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CHALARA MANAGEMENT PLAN FOR WALES

March 2013

Summary

This Chalara Management Plan is an updated version of the Defra interim Chalara Control Plan published in December 2012 and it:

- provides an update on the action Welsh Government and others have already taken in response to the disease;
- sets out new science-based and proportionate action that will be taken now that our understanding of Chalara and the costs and benefits of action has developed further; and,
- outlines further work that will be undertaken to further develop our understanding of the disease.

The key actions are:

- **Objective 1 – Slowing the spread**
 - Remove recently planted infected ash
 - Review the restrictions on import and movement of ash trees
 - Continue surveillance
 - Review the potential for protected zones
 - Record the progress of the disease
 - Continue research on the biology and management of Chalara
 - Trial potential treatments
- **Objective 2 – Developing resistance**
 - Pursue genomic research and field trials
- **Objective 3 – Encouraging citizen, landowner and industry engagement in surveillance, monitoring and action in tackling the problem**
 - Continue to provide advice and guidance
 - Support and review the results of ObservaTREE, the OPAL Tree Health Survey, and volunteer naturalist recording of species impacts
- **Objective 4 – Building resilience in woodlands and in associated industries**
 - Support the replacement of recently planted ash
 - Liaise with amenity tree suppliers to minimise business impacts
 - Take account of ongoing research on the ecological impacts of Chalara when reviewing management guidance

Welsh Government will develop the next version of the Chalara Management Plan for publication by March 2014.

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Introduction

Chalara fraxinea, a fungal pathogen which causes dieback of ash trees, was discovered for the first time in Great Britain in a nursery in Buckinghamshire in February 2012. Soon after, in October 2012, it was also discovered in the wider environment in woodland in Norfolk. So far, the disease has only been found at recent planting sites in Wales; there is currently no evidence that it is present in the wider environment. This plan is largely focussed on native ash, *Fraxinus excelsior*. Other *Fraxinus* species vary in their susceptibility to Chalara.

Welsh Government believes the economic and environmental resilience of our forests, wooded areas and other trees, and the associated industries go hand in hand. Our trees, woods, forests, hedgerows and landscapes are a vital national asset providing multiple economic, social and environmental benefits. Woodlands alone in Britain provide at least £1.8bn per year of social and environmental benefits. This Management Plan has been guided by Welsh Government's overall policy on forestry which is based around a clear hierarchy of priorities set out in the Wales woodland strategy, *Woodlands for Wales*.

The management of our trees and woodlands, whether for timber production, for their biodiversity and landscape benefits, or for access and recreation, is a long term endeavour. The full impact of Chalara will not be seen for at least a decade as infected trees will continue to survive for a number of years, but evidence from other European countries has already shown the impact that this disease can have. Welsh Government will continue to work with nurseries, land owners, environmental and other groups to develop a more strategic approach to understanding the economic, social and environmental impacts of the disease, and to secure the long-term resilience of woodlands and other trees and the supply chains that surround them.

The scientific advice is that it will not be possible to eradicate Chalara and all the administrations of the UK have discussed with stakeholders and other interested parties what appropriate action might therefore be taken. Following these discussions, Welsh Government and a core group of stakeholders have concluded that the objectives, which were set out in the December 2012 interim Control Plan, should remain for now. These are:

- to reduce the rate of spread of the disease;
- to develop resistance to the disease in the ash tree population;
- to encourage landowner, citizen and industry engagement and action in tackling the problem; and,

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- to build economic and environmental resilience in woodlands (and other areas such as hedgerows, parkland etc.) and in associated industries.

Given that the disease cannot realistically be eradicated, in the future increasing emphasis needs to be placed on adaptation and building our economic and environmental resilience to it. Action will therefore focus on:

- in the long-term, producing and establishing more resistant populations of ash trees, and helping our woodlands adapt so that they continue to provide a wide range of benefits and services; and,
- in the short and medium-term, taking proportionate, cost-effective action to reduce the spread of Chalara, and supporting landowners, woodland managers, nurseries, and others to mitigate the impacts of the disease.

Non-woodland trees

This Management Plan focuses heavily on tackling Chalara in woodland settings. We are aware that, over recent years, many ash trees have been planted in other settings, from the sides of roads and railway lines, to parks, gardens and other parts of the public realm. We recognise the importance of addressing the impact of Chalara on those sites and the next phase of our work with stakeholders in the year ahead will examine the best ways of doing so.

Devolved Administrations

We are working with the Devolved Administrations to ensure a co-ordinated approach based on a shared evidence base and similar sets of objectives for tackling the disease. Implementation will reflect the policies and circumstances in each country. **Therefore, the implementation measures in this Management Plan relate to Wales only.**

Key facts about ash in the United Kingdom

- Ash trees in woodlands of 0.5 hectares or more in size cover 141,600 hectares in Great Britain (5.4% of total woodland) and 17,600 hectares in Wales (6.8% of total woodland). In addition to this there are a further 38,500 hectares of ash in Great Britain's woodland of less than 0.5 hectares (2,000 hectares in Wales). Ash is estimated to make up 22 million tonnes (15%) of the standing UK hardwood resource stock.
- Ash is widely distributed in Wales except in the highest mountain regions, although some of the largest concentrations are along the line of the Cambrian Mountains and in parts of Snowdonia.

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- Ash is one of the most common trees in hedgerows, parks and gardens and along the road and rail networks. It is also one of the most frequent and widely dispersed veteran trees, often pollarded and very important for wildlife.
- Ash timber is one of the most valuable native hardwoods, with a variety of high value uses. Ash also makes excellent firewood. It is favoured by timber growers because it is less prone to bark stripping by grey squirrels (*Sciurus carolinensis*) than other hardwood species.
- The supply chain for young ash and more mature amenity trees is complex, involving nurseries, retailers and landscapers. There are estimated to be 60-80 enterprises in the UK nursery sector dealing in ash.
- Approximately half of young ash trees planted in the UK are imported. The annual value to UK importers of trading young ash trees is tentatively estimated at up to £300,000.
- Woodlands and trees generally provide a range of services to us, known as ecosystem services, which are valuable to our prosperity and wellbeing. These include renewable energy, sustainable materials, recreation, landscape, clean water and flood alleviation, cultural heritage, carbon sequestration, and biodiversity.

Further information about the value of ash in the UK can be found in Annex A.

