

REPORT OF THE OPERATIONS MANAGER

SUBJECT: REPORT ON THE PROGRESS OF THE DIGITAL TRANSFORMATION OF THE COUNTRYSIDE MANAGEMENT TEAM

1. The attached report outlines the progress the Countryside Management Team has made in digitising its work flows, including inspections, as well as in planning and scheduling work, using the Arc Online Software Platform, since October 2018. This includes detailed examples and an outline of future plans.
2. The report includes the following sections:

Summary

Background – The Countryside Management Team

The Software

- New Mobile Apps for Rights of Way and Bridge Inspections
- Rights of Way and Bridge Apps – outcomes.
- Fault Reporting – Using the Survey 123 App.
- Workforce Manager (Job Management System)
- Dashboards
- Using the Data – Analysis and Insights
- Way-marking Case Study
- Managing Project Work using Arc Online
- The Ash Dieback Recorder
- Pollinator Project
- Future Plans

Conclusion

RECOMMENDATION:

Members are requested to RECEIVE and COMMENT on the Report.

(For further information contact Steven Jones via email stevej@pembrokeshirecoast.org.uk or on 07866 771151)



Parc Cenedlaethol Arfordir Penfro
Pembrokeshire Coast National Park

Countryside Management Team – Progress Report on the Teams Digital Transformation

Summary

Pembrokeshire Coast National Park Authority invested in ESRI ArcGIS software including online functionality in October 2018, as part of the Digital Park project. The Countryside Management Team (CMT) has since adopted the software in its daily activities, enabling the team to deliver work more efficiently and to improve the flow of work, from inspection through to delivery. This report details the progress the Warden Team has made in adopting the new approach to planning and delivering commissioned tasks during the normal course of its work; maintaining the Coast Path, Inland Rights of Way Network, the authorities Estate and in delivering conservation work.

The report also outlines future plans for the teams continued digital transformation, taking into account what we have learnt so far.

Contents

Summary

Background – The Countryside Management Team

The Software

1.0 New Mobile Apps for Rights of Way and Bridge Inspections

1.1 Rights of Way and Bridge Apps – outcomes.

2.0 Fault Reporting – Using the Survey 123 App.

3.0 Workforce Manager (Job Management System)

4.0 Dashboards

5.0 Using the Data – Analysis and Insights

5.1 Insights – Way-marking Case Study

6.0 Managing Project Work using Arc Online

6.1 Ash Dieback Recorder

6.2 Pollinator Project

7.0 Future Plans

Conclusion

Background

The Countryside Management Team

The Countryside Management Teams remit is wide and varied, with Wardens delivering work across the National Park.

Work is commissioned by teams across the authority – from Direction (Conservation Team, Rights of Way Team and Archaeology), by the Estates Manager, by Visitor Services Managers, the Interpretation Team and by the Buildings Project Officer. The team primarily delivers planned work, in the form of an annual (or sometimes seasonal) work programme but also delivers reactive work – related to user complaints or emergency work such as resolving issues that result from adverse weather events. In addition the team is also responsible for delivering Site Risk Assessments, associated inspections (such as Tree Surveys), Rights of Way Inspections and Bridge Inspections.

With such a varied remit, it is imperative that work is planned and scheduled effectively. The team is currently made up of 28 staff, rising up to 34 in the summer season.

The Software

To aid efficiency in delivering this varied workload, the ArcGIS Software platform has been introduced into all aspects of the teams work over the last 24 months. It was clear from the outset that an online solution, with data hosted ‘in the cloud’ would be a real benefit – not least because users were located in remote locations, more often than not utilising mobile phone technology, outdoors, to access Authority systems.

The digital transformation of the team, across its functions, led to investment in a platform rather than a single piece of software. The ArcGIS Online platform consists of the following basic parts –

- **Collector** – a mobile app that is used for data collection (used for Inspection Work)
- **Survey 123** – a form based mobile app (used for reporting issues and data collection)
- **Workforce Manager** – an online and mobile work scheduling system (used as a Job Management System for allocating and completion of jobs in the field).
- **Dashboard** – a web based dashboard for live monitoring of progress and to provide an archive of completed tasks.
- **Story Map** – a web based function to tell the story of the work in a graphic and visual way.
- **ArcGIS Pro** – used to analyse results and data in order to provide insights.

This platform has replaced excel and paper based systems where possible. In addition, the online nature of the software has meant improvements in data capture (during inspections), huge reductions in administration and back-office functions, automated workflows, improved job scheduling, rapid response to change and improved monitoring of performance.

The work that we undertake within the team is ideally suited to one or more of the different functions found within the platform. The following sections outline how that looks in the real world and the benefit these changes have brought to the team.

1.0 New Mobile Apps for Rights of Way and Bridge Inspections

The Area Managers have for some time been responsible for delivering Rights of Way (ROW) inspections on the footpath network, within the National Park Boundary. Aside from the Rights of Way inspection, Area Managers are also tasked with inspecting bridges on the network. ROW inspections are carried out in a 3 year cycle, bridge inspections are carried out in a 2 year cycle. Due to the administration of both surveys, they were often carried out separately.

The Coast Path is inspected annually by the National Trails Officer and the inspection is not part of the Area Manager remit.

Naturally, the Rights of Way network varies across the geography of the National Park, with some routes used more than others. Routes often cross challenging terrain and inspections are naturally carried out in all weather conditions. The extensive nature of the network in the North area can be seen in Fig 1 below.

