

Ancient Pollard Management Plan Aspal Close LNR 2011



On behalf of Forest Heath District Council

Vikki Bengtsson, Reg Harris
Pro Natura & Urban Forestry

July 2011

All pictures taken by the authors

Introduction

Aspal Close SSSI is in Beck Row, north-east of Mildenhall, on the western edge of the Breckland area. The site was purchased in 1982 by the District Council as a public open space and is well used locally. Historical records for the site date back some 800 years. The site is approximately 19 hectares and is a wood pasture with 183 oak pollards. There are additional oak pollards outside of the site in amongst the houses nearby.

In 1999 a full survey of the oak pollards was carried out by Treeworks Environmental Practice (Fay & De Berker, 1999). Unfortunately the maps identifying the trees have been lost, which means that the management prescriptions cannot be matched to the right trees. This has resulted in a difficulty in prioritisation; which trees and/or which areas to concentrate on. This prioritisation is vital when dealing with a relatively large population, with limited time and resources. It was therefore decided to re-survey the site to update the management plan to ensure that resources are being allocated to the most appropriate trees. It is hoped that with the new photographs taken in 2011, that it may be possible to match up the trees from the original Fay and De Berker report (1999).

Method

The survey of the pollards was carried out in March 2011 by Vikki Bengtsson, Pro Natura and Reg Harris, Urban Forestry. Each tree was tagged with a metal tag which has a specific number. These were then matched, where possible, with the Arbortrac numbering system used by Forest Heath District Council. All trees were photographed and the direction in which the photograph was taken recorded. The trees were surveyed using a specially enhanced adaptation of the English Nature's Specialist Survey Method (the SSM) (Fay & De Berker, 1997). The SSM system was originally designed by Treework Environmental Practice (TEP) for English Nature (now Natural England). TEP have further developed this system to include a veteran tree management model including an arboricultural viability assessment (Levels 5 and 6) (Fay *pers. comm.*). It is this latter, enhanced element of the survey system which has been used at Aspal Close (Bengtsson & Fay, 2009, Fay, 2002).



The arboricultural viability score is a measure of the condition of the tree with regard to vitality and stability. The vitality assessment ranges from 1=Dead, up to 10=exceptional vigour. The decline assessment takes a similar approach to the estimation of the tree falling into radical decline within a period of five years. Decline expectation ranges from 0=Dead, 1=extremely high decline expectation, up to 10=improbable failure. The structural failure/collapse assessment ranges from 0=Dead, 1=extremely high failure expectation (catastrophic), up to 10=improbable failure within an indicative period of 5 to 10 years. These scores are aggregated to identify a quantified arboricultural score (maximum of 30) in order to inform future management. It was designed for surveys of large tree populations to assist prioritising prescribed tree works. The aim of this work is to optimise their long-term viability and survival and thus continuity for the saproxylic habitat they contain and the dependant organisms.

The survey recorded the following items:-

- Assessment of live growth and past management
- Amount of shade
- Presence of epicormic growth and its location
- Arboricultural viability assessment.
- Management plans for each tree to support their viability and habitat continuity¹.

The results of the survey are presented in:-

- An excel spreadsheet database, that contains a prioritised work schedule and which can be updated.
- Photographs of the trees in *.jpg format on a CD
- This report outlining key findings from the survey and some more general site management recommendations.

The purpose of this report is to provide information and management proposals to support long term veteran tree habitat at these sites; it not designed to address risks posed by trees in relation to public safety. This assessment is time-limited and recommendations relate to conditions at the time of inspection. Tree growth is continual and the effects of any debilitating factors may be progressive. Due to these dynamics, regular tree assessments are advised.

This is a preliminary assessment from ground level and observations have been made solely from visual inspection. No tools have been used to aid the assessment other than binoculars. No invasive or electronic decay detection devices have been used in assessing trunk condition. Measurements for management are approximate and recorded in metres or given as a percentage of the whole crown.