Improving our understanding of the disease

We have sought to increase our knowledge about the spread of the disease based largely on experience in other European countries where, for the most part, no action has been attempted to slow it. In addition, Defra commissioned a team from the University of Cambridge to model the potential spread of Chalara, based on the latest evidence, and as a part of this to look at the impacts of any action which could be taken to slow the spread. In parallel, the surveillance exercise has continued to develop our understanding of the current prevalence of the disease in Great Britain both in established mature trees in the wider environment, and in younger newly planted trees.

Collectively, this work is telling us that:

- Our understanding of the biology and epidemiology of this disease is still evolving.
- If the climatic conditions are favourable, airborne Chalara spores can survive for days and travel tens of kilometres.

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- Using the currently available science and technology, it will not be possible to eradicate Chalara.
- There is currently no known treatment or cure for the disease.
- Currently available fungicides are unlikely to be effective at eliminating Chalara from infected trees, although new products are being developed. Over time, even if action is taken, the disease will become prevalent throughout Great Britain.
- Established, mature ash trees appear to take years to die and often die from secondary infections. This may mean that the full impact of the disease is not seen for a number of years. Younger, recently planted trees succumb much more quickly.
- The value – environmental, social, and economic – of ash trees in Great Britain varies from region to region, and according to other factors such as proximity to towns and cities, the habitat in which it is situated etc.
- Whilst action could be taken to slow the spread of the disease, this may only reduce the rate of spread by a few years.
- Action to slow the spread would still bring some limited benefits. If effective, it would allow for a more considered approach to managing the decline of ash in our woods, and rural and urban landscapes.

Modelling the impact of Chalara

This section summarises the modelling work done by the University of Cambridge. Given our limited knowledge of the disease the modelling inevitably involved making many assumptions and the results must therefore be considered preliminary and indicative.

The modelling involved work to:

- ascertain the likelihood of airborne incursion from the continent;
- predict the spread within Britain; and,
- predict whether or not the spread and its impact will be similar across Britain.

The modelling work to date indicates that:

- Meteorological models strongly support the likelihood of airborne incursion, that is that the disease was carried by the air, wind currents etc. across the Channel from Europe. The whole of Great Britain therefore continues to be at risk from further airborne incursion either from continental or domestic sources of infection.

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If the climatic conditions are favourable, airborne Chalara spores can survive for days and travel tens of kilometres.

- Based on modelling the spread of the disease over time (see below), the risk of infection in Wales by 2017 is low. The highest risks of infection are in south east England.
- Given that mature trees may take several years to succumb, the spread of the disease that has been modelled does not reflect the timing of the impact on mature ash trees and the landscape. The impacts appear likely to be delayed 5-10 years after infection takes place.
- The likelihood of spores reaching a location can be modelled, alongside predictions of the impact of an infection at any given site. Some areas of Britain are less likely to become infected than others. If infection does occur, then the impact of that infection will vary. Therefore, areas where there is a relatively low likelihood of infection (or re-infection), but where the impact of an infection would be relatively high, are the areas where preventing or delaying infection may be most beneficial.
- The outcome of successful intervention to slow the spread of Chalara may delay the spread of the disease in some regions across Britain for a period of time.

A full report of the modelling work will be published by the University of Cambridge in due course, but the key outputs from the modelling are summarised below.

Map 1 is an output from the Cambridge spread model for Chalara. It shows a prediction of the expected level of infected ash in each county in 2017 created by averaging results for each of the 250m x 250m squares used in the model. The infection risk is expressed in relative terms as high (red), medium (yellow) or low (green).

The majority of windborne spread is likely to take place near existing cases in the wider environment, and therefore the highest levels of infection will be concentrated in the easternmost counties of England. The map shows where infection is likely to be; this will normally occur ahead of symptom expression because there is a lag, especially for older, larger trees, between infection and detection of symptoms.

Map 2 is also an output from the Cambridge model and shows the relative hazard from Chalara to ash in Great Britain. The model calculates the area of ash that would become infected by an isolated new focus of infection in an otherwise completely uninfected region. This area is then weighted by an estimate of ash value for recreation, carbon sequestration, biodiversity and timber. The size of the hazard from an infected focus depends on how much ash is present in the local region, and

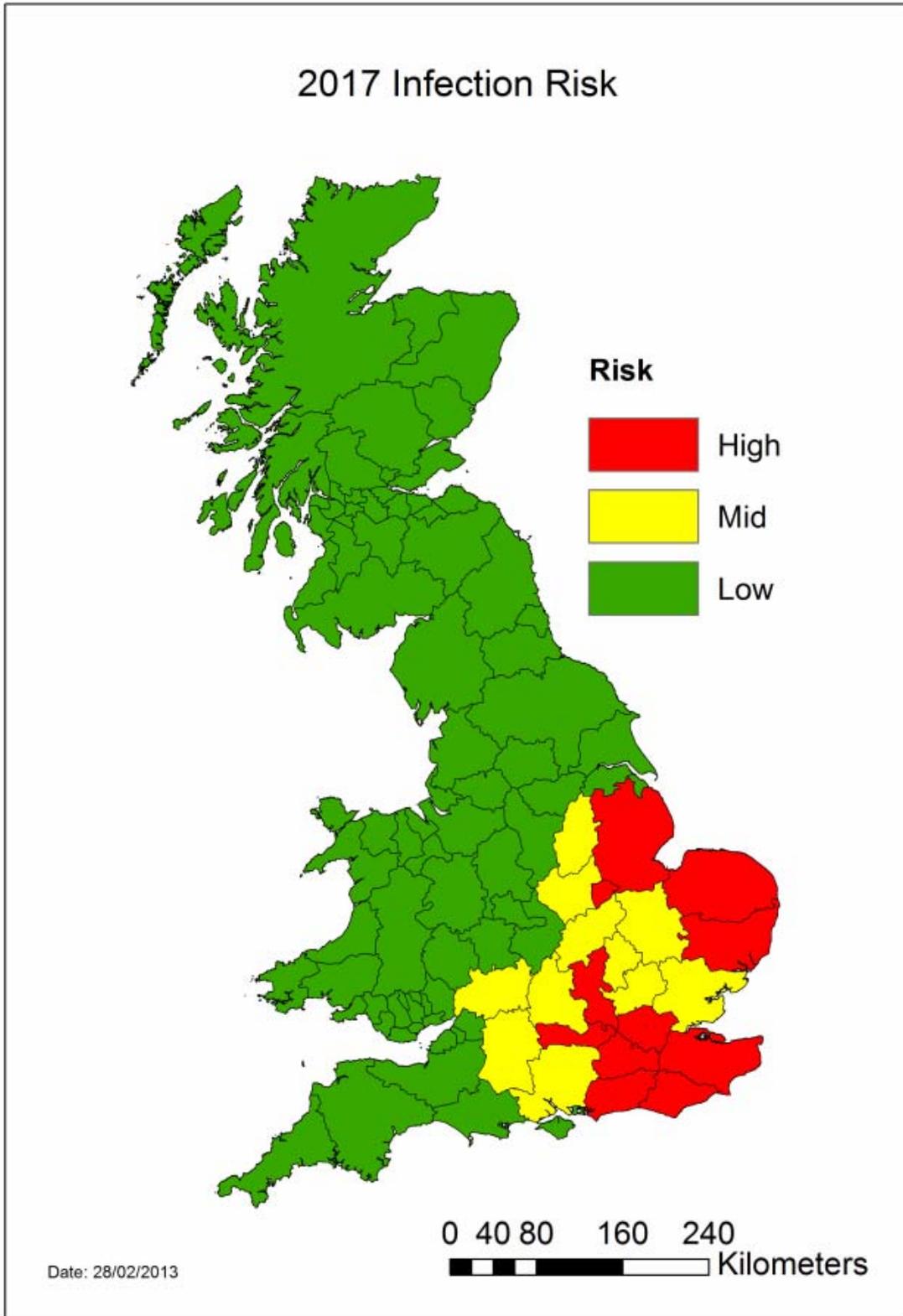
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whether there are gaps in its distribution which are likely to delay spread. The hazard is averaged across each county and then expressed as high (red), medium (yellow) or low (green).

