertheless, it should be recognised that peri-urban trees are also important because of their proximity to towns and could be considered of greater importance where the canopy cover within an urban area is particularly low. The contribution peri-urban trees make to urban areas warrants inclusion in further studies.

National Area Size Rank	Urban Area	Landscape Character Zone	Population ONS 2011 Census	Urban Area (ha)	Total Cover 2013 (ha)	Total Cover 2013 (%)
10	Connah's Quay	Coastal	33,549	1582	249	15.7%
28	Holywell/Bagillt	Coastal	9,808	621	118	19.0%
30	Buckley	North-East	19,639	605	75	12.4%
36	Broughton	North-East	5,974	533	28	5.3%
50	Mold	North-East	10,058	398	61	15.3%
51	Flint	Coastal	14,907	394	56	14.2%
85	Caergwrle	North-East	4,284	239	71	29.7%
100	Saltney	North-East	4,769	163	9	5.5%
170	Penyffordd	North-East	3,554	84	10	11.9%
197	Leeswood	North-East	2,282	58	6	10.3%
199	Mostyn	Coastal	1,606	55	4	7.3%
208	Soughton	North-East	1,710	46	5	10.9%
212	Gwernymynydd/Cadole	North-East	1,141	41	8	19.5%
219	Gwernaffield	North-East	905	21	2	9.5%

Table 1. Flintshire town canopy cover comparisons (Credit: CNC/NRW)

3.1. | Canopy cover by Land Use Category

The study looked at the distribution of urban canopy cover across 14 Land Use Categories in Wales. By implication the Woodland Land Use Category, that will include the woodlands at Wepre Park and Greenfield Valley are the highest and have a 100% canopy cover. Unsurprisingly, the land use with the second highest canopy cover is Informal Open Space with 46.6% canopy cover. An example of Informal Open Space in the county is the riparian habitat adjacent to Swinchiard Brook.

Canopy cover on Formal Open Space is 22% and includes many of Flintshire's parks, such as the northern part of Wepre Park, Higher Common in Buckley and Fron Park, Holywell. Transport Corridors and Education have relatively low canopy cover at 10.1% and 9.7% respectively.

Urban Land Use Category	Total Land Use in Hectares	Canopy cover in Hectares	Canopy cover in each Land Use Category
Commercial Areas	739.97	77.65	10.4%
Education	189.29	18.30	9.7%
Hospitals	10.38	2.04	19.7%
Burial Sites	26.96	3.58	13.3%
Remnant Countryside	193.73	19.14	9.9%
Open Space Formal	371.26	81.43	22.0%
Open Space Informal	325.20	151.58	46.6%
Woodland	84.66	84.66	100%
High Density Residential	114.72	3.62	3.0%
Low Density Residential	1683.52	168.86	10.0%
Transport Corridors	689.79	69.74	10.1%
Unclassified Land	413.10	20.28	4.9%
Total	4824.59	700.89	

Table 2. Land use categories and canopy cover comparisons for Flintshire (Source: CNC/NRW)

From the Land Use Categories it is evident the council has a major role in managing urban canopy cover. In the Land Use Classifications shaded blue in Table 2 the council will almost entirely be the organisation responsible for the management of the land and the trees situated on them. When combined, these three Land Use Categories add up to nearly 35% of all urban land cover and 60% of the total urban canopy cover.

Within urban and peri-urban areas there is 85 hectares of woodland that is mainly broadleaved. This represents a relatively small proportion of the 2,750 hectares of broadleaved woodland (predominantly ash, sycamore, birch and oak) growing across the whole of Flintshire but is exceptionally important because of its accessibility for use by the public and the additional environmental benefits that urban woodlands provide. The 'Woodland' Land Use Category provides 12.1% of urban canopy cover.

Flintshire Countryside Service is responsible for managing much of the urban woodland canopy cover including the following sites.

- Gathering Ground
- Wepre Wood
- Broadoak Wood
- Llwyni
- Carmel
- Penymaes
- Greenfield
- Caergwrle Castle
- Etna
- Buckley Community Woodland
- Coed Talon

The council is the main landowner in the Education Land Use Category and also manages a proportion of land under other Land Use Categories. Flintshire County Council owns over 7000 residential properties which will be classified Low Density Residential or High Density Residential in the study and several business parks that will be classed as Commercial Areas.

Where the council is not directly responsible for land it can encourage other landowners to increase canopy cover, particularly through its statutory planning powers and by working in partnership.

3.2. | Canopy cover and deprivation

The Welsh Government uses the Welsh Index of Multiple Deprivation (WIMD) to identify areas which are most disadvantaged. Each ward in Wales is ranked from 1 (most deprived) to 1896 (least deprived). The study by CNC/NRW found that 40% of the most deprived wards (1-570) have less than 10% canopy. Within the county of Flintshire the correlation is not as strong, with five of the least canopied wards in the most deprived areas.

4.0 | The vision, target and objectives

The plan's vision;

'To have a diverse and resilient tree canopy cover throughout Flintshire's towns that is appreciated, managed sustainably, provides multiple benefits to people and the environment, and enhances biodiversity.'

To support this overarching vision the plan sets out the following target and objectives.

Plan target - To increase urban canopy cover to 18% by 2033

The target of the plan is to increase urban canopy cover from 14.5% to 18%, or more, by 2033. This target is all encompassing and takes into account the many and varied factors that will determine canopy cover (Appendix 2) and simply records it as the percentage of the urban area.

Factors influencing canopy cover will include tree felling, in particular the loss of mature large canopied trees, new tree planting and natural regeneration. Alongside new planting, aftercare is an important factor to ensure good survival rates and that trees grow to achieve measurable canopy cover. The target also takes into account planning and other policies that affect tree canopy cover on land that is not directly managed by the council.

CNC/NRW has already undertaken two surveys of Flintshire's canopy cover which will act as benchmarks. The adoption of a standard methodology will also enable direct comparison between current and future canopy cover values.

Critically, canopy cover is measured by an organisation independent of the council.

The measurement of this target will be reliant upon CNC/NRW undertaking a future canopy cover assessment towards the end of the plan period based on new aerial photography surveys. Further surveys and assessments are likely to take place as it is a cost effective method of knowing the nature and extent of the urban tree resource.

The target of 18% canopy cover is ambitious but achievable. For comparison the ten year Wrexham Tree and Woodland Strategy 2016-2026 aims to increase canopy cover from 17.4% (2013) to 20%¹³. The Woodland Trust/Coed Cadw is also campaigning for 20% canopy cover in urban areas¹⁴. To support the canopy cover target and meet the plan's overarching vision the following five objectives support the plan.

¹³ Wrexham County Borough Council. 2016. Wrexham Tree and Woodland Strategy 2016-2026

¹⁴ Coed Cadw/Woodland Trust. 2016. Policy Paper, Wales is better with trees. Woodland Trust

Objectives

1. Increase the amount of tree planting
2. Manage trees sustainably
3. Manage the risks associated with trees
4. Promote biodiversity
5. Work in partnership

The following chapters cover each of the five objectives and how they will be delivered. The objectives are not confined to the management of trees on the council's own land and include the Local Planning Authority's role as well as other legislation that the council is responsible for administering under other Acts of Parliament. Lastly the council cannot act on its own and the objectives recognise the need for the council to work in partnership with the public and other organisations.

5.0 | Objective 1 - Increase the amount of tree planting

5.1. | Meeting the canopy cover target

New tree planting is the most direct way of increasing canopy cover and reorganisation of services has meant that the council’s arboriculturists are now directly responsible for trees within many public open spaces and can promote tree planting in consultation with stakeholders.

As an initial step tree planting sites will be identified at a strategic level that will enable the target of 18% canopy cover to be achieved. The plan also provides reassurance that long term maintenance costs and liabilities are, by far, outweighed by trees as a growing natural asset.

In the past, there has not been a policy of replacing trees felled on land managed by the council. Replacement planting would only be undertaken where individual circumstances made it necessary. This approach was clearly unsustainable and diminishes a key natural asset.

To achieve a canopy cover target of 18% it will be necessary to maintain existing canopy cover by providing replacement planting where tree removal is necessary and to carry out substantial new tree planting. Planting will need to be carried out in the first ten years of the plan so that the trees have a chance to develop their canopies and be measurable as part of the urban tree canopy cover.

For comparison a 100m x 100m woodland with a closed canopy will provide one hectare of canopy cover or slightly more if the perimeter trees spread outside the woodland boundary. A single early mature specimen tree with a crown spread radius of 3m will have a canopy cover of 28m² and a fully mature specimen with a crown spread radius of 9m a canopy cover of 254m². Table 3 provides examples of crown sizes and how they contribute to canopy cover. The table illustrates how the loss of fully mature trees can result in a significant decrease in canopy cover.

Canopy cover examples		
Nominal tree age class	Nominal tree crown spread radius (m)	No. of trees required to provide 1ha of canopy cover
Young	1.5m	1,428
Early mature	3m	357
Mature	7m	65
Fully mature	9m	39

Table 3. Canopy cover examples

Table 4 compares the existing canopy cover and the proposed target canopy cover in each Land Use Category of the study. The canopy cover targets in each Land Use Category have been calculated to achieve the overall canopy cover target of 18% and are heavily weighted towards the Land Use Categories where the council is able to carry out tree planting without having to rely on other landowners for consent. The plan is mainly focussed towards Open

Space Informal, Open Space Formal and Transport Corridors. For example the plan proposes increasing the canopy cover on Informal Open Spaces from 46% to 65% by 2032.

The plan proposes modest gains in canopy cover on Education land from 9.7% to 12% and Burial Sites from 13.3% to 14%.

The plan also sets out minor increases in canopy cover for High Density Residential, Low Density Residential and Commercial Areas. The council is not a major landowner in these three Land Use Categories but it is where planning policies and promoting the plan could increase the amount of planting.

