

# Highways tree inspections for ash dieback

## Drive-by surveys

Jez Lawton and Paolo Bavaresco

In this, our third, article we continue to share our experiences of highway tree inspections.\* This time we consider the topical issue of ash dieback surveys, again with the emphasis on putting principles into practice.



**Figure 1:** At the side of trunk road: an ash tree with noticeably reduced crown and foliage condition compared to other ash behind it.

Over the past few years' inspection cycles (of the same roads and trees), we have noticed increasing ash decline, potentially attributable to ash dieback disease. Therefore, it was not completely unexpected when we were asked by our highways client to undertake inspections specific to their ash population.

Given the considerable size of the road network and the number of ash trees involved, the most appropriate starting point was an initial drive-by survey. This was likely to provide a cost-effective method of determining the extent and location of potential ash dieback, thus enabling a means of estimating the likely resources required to manage the situation.

*It is important to state at the outset that the approach was to use tree canopy and foliage condition as a potential indicator of ash dieback, with a view to subsequent 'ground-truth surveys' to validate data and give further insight.*

### Drive-by survey methodology and data collection

From considerable experience of drive-by surveys, we know these can be a fatiguing and at times literally nauseating undertaking. Our current approach is to use two arboriculturists, taking it in turn to fulfil the role of either tree inspector (passenger) or driver. This is in conjunction with suitable rest periods and where possible pulling over in safe locations to undertake the survey.

We set up the data capture system to enable the passenger (acting as the surveyor) to input (capture data on) single and groups of trees by operating a mouse whilst looking at the trees. This avoids having to continually



**Figure 2:** Working 'off carriageway' where it is safe to do so.

switch between monitoring the tablet screen and inspecting the trees, which greatly reduces the impact of motion sickness.

It is important to stress that whatever approach is taken, it must be approved by the client and subject to necessary risk assessments and method statements.

As mentioned in our previous articles, there is a limit to what can reasonably be determined using drive-by surveys. Following discussions with our client, we embarked upon a concise approach, collecting tree and site data under the following headings:

- location (single trees and groups) via XY coordinates and further text descriptor
- age and height class
- approximate percentage of crown decline
- estimated number of trees
- standard details such as site number, date, name of surveyor, etc.

Field data collection was undertaken using ArcPad running on Windows tablets, with Bluetooth-linked GPS receivers. Our choice of ArcPad was based on experience of its ability to easily customise data collection forms and to subsequently integrate data (via shape files) with many desktop GIS applications for further analysis and presentation.

### Vehicle-mounted cameras

Although the main data capture process was via ArcPad, we also trialled the use of vehicle-mounted cameras with video- and single-image-enabled GPS. Unfortunately, it is beyond the scope of this article to give detailed feedback in this regard. However, in general terms this provided a useful means

\* 'On the road', ARB Magazine 181, summer 2018, pages 51–55. 'Street view', ARB Magazine 185, summer 2019, pages 64–67.



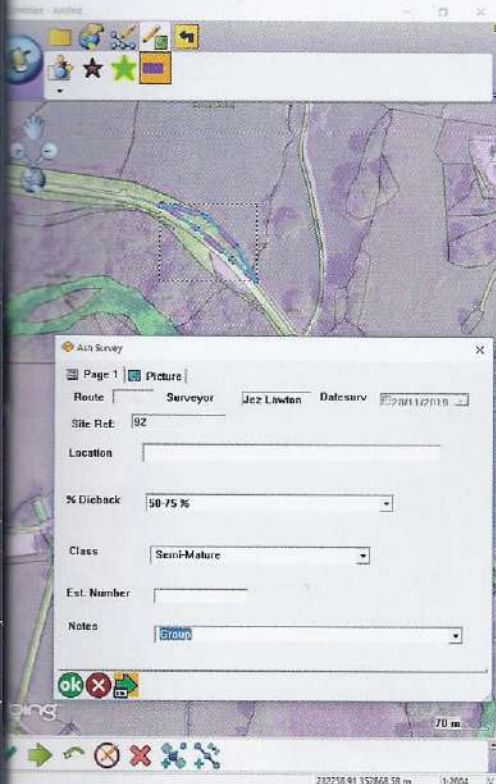


Figure 3: Field data capture form on a tablet.

of quickly reviewing images of areas where the drive-by had taken place, thereby giving further detail of tree condition and location. Potentially, the footage could be used to monitor tree condition changes over time and inform follow-up actions. Additionally, it allows for greater initial scrutiny of areas where foot patrols cannot be safely undertaken without traffic management.