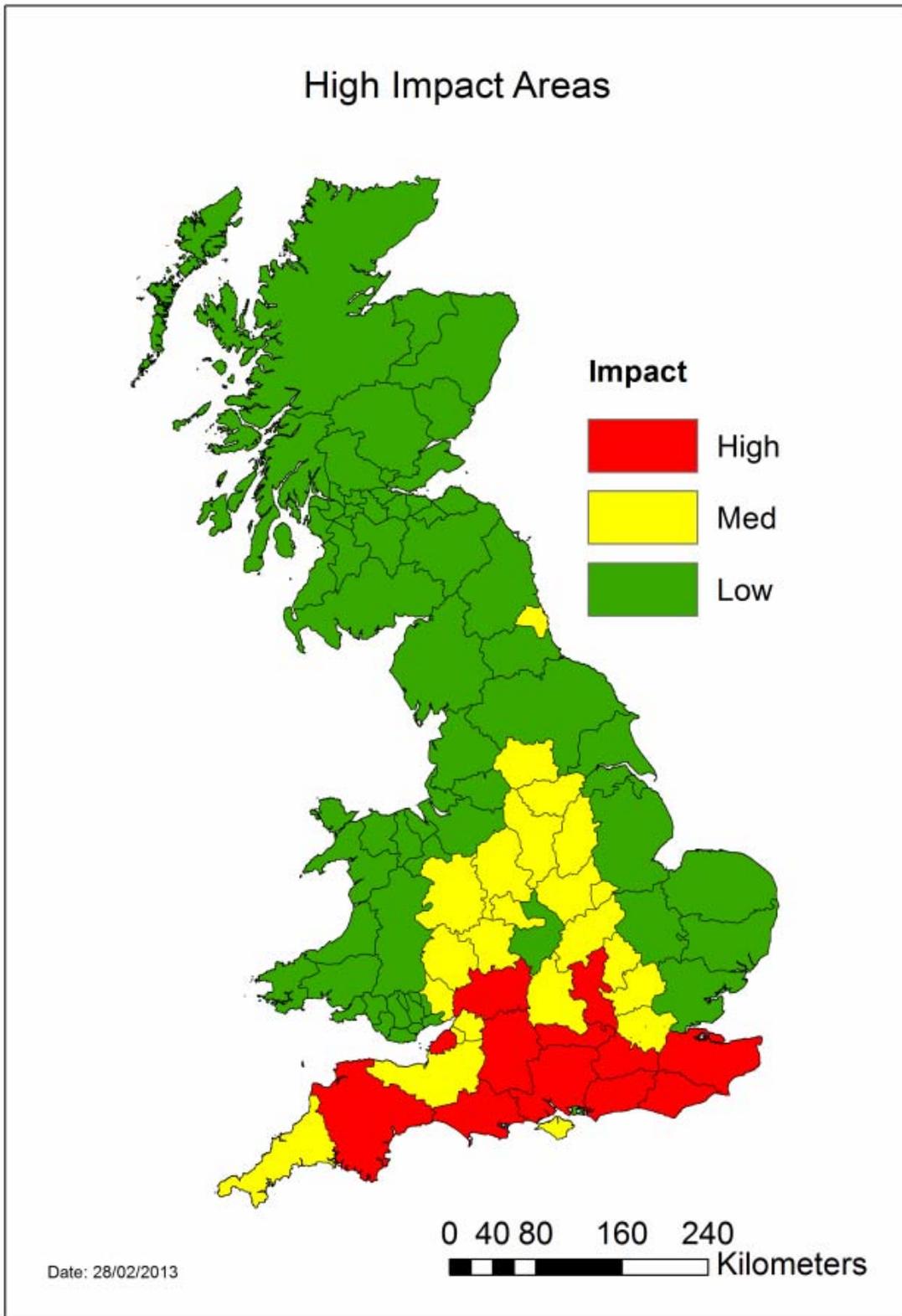
The hazard from new foci of infection is highest in south central England, where ash is most abundant and there are many possible routes of further local spread.

Map 3 combines the two Cambridge model outputs. Areas with a relatively low risk of windborne infection and a relatively high hazard are shown in dark blue. These are areas where interventions, e.g. removing young infected plants, are most likely to be cost effective. Areas in pale blue are those where intervention is likely to be less cost effective, either because of the high risk that these areas will become infected anyway or because the ash that would be protected is of lower value.