Urban Land Use Category	Total Land Use (ha)	2013 Canopy cover		2033 Canopy cover target			Comments
		(ha)	(%)	(ha)	(%)	Change (%)	
Commercial Areas	739.97	77.65	10.4%	81.40	11%	+1.6%	Effective landscaping through planning or planting on council owned land
Education	189.29	18.30	9.7%	22.71	12%	+2.3%	Work in partnership with head teachers
Hospitals	10.38	2.04	19.7%	10.38	2.04	0%	Smallest Land Use Category. Betsi Cadwaladr University Health Board
Burial Sites	26.96	3.58	13.3%	3.77	14%	+0.7%	Promote replacement and additional planting
Remnant Countryside	193.73	19.14	9.9%	19.14	9.9%	0%	Dataset of limited use for meeting plan target
Open Space Formal	371.26	81.43	22.0%	111	30%	+8.0%	A key Land Use Category for meeting plan target
Open Space Informal	325.20	151.58	46.6%	211	65%	+18.4%	A key Land Use Category for meeting plan target
Woodland	84.66	84.66	100%	84.66	100%	0%	Already 100% canopy cover
High Density Residential	114.72	3.62	3.0%	4.6	4%	+1%	Promotion and protection by LPA
Low Density Residential	1683.52	168.86	10.0%	202	12%	+2%	Promotion and protection by LPA
Transport Corridors	689.79	69.74	10.1%	103.50	18%	+7.9%	A key Land Use Category for meeting plan target
Unclassified Land	413.10	20.28	4.9%	20.28	4.9%	0%	Dataset of limited use
Total	4824.59	700.89	14.5%	874.44	18.1%	+3.6%	

Table 4. Land use categories, canopy cover comparisons and target (Source: CNC/NRW)

5.2. | Formal Open Space

Formal Open Space covers 8% of the urban area and to achieve an overall figure of 18% urban canopy cover it will be necessary to make much greater use of existing mown grassland for tree planting. Regularly mown grass is species poor and more costly to maintain than longer

grass planted with trees¹⁵. The provision of accessible open space by the council is an important investment for public well-being¹⁶ and it is recognised that people prefer a mixture of open areas and trees to dense woodland¹⁷. The plan will focus tree planting in strategic locations on Formal Open Spaces to recreate the favoured open space character.

To increase biodiversity there is also the opportunity to sow wildflowers adjacent to trees where reduced grass cutting occurs as part of revised open space management.



Plate 2. Mature trees and parkland at Wepre categorised as Formal Open Space



Plate 3. Whip tree planting undertaken at The Willows, Hope categorised as Formal Open Space

To assist with creating a diverse and resilient tree cover less common tree species will be used. These less common species will also provide added interest and will not look out of place in a more formal landscape. Within Formal Open Space there is an over reliance on mature and late mature trees to provide canopy cover and new planting will result in a more varied age structure.

¹⁵ Land Use Consultants. 2011. Trees or Turf? Woodland Trust
¹⁶ World Health Organization. 2017. Urban green spaces: a brief for action
¹⁷ Land Use Consultants. 2011. Trees or Turf? Woodland Trust

5.3. | Informal Open Space

Informal Open Spaces offer the greatest opportunities to increase canopy cover and meet the target of 18% canopy cover by 2033. Informal Open Space covers 7% of the urban area and is less kempt than Formal Open Space providing greater tree planting opportunities. Where public recreation is limited, areas could be left to regenerate with trees or planted with small nursery tree stock to create new woodlands. Existing desire lines across Informal Open Space can be formed into regular paths maintaining access within a landscape of woodland, glades and specimen trees. Planting in these areas will be more suited to native or other common tree species.

Land Use Category	Strengths	Weaknesses	Opportunities	Threats
Open Space Formal	Highly visible Widely accessed for recreation. Well-being benefits.	Grass cutting contracts will need to be changed. Space required for informal ball games.	Where appropriate Integrate with wildflower meadows to provide greater biodiversity gains. The most formal areas are suitable for planting large nursery stock that offer the greatest benefits. Less common species to add interest.	Maintenance will require the adoption of new skills.
Open Space Informal	Urban canopy cover usually visible and accessible. Informal areas are likely to have more biodiversity due to less disturbance.	Grass cutting contracts will need to be changed.	Less formal areas may be suitable for developing into woodland using natural succession, reducing establishment costs.	Maintenance will require the adoption of new skills.

Table 5. Analysis of canopy cover potential for Formal and Informal Open Space Land Use Categories

5.4. | Transport Corridors

With the exception of the trunk roads managed by the North and Mid Wales Trunk Road Agency for the Welsh Government, railways and private roads most transport corridors will be managed by Flintshire County Council in its capacity as the Highways Authority. Transport corridors comprise 14.2% of urban land by area, approximately equivalent to Formal Open Space and Informal Open Space combined but with only 10% canopy cover. This is

significantly below the average for other Land Use Categories even though a major proportion of the Land Use Category comprises of soft verges suitable for tree planting.

Transport Corridors			
Strengths	Weaknesses	Opportunities	Threats
Highly visible Reduce noise and pollution from traffic. Provide shelter from wind and rain. Street tree planting will moderate high summer temperatures and intercept rainfall.	Safeguarding highway infrastructure Underground and overhead utilities will need to be safeguarded. Planting in hard surfaces is expensive.	Lower than average canopy cover. Soft verges suitable for planting. Verge planting can be integrated with wildflower verges.	Planting vulnerable to damage.

Table 7. Analysis of canopy cover potential for Transport Corridors

Tree planting on highway land requires careful planning to avoid obstructing visibility for motorists and working adjacent to underground utilities. Nevertheless, as a result of their positions, trees on highway land will be highly visible and also provide the greatest environmental benefits.

The widest verges will be suitable for planting at a higher density with small nursery stock whilst narrowest verges could be strategically planted with large specimens.



Plate 5. Planting in the soft highway verge



Plate 6. Mature highway trees in Flint

Planting within the pavement on streets is technically challenging and requires consultation with a wide range of stakeholders (e.g. highways engineers, utility providers, landscape and tree professionals). Planting must meet highways standards whilst creating suitable conditions for tree growth. Nevertheless, street tree planting can be extremely effective at improving the quality of the public realm. Due to the relatively high cost, planting in paved areas will usually be undertaken as part of externally funded regeneration schemes.

When planning and implementing tree planting in hard surfacing best practice guidance within Trees in Hard Landscapes will be followed and the guiding principles of Manual for Streets 2. For successful tree planting to be undertaken in streets it will be necessary to overcome technical issues and objections that have traditionally occurred.



Plate 7 and 8. Flint street tree planting undertaken in 2013 (Before, left and after, right)

5.5. | Education

Education land comprises of a relatively low (3.9%) proportion of urban land and therefore the scope to make significant urban canopy cover gains in schools and on other education land is limited. Some education land (e.g. Coleg Cambria) is wholly independent of Flintshire County Council and several Flintshire County Council Schools independently maintain their school grounds. Nevertheless, canopy cover on Education land is relatively low (10%) and there will be opportunities to work in partnership with head teachers to achieve 12% canopy cover to benefit students and the wider community.

Many Flintshire schools participate in Forest School, a project which promotes hands on learning in an outdoor woodland or natural environment with trees. There is an opportunity to target schools enrolled in the Forest School project as they are more likely to appreciate the outcomes.

Some schools may be risk adverse and not wish to participate in tree planting projects even though the health benefits of trees far outweigh the risks they pose. This will need to be addressed through advice and information.

Education			
Strengths	Weaknesses	Opportunities	Threats
<p>Education resource for Forest School outdoor learning.</p> <p>Provide shade for students.</p>	<p>Some schools have opted out of council grounds maintenance contracts and act independently.</p> <p>Sports pitches need to be safeguarded which will limit scope.</p>	<p>Students can participate in planting schemes.</p> <p>Relatively low cover that could be significantly increased.</p>	<p>Schools can be risk averse.</p>

Table 8. Analysis of canopy cover potential for education

5.6. | Burial Sites

At 0.6% of urban land, Burial Sites are the least significant land use in which the council is the manager of the land. This Land Use Category will include the cemeteries at Connah's Quay, Flint and Hawarden. Canopy cover on burial sites is 13.3% and therefore slightly below the average for Flintshire and a modest canopy target cover of 14% is proposed to be achieved with the new planting. It is evident that extensions to existing cemeteries lack specimen tree planting and this is something that could be addressed on a sensitive basis, working in partnership with the relevant officers.

5.7. | Woodland

The study categorised canopy cover greater than 0.5ha in the Woodland Land Use. Woodland covers 5% of the urban area, with amenity trees as 9%.

As canopy cover within the Woodland Land Use category is already 100% it cannot be increased. Instead, any new woodland planting will be measured by another land use category being reclassified into woodland. Most woodlands are situated in the countryside however they can also be found in urban and peri-urban areas where Ancient Semi-Natural Woodland has been protected from development (e.g. Broadoak Woods in Connah's Quay) or woodland has grown up on post-industrial land (e.g. Greenfield Valley). Most urban woodlands have a network of paths allowing the public to access the quietest and most tranquil parts offering the greatest opportunities for reducing stress and connecting with nature.

5.8. | Commercial Areas

Commercial Areas such as Greenfield Business Park and County Hall are managed by the council however the majority of this Land Use Category will be businesses. The category will not be specifically targeted for tree planting however it is expected that a small gain in canopy cover (+1.6%) can be achieved through planning policies and more sustainable management on council maintained land.

5.9. | Other land

The council is not a major stakeholder in the other Land Use Categories but can work in partnership with other organisations to plant trees and increase canopy cover. Partnership working is more likely to occur later in the plan period and could include organisations, such as, Betsi Cadwaladr University Health Board, Clwyd Alyn Housing Association and Pennaf.