As the tree inspection has taken place while the trees were not in leaf observation of twig and bud character, as well as general tree condition have been taken into consideration. In addition, the tree inspection has taken place at a time of year which potentially restricts the availability of evidence of fungal presence and activity, subsequent inspections may confirm the presence of significant fungi that were not originally observable. Ivy and herbaceous ground cover was present surrounding or covering some trees. It remains possible that the presence of ivy around tree stems or within canopies may have obscured defects.

¹ Although, tree risk is not within the remit of this survey, both hazard and target value were considered by the surveyors when specifying management works.

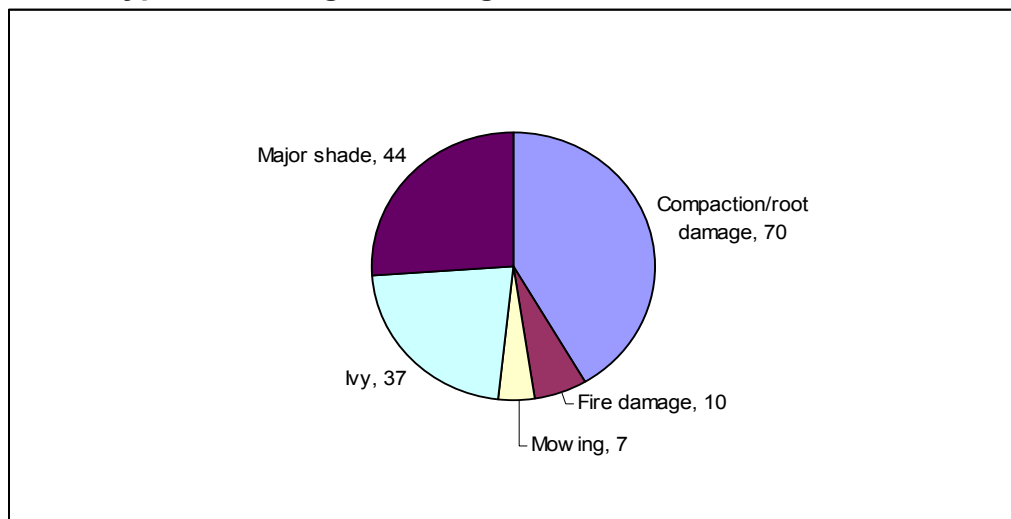
Results and Conclusions

194 veteran trees were surveyed, 2 of which were hawthorn and the rest oak pollards. Of these 194 trees, 173 were still alive at the time of survey in March 2011. 183 of these were within the nature reserve.

Damage/threats

The main cause of recorded damage was root damage/disturbance and compaction (70 trees) which was caused by human disturbance (i.e. cycle ramps and trenches), footpaths, and digging by rabbits. Compaction of the soil reduces the amount of air spaces in the soil and turn therefore reduces the amount of water and nutrients available to the tree roots. Major shade was the next most significant threat to the trees (44 trees).

Figure 1: The types of damage affecting the veteran trees

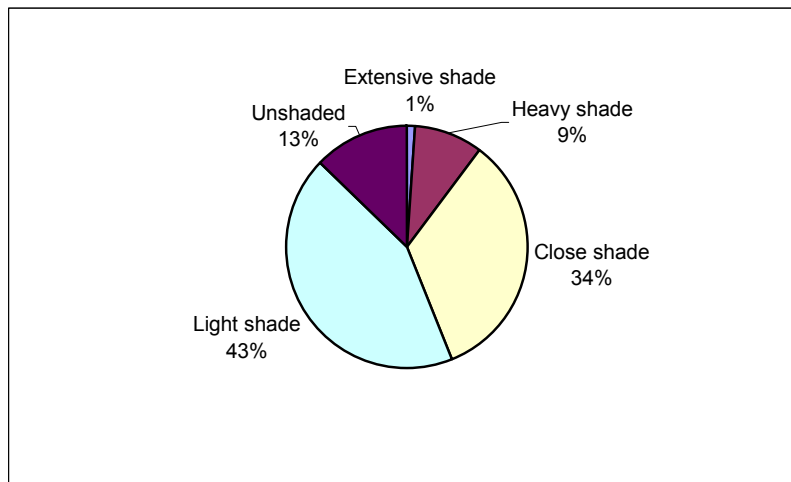


The degree of shade was recorded using the following scoring system:

- | | |
|---|---|
| 0 | Unshaded - unshaded at present |
| 1 | Light Shade - shaded on one or two sides but not from above |
| 2 | Close Shade - shaded on three or four sides, not from above |
| 3 | Heavy Shade - shaded from above and one or two sides |
| 4 | Extensive Shade - shaded from above and all aspects |

Very few trees are unshaded (13 trees in total) which means that shade represents a significant threat to the veteran trees of Aspal Close. It is well known that shade has a major impact on the viability of veteran tree populations. It inhibits the “growing downwards” or retrenchment process by shading shoot growth in the lower crown and encourages trees to grow in ways which results in extended heavy limbs and increases the likelihood of structural failure. It also results in significant competition for both light and nutrients. One of the difficulties with shade at Aspal is the fact that the old pollards often grow very close to one another and thus are now shading one another. This is why recommendations for clearing the vegetation around the old pollards is sometimes proposed for groups of trees to be carried out at the same time. Work by Alexander *et al* (2010) has shown that this is favourable for old oak pollards.

Figure 2: This diagram shows that 44% of the trees at Aspal Close have shade as a serious threat.



Arboricultural Assessments and Viability Score

In this system, described in the method, there is a maximum potential score of 30 for each tree. Trees that have a score of 10 or below are considered to have low viability (i.e. there is a high risk of losing these trees within the next 5-10 years). Trees that have scores from 11 to 20 are considered to have a moderate viability (i.e. their risk of failure within the next 5-10 years is considered to be likely to be remediable). Trees with an arboricultural score over 20 are considered to have high viability at the time of inspection. When applying this system to veteran tree management specifications, it is also important to consider that trees with high vitality and high likelihood of structural failure have a good potential to respond well to tree surgery. This is in contrast to trees with low vitality where there are far fewer options for management to improve viability.

Only 1.7% of trees (as a proportion of live trees) at Aspal have a viability score below 10. These trees are considered likely to die following partial or total collapse or decline and are unlikely to be remediable. There are in addition 8.1% of the veteran population prone to advanced decline (scoring between 11 and 15). However, the mean viability score for all trees is 19.7, indicating that the majority of the population (156 trees) is above the threshold of 15 and show fair vitality and a relatively low probability of total failure through collapse or decline. It is considered that 56% of the population is remediable and 42% currently have a good viability score. This means that with the implementation of the management schedule the future looks bright for at least 90% of the population of veteran trees at Aspal Close. See Tables 1 and 2 below.

Table 1: This table indicates the condition and viability of the veteran trees. It is a method of identifying trees that may be targeted for arboricultural works.

Viability Score	Count	% of Total Live Trees
7	1	0.6
9	1	0.6
10	1	0.6
12	1	0.6
13	2	1.2
14	3	1.7
15	8	4.6
16	9	5.2
17	12	6.9
18	17	9.8
19	17	9.8
20	28	16.2
21	21	12.1
22	22	12.7
23	13	7.5
24	9	5.2
25	5	2.9
26	3	1.7
Total	173	100