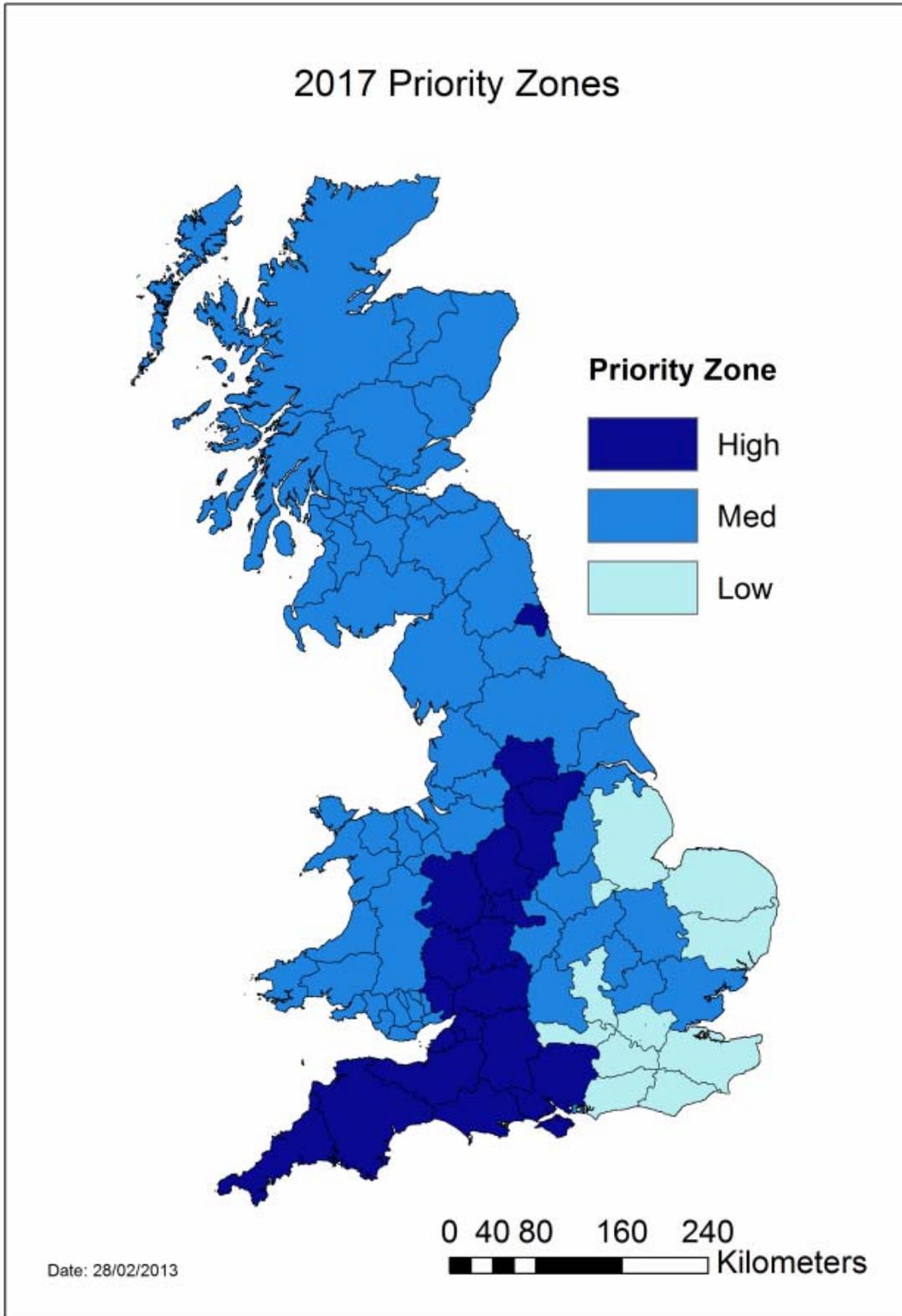
Map 1 – Risk of infection by 2017



Map 2 – Hazard from infection



Map 3 – Priority areas



Welsh Government’s objectives for responding to Chalara

Welsh Government has updated the action that it is taking under each of the four objectives following analysis of further scientific evidence and discussions with stakeholders.

Objective 1 – Slowing the spread

Given the likelihood that the disease cannot currently be eradicated or stopped, there will be limits to the benefits that can be achieved from any action to slow its spread. Welsh Government, in consultation with stakeholders and the scientific community, has therefore considered very carefully whether it should take any further action at all to slow the spread of the disease.

The University of Cambridge modelling work tells us that the effect of slowing the spread of the disease will be relatively short-lived, perhaps buying us a few years at most. This means that we should not rush to take actions such as the felling of trees or mass leaf litter collection. These actions would be costly, potentially have adverse consequences for the environment, and are unlikely to have widespread support of landowners and woodland managers.

Furthermore, trade-offs exist between taking action on Chalara, which is already established in England and Scotland, and directing resources to monitor and protect Great Britain from other potential tree and plant health risks that are not yet prevalent.

While actions are unlikely to prevent the spread of the disease across the UK over time, there are likely to be a range of benefits from slowing its progress. Slowing the rate of spread will allow a more considered approach to managing the decline of ash in our woods and rural and urban landscape. It will allow time for commercially valuable ash, both high quality timber and woodfuel, to be brought to market at a rate that does not adversely affect prices or the ability of the supply chain to absorb it. It will also allow time to further develop silvicultural techniques to create more resilient woodland and to produce new stocks of trees.

Therefore, the Government will pursue a collaborative and largely voluntary approach to slowing the spread in Wales. In the first instance, we will support replacement of recently planted infected ash trees. More details are set out under **Objective 4 – Building economic and environmental resilience in woodlands and in associated industries**, but the basic principles of the approach are summarised here:

- Welsh Government and many stakeholders believe there is value in removing as many recently planted ash trees (i.e. those planted within the last five years) as

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possible and replacing them with alternative species. This is a precautionary approach based on the probability that some of these younger ash trees are already infected, and the possibility that more will become infected within the next few years.

- Welsh Government believes that, over time, landowners and woodland managers would generally wish to phase out ash as it is unlikely to be a viable species for the foreseeable future, and that supporting replanting is a cost-effective way to achieve the objective of removing infected young ash.
- Welsh Government is actively investigating the provision of grant funding to support replacement of recently planted ash trees (i.e. those planted within the last five years) with other species, provided the original planting was grant aided. This support may be available regardless of whether the trees have been found to be infected with Chalara.
- Guidance, based on the latest scientific evidence, will be provided on how to protect the environmental, amenity and economic value of ash trees, and interested parties should develop collaborative approaches in local areas.
- Welsh Government will not be encouraging the felling of mature trees as part of the action to slow the rate of spread. In general, retention of mature trees should be encouraged in order to maximise the potential for regeneration of a new population of disease resistant trees. This does not interfere with owners' normal rights to fell subject to licence.
- Any removal should be phased to ensure, as far as possible, that there is not a mass felling of uninfected ash, particularly at high value sites, as this would have the potential to reduce its timber value and have a disruptive effect on landscape, wildlife and woodland habitats.