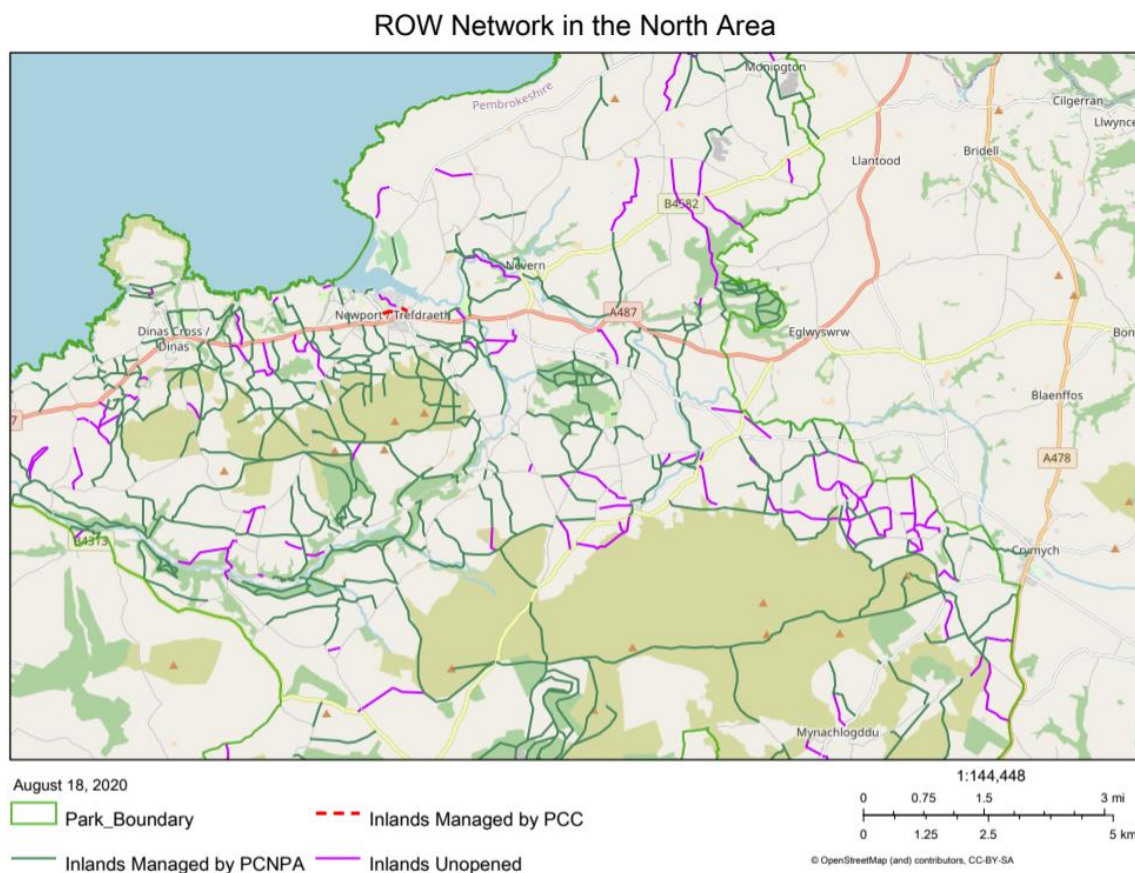


Fig 1 North Area Rights of Way Network.

There are some 1100 individual sections of footpath and bridleway to inspect, along with 204 bridges. Some Rights of Way are managed by Pembrokeshire County Council on behalf of the National Park Authority. Some Rights of Way are 'Permissive' only and the vast majority of all ROWs cross private land. This complexity, and the specification that we adhere to, was written into a

Standard Operating Procedure (SOP) in the first instance – this informs the design of the digital system and ensures we collect the correct information from the outset.

Up until 2018, the Rights of Way Inspections were carried out on paper. To speed up the inspection process, the new Arc Online software was used to create a 'Path Inspector' application (app), for use on existing work mobile phones. The system was developed 'in-house' by the Operations Manager and tested by Phil Lees (Countryside Manager West). Inspections began in earnest in March 2019. The ease of use of the new system meant that face to face training was not required, with the provision of the SOP and a brief 'User Guide' being sufficient. Keeping the system simple was a key aspect and was deemed particularly important given that staff within the Countryside Management Team had little previous experience of using such technology. In reality, we 'hit the ground running'.

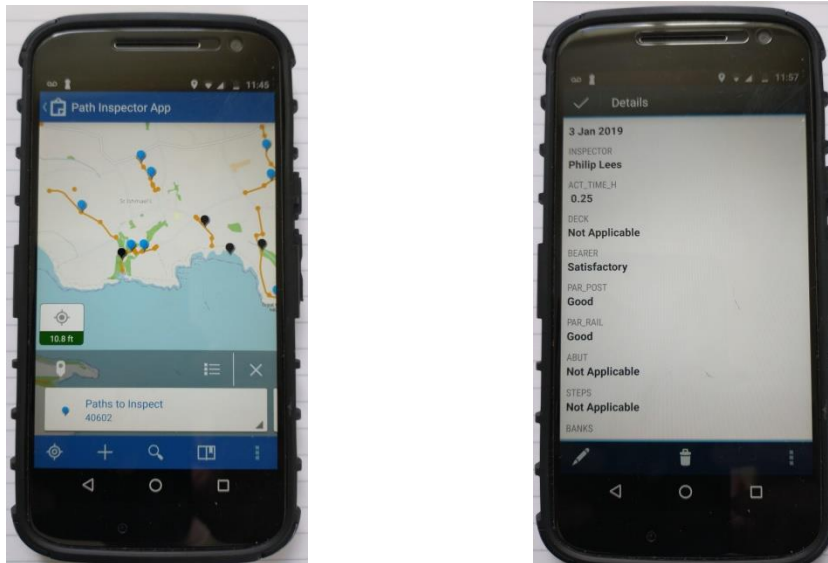


Fig 2 The Path Inspector App on a standard Warden mobile phone.

The App was used to survey and provide condition reports for the ROW network, with the aim of inspecting at least 30% of the network in the first year. The App utilises mapping, with an inspection form to fill in on each numbered section of path. The inspector uses a standard scoring system for the condition assessment of each path section – from Excellent through to Very Poor. Time and date of inspection were recorded, as well as the condition of surfaces, drainage, boundaries, vegetation and furniture. This is simply a digital version of the paper system already in use.

The Bridge Inspection App looks and works in much the same way. The condition assessment is a little different with Bridges – as attention is given to the various parts that make up a bridge (deck, rails, steps etc), with each part given a score.

1.1 The Rights of Way and Bridges Apps - Outcomes

The Apps were universally accepted as a much improved way of working by the team. In addition to the managers undertaking inspections, some more experienced Wardens were also given access to the mobile Apps to carry out inspections.

Benefits of the new system included the following –

- The method is quicker – with less paperwork and administration. Once the survey is captured, the data can be used many times and there is no requirement for the manager to do any addition admin work.
- Bridge and Path surveys could be integrated – both undertaken easily in one visit.
- Immediate – once inspected, the data was immediately available to everyone with any interest in the results.
- Improved Planning – progress of the survey could be tracked in real-time. This prevented duplication occurring.
- With the App on the standard mobile phone – it was always available. Inspections could be integrated easily with other work. Often an inspector could fill in spare time with a quick local inspection when out in the National Park. This increases productivity enormously, compared to treating Inspections as a separate specialist task carried out on specific set days, as was the case in the past.

Bridge Inspections were largely completed within the first year of using the application, against a target of two years, with 5 inspections outstanding at present. This has proved almost twice as quick to undertake as in previous cycles. The swifter inspection of bridges will lead to improved quality and safety of these structures – improving the flow of work between inspection and the completion of any maintenance work.