5.10. | Planning, tree planting and aftercare

Well planned and implemented schemes of tree planting are easier to maintain and less likely to fail. Tree species will be suitable for the soil type, drainage and position. In particular varieties of tree with tightly formed crowns will be used where there is limited space (e.g. pavements) and large spreading species (e.g. common beech) used in parks where they can grow unconstrained and afford the greatest benefits. Tree planting schemes will also take into account the likelihood of casual vandalism, specifying larger and more robust trees and/or tree guards where necessary.

Tree planting will comply with the relevant latest British Standard¹⁸ which covers the quality of nursery stock, site evaluation, species choice, handling, planting and post planting maintenance. To minimise the risk of a pest or disease being imported from abroad the council will favour UK grown stock, or where trees are imported the stock that has grown for at least one year in a UK nursery. In most cases nursery stock will need to be accompanied by an EU Plant Passport.

To reduce susceptibility to host specific diseases (e.g. ash dieback), which may become more prevalent as a result of climate change, a range of species will be chosen from different

¹⁸ British Standards Institute. 2014. Trees: from nursery to independence in the landscape –Recommendations. BSI

botanical genera and families. For resilience Santamour¹⁹ recommends that trees, as a component of the whole urban forest, should not comprise of more than 10% of a single species, 20% of a single genus and 30% from a single family.

Tree planting will not be undertaken unless there is provision to undertake adequate maintenance until establishment. The majority of planting schemes will require monitoring and maintenance for three years. This will include weed control, watering of large trees, checking tree ties and stakes, formative pruning and where, necessary, replacement planting. The prompt replacement of any dead or vandalised trees is important to show that the planting scheme is being managed and will not be left to become neglected. Unmaintained schemes are likely to suffer greater vandalism.

As well as requiring maintenance tree planting schemes will require long term grounds maintenance regimes to be revised. Areas of mown grass can be cut with tractor driven machinery to within 5m of trees with a longer grass sward left underneath trees cut once or twice a year if desired. Where it is necessary to maintain regular mowing adjacent to a tree small ride-on cutting machinery can be used. Under no circumstances should grass trimmers be used at the base of trunks because this inevitably causes damage.



Plate 9. Park Avenue playing field, Saltney



Plate 10. Park Avenue, Saltney

5.11. | Connah’s Quay pilot area

With a population of over 33,000 and the tenth largest urban area in Wales, Connah’s Quay’s canopy cover of 15.7% is lower than the national average (16.3%) but higher than the mean canopy cover for Flintshire.

As the largest urban area in Flintshire the town merits more detailed focus and the study by CNC/NRW²⁰ includes a desk top survey for potential planting sites in Connah’s Quay. The survey found that there is significant potential for planting and increasing canopy cover on available ‘green areas’. Theoretically, the study found that a canopy cover of 62% could be achieved (14% in 2009) if all existing ‘green areas’ were targeted. As the main urban area and with a significant potential to increase canopy cover the first five years of the plan will target new planting in Connah’s Quay. The council’s Countryside Service already has good working

¹⁹ Santamour, Frank S. 1990. Trees for Urban Planting: diversity, uniformity, and common sense. Proceedings of the 7th Conference of the Metropolitan Tree Improvement Alliance.

²⁰ Cyfoeth Naturiol Cymru/Natural Resources Wales, 2013. Tree Cover in Flintshire

partnerships with the community, through its work on the coast and at Wepre Park, and it is proposed to strengthen these working partnerships to deliver tree planting.

5.12. | Broughton and Saltney target areas

Broughton and Saltney are the two settlements in the county with the lowest canopy cover and the early stages of the plan will focus on increasing the amount of tree planting on sites that the council maintains in those settlements.

As a first step tree planting on land maintained by the council at Park Avenue Playing Field (Plate 9) will be explored with stakeholders. Later in the plan period the feasibility of street tree planting on Park Avenue (Plate 10) can be examined.

Hawarden Airport is an aerodrome operated by Airbus under the European Aviation Safety Agency safety rules. The aerodrome is situated to the north of Broughton and the adjacent Airbus factory is a major employer in the county. The proposed first step in increasing Broughton's canopy cover will be to consult Airbus to identify the constraints imposed by the aerodrome.

6.0 | Objective 2 - Manage trees sustainably

Sustainability is at the core of the Welsh Government’s policies and the sustainable management of urban trees and woodlands must be an overarching objective of the council.

Tree management	
Traditional approach – less sustainable	Modern approach – more sustainable
Focus on individual trees	Focus on whole urban forest resource
Mainly valued for their visual amenity	Trees recognised as an important part of urban infrastructure with major ecosystem benefits
Monetary value of trees not recognised	Monetary value of urban forest recognised
Managed in isolation	Integrated management
A resource that belongs to the owner	A shared resource

Table 9. Tree management comparisons (After: North Sydney Council. 2011)

The traditional approach tree management looked at a tree in isolation and what was required to solve that particular problem or issue. The traditional method was not strategic and tree canopy cover was not measured, so it was unclear whether or not it was sustainable. The advent of the urban forestry movement recognised that the whole urban forest resource is much greater than the sum of its individual parts and is a shared resource with a monetary value. To sustainably manage urban canopy cover the council will need to adopt the modern approach (Table 9).



Plate 11. Mold urban canopy cover

The council’s arboriculturists are responsible for managing trees that are growing in highway verges, streets, town parks, civic areas and country parks. Trees on other council land (e.g. Tenanted properties, Flintshire business parks, cemeteries) are managed by the relevant department with advice from the council’s arboriculturists being provided in accordance with agreed service levels. As changes to the organisational structure occur it is expected that the

council’s arboriculturists will become more directly involved with the management of other department’s trees resulting in more strategic and sustainable management.

The council has a role in ensuring that trees on other land are managed sustainably by using planning powers and promoting best practice.

6.1. | Woodland management

The council will protect and enhance its own urban woodlands guided by long term woodland management plans. Management plans will be based upon a policy of continuous cover so that long term canopy cover remains stable or is increased. Felling will only be carried out for overriding safety reasons, to facilitate natural regeneration or carry out new planting. Where felling is considered acceptable it will only be carried out in small woodland compartments or as a thinning operation. In exceptional cases young scrub woodland may be cleared to enhance particularly rare plant communities (e.g. limestone grassland), geological features (e.g. limestone pavement) or ancient monuments.



Plate 12. Urban woodland at Wepre Park

Woodland management will be undertaken in consultation with CNC/NRW and where required subject to a felling licence and/or other consents to safeguard protected species and habitats. Where grants are available to undertake woodland management the council will seek funding to contribute towards the cost of the work. Whilst the production of marketable timber is not an objective in the management of the council’s urban woodlands any harvested timber will be marketed and sold where opportunities exist. As an example timber from felled larches was planked by the Countryside Service and sold to clad school buildings and outdoor structures at Ysgol Ty Ffynnon and Hawarden Village School.

The council will work in partnership with other woodland owners to meet shared objectives. Urban woodlands which are considered to be under threat of development will be protected by the council using its Local Planning Authority powers.

The objectives of woodland management plans will be to;

- Increase biodiversity
- Resilient
- Safeguard protected species, habitats and features (e.g. monuments)
- Silviculturally well managed
- Maintain landscaping qualities and local distinctiveness
- Permit managed public access
- Engage with the community

6.2. | Prioritising tree inspections

Inspections in response to enquiries will be prioritised according to the level of risk to people and property (Table 10). More information about risk management is contained in Chapter 7.

Prioritising tree inspections			
Category	Example	Department	Response
Urgent	Fallen trees/branches blocking the carriageway of a classified road including trees from private land	Streetscene	1-5 days
High Priority	Imminent risk of an unstable tree or large branch falling onto the carriageway of a classified road or footway including trees on private land.	Streetscene	
	Imminent risk of an unstable tree or large branch falling onto the carriageway of an unclassified road including trees on private land.	Streetscene	
	Fallen council owned trees or boughs on buildings.	All	
	Trees or boughs at imminent risk of falling onto a building.	All	
Medium Priority	Trees adjacent the highway that are dead or dying but not deemed hazardous. Trees causing an actionable nuisance. Council trees or branches that have fallen onto third party land but not caused damage to buildings or structures. Plant Health Notice issued to control the spread of a pest or disease.	All	1-4 weeks
Low Priority	Trees or other vegetation obstructing footway or visibility splay.	Streetscene	2-6 weeks
	Trees branches obstructing a highway’s sign or street light.	Streetscene	4-12 weeks

Table 10. Prioritising tree inspections

As a major landowner, the council receives many requests and complaints regarding trees and it is important that they are dealt with consistently and proportionately. Unless there are

exceptional overriding reasons, trees managed by the council's arboriculturists will not be cut back or felled, at the expense of the council, as a result of the following:-

- Allegedly too tall
- Shade (unless oppressive)
- Loss of a view
- Dropping aphid honeydew/sap
- Dropping leaves or other seasonal debris
- Interfering with TV reception
- Affecting the efficient working of solar panels
- Touching overhead telecommunication wires
- Overhanging branches

This policy is in accordance with the common law rights that exist between a tree owner and a person making a complaint. Prioritising inspections and handling enquiries in accordance with the policy will enable the council's arboriculturists to work more efficiently and allow time be spent on meeting the plan's other objectives and its target.

During inclement weather tree works may be delayed until conditions improve sufficiently to enable council operatives or its contractors to work safely.

It is proposed to expand the council's computerised tree database to include all major sites belonging to the council (e.g. Parks, Schools and cemeteries). This will provide a more comprehensive picture of urban canopy cover which can then be used to carry out an i-Tree Eco Project²¹ and provide a valuation of the urban tree resource, similar to that undertaken in Wrexham, Swansea and Cardiff.

6.3. | Overhanging branches

Under Common Law a neighbour, or contractor acting on the owner's behalf, can prune off branches overhanging their property provided they do not trespass onto the neighbouring land to carry out the work (e.g. climb the tree). It is also a requirement to offer the arisings (e.g. branches) back to the owner of the tree.