Welsh Government wishes to avoid statutory action if possible. However, there may be situations where, to protect sites of particular value, Welsh Government would wish to take additional action beyond a purely voluntary approach to mandate the removal of infected young or old ash trees. This could be for a number of reasons, for example:

- a new source of infection is at risk of spreading to the wider environment in an area where the disease is not yet present; or,
- an isolated wider environment site is a risk to an otherwise uninfected area.

If landowners feel that infected trees on their property are a health and safety risk then they will be responsible for them as they would be for any other diseased tree.

Review the restrictions on import and movement of ash trees

The December 2012 interim Chalara Control Plan stated that the current restrictions on the movement of ash trees would remain in place and the Welsh Government together with the other Devolved Administrations committed to review this by spring 2013. The restrictions were originally imposed to prevent, as far as possible, the disease entering and spreading within Great Britain, and to provide the opportunity to identify disease free areas from which plants could be safely moved. The evidence from the survey and the modelling is that it is unlikely to be possible to demarcate disease free areas within the UK. As set out above, given that Chalara cannot be eradicated, the Government believes that planting of native ash and other ash species of low resistance to the disease should be discouraged, and freeing up the movement of ash at this point in time is not consistent with this objective.

Therefore, while our understanding of the disease continues to develop, Welsh Government supports the continuation of movement restrictions. However, we will keep this under review over the coming months. The movement ban does not currently include the movement of ash timber, including firewood, as Welsh Government does not believe this poses a significant additional risk.

Surveillance and the trace forward exercise

In the December 2012 interim Chalara Control Plan, Welsh Government set out its intention to continue with the exercise to trace sites which may contain recently planted trees from an infected source and to review this approach in the spring in light of further scientific research. The trace forward has been successful in helping to build a more accurate picture of the extent of infection in Wales. A survey of newly planted ash under seven years old and forming more than 20% of the woodlands is now complete. Further surveys of ash from infected nurseries will enhance our understanding of the distribution. It is likely that data on the disease which will come through other routes, such as reporting by landowners, forest managers and the general public will be a cost effective way of keeping a reasonably accurate and up-to-date picture of the spread of the disease. A surveillance strategy is in development and will be reviewed on the same timescale as this Plan.

Protected zones and high-value sites

The interim Control Plan published in December 2012 said that Welsh Government would consider the feasibility of protected zones, and whether some areas of the country could be designated as disease free. Based on our understanding of the current levels of infection and rate of spread, it may not be possible to designate disease free areas or disease free protected zones. The cost of designating and policing such areas could be high, with no guarantee of success, given the prevalence of the disease and its estimated rate of spread. This will be reviewed

after wider environment surveys throughout the summer of 2013 centred on positive sites.

Recording the progress of the disease

As ash trees start to come into leaf over the next few months, it is likely that any infections in the wider environment and on mature trees will become more visible. Summer 2013 will provide the first opportunity to collect data on the extent of Chalara when trees are in leaf in Wales.

Natural Resources Wales working with the Forestry Commission and Fera will keep surveillance and monitoring strategies under constant review. Improved survey techniques will be explored and developed including:

- lower cost aerial surveillance;
- rapid field diagnostic techniques such as Genie machines; and,
- spore trapping.

Reports from landowners and land managers will also help us to gain a clearer picture of the current extent and impact of the disease. The aim will be for reports to be made in a standard electronic format using high quality digital photographs e.g. via Tree Alert.

Future research priorities

Research is being commissioned and other evidence sought as we continue to improve our understanding of *Chalara fraxinea*, how it spreads, and how spread might be slowed and damage reduced. This research forms part of the overarching tree health and plant biosecurity evidence plan.

Defra are commissioning research to address specific questions about the biology and management of the disease. This will, for example, help to refine the epidemiological models that show how the disease may spread across the UK over the next few years as well as identifying if any specific management approaches can reduce the level of damage locally, e.g. by reducing the production of spores from overwintered leaf litter.

The modelling has enabled us to determine how best to target any future tracing of recent plantings in areas of the country, where new foci of infection are more likely to be damaging and less likely to arise other than from windblown spores. We will continue to fund refinements of the models in the light of new information on the spread of the pathogen and its biology.

One significant area of uncertainty is the level of risk posed by infected young trees. Some sites where infected young trees have been growing will be monitored to gain a picture of whether and how the disease develops there, and what proportion of infected young trees present a risk.

We will also investigate the use of DNA tests on filters from existing air quality and pollen monitoring networks to see if these can provide early warning of the presence of windblown Chalara spores. This approach, like other techniques being developed for Chalara, will also have potential for application to other plant diseases.

Cures, treatments and antidotes

Based on our experience of other tree diseases, and experience of Chalara on the continent, we are not expecting to find a treatment which can be widely applied to protect woodland or slow spread of the disease. Treatments may have a role, though, in protecting individual trees or groups of trees, or reducing production of spores, level of damage and rate of spread in some circumstances. Over eighty different chemical treatments have been proposed by companies or individuals. Those which show the most promise from the evidence available will be subject to laboratory and field trials. If the trial results indicate that one or more of the treatments could form an effective part of a containment strategy, the potential for extending the authorisations for the product(s) to cover relevant environments such as amenity or forestry trees will be determined in consultation with the Chemicals Regulation Directorate (CRD).

Objective 2 – Developing resistance

Our best hope of securing the future of the native ash tree *Fraxinus excelsior* in Britain lies with understanding the genetic variability in ash, identifying resistance to Chalara, and facilitating the spread of that resistance sustainably in our ash populations.

To meet this objective, Defra, with other funding partners including the Forestry Commission and the research councils (Biotechnology and Biological Sciences Research Council, BBSRC, and Natural Environment Research Council, NERC), is taking forward a coherent programme of research to identify and exploit resistance in UK ash trees. It will support longer-term selection and breeding to mitigate the impacts of Chalara and includes both cutting-edge genomics and practical field-based screening of ash material that utilises the widest possible range of genetic variability.

The programme of research brings together some of the UK's leading researchers on plant genomics, plant pathogen genomics, tree breeding and plant health from a number of universities, research institutes, government agencies and other groups, as well as Chalara expertise from Europe. It was developed with the input of UK and EU key experts from various science meetings including a workshop on developing resistance convened by Defra's Chief Scientific Adviser, Professor Ian Boyd, on 13 December 2012 and a FRAXBACK European Chalara conference on 13-14 November 2012. The FRAXBACK conference brought together 150 European scientist, officials and stakeholders from 30 countries to discuss the health status of their ash, on-going research projects and significant results as well as research needs.

