

PETERBOROUGH CITY COUCIL ASH DIEBACK ACTION PLAN (ADAP)



Document Control Sheet

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Appendices

Appendix 1 - Recommendations on Ash Dieback for Private Landowners

1. Executive Summary

- 1.1 Ash dieback is a virulent fungal disease that has spread across the country since its introduction in 2012. It causes wilting and dieback of ash, often leading to death of the tree. It is possible that up to 90% of the ash trees in Peterborough will be killed by the disease (based on epidemiology from other countries). These dead trees will rapidly present a health and safety risk to the public and property as they decay and become susceptible to other wood decay fungi. This in turn creates a risk of claims against the Council, litigation costs and bad publicity if prompt action is not taken to deal with the problem.
- 1.2 This Ash Dieback Action Plan (ADAP) has been prepared to both assess the impact of the disease and estimate the likely financial implications based on two scenarios: 90% of the trees dying within 10 years and 50% of the trees dying within ten years. It is based on the Tree Council ADAP template that sets out a format for Local Authorities to follow when formulating plans to deal with the problem.
- 1.3 This ADAP includes a delivery plan that sets out how Peterborough City Council in partnership with Aragon Direct Services will deal with the impact of the disease.
- 1.4 Large numbers of dead trees have the potential to impact on the City's infrastructure in particular roads, footpaths, and overhead services.
- 1.5 Trees in the City provide a wide range of ecosystem services many of which help ameliorate some of the worst effects of climate change. The loss of ash will significantly affect the delivery of these services
- 1.6 There are an estimated 22,600 Council owned ash trees at risk. These fall into three main categories: trees in streets and public open space, trees in woodland belts planted by Peterborough Development Corporation (PDC) and trees in Bretton Woodlands.
- 1.7 It is estimated the cost of clearing and replanting diseased council owned trees over a ten-year period will be substantial. Two scenarios are considered within this plan: 90% of the ash dying within 10 years and the lesser impact of 50% dying within 10 years.
- 1.8 Estimates of cost in this plan do not include routine tree management work already budgeted for or anticipated within the period. Inevitably there will be additional administrative costs in dealing with trees in private ownership. No allowance is made for the effect of inflation. The 10-year timescale could be significantly reduced if the pace of infection within the City quickens.
- 1.9 The plan provides guidance for property and woodland owners on the procedures and rules that need to be considered when seeking to remove dead or dying ash particularly when the trees are the subject of a Tree Preservation Order (TPO) or within a Conservation Area. It also signposts sources of further help and advice.

2. Aims and Objectives

2.1 Ash Dieback is a serious fungal disease that threatens the survival of ash (*Fraxinus excelsior*) trees in Peterborough. The aim of this Ash Dieback Action Plan (ADAP) are as follows:

- To communicate the risk posed by the disease and the measures that may be needed to remediate the impact.
- To identify the likely risks to public safety and infrastructure such as roads, footpath, railways and overhead services
- To consider and address the impact on the environment, landscape and biodiversity within the City this applies particularly to the Ancient Semi Natural Woodland in Bretton which contains a large number of ash trees.
- To consider two likely scenarios: over 90% of ash dying within a 10-year period (scenario 1) and a more mixed impact of less than 50% of the trees during in a 10-year period (scenario 2).
- To estimate the likely costs of dealing with ash trees killed and badly affected by the disease and their replacement.

3. Ash Dieback

3.1 Ash dieback (*Hymenoscyphus fraxineus*) is a fungal disease that interferes with the transport of water up the stem and the flow of nutrients from the crown to the roots often killing the tree. It was not found in the UK until 2012 and thought to have been introduced on trees imported from continental Europe. It is also possible that wind born spores were blown across the North Sea, The outbreak started in East Anglia but has since spread across almost the whole country.

3.2 The fungus infects the leaf stalk of ash and rapidly spreads to the twigs and branches causing dieback of the trees. The infection can be relatively slow acting, and the tree often produces new growth which, in turn, becomes infected with the fungus and dies back again. The trees typically enter a cycle of decline that leads to the death of the tree. However, the progression of the disease is variable in the UK - some trees die rapidly whilst others show considerable resistance to the disease. There is also marked regional variations. In badly affected areas a high proportion of the ash population are dead or dying while in others the disease only affects a proportion of the ash with some seeming to tolerate the disease. In comparison to other areas of the country the level of ash dieback in Peterborough is low but, based on visual assessments and recent surveys, is increasing particularly in the northern and western part of the City.

- 3.3 The symptoms of the disease include the presence of dead brown leaves in the summer. diamond shaped black lesions on the stem and branches as shown in Figure 1, also upright reactive shoots with a pink tinge and, perhaps the most notable, dieback and dead wood present in the crown with tufts of regrowth as shown in Figures 2 below.