A neighbour wishing to exercise a Common Law right to cut off overhanging branches growing from trees on council land is advised to contact a council arboriculturist or other officer managing the land. This will enable the extent of the work to be discussed, how the arisings will be disposed and access to be arranged. Where a programme of tree maintenance is scheduled for the site the council may prune the overhanging branches.

Complaints and enquires which allege that branches are causing an actionable nuisance (e.g. dislodging roof tiles) will be investigated. Where necessary remedial action will be undertaken by the council to address the nuisance caused.

²¹ Treeconomics i-Tree Eco. Available at: <http://www.treeconomics.co.uk> [Accessed 21 September 2017]

6.4. | Tree roots

Flintshire is a county where the overlying geology comprises of glacial clay, sands and gravels with occasional alluvial sand and gravel deposits in valleys. Due to this geology the consequent overlying soil type is not prone to shrinking when drying out and the potential for tree root related subsidence to occur is low. Notwithstanding, if subsidence is suspected to have been caused by the roots of a council tree any claim made to the council should be supported by technical information (An arboricultural report, structural engineer's report and a period of crack monitoring). Where a tree is proven to have been the main factor causing subsidence remedial action will be undertaken appropriate to all the relevant factors, including amenity and arboricultural best practice.



Plate 13. Structural roots severed just below the surface during excavations

Direct damage is caused by tree roots where they push against structures (e.g. wall, fence) as they grow. Where a tree owned by the council is allegedly causing damage to a neighbouring property it will be investigated and action taken that is commensurate to the damage caused, the value of the tree and what is required to remediate the damage.

Normal tree root growth will not actively penetrate an intact pipe or drain. Already leaking foul water and surface water drains can suffer tree root ingress which can worsen existing damage and cause blockages. If a root from a tree owned by the council has grown into a drain the replacement of the faulty section with plastic pipe, less prone to leaking and with greater flexibility, will be the most appropriate solution. Where appropriate, householders should make enquiries to find out whether a sewer on their land is maintained by Dwr Cymru/Welsh Water²². Tree removal will not normally be considered.

Most tree roots are within one metre of the surface where soil conditions are most suited to supporting growth and therefore even relatively shallow excavations can cause major root damage. In addition a tree's structural roots will be growing from buttresses just below the surface. To compensate for having a shallow root system tree roots will grow laterally extending beyond the tree's crown spread.

Utility providers installing and maintaining services in the public highway must safeguard trees when undertaking their works. Underground services frequently share a narrow highway verge or footway and pass through the rooting zone of trees growing on or adjacent to the public highway. The council will require streetworks to be carried out in accordance with Volume 4 of the NJUG Guidelines for the planning, installation and maintenance of utility

²² Dwr Cymru/Welsh Water. [c2011] Changes to the ownership of your drains and sewers. Dwr Cymru/Welsh Water

apparatus in proximity to trees²³ or in accordance with other current best practice guidance. When the Highways Authority is notified of proposed streetworks adjacent to trees the highways engineer will seek advice from the council's arboriculturists. Where utility providers sever tree roots as a result of poor professional standards the council will seek compensation commensurate to the damage caused.

The council will not consider felling a healthy tree in a highway verge to allow for installation of a dropped kerb and crossover. Pruning the roots of a council tree or removing lower branches to facilitate the installation of a crossover will be considered on an individual basis but will be only be permitted when it can be undertaken in accordance with arboricultural best practice.

Tree root trip hazards will be remediated by building up the levels and repairing the surface. Less flexible paving slabs and block paving can be replaced with tarmac or loose aggregate at the tree's base. Where this is not feasible advice should be sought from a council arboriculturist.

6.5. | Overhead utility lines

Both telecommunication and electricity providers carry out work to safeguard their overhead apparatus. Due to the danger of death electricity providers have a proactive approach to the management of trees and hedges on public and private land near to overhead lines. Tree works are carried out by contractors on behalf of utility providers and will specify what works are required and obtain the landowner's consent before carrying out the work at the utility provider's expense. As a result the council does not normally carry out tree works adjacent overhead lines unless specified as part of other major works to a tree.

When granting consent for council trees to be cut in the vicinity of overhead lines the council's arboriculturists will ensure that the work, as far as possible, safeguards amenity and is in accordance with good arboricultural practice (e.g. BS3998:2010 Tree work - Recommendations and adequate biosecurity). If consent is granted to fell trees there will be a presumption for the utility provider to plant replacement trees in an agreed position.

6.6. | Unauthorised works to trees on council land

Tree work that has not been specifically sanctioned by a council officer may be regarded as criminal damage. Where unauthorised works takes place that disfigures or destroys a tree the council's arboriculturists may require remedial work to be undertaken or request replacement planting. If the amenity afforded by a mature tree is judged, by a council arboriculturist, to have been destroyed the council will request the police to carry out a criminal investigation. Alternatively, the council may bring a civil case against the perpetrator for the tree damage caused.

6.7. | Planning policy

The Local Planning Authority (LPA) is the part of the council which determines applications for development and administers the policies and legislation relating to the protection of trees. The LPA's role is important because it enables the council to broaden the reach of its objectives and influence canopy cover on land other than its own. Planning policy is one of

²³ National Joint Utilities Group, 2007. Volume 4. Guidelines for the planning and NJUG Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. NJUG

the main mechanisms that the Welsh Government uses to drive its sustainability and biodiversity agendas. Planning policy is led nationally and detailed guidance and local policies produced by the LPA should be in accordance the Welsh Government's policies.

Chapter 5.2.10 of Planning Policy Wales²⁴ states;

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

During the period of the plan the council will publish a Local Development Plan which will provide detailed policies relating to trees and woodlands that reflect the latest national planning guidance. At the time of drafting the plan (September 2017) policy TWH1 of the Unitary Development Plan is the relevant policy relating to the protection of urban trees and woodlands.

TWH1 Development Affecting Trees and Woodlands

The Council will protect from development those woodlands and trees which are considered to be important local landscape, townscape and wildlife features. Where the principle of development affecting trees or woodland is acceptable, the County Council will require that:

- a any tree, groups of trees or woodlands of value on or adjacent to the site are retained and that development is sympathetically incorporated around them;*
- b the pre-planning assessment of the trees and the development complies with the British standard, Guide for Trees in Relation to Construction (BS 5837); and,*
- c where the removal of trees is considered acceptable, suitable replacements that are appropriate to the character of the area shall be established elsewhere within the site.*

Policy TWH1 is supported by Supplementary Planning Guidance Note No. 4 Trees and Development which will also be subject to review during the plan period following the adoption of the Local Development Plan.

It is likely that national planning guidance will be strengthened during the plan period to reflect the sustainable requirements of the Well-being of Future Generations (Wales) Act 2015²⁵ and the Environment (Wales) Act 2016²⁶. In accordance with sustainability requirements new guidance may make provision for greater replacement tree planting where the removal of trees on development sites is permitted. There is scope for developers to contribute towards replacement off site planting via planning obligations, subject to the adoption of a suitable policy by the council.

In the later stages of the plan and with assistance from CNC/NRW it may be feasible to monitor the effect development has on urban canopy cover.

²⁴ Welsh Government. 2016. Planning Policy Wales. Chapter 5 Conserving and Improving Natural Heritage and the Coast

²⁵ HMSO, 2015. Well-being of Future Generations (Wales) Act 2015

²⁶ HMSO, 2016. Environment (Wales) Act 2016

6.8. | Tree Preservation Orders and Conservation Areas

Using national legislation the LPA makes Tree Preservation Orders (TPOs) under Section 198 of the Town and Country Planning Act 1990, where it is considered that a tree or trees afford significant amenity and it is expedient to do so.

A TPO may protect individual trees, groups of trees and areas of trees or woodlands under the four different designations specified in Schedule 1 of the TPO. Unless exempt a TPO prohibits the cutting down, uprooting, topping, lopping, wilful damage or destruction of a tree, covered by the TPO, without the LPA's consent. It is usually the case that trees within the built environment are under the greatest risk of being felled and therefore the majority of TPOs are made in urban areas.

The council administers TPOs in accordance with the Wales guidance contained in TAN10²⁷ and where applicable in accordance the more detailed guidance contained in Tree Preservation Orders: A Guide to the Law and Good Practice²⁸ (strictly applicable to England only). The council administers 376 TPOs (2017 figure). Depending on how Schedule 1 is drafted a single TPO can provide protection for a single tree to many trees, groups and woodlands. During the period 2007 to 2011 Flintshire County Council undertook a review of its TPOs using Welsh Government grant funding and this led to many of the older TPOs being revoked, after they had been replaced by newer and more concise Orders. The review has enabled the TPOs to more accurately reflect the important trees in the county. The CNC/NRW study suggests that effective tree protection by LPAs has contributed to maintaining urban canopy cover.

Conservation Areas are designated to protect areas of architectural and/or historical interest. In Flintshire there are 32 Conservation Areas which mainly cover historic town centres or villages. As well as providing additional controls that restrict development Conservation Areas also afford protection to trees and subject to certain exemptions it is a criminal offence to cut down, lop or top, uproot, wilfully damage or destroy a tree without notifying the Local Planning Authority in writing. The six week notification period gives the LPA the opportunity to make a TPO where it is considered necessary to safeguard the amenity afforded to an area by a tree. Where a TPO is made it has the effect of stopping the work described in the notification from proceeding. Subject to certain exemptions and a minimum size²⁹ all trees within designated Conservation Areas are protected.

There is no fee to make an application for consent to carry out tree works to a tree subject of a TPO or to make a notification to carry out works to a tree inside a Conservation Area.

As Tree Preservation Orders and Conservation Areas afford protection to trees in the interests of mainly public amenity the council will, in accordance with best practice, normally publicise trees works that include felling. The consultation process enables local members, community councils, adjoining occupiers and the public to comment on proposals.

