

Oak Processionary Moth (OPM)

Control Plan for 2013/14



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1 Plan Ownership

This plan is prepared by FC for adoption by the OPM Advisory Group. It sets out collaborative action between FC, other Government bodies and stakeholders to control OPM in the London area.

FC's role is to implement Government policy on tree health in partnership with FERA and others. If aspects of this plan fall outside this remit, other partners will be expected to take work forwards.

2 Plan Objectives

Plan objectives are:

- To contain OPM (i.e. OPM no longer spreads further) in West London within a time period to be defined.
- To eradicate isolated findings elsewhere in England.

This implies a medium term commitment in West London. It keeps the door open for eradication depending on research, new resources, science etc, as in 2010, following advice from Forest Research that eradication was no longer feasible, Ministers agreed to move from a strategy of OPM eradication to one of containment in the West London area. This was largely due to the increased difficulty of control as the moth became established in more wooded areas.

On the basis of observations from recent survey and reports from those undertaking treatments, we believe that if enhanced action through prophylactic spraying were applied to some 60,000 ¹oak trees over a 3 year period the population of OPM could be drastically reduced.

3 Background and Current Position

Details on policy context, regulatory framework, OPM biology, control methods, current methodology and research activity are all contained in Appendix 1.

Both the number of OPM nests and the area affected have doubled in the last two years. In 2012 the West London OPM outbreak extended into the London Boroughs of Hounslow and Kensington and a new outbreak was identified in 2012 in SE London on the Bromley/Croydon boundary.

In broad terms the current London outbreak covers between 2,000 - 3,000 hectares of woodland/street tree area. The extent that we know about is distributed across 10 London Boroughs and out into the Elmbridge district of Surrey. It includes a minimum of 50 distinct properties and strings of properties along streets. The general consensus from surveyors, arboriculturists and those working on the ground is that the number

¹ 60,000 trees is a broad assessment of the existing capacity to undertake prophylactic spraying

of infested properties is far greater, possibly double this figure. Advice suggests that prophylactic spraying is the only known effective means of controlling/reducing the population and when applied in appropriate conditions at the right time of year, all the 3 main recommended chemical spray treatments are capable of achieving an 80-90% kill of larvae/caterpillars. The treatment period for the 2 most widely approved chemicals is roughly mid-April to end of June dependent on dates of leaf emergence.

Apart from Pangbourne and a few key sites in Richmond and Ealing Boroughs, effort to manage OPM has until now focused on manual nest removal. Manual nest removal has helped reduce the rate of spread of OPM. In response to advice of the OPM Advisory group and others the decision has been taken to significantly step up action to contain and reduce the population of OPM in 2013 and for Government to support a widespread pilot programme of enhanced prophylactic spraying and nest removal.

Any programme of prophylactic spraying is necessarily restricted by the need to minimise the impact of pesticides on SSSIs (e.g. Richmond Park), by the inaccessibility of certain sites (e.g. Wimbledon Common) and by safety factors (e.g. around key transport corridors). It is also currently limited by the availability of suitable equipment and experienced operatives to undertake this whole tree spraying work.

A preliminary review of Government's pilot for enhanced support will take place in Autumn 2013 and then repeated annually for as long as the pilot runs.

This plan reflects the articles of the Plant Health (Forestry) Order 2005 as amended (no:644) and enacted 31st March 2008.

4 The Need for Co-ordinated Action

Collaboration will be required for effective control of OPM. The risk of re-infestation from neighbouring properties is highly likely if adjacent landowners do not work together. The Advisory Group plays an important role in coordinating effort so that control is consistent and cohesive and that as far as possible we conduct a full survey of London's affected trees.

Information sharing

A crucial principle of this plan is that all stakeholders involved in OPM management share their information freely to support the collective effort. Advisory Group members are expected to keep the group informed of key information, including:

- Emergence of oak-leaves
- When larvae are first seen hatching
- When larval stages 3-4 are first seen
- Key outbreaks e.g. isolated and outlying locations, high nest numbers found
- Any other information on patterns/trends that will be of interest

Such information would normally be shared amongst the group via email rather than waiting for the next Advisory Group meeting. Thought will also be given to setting up a "knowledge centre" similar to that which operates in the Netherlands.

5 Survey

A crucial change for 2013 will be the coordination of survey effort for optimum coverage of areas at risk of infestation. This will involve all key stakeholders including FC, major landowners, Boroughs, NGOs and trained volunteers working together.

5.1 Host Tree Survey

Survey will begin at the earliest opportunity. It will detect when larvae hatch (April through to May) and hence when prophylactic spraying should commence. Survey will start in earnest as soon as larvae are visible i.e. larval stage 3-4, which can occur from May through to June depending on weather conditions and restrictions highlighted in Section 3 above.

FC Survey

FC will survey potential host oak trees within the buffer zone (see Appendix 5). They will collect information on all inspected trees whether they are infected or not and populate a new OPM recording system which has been trialled in the Bromley/Croydon outbreak zone. This will permit all OPM data (FC and others) to be collated into a single source. See Appendix 8.

The geographic scope of FC survey will be regularly reviewed to optimise available resource and permit effort to be diverted elsewhere should a new outbreak be found. Stakeholders will be informed.

The FC survey may be conducted in collaboration with partners e.g., FERA, Local Authority staff and other organisations such as the Corporation of London. This FC survey is separate from the FC review of sites that were previously issued with SPHNs 2010-2012. See section 6.

Stakeholder Surveys

Surveys using the OPM recording system by non-FC surveyors will focus on:

- The core zone
- Areas adjacent to the FC survey area

Where new infestation is found, the FC will verify infestation, liaise with landowners and issue Plant Health Notices.

Training of non-FC surveyors

The FC will provide training for non-FC surveyors at the beginning of the survey season. At least one half day and one evening event will be held. Further events will be considered for contractors/landowners and may be chargeable.

Overseeing volunteer surveyor activity

Volunteers will be utilised in lower risk locations and/or where other survey resources are not available, this is probably limited to the survey of public spaces. Volunteer survey and data input to the new recording system will need to be overseen by the landowner and/or Local Authority

Volunteers would not be expected to liaise with landowners in the event of infestation being found; this would normally be done by FC, FERA or Borough officials.

The OPM Advisory Group will help identify potential volunteers such as Tree Wardens, Trees for Cities, TCV, LLT, Friends-of groups. The FC will train trainers and volunteers. A sample check system will need to be applied by landowners to ensure that the quality of volunteer survey information is satisfactory.