Forestry Commission Picture Library

Fig 1: Dead leaves and diamond shape stem lesions are symptomatic of the disease.



Forestry Commission Picture Library

Fig 2: Typical crown dieback with tufts of regrowth.

- 3.4 The fructifications or fruit bodies of the fungus are formed on the leaf stalks and look like tiny mushrooms. They appear in autumn when the moist conditions are most favourable for the spread of the spores.
- 3.5 The infection rate is variable. Woodland trees or trees in groups appear to be more prone to the disease, as in woods trees are exposed to concentrated levels of spores. However, free standing ash of all sizes are also susceptible. Trees can become infected throughout the size range from young self-sown trees to large over mature specimens. The fungus also affects cultivated varieties of common ash, such as weeping ash (*Fraxinus excelsior* 'Pendula'), which is particularly susceptible. Other species of ash also succumb to the disease, for example Raywood Ash (*Fraxinus oxycarpa* 'Raywood'), notable for its wine-red autumn colour, which is common in the City particularly in roadside belts and parks.
- 3.6 The Tree Council have adopted a class-based system of categorising dieback in ash as follows:

Class 1 100% to 76% of the Crown Remains



Picture of class 1 from the Tree Council

Class 2 75% to 51% of the Crown Remains



Class 3 50% to 26% of the Crown Remains



Class 4 25% to 0% of the Crown Remains



Pictures of class 2 to 4 from the Tree Council

- 3.7 This system is not an exact measurement and is subjective, but it does provide a basis for deciding when it's necessary to take action.

4. The Status of Ash in Peterborough

- 4.1 Ash forms an important element of the tree cover in Peterborough. This ADAP considers the three types of tree cover in Council ownership including street trees and trees in parks and public open space, trees in the tree belts originally planted by PDC and trees in Bretton Woodlands.
- 4.2 The Council-owned trees in streets parks and other open spaces are carefully monitored and logged on the Council database which contains 2904 specimen ash trees. The table below gives the distribution of the trees by Ward and size. Based on a total tree population of 48,000, ash forms 6% of the of the City's tree stock.

4.3 Table 1 Showing the Distribution of Ash by Ward and Size Category

Location	Cat Sizes and Stem diameter at 1.5 m in cm							Totals
	A 0 to 20 cm	B 21 to 40 cm dia.	C 41 to 60 cm.	D 61 to 80 cm	E 81 to 100 cm	F >100 cm	Other	
Barnack Ward	21	34	15	5	2	4	0	81
Bretton Ward	46	299	85	4	0	0	2	436
Central Ward	2	33	12	3	1	1	0	52
Dogsthorpe Ward	4	28	12	4	1	1	0	50
East Ward	15	40	5	3	1	0	0	64
Eye, Thorney & Newborough Ward	109	69	34	13	3	8	1	237
Fletton & Stanground Ward	11	26	13	4	0	0	0	54
Fletton & Woodston Ward	18	44	20	2	0	0	0	84
Glington & Castor Ward	62	88	36	34	8	1	0	229
Gunthorpe Ward	24	18	7	1	2	1	1	54

Location	Cat Sizes and Stem diameter at 1.5 m in cm							
	A 0 to 20 cm	B 21 to 40 cm	C 41 to 60 cm	D 61 to 80 cm	E 81 to 100 cm	F >100 cm	Other	Totals
Hampton Vale Ward	32	1	0	0	0	0	0	33
Hargate & Hempsted Ward	26	45	10	0	0	0	0	81
North Ward	29	63	5	1	10	1	0	109
Orton Longueville Ward	24	175	41	3	1	0	0	244
Orton Waterville Ward	34	154	53	7	0	0	0	248
Park Ward	0	3	5	5	2	1	1	17
Paston & Walton Ward	14	111	54	8	4	2	0	193
Ravensthorpe Ward	8	131	80	3	0	1	1	224
Stanground South Ward	10	27	17	3	2	1	0	60
Werrington Ward	10	91	49	10	3	8	0	171
West Ward	8	34	26	4	1	0	0	73

Location	Cat Sizes and Stem diameter at 1.5 m in cm							Totals
	A	B	C	D	E	F	Other	
	0 to 20 cm	21 to 40 cm	41 to 60 cm	61 to 80 cm	81 to 100 cm	>100 cm		
Wittering Ward	12	46	28	8	10	3	3	110
Total No. Ash	519	1560	607	125	51	33	9	2904

4.4 A feature of Peterborough, dating back to era of the Peterborough Development Corporation (PDC) are the legacy tree belts running through the townships. Following the closure of the PDC in 1988 these woods passed to the ownership of the City Council. These largely mixed woods extend to 230.0 ha. Based on estimates made during the last whole belt survey in 2017 the woods contain around 18.5% ash. Figure 3 is a pie chart showing the proportion of ash in comparison to other species. This is an average figure some of the belts have no ash, others have more. In belts where ash is present the proportion of ash is nearer 25%. Based on an estimated total stocking of 400 trees per ha there are there are thought to be approximately 17,020 ash trees at risk in these legacy woodlands.