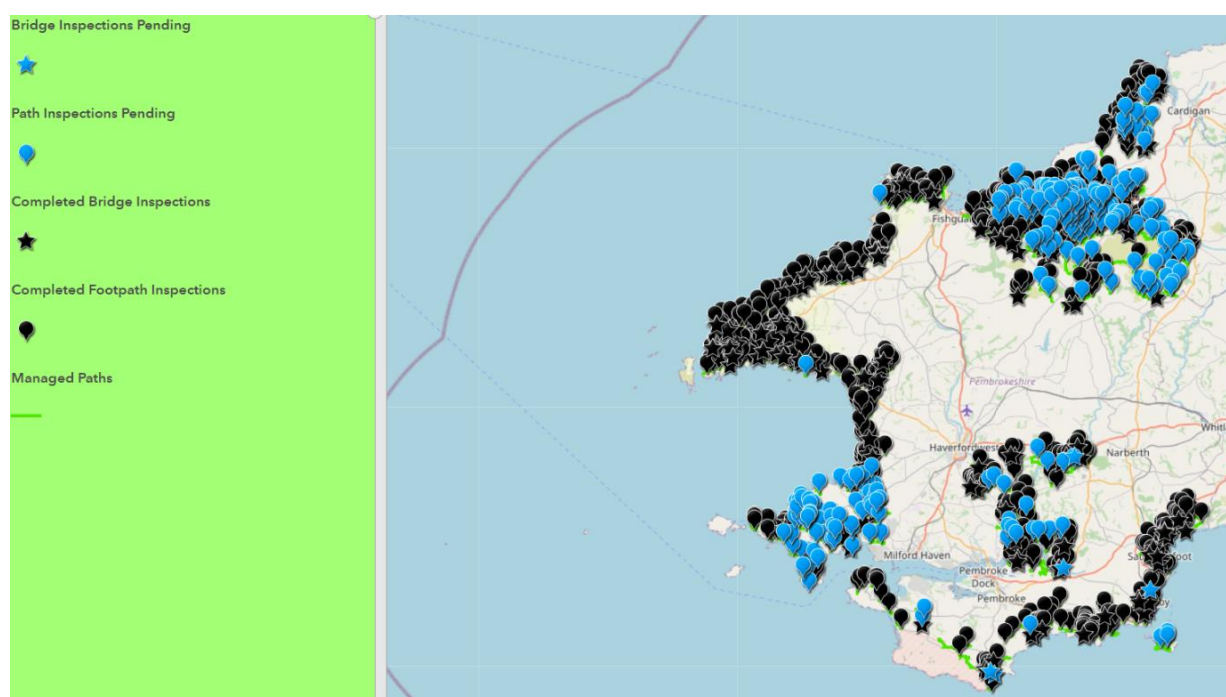


Fig 3 Map view showing the progress of inspections (Aug 2020)

As of August 2020 we are 18 months into the 3 year ROW Inspection cycle. We would expect to have completed 50% of inspections by now. Currently of the 1062 sections of path to be inspected, 764 have so far been completed – some 72%. This is despite a five month period during the COVID crisis where few if any inspections were undertaken.

Naturally, the digital inspections have provided us with a wealth of data on the condition of the network and the bridges found on it. This data will be easier to collate and analyse than that collected during paper based inspections. Analysis of the data will allow us to see patterns and give us a better understanding of the maintenance demands of the network – this in turn will be used to

improve our maintenance activity annually and also to target improvement work more efficiently. Visualising patterns across a geography, will also allow us to better understand the demand that maintenance work puts on the local teams – in the future we can plan team capacity based on ‘where’ the issues arise.

2.0 Fault Reporting – Using the Survey 123 App

The Inspection process is the start point of most of our work flows within the Countryside Management Team. Whilst in legal and operational terms the inspections in themselves are valuable and necessary – they do not lead directly to network improvement. As part of the inspection process in past times, Area Managers would also create a ‘schedule of works’. Any issues found during the course of an inspection, became future maintenance work for the Warden Teams to undertake. In addition to this, faults, such as broken gates and steps were often fixed and the work remained unrecorded, or quickly scribbled onto a piece of paper for eventual forwarding to the Rights of Way team. Recording the work more effectively is the first step to improving our processes.

During late 2018 we designed and introduced the Fault Reporter App – collecting future work on a mobile phone, with the data being stored online in real-time for future use. This App allowed the Inspector to record ‘Faults’ in a simple and easy to use, form based format. Anything from broken gates to faded signs, boggy and uneven surfaces to broken fences and walls. The App includes the accurate recording of location, using the mobile phones in-built GPS. In the wide open spaces of the National Park, this is crucial, in order to avoid Wardens wasting time searching for the task in hand when they come back to make the repair. In addition, photographs could also be attached to the fault – on the premise that ‘a picture speaks a thousand words’. These functions, combined with a note taking function, meant that it was no longer a requirement to write extensive instructions with each job.

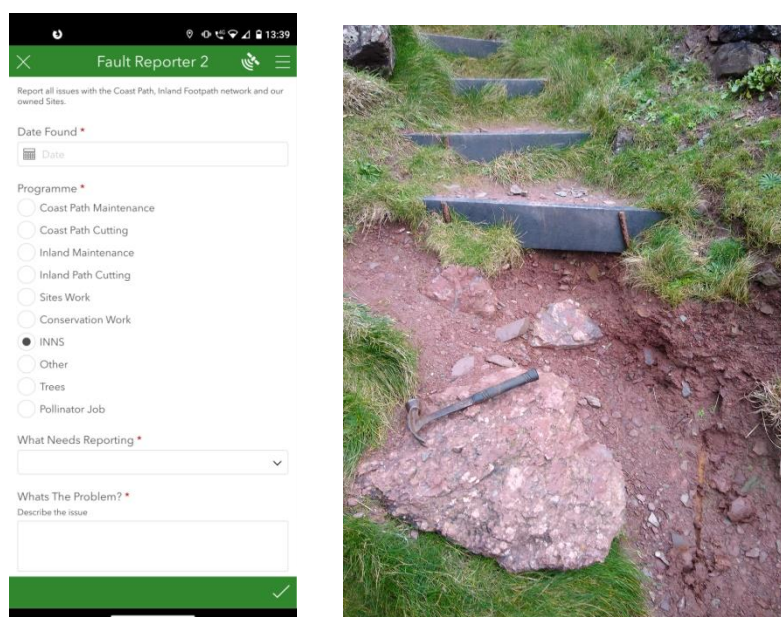


Fig 4 The Fault Reporter Mobile App – with a typical ‘issue’.

Right at the start of the Digital Park project, it was anticipated that the software would also be used by the entire Warden Team – not just limited to the management team. There are usually over 20 Wardens active at any one time – and it soon became evident, that if we wanted to record faults on the network (or indeed on our owned estate), a much more comprehensive picture could be obtained if the Wardens also had full access to the App. Whilst inspections occur every three years – it is not often that broken gates wait that long to be found – so on a more granular timescale, having 20+ Wardens recording faults as they found them during the normal course of their work was clearly desirable. The Wardens visit many parts of the network and on a fairly regular basis.

Fault Reporter was launched for general use in December 2018, replaced by a new version in October 2019. In total, in the first 20 months of use, 1750 faults have been recorded in the App.

The graph below shows the number of faults recorded in the last year – with the evident decline during the lock-down period. A total of 25 individuals recorded faults to be rectified.

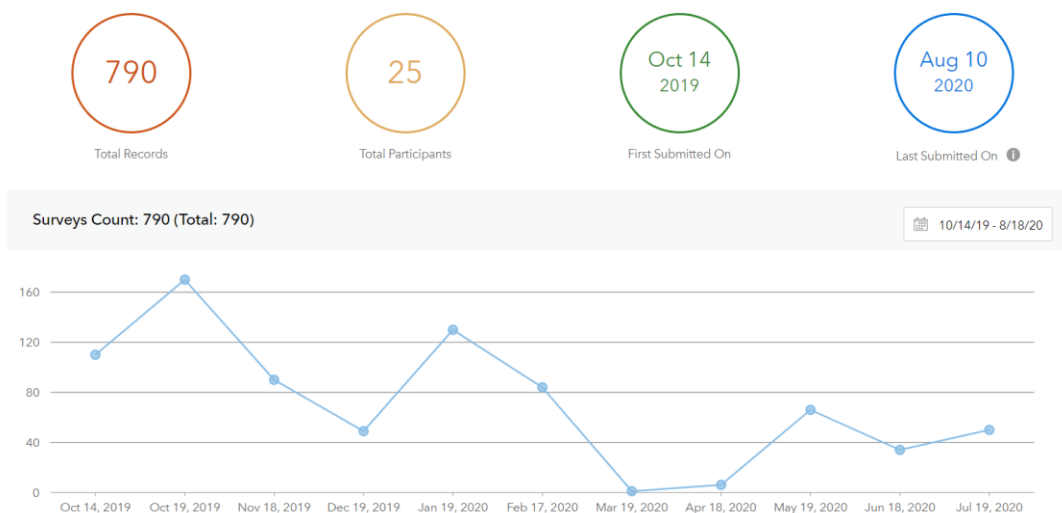


Fig 5 Chart showing a summary of activity using the new Fault Reporter App.