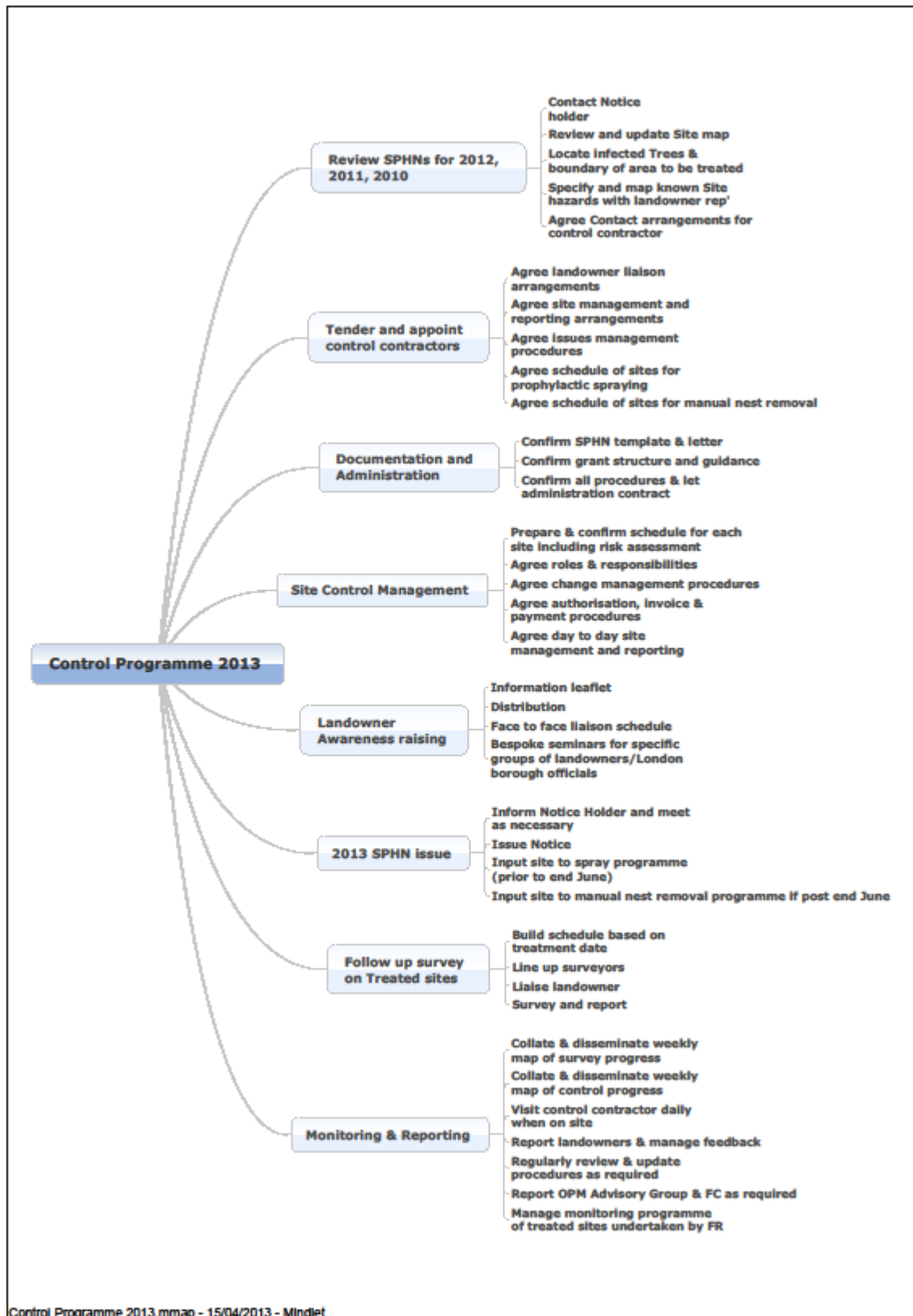
5.2 Winter surveys

Winter surveys for OPM can usefully supplement the previous season's survey. Survey should be done as soon as all leaves have been shed, usually December - mid March. A more thorough survey of the tree can be carried out but there are limiting factors in terms of light quality and the nests becoming more camouflaged with age. By targeting known infested trees (and trees nearby) it can provide valuable data on the effectiveness of previous control measures and identify any remaining nests.

5.3 Pheromone traps

Pheromone traps should be used for monitoring adult moth emergence (July-September) as soon as the technology for their use has been mastered. Over the past five years the network of pheromone traps has neither captured as many moths as expected, nor proved particularly effective at monitoring their spread. Current research is focusing on how to improve trapping techniques. A Practice Note on monitoring OPM with pheromone traps is about to be published, after which the Advisory Group is encouraged to invite selected landowners to test a network of pheromone traps to better detect OPM distribution for planning future control needs. Light traps could also be considered.

6 Control Programme



6.1 Preparatory Actions

This year's pilot programme of enhanced action will be based on an initial review of sites with active plant health notices for 2012 as well as key sites that received plant health notices in the years 2010 and 2011. Sites harbouring large numbers of OPM nests and sites located on the periphery of the current outbreak are being prioritised for support. Landowners are being contacted and documentation is being updated so as to assess site readiness for prophylactic spraying. Additional sites can be considered if appropriate. Once reviewed and checked through with the landowner, sites will be included in a schedule of areas for treatment by contractors. It is likely that for physical or other reasons some areas will be excluded but the presumption is to try and include as many sites as possible in a programme of prophylactic spraying. See Appendix 8 Document Flow

A three year framework contract for control services has been awarded to three arboricultural contractors for prophylactic spraying and nest removal on infected sites. It will be important that there is a commitment and clear administration for close working relations between contractor, landowner and the FC to ensure effective day to day management of sites, risks and variances.

At least £1.5 million funding has been awarded by DEFRA for the 2013 control of OPM delivered in accordance with the regulatory framework set out under the Plant Health (Forestry) Order 2005 (see Appendix 1). If successful the pilot approach, as follows, could have a wider application. As pre-notification of the intention to enter premises and execute control measures, landowners should be in receipt of a plant health notice issued under article 31 of the order. Landowners should have also supported and agreed a site assessment/job sheet and risk assessment for spraying and should have authorised entry of contractors onto site, supervised their work and be prepared to certify that work has been undertaken in an acceptable manner. The contractor will be paid direct by the Forestry Commission on provision of signed timesheets and a job sheet for each site. Only those works specified in the job sheets will be included in the programme. See Appendix 7 Document Templates

Wording of The Statutory Plant Health Notice (SPHN) template and accompanying letter has also been reviewed for 2013 and there will be a step change increase in the administration and progress reporting for control. See Appendix 7 Document Templates

6.2 Control Programme

Key Actions

- Prophylactic spray treatments need to take place from time of egg hatch until 3rd stage larvae, (April – June). Preference will be afforded to spraying with Bt and Dimilin, tackling priority sites first and then pursuing surrounding areas.
- Activity is dependent on suitable periods of dry, calm weather thus the logistics of having a schedule of "treatment ready" sites is crucial, only sites with an active SPHN will be considered. This will require the combined commitment of contractor,

landowner and FC working jointly to a clear and concise *modus operandi*. See Appendix 8 Document Flow

- Follow up survey by FC contract staff will take place roughly 6-8 weeks after spraying and any remaining nests will need to be removed manually thereafter, probably within 2 weeks. Support for this work will be dependent on available funds within the Government pilot.
- All sites will be subject to re-survey the following December – March.

Scope of Programme

The current plan is based on treating 60,000 trees over at least 50 different ownerships – estimated currently as approx 30% parks/open spaces with the London Boroughs, 25% Golf courses or sports clubs, 25% other institutional landowners and 20% (individual streets where residents in a street are considered as a group). In addition to Elmbridge District in Surrey, key London Boroughs that need to be engaged in this control programme are: Bromley, Croydon, Merton, Kingston, Richmond, Hounslow and Ealing. Other London Boroughs that have known infestations are: Brent, Hammersmith and Fulham, Kensington and Chelsea. The situation in Westminster, site of a former infestation, needs to be reviewed. Key institutional landowners that need to be engaged include: The National Trust, The Royal Parks, The Historic Royal Palaces. Government support for enhanced action is currently at least £1.5 million. The Forestry Commission will notify the Advisory Group when the rate of spend reaches 80%, so that alternative measures can be implemented to address any outstanding unfunded elements of the programme.

Some sites (estimated as approx 30,000 trees) may not be treatable this year due to access difficulties – these include Wimbledon Common and some underground/rail embankments. This amounts to as much as 30% of the known area of infested trees. Time to plan innovative solutions will need to be worked up for treatment in future years. Legal issues may also restrict activity. Much will depend on establishing positive landowner relationships.

Process

For a proposed document flow for this year See Appendix 8

Key timings and milestones (*) are presented in the table below:

Action	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar
Life cycle milestones	*	*		*		*					*	
Site assess'												
Landowner engagement												
Administration												
Spray												
Re-Survey												
Manual removal												
Monitor control												
Buffer survey												
Outbreak Map updates		*	*	*	*		*				*	
Process review												
Advisory Group meetings	*	*	*				*				*	
Press releases	*						*					
Landowner meetings		**					*					
Research project												
Stakeholder seminars/preparation for 2014							*	*				*

6.3 Landowner liaison

If infestation is found on a site, it is vital that landowners are informed in an appropriate manner to ensure they understand the issue and are positively engaged in helping control the infestation; this normally is the most effective way of achieving control compliance rather than statutory enforcement. The landowner 'toolkit' will be a crucial part of this work, but also needs to be coupled with appropriate training of appropriate people. The Forestry Commission wants to work in partnership with landowners to achieve the most effective control.