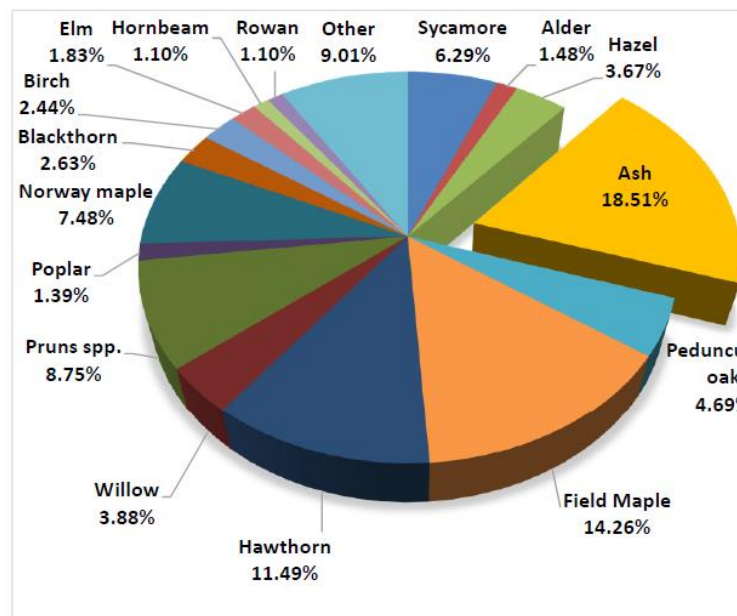


Figure 3: (above) a Pie Chart Showing the Proportion of Ash in the Legacy Tree Belts

4.5 The Bretton Woodlands extend to 23.3 ha and include Grimshaw Wood, Pocock’s Wood and Highlees Spinney. Grimshaw Wood and Pocock’s Wood are the only ancient and semi natural

woodlands owned by the Council and are extremely important for local wildlife and biodiversity. Ash forms a much higher proportion of the trees than in the younger legacy tree belts and is estimated at approximately 80%. A recent survey counted 2707 ash trees, many of which were showing signs of infection.

- 4.6 Beyond the Council's own tree stocks there are a large number of ash trees in private ownership in the wider area of Peterborough, particularly in the rural areas, these include field and hedgerow trees, roadside trees and trees in woodlands. In most cases ensuring these trees do not present a risk to the general public will be the responsibility of the owners. Some of the larger local landowners in the area have had to undertake substantial clearance of dead and diseased ash. However, when an owner fails to deal with trees considered to present a risk to the public highway the onus will fall on Peterborough City Council's Highway Authority to deal with the problem and seek to recover the costs from the owner concerned.
- 4.7 The Woodland Trust Register of Ancient and Veteran Trees lists one veteran (ref 211870) and three notable ashes in Peterborough. However, there are likely to be many more unrecorded trees in private ownership. The ash stools in the Bretton woodlands, which have been coppiced many times, are of considerable age and have a particularly high conservation value.

5. Benefits of Trees and Woodlands

- 5.1 The City's trees provide a wide range of ecosystem services. Ash trees account for a significant proportion of these benefits forming 6% of the street trees, approximately 18% of the trees in tree belts and 80% of the Bretton Ancient Woodlands.
- 5.2 Some of the benefits provided by trees are illustrated below. Many of these helps to reduce the impact of climate change.

Landscape and Aesthetic Values

- 5.3 The Landscape impact of trees and woodland in the City is considerable, particularly in City centre parks and the townships constructed by PDC in the late 20th Century. It is difficult to quantify the immense contribution to the visual amenity and wellbeing of the population. However, there are three main systems to estimate the monetary value of the amenity trees. These include Council for Landscape Appraisers (CTLA) method developed in the USA, The Helliwell System and Capital Asset Value for Amenity Trees (CAVAT). CAVAT is perhaps the most appropriate for Local Authority trees and makes an allowance for the public benefits they provide and if used to calculate the value of the potential ash trees that could be killed would yield a valuation in the millions of pounds.
- 5.4 Shading and Reducing Air Temperature
- 5.5 Higher summer temperatures attributed to climate change present health risks to vulnerable groups. Tree canopies reduce air temperatures and provide pools of shade which are particularly important in urban situations. The Council has target of achieving 25% canopy cover. However, the predicted loss of ash trees will make this much harder to achieve.