The council will not normally consult interested parties where pruning is proposed because, in most cases, the potential effect of the works to amenity will be far less than felling. This approach enables applications and notifications for pruning to be determined within a shorter

²⁷ Welsh Office. 1997. Technical Advice Note (Wales) 10 Tree Preservation Orders. Welsh Office

²⁸ ODPM. [c2006]. Tree Preservation Orders: A Guide to the Law and Good Practice. HMSO

²⁹ Section 10, Town and Country Planning Trees Regulations 1999

period. In exceptional cases the council may consult interested parties if it is anticipated that the proposed pruning will be particularly disfiguring to a tree and adversely affect amenity.

When determining TPO applications and Conservation Area notifications the LPA will take into account the relevant national guidance and the council's own planning policies.

Subject to certain exemptions, it is a criminal offence to cut down, lop, top, uproot or wilfully damage or destroy a tree subject to a TPO or Conservation Area controls. On conviction in a Magistrates' Court breaches of TPO or Conservation Area legislation can lead to a level 4 fine (equivalent to £2,500 for 2011). Where a tree is felled or otherwise destroyed a fine of up to £20,000 can be imposed in a Magistrates' Court. If a TPO offence is committed to a Crown Court for trial an unlimited fine can be imposed³⁰ and where it is believed that a breach of TPO or Conservation Area legislation applying to trees is imminent or an offence is ongoing the council can seek a court injunction³¹.

The effective enforcement of planning legislation relating to the protection of trees is vital to act as a deterrent and meet the plan objectives. In addition because TPO and Conservation Area (Trees under Section 211) are criminal offences it is necessary for them to be investigated in accordance with legal evidential requirements. To meet this requirement an enforcement protocol for trees covered by a Tree Preservation Order or subject to Conservation Area restrictions (Appendix 4) forms part of the plan.

6.9. | Planning conditions

In accordance with Government guidance the LPA will not normally rely on planning conditions to secure the long term protection of trees that merit protection by TPOs³².

However, when granting planning permission for development the LPA will make planning conditions to ensure that retained trees on a site undergoing development are safeguarded. This type of planning condition may require adherence to an approved scheme of measures that provide physical protection to trees during development or for works in the vicinity of trees to be carried out in accordance with an Arboricultural Method Statement. A planning condition may also require the supervision of works adjacent to trees by an arboricultural consultant. These prescriptive types of planning condition will be used alongside TPOs to provide comprehensive protection for the most significant trees in terms of amenity.

6.10. | Landscaping

The planting of shrubs, trees and hedges as part of landscaping on development sites is important because it has a softening effect and helps new buildings integrate with their surroundings. In particular tree planting can replace trees lost due to development and therefore maintain long term canopy cover. Sites with little or no landscaping when they are developed will usually remain lacking in green infrastructure for the life period of the development. It is therefore critical that provision for shrub, tree and hedge planting, where appropriate, is integral to the planning process.

³⁰ HMSO. 1982. Section 32(2) Justice Act 1982

³¹ HMSO. 1990. Section 214A Town and Country Planning Act 1990

³² ODPM. [c2006]. Tree Preservation Orders: A Guide to the Law and Good Practice. HMSO



Plate 11. Landscaping in a new retail development, Flint

Policy L1 of the Flintshire Unitary Development Plan is the policy that supports landscaping and states that;

New development must be designed to maintain or enhance the character and appearance of the landscape.

The policy is supported by Supplementary Planning Guidance Note No. 4 Landscaping (Adopted January 2017) which will be subject to review during the plan period following the adoption of the Local Development Plan.

Due to the promotion of green infrastructure by the Welsh Government the council will produce a policy on green

infrastructure and provide subsequent guidance for developers. The focus of the guidance will be looking at planning and developing green infrastructure at a strategic level, and where feasible to carry out advance tree planting on major developments. Well planned green infrastructure schemes can provide drainage solutions for new built development and complement active travel routes.

6.11. | Felling Licences

Under the Forestry Act 1967 (As amended) the volume of growing timber which can be felled in each calendar quarter without a Felling Licence is restricted³³. The controls are administered by CNC/NRW and, subject to certain exemptions, prevent the felling of trees not covered by a TPO, Conservation Area or other restrictions. Occasionally the Felling Licence controls overlap with the TPO and Conservation Area legislation and it is necessary for officers from each organisation to liaise with each other. When carrying out work to trees on its own land the council must have regard to the Felling Licence controls and seek consent from CNC/NRW.

Where a council arboriculturist becomes aware of tree felling which, it is suspected, contravenes the Forestry Act details will be forwarded to CNC/NRW officers for investigation.

6.12. | High hedges

The council administers legislation under Part 8 of the Anti-social Behaviour Act 2003 which allow an owner or occupier of a residential property to make a formal complaint about a high hedge. The hedge must be evergreen (or at least semi-evergreen), more than two metres tall

³³ Cyfoeth Naturiol Cymru/Natural Resources Wales. 2017. Tree Felling : Getting Permission

and comprise of two or more trees or shrubs³⁴. By implication the legislation may cover a line of trees.

Before a complaint can be made the neighbour must try and resolve the dispute with the hedge owner. In order to remain impartial council officers cannot visit a complainant's property to view the hedge until a formal complaint is made.

Where a hedge is considered to be adversely affecting the complainant's reasonable enjoyment of their property the council can issue a Remedial Notice requiring the hedge to be cut and maintained below a specified height.

The number of high hedge complaints submitted to the council for investigation is less than 10 per year and only several of these will require remedial action. In addition the council cannot require trees that form a 'hedge', to be removed. It is therefore considered that the enforcement of the high hedge legislation will not affect canopy cover.

6.13. | Hedgerow Regulations

These Regulations³⁵ protect hedgerows and in particular those which are growing in the open countryside. Subject to certain exemptions the destruction of hedgerows is controlled through a system of prior notification to the Local Planning Authority and contravention of the legislation can result in prosecution. The various exemptions contained in the legislation mean that the majority of hedges within urban areas will not be covered by the legislation. As a result the Regulations will not have a positive or negative effect on urban canopy cover.

6.14. | Monitoring tree health

Pests and diseases are considered to be an increasing risk to the health of trees and woodlands. Greater movement of goods, materials and people across the world and climate change are factors which increase the risks to tree health. The council's arboriculturists will keep appraised of the most acute pests and diseases and liaise with plant health officers over the best methods for dealing with them.

Appendix 3 is a list of the newly researched main pest and disease threats affecting or having the potential to affect urban canopy cover.

6.15. | Biosecurity

The increase in the number of pests and diseases affecting urban trees and woodlands makes biosecurity very important. Human activity is a key factor in the spread of tree pests and diseases present in the soil (i.e. mud) or on plant material. Arboricultural Officers, Woodland Officers, and Countryside Rangers follow Forestry Commission guidance on biosecurity to reduce the risk of spread. This guidance recommends ensuring clothing and equipment is cleaned regularly to avoid spreading material from site to site, sourcing trees from trustworthy nurseries that supply healthy stock and ensuring vehicles are kept free of mud and debris. Members of the public visiting woodland will be encouraged to follow biosecurity measures that are relevant to the risk and in accordance with best practice advice.

As well as being irresponsible and illegal the tipping of garden waste in the countryside increases the risk of tree pests and diseases. There is also a risk of spreading invasive plants.

³⁴ HMSO. 2003.Paragraph 66, Anti-social Behaviour Act 2003

³⁵ HMSO. 1997. The Hedgerow Regulations 1997

7.0 | Objective 3 - Manage the risks associated with trees

Just like other landowners, the council has a duty of care under the occupiers' liability Acts³⁶ to ensure it is not negligent, as a result of its actions or inactions. Even though they are dynamic living organisms, naturally growing and then declining, the duty of care in UK law extends to trees.

The risk of being killed or injured by a falling tree is frequently exaggerated. This is believed to be due to over reporting of incidents by the media, probably because they are considered to be a freak occurrence and newsworthy³⁷. Statistically, the risk of being killed by a falling tree or branch situated in an area of high public use is extremely low³⁸.



Plate 12. A mature oak in decline subject to frequent inspections

Through its Risk Management Policy and Strategy³⁹ the council is committed to the effective identification, evaluation and management of all risks including health and safety which is the category of risk associated with trees failing. The council acknowledges that the sudden failure of a tree can result in tragic consequences but at the same time not all risk can be eliminated, therefore incidents should be dealt with proportionately.

To aid the council's arboriculturists in managing risk Tree Risk Assessment methods are used to ensure that trees are inspected and managed to reflect the level of risk that they pose. Tree Risk Assessment takes into account the proximity of targets (e.g. people, property) to a standing tree, the hazard (e.g. branch, whole tree, dead twigs), the impact of failure (harm or damage), as well as the likelihood of failure, to determine what remedial action, if any, is necessary.

This approach ensures that the council uses its resources effectively, with large trees adjacent to major trunk roads being inspected on an annual basis, whilst other trees are not subject to tree risk inspections because they would not cause damage or harm even if they suffered major failure.

³⁶ HMSO. 1957 & 1984. Occupiers' Liability Act 1957 and 1984. HMSO

³⁷ National tree Safety Group. 2011. Common sense risk management of trees. Forestry Commission Publications

³⁸ HSE. 2013. Management of the risk of falling trees or branches. Available at: http://www.hse.gov.uk/foi/internalops/sims/ag_food/010705.htm#Summary [Accessed 6 September 2017]

³⁹ FCC. 2016. Risk Management Policy and Strategy- Version 4

To assist with this risk based approach the council uses a GIS based computerised tree management system. The computerised system allows the scheduling of re-inspections at set intervals based upon tree risk.

The council, acting in its capacity as the Local Planning Authority also applies Tree Risk Assessment methods to assess proposals to carry out works to protected trees that are claimed to be unsafe.

7.1. | Highways

Acting in its capacity as the Highways Authority the council can, by formal notice, require the owner of a tree (or vegetation of any description) to lop or cut it back where it endangers or obstructs the passage of vehicles⁴⁰.