Table 2: Summary of viability assessment results

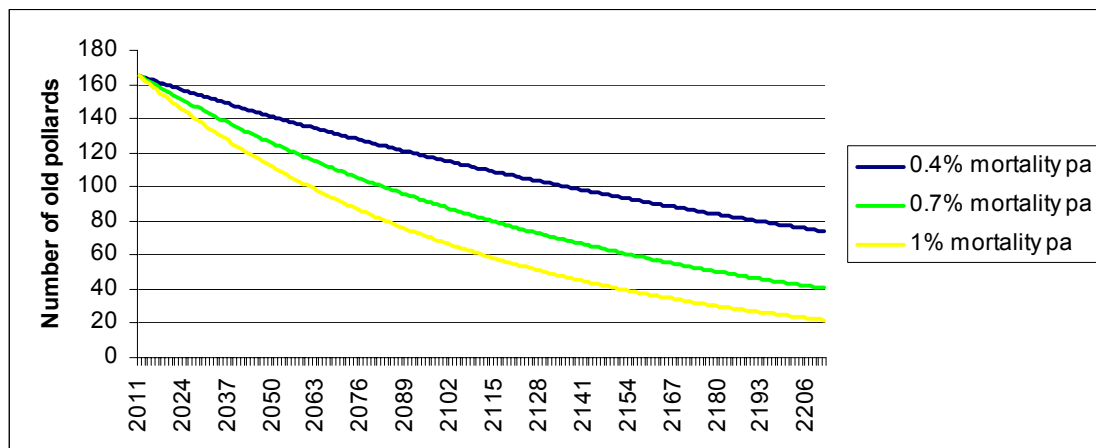
	Number of Trees	% of Live Trees
High Risk of Failure	3	1.7
Remediable Trees	97	56.1
High Viability Trees	73	42.2

Mortality rates

In 1999 when Fay and De Berker surveyed Aspal Close, they recorded 182 old pollards of which 9 were dead. In 2011, 17 were dead. Although the individual trees cannot be matched up, the overall figure can be used to give an indication of the mortality rate over the 12 years since 1999. The annual mortality rate is 0.4%, which is relatively low compared with other sites surveyed by the authors of this report (Bengtsson & Fay, 2009). The mortality rate can be used as a useful and simple monitoring tool. It also helps guide management. It shows that for Aspal it is crucial that there are adequate numbers of replacement oaks which are able to reach the habitat qualities of the existing trees within 150 years. That sounds like a

long time; however the next generation of trees are in general quite young. A useful piece of work would be to do a simple survey of the younger oaks and split them up into different age classes. A more accurate picture of the population structure could then be modelled. A key conclusion that is also important to draw from this information is that the mortality rate should ideally not be allowed to increase. Measuring the mortality rate (i.e. number of trees which have died) is a useful and simple monitoring tool that could be carried out every five years (Bengtsson & Fay, 2009, Bergman, 2006).

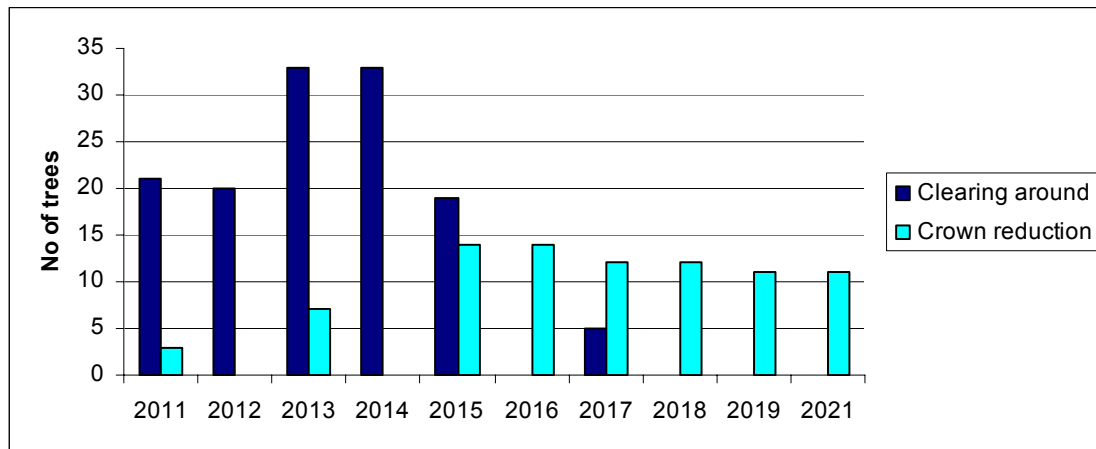
Figure 4: Diagram showing the changes in the population of the old oak pollards with varying mortality rates.