5.6 Carbon Sequestration

5.7 Trees help to reduce the impact of climate change by taking carbon out of the atmosphere and storing it in the timber which helps to absorb carbon emissions of the City, Fuel wood produced from sustainable woodland management is a source of carbon neutral fuel. Around 6% of the carbon emissions of the City are sequestered by trees each year.

5.8 Local Flooding

5.9 Trees reduce surface water runoff and help prevent flooding. All parts of the City are susceptible to flooding due to surface water runoff. Trees in catchment areas delay and reduce runoff into water courses. Trees are also important components of sustainable drainage schemes.

5.10 Human Health and Wellbeing

5.11 The City's trees and woodlands provide recreational opportunities and encourage a healthy lifestyle. The landscape of woodland and individual trees generates a feeling of wellbeing and relieves stress for residents making a contribution towards better health.

5.12 Providing Recreational Resources

5.13 In the UK it has been estimated only one third of the population does the recommended level of exercise. The estimated cost of ill health due to obesity is £1 billion per year. The City's green space and woodlands encourages outdoor recreation and a healthy lifestyle.

5.14 Reduction of Air Pollution

5.15 Air pollution from vehicles and industrial processes produces minute particles known as particulate matter as well as gasses such as ozone, nitrogen dioxide and sulphur dioxide. These present a risk to health; it has been estimated around 30,000 deaths in the UK are attributable to air pollution. Trees and woody shrubs along the tree lined roads in the City trap particulates on the leaves and take in gasses through the pores lowering the risk to health.

5.16 Provides a Link with Past Lives and Landscapes

5.17 The City's woodland and open space preserve archaeological remains and features that may have been lost in developed areas. Bretton Woodlands have preserved the same boundaries for centuries and were former monastic holdings. It is possible that ash has been a major component of the woods since Saxon times.

5.18 Noise Reduction and Screening

The road system within townships, designed by PDC, was inspired by the American Parkway Movement. Trees provide both noise reduction and screening to the major road arteries within the City.

5.19 Biodiversity and Wildlife Habitats

5.20 The trees and woodland throughout the City provide a wide range of habitats for wildlife. In Bretton woods it should be noted that the main tree component is a Local Nature Reserve and that part of the Council owned woodland in Hampton is designated a SSSI

5.21 Landscape

5.22 The landscape impact in the short term will be significant. This applies particularly to free-standing trees throughout the City and roadside trees in rural areas. In urban situations replacement planting will be essential to maintain tree cover. However, trees must be planted in appropriate positions with proper room for development using a range of species and genera. The losses caused by ash dieback will, to an extent, provide the opportunity to rationalise planting positions in line with the Council's Right Tree in the Right Place Framework.

5.23 There will be some areas of pure ash in the tree belts where there is potential to lose screening and landscape amenity and priority will be given to replanting in these areas.

5.24 In the rural areas ash undoubtedly forms a significant feature of the landscape as both field and hedgerow trees and components of small woodlands.

5.25 In the in the worst-case scenario of 90% loss of ash the landscape character in the Bretton Ancient Woodland would be changed creating more open woodland with fewer large standards and hazel replacing ash as the understory species.

5.26 Environmental

5.27 Ash is estimated to make up around 18% of roadside belts in the townships and main routes around the City and the death of clusters of ash could produce gaps reducing screening and potentially threatening the stability and resistance to storms. The belts are important both in terms of noise reduction and trapping particulates from vehicle exhausts.

5.28 Biodiversity

5.29 A report prepared by the Joint Nature Conservation Committee in 2017 identified 1,058 species associated with ash including 12 birds, 55 mammals, 78 vascular plants (these use the ash woodland habitat, not the trees themselves), 58 bryophytes, 68 fungi, 239 invertebrates, and 548 lichens. However, only forty-four species have been identified to be dependent on ash: 11 fungi, 29 invertebrates and four lichens; and 62 species were classed as highly associated. Therefore many of these species can adapt to other tree hosts and woodland conditions. If 90% of the City's ash are lost there will be an impact on many of these species, particularly those that are ash dependant. Conversely, an increase in dead wood may provide increased habitat for some species particularly invertebrates.

5.30 Ecosystem Services

- 5.31 The benefits provided by the City’s trees in terms of regulating pollution, air quality and surface water runoff were assessed in 2018 by National Capital Solution’s using i-Tree Eco (V6) software. The benefits totalled £ 38, 000,000 over 80 years with a further £ 11,000,000 for carbon storage.
- 5.32 However, these figures were far outweighed by the value of the amenity provided by the City’s trees calculated to be more than two billion pounds. It can be seen that, as ash make up a significant proportion of the tree stocks, either the 90% or 50% loss scenarios have serious financial and practical implications.

