

Flintshire Ash Dieback Action Plan



First Edition – September 2019

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Introduction

This first edition of the Flintshire Ash Dieback Action Plan (FADAP) sets out how Flintshire County Council will confront ash dieback (*Hymenoscyphus fraxineus*). Ash dieback is the most significant tree disease to affect the UK since Dutch elm disease and has the potential to infect more than two billion UK ash trees and lead to the death of approximately 90% of them.

The experience of other local authorities, who have been dealing with ash dieback for longer, is that it will not be business as usual and it is necessary to plan for the disease and its anticipated impacts on council services.

As a first edition of the FADAP this document focuses on making stakeholders aware of the problem and assessing the considerable risks to the council resulting from the disease. It also outlines the steps that will need to be undertaken to help mitigate the disease's worst effects. The most immediate threat is the increased risk to public safety as a result of mature ash trees dying and subsequently falling or shedding large limbs.

The loss of the ecosystem services currently afforded by ash trees is a major concern. Ash trees remove pollution from the air, store carbon and intercept rainfall, they are a functioning part of a vital ecosystem. The financial value of these ecosystem services are immense.

There is also the loss of biodiversity and the impact on the appearance and quality of the landscape to consider. If the ecosystem services and other benefits currently provided by ash trees and ash woodlands are not to be permanently lost it will be necessary to carry out extensive replacement planting and plan for recovery. It is hoped that later editions of the FADAP will be able to focus on this huge task and identify where the very considerable resources necessary to undertake this work will be found.

1. Ash Dieback Action Plan

The Tree Council has produced a second edition of its Action Plan Toolkit^{1 2} which provides best practice to large organisations on how to plan for ash dieback and mitigate its effects. The document provides useful information about the background to the disease, its spread, affects and how to plan for the disease using the experiences of organisations who have coped with having the disease for longer.

The Action Plan Toolkit recommends that large organisations each produce an Ash Dieback Action Plan (ADAP) to inform key stakeholders about the disease and the risks it poses to their services, and to also have a planned, measured and coordinated response to it.

The production of an ADAP will allow the council to combat the disease's effects in a coherent and proactive way which will be more efficient and cost effective. This ADAP follows other published plans, produced by Leicestershire County Council and Kent Resilience Forum. ADAPs are being produced by large organisations in other parts of England and Wales.

In the same way as The Tree Council's Action Plan Toolkit is now in its second edition, it is proposed to update Flintshire's Ash Dieback Action Plan to take into account evolving best practice and address any deficiencies in the current edition. It is also hoped that later editions of the plan will have an emphasis on a programme of recovery.

¹ [Ash Dieback : an Action Plan Toolkit \(English\)](#)

² [Ash Dieback : an Action Plan Toolkit \(Welsh\)](#)

2. Ash trees

Common ash (*Fraxinus excelsior*) is a native tree found in nearly every part of the UK except for parts of the Scottish Highland and islands. Ash trees grow best in moist but well-drained nutrient rich soils with a pH of 5 or above. The canopy casts light shade and the fallen leaves soon decompose both benefiting the woodland ecosystem. The species is hardy unless the leaves, which generally come into leaf later in the spring, are caught by frost.

Older ash trees that are gnarled and decaying have the greatest value for wildlife. Over a thousand species are associated with common ash. Of these species, 62 are highly associated with the species and 44 are restricted to it making them particularly at risk from ash dieback.

Ash wood has many uses and is an important broadleaved tree for the timber and firewood industries.

The Tree Council estimates that there are 27.2-60 million ash trees in non-woodland situations and 125.9 million in British woodlands over 0.5ha in area. This figure covers trees larger than 4cm in diameter (measured 1.3m above the ground level). It is also estimated that there are 2 billion saplings and seedlings in the UK³. Ash is the second most abundant broadleaved woodland tree in Wales.

As a countryside tree, ash is typically found in hedgerows, highway verges and boscs (i.e. groups of trees and shrubs too small to be classed as woodland). In an urban setting it is found in a variety of areas including open spaces, peri-urban woodlands, parks, private gardens, schools and cemeteries. Ash is prolific at self-seeding on unmaintained land and prior to the disease was extensively planted by woodland managers, local authorities and private landowners.

³ The Tree Council, Chalara in Non-Woodland Situations. February 2015

3. What is ash dieback?

Ash dieback (*Hymenoscyphus fraxineus*) is a fungal pathogen that affects the UK's native ash tree (*Fraxinus excelsior*). The disease arrived in Europe from Asia in the 1990s and spread rapidly on the continent. Although the first official records of ash dieback in Britain were not until 2012 analysis of diseased trees now suggests it arrived here earlier and possibly before 2000.