The Council's Streetscene and Highways Supervising Officer's will assess the extent of the interference or obstruction before determining what remedial action, if any, is necessary. During the periods Mid-March to August inclusive, officers will take into account the legal protection afforded to nesting birds when determining the cutting required to remove the danger. The owner or occupier of the land will usually be visited by an officer and advised of the council's concern before formal action is taken.

Standard clearances above the highway are 2.4m over a footpath and 5.2m over the carriageway. When cutting back vegetation over the highway owners and tree surgeons will be advised to allow for a period of new growth and for the branches to hang lower over the highway during wet weather. Tree works on the public highway should comply with the Safety at Street Works and Road Works – A Code of Practice⁴¹.

Where a hedge, tree or shrub is dead, diseased, damaged or insecurely rooted and is likely to cause a danger by falling onto the highway the council can, by formal notice to the owner, require the danger to be removed by cutting or felling⁴².

Reports of allegedly dangerous trees adjacent to the highway can be made to Streetscene and will be assessed using a Tree Risk Assessment method to determine what, if any, remedial action is necessary. Where a tree is assessed as an unacceptable risk to highway users the council will require the danger to be removed by formal notice if necessary.

In default of a formal notice the council, or contractors acting on the council's behalf may enter the land and carry out the works specified in the notice. It is unlikely that a hedge or shrub will prove to be a danger by falling onto the highway. When invoking its powers the council will have regard to protected species and in particular bats before determining the best course of action.

Where a tree falls onto the highway from adjoining land and causes a highway obstruction the council may take steps to recover the costs of clearing the highway from the owner of the land on which the tree was situated.

⁴⁰ HMSO. 1980. Section 154 (1) Highways Act 1980 (HMSO)

⁴¹ Welsh Ministers. 2003. Safety at Street Works and Road Works – A Code of Practice.

⁴² Highways Act 1980. Section 154 (2). HMSO

7.2. | Local Government (Miscellaneous Provisions) Act 1976

The Act gives the council power to deal with trees on land which are a danger⁴³ to an owner or occupier of adjoining land. The council receives many enquiries from members of the public alleging that a neighbour's tree is dangerous however very few of these claims are founded.

Therefore any person claiming that a tree on neighbouring land is dangerous should seek independent arboricultural advice about the tree's condition and/or inform the owner of the tree about their concern before reporting the matter to the council for investigation.

A tree that may be regarded as dangerous, within the meaning of the Act, will have a major weakness sufficient to make it highly likely that failure will happen soon and that failure would cause harm or injury to the adjoining owner/occupier or their property. (Examples might include a root plate uplifting, a tree resting on an adjacent tree, large hanging branches or opening up of a fissure in a critical part of the trunk, fork or main branch).

Reports of dangerous trees should be made in writing to the council and where appropriate include photographs of the tree and an arboricultural report. The council's arboriculturists will use a Tree Risk Assessment method to determine the degree of danger and whether the council's powers should be used. When invoking its powers the council will have regard to protected species. The power is also discretionary and the council is not required to take action even when the requirements stated in the Act have been met⁴⁴.

⁴³ Section 23 (1) (b) Local Government (Miscellaneous Provisions Act) 1976. HMSO

⁴⁴ HMSO. Section 23 (1) Local Government (Miscellaneous Provisions Act) 1976. HMSO

8.0 | Objective 4 - Promote biodiversity

Section 6 of the Environment Act (Wales) 2016⁴⁵ places a specific duty on public bodies, including local authorities to maintain and enhance biodiversity, and to promote ecosystem resilience. Under the Act, Cyfoeth Naturiol Cymru/Natural Resources Wales is required to publish 'area statements' covering natural resources, the benefits they provide and the priorities, risks and opportunities that need to be addressed for their sustainable management. In addition CNC/NRW must specify the public bodies which may assist with addressing the priorities.

The Flintshire Section 6 Biodiversity Duty Delivery Plan⁴⁶ focuses on the six objectives for nature recovery in Wales⁴⁷ which include safeguarding species and habitats of principle importance, as well as the restoration and creation of habitats, such as woodland, to increase the resilience of our natural environment.

Trees are an essential part of biodiversity with over 284 different species of insect and 324 species of lichen dependent upon native oaks⁴⁸. In particular older trees have the greatest value for wildlife.

Many species of principal importance for the conservation of biological diversity are dependent on, or are associated with trees and woodland. These species include dormice, great crested newts, bats and badgers as well as many species of bird, invertebrate, lichen, moss and liverwort.

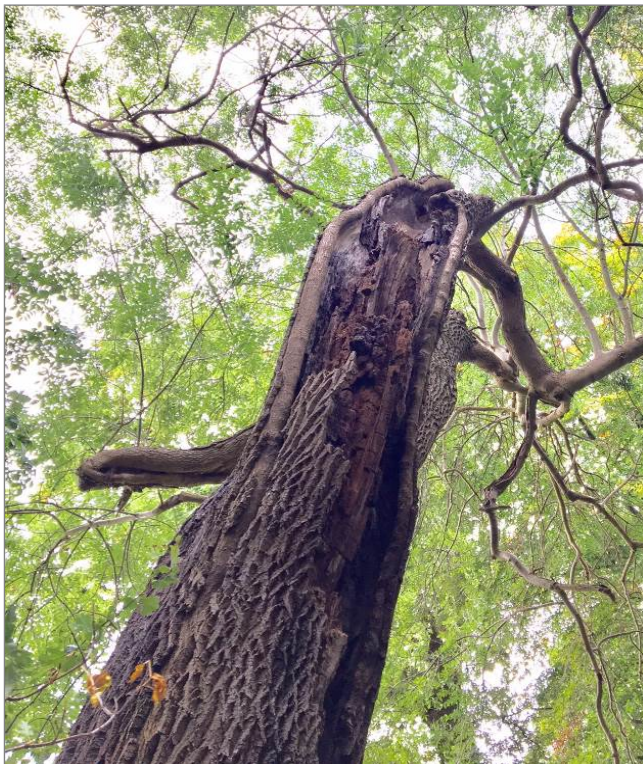


Plate 13 A decaying tree with bat roost potential

Traditional orchards, wood pasture and parkland, upland sessile oak woodland, wet woodland, lowland mixed deciduous woodland and hedgerows are habitats that are of principal importance for conserving biological diversity in Wales. Where these woodlands are managed by the council the primary objective will be to safeguard or increase their biodiversity. Woodland forms an important habitat component in many protected sites across the county including peri-urban areas. A significant amount of the Deeside and Buckley newt sites Special Area of Conservation is woodland that is an important terrestrial habitat for great crested newts. Woodland at Wepre Park is designated a

⁴⁵ HMSO, 2016. Environment (Wales) Act 2016

⁴⁶ FCC (in press) Flintshire Section 6 Biodiversity Duty Delivery Plan

⁴⁷ Wales Government, 2015. The Nature Recovery Plan for Wales 'Setting the course for 2020 and beyond'

⁴⁸ Offwell Woodland & Wildlife Trust.[No date] Available at: http://www.countrysideinfo.co.uk/woodland_manage/tree_value.htm [Accessed 6th September 2017]

Site of Special Scientific Interest for its sessile oak woodland.

To assist with this aim the woodlands designated as Special Areas of Conservation will be managed in accordance with the Core Management Plan for Deeside and Buckley Newt Sites SAC⁴⁹. The council will work in partnership with the statutory body, CNC/NRW, to achieve this aim. Woodlands which are less biodiverse and not designated as protected habitats will be managed to increase species diversity through appropriate management.

In the UK all species of bat and their roosts are protected under European legislation and in particular the lesser horseshoe bat has a stronghold in the county’s woodlands. Proposed pruning or felling affecting trees with holes, cracks, crevices and/or dense ivy will be assessed for their suitability to support bats in accordance with the relevant guidance^{50 51}.

8.1. | Ancient and veteran trees

Ancient trees are those that have reached a great age when taking into account the typical lifespan of the species. Great Britain is thought to have more ancient trees than any other country in northern Europe⁵².

Veteran trees will usually be some of the oldest (ancient) trees of that species but will exhibit characteristic features such as large boles, cavities, significant dead wood, collapsed branches and retrenched crowns associated with decline. Due to the features that they exhibit veteran trees support a great diversity of fungi and insect species.

Ysgol Bryn Gwalia in Mold has an ancient pedunculate oak growing in the grounds with a trunk girth of 8.30m, the largest known in Flintshire. The oak is the school’s emblem and the most accurate estimate of the tree’s age using White⁵³ is 774 years. Despite the oak’s great antiquity the tree is remarkably uniform and vigorous and because of this lacks veteran features.



Plate 13. Ancient oak at Ysgol Bryn Gwalia, Mold



Plate 14. Base of ancient oak at Ysgol Bryn Gwalia

⁴⁹ Countryside Council Wales. 2008. Core Management Plan for Deeside and Buckley Newt Sites SAC. Available at: https://www.naturalresources.wales/media/671740/Deeside_and_Buckley_WES32_Plan_English.pdf [Accessed 6 September 2017]

⁵⁰BCT. 2015. Bats and Trees. Bat Conservation Trust. Available at: <http://www.bats.org.uk> [Accessed 6th September 2017]

⁵¹BSI. [No date]. Micro guide to surveying for bats in trees and woodlands, An introduction to BS8596 for non-specialists. Available at: <http://shop.bsigroup.com/upload/273444/BSI-Bat-Microguide-UK-EN.pdf>. [Accessed 6th September 2017]

⁵² Ancient Tree Forum, (No Date) Working for the future of our ancient trees. Ancient Tree Forum

⁵³ White, J. 1998. Estimating the Age of Large and Veteran Trees in Britain. Forestry Commission

The statutory protection that is able to be afforded to veteran trees is limited and the plan would support Welsh Government with introducing legislation that better protects trees that have veteran characteristics. (A Task and Finish Group set up by the Welsh Government has examined weaknesses in the existing legislation).