6. Impacts on the Council’s Tree Stock

- 6.1 The impact on the Council’s tree stock needs to be considered in terms of the three categories of tree cover in the city.
- 6.2 **Ash Trees in Streets, Parks and Public Open Spaces**
- 6.3 It seems inevitable that a large proportion of the 2904 ash trees in the City will succumb to the disease and there will be a loss of amenity that will need a concentrated effort to remove and replace dead or badly infected specimens and replace them with trees of other species. Most of these trees are in high target areas and will present a health and safety risk if left unattended.
- 6.4 Currently, infection rates in the Council tree stocks are very low. However, the spread of the disease to the west and north of the City has had an impact on other landowners in the area such as Milton Estate that has undertaken substantial clearance of diseased trees recently. Given that Bretton Ward has by far the most ash trees in the City and is situated close to what appears to be the direction of travel of the disease it was therefore chosen for a trial survey to assess the current level of infection. It was completed in October 2022 and results are given in Table 2 below:
- 6.5 **Table 2 Results of a Survey of Ash in Bretton Ward Showing the Percentage of Trees Infected**

Dieback Class	No. of Ash trees	Percentage
1	234	59
2	149	37.5
3	8	2
4	0	0
Unrecorded	6	1.5
Total	397	

- 6.6 It can be seen that no severely infected trees (Class 4) were noted in the survey and only 2% of the trees in the Ward had crown dieback of 75% or more (Class 3). This contrasts with the Bretton

Woodland results where infection rates are considerably higher. This situation is expected to worsen in the next two to three years. The condition of the ash trees will be monitored regularly in line with the standard tree health and safety policy for tree Inspections. Given the potential high targets, all trees in Class 3 and 4 will be removed and replaced with a new tree of a different species (Replacements may not be planted in exactly the same position). This situation applies to all wards within the City and there should be contingency sums made available to cover additional tree work, replanting and maintenance costs resulting from the disease.

- 6.7 This strategy considers two possible scenarios: 90% of the ash requiring removal and 50% of the ash requiring removal within 10 years. Working on an average cost of £500 per tree to fell, remove and plant a replacement it can be seen that possible costs for the two options are significant. Based on a total stock of 2904 ash in streets and open spaces, estimated costs over a ten-year period are as follows:

Percentage lost from total of 2904	Failed Tree Numbers	Estimated cost per Tree (£)	Total Cost (£)
90%	2614	500	1,307,000.00
50%	1452	500	726,000.00

6.8 Ash Trees in The Legacy Tree Belts Inherited from PDC

- 6.9 Many of the belts adjoin public roads, formal footpaths and cycleways and private gardens. As the trees reach a stage where they become dangerous it will be necessary to remove them promptly. As for street trees, ash with class 3 and 4 levels of dieback will be removed. However, replacement planting may not be necessary in a dense mixed woodland situation and any tree clearance from mixed groups and not exceeding 20% of the total number could be incorporated into the planned thinning programme that has an existing felling licence. For pure areas of diseased ash or where ash form a high percentage of the trees, further felling permission will be required unless the trees are immediately dangerous.
- 6.10 Where gaps appear in the tree belts it is expected that these will be rapidly filled with natural regeneration of both ash and other broadleaved species. Norway maple (*Acer platanoides*) is found in many of the belts and regenerates profusely. Sycamore and birch will also rapidly colonise gaps in the canopy. Although Norway maple and sycamore are not native species, they are already a component of the tree stock in the City, well adapted to the conditions and will be allowed to develop to maturity.
- 6.11 The tree belts were well planned by PDC in terms of future structure and are generally species rich with a range of conifer and broadleaved species in an intimate mixture. The loss of most of the ash trees will, in most areas, leave the belts relatively intact. The belts are very dense and the loss some or all of the ash will create gaps in the canopy, but these will allow other adjoining trees room to develop full crowns. Also by letting light reach the woodland floor, it should encourage natural regeneration of tree species and woodland flora. The gaps should improve the structure of the woods, and dense natural regrowth provides good habitat for woodland birds and other

wildlife. The increase in dead wood will provide improved habitat particularly for birds and invertebrates.

6.12 In those tree belts that have limited public access and clear of roads and footpaths dead trees will be retained and allowed to disintegrate naturally.

6.13 With regard to the cost of clearance, the average tree size in the woodland belts is generally smaller. However, trees edging roads and private properties will need careful removal and potentially traffic control during clearance operations. Normally trees will not be replanted, and the areas allowed to regenerate naturally hence the estimated cost over a ten-year period has been reduced accordingly.