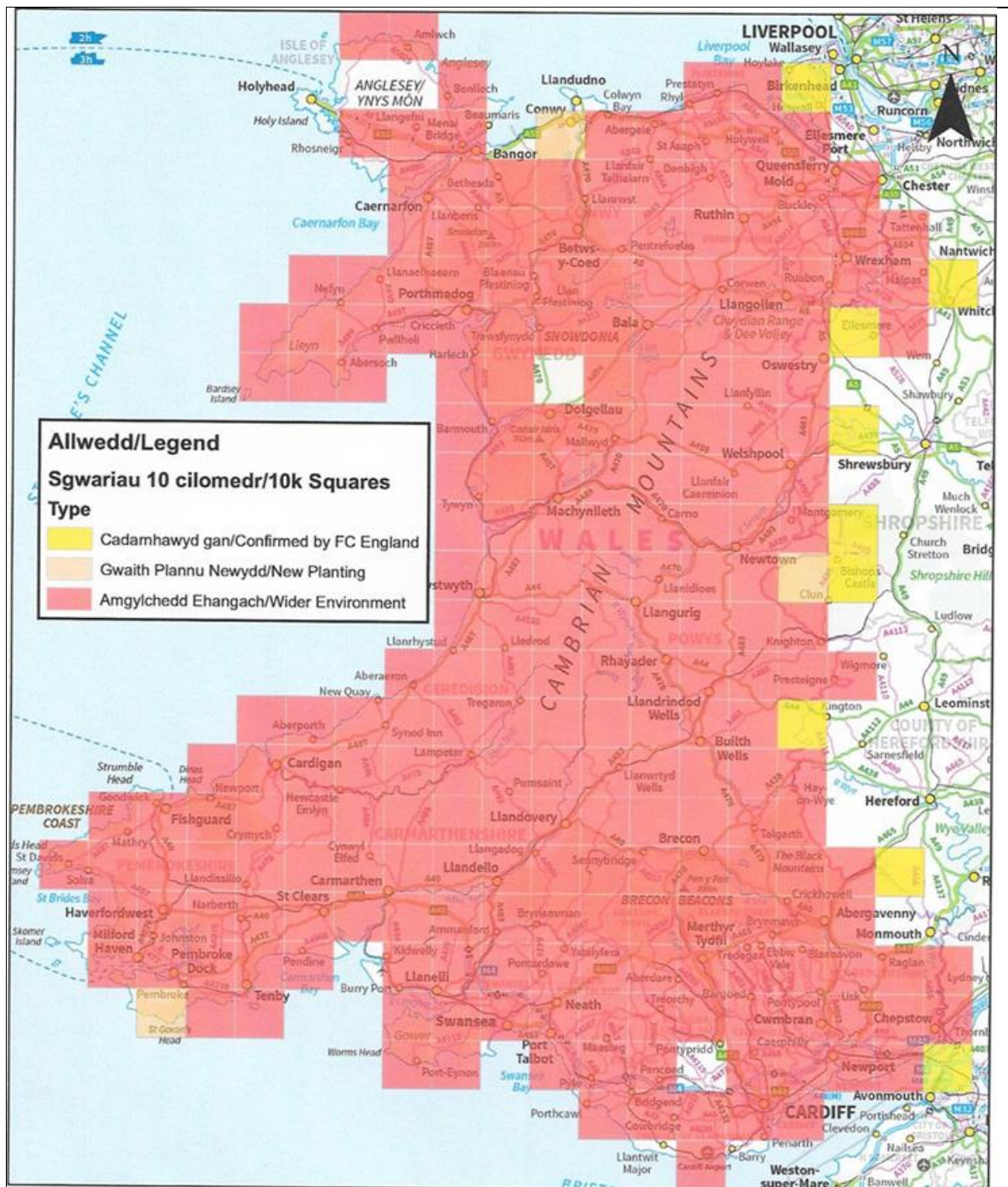


Figure 1. Ash Dieback in Wales Survey Results March 2019 (Natural Resources Wales)

Other species of ash belonging to *Fraxinus* are affected by the disease and also garden shrubs belonging to the *Oleaceae* family but these are much less frequent than common ash. The disease

does not affect mountain ash (also known as rowan) which is an unrelated species. Ash dieback previously had the scientific name *Chalara fraxinea* and is therefore sometimes called chalara.

Since first being identified at three separate locations in England the disease has been found across England into Wales, Scotland and Northern Ireland. Despite the Government prohibiting the movement of ash for planting in October 2012⁴ the disease continued to spread rapidly and management soon changed from control and eradication to mitigating and managing its effects.

Figure 1 shows the widespread distribution of ash dieback in Wales as of March 2019. The disease is now endemic in Flintshire and it can be assumed that all ash trees in the county have been exposed to the airborne spores of the pathogenic fungus.

Ash dieback infects a tree via airborne spores produced by the fungus' mushroom which grow on last year's fallen leaves. In favourable warm and wet conditions, during the period June to September, many millions of spores are produced on the fallen leaves shed from a single tree. Where healthy trees are heavily exposed to the spores they become infected. Symptoms of the disease are wilted and subsequently blackened leaves which hang dead on a twig (Plate 1). Infection soon extends into branches and stems initially causing a diamond shaped lesion around the dead side shoot (Plate 2).



Plate 1. Dead infected leaves hanging from branches



Plate 2. Dead bark forming a diamond shaped lesion around dead side branch

Where the disease is fatal the dieback progresses until there is no foliage in the tree. Mature trees may respond to the infection with dense clusters of leaf growth that mark the extremities of the live

⁴ [The Plant Health \(Forestry\) \(Amendment\) Order 2012](#)

tree. This dense growth can be likened to a cheerleader's pom-pom and a clear symptom of ash dieback in a mature tree.

In addition to the above symptoms, infected trees in dense ash populations across mainland Europe exhibit dead lesions at the base of the stem. Research found that 17% of mature trees infected with the disease suffered from basal lesions and this was not always associated with crown dieback. The lesions can readily develop into a butt or root rot and make the assessment of risk much more difficult in large tree populations where it is not accompanied by crown dieback. This is a significant cause for concern.

Young trees are usually killed over a period of several months whilst mature trees decline over several years. Following initial infection by ash dieback mature trees are likely to be subject secondary infection by other pathogens (e.g. honey fungus).

Although devastating ash dieback is not always fatal. Evidence from mainland Europe suggests that 10% of trees exhibit moderate tolerance and 1% to 2% have a high level of disease tolerance⁵. Even after 20 years of exposure no site in Europe has reached 100% mortality⁶. In the UK there is hope that a small percentage of ash trees will be highly tolerant of the disease or possibly resistant and research is being undertaken to identify these trees. Early research shows ash trees in Wales and eastern England are more susceptible to the disease than trees in the middle of Scotland.

The Tree Council and the Forestry Commission have online resources for the disease's identification.

[Forest Research – Chalara Ash dieback](#)

[The Tree Council – Chalara in the UK: A photo id guide to symptoms in young trees](#)

[The Tree Council – Chalara in the UK: A photo ID guide to symptoms in in larger trees](#)

It has been predicted that ash dieback in Britain will cost £15 billion⁷. The largest proportion of this cost, £9 billion, is the loss of ecosystem services provided by ash trees. These ecosystem services include improving air quality, mitigating the effects of climate change, carbon sequestration and flood attenuation that will be foregone as a result of the disease.

The estimated cost of safety felling in Britain is £4.7 billion, comprising £2.8 billion for roadside safety felling and £1.6 billion for safety felling in urban areas.

⁵ [Ash Dieback : an Action Plan Toolkit \(English\)](#)

⁶ Coker L. R. et al. (2019). Estimating mortality rates of European ash (*Fraxinus excelsior*) under the ash dieback (*Hymenoscyphus fraxineus*) epidemic. *Plants People Planet* 2019;1:48-58

⁷ Hill, L. et al. (2019). The £15 billion cost of ash dieback in Britain. *Current Biology* 29, R301-R316, May 6, 2019. Elsevier Ltd

4. Ash trees and ash dieback in Flintshire

Due to its calcareous limestone geology common ash is one of the most abundant and widely distributed trees in Flintshire. Ash is dominant in National Vegetation Classification (NVC) W8 and W9 woodlands that comprise of nearly 1500ha of the county's 2700ha of broadleaved woodland⁸.

As a minor component, ash is present in pedunculate oak (W10) and beech (W12) woodlands found on drier ground. Whilst ash is not suited to damp ground, it was often planted or has colonised NVC W6 and W7 woodland types as a substitute for wych elm killed by Dutch elm disease or common alder affected by the disease *phytophthora alni*. When taking into account these factors it is estimated that there is another 400ha of ash woodland forming a sub component of woodland where other species are predominant⁹.

The estimated number of mature ash trees outside of woodlands in Wales is 240,000¹⁰. Based on this national figure it is estimated that there are 24,000 mature ash trees outside of woodlands in Flintshire growing in hedgerows, boscses, shelter belts and urban areas.

Out of the 12 Landscape Character Areas in Flintshire mature ash trees, in a non-woodland setting, are a dominant feature of the landscape in the Pantymwyn Farmlands and the Trelawnd Plateaux. In four other Character Areas mature hedgerow trees, including ashes, are noted as being important in defining the character of the landscape¹¹.

Within the Clwydian Range and Dee Valley Area of Outstanding Natural Beauty mature ash trees are a particularly strong feature and one of the key features of the Alyn Gorge Special Area of Conservation is its ash woodlands.

Ash dieback was first suspected but not confirmed in Flintshire during 2014 when the Forestry Commission's plant health team ordered the destruction of young ash trees at Llong. At that time the trees had been recently planted and were known to be sourced from an infected nursery. The following year ash dieback was suspected and confirmed on the A55 at Northop. In 2016 ash dieback was identified on ash trees that had been cut down underneath overhead power cables near Rhydymwyn. Even though Figure 1 only shows the presence or absence of the disease and not the level of infection in any 10km grid square, it is evident that since 2015, ash dieback has become endemic in the county. It is now widely distributed along the Alyn and Wheeler river valleys, the Dee coastline, Greenfield Valley and A55 trunk road.