Genomic research within the programme will aim to provide robust molecular markers for accelerated selection of resistant UK ash genotypes and advance our understanding of the nature of the fungus. Specifically, the genomes of UK strains of *C. fraxinea* and related non-virulent fungi will be sequenced and analysed to provide understanding of the evolution of the fungi, to help elucidate the pathway of spread of the disease into and across the UK, to inform on the mechanisms of attack of Chalara and to enable the development of specific diagnostic tools. Additionally, the genetic work will provide further understanding of the mechanisms of entry of the pathogen into the tree and the pathogen's life cycle, which will inform the practical management measures described in **Objective 1** of this Plan.

Alongside this technology-driven approach, and as an urgent first step, we will commission practical field-based work to identify ash trees of UK provenance which are less affected by the disease. Ash trees of wider European provenance will also be screened as appropriate.

Objective 3 – Encouraging citizen, landowner and industry engagement in surveillance, monitoring and action in tackling the problem

The public response to the threat posed by Chalara has provided a vivid demonstration of just how valued the British ash tree is by woodland and individual tree owners and growers, managers, conservation organisations and members of the public. Welsh Government is committed to tackling the disease through a collaborative approach with stakeholders, and this Plan has benefited from the engagement and expertise of many of them.

Some recent examples have ably demonstrated the commitment to continued voluntary support by stakeholders:

- The rapid and generous response to a request for sites to plant trials of ash to test for natural resistance.
- The time devoted to developing this plan and helping to guide the work of ongoing management.
- The stakeholder response to the unprecedented national survey of ash woodlands in 2012.
- The time and expertise provided by scientists and professionals in helping to develop practical advice and guidance based on sound evidence.
- The interest and commitment shown by members of the public in reporting possible findings of Chalara through the Tree Alert and AshTag apps.
- The 97% response rate to a Chalara survey for Local Authority Tree Officers carried out by the Tree Council in late February.

Advice and guidance

Details of guidance and advice published to support the December 2012 Control Plan are set out in Annex B.

Natural Resources Wales together with the Forestry Commission is reviewing its guidance in light of this Plan. In the meantime, woodland managers, landowners and other interested parties may wish to note the latest position on various aspects of the package of Welsh Government advice and guidance:

- The main source of Chalara spores is from fruiting bodies produced on overwintered leaves and released in the summer months. Circumstantial evidence from the continent suggests that trees in a woodland environment with little or no understorey suffer more disease than trees in streets or parkland. This

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may be in part because more spores are produced from an undisturbed layer of woodland leaf litter than from ground which is swept, mown or grazed. We will work with landowners to identify possible sites where different approaches to management of leaf litter can be trialled and the speed and severity of damage from the disease compared.

- There is likely to be a number of years between symptoms of Chalara ash dieback appearing on a tree and timber quality starting to deteriorate. Further information will be gathered on this question from experience on the continent, and from observations in woods in the easternmost counties of England where infection has been present for longest.
- Research will be undertaken to check on the efficacy of composting in reducing the risk of Chalara spreading with leaves being moved. This research will be based on techniques and protocols used by local authorities and others disposing of large quantities of leaves in areas affected by the disease.

Some of the general guidance on good silvicultural practice will be relevant to those looking to secure the long-term resilience of woods and forests in the face of Chalara.

Citizen engagement

Citizen science is an important part of the response to Chalara and good progress has been made on many of the actions aimed at encouraging citizens, landowners and industry to engage with surveillance, monitoring and action. These include:

- A Defra-funded feasibility study that is already providing evidence to accelerate the development of ObservaTREE, a tree health early warning system using volunteer groups.
- The development of a proposal for an interactive web-based mapping application which will allow the public to explore maps showing the distribution of our woodland areas and native ash population against the extent of known disease.
- The OPAL Tree Health Survey that will provide the public in Wales, England, and Scotland with the opportunity to monitor for Chalara ash dieback.
- A web-based recording form for volunteer naturalists developed by the Joint Nature Conservation Committee (JNCC) and Centre for Ecology and Hydrology (CEH) to assist in monitoring the biodiversity impacts of Chalara.

ObservaTREE and Plant Health Network

Defra has funded a feasibility study to accelerate development of ObservaTREE, a tree health early warning system using volunteer groups. Under test in the feasibility

study are development and training of a volunteer network (led by the Woodland Trust and National Trust), deployment of the latest in DNA diagnostic technology (Genie machines) to specialist volunteers (led by Fera), and a workshop to scope the needs of supporting information databases, interactive mapping and smartphone apps (led by Forest Research and the Woodland Trust).

In December, Fera also completed a series of four “train the trainers” workshops to develop tree health and biosecurity expertise within the garden sector, including the National Trust, Royal Horticultural Society, National Trust for Scotland, Royal Botanic Gardens Kew and Edinburgh and the Field Studies Council.

OPAL

The OPAL consortium, Fera, Defra and Forest Research are on course to launch the Tree Health Survey in May 2013. Included in the survey is an activity for participants to report suspect sightings of Chalara ash dieback along with five other high risk pests threatening the nation’s trees (emerald ash borer, citrus longhorn beetle, Asian longhorn beetle, oak processionary moth and pine processionary moth). It has now been confirmed that the survey will be extended from England to Wales and Scotland.

Volunteer naturalist recording of species impacts

A web-based recording form for species associated with ash trees has been produced by JNCC and CEH, and it is already capable of linking to other data systems such as the National Biodiversity Network. Research into how best to structure the monitoring of Chalara impacts will be completed in the next month, and this will be used to further develop the recording form to be ready for the main species recording season.

The contributions of other bodies

Noteworthy in all the initiatives has been the positive and proactive involvement of a wide range of industry and non-government organisations, who have taken the lead on a number of projects. The work of just a few of these organisations is set out below.

- **Country Land and Business Association (CLA)** members took part in the rapid response survey and CLA staff have contributed to the production of this management plan. The CLA is running regional workshops for members on woodland management, tree pests and diseases and tree safety and will continue to run these and workshops on adapting woodland to climate change as our understanding of the issues develops.