To be a useful asset the camera needs to seamlessly integrate with the GIS

tree survey software, and the tablets need to be capable of fast processing speeds with large storage capabilities.

### Data processing

Once the surveys were complete, the data was processed and presented on maps and graphs using a basic priority presentation system. The maps and graphs are essentially derived by considering tree crown condition together with the sizes and number of trees in each location.

It is important to stress that this is not a risk assessment exercise; it merely helps to inform the potential extent and location of ash dieback across the road network.

This process provides a general insight into the likely resources (including funding bids) required to manage the situation. Prioritisation allows for follow-up ground-truth exercises which will confirm the presence (or not) of ash dieback disease, facilitate risk assessments and further inform the appropriate management options and resources required. It also affords the opportunity to identify where diseased trees may be close to neighbouring third parties.

### Personal observations

To a greater or lesser extent, we found evidence of ash dieback across the entire road networks surveyed. There was no obvious pattern, but seemingly a higher frequency of the disease in low-lying and damp areas.

Many of the mature ash trees which we regularly inspect and monitor do appear to be declining at an increased rate. This seems in accordance with observations made by the client's experienced in-house arboriculturists who report the same, particularly once symptoms are noted in >50% of the crown.

There is no doubting the significant cost and resource implications of ash dieback disease in terms of highway safety and management, particularly considering the increasing amounts of dead and dying crown and branch material forming above and adjacent to roads and footpaths. In our experience this seems to be compounded by the increased tendency for ash trees to shed dead and dying material when compared to other species.

Understandably, many highways organisations are focusing on the road-facing aspects of their verges and tree safety. However, it is also important to consider responsibilities regarding trees towards the rear of verges which often border neighbouring third parties.

We hope this article is of some use to others facing similar situations. Any feedback or questions will be gratefully received at [jezlawton@live.co.uk](mailto:jezlawton@live.co.uk).



Paolo Bavaresco  
MICFor,  
Chartered  
Arboriculturist



Jez Lawton  
MICFor,  
Chartered  
Arboriculturist



Figure 4: Vehicle video camera footage of ash trees in a narrow verge where a general foot patrol is not possible.

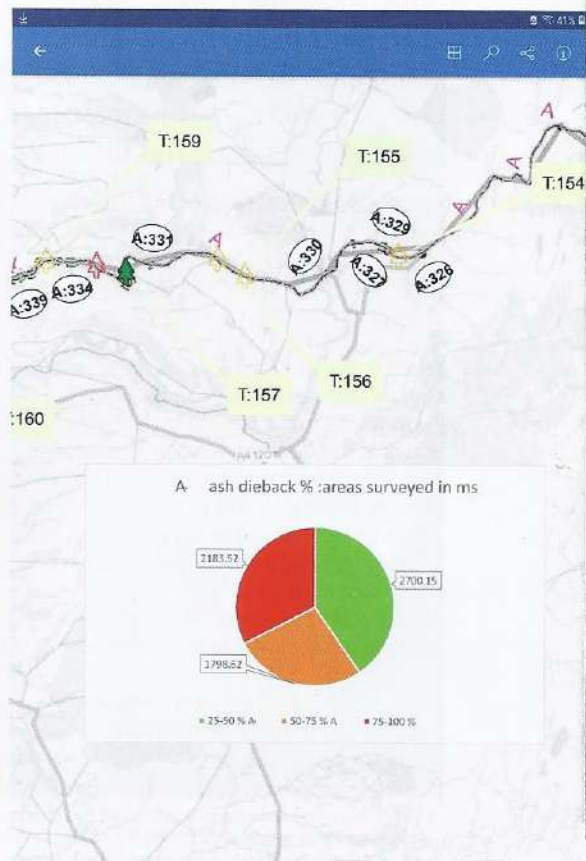


Figure 5: Processing data for further analysis.