It is predicted that the ash dieback will have a significant adverse effect on Flintshire's landscape. The disease will reduce biodiversity and weaken environmental resilience. Protected habitats such as the Alyn Gorge Special Area of Conservation (SAC) and the landscape of the Clwydian Range and Dee Valley Area of Outstanding Natural Beauty (AONB) and will be particularly vulnerable to disease's effects.

⁸ Reference required

⁹ Hall J. E., Kirby K. J. and Whitbread A. M.(2004). [National Vegetation Classification: Field guide to woodland](#). English Nature

¹⁰ Maskell L. (2013). Distribution of Ash trees (*Fraxinus excelsior*) in Countryside Survey data. Centre for Ecology & Hydrology

¹¹ Clwyd Landscape Assessment.(1995). FCC

5. How will ash dieback affect Flintshire County Council?

Local authorities that have experienced ash dieback for a longer period have recognised that the disease represents a 'significant corporate risk'¹². The main areas of corporate risk are identified under four separate headings (Table 1).

HEALTH AND SAFETY	ECONOMIC	REPUTATIONAL DAMAGE
Potential for death or injury as a result of ash dieback related accidents, both to professionals working on trees and to the general public	Increased liabilities in cases of death or injury as a result of ash dieback related incidents	Potential for disruption as a result of ash dieback management e.g. widespread road closures to deal with potentially dangerous trees
Increased health and safety issues due to declining ash trees on roads, owned and managed land such as in county parks, housing estates, schools, cycleways, bridle paths and footpaths	Inadequate staffing levels and the ability (or inability) to undertake the work required resulting in increased costs to recruit and retain the necessary staff	Political and reputational risks as a result of negative press over ash dieback management and public outrage and/or anxiety
Risks to statutory functions or service delivery such as retaining safe schools, public open spaces or highways	Increased expenditure from direct and indirect cost due to ash dieback e.g. additional staff and management activities, and the impacts this may have on other services and budgets	Potentially strained relationships with land owners and managers as ash dieback spreads and increased costs fall on the private owners.
Risks to staff and user community from trees on adjacent land falling into your estate	Additional costs of the disposal of waste products from felled ash entering the waste management system	ENVIRONMENTAL IMPACTS
Risks from falling ash to your infrastructure such as fencing, signs, equipment stores.	Increasing prices as a result of market competition for a limited pool of skilled tree contractors	Landscape changes with impacts on tourism and recreational opportunities
	Increased direct/indirect costs due to increased flood risk resulting from changes in the way water may be held back by tree roots, or absorbed into the soil, or taken up by ash trees	Losses to ecosystem services such as reductions in air quality, potential for increased flooding, biodiversity losses, increases in noise levels adjacent to roads, losses of visual screens
	Costs of replanting needed to retain ecosystem services provided by ash e.g. flood reduction, urban shading, carbon storage and habitat for biodiversity	Risks to protected species/ sites through alteration of habitat structure, stability and composition e.g. loss of bat breeding/feeding sites
	Increased liabilities as a result of risks to adjacent land and 'third party' property from your trees falling/shedding branches	Losses of carbon storage and sequestration
	Drop in market prices for ash wood products due to excess ash on the market.	Loss of biodiversity from the decline or extinction of species which are largely or entirely dependent upon ash.

Table 1. Source: The Tree Council, Ash Dieback : an Action Plan Toolkit

The risks identified can be divided into those associated with the council being a landowner and those resulting from its statutory functions, where, as result of ash dieback there will be increased pressure.

¹²[Ash Dieback : an Action Plan Toolkit \(English\)](#)


The decline and death of many mature trees has implications for public safety because the trees will become likely to fail. Taking into account what is known about the disease and its spread the decline and death of numerous ash trees will commence in the county during 2020.

The council is exposed to the greatest health and safety liability where it is the tree owner. Like all landowners the council has a duty of care under the Occupiers Liability Acts¹³ and must meet with this requirement if it is to defend potential civil claims of negligence brought against it. In the worst scenario, the council could be held criminally liable in the courts for a death caused by a falling ash tree if it were found to be grossly negligent.

To address the increased healthy and safety risks presented by ash dieback it will be necessary to be more proactive in the surveying and maintenance of the council's ash trees. More specifically it will be necessary to identify declining trees in high risk areas, where if they fall or shed boughs, are likely to cause damage or harm.

Even if the council is not the legal owner of a tree there is also a risk that its reputation could be damaged if it did not act using its statutory powers to deal with trees that are deemed dangerous. This will mainly apply to trees which are at risk of falling onto busy stretches of public highway.

Consequently the scale of the health and safety risk caused by ash dieback alone will mean that it will not be 'business as usual' for the council.



It is vital to understand that ash dieback will not be 'business as usual'.

Ash dieback is either already in an area or is likely to be in the next few years with potentially serious practical and financial impacts to many areas and organisations. Therefore, to manage ash dieback effectively a collective, co-ordinated approach across organisations and areas is recommended.

Figure 2. The Tree Council's statement on ash dieback¹⁴

Table 2 is guide for assessment of diseased trees using a system based on the percentage of live canopy cover and is used to determine when action is necessary to address the risks posed by a tree's decline. It is recommended to take action when approximately 40% of the crown remains (towards the beginning of Health Class 3) and it is advised that the tree will be a safety issue where the crown dieback is 75% or greater (Health Class 4). Where there is dieback but the crown remains in Health Class 1 a tree may have degree of tolerance and worth monitoring.

It should be emphasised that the above recommendations are only necessary where there is a risk of harm or damage if tree failure occurs.





In response to the disease it is important that the resources are prioritised to address the areas where there is the greatest risk. This is in accordance with Objective 3 of the Flintshire Urban Tree and Woodland Plan 2018-2033¹⁵ and will target Principal A Roads, B Roads and urban streets with

¹³ HMSO. 1957 & 1984. The Occupiers' liability Acts 1957 and 1984. HMSO.

¹⁴ [Ash Dieback : an Action Plan Toolkit \(English\)](#)

¹⁵ <https://www.flintshire.gov.uk/en/PDFFiles/Countryside--Coast/Tree/Tree-Plan.pdf>

increased frequency of inspections. These are the stretches of the highway network which have the greatest vehicular and pedestrian traffic where a tree falling onto the footway or carriageway is more likely to strike a vehicle or pedestrian.

	
<p>Health Class 1 100%-75% Remaining Canopy</p>	<p>Health Class 2 75%-50% Remaining Canopy</p>
	
<p>Health Class 3 25%-50% Remaining Canopy</p>	<p>Health Class 4 0%-25% Remaining Canopy</p>
<p>Table 2. Ash dieback in Flintshire using Suffolk County ash health assessment system</p>	

RHYBUDD AROLYGU GWYWIAD YR ONNEN CAUTION ASH DIEBACK SURVEYING

Figure 3. It is proposed to use specific survey signs on highway vehicles to increase awareness whilst warning motorists

Where trees are identified as being a risk it will be necessary to have resources to carry out works to the council's own trees or in the case of privately owned trees resources to engage with the owner and resolve the issue. Tree works carried out adjacent to the highway will require traffic management and inevitably lead to traffic disruption.