Within an urban setting, it is important that ancient trees are not cut back or felled as part of over-zealous tree risk management. Trees that exhibit weakness due to veteran characteristics will be carefully risk assessed. The option of moving targets away from a hazardous trees will be assessed before remedial tree works are considered.

9.0 | Objective 5 - Work in partnership

It is recognised that the council is unlikely to achieve its canopy cover target without working in partnership with other organisations. The preparation of the plan could not have happened without the studies undertaken by CNC/NRW which has provided benchmark information on urban canopy cover.

Partners for the delivery of the plan will include town and community councils, with other partners potentially including Coed Cadw/Woodland Trust. The Countryside Service has already established good working partnerships and manages woodland at Caergwrlle Castle on behalf of the community council.



Plate 14. Volunteers planting orchard trees at Llwyni on the edge of Connah's Quay

Effective community engagement is usually a requirement for grant funding and can make the difference between a grant bid being successful or unsuccessful.

Community engagement is vital and should be a meaningful process with the community's aspirations and concerns being fed back into the plan. Even if the target canopy cover of 18% is met the plan's vision of an appreciated canopy cover is much less likely to be achieved if it has been at the expense of little or no community engagement.

When scoping schemes of tree planting, council officers will carry out mapping exercises before draft proposals are put forward for community engagement. Following feedback from the community and other stakeholders tree planting schemes will be finalised before implementation.

There are various ways in which community engagement can occur, including surveys, leaflet drops, community events, meetings and workshops. Face to face discussions are often considered to be the most effective way of ensuring meaningful community engagement and therefore officers will arrange to meet groups (e.g. town and community councils, environment groups, access groups) as well as consult elected ward members. There is also scope to have a stall at community events (e.g. Big Dee Day) organised by the Countryside Service. Community engagement will be proportionate to the scale of the proposals.

The Countryside Service has extensive experience of working with volunteers of all ages and backgrounds who carry out a range of activities including tree planting. Public participation empowers the community and fosters pride, resulting in improved maintenance and reduced vandalism.

Several large local and national companies (e.g. Airbus, Kimberly-Clark, Kingspan, McDonalds, Tate & Lyle and Tesco) organise corporate volunteer days to undertake projects of environmental improvement organised by the council. There is an opportunity to further develop the volunteer network and broaden their work to undertake tree planting on land not managed by the Countryside Service.

The plan seeks to be a key document in securing funding from the Welsh Government under the Sustainable Development Fund and other Welsh Government grants that are expected to become available in the future. Occasionally grant funding for tree planting becomes available at short notice and the plan will be able to identify suitable sites that can be planted ‘off the shelf’ at short notice.



Plate 15. Treeneration funded tree planting in Flint

In the past the council has obtained funding from the Forestry Commission to plant community woodlands and was involved in a partnership project in north east Wales called Treeneration that provided Forestry Commission funding to undertake urban tree and woodland planting.

In 2013 the Wales Government provided £35,000 of funding under its Cleaner, Greener and Tranquil Spaces Grant to undertake two tree planting schemes in Flint (front cover) and at Wepre Park. The capital funding for Wepre Park was matched ‘in kind’ by officers and volunteers planning and implementing the tree planting.

At the time of drafting the plan there is uncertainty over the future of all Wales Government grants. Nevertheless it is apparent that sustainability is one of the main policies the Wales Government is committed and it is anticipated that future capital funding will be made available to meet the plan target, either directly or through the allocation of grants by CNC/NRW.

The Countryside Service has been successful in obtaining sponsorship from Airbus, Kimberley-Clarke and Bourne Leisure to carry out management of its sites. Following publication of the plan the council will seek sponsorship funding. (Capital funding has already been secured for the first three to five years of the plan). Funding from sponsorship will be ‘ring fenced’ to cover tree planting and establishment costs, making it a more attractive proposition for businesses who may be reluctant to fund general tree works.

10.0 | Resources and delivery

Capital funding, through planning obligations, has been secured to carry out a programme of tree planting, to meet the plan target and Objective 1, in the first three to five years of the plan. This funding is ring fenced and cannot be used for the ongoing management of the council's existing trees. The resources required to plan, consult and implement planting will be met using existing staff resources.

The various options for additional capital funding have been explored in Chapter 9 and could be met through grants and/or sponsorship. At the time of the plan being in its final draft the Welsh Government has announced funding under the Green Infrastructure Capital Fund for the period 2017-2021.

Ongoing maintenance will be met under the council's existing grounds maintenance budgets. The resource implications of managing young and early mature trees are comparable to managing mown grass, and in the case of woodland are lower. Realignment of the council services has provided efficiencies in the management of the council's trees and the adoption of more efficient grass cutting regimes around planted trees will reduce costs.

Objectives 2 to 5 are policy orientated and do not require capital funding to be achieved although there will be resource implications for officers that will be met using existing staff resources.

A timetable for the delivery of plan tasks and their evaluation is attached as Appendix 1. The timetable includes a mid-plan report in years 7 to 9.

Appendix 1 – Delivery Timetable

Delivery timetable							
No.	Objective	Years					
		1-3	4-6	7-9	10-12	13-14	15
1 to 5	All			Mid-term report. To include a review of plan objectives and progress on meeting target canopy cover			
1	Increase the amount of tree planting	Mapping exercise, ground truthing and consultation for Connah's Quay pilot area	Implement planting in pilot area. Revise land management practices to take into account planting	Evaluate and maintain	Maintain	Monitor	Assess success against target canopy cover in partnership with CNC/NRW
			Mapping exercise, ground truthing and consultation exercise to target Broughton and Saltney with lowest canopy covers	Implement planting. Revise land management practices to take into account planting	Evaluate and maintain	Maintain	Count number, species, nursery stock sizes of trees and area of woodland planting
			Mapping exercise, ground truthing and consultation for OSF, OSI and TC	Implement planting. Revise land management practices to take into account planting	Evaluate and maintain	Maintain	Calculate survival rates
				Evaluate tree potential on other council land	Implement planting. Revise land management practices to take into account planting	Evaluate and maintain	Identify key successes and failures with reasons
		Draft green infrastructure policy for Local Development Plan and guidance					Assess success of policy using target canopy cover and other measures
2	Manage trees sustainably	Promulgate plan information on the council's web pages					Assess success against target canopy cover in partnership with CNC/NRW
		Prepare site specific woodland management plans for woodlands in country parks and partner woodlands	Undertake woodland management				

Delivery timetable							
No.	Objective	Years					
		1-3	4-6	7-9	10-12	13-14	15
		Draft Local Development Plan policies for trees and landscaping. Carry out an appraisal of a policy that would require the funding of off-site replacement planting where trees are removed for development					
		Expand database of trees on computerised tree management system			Undertake an i-Tree Eco Project based on improved tree database		
		Monitor effectiveness of TPO and Conservation Area decisions in meeting objective					
					Monitor net canopy loss or gain as a result of development and age class diversity		
		Follow planning enforcement protocol for the investigation of alleged TPO and Conservation Area (Trees) offences					
		Monitor spread of ash dieback in the county and consequent risk of meeting plan target					
		Undertake tree plant health Continuous Professional Development					
3	Manage the risks associated with trees	Promulgate plan information on the council's web pages				Evaluate using records of inspections	
		Maintain cyclical inspections for identified trees and carry out identified tree works					
		Monitor interventions taken in response to dangerous trees legislation					
		Evaluate alternative GIS based tree management systems and consider updating					
		Populate tree management database with new trees in response to new responsibilities and level of tree risk					
4	Promote biodiversity	Identify areas of synergy with Biodiversity Duty Delivery Plan	Undertake joint tasks identified in the plan and Biodiversity Duty Delivery Plan			Evaluate contribution plan has had in reaching Biodiversity Duty Delivery Plan	
		Where led by the Welsh Government progress legislation for the better protection of veteran trees					
5	Work in partnership	Encourage and develop community engagement in tandem with other plan objectives				Evaluate community engagement, partnerships, sponsorship and grant funding	
		Explore and develop sponsorship opportunities with businesses					
		Monitor grant funding streams for eligible grants					

Key

OSF –Open Space Formal

OSF –Formal Open Space

TC –Transport corridors

CNC/NRW - Cyfoeth Naturiol Cymru/Natural Resources Wales

Appendix 2 – Factors affecting urban canopy cover

Factors affecting canopy cover	
Increasing	Decreasing
Tree planting and aftercare	Tree felling especially large canopied trees
Natural regeneration	Lack of replacement planting
Green infrastructure in new developments	Loss of trees due to development
Availability of grant funding to support planting	Undervaluing trees as a capital asset
Availability of a plan to direct resources	Weak policies and protection for trees
Strong and effective legislative framework for trees	Pests and Diseases (e.g. Ash Dieback, Dutch Elm Disease)
Protected species and habitats legislation	Overzealous tree risk management
Effective partnership working	Fragmented working

Appendix 3 – Pests and disease threats

Ash dieback

Ash dieback (*Hymenoscyphus fraxineus*) has spread from the west of England to Flintshire and is a serious threat to the county's native common ashes (*Fraxinus excelsior*) which predominate on the calcareous limestone soils and makes up nearly 15% of all the UK broadleaved woodland. Within Flintshire's urban areas common ash is one of the most frequent tree species.

Young trees are particularly susceptible to the disease and soon die whilst mature trees are affected to varying degrees and may decline over a period of years.

At the time of drafting the plan it is unclear what long term effect ash dieback will have on canopy cover, in the worst case scenario the disease could prevent the target canopy cover from being reached. Restrictions have also been placed prohibiting the supply of ashes for planting. This means that a valuable and very common native species of tree cannot be planted in urban areas.

Acute Oak Decline

This is an emergent threat to oak affecting both of Britain's native oak species, pedunculate oak (*Quercus robur*) and sessile oak (*Q. petraea*), as well as other species of oak.