We would normally expect landowner liaison for infested sites to be undertaken by a member of the FC, FERA or Local Authority. There may be circumstances where a trained volunteer may liaise with the landowner but this would be carefully managed under the supervision of FC, FERA or the LA.

Where infestation is found, the landowner will be contacted to:

- Advise them of the infestation
- Provide advice on how to control OPM (nest removal, chemical control and prophylactic spraying) and contractors who are likely to be deployed.

- Work with the landowner to confirm the next actions
- Where appropriate, advise that they will shortly receive a statutory notice issued by the FC
- Advise them to work with the FC appointed contractors to undertake spraying/nest removal at the earliest opportunity, once they have a 2013 issued SPHN.
- Advise them that the notice must be adhered to. We have a duty to advise that the FC has powers to enforce action if the notice is not complied with
- The notice will identify the affected trees, specify the work required to control OPM and the timescale in which it must be carried out. See Appendix 7
- All this information will be collated into a landowner 'toolkit' (see below)

6.4 Serving Notices

Statutory Plant Health Notices (SPHNs) will be renewed annually (Legal advice from DEFRA). The current review of 2012 notice sites and key notice sites from 2010 and 2011, will trigger notice renewals. Where new infestations are found a Statutory Plant Health Notice (SPHN) will be served on the landowner but please note that:

- Due to limited resources survey effort will be focused within the Buffer Zone.
- Whilst the intention is to issue a SPHN for landowners with infested sites in the Core Zone, sites within the Buffer Zone will be prioritised.
- Notices will be served by FC or FERA (if required) through a standardised administrative process. The OPM Advisory Group will work with FC and FERA to confirm in advance, the latest possible issue date for a notice that requests spray treatments or manual nest removal in each given year.

6.5 Compliance

Required Response to receiving an SPHN

- All those receiving a Statutory Plant Health Notice this year will be expected to implement control measures.
- Those landowners with a signed grant agreement and associated documentation will be eligible for control to be undertaken by an FC appointed contractor. Contractor costs will be covered by DEFRA funding on receipt of confirmation that work has been appropriately completed. Funds will be distributed until they are exhausted, thereafter the landowner will be liable for costs.
- There must be clear and timely feedback from landowners to confirm that control has been carried out.
- The FC contract surveyors will carry out a follow up survey later in the summer to determine whether there are remaining OPM nests for removal. They will liaise with the landowner to instruct manual nest removal within a period of approx 2 weeks or otherwise as required.
- Landowners will also need to undertake follow up surveys in future years to confirm that control has been effective. FC/FERA will need to re-survey these sites to verify that effective control is being achieved.

The above process must be enacted within a short timescale for effective control. Infestations found late in the season make it very problematic to ensure control is enacted prior to the moth emerging.

The timescales are challenging. Within two weeks of nests being discovered they need to be removed. This is especially important the closer it is to pupation. There are significant resource implications for compliance monitoring and this is a critical phase for the control of OPM.

An SPHN issued for control of OPM will be re-issued annually for 5 years. It will be expected that the landowner continues to apply control measures for a period of 3 years from the date of first issue of the notice and that site surveys continue for a further 2 years to ensure that the pest has been eradicated. This only works if neighbouring landowners with infestations all work together to remove the pest from their properties otherwise landowners run the risk of re-infection from surrounding untreated areas.

Enforcement

Where the FC has no evidence that control has taken place within the statutory notice period, landowners will receive warnings of non compliance and further action may be taken. The legal position, taken from the Plant Health (Forestry) Order 2005 is that:

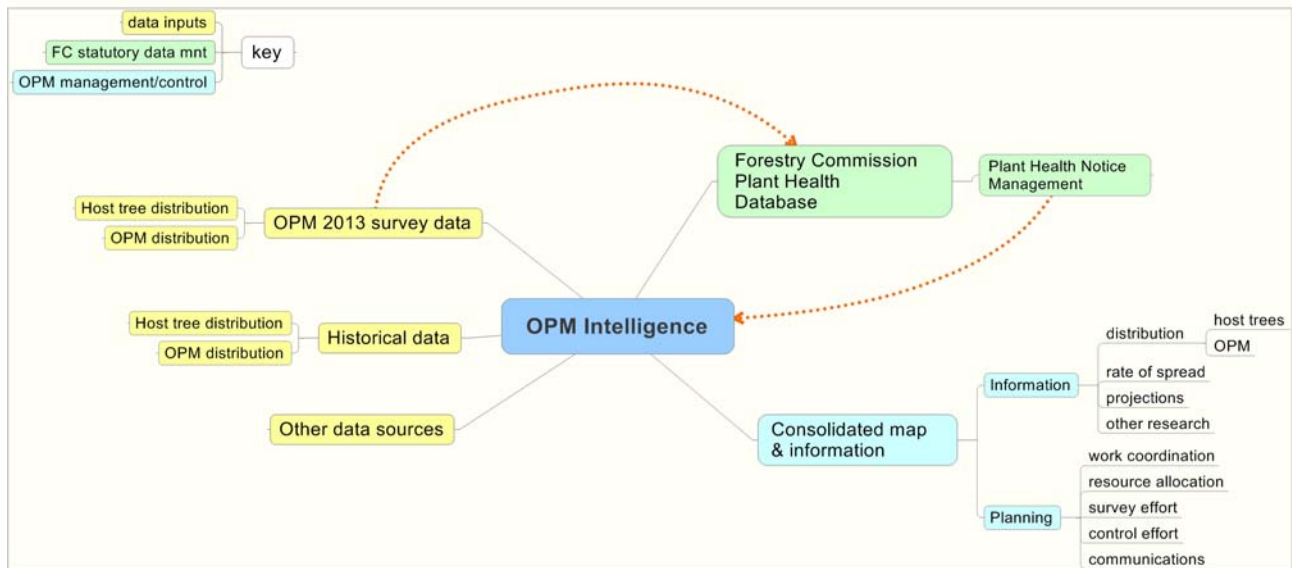
If any person fails to comply with a notice served under this Order then, without prejudice to any proceedings consequent upon such failure, an inspector may, on production if so required of his authority, at all reasonable times for the purposes of this Order enter any premises in which any tree pest or relevant material to which the notice relates may be present and take or cause to be taken such steps as appear to him to be necessary either to ensure compliance with the requirements of the notice or to remedy the consequences of the failure to carry them out.

An inspector entering any premises may take with him such other persons, including representatives of the European Commission, and such equipment and vehicles as he considers necessary for the purposes of facilitating the exercise of his powers under that paragraph, and such other persons whether or not accompanied by the inspector and on production, if so requested, of their authority given in that behalf by the Commissioners, may remain on the premises and from time to time re-enter the premises with any equipment or vehicles that person considers necessary, and carry out such work and in such manner as the inspector may direct.

Where an inspector takes any of these steps the Commissioners may recover all reasonable costs of taking such steps as a debt from the person on whom the notice was served.

7 Data Management

Figure 3: diagram indicating data interactions and how they will be used



The following is proposed:

7.1 Management System

An updated system will be introduced which records:

- all potential host trees (infested and non-infested)
- basic tree details to gain a holistic picture of survey progress and host resource distribution
- GPS co-ordinates for each tree/group of trees
- photographs with the ability to annotate, so nest locations can be marked
- data uploaded into a central point to permit fast sharing of survey information (at least monthly and possibly weekly during the summer)
- All data handling should be collected on the proforma in Appendix 6

The Forestry Commission will collate data and update stakeholders through a weekly (or as required) map-based report on the website <http://www.forestry.gov.uk/opm>;

FC England currently record and monitor sites for *P.ramorum* and other diseases. The attributes and capture of OPM data will need to be modified to become more consistent with data fields and standards used in this national database. This is likely to enhance the current data management methodology for OPM. Once achieved, OPM data will be added to national records. This work is necessary to ensure that we implement procedures consistent with other pest and disease outbreaks.

7.2 Review of Historical Data

Historical data will be reviewed to inform the current rate of spread of OPM as follows:

- Gathering and importing 2009-2011 FC contractor data sets including infected tree data and statutory notices into the new database
- Tracing, capturing and consolidating other sources of data on infected trees held by London Boroughs, Royal Parks, etc and inputting these to the new database whilst highlighting and seeking to rectify any inconsistencies and gaps.
- Creating an ArcGIS geodatabase of infected tree locations and developing a process for regular production of outbreak maps.