Management recommendations and their interpretation

Clearing the competing vegetation (also known as haloing) from around the pollards is recommended for 41 trees within the coming two years. When trees are shaded, they are forced to seek light and this can result in the crown becoming unbalanced. Clearing should be carried out carefully without too much being removed at once which can lead to other problems such as exposure to wind or drying out. In addition the water and nutrient balance changes when trees and bushes are removed. In general the management recommendations for releasing the trees involve clearing under the crown and a few metres outside to begin with. On occasions, it is recommended that trees are cleared around in small groups because of the impact they are having on one another. A combination of management techniques should be adopted including ring barking, pollarding as well as removal. The longer the period of time the tree has been shaded the more slowly the clearance work should be.

The trees which have been recommended for crown reduction as a high priority; ten within the next two years are those which have a high risk of losing large parts of their crown which could be catastrophic, but which also have a reasonably vitality. This means that the management efforts are more likely to be successful and the tree more likely to respond well to the cutting.

Figure 4: Diagram showing the spread of work over the coming years

A prioritised management schedule is provided in the associated Excel spreadsheet and is associated to the tree tag number and Arbotrac number where it was possible to connect them together. The management schedule has been arranged according to the priority advised for the implementation of each operation. Each tree may however, have a series of treatments ordered in stages over a number of years. Monitoring and regular re-inspection of trees is essential for the full benefit of the management regime to be realised. Data should be systematically recorded and retained. Subsequent stages of management programmes should take account of the response of veteran trees to previous phases of treatment and programmes should be sensitive to adjustment. It is for example possible that the proposed management programme be halted or the period between treatments extended if the response from the tree is poor or slow.

Factors influencing the timing of tree work

To optimise success with tree pruning the following issues are worth considering and including in any contracts:

- No works should be carried out during periods of drought, (A period of drought is considered to be 20 consecutive days without rain). If a dry period follows pruning the root zone of each tree that has been pruned will require watering.
- No pruning works should be carried out on trees in the year following an exceptionally dry summer. In some cases this may over-ride works scheduled in as routine tree risk management, however there may be particularly dangerous trees that will have to be worked on during this period.
- Contractors should be aware of the vulnerability of veteran trees to hot and dry weather. It is recommended that there should be flexibility in their employment contract that ensures that financial / contractual pressures do not lead to trees being worked on during exceptionally hot periods.

In some areas, the trees are very close together and where appropriate, management recommendations have been given which may involve work being carried out at the same time to several trees in an area. This is particularly the case for shade clearance of the understorey vegetation. If tree work is carried out on only one of these trees, there is a risk that the others continue to be shaded. Due to the inherent variability and condition of veteran trees, it has not been possible to do this everywhere, even if it had been desirable. The risk of doing work to several trees at the same time (generally not recommended due to weather risks – see table below) has been taken into consideration when making these decisions.

Where management has been recommended an end height has been proposed for the tree, which is the height of the whole tree and main stems after the end of all management work (which may take 20 to 30 years to reach). A period for management has also been given which is the number of years from the year of the first operation to the last operation. The number of operations is also stated. The management operations are specified under the headings of *one off/first operation* and *recurring operations* and then under a priority for works within each of these two categories. The amount of crown to be removed has been specified in metres when the work is to take place relatively soon (according to BS 3998) and in percentages when it is recommended for further into the future because this is more difficult to predict.

Example

Final height aim (m)	Period for management (years)	Number of operations	One off/first operation	Recurring operations
			4 - 5 - 10 years	5 - +10 years
8	30	4	Reduce crown by 15%	Reduce crown by 10% every 10 years

The above example should be interpreted as follows:-

The final height of the tree should be 8m after all four operations and after a period of 30 years from the year of the first operation. The first operation involves reducing the crown by 15% within 5-10 years of 2011 (e.g. 2017). The following recurring operations (reducing the crown by 10%) should be carried out approximately every ten years (e.g. 2027, 2037, 2047). The final operation in this case would be 2047 assuming the first operation took place in 2017.