Percentage lost from an estimated 17,020 trees	Tree Number	Estimated cost per Tree (£)	Total Cost (£)
90%	15318 (less retained dead 33%) = 9813	350	3, 434,550.00
50%	8510 (less 33% retained dead) = 5957	350	2,084,950.00

6.14 Ash Trees in Bretton Woodlands Ancient Woodland

6.15 The Ancient Woodland in Bretton includes up to 80% ash and on western side of the City is close to, what appears to be, a wave of infection coming in from the northwest. Milton Estate have had to undertake extensive removal of diseased trees from their adjoining woodlands recently. A survey of the condition of ash in Bretton Woodlands was undertaken in October 2022 to gauge the spread of the disease. Table 3 (below) shows the distribution of the infection classes within the woodlands. It can be seen that 6% of the trees are within Class 4 and 11% in Class 3. Therefore 17% of the trees in the wood have less than 50% live crown.

Table 3 Results of a Survey of all Ash in Bretton Woodlands Including The Infection Class

Class of Damage	Tree Numbers			Bretton Woods Total
	Grimshaw Wood	Pocock's Wood	Highlees Spinney	
Class 1 – 100% to 76% of the Crown Remains	1009	332	163	1504

Class of Damage	Tree Numbers			
	Grimshaw Wood	Pocock's Wood	Highlees Spinney	Bretton Woods Total
Class 2- 75% to 51% of the Crown remains	538	117	71	726
Class 3 – 50% to 26% crown remains	234	53	17	304
Class 4- 25% to 0% of the crown remains	84	79	10	173
Totals	1865	581	210	2707

- 6.16 It can be seen that the woods contain a large number of infected trees which is consistent with the observed spread the disease more prevalent in the north and west of the City. The figures in Table 3 do not include infection in small naturally regenerated trees under 75 mm diameter at 1.5 m.
- 6.17 In the last Woodland Management Plan revision, prepared in 2019, the spread of ash dieback within the woodlands was anticipated and a process making small clearances and enrichment planting with other native broadleaved species was instigated. Ash dieback has worsened considerably with many of the mature trees showing crown dieback symptoms.
- 6.18 The twenty-year Woodland Management Plan for the area produced in 2013 was revised in 2018 in the light of the anticipated onset of ash dieback. A policy of creating small regeneration areas throughout the woodland centred on trees identified as in poor condition and in need of removal for health and safety purposes and carrying out enrichment planting with other native broadleaved was incorporated in the plan. These clearances were planned to cover 12% of the area during the 5-year period up to 2024. The method used was felling selected ash in poor condition and coppicing all ash and hazel stools in a 10m radius of the selected tree.
- 6.19 The work was implemented in 2019 completing 48 coupes through the woodlands. These were planted and are establishing well with low levels of deer damage and vandalism. The next round of clearances is due for 2024 when additional coupes are scheduled in the plan.
- 6.20 The aim of this work is to reduce the proportion of ash in the woodlands, by felling trees in poor condition, coppicing old stools and enrichment planting with other native broadleaved tree and woody shrub species, rather than remove as completely. This includes retaining some ash even if dead and dying for the conservation benefits, they provide. In particular, individual ash showing tolerance to ash dieback are to be monitored and preserved. Small areas of felling and coppicing

and replanting are spread evenly over all the woodlands producing a varied and habitat rich woodland structure. Hazel will largely replace ash as the coppice understory centred around maturing broadleaved standards.

- 6.21 Based on the recent (Oct 2022) survey where 17% of the ash were found to be in poor condition (173 trees in category 4 and a further 301 in Category 3), the rate of clearances will need to be increased during the current 5-year plan period. In these Ancient Woodlands no action is not a viable option if the conservation value is to be preserved.
- 6.22 The following cost estimate is based on a per tree basis with an allowance for retaining a proportion of the trees as standing dead wood.

Percentage lost from an estimated 2707 trees	Tree Number	Estimated cost per Tree (£)	Total Cost (£)
90%	2436 (less retained dead 33%) = 1633	350	571,550 00
50%	1353 (less 33% retained dead) = 907	350	317,450.00
Additional coupes needed beyond those in WMP	57	1000	57,000.00

- 6.23 All the cost estimates provided above are at current rates with no allowance for inflation. While the scenarios cover a 10-year period the progress of the disease in the city could be much quicker based on the speed of spread in other areas of the Country.
- 6.24 The impact of the disease will increase the cost of administration needed to deal with applications for tree work on ash trees covered by TPO's and situated within Conservation areas. Further monitoring and management costs will also be incurred. The situation will require maintaining adequate staffing levels to deal with the problem.

7. The Delivery Plan

- 7.1 It will be necessary to ensure sufficient funds and resources are available to deal with the worst-case scenario. From the above surveys and estimates it seems the costs of dealing with the worst-case scenario (90% Loss) over 10 years would be in excess of five million pounds.

7.2 The approach to dealing with the problems created by ash dieback will be to, as far as possible, incorporate clearance of diseased trees into the standard Council work programmes for its own tree stock. In some cases it will be necessary to increase the frequency of monitoring to ensure that, as far as is reasonably practicable, diseased trees do not present a risk to the public.