7.3 Wider Host Tree Distribution

Data sources on host tree distribution will be investigated to map distribution of oak (and other species if available – in anticipation of threats to other species), both street/park/garden trees and woodland, across all London Boroughs and Greater London. Polygon boundaries and point data on individual trees would be captured. This will require:

- Research into the availability of spatial datasets currently held by London Boroughs, Royal Parks, the National woodland inventory and others.
- Consolidation and standardisation of these datasets into a single ArcGIS geodatabase with a report that summarises the inconsistencies and gaps in host distribution data.

7.4 Spatial Analysis for Prediction of Future Spread

This will involve taking spread predictions (distance per year – which may change as the infection matures) from Forest Research and calculating the area/number of host trees at risk beyond the current outbreak at the end of each year (potentially up to 2035) using the host distribution data collected above. This could include 3 different control scenarios and hence different rates of spread.

7.5 Data sharing

The new OPM data collection system will be used by all surveyors, as it provides an online means of collating data rapidly. This will enable the FC to provide rapid and regular reports on OPM survey progress and the extent of infestation to all those involved.

Outbreak maps will be updated and if possible shared weekly during late Spring/Summer months.

8 Research and Monitoring

Forest Research has devised a 3 year programme to support this pilot, which is informed by and fills gaps generated by other DEFRA commissioned research on OPM. It assumes that a 3 year pilot may ultimately be implemented and breaks down into the following 3 main areas:

1. Monitoring the efficacy of this control programme:

- a. to analyse treatment information on job sheets against the follow-up survey data, and produce reports.
- b. requires 1 x PB4 statistician for 3 months per year (years 1 & 2) based with FR

2. Research into the biological control of OPM by natural enemies:

Parasite wasps and invertebrate predators appear to play an important role in limiting OPM populations in parts of Europe. This part of the programme will link to the work of entomologists at the British Museum for Natural History and in Belgium, France and Germany.

- a. to investigate parasitism and predation in OPM using new DNA sequencing techniques applied to the parasite and predator complex attacking OPM.
- b. requires 1 x post-doc researcher based at University of Hull for 2 years

3. Study of OPM population dynamics & management in woodlands:

How will OPM populations behave in woodland and forestry environments? Will they continue to increase until the trees are completely defoliated and health issues become acute or will other factors (e.g. natural enemies, microclimate) limit population densities before severe damage and health problems occur? This work will link to that of the laboratory group at Hull and with researchers in Europe.

- a. To monitor OPM populations at two or more woodland sites (e.g., Richmond Park) and assess
 - i. the relationship between population density and defoliation
 - ii. the impact of natural enemies/microclimate/management
 - iii. the risks to human and animal health
- b. To develop standard monitoring methods for management of OPM populations
- c. Requires 1 PhD studentship based at FR & University of Southampton (3 years (2013-2016))

9 Communications

9.1 Raising Awareness

An OPM Communications plan is being prepared based on previous years experience. FC communications staff are liaising with PR colleagues in the London Boroughs and with Advisory Group member organisations. It is planned that the successful co-ordinated effort with PR and media interests of previous years will continue. FC London staff will work closely with their communications colleagues to ensure that we liaise closely with operational contacts

9.2 The OPM 'Toolkit' for landowners and managers

An OPM 'toolkit' endorsed by the Advisory Group will be produced. It will include a list of resources, use plain English and contain:

- A Summary of what to do/not to do in the event of finding an OPM nest
- Background to OPM, including the legislative framework, roles, responsibilities and status of Statutory Plant Health Notices
- OPM control contractor list
- A survey checklist
- Recommended control methods
- The wording for Public signs to place at infected sites
- Alert notices
- Posters
- Sources of further information

9.3 Landowners and Land Managers

The following is proposed:

- There will be early season events to highlight the benefits of taking action early in the control period and Autumn events to help plan work for 2014/5.
- OPM surveyor training will be scheduled for April/May
- A Landowner toolkit, based on the LTOA guidance, will be available from early May
- The Advisory Group will meet at least quarterly and receive regular updates on progress with survey and control
- There will be a General co-ordinated outreach e.g. meetings, events, site visits etc, by Advisory Group member organisations
- FC will send out an email alert to the ReLeaf network in late April
- The Comms network across London will be kept up to date with activities and progress (via Charlton Clark FC)
- FC will provide text and images so that landowners/Local Authorities can produce their own branded posters / leaflets etc

9.4 Public engagement

The FC Website will be monitored on a regular basis. The FC Comms team will produce site posters and pest alerts for distribution in April and Posters/Display stands can be made available to partner organisations if required. A small number of press articles will be considered and agreed as part of a co-ordinated Comms plan

9.5 Public health sector liaison

Health sector representatives are Advisory Group members. We will liaise with HPA to ensure:

- GP practices are aware of the symptoms of OPM and it is appropriately recorded
- Public are made aware of the potential health impact of OPM, symptoms to look out for and how it can be treated

9.6 Programme

Ops Phase / Event	Date	Communications activity	Lead	Resources
1. Pre-season preparation	Mar - April	Draft / update / prepare regular and any ad hoc press releases, briefing, FAQs, reactive lines to take, web material, posters, leaflets, banners, photo packs; brief Ministers Distribute Pest Alert, Council/landowner leaflet, photo packs Medical professionals notified / reminded of season, symptoms and treatment Brief key staff (comms, receptionists/call centres, tree officers, grounds staff, other outdoor staff, senior managers, Cllors etc)	FC FC PHE All	
2. Locating and treating larvae (caterpillars)	April - June	Trigger - First larvae sighted and status of oak leaf emergence Notify partners Issue 'generic' press release to forestry, hort, rural, landscape, environmental, farming, vet and animal media, plus news media with Greater London & national circulations. To encourage sighting reports, warn re	1 st land manager to see larvae, FC FC	Press release/s Photo packs Maps FAQs Reactive lines to take

		dangers, and advise seek med or vet help if affected. Quotes by FC/OPMAG and PHE Tweet and Retweet above Complementary press releases by partners to local media backing up above with more local references, interviews etc.	FC All Councils, major landowners	Briefed spokespeople Interview opps Photo opps Filming opps Website/s
Ops Phase / Event	Date	Communications activity	Lead	Resources
2. Locating and treating larvae (caterpillars) (Continued)		Media interviews, chat shows and similar Talks to local/specialist groups Deploy FC Pest Alert. Deploy other comms tools as appropriate e.g. web pages, Twitter, Facebook, customer newsletters, public meetings. Share details of media contacts to aid joined-up messaging	All All All All	Press release/s Photo packs Maps FAQs Reactive lines to take Briefed spokespeople Interview opps Photo opps Filming opps Website/s
3. Announce Defra funding	May	Press release Tweet → Retweet	FC / Defra Defra → FC / All	Partners' Twitter accounts
4. Locating and removing nests	May - July	Trigger- First new nests sighted Repeat above, but angled towards seeking "last-minute" reports of sightings, particularly of nests, with a view to ensuring they are included in removal ops.	FC, Councils, landowners	As 2. above
5. Pheromone trapping and results collation	Oct - Nov	As above, but without Pest Alert and leaflet, reporting results of year's operations. Preview next year's ops./prospects	FC, Councils, landowners	As 2. above
6. Unforeseen / Contingency	Any	Trigger - e.g. discovery of new outbreak, spread into new areas According to need, but prob a press release, tweet, web update Trigger - e.g. Serious health event According to need, but prob press release, tweet, web update	FC PHE	Briefed spokespeople FAQs Reactive lines Web updates Twitter

10 Risk Analysis

There are a variety of operational issues that make the success of this strategy a challenge; please see figure 4 overleaf:

Figure 4: Operational risk analysis

Risk	Impact	Likelihood	Rating	Action e.g. mitigate
Difficulty in detecting infestation – low density infestation, difficult sites e.g. woodland with bramble, massive number of host trees, poor visibility in the canopy. Nests not found during survey or missed at time of control.	M	M - on some sites	M	Promote landowner management to enable easier access (could be grant aided on occasion)
Theory that some OPM eggs hatch in 2 nd year and could be missed	L	L	L	No evidence. Hatching would be picked up in survey/control programme anyway
Difficulty finding all of the infestation, even if some found on a tree	H	H	H	Must carry out prophaltic spraying in the next season.
Some nests are in the soil and difficult to detect. This happens in plague conditions and bad weather.	L	L	L	Ensure nest removal is carried out and spray infected area
Pheromone traps not fully effective in determining presence / density of adult moths	M	M	M	New guidance on pheromone traps to be published.
Timing of survey and deadline to enact control	H	M	H	Need to ensure co-ordinated survey response across all stakeholders and have regular communications to know which areas have been effectively surveyed
Liability for control costs lie with landowners which (a) reduces likelihood they will report infestation (b) increase chance of non-compliance (c) increased chance that control is not the most effective	H	H	H	Emphasise the long term cost savings of early effective control; good case studies showing efficient control; flexibility of e.g. Local Authorities to pick up the cost of occasional private infestation; public funding available for landowners
Control via chemical – difficulty getting chemical to uppermost canopy	H	H	H	Ongoing research in OPM chemical control. This could be a number of years away. Large trees will need highlighting to monitor for effectiveness of spraying control although technology to treat these is now available
Ensuring effective control at landscape scale and across	H	H	H	Co-ordination of stakeholders and good

different ownerships				communication as to what has been done to locate areas where more needs to be done
Peak in control demand results in sub-optimal chemical application	H	H	H	Liaise closely with the OPM control contractors to ensure best use of available resource
Use of insecticides on sensitive sites	M	M	M	Work closely with the relevant authorities to use the most appropriate solution for controlling OPM
Public perception re broad spectrum insecticides and indiscriminate control	L	M	M	Have good comms in place explaining the need for chemical control Ensure high standard of operator control in chemical application
Nest removal not fully effective and costly	H	H	H	Promote awareness raising for chemical control
As OPM spreads the effective 'edge' increases exponentially and hence resource implications	H	H	H	Secure more resources for controlling OPM
Poor co-ordination of cross sector survey efforts leading to duplication of effort and poorly informed control programmes	H	L	L	Greater FC data collation and liaison with stakeholders through AG, web-based tools

11 Roles and Responsibilities

Roles and responsibilities are defined as follows:

Forestry Commission: The role and duty of the Forestry Commission is to prevent the spread of tree pests is defined in the Plant Health (Forestry) Order 2005. This applies to the Forestry Commission and their nominated inspectors. Within this plan the Forestry Commission will:

- survey for new infestations within the buffer zone
- review and renew previous SPHNs and issue new SPHNs following identification of new infestations. Sites within the buffer zone will be prioritised.
- keep stakeholders updated on progress through regular publication of an OPM outbreak map and reports to the OPM advisory group
- provide training as agreed
- undertake communications, press relations and awareness raising as specified, including managing the OPM web pages
- provide secretariat to the OPM advisory group

Landowners: The landowner of an infested site has a responsibility to comply with the provisions of a statutory plant health notice as defined in the Plant Health (Forestry) Order 2005. They also have a duty to report any new infestation. When control works take place the landowner is responsible for:

- site assessments
- job appraisal
- risk assessments
- supervision of any works on their land

Arboricultural Contractors: Are responsible for performing to standards of best practice, including training and supervision of operators, ensuring that all equipment is in order, undertaking risk assessments on sites in association with the landowner and reporting progress as requested. Any variance procedures as will be agreed in advance must be duly adhered to. Arboricultural Contractors will also offer their practical experience to help guide future research into innovative and more effective/acceptable control methodologies.

Forest Research: Will monitor the effectiveness of this year's pilot actions and will also explore alternative approaches for future control of OPM as defined.

Greater London Authority: Will encourage the London Boroughs to adopt the control plan

City Of London: Will, where appropriate undertake survey of own sites and support neighbours using own staff and volunteers

Royal Parks: Will survey and control OPM infestations on their premises.

Natural England: Provides landowners and managers with advice on how best to manage European and national designations (Special Protection Areas (SPA's), Special Areas of Conservation (SAC's), Sites of Special Scientific Interest (SSSI's). For certain operations (those likely to damage a SSSI and its interest features) consent has to be sought through Natural England. This may be highly relevant where OPM is found to

exist on designated sites, no chemical spraying for OPM should occur on designated sites (SSSI's/SAC/SPA) prior to consent/assent being agreed with Natural England.

Natural England advisers will also have a role in flagging OPM to landowners if they find it on trees during the course of their normal work and also in providing up to date information for landowners and managers on their responsibilities in relation to designated sites and OPM. Natural England will help to disseminate messages in relation to OPM where ever possible.

London Boroughs: LBC Richmond and LBC Ealing have committed to an annual control programme against OPM, using a combination of spraying and manual nest removal. Other London Boroughs are increasingly working with FC to undertake survey and control actions.

FERA: Could play an enhanced supporting role to the Forestry Commission

LTOA: Will update their guidance on OPM management

Duty with regard to public health?

Terms of Reference for the OPM advisory Group have been circulated previously

12 Budget

12.1 DEFRA/FC Resource

The following resource has been made available for management of OPM :

- OPM Project Manager for 2013/4
- A Part time Woodland Officer or equivalent to carry out follow-up survey on sites under an SPHN where treatment has occurred
- A survey Contract worth £248k over 3 years
- A short-term administration contract to issue plant health notices, manage files, collate survey records and prepare and post outbreak maps on the web.
- Communications team support on PR and stakeholder liaison
- FC GB Plant Health/secretariat – technical & legislative support to national and local teams; ministerial liaison
- Forest Research – support to monitor the control programme, provide data, evidence and expert advice to assist operational decision making and two research assignments to inform control methodologies and improve our understanding OPM
- A Defra backed pilot funding package of up to £2 million for 2013/4. The budget estimate (round figures) is set out below:

Action	Sub Total	Total	Total cfwd yrs 2-4
Site Survey & follow up survey	£ 100,000		
Spraying	£ 750,000		
Manual Nest Removal	£ 500,000		
Administration	£ 40,000		
Communications	£ 10,000		
Research & Monitoring	£ 75,000		£225,000
Contingency (15%) *	£ 300,000		
N.B. Supervision/Overheads excl *	Total	£1,775,000	

* This contingency is already committed to the actions listed, but is presented here to enable greater flexibility in programme management.

* Significant additional resource from the FC SE and London area has also been committed to project management.

12.2 Other resources

OPM Advisory Group members are asked to quantify the resources they have to commit to control of OPM in 2013/4 and suggest any further resource that could be mobilised.

Control Contractors

- Technical support to the programme and advice on the practical implementation of actions. Access to knowledge networks and dissemination of best practice

Royal Parks

- £190K committed to survey and control of OPM in 2013

London Borough of Richmond

£60K committed to survey and control of OPM in 2013

London Borough of Ealing

- £30K committed to survey and control of OPM in 2013

NHS

- £70K - £100K estimate/unconfirmed to control at Bethlem Hospital in 2013

1 Appendix 1: Background information

1.1 Policy Context

On 1st March 2011, following ministerial direction, the Forestry Commission's policy changed from eradication of Oak Processionary moth (OPM) in London to a policy of containment. This was as a result of expert advice that the moth was now an established insect within the original outbreak area, centred on the London Boroughs of Ealing, Hounslow and Richmond (Parks and Townsend 2010).

The Forestry Commission's policy is to eradicate OPM in the Bromley/Croydon outbreak area and that of Pangbourne in Berkshire – plus eradication of any other isolated outbreaks that are found.

To deliver the policy of control in London, Forest Research defined a buffer zone around the core zone of known infestations discovered during Forestry Commission and Local Authority surveys undertaken in 2010.

Based on the FC and other landowner surveys in 2010, a core zone within a buffer was mapped by Forest Research. Refer to map in later section showing distribution/rate of spread

1.2 Regulatory Framework

Following the discovery of the insect breeding in the wild in London in 2006, emergency measures were enacted under the Plant Health (Forestry) Order 2005, which came into effect on 31st March 2008. The Plant Health Order was amended (amendment N°644) so that it now lists OPM as a Schedule 1 tree pest "which shall not be landed or spread within Great Britain".