Faults recorded came from all corners of the National Park, as evidenced by the map (Fig 6) below, showing data from October 2019 to August 2020. This graphically indicates the importance of having many eyes on the ground, when it comes to the maintenance of the Rights of Way network.

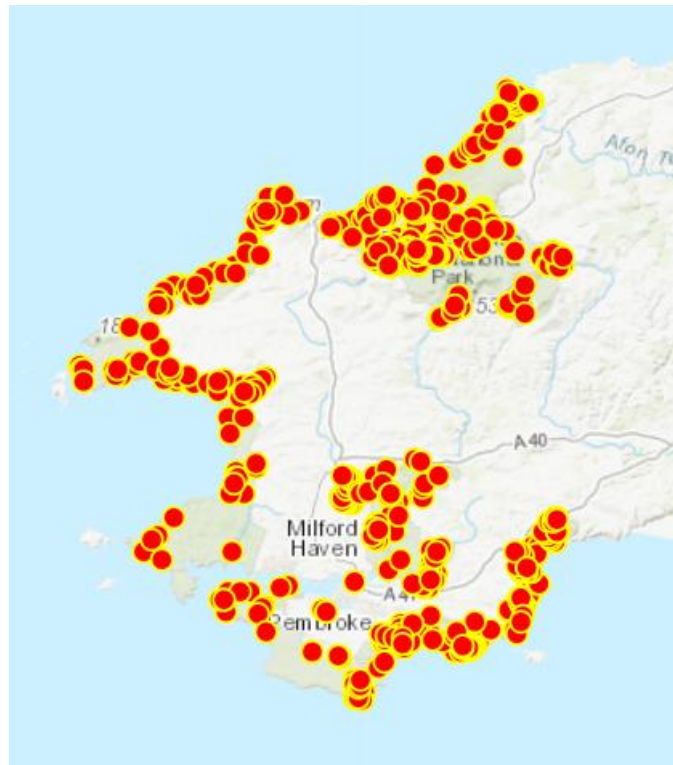


Fig 6 The geographic spread of faults reported.

Fault Reporter is used to collect faults across all of the programmes of work undertaken by the Warden Teams. This could be issues found on PCNPA owned Sites or on the Rights of Way Network, issues with Invasive Non Native Species or issues with trees. The graph below shows the split of those jobs between programmes. It is not surprising that, given the length of the Inland ROW Network, this programme dominates. Whilst we do collect faults on the Coast Path when we find them, we do not systematically inspect it – this combined with the fact that the Coast Path is managed to National Trail standards, so is in better order than the Inland Network generally, translates into fewer faults being recorded by the team on the National Trail.

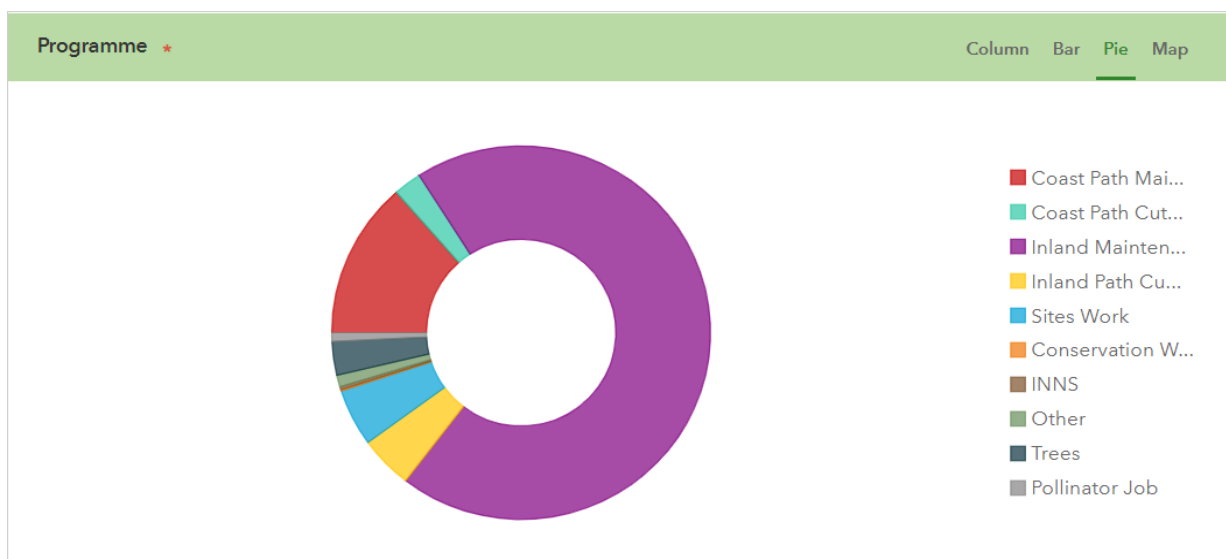


Fig 7 Chart showing faults reported, split to different programmes of work.

Of those faults recorded, the type of work to be undertaken is also captured using the App. The proportion of faults assigned to the different type of work is shown in the chart below.

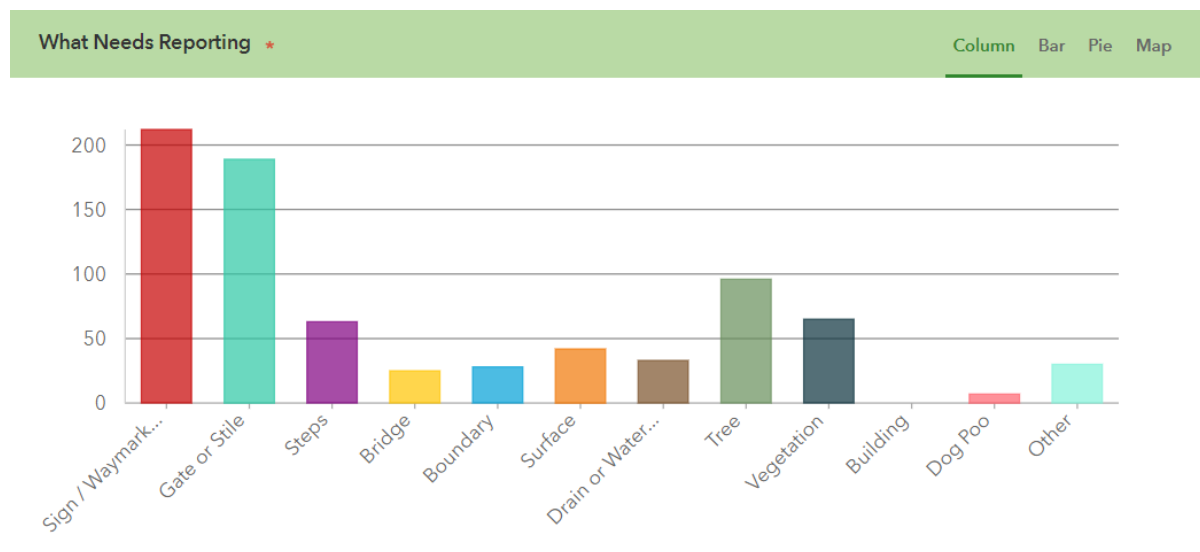


Fig 8 Graph showing the different types of fault reported.