7.3 **Delivery of the ADAP in Streets, Parks and Public Open Spaces**

7.4 In the case of Council owned street trees and trees in public open spaces, health and safety tree inspections are currently carried out every three years. However, particularly prominent trees or trees that are in need of more frequent inspection are checked annually. From 2023, in Wards where a significant incidence of Ash dieback is noted, all Council owned ash will be added to the high frequency inspection regime of annual inspections. There will be a presumption that trees in Classes 3 and 4 will be felled, the timing of which will be assessed in line with the Council's agreed risk evaluation protocols. In the case infected trees in other Classes the level of infection will be recorded on the Council's tree database software, along with a routine risk assessment using the Tree Hazard Risk Evaluation and Treatment System (THREATS). Where trees are felled a suitable replacement will be planted in the future planting seasons.

7.5 **Delivery of the ADAP in The Legacy Tree Belts Inherited from PDC**

7.6 With regard to ash in the tree belts the current inspection regime is based on periodic basic inspections on a three-year cycle with particular attention to trees adjacent to roads, private property and public footpaths. This procedure will continue but from 2023 all ash noted in Classes 3 and 4 will be tagged plotted and felled and removed, the timing of which will be assessed in line with the Council's agreed risk evaluation protocols. Ash trees in other classes close to roads and footpaths and private property will be assessed using THREATS and only tagged and plotted if presenting a significant risk. The trees will only be replaced if they were the main component of the woodland, or their loss will mean a significant loss of local amenity. Where possible necessary tree removals will be incorporated into the thinning programme for the woods.

7.7 Areas of natural regeneration will be managed by thinning to an initial spacing of 2500 per ha (2 m centres) favouring any resistant ash. Thinning to take place before the re-gen reaches 90 cm in height. If there is a threat of browsing by rabbits, hares or deer, thinned trees to be fitted with individual tree shelters. In some areas re-generation will be predominately Norway maple which will be acceptable. However, when thinning the aim should be to promote species diversity.

7.8 **Delivery of the ADAP in Bretton Woodlands Ancient Woodland**

7.9 In Bretton Woodlands all necessary work indicated in the 2022 tree health and safety survey will be completed in line with standard procedure. The current health and safety inspection regime is inspecting all trees on a three-year cycle, this will be changed to a two-year cycle. This is because of the poor condition of the ash woodlands as revealed by the 2022 survey. Therefore, the next survey will be in 2024. The planned programme of clearing small areas for woodland enrichment planting will be increased to 102 coupes in 2024. The re-scheduled 2024 survey will further advise the position of the coupes. The tree removals in the coupes will be in addition to any work on trees edging the roads or public footpaths recommended in the in the woodland health and safety survey.

- 7.10 As for the tree belts areas of natural regeneration will be managed by thinning to an initial spacing of 2500 per ha (2 m centres). However, in these ancient woodlands, favouring only resistant ash, other native broadleaved species, and yew. Non-native species such as Norway maple and sycamore will be removed in thinning. Thinning to take place before the re-gen reaches 90 cm in height. In areas of pure ash re-generation, it may be difficult to single out resistant trees these dense groups which will be left to develop naturally without thinning. If there is a threat of browsing by rabbits, hares or deer, thinned trees to be fitted with individual tree shelters.
- 7.11 **General Delivery Action Points**
- 7.12 All tree work and ash removals will be completed by Aragon Direct Services using in house staff and approved contractors working under their standard contract arrangements. Aragon Direct Services will, where appropriate, seek to use mechanised felling techniques such as a tractor mounted tree shear and forwarder to extract the timber. In the event that large numbers of trees dying the use of mechanisation is likely to be the most economical approach to the problem and reduce the number of skilled operations needed.
- 7.13 Where practicable timber and firewood will either be sold or arrangements for an agreed allowance for timber and firewood made against the cost of clearance. In woodland situations, where safe to do so, a proportion of stem and branch wood will be left in conservation piles.
- 7.14 The disease is now endemic throughout most parts of the UK. There are no specific regulations regarding removing ash timber or branches. However, it would be prudent to avoid walking or driving a vehicle from an infected area into a non-infected area without following good biosecurity practise such as cleaning tools that have been used to cut up infected trees and washing down tyres and shoes after walking in an infected area. In a household situation clearing leaves in the autumn may help reduce the number of fungal spores.
- 7.15 To defray the cost of the ash clearance, particularly in its woodlands, the Council will apply for any government aid for which it is eligible via Countryside Stewardship or Forestry Commission Schemes or any other additional government aid that may be available.
- 7.16 The management of roadside and highway trees is part of Aragon Direct Services brief and trees with the potential to fall on the roadside are included in the regular inspection cycles. Trunk roads within the Unitary area are the responsibility of Highways England. Some of the sections of trunk roads through the townships are lined with tree belts. Dealing with dead ash in these areas will inevitably require traffic control measures that could cause delay and disruption while in progress. Liaison with Highways England will be needed as road closures could facilitate work on nearby council owned trees or woodland.
- 7.17 Many roadside trees will be in private ownership and when completing routine inspections any privately owned ash trees noted that fall into Class 4 should be reported to the internal Highways department who will log the report and contact the owner to request, they monitor the trees condition and take appropriate action. If action is not taken by the tree owner, where the tree endangers the passage of vehicles or pedestrians, the Council will consider completing the work and recovering the costs from the owner as allowed under statutory provision.