The legislation was further amended by The Plant Health (Forestry) (Amendment) Order 2009 N°594, such that:

- Trees > 2 m are prohibited from import unless the trees have been nursery grown and the immediate vicinity of the nursery has been free of symptoms of OPM for the last growing season.
- Restrictions on the immediate vicinity of nurseries do not apply to trees less than 2m.

All oak plants must be accompanied by an official statement:

- That they have been grown in a nursery.
- That they have been inspected and no symptoms of OPM have been observed since the beginning of the last complete cycle of vegetation.

General PHO powers also apply:

- Requirement to notify the Plant Health Authorities about the presence or suspected presence of OPM.
- Inspectors have powers of entry and can require official control measures under statutory notice.

Where the presence of Oak Processionary moth was confirmed by an Inspector, the owner or occupier of the land can be served with a statutory notice under article 31 (4) of the Plant Health (Forestry) Order 2005 (as amended). The notice requires the removal of the pest from the tree and safe disposal of larvae or nests, and can also include prophylactic chemical control measures in future years.

Notices also prohibit the movement off-site of arisings from infested trees without written authority of an inspector.

1.3 Biology of OPM and control methodology

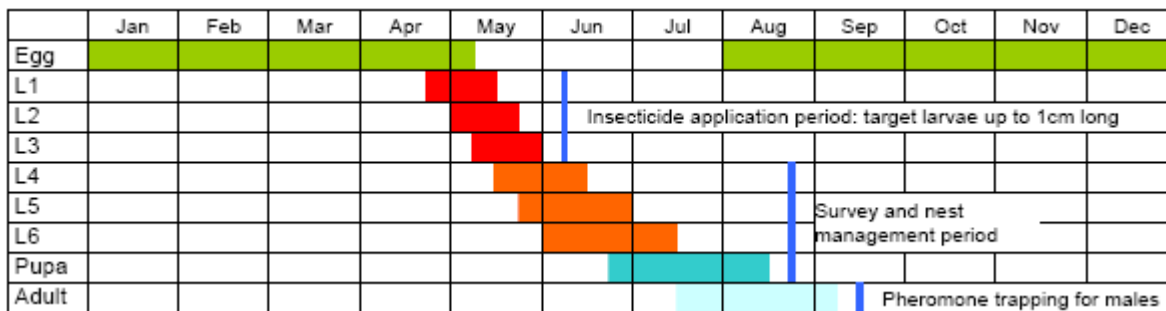
A summary of the key aspects of OPM life cycle and control are below. For further information refer to [this document](#).

OPM Origin

OPM originated in Southern Europe where it is kept in check by natural enemies. The two main susceptible species are Turkey oak (*Quercus cerris*) and Pedunculate oak (*Quercus robur*), though it can be found on most Oak species and has been recorded on Hazel, Hornbeam and Sweet chestnut.

OPM Life cycle

Figure 1: Diagram showing indicative stages of egg/larvae/moth development



Note: the precise timings of each of the above stages varies from year to year due to factors such as weather. For example, in 2012 egg hatching occurred in 2 separate periods so there was staggered larval and moth development

Egg stage: 100-200 eggs are laid in small strips called 'plaques' on branches and twigs in the canopy of Oak trees. It is very difficult to find the egg stage.

Larval stage: The larvae pass through six stages (instars) L1-L6

L1: (April-May) newly emerged larvae are 2mm long have a brown body with a black head and lacking urticating (irritating) hairs.

L2: (early to mid-May) the larvae begin to lighten in colour, less than 10mm long lacking urticating hairs

L3: (mid to late May) the larvae move in procession down from the top of the tree and start to form urticating hairs

L4: (Mid-May to mid-June) larvae start to form silken nests incorporating hairs and frass

L5: (Late-May to end of June) the larvae leave visible silken trails from the nest back upto the canopy where larvae return to feed.

L6: (June to early July) the larvae now have a grey body and dark head, 35mm in length

Pupae: (Mid-June to early September)

Adult stage: Adults emerge and fly from around the middle of July to early September. Males are strong fliers, the females less so.

OPM control methods

Please refer to LTOA guidance for more detailed information

Stages L1-L3: The most effective method of controlling OPM is to apply insecticides against the early stage (L1-L3) larvae; this relies on early detection of larval emergence and timely application of the insecticide. The first three larval stages are the most susceptible to the insecticides approved for use against OPM, especially the biological and growth regulating insecticides (*Bacillus thuringiensis* and Dimilin) that have a lower overall environmental impact. Fourth stage and older larvae also remain mainly within their silken nests during the day where they are protected from chemical sprays

OPM larvae are very small when they hatch (around 2mm long) and are still less than 1 cm long by the time they reach the third stage. As a rule of thumb therefore, insecticide applications will be most effective when applied to larvae smaller than 1 cm. The majority of larvae will have reached this size by the end of May (by mid May in warmer years).

Stages L4-L6 and pupae: The main method of control for larger larvae and pupae is to manually remove and destroy the larvae and their nests, either by using professional vacuum equipment or by removing the nests by hand. Larvae spin bigger silken nests and spend more time within these nests during the day as they grow larger. Eventually, the larvae moult to the pupal stage, again within the nest. By this stage the nest tends to be tougher and usually brown in colour (whitish when first formed), containing cast skins and shed hairs. Removing nests immediately after they are discovered will reduce further damage to trees and minimises risks from dislodging the irritating hairs. However, delaying nest removal until the larvae have completed feeding and have moulted to the pupal stage increases the chances of destroying all of the larvae/pupae within the nests.

Large, old nests need to be removed with considerable care, as indicated in the operational safety advice, to reduce the exposure of operatives to the hairs, which are inevitably shed, especially from the cast skins adhering to the nests. During this phase of the life cycle, larvae may also be seen massing on the trunks and branches of trees and moving in the characteristic nose to tail processions that give the moth its common name.

Removing larvae and nests manually, by vacuum equipment or by hand, can be very effective in reducing OPM populations, but this method alone is unlikely to lead to eradication, because it may not be possible to find and locate every last larvae and pupae. Eradication of OPM is most likely to be achieved by a combination of methods which includes correctly timed applications of insecticide that treat the whole of the tree canopy.

1.4 Current Survey Management

At present survey data is gathered in a paper format and transposed into spreadsheets; this creates double handling of information and leads to possible transcription errors along with significant time delays on receiving the information. We need to record the extent of OPM infection in London and take a more proactive approach in determining where surveys should be taking place. There are also challenges to overcome with regard to collating existing data that will help inform the strategy and operational planning.

1.5 Data Management

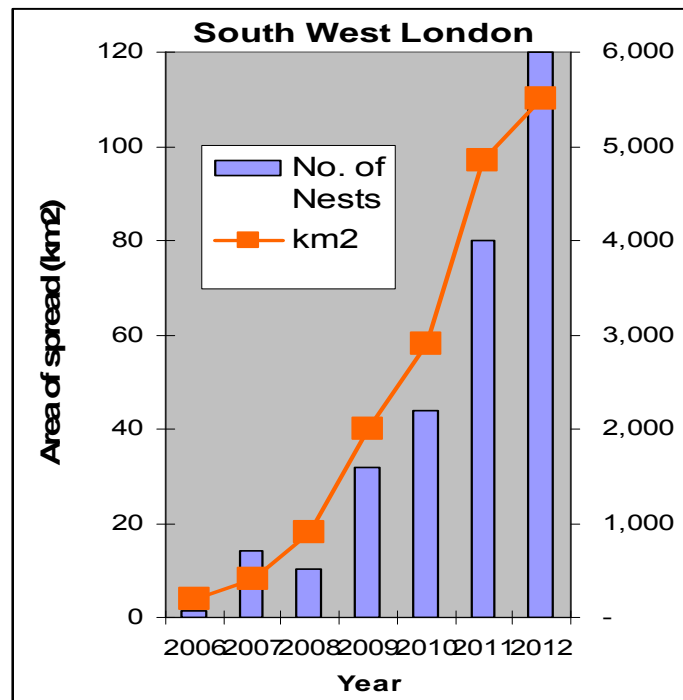
Whilst there is a huge amount of information being collected that helps inform the OPM strategy and this plan, there are a number of issues that this plan seeks to resolve. The method of data collection from surveys is, as already described, inefficient; the speed of data sharing is slow; the collation of data being collected is not exhaustive; there are challenges in collecting existing datasets due to data access issues.