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- **The Horticultural Trades Association** (HTA) is organising an industry conference “UK Plant Biosecurity Seminar - Preparing for the threats of tomorrow” for 30 May 2013.
- **The Tree Council** has galvanised its national network of 8,000 community based Tree Warden volunteers to look for the disease and report any sightings. It produced the first comprehensive photo-ID guide to the winter symptoms, which was widely circulated and has been at the forefront of efforts to spot infected sites in the wider environment. It continues to champion the exploration of the management issues for non-woodland trees on behalf of its 180 member organisations, work with transport infrastructure organisation to understand the issues that will affect our roads and railways and discuss Chalara with its partner European tree organisations, to better understand the problems caused by the disease in Europe, and the effectiveness of their response to it.
- **The National Trust** has formed a group of trained staff that can support properties on Chalara issues, and also engage with plant health agencies and other organisations on a local level. All significant young plantings of ash have been inspected and will continue to be monitored. Staff will receive training on the new Genie diagnostic machine and then will be available to conduct field diagnostic tests. The Trust is focusing renewed effort on improving the conditions in which any of its ancient ash are growing, with the aim of enhancing their resilience to future secondary infections. The Trust has offered the use of its state of the art Plant Conservation Centre to store genetic material and breed resistant trees. It will work closely with its suppliers to develop much more robust purchasing protocols for all trees and plants. And it will continue to engage the public in opportunities to become involved in initiatives such as the current ObservaTREE and OPAL projects.
- **The Woodland Trust** published a three point plan last October in response to Chalara and tree diseases more generally which committed it to:
 - accelerate the search for funds and the delivery of the ObservaTREE project;
 - work much more collaboratively with tree nurseries on issues such as forward planning of tree supply and provenance; and,
 - host a scientific conference on developing conservation impacts and responses to Chalara and to other tree disease for native woodland at a central London location in June 2013.
- In addition to this the Woodland Trust has offered some of its own sites for controlled planting trials of native ash provenance. It is also using its many communications channels to increase information to its supporters around the

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consequences of tree disease and to promote opportunities for supporters and the public to become involved. The Trust will be working with its expert recorders and the Ancient Tree Forum to look again at almost 6,000 ancient and notable ash trees on its database over the coming months and years to see how they respond, if they become infected and whether they hold potential for resistance to the disease.

- **Confor** has recently published a major new report which highlights the importance of government support for the private forestry sector to respond to tree disease. Around 97% of woodland ash is in non-state ownership. The report, commissioned by Confor, considers the potential financial and other impacts of this important tree disease, with context, costs, benefits and recommended actions, and is available for download at www.confor.org.uk.

The Welsh Government is particularly grateful to these stakeholders for their advice as it has developed this version of the Plan.

Objective 4 – Building economic and environmental resilience in woodlands and in associated industries

Supporting forest managers and their supply chains

Landowners, forest and woodland managers, and the nurseries that supply them all have an interest in ensuring that forests and woodlands continue to thrive. As the UK adapts to Chalara, this will mean replanting or encouraging natural regeneration with different species, and in the first instance replacing infected young ash stock.

The interim Control Plan published in December 2012 said that Welsh Government would conduct a review of policy measures that influence forest planting grants and planting decisions to identify mechanisms that minimise threats from imported plant material and maximise opportunities for stock to be grown domestically. In the longer term, that will mean exploring the scope for the next Rural Development Programme to support action which promotes tree health. However, we have also looked at how the grant system might be used to support the resilience of woodlands and the supply chain for the rest of the current programme, which runs until the end of December 2013.

Force Majeure

Grant customers will have to follow certain steps where trees planted under grant schemes have become infected with Chalara to comply with grant conditions and permit Force Majeure to be applied. In these cases the grant will not be reclaimed.

Removal and replanting

Welsh Government is investigating options to fund replanting of ash sites with alternative species for those sites recently planted with support from Welsh Government grant schemes. Sites planted under these schemes that contain ash planted in the last five or so years that are still uninfected may be eligible for financial support to replant them. The aim is to improve the resilience of these young woodlands and to secure the future of sites already funded by the Welsh Government. It is hoped to have the guidance for agreement holders available by the end of May 2013.

Amenity suppliers

There are other vital parts of the supply chain for ash (and other trees) which, whilst just as important, will not be able to take advantage of demand created by replanting grants. Amenity suppliers, usually nurseries, supply trees to a variety to locations and often as a part of critical public sector projects. Rather than young seedlings destined for forests, these suppliers grow larger, more mature trees that require significant investment. Where this investment has been made, nurseries

have told us that they currently have large ash trees in pots or in the ground, which they cannot move and for which there may no longer be a market. Welsh Government will continue to work with this sector to explore how the impact of Chalara on these businesses can be minimised before the next movement and planting season.

Wider economic impact

Ash trees feature along transport routes which means that Chalara will have risk implications regarding health and safety. Over a number of years, as mature trees in the wider environment begin to succumb to the disease, it is likely that more will have to be removed. Welsh Government will continue to work with public and private land owners to understand the implications of this.

Environmental resilience

In addition to the action being taken under other objectives in this plan, the following will be taken into account as we continue to take action to build environmental resilience to the disease.

JNCC has commissioned research on the direct impact on species that depend on ash and the ecological responses to a range of management scenarios in responding to Chalara. The final report is due in the next few weeks. This work should give us a clearer picture of the ecological impact of Chalara and will allow policymakers and land/forest owners to better understand the likely affect of different pressures on tree health, and how management can improve the resilience of ecosystems. It will also provide information on whether alternative tree species could provide similar ecological function to ash.

There are actions that managers of woodlands and other trees can take to build resilience, which will need to be borne in mind as ash is phased out, for example to create greater diversity of species, age class and structure. This should happen at a woodland scale but also at a landscape level so that there is diversity across the country. Managing the impact of squirrels, deer and other animals on the natural regeneration of trees (and other plants) is also vital, and work on deer is underway through the Welsh Government wild deer management strategy, available from <http://www.forestry.gov.uk/forestry/infd-8czed6>.

Best practice needs to be readily available on management and on practical experiences of the impacts of Chalara such as timber degradation times. Natural Resources Wales and the Forestry Commission will co-ordinate this guidance.

The protection of ancient and veteran trees is particularly important, because of their high value and the fact that they cannot easily be replaced. Ancient trees are important in their own right but also as a potential source of disease resistant

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material. Both the Woodland Trust and the Tree Council have worked with the Ancient Tree Forum to produce guidance on managing these trees available from <http://www.woodlandtrust.org.uk/en/about-us/publications/Pages/ours.aspx> and, from March 2013, *Ancient and other Veteran Trees: Further Guidance on Management* will be available at www.treecouncil.org.uk.