Dutch Elm Disease

The 1970s outbreak was caused by a new and far more aggressive fungus (*Ophiostoma Novo-ulmi*) that was imported into Britain on infected elm logs and spread by the elm bark beetle. Within a decade about 20 million elms out of an estimated UK elm population of 30 million were dead. A once robust and very common mature tree has been almost wiped out. Only several fully mature elms are known to be surviving in the county. Dutch elm disease remains endemic in Flintshire preventing recovery of the species.

Horse Chestnut Leaf Miner

This exotic insect pest has become established in the county gradually spreading across England from Wimbledon where it was first reported in 2002. The larvae of the moth feed inside the leaves of horse chestnuts turning them brown as though the tree is dying and disfiguring the tree's appearance. The horse chestnut (*Aesculus hippocastanum*) or conker tree is a frequent large tree of parks and gardens that is valued for its flowering and fruit. Fortunately, the pest is not fatal to the tree and can be controlled by collecting fallen leaves in the autumn and composting them. This kills overwintering pupae, which would normally re-infect the tree the following year.

Horse Chestnut Bleeding Canker

This is a disease that results in dead lesions on the bark of horse chestnuts is caused by a bacterium. It is disfiguring, affects young trees and can be fatal. The prevalence of horse chestnut leaf miner and bleeding canker in Flintshire means that horse chestnuts are unsuitable for planting until resistant varieties become available.

Phytophthora alni

The disease was discovered in Britain in 1993 and affects the native common alder (*Alnus glutinosa*) that is a very common tree along the Alyn and Wheeler rivers as well as narrower watercourses such as the Swinchiard Brook in Flint and Wepre Brook in Connah's Quay. The disease initially causes dieback in the crown following infection of the trunk. The effect of the disease can be variable, even amongst trees growing adjacent to each other. In many cases the disease is fatal.

Phytophthora lateralis

The disease *P. lateralis* was first detected in the UK in 2010 and is known to have spread to Wales. The aggressive fungus-like pathogen mainly affects Lawson cypresses which along with Leyland cypresses are the commonest types of conifers found growing in urban areas in hedges or individual trees. Infected trees are usually killed.

Emerald Ash Borer

This beetle is not currently present in the UK but is spreading across western Russia and has caused millions of ashes to die in North America. The emerald ash borer could have a devastating effect on Flintshire's ashes, comparable to the loss of mature elms by Dutch elm disease. The threat is so severe that the Forestry Commission has published contingency plan to deal with any outbreak, with the hope of eradicating the pest before it becomes established.

Asian Longhorn Beetle

An exotic beetle (*Anoplophora glabripennis*) native to China and the Korean peninsula that poses a very serious threat to a wide range of broadleaved trees if inadvertently introduced to the UK. Control measures have been put in place at UK ports to prevent the beetle from becoming established and so far outbreaks that have occurred have been successfully controlled by plant health officers.

Dothistroma Needle Blight

This disease caused by the fungus *Dothistroma septosporum* causes defoliation of the native Scot's pine and other pines. The disease can be fatal but more often reduces incremental growth affecting yields in commercial pine plantations. Plant health experts are monitoring the disease's spread and impact. It is not known to be present in Flintshire but has been confirmed on Forestry Commission land in Cheshire.

Massaria Disease

A disease affecting plane trees caused by the fungus *Splanchnonema platani* that causes dead lesions on the upper surfaces of branches making them prone to breaking off and falling. Present in London since at least 2009 but not known to be in Flintshire.

Phytophthora ramorum

Present in North Wales and the reason for large scale tree felling in larch woodlands but not known to be in Flintshire. The fungus-like pathogen causes shoots on larches to wilt and die, progressing to eventually kill the whole tree. The disease has the capacity to kill many other tree and shrub species.

Further information about the above pests and diseases and their current statuses can be found on the Forestry Commission's website. These emergent pests and disease need to be considered alongside other established pests and diseases affecting tree health. These include mammal damage (e.g. grey squirrel) and the root decay fungi (e.g. *Armillaria* spp. and *Meripilus giganteus*).

Appendix 4 - Planning enforcement protocol for trees covered by a Tree Preservation Order or subject to Conservation Area restrictions

This enforcement protocol has been drafted to ensure that the investigation of alleged offences under Sections 210 and 211 of the Town and Country Planning Act 1990 are carried out in accordance with the evidential requirements necessary for a criminal court.

1. Officers will conduct the investigation of alleged offences under Section 210 and 211 of the Town and Country Planning Act 1990 in a fair, consistent and accountable manner. The investigation of alleged offences will be prioritised according to the seriousness of the reported offence, particularly the effect on amenity resulting from the unauthorised tree work and whether prompt intervention by officers will assist with limiting the offence and harm caused.
2. A person reporting an alleged offence will be asked to give their name, address and telephone number. Anonymous complaints will only be investigated where sufficient details have been provided to enable effective investigation. In the event that an alleged offence is deemed to have been committed and has resulted in significant harm to amenity, the person reporting the offence may be requested to provide a written witness statement. To meet evidential requirements all written witness statements will comply with the current legal requirements and subject to the witness' consent may be used as evidence in legal proceedings.
3. A person reporting an alleged offence will be kept informed of the council's investigation without prejudicing the investigation and/or any future legal proceedings, should they arise.
4. Council officers duly authorised by the LPA have the power to enter land for the purpose of ascertaining whether an offence has been committed on the land¹ and will exercise this power where it is considered expedient to the investigation. If entry onto land is obstructed council officers may seek assistance from the police.
5. Site visits will be undertaken at a reasonable hour and involve recording details of the alleged offence and typically require making contemporaneous notes, drawing a sketch plan and taking photographs. Where appropriate to an investigation officers may take samples such as severed roots for examination². The owner/occupier or other person duly authorised by them may accompany council officers during their site visit however they must not interfere with the investigation.
6. When investigating alleged offences council officers will be required to pursue all reasonable lines of enquiry. This may include questioning, in accordance with legal requirements, any person on the land who appears to be responsible or associated with the alleged offence in any way. If the owner or occupier of the land, where the alleged offence has occurred, is not present they will be contacted at the first opportunity during the investigation and questioned in accordance with legal requirements. A director, manager or secretary of a company will be implicated where it is suspected that an offence has occurred due to their actions, omissions or neglect.
7. Council officers will engage with persons suspected of committing an offence in a constructive and reasonable manner without prejudicing the investigation. As there is the potential for a criminal prosecution arising from an investigation, although this is never pre-determined, officers will have regard to applicable legal requirements which at the time of writing is the code of practice contained in the Police and Criminal Evidence Act 1984 (PACE) as amended. Therefore, if

¹ Section 214B Town and Country Planning Act 1990

² Section 214, Town and Country Planning Act 1990

there are reasonable grounds to suspect that a person has caused or permitted an offence to occur and which has resulted in significant harm to amenity, they will be cautioned in accordance with applicable legal requirements (such as PACE) before being questioned.

8. Under PACE a person suspected of having committed an offence is required to give their name, address and date of birth. Before being cautioned by a council officer or any other person duly authorised, the person will be given the reason(s) why they are suspected of having committed an offence and be advised that they have a right to legal representation, are not under arrest and are free to go at any time.
9. Interviews under PACE will be recorded using contemporaneous handwritten notes and once completed the person interviewed will be asked to date and sign the officer's interview notes. A photocopy of the written PACE interview notes will be provided if requested. Longer PACE interviews will not normally be recorded using handwritten notes and instead will be tape recorded in the council's offices in accordance with PACE³. There is no free entitlement to legal representation under the 'duty solicitor' scheme for persons interviewed under caution by council officers.
10. The purpose of the PACE interview is to ensure that an accurate record of the questions asked and the replies given is obtained. Where a person is interviewed in accordance with PACE requirements the alleged offence will be sufficiently serious to require formal investigation however there will be no presumption that a prosecution will be ultimately brought. Similarly, there will be no presumption in favour of prosecution where a witness statement has been obtained.
11. Gathering contemporaneous evidence, statements and interviews under caution will enable council officers to assess the circumstances of the alleged offence and make an informed judgement about whether or not to prosecute. In deciding, the council will carefully assess the evidence to determine whether or not there is a realistic prospect of conviction in court. Where it is concluded that there is a realistic prospect of conviction the council will then consider whether it is in the public interest to prosecute.
12. In determining whether or not it is in the public interest to prosecute, the council will give considerable but not exclusive weight to the harm caused to amenity as a result of the alleged offence. The harm to the amenity of the area will, where relevant, take into account whether good arboricultural (or silvicultural) practice has been followed and whether the harm can be remedied in the short term by new growth, or corrective pruning that the owner may be willing to undertake.
13. Where appropriate council officers will use tree valuation or landscape assessment methods to objectively assess the harm to amenity. In addition records of inspections, site photographs, aerial photographs and where available Google Streetview™ images will be used.
14. The council may consider an alternative sanction to prosecution including but not exclusively a council caution or written warning. Where an alternative sanction is deemed appropriate and used, the council reserves the right to refer to them as evidence in the event of any future legal proceedings.
15. To prosecute for an alleged offence under Section 210 or 211 of the Town and Country Planning Act 1990 takes a significant amount of officer time. Therefore officers investigating alleged offences will keep records of the time spent on each case so that a claim for costs can be made to a court following conviction for an offence.

³ Police and Criminal Evidence Act 1984 67(7B) CODE E Revised Code of Practice on Audio Recording Interviews with Suspects (HMSO 2016)

16. Irrespective of any criminal prosecution for every tree felled or otherwise destroyed in contravention of the legislation there is a duty on the landowner to replant⁴. The requirement to plant a replacement tree will be considered alongside any criminal prosecution. Where the landowner has not complied with the duty to replant and it is considered expedient to require replacement planting the council will serve a Tree Replacement Notice. Where a landowner does not comply with a Tree Replacement Notice and it remains necessary to provide replacement amenity the council will carry out the planting as permitted under the legislation.

⁴ Section 206, 207 & 213, Town and Country Planning Act 1990