Plate 3. Planned tree works and tree failures will cause traffic disruption

Considered secondary to the highway risk are the trees in schools and parks that are the responsibility of the Local Education Authority and Streetscene respectively. On these sites it will be necessary to increase the frequency of tree inspections and carry out works to make trees safe.

Additional areas of lesser concern comprise of FCC owned business parks, Countryside Service sites (e.g. Wepre Park and Greenfield Valley), cemeteries and housing land. Due to historical reasons the Housing Department is responsible for several large woodlands and although these woodlands are not regarded a priority they still require a desktop study to assess the extent of the land and the potential ash component present near to people and property.

At this time the areas of lowest priority are considered to be public footpaths, bridleways and council farms.

There will be additional demands on administration and legal services to help identify tree owners, serve notices under the Highways Act to make trees safe and recover costs.

The number of proposals to carry out work to trees protected by the Local Planning Authority will increase as a result of ash dieback. There is evidence that owners of protected ash trees are wanting to fell healthy trees that could have a high level of tolerance to the disease.

The council does not have a specialist tree gang capable of undertaking the removal of mature trees and therefore it will be reliant on tree contractors to carry out this type of work. The services of tree contractors may become more difficult to secure and the council may have to pay a premium to employ competent firms.



Plate 4. Early mature ash dying back adjacent to A55 on NMWTRA land, Broughton

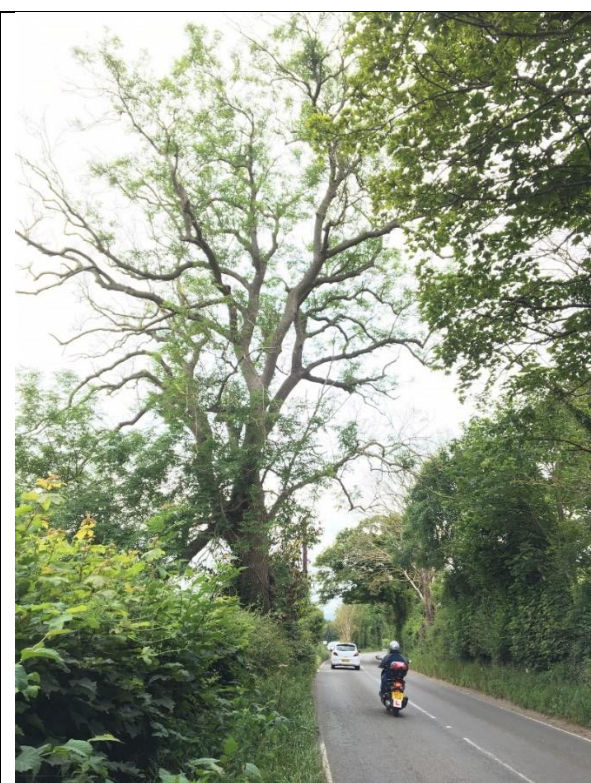


Plate 5. Mature ash declining adjacent to A Road, Bodfari

When being felled or dismantled there is anecdotal evidence that ash dieback makes trees more unpredictable and there is a need to ensure method statements specifically highlight and address these risks.

Due to the demand for tree contractors there is potential for unscrupulous operators to 'cash in' on the disease and this should be addressed by information on the council's website and a Trading Standards campaign raising public awareness.

The loss of ecosystem services presently provided by ash trees will be huge and whilst health and safety concerns are more immediate this should not be wholly at the expense of planning replacement tree cover. Planting at an early will retain biodiversity and mitigate the environmental effects of ash dieback.

Currently Flintshire County Council manages highway trees using a GIS based computerised tree management system. Through better IT support, this type of technology can be used to survey trees on other land and identify where the disease is likely to result in the greatest risks to the council.

When planning and undertaking tree works it is necessary to ensure protected species and habitats are safeguarded. This would be most effectively dealt with by adopting a protocol in conjunction with Natural Resources Wales (NRW). In particular it is important that standard survey methods are adopted to assess the likelihood of the presence or absence of European Protected Species (e.g. bats, dormice). Where protected species are present it will be necessary to obtain a licence and work closely with NRW. Every effort should be made to safeguard protected species as they will already be at risk as a result of the catastrophic loss of ash tree and woodland habitat.

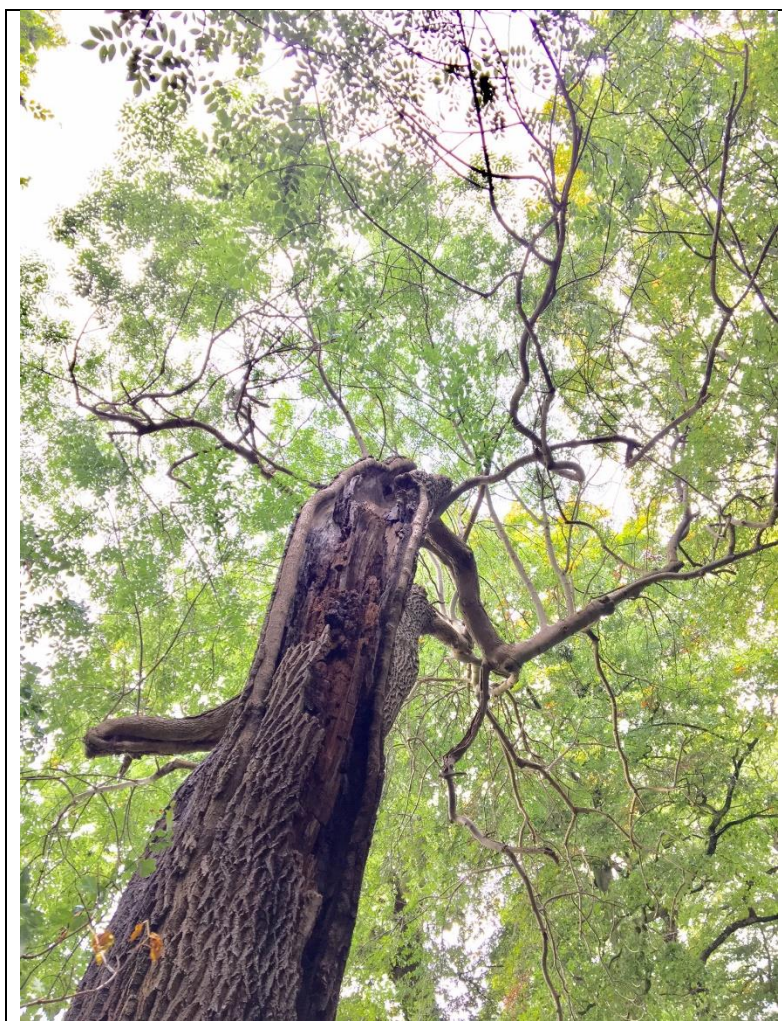


Plate 6. Decaying ash tree habitat

Bats are one of the key protected species of concern and it is necessary to ensure that their roosts and habitat is safeguarded. The Bat Conservation Trust's publication *Bats in Trees*¹⁶ provides best practice guidance on protecting bats during tree works and will be followed by the council when carrying out ash dieback tree works. In accordance with the advice, works to trees that have a high bat potential will be supervised by the council's ecologist or other licensed bat worker.