Signs and way-marking, followed by Gates and Stiles form the bulk of faults reported.

The variety of tasks reported within the App is enormous – from ten minute jobs to jobs that may require multiple people or contractors to work over the course of days. The photographs below were collected whilst using the App and illustrate some typical issues (Fig 9).



Fig 9 - typical examples of faults recorded using the Fault Reporter App.

3.0 Workforce Manager (Job Management System)

At some point following the discovery or reporting of an issue in Fault Reporter, that task returns to the Warden in the form of a job to complete. In addition jobs are also commissioned from other teams – including work found during the annual Coast Path inspection carried out by the National Trails Officer. In the past, work was often received in the form of a paper sheet with a rudimentary map and very occasionally a photograph, the new system sees all maintenance work in one location – the Job Management System. This allows us to integrate and deliver different work types in geographic batches.

Workforce Manager is a web and app based part of the Arc Online platform, facilitating the allocation and scheduling of work. The Area Manager uses an online mapping system to dispatch work to individual Wardens. Jobs appear immediately on the Wardens mobile App – acting in effect as a digital ‘To-do-list’ for the Warden. The App includes all the original job details needed to undertake the work – location, description and photographs for example. Additional files can also be attached to the job, these can include Risk Assessments, Consent Forms or specific Job Instructions, as required.

The Wardens are responsible for setting the priorities within their to-do-list. It has become standard practice to assign batches of up to 30 jobs at a time to an individual or team. This gives Wardens flexibility to choose the right job to do depending on the conditions. This can be important when considering the weather for example.

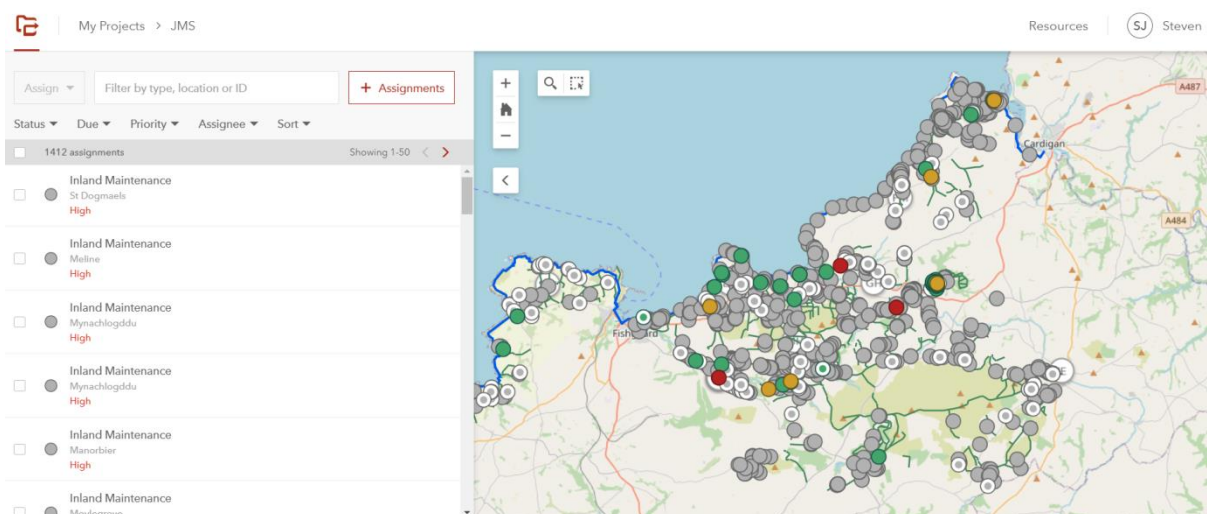


Fig 10 The Area Managers Workforce Web Map – showing jobs and details on a map and list.

The system works in a live environment – jobs changing colour as they are allocated, started, and completed. Wardens have a good view of the work they have to complete and managers can keep a real-time track of progress. In addition, completed jobs are archived as a record of activity, should the information be required in the future. The system went into full operational use across the Warden Team in September 2019 and has been universally accepted by the team as the de facto way of managing workloads.

An additional feature that some of the Wardens have started to use, is that of attaching photographs at the point of completing a job. This is useful for record keeping and is a feature we

intend to use more often in the future, not least so that we can celebrate some of the great work that Wardens do, often in very poor weather conditions!



Fig 11 A selection of completed tasks from across the National Park.

The new Job Management System is the last piece of the jigsaw for the end-to-end process of infrastructure maintenance work in the field. Generally, most such maintenance activity takes place in the period when vegetation growth is at its lowest – between October and April. For the rest of the year – May to September inclusive, most effort within the Warden Team is spent on vegetation control on the inland rights of way and Coast Path. This activity is a separate programme of work, so required a separate job management system specifically tailored for that activity. This new system was planned for launch to coincide with the 2020 cutting season. Whilst a global pandemic did all it could to de-rail these plans, we pressed ahead, not least because we felt that web based working was the best fit for managing the workloads of remote staff, working within COVID restrictions. Despite the challenges associated with COVID, the new system for managing the 2020 Cutting Programme was ready for when the Wardens returned from their enforced absence on May 11th.

4.0 Dashboards

As part of any plan-do-check-act system, having a view of performance and progress is always useful. Improvement begins at ‘Check’. As the inspection data, fault reports and job data within the Job Management System are all stored in the cloud, it is possible to connect to that same data to create dashboards – either in the live environment, or as an archive.

Various web based Dashboards have now been created – these have proven a useful way of communicating the progress of any particular programme of work, either for local use by the Warden Management Team, or across teams. Dashboards have been supplied to the Conservation Team, Rights of Way Teams and to the Senior Management Team.

During the lock-down period Wardens primarily worked on grass cutting – on both the Coast Path and Inland Rights of Way. Whilst the Coast Path was closed, the inland network remained open throughout and some sections were particularly well used in areas close to main centres of population. The new system was designed to allow us to prioritise work close to main towns and villages.

As face to face contact was minimised during the pandemic (and still is), the presence of a dashboard to monitor progress remotely was a real benefit.