There are some operations which are cyclical and thus do not have an end time period specified, nor number of operations. In these cases, the management is expected to be ongoing and this may include clearing around the tree or where pole thinning has been recommended for example.

Even if there are recurring operations recommended, each management operation **must be evaluated** before the next one is carried out. It is very difficult to see into the future and there are also many other factors which can play a part, such as disease, weather or climate change. It is also very important that the work is carried out by arborists with **experience of**

working with old trees. There are many differences in working with old trees in comparison with younger trees and this must be taken into consideration, such as the length of stubs, time of year, how much to remove etc. See the reference list for more detailed information (Read *et al*, 2010, Read (ed.), 2000, Fay, 2002, 2003, Bengtsson & Fay, 2009).

General site management recommendations

There are a great number of recommendations which include regular maintenance of the competitive vegetation such as holly or in some cases hazel which are shading the lower crowns. Grazing by rabbits keeps large areas of the site open, but additional clearance work of some of the scrub vegetation will be necessary. It is therefore recommended that the scrub areas are put into a rotation management cycle of approximately 20 years (where a small area is cut annually). This will create areas of scrub in different successional stages across the site, without shading the old trees. Grazing with cattle at low levels in combination with the rabbits would be an ideal solution in the longer term and may reduce the amount of manual clearance required.

Aspal Close is a wonderful site, but it is relatively isolated and surrounded by housing on all sides. This means it is vitally important that at the same time as implementing management for the old trees that adequate numbers of new trees are pollarded to ensure that they old ones can be replaced when they die. If pollarding proves to be too intensive, then ensuring that there are open grown oaks would be a suitable alternative, although the habitat formation is likely to take longer. The reason for continuing with pollarding is that it speeds up the process of habitat creation in oaks. Experience from France and Sweden suggests that hollowing begins one or even two hundred years earlier in pollards than in open grown unmanaged trees.

Acknowledgements

Thanks needs to go to Reg Harris who helped significantly with the preparation and field work. In addition to Neville Fay, who made all previous information available and helped in gaining a better understanding of the site. It is hoped that this work and the report produced by Fay and De Berker can in the future be connected to the appropriate trees by using the photographs from both surveys. Thanks also to Matt Vernon, Forest Heath District Council, who provided very useful maps and background information for the survey work and the report.

Reference list

- Alexander, K.N.A, Stickler, D. & Green, T. (2010). *Is the practice of haloing successful in promoting extended life? - a preliminary investigation of the response of veteran oak and beech trees to increased light levels in Windsor Forest*. Q. Journal of Forestry, Vol. 104 (4): 257-265.
- Bengtsson, V. & Fay, L. (2009): *2009 Veteran Tree Survey, Ashted and Epsom Commons*. – City of London Open Spaces Department, City of London report. www.pro-natura.net
- Fay, N. & de Berker, N. (1997). *Veteran Trees Initiative Specialist Survey Method*. English Nature, Peterborough.
- Fay, N. (2002). *Environmental Arboriculture, Tree Ecology and Veteran Tree Management*. The Arboricultural Journal, Vol 26, No 3. 213-238.
- Fay, N. (2003) *Coronet cutting and retrenchment pruning. Natural fracture pruning techniques*. www.treeworks.co.uk
- Read, H. J., Wheeler, C. P., Forbes, V. & Young, J. (2010) *The current status of ancient pollard beech trees at Burnham Beeches and evaluation of recent restoration work*. Quarterly Journal of Forestry. Vol 104, No.2. 109-120.
- Read, H. (2000) (ed). *Veteran Trees – A Guide to Good Management*. English Nature: Peterborough.
- Bergman, K-O. (2006) *Living Coastal Woodlands*. LIFE NATURE report.