- 7.18 Requests to remove diseased ash covered by TPO or those that fall within a Conservation area will be handled promptly. Any ash trees with Class 3 or 4 dieback (established by site inspection or by photographs), other than veteran or ancient specimens, will be processed within the normal timescales. However, this is subject to proper assessment of ecological aspects such as bat potential and nesting birds. In the case of TPOs, replanting will be required and in Conservation Areas owners will be encouraged to replant.
- 7.19 Veteran or ancient specimens should normally be retained as conservation features even if dead. The Council's Tree Officers will consider requests to undertake tree work to facilitate safe retention of these trees.
- 7.20 Applications for pre-emptive felling of ash will be rejected. Where planning applications have ash trees near a potential development, they must be given full consideration in terms of BS5837:2012. In the case of severely affected (Class 3 and 4) trees, it will be acceptable to grade them under the British Standard as "U category" trees that will not provide a contribution for more than ten years.

8. Recovery from Ash Dieback

- 8.1 Ash dieback is a natural phenomenon, and it remains difficult to predict the ultimate status of the ash population in the area. In Scandinavia, where the fungus arrived before it reached the UK, over 90% of ash were killed. The Woodland Trust have estimated up to 80% of UK ash may be killed.
- 8.2 Natural re-growth of resistant strains of ash and other species has the potential to make good some of the losses and it is important that natural regeneration is managed and persevered.
- 8.3 Replanting the lost trees with a range of other genera and species will be an important element in the restoration process. The work will be included within the Council's annual tree planting programme. Initiatives such as Forest for Peterborough, managed by Peterborough Environment City Trust (PECT) which aims to plant one tree for every person living in the City by 2030 has the potential to make a contribution to this regeneration process by planting up woodland areas where patches of pure ash have succumbed to the disease. In the worst-case scenario, around 20,000 Council owned ash trees may be lost it seems that future planting by the Council and other stakeholders has the potential to make good the losses. A key point is that all planted trees must be protected at the time of planting with individual tree shelters a minimum of 60 cm and maintained for five years after planting including controlling weed growth, replacing all failures and checking and repairing guards.
- 8.4 In the wider rural area, as far as possible, landowners will be encouraged to replant lost trees with other native broadleaved species. Where trees are the subject of a TPO landowners will be required to plant replacements. Any ash removals that need a felling licence from the Forestry Commission will be the subject of a replanting condition. In the case of trees that have no protection, there will be no legal obligation to replant.
- 8.5 There has been extensive research into breeding resistant strains of Ash for example the government backed Nornex project, led by the John Innes Centre near Norwich. Resistant ash are

not yet commercially available but offer hope re-establishing ash in the future. As soon as resistant plants become commercially available they will be incorporated into the replanting programme. However, this will be on a trial basis using no more than 10% of total replanting in the first instance.

- 8.6 If a proportion of ash trees survive there are other potential threats that could lead to further losses of ash. For example, in the USA, ash trees have been devastated by a species of wood boring beetle called the Emerald ash borer (*Agrilus planipennis*). Attack by this insect normally results in the death of the tree due to a maze of larval feeding tunnels under the bark. This pest has yet to reach the United Kingdom but there are breeding populations in Russia and eastern Europe as far west as Ukraine and the gradual spread of the insect across Europe seems likely. Wood boring beetles thrive when trees are in a weakened condition so ash trees infected with ash dieback would rapidly become a target
- 8.7 Council staff will be fully apprised of the risk presented by Emerald ash borer and other exotic pests and other pests and diseases that may pose a threat to Peterborough's trees. Prompt action will be taken to report and deal with any sightings and incidences of damage in line with current Government recommendations from DEFRA and the Forestry Commission.

9. Acknowledgements

- 9.1 Some of the tree data and information included in this ADAP was provided by Chris Jackson, Street Care Manager, Aragon Direct Services and members of his team including Neil Horsewell and Jo Farman.

10. Lead Delivery Partners

- 10.1 The Council will aim to deal with its own tree stock using its existing resources but will liaise with other large local landowners, organisations and stakeholders on the problem of ash dieback particularly where co-operation would be advantageous to all parties.