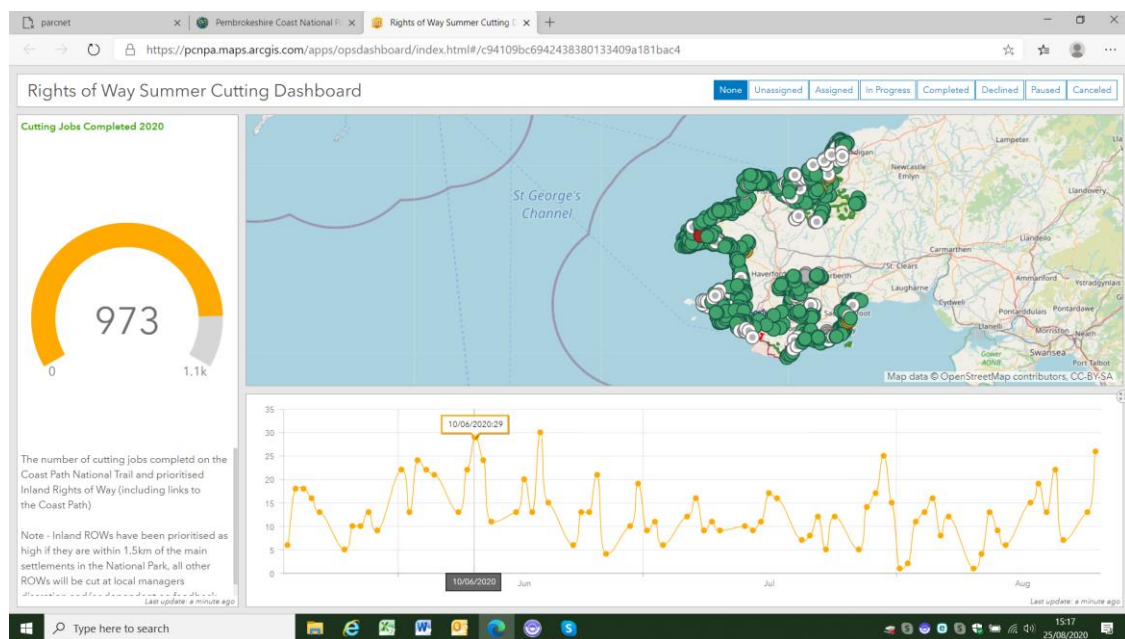


Fig 12 The Summer Cutting Dashboard

The Summer Cutting Dashboard (Fig 12) shows the real-time progress of the cutting programme and is automatically updated. As a job is completed on the ground, the Warden marks the job as completed on their mobile App, this is immediately available to the manager via the Dashboard. The Dashboard also shows task status – indicating those that are planned for cutting soon, as well as jobs which are 'In Progress'.

Watching the counter increase by the hour became quite addictive. The Rights of Way Team had access to this web based system at home, so could quickly determine which footpaths had been cut. The line graph shows cutting over time, with the map a geographic record of the stretches of footpath that have been cleared.

5.0 Using the Data - Analysis and Insights

As with all digital data, once collected, it can be used many times. We are quickly gathering a wealth of useful data. Once this seasons cutting programme is complete, we will have a record of the dates each stretch of footpath and Coast Path were cut for example. This data can then be used to help plan and co-ordinate next season and will help determine capacity and where and when effort is required across the Park. In addition, as data is gathered year on year, comparisons can be made between years and variance can be better understood.

An important aspect of collecting data, is the ability to store that data within an archive. This information is readily available to the Rights of Way Team, should they receive any personal injury claims in the future.

Operationally, the system has underpinned improvements in the way that we have carried out our day to day work – particularly in terms of reducing paperwork and in aiding planning and scheduling

complex workloads. Workforce Manager has allowed us to cluster jobs together – completing many jobs in a location and reducing the need for repeat visits. Our inspection regimes are now slick – with results immediately available – time taken between the discovery of work and the delivery of it has reduced.

Further improvements can however also be made at Programme level. The wealth of data now building up, allows us to analyse and gain insights into patterns that we previously did not see.

In its simplest form, the heat map (Fig 13) below shows the geographic spread of all maintenance work completed during the winter of 2019 -20.

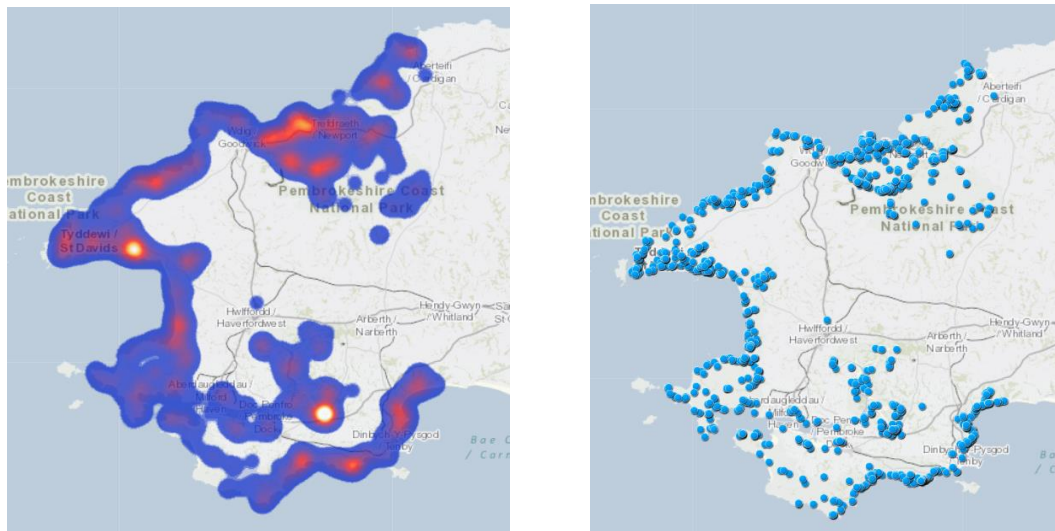


Fig 13 Maps outlining the maintenance work completed during 2019/20

These maps form a simple visualisation of where the team worked during the winter season. It's immediately clear that the Warden Teams visit all corners of the Park to undertake work! Areas such as Dinas Cross, Solva, Manorbier, Tenby and Saundersfoot are clearly shown as hot spots of activity. The brightest spot is Carew Castle – a record of the work completed by the Warden on site and by the wider team.

5.1 Insights – Way Marking Case Study

With many thousands of signs and way-marks across the National Park ROW network, it is inevitable that a proportion of our maintenance work involves the replacement of way-marks on a periodic basis. Clarity of way marking and signage is important to users, particularly those less familiar with routes – including visitors to the Park. From a quality perspective, the presence of a poorly maintained sign can serve as an indicator to a poorly maintained footpath – whether that is the case or not.

6.0 Managing Project Work using Arc Online.

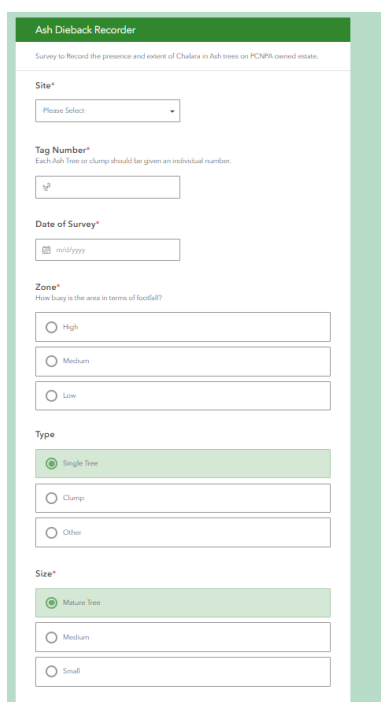
Whilst work on the Rights of Way Network, Coast Path National Trail, and on our owned Estate dominates the Countryside Management Teams workload, other elements of our work, away from 'business as usual' were also a good fit for using the new software. The following sections outline two specific cases where the software has been put to good use.

6.1 Ash Dieback Recorder

Ash dieback disease is extensive across the county and occurs on the Authorities owned estate. We have an obligation in terms of staff and visitor safety to manage trees, and we do so in accordance with the authorities Tree Policy. As with many of our workflows, we begin with a tree survey. Tree Surveys are undertaken as part of the annual Site Risk Assessment process. In addition trees are also assessed following adverse weather events.

It was felt that Ash Dieback Disease would require a new approach – not least because the disease can be quick spreading and trees can decline rapidly once infected. Guidelines provided by the Tree Council on the management of trees with the disease were adopted. These include details on how to assess trees with the disease and a simple decision making tool, to allow us to decide whether to leave a tree in-situ, lop or fell or manage in other ways.