At the time drafting the first edition of the Flintshire Ash Dieback Action Plan a protocol for assessment of protected species and habitats has not been prepared however it is one of the points recommended for action. Following on from the

adoption of a protocol there is also scope to agree a derogation under licensing which would allow the council to carry out ash dieback related tree works across its sites without having to apply for a licence on each site.

When liaising with landowners over infected trees the council will make them aware of the need to safeguard protected species and habitats.

¹⁶ [Bats and Trees. Bat Conservation Trust](#)

6. Estimating the financial cost of the disease to the council

The risks and also financial costs to the council can be divided into those associated with the council being a landowner and those resulting from its statutory functions. For clarity the following tables with burgundy shading relate to trees where the council is the landowner and tables shaded blue relate to a statutory function or duty relevant to trees.

Trees on adopted highway land

Acting in its capacity as a Highways Authority the council is responsible for managing 152Kms of A roads, 78Kms of B Roads, 262Kms of C Roads and 682Kms of Minor Surfaced Roads. This excludes the roads maintained by the North and Mid Wales Trunk Roads Agency. Currently trees on highway land adjoining Principal A and B roads, and urban streets are surveyed once every five years, unless due to a tree's condition, it merits inspection more frequently. Prioritising a selected number of trees for more frequent inspection saves time and is in accordance with established Tree Risk Assessment methodology. The tree survey database has over 4000 records which are either individual trees or trees surveyed in groups. Within this dataset there are 562 individual ash trees and 33 ash groups containing an estimated 400 trees. Therefore there are approximately 1000 mature ash trees representing 14% of all the trees on highway land.

As a result of ash dieback it will be necessary to increase the inspections of ash trees on highway land from five to one year. In the case of mature ashes growing in sub optimal conditions where the rate of decline is quickest it is recommended that they are inspected biannually and checked at the base for lesions. Taking these factors into account the additional cost of surveying is estimated to be 30K over a five year period. (This figure excludes the cost of surveying trees adjoining the highway on private land).

It is estimated that the mortality rate for ash dieback in Flintshire will be 90% and all the following cost projections are based on this figure.

Predicted mortality rate for mature ash trees	90%
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Based on figures used by other local authorities the average cost of felling a single mature roadside tree is between £400 and £800. This will include traffic management, clearance and disposal.

To safeguard highway users and operatives, road works must be carried out in accordance with the Safety at Street Works and Road Works – A Code of Practice¹⁷. Where identified by a risk assessment, traffic management or even road closures will be necessary to carry out tree works adjacent to the public highway. Typical traffic management requiring stop/go lights will cost £200-£300 per site. The cost of a road closure is much higher and for example, where the FCC undertook tree works on the old railway bridge at Greenfield this necessitated a four day closure of the A548 which cost £2500.

¹⁷https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/321056/safety-at-streetworks.pdf

A single mature tree adjacent to the highway may cost £2,000 to dismantle and remove whilst a 6m high but still mature tree will be much less.

Average cost of felling a mature ash tree adjacent highway	£400-£800
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To more accurately predict the cost of felling ash trees on highway land the recorded tree heights can be used. Table 3 provides a breakdown for the felling of trees in three different height categories and percentage in each category to estimate the total cost.

Estimated cost of removing mature ash trees on adopted highway land				
1000 trees x 90% mortality				900 trees
Height Category	Percentage in category	Unit cost to fell	No. of trees	Cost
<10m	20%	£50	180	£9K
10-20m	67%	£400	603	£241K
>20m	13%	£800	117	£94k
Total				£344K

Table 3. Mature ash trees on highway land

Whilst there is a wide variation in the cost of removing a tree the high number means that it is not unreasonable to use an average to estimate the cost of the health and safety tree works required. Economies of scale will also mean there will be a saving which is also taken into account. The cost of removing diseased trees for health and safety reasons is likely to take place over a five to ten year period with most of the cost being incurred in the first three years.

The cost of replacement planting is based on the assumptions that three trees will be planted for every one tree removed and the cost of planting each tree using small nursery stock, including maintenance, will be £30. The total cost for replacing mature trees felled within the adopted highway is £81K. The cost per tree when planting in the adopted highway will be lower compared to other types of council land. This is because most ash trees are situated in wide informal verges where cheaper and smaller nursery stock can be used.

Education

It is estimated that identifying ash trees and surveying for ash dieback in schools will cost 20K over five years based on the number of primary and secondary schools in the county. There is a need to undertake a full Tree Risk Assessment based survey of all schools as one has not been undertaken for at least five years and this would form part of a strategy for surveying and managing trees infected with ash dieback.

A desktop study using aerial photographs was undertaken to assess the mature tree canopy cover in 12 primary and three secondary schools. It is estimated that there are 1300 mature trees on education land. Compared to trees on the adopted highway verge adjacent to Principal A and B Roads the proportion of ash trees will be lower and is estimated to be 5%. Using a mortality rate of 90% and

nominal felling cost of £300 per tree it is estimated that the cost of felling 59 mature diseased ashes in council schools will be £18K.

An estimation of the cost replacement planting on a three for one basis is also provided with a unit price per tree of £100, reflecting the need to plant trees of a reasonable size in schools and reduced survival rates for larger nursery stock sizes.



Plate 7. Mature ash in a Flintshire school

Public open spaces

Public open spaces are maintained by Streetscene but were formerly managed by Leisure Services. There is a lack of survey information for trees on Public open space and a need for a full Tree Risk Assessment based survey to be undertaken. The cost of surveying for ash dieback in public open spaces is estimated to be 30K over five years.

A desktop study using aerial photographs was undertaken to estimate the mature tree canopy cover on a sample of five public open spaces. The area covered by the five open spaces was measured and using the total area of open space it is estimated that there 2030 mature trees.

Once again it was estimated that 5% of the trees would comprise of ash species and there would be 90% mortality. Taking into account these assumptions 90 mature trees will require felling as a result of the disease. At a cost of £300 per tree the cost of felling ash trees on public open space will be £27K.

The formula used for calculating replacement planting costs was the same as that used for Education land and is £27K

Identifying, removing and replacing council owned trees					
Activity	Area	Department	Cost (£K)		
			Increased surveying 5 years	Felling	Replacement planting
Removing* and replacing diseased ash trees on adopted highway land Increased tree surveying (*Removal also includes truncation or lopping a tree so that it is no longer a risk)	Adopted highway	Streetscene	£30K	£344K	£81K
	Education	Education and Youth	£20K	£18K	£18K
	Public open spaces	Streetscene	£30K	£27K	£27K
	Housing	Housing and Assets	£4K	10K	£3K
	Cemeteries	Streetscene	£4K	£8K	£3K
	Industrial Estates	Valuation and Estates	£4K	£12K	£3K
	Country parks Rights of way	Access and Natural Environment	£4K	£12k	£3K
Sub Total			£96K	£431K	£138K
			Total		£665K

Table 4. Estimated costs for surveying, felling and replacement planting

The costs of surveying, felling and replacement planting have been estimated for other council land types and are also contained in Table 4.