1.6 Current and Recent Trends

Figure 2: Spread of OPM in West London 2006-2012



Graph showing the increase of OPM from 2006



Despite control measures being put in place the number of nests and the area of infestation in London has been increasing significantly since 2006. The current rate of expansion is about 0.9km per year – less than experienced in continental Europe (7.5 km per year).

The distribution of OPM in London as of November 2012 is shown on maps in Appendix 1 (SW London as of Nov 2012) & 2 (Bromley/Croydon outbreak as of Nov 2012)

2 Appendix 2: OPM Research

2.1 Defra research

DEFRA are funding three research projects:

Improved Methods for the Early Detection of OPM

This is a study to deliver outputs that will improve the early detection of the oak processionary moth, including: better pheromone (sex attractant) traps for adult moths, an evaluation to determine whether amateur moth-trapping networks and enthusiasts can provide additional monitoring, novel cost-effective detection methods for the younger stages (eggs and young caterpillars) and of the airborne irritant hairs, and a better understanding of the OPM lifecycle under UK conditions to improve the efficiency and effectiveness of surveillance. The proposed delivery date for this project is March 2014

OPM 'Control'

The overall aim of this work is to provide improved control methods to address both short and long-term needs for management of oak processionary moth (*Thaumetopoea processionea*), a recently introduced non-native pest. Specific objectives are:

- Develop new, low volume, ground-based insecticide application methods for eradicating and containing new outbreaks of OPM on urban trees where the pest has already established.
- Develop new, sustainable, integrated methods for practical, longer-term management of OPM in infested urban areas and potentially in woodlands and plantations.
- Produce management guides for any new methods developed, for use by end-users of the research.

The proposed delivery date for this project is March 2015

Analysis of the Management of OPM in the UK

The project begins with a retrospective analysis of the eradication campaign in London, integrating a review of the documentary evidence with a series of interviews with people centrally involved. It will then look forward to identify options for future management, exploring some of the likely consequences of, for instance, extending the buffer zone and implementing more aggressive chemical treatments. Experience with OPM elsewhere in the EU will be drawn on to scope other management alternatives. The proposed delivery date for this project is March 2013

2.2 Forestry Commission activity

Forest Research OPM research info is all on FR website

Economic Impact Analysis of OPM in GB

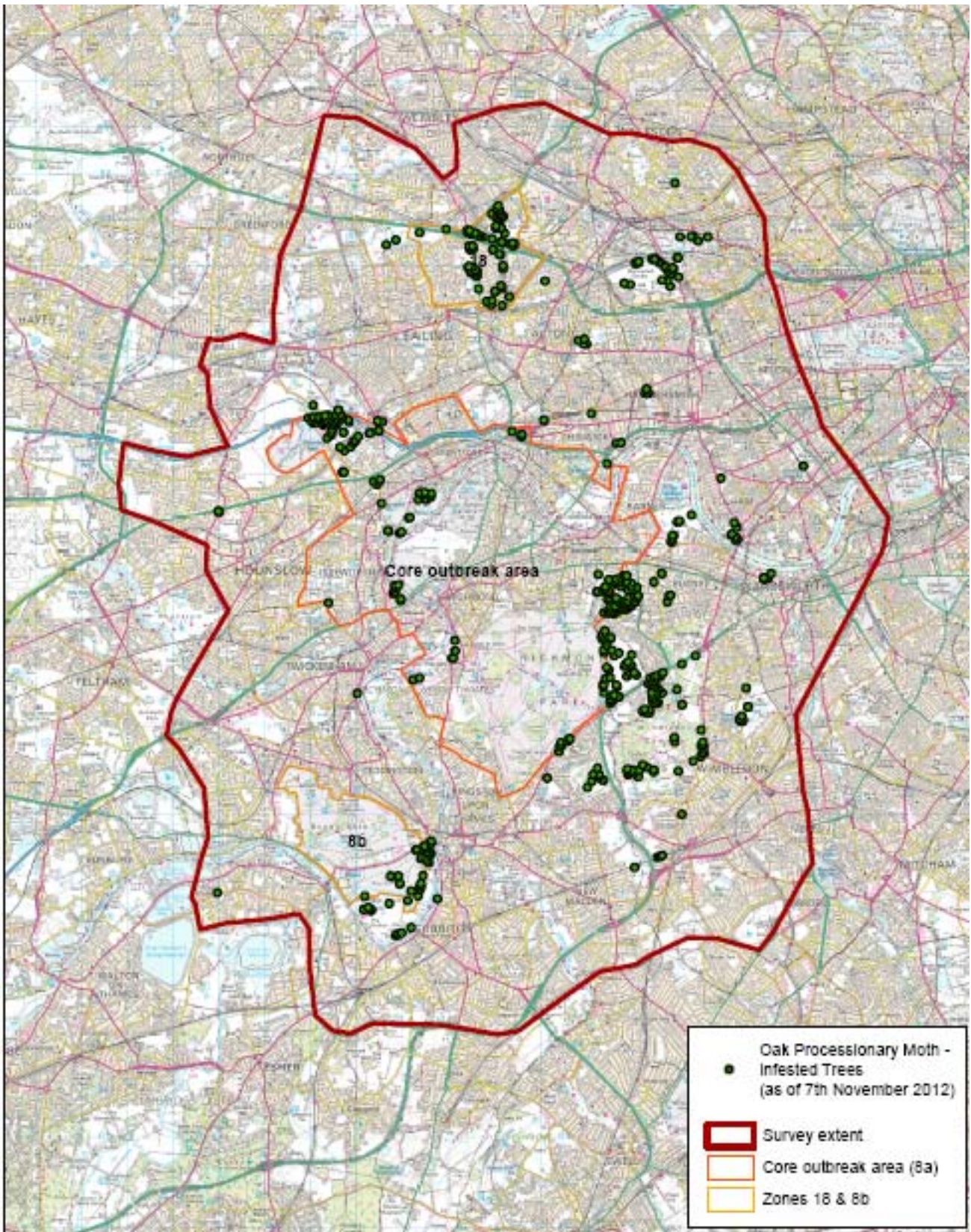
Three options have been modelled:

- Option 0 (Do nothing) assumes all intervention ceases at the end of this financial year when the current funding agreement ends. No further surveys of nests would be carried out
- Option 1 is to continue the current level of intervention until 2050. This strategy allows surveys to be carried out, notice to be served on infested properties; the availability of OPM related information and the employment of a project officer.
- Option 2 is to increase the current level of intervention until 2050. This would fund mapping of OPMs expansion path, double the survey budget, enable compliance checks with notices issued and fund extra staff costs. The paper has been produced and is currently being peer reviewed.