There is currently no need to fell veteran, ancient, or mature ash trees as a result of them becoming infected with Chalara as they could take many years to die. Diseased and deadwood is also beneficial for some wildlife species that depend on ash. Veteran, ancient and mature trees are important components of a resilient woodland or landscape. They will also provide potential for resistant regeneration. Guidance on their safe management, *Common Sense Risk Management of Trees*, is available from [http://www.forestry.gov.uk/pdf/FCMS024.pdf/\\$file/FCMS024.pdf](http://www.forestry.gov.uk/pdf/FCMS024.pdf/$file/FCMS024.pdf).

Further work is needed to understand the impact of the disease on non-woodland and hedgerow trees of which ash is often a major component. As part of this Welsh Government and the other Devolved Administrations will work together with the amenity sector, including Network Rail and the Highways Agency to better understand the impacts and costs of the disease. In the meantime, if infected trees pose a health and safety risk utility infrastructure operators and local authorities will remove infected trees.

Next steps

Chalara

Welsh Government will publish a revised version of this Management Plan no later than the end of March 2014. This will focus in particular on non-woodland trees and further proposals to secure long-term resilience to Chalara. In the meantime, as our understanding of the disease develops, we will keep our approach under review and continue to work closely with stakeholders.

Wider plant health policy

Welsh Government awaits the final report of the independent Tree Health and Plant Biosecurity Expert Taskforce. The Task Force was convened in November 2012 to advise all the Devolved Administrations on the current threats from pests and pathogens, and to make recommendations about how these threats to trees could be addressed. The taskforce brought together a number of academics, both national and international, to advise on the current threats to tree health and plant biosecurity in the UK and make recommendations about how those threats could be addressed. They published an interim report making some initial recommendations for Defra to consider in December 2012. Following further work, the Taskforce will produce a final report addressing all of its aims in May 2013. This is expected to review the national and international risks and the evidential basis for the effectiveness of response options, develop work to provide an independent perspective on costs and benefits to inform setting priorities and resource allocation around tree and plant health and to review international practice in tree health and plant biosecurity management. The Devolved Administrations will respond to the Task Force's final report later in 2013.

Annex A – The value of ash (*Fraxinus excelsior*)

In the UK, trees and woodlands are an important part of cultural identity and cultural heritage. They also provide a wide range of ecosystem services valuable to prosperity and societal well-being such as recreation, landscape, carbon sequestration, biodiversity and air pollution absorption. In 2011, 358 million visits were made to woodlands in England, 65 million in Scotland and 86 million in Wales.

Ash is a common native tree species occurring throughout many of our woodlands, wood-pastures and parklands, and supports a high number of species that exclusively or significantly depend on it as a host or food source. Ash is a feature of interest in many designated Sites of Special Scientific Interest (SSSIs) and Special Areas of Conservation (SACs), and is an important component of ancient woodlands. Ancient and veteran ash trees occur within woods, as well as agricultural, parkland and urban landscapes. Ash is one of the most common hedgerow and field boundary trees, which is important for ecological connections between semi natural habitats.

The societal and environmental value of ash is several times higher than the commercial value of ash to the economy. These benefits are partially estimated at around £1.8bn p.a. and a first approximation of the ash contribution to this estimate is £68-124m p.a.

The total UK forestry sector, including support services, directly employed around 14,000 people in 2010, in more than 3,000 separate enterprises with a Gross Value Added (GVA) of £385 million in 2011. Estimating the commercial value of ash is difficult because there are no direct official figures and the supply chain is complex. However, according to the Forestry Commission around 20-30% of ash woodland is actively managed for timber which represents 1-2% of total Great Britain woodland. It is estimated that in 2011 a total of 541,000 green tonnes were harvested from UK woodlands of which 81,000 tonnes went to sawmills, 400,000 was used as fuel wood and the remaining 60,000 went into fencing, wood based panels and roundwood exports.

There are estimated to be 60-80 enterprises in the nursery sector dealing in ash. The HTA estimated from their survey that the current stock of ash trees held by these nurseries has an estimated total value, based on previous prices, of around £2-2.5 million with the majority of this stock, by volume, consisting of 1-2 year seedlings. However, some nurseries are destroying their ash stocks with the majority expecting reduced business profitability.

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For sawmilling the GVA in 2011 was £433 million, employing around 8,000. In 2004, the last year for which species specific data is available, ash accounted for 8% or approximately 10,000 green tonnes of all hardwood going to UK sawmills.

Annex B – Advice and guidance

- Practical advice has been published on slowing the impact of the disease for anybody with a responsibility for the management of ash, whether in woodlands, parks and gardens, or individual trees: <http://www.forestry.gov.uk/forestry/INFD-92PJKX>
- Detailed advice to local authorities on the disposal and composting of ash leaves and saplings has been developed in consultation with the Environment Agency, the Food and Environment Research Agency and the Forestry Commission: <http://www.forestry.gov.uk/forestry/inf-d-92gjvb>
- Chalara signs for woodland visitors have been published in downloadable form on the Forestry Commission website, for use in affected areas and also for more general use: <http://www.forestry.gov.uk/forestry/inf-d-8zklv5>
- The Highways Agency and Network Rail have worked closely with the Forestry Commission to develop guidance for staff working on their networks about handling and disposal of ash material: <http://www.dft.gov.uk/ha/standards/ians/pdfs/ian172.pdf>
- We have provided advice for a National Trust funded poster on general plant biosecurity for those who work in forests and woodlands: [http://www.forestry.gov.uk/pdf/Poster_Forestry_Biosecurity_2013.pdf/\\$FILE/Poster_Forestry_Biosecurity_2013.pdf](http://www.forestry.gov.uk/pdf/Poster_Forestry_Biosecurity_2013.pdf/$FILE/Poster_Forestry_Biosecurity_2013.pdf)
- We have published advice on taking simple biosecurity measures which can help to prevent spreading tree diseases: <http://www.forestry.gov.uk/forestry/INFD-8ZJMQ4>
- The Forestry Commission has developed a web based Tree Alert form and a Tree Alert app that can be downloaded onto smartphones or tablets to facilitate the reporting of potential outbreaks of the disease: <http://www.forestry.gov.uk/website/treedisease.nsf/TreeDiseaseReportWeb#>
- The Forestry Commission has produced a winter symptoms video and a summer version will be filmed when the symptoms appear on the leaves: <http://www.youtube.com/watch?v=8sl7hgFZ-4g&feature=youtu.be>