The above figures demonstrate that there is a saving of £138K if the council does not undertake replacement planting. However this would not meet the council's duty under the Environment (Wales)

Act 2016 and not be in accordance with Objective 2 of the adopted Flintshire Urban Tree and Woodland Plan¹⁸.

Statutory functions

The main area of concern is the risk that the council will be exposed to in carrying out its duties under the Highways Act 1990.

A sample survey of 18.5kms of the road network was undertaken during August 2019 and found that there are 1078 mature ash trees (over 6m in height) in private ownership adjacent to the highway. Using the length of the highway network these figures can be extrapolated to estimate the number of mature ashes adjacent to the highway on Principal A and B roads (Table 5). Category C Roads and Minor Surfaced Roads were not included in the sample.

Estimated number of mature ash trees adjacent to the highway (Principal A and B Roads) on private land	
60 mature ash trees per kilometre x 90% mortality	54 trees/Km
Length of Principal A and B roads (Excludes NMWTRA roads)	230Kms
Trees total	12,420

Table 5. Estimated number of ash trees adjacent to highway on private land that will require removal

The unit cost of felling the trees has been estimated to be between £100 and £400 taking into account the level of traffic management requirement on Principal A and B Roads, clearance and disposal.

Cost of felling* mature ash trees adjacent to the highway (Principal A and B Roads) on private land	
Number of mature ash trees over 6m in height	12,420
Unit cost – higher and lower estimates	£100-£400
Total	£1.2m - £5m

Table 6. Higher and lower estimates to fell mature ash trees adjacent highway on private land

Critical to an estimation of the cost to the council is predicting how proactive private landowners will be managing diseased trees adjacent to the highway and how frequently it will be necessary for the council to intervene and use its statutory powers following initial discussions with a tree owner. However, the council is more likely to have to fell trees which are difficult to remove because of their location and size.

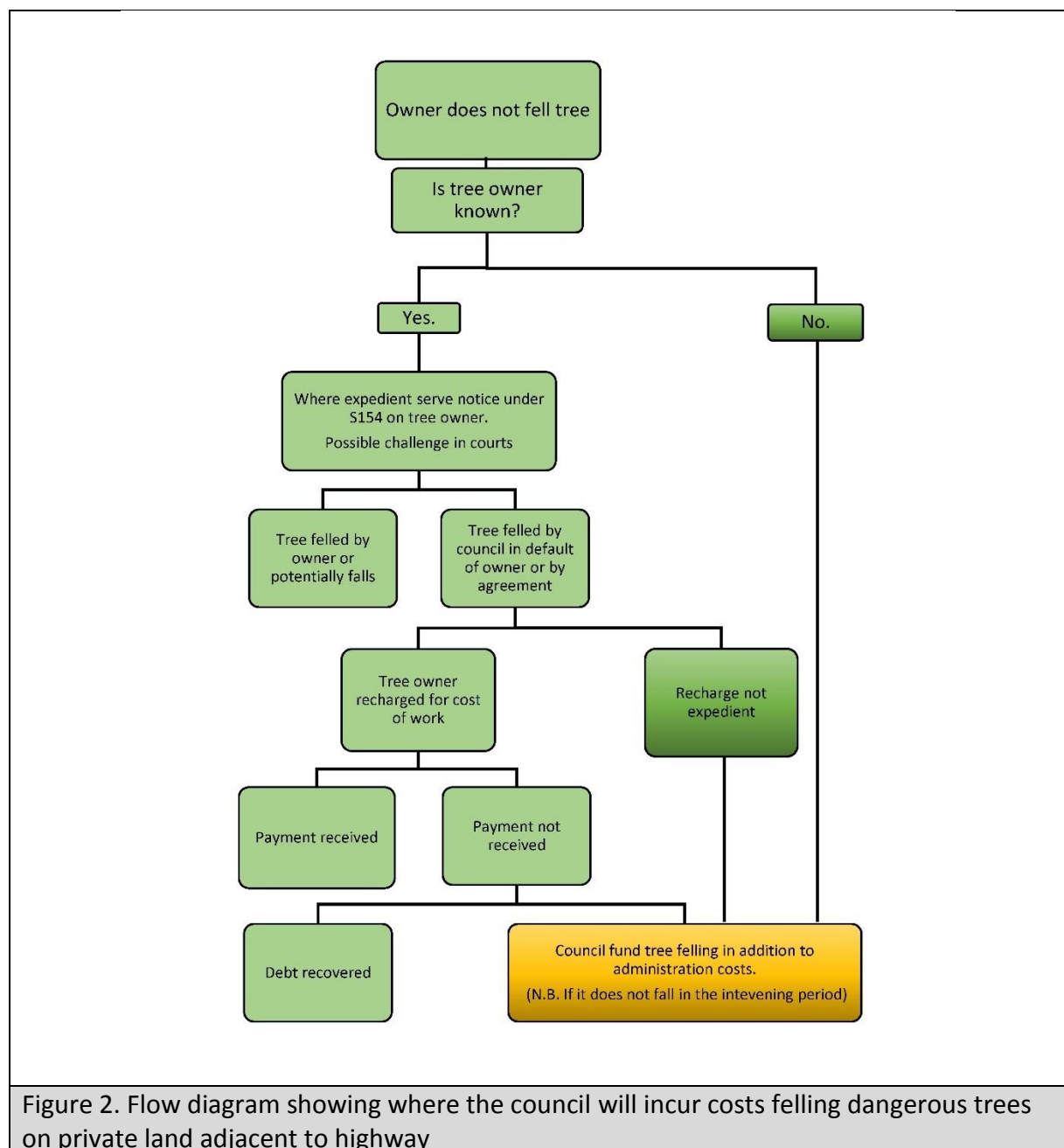
Under Section 154 of the Highways Act 1980 (As amended)¹⁹ the council in its Highways Authority capacity can serve notice on a landowner to require the removal of a tree deemed a danger to the highway, and where necessary carry out tree work in default of the landowner. The highways authority is not under a strict duty to use Section 154 and may choose not to serve a notice on a landowner especially where, if a tree fell, it would be unlikely to cause damage or harm. Public footpaths, C Roads and Minor Surfaced Roads in rural areas will be considered to be a much lower priority than other busier stretches of the highway network.

¹⁸ <https://www.flintshire.gov.uk/en/PDFFiles/Countryside--Coast/Tree/Tree-Plan.pdf>

¹⁹ Highways Act 1980 (As amended) HMSO

Even on Principal A and B Roads it is anticipated that the council will not have the resources to identify trees deemed as dangerous adjacent to the highway, ascertain the landowner and engage with them over tree felling; especially when the council will be dealing with its own trees which will be a higher risk as far as strict liability is concerned.

To further compound the estimate of the cost to the council, there is provision within the Act for the council to recover its costs in arranging and carrying out the work, although realistically only a small percentage of these costs are ultimately recovered from the tree owner. The reasons for this may be because the tree owner cannot pay, cannot be established or it is not viable to pursue recovery of the debt. The flow diagram in Figure 2 summarises the process.



Taking into account the above factors it is very uncertain what the cost to the council will be when dealing with the estimated 12,000 mature and diseased ash trees adjacent to Principal A and B Roads on private land. Inevitably, the council's response will also be dependent on the resources available to deal with ash dieback.