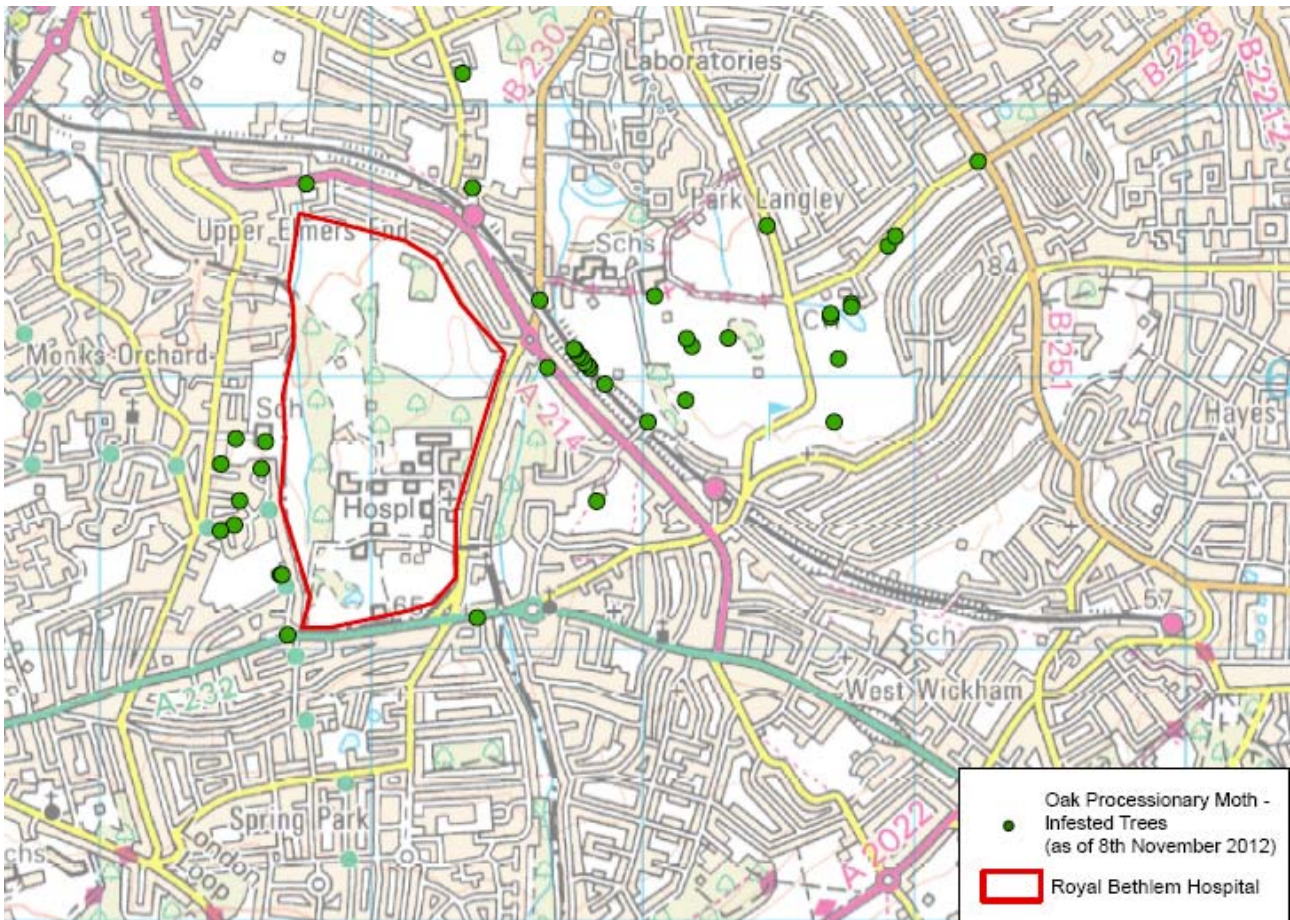
2.3 Other research activity

Suggest we provide an overview of other research taking place from Nigel/Joan, and also ask for Advisory Group member input to this section. Agree with comments not the highest priority in this plan but bullet points would be good

3 Appendix 3: Map of West London OPM spread

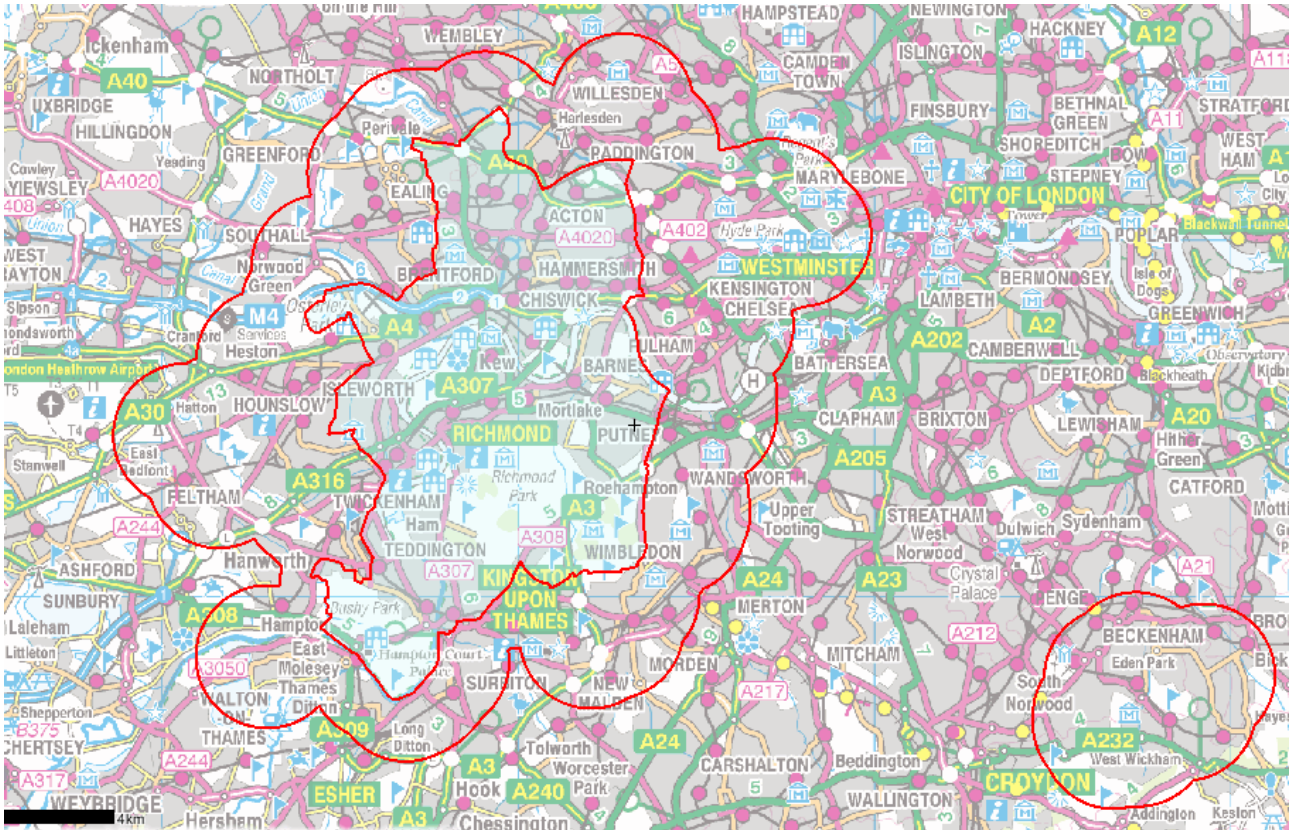


4 Appendix 4: Map of Bromley/Croydon OPM distribution



5 Appendix 5: Planned FC survey area for OPM 2013

The FC will use their contract survey resource to survey the 'doughnut' that surrounds the core zone area on the map below



6 Appendix 6: Outline of New OPM Recording System

- A bespoke app will be used to gather attributes in a consistent manner that operates in a rapid way. This will allow a more robust way to monitor the extent of survey work and act in a timely manner to initiate OPM control.
- The app will not be available to the public. It is for trained individuals in OPM surveying such as local tree officers or people who have attended a training event
- The attributes to be collected are:
 - Time/Date (done by the app)
 - Site Name/Road Name (completed by surveyor)
 - Site type from list (completed by surveyor)
 - Location (done by the app)
 - Is it possible to survey the tree (yes/no completed by surveyor)
 - Species of tree (completed by surveyor)
 - Age class (young/semi-mature/mature (completed by surveyor)

-
- Is the tree infested? (completed by the surveyor). If no move on to next tree
 - If infected Number of nests?
 - Number of old nests?
 - Capture picture if required and annotate
 - Owner known, if yes record details
 - Additional comments to be input if required by the surveyor
 - Save and complete, data sent to server
- Data can then be imported to secure systems and processed
 - Additional feedback to will also be obtained from arboricultural contractors to help inform judgements on the nature and extent of infestation

7 Appendix 7: Document Templates

7.1 SPHN Template

See separate. This will be accompanied with an annotated map showing location of infested trees

7.2 Standard covering letter

See separate

8 Appendix 8: Document Flow

See separate

9 Appendix 9: OPM Advisory Group TOR

See separate