In order to manage trees on our estate a new mobile App, using the Survey 123 platform was designed and adopted. This utilises a form based approach, similar to Fault Finder, to collect details of disease extent at individual tree or clump level. This information can then be monitored, ensuring we manage our diseased trees in an appropriate and timely way. The survey is currently ongoing.



The screenshot shows a mobile app interface titled "Ash Dieback Recorder". Below the title is a subtitle: "Survey to Record the presence and extent of Chalara in Ash trees on PCNPS owned estate." The form contains several fields: "Site*" with a dropdown menu showing "Please Select"; "Tag Number*" with a text input field containing "12"; "Date of Survey*" with a date picker showing "mm/dd/yyyy"; "Zone*" with three radio button options: "High", "Medium", and "Low"; "Type" with three radio button options: "Single Tree" (which is selected), "Clump", and "Other"; and "Size*" with three radio button options: "Mature Tree" (which is selected), "Medium", and "Small".

Fig 16 Mobile App for Ash Dieback



Fig 17 Diseased Tree at Sychpant

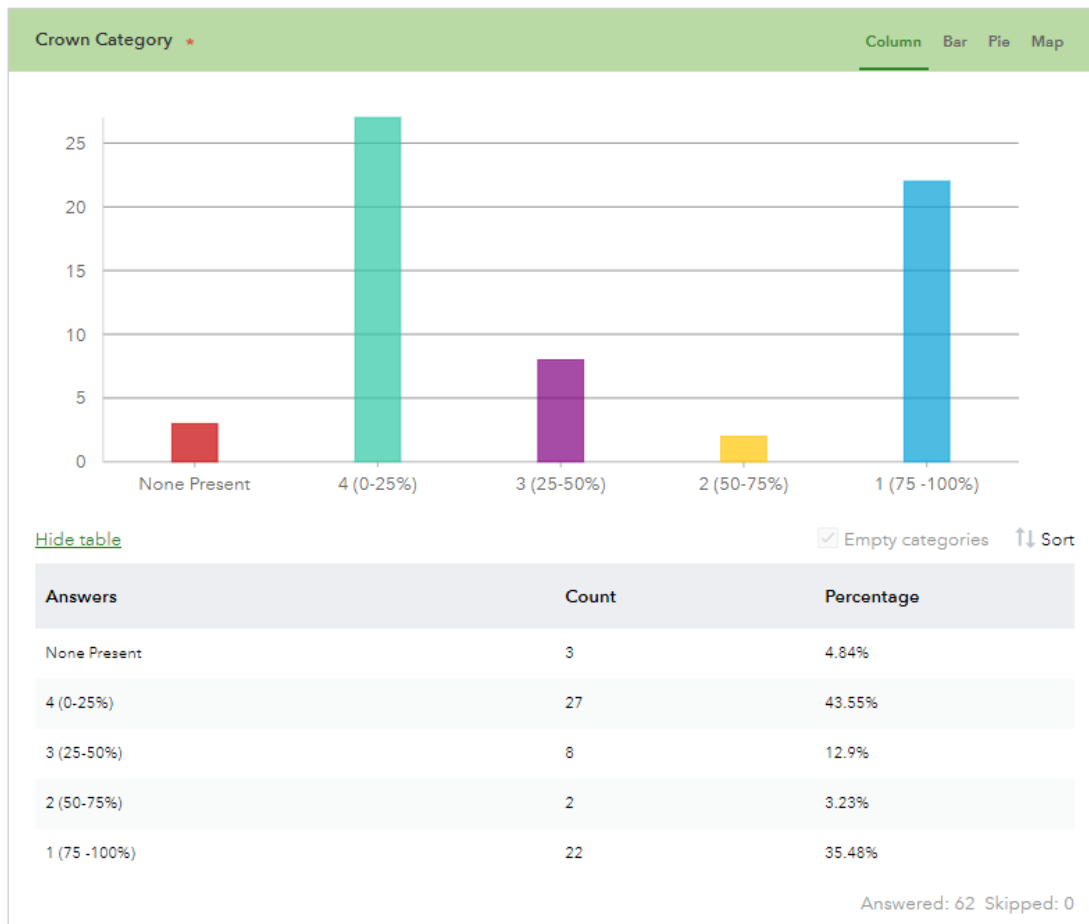


Fig 18 Data from Arc Online showing % of Crown with no leaves on Ash trees

Again, adopting a digital approach to the problem means that data from the survey is immediately available. The table above (Fig 18) shows the results of one element of the survey – the % of the crown affected by the disease – this is a good indicator to the progress of the disease. Of the 62 trees surveyed at the time of this report, 95% showed some signs of Ash Dieback Disease, with 35% showing chronic signs. Having the data in this format and the use of the mobile App, has meant we can speed up tree surveys and will allow us the opportunity to survey the trees more frequently. Results of the survey will feed into the tree management activity this winter, with jobs entered for completion into workforce manager. This could be felling, pruning or other mitigating measures such as excluding people from the vicinity of a diseased tree.

Fig 19 below shows the web map monitor that includes the details of all Ash Trees surveyed and will be used to monitor and ensure we re-survey trees as required, in order to ensure public safety.

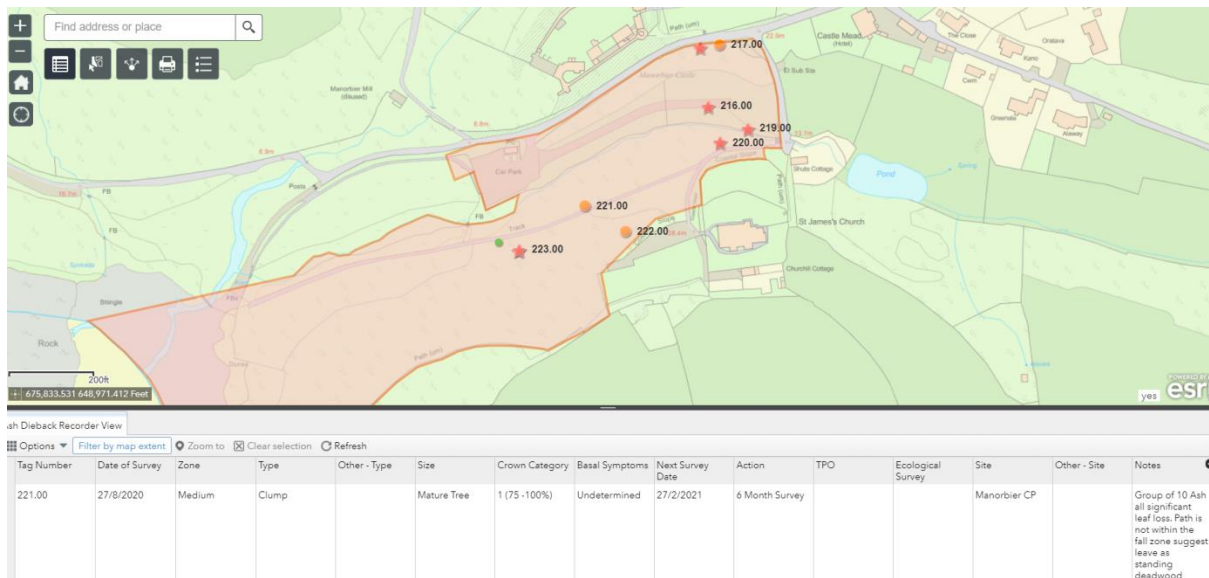


Fig 19 Web Map showing results of the Ash Dieback Survey at our Manorbier site.