It is important to note that the above assessment does not include C Roads or Minor Surfaced Urban Roads because they are a lesser risk. If it is assumed that the number of trees per kilometre is consistent for the whole network there would be an estimated 63,000 diseased ash trees which would cost between £6.4m and £25m to fell using the £100 lower and £400 higher estimates used in Table 6.

To address the weaknesses in the above assumptions it is important that costs of ash dieback to the council's services are accurately recorded and used to more accurately predict future costs. One of the actions proposed is to set up a unique cost code for dealing with ash dieback to enable easier auditing of figures. Officers will also be advised to record the time spent dealing with ash dieback.

Statutory requirements or duty				
Activity	Area	Department	Estimated Cost	
			Survey/Admin over 5 years	Felling
Increased surveying costs Issuing and serving notices Felling* ash trees on private land adjacent to public highway in default of landowner	Highways Authority under S96, S150 and S154 Highways Act	Streetscene	£150K	£1200K to £5000K
Administering LPA tree work applications to fell diseased ashes Replacement planting costs can be incurred by the LPA when a Tree Replacement Notice is served	Tree Preservation Orders and conservation areas	Development Management	£20k	Not part of duty
Ordering the felling* of ash trees on private land which are a danger to adjoining property	Local Government (Miscellaneous Provisions) Act 1976	Access and Natural Environment	£20K	£10K (Takes into account recovery of some costs)
Sub total			£190K	£1410-£5010K
*Felling also includes truncation or lopping a tree so that it is no longer a risk Total				£1.6m - £5.2m

Table 7. Estimated costs to the council when carrying statutory requirement or duty

Where a tree falls and blocks a highway the council is under a duty to remove the obstruction. Once again there is provision for the council to be able to recover costs from the owner of the fallen tree however in the past this has been rarely undertaken. If private landowners are to be encouraged to

remove standing dying trees adjacent to the highway it will be necessary to recover the cost of clearance if they do fall. This is particularly relevant when a tree owner is served with a notice to remove a standing tree who may be inclined not to carry out the work in the formal notice knowing that if they, negligently, let the tree fall onto the highway they may not be charged by the council for the tree's clearance.

Private landowners will be expected to shoulder a considerable financial burden when removing diseased ash trees adjacent to the highway. Ergo it is likely that relationships between private tree owners and officers will become strained where the council requires works to be carried out and is unable to offer any financial assistance.

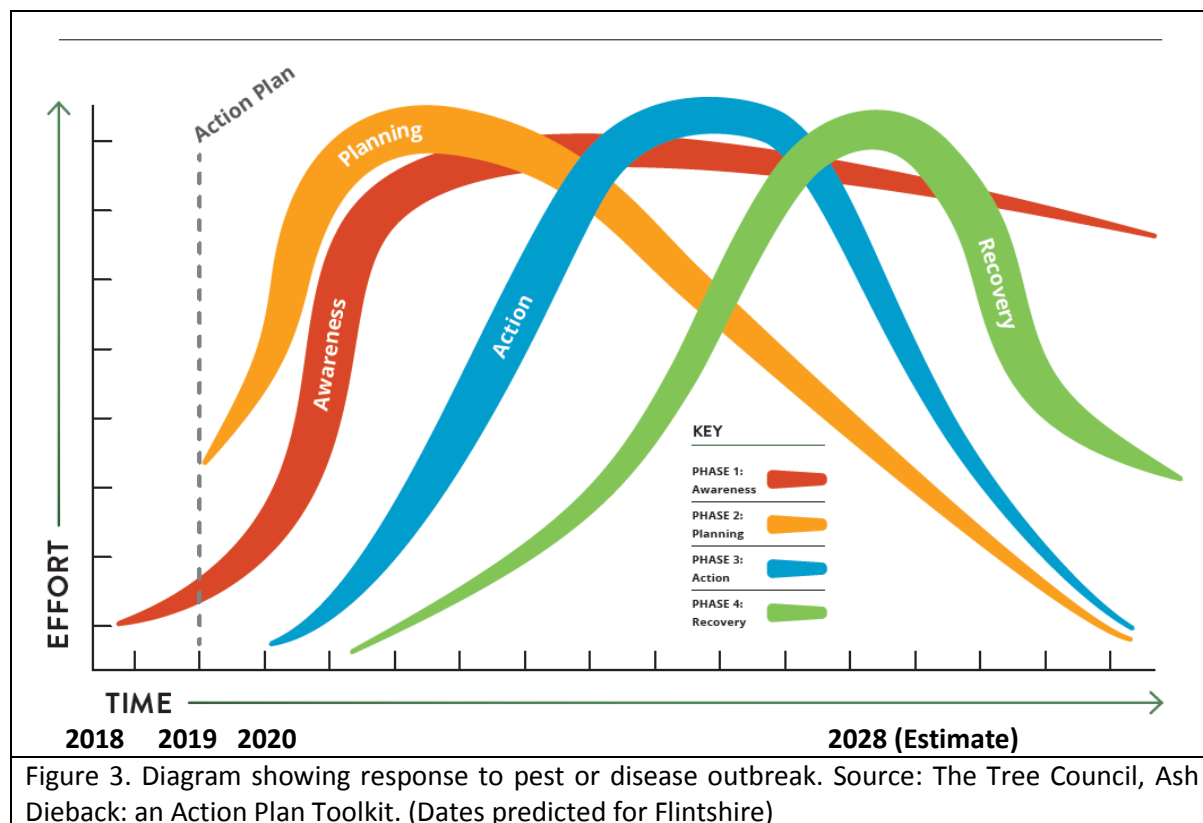


Plate 8. The cost of removing a mature tree adjacent to an A road will be approximately £2,000

As indicated in Table 7 the burden of dealing with ash dieback related tree work applications and enquiries to the Local Planning Authority are relatively minor. It is also anticipated that the cost to the council dealing with the powers under the Local Government (Miscellaneous Provisions) Act 1976 will be minor.

7. Delivery plan

Figure 3 shows four key parts of a recommended response to the potential outbreak of a tree pest or disease. It is based upon the wider used protocol of an Emergency Plan and was the basis of the strategy used by Kent County Council in response to ash dieback.



Awareness

The national media extensively covered ash dieback when it was first found in 2012 however coverage of the disease has waned despite its major effect. Now that the disease is widespread in Flintshire we cannot afford to be complacent. Awareness of the problem and coming to terms with it are the first steps in confronting it.

At the time of drafting this first FADAP awareness of the disease within the council is low and its effects are not fully appreciated. It is hoped that publication of the FADAP will raise awareness of the disease and the magnitude of its consequences. FCC tree officers have learnt a lot about the disease from counterparts who have been dealing with the disease for longer and a lot of this information is contained in this document.

Making members of the public aware of the disease will help gain momentum and support for later phases. It will also help them understand why there will be disruption to the highway network and council services.

Planning

An Ash Dieback Management Team has been set up as the first step in planning for the disease. The team comprises of the tree officers, a lead highways officer and principal solicitor. This will be the main forum discussing issues relating to ash dieback within the county and report to a Chief Officer.

Where necessary to address specific issues, additional officers will need to attend Ash Dieback Management Team meetings. From time to time this may include a chief officer, communications officer, finance officer, ICT officer and officers involved with the management of council land where ash dieback is less critical. At this stage it is not proposed to include stakeholders from outside the council (e.g. Police) but this can be subject to ongoing review.