A full report into Ash Dieback on our estate and how the issue is being managed, will be produced when the survey is complete.

6.2 Pollinator Warden – using ArcGIS Online

A Pollinator Warden joined the Countryside Management Team in 2019. The aim was to improve our habitat management for pollinators, primarily along the Coast Path. With some sections of path receiving up to 3 cuts a year, it was important to understand the impact our management was having on flowering plants and how that management could be improved for pollinator species.

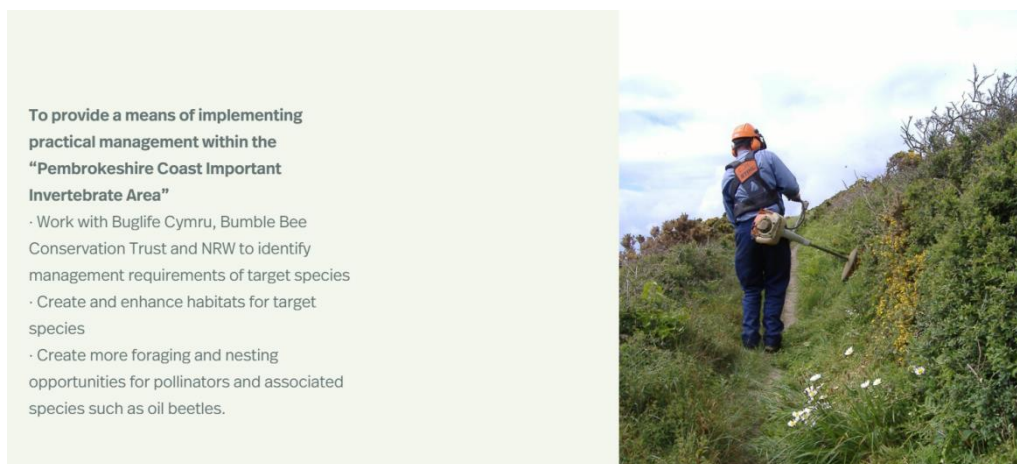


Fig 20 Project Overview, taken from the Pollinator ‘Story Map’.

The work initially involved surveying the Coast Path in the West Team Area, to find candidate sites for habitat improvement. Candidate sites included boundary banks that could be managed more effectively for bees, gorse and blackthorn tunnels that could be scalloped, water bodies that could be opened up and ant hills that could be cleared of vegetation. Again, Survey 123 proved invaluable

in collecting information on candidate sites, quickly and efficiently. The survey was completed far more quickly than anticipated and as a result has since been extended to the rest of the Coast from Goodwick to Sandy Haven. Improvement works were then planned and scheduled in Workforce Manager, for completion by Wardens, Rangers or Volunteers – again a very efficient process, keeping paperwork to a minimum.



Fig 21 Candidate Sites for Pollinator Habitat Improvement on the St Davids Peninsula

In total 352 candidate sites for improvement have been recorded within the system to date, with 82 having been assigned and completed before the authority went in to lock-down.

The digital aspect of this project has meant that activity is automatically recorded. Not only does that free up time for staff to concentrate on core aspects of habitat management, it also provides an archive of data for monitoring and telling the story. To communicate progress, the 'Story Maps' function of the platform has been used. Project data will also eventually form the basis of a training guide for present and future Wardens, to ensure the learning points from the project form a lasting legacy.

7.0 Future Plans

Whilst the team has successfully adopted our new approach over the last 18 months, there is still further improvement to be made. Investment in the teams systems and processes had been lacking for many years and we had fallen behind in many respects. Having said that, we have concentrated in the first instance on improving our core systems and functions, we have also used the software to support new challenges such as Ash Dieback Disease and new projects such as the Pollinator Project.

To build on what we have already achieved, and make those improvements sustainable in the long term, more development is required. Future plans include the following -

- **Time Recording**

Whilst job planning and recording has now been embedded into the new digital system, there are significant parts of our processes missing. At present we do not record the length

of time it takes to complete tasks, this information is still recorded on paper. It is planned to change that during the course of the next year, so that Wardens are recording effort against each job completed within the system. Only then will we have the full data we need in order to plan capacity and assess the cost of the work we are asked to deliver at a more granular scale.

- **Continued transformation of Warden Team Processes.**

There are processes within the Warden Team still awaiting improvement. Of greatest priority is a digital system for recording Site Inspections and Risk Assessments. This will include condition reports for site infrastructure, standard Tree Survey information and records associated with visits following adverse weather events. We will also look at adapting Bridge Surveys to include other structures that could pose an increased risk to users – such as coastal steps, boardwalks and rights of way along coastal defences. This will give us improved record keeping and enhanced ability to monitor.

- **Integrating procurement at Cilrhedyn Workshop**

A new digital system for creating orders for new furniture and timber from Cilrhedyn Workshop is a possibility. This will improve the monitoring of sales and delivery at the workshop. The system could be used to improve the flow of orders from the field to the workshop – this will be explored further.

- **Technical improvements to existing Apps.**

This includes improved offline working capabilities and improved data and mapping. We will also look at the possibility of moving away from using mobile phones and utilising shared tablet devices.

- **Public Engagement and Inclusion.**

The online nature of the system lends itself to improved engagement with the public – both residents and visitors to the National Park. With cloud-based systems such as Arc Online, we have the opportunity to build systems that are either visible or useable by the public. An Online reporting tool for issues on rights of way is a prime example. It is entirely feasible, and straightforward now the investment has been made, to create a web based version of Fault Reporter for use by the public or volunteers. This has the added advantage of standardising the feedback so that it matches our requirements.

- **Improved Reporting**

Whilst we have used the Story Maps function to outline progress so far with the Pollinator Project, we have yet to utilise that function to tell the Warden Teams story. Much of the daily activity of the Warden Team goes unseen, but may be of wider interest. The availability of data lends itself not only to improved communication about the work of the team, but also improved reporting in the form of annual reports.

- **Supporting other Teams**

Teams across the authority have expressed an interest in using the system or parts of it. Community Archaeologist Tomos Ll Jones is using Survey 123 to record and monitor the condition of Scheduled Ancient Monuments within the National Park for example. This type of functionality could be made available to other teams for similar activity, including by volunteers. We will work to support that where there is a demand.

Conclusion

The team has come a long way since the digital transformation began in October 2018. Many of our work processes have changed considerably, cutting administration and reducing the need for time consuming back-office support. The Warden Team, despite a lack of experience in using a digital approach to their work, can be commended for the way that they have enthusiastically adopted new ways of working.

The report shows web based working is a distinct advantage for remote teams, working outdoors, particularly with the technology available today. This type of working has also ensured we remained resilient in the face of the Covid 19 pandemic.

As a Team we have increased confidence in our ability to deliver functions associated with inspections. As these relate to risk, it is imperative that we have an effective recording system, to ensure we are meeting all of our obligations and leaving nothing to chance.

In the past we had few monitors and therefore found it difficult to identify areas for improvement. This new systems provides improved visibility and the data we are collecting can be used to good effect in future years.

With a varied portfolio of work – delivering work for many teams within the Authority, it was crucial that we worked to integrate all workflows, into one centralised system. This is the key to improving efficiency. The Job Management System is key to delivering this aspect.

As with all transformations, there is still much to do and we will continue as a team to improve and progress over the coming years, in order to build on our ability to deliver all that is asked of us, at a time when there are many uncertainties and challenges.