The FADAP has been prepared and is due to be considered by Informal Cabinet which will notify council members about the disease and the council's exposure to its effects. Following promulgation through the distribution of the plan, internal stakeholders will be asked to participate in a meeting to identify action points for their services areas.

The North and Mid Wales Trunk Road Agency manages parts of the road network in Flintshire and it is important that there is regular communication between the agency and the council over ash dieback. There is also a North Wales Tree and Landscape Officer Group which meets every six months. Where common to external stakeholders there is scope to share information and expertise, and a planned approach to this will achieve better outcomes.

Utility providers will also be faced with having to deal with the challenges of ash dieback. Taking into account the number of trees managed by the council it will be worthwhile discussing protocols with the main providers.

An obvious part of the planning stage is identifying the areas of highest risk and the resources required to address or at least mitigate the risk. This has already been undertaken with the findings and financial costs identified in Chapter 6.

Actions

So far there has been limited action in response to the disease and this will need to change as it progresses. The cost of dealing with the disease will be greater if actions are delayed.

There is an obvious need to make a case for additional funding and it is recommended that the council cooperates with the Welsh Local Government Association to lobby the Welsh Government for extra funding for local authorities to tackle ash dieback. The Welsh Local Government Association wrote to the Minister for the Environment, Energy and Rural Affairs in July (Appendix 1) which among other things highlights the need for a package of funding and there is a need to maintain pressure by providing supporting information.

As outlined in Figure 2 it is not possible to come to a firm estimate of the costs that the council will incur as a result of dealing with trees deemed as dangerous on private land adjacent to the public highway. The amount estimated is between £1.3m and £5.2m for Principal A and B Roads and there is a need for further assessment of this figure to determine whether more of the highway network should be included and what the council's liabilities are if it cannot afford to carry out its duty under the legislation.

Whilst the main estimated costs of ash dieback are stated in Chapter 6 there is a need to estimate the costs to other council services in dealing with the disease especially in administration and legal support. It is therefore proposed to prepare a comprehensive table outlining all the costs to the council.

As outlined above there is a need to increase public awareness and it is proposed to use the council's website, social media and the regional press to achieve this. Inevitably, ash dieback will increase the number of enquiries made to the council and it is important that the right information is efficiently provided to members of the public on the web. Where appropriate links can be used on council's web pages to take enquiries to more appropriate websites such as The Tree Council, Forestry Commission and trade bodies for the arboricultural industry.

Therefore one of the key initial actions is to adopt the Communications Strategy which is attached as Appendix 2.

Recognising the pressure on resources a vehicle mounted GPS enabled HD video camera has been used to record footage of each side of Principal A and B Roads in two passes. This method is much faster than carrying out the manual plotting of trees and is a more advanced method of windshield surveying used in the U.S.²⁰ and will identify areas where the incidence of ash trees and ash dieback is greatest. It is proposed to carry out resurveys at the same time each year so that the footage can be used for assessing the impact of the disease over time.

The Area Coordinators in Streetscene undertook a Basic Tree Inspection qualification in May 2016 and there is a need to refresh this training with an emphasis on identifying ash dieback and the Tree Risk Assessment methods used for the disease. It is also necessary to increase awareness of ash dieback for Streetscene officers.

In anticipation of a significant increase in the amount of tree work procured by the council another action is to increase the number of contractors who are approved to work for the council and to formalise emergency call out procedures.

Another action is for Trading Standards to be aware of the increased risk that householders may be under from rogue tree contractors and a further action could be a campaign highlighting the issue.

Recovery

It is too early to focus on the recovery stage especially where there are more urgent priorities.

However it is worth exploring what we would like in the way of future tree and woodland cover, how this can be achieved and what indicators will be used to measure recovery or, at least, the degree of recovery. Many ash trees in Flintshire's countryside are over 100 years and cannot be replaced in a human's lifetime but we can insist on making our existing woodlands more resilient and look after our existing mature trees better.

²⁰ [The reliability of a windshield survey to locate hazards in roadside trees](#)

It has been estimated that the cost of recovery to Britain could be reduced by £2.5 billion by facilitating natural tree regeneration through the proactive management of areas²¹. Thus, where there is an opportunity to undertake 'quick fixes' to encourage regeneration it may be possible to replace ecosystem services at a reduced cost.

Section 6 of the Environment Act (Wales) 2016 places a specific duty on public bodies, including local authorities to maintain and enhance biodiversity, and to promote ecosystem resilience. Under the Act 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. Trees and woodlands are part of this natural resource and the publication of Area Statements could provide a framework for recovery.

The Flintshire Urban Tree and Woodland Plan has the target of increasing urban canopy cover to 18%²² by 2033 and provides a strategic approach to recovery from ash dieback in urban areas. This document also makes use of the canopy cover studies^{23 24} carried out by NRW.

Woodland recovery will be guided by UK Forestry Standard²⁵ and Woodlands for Wales²⁶ the Welsh Government's long term woodland strategy.

Where new tree planting is undertaken it must be properly maintained and nurtured to ensure the trees mature and ultimately provide the replacement ecosystem services that are necessary.

In any recovery plan it is vital that there is stringent biosecurity as there is currently an unprecedented level of pest and disease threats to UK trees. Whilst it is open to debate whether ash dieback was imported as a result of trade or has blown across from mainland Europe, there is a need to be much more aware of tree health and resilience²⁷.

It is also evident that any meaningful recovery will not take place without funding from the Welsh Government. Therefore the strongest possible case needs to be made to secure funds for recovery in addition to the more urgent health and safety tree works.

²¹ Hill, L. et al. (2019). The £15 billion cost of ash dieback in Britain. Current Biology 29, R301-R316, May 6, 2019. Elsevier Ltd

²² <http://www.sirryfflint.gov.uk/cy/PDFFiles/Countryside--Coast/Tree/Tree-Plan.pdf>

²³ [Tree Cover in Wales' Town and Cities](#)

²⁴ [Town Tree Cover in Flintshire](#)

²⁵ [Forestry Commission. \(2017\). UK Forestry Standard](#)

²⁶ [Welsh Government. \(2018\). Woodlands for Wales](#)

²⁷ [DEFRA. \(2018\). Tree Health Resilience Strategy](#)

8. Conclusion

The first Flintshire Ash Dieback Action Plan explains the background to the disease, how it is now prevalent in the Flintshire and how it has begun to affect the county's trees. Critically, it also sets out the anticipated risks to the council.

At the time of preparing this first Flintshire Ash Dieback Action Plan councils are having to begin preparing for the disease using existing resources and budgets. It is evident that the cost of addressing the health and safety effects of the disease alone will be considerable and place a massive burden on already severely restricted budgets for tree maintenance and highway budgets.

Using the information contained in Chapter 6 the estimate for dealing with ash dieback on the council's land is estimated to be £665K over the next five years. This estimate includes additional tree surveying, felling and replacement planting.

The cost of felling mature infected and dangerous trees on private land adjacent to the highway is much greater but less clear but has been estimated to be between £1.2m and £5m when applied to the main part of the road network. In addition to this figure there will be other costs for surveying.

9. Appendix

Appendix 1 – WLGA letter to Minister for Environment, Energy and Rural Affairs

Appendix 2 – Communications Strategy