

Contingency plan for the
Oak Processionary Moth
(*Thaumetopoea processionea*)

INTRODUCTION

The purpose of Pest-Specific Contingency Plans is to ensure a rapid and effective response to an outbreak of the pest or disease described.

Scope

This contingency plan was prepared by the Forestry Commission Plant Health Cross-Border team to be used at both country and national levels. It should be used in England in conjunction with the FC Forest Services' Specific Incident Contingency Plan for Plant Health Pest and Disease Outbreaks (currently in draft), developed by Forestry Commission England and which provides details as to the level of response required and by whom, depending on the scenario. Forestry Commission Scotland and the Welsh Government will develop similar documents detailing their management of outbreaks. Where an outbreak becomes of UK-wide concern, the Chief Plant Health Officer will form an outbreak management team to co-ordinate the activities in the different countries.

Oak Processionary Moth (OPM) is present in west London, where the current policy is containment of OPM (i.e. OPM no longer spreads further) within a time period to be defined. This contingency plan therefore refers to an outbreak outwith the west London area. Outwith is an area beyond the expected yearly OPM migration distance of 1km. A control plan has been prepared by FC England for adoption by the OPM Advisory Group. It sets out collaborative action between the Forestry Commission, other Government bodies and stakeholders to control OPM in the London area.

Current Government policy on OPM is to contain the outbreak in south-west London and elsewhere seek to eradicate outbreaks. These include sites at Pangbourne and Bromley in South East London, together with eradication of any new outbreaks.

This contingency plan falls into three main parts:

- [Pest background information](#);
- [Official action following a presumptive diagnosis](#); and
- [Official action following the conformation of an outbreak](#).

These are designed to help government agencies to anticipate, assess, prepare, prevent, respond and recover from pest outbreaks.

This plan will be updated following new information or changes in policy or contact details (last updated April 2015).

Objectives of this plan

- To raise awareness in the event of a **new** outbreak of the potential threat posed by *Thaumetopoea processionea*, and therefore ensure that stakeholders are aware of the symptoms caused by infestation by this pest. For existing OPM populations, reference should be made to the current control plan.
- To provide guidance on steps to be taken whenever symptoms of attack by *Thaumetopoea processionea* are observed.
- To ensure that infestations of *Thaumetopoea processionea* are managed promptly with the aim of eradicating pioneer populations of the moth.
- To ensure that all relevant Forestry Commission staff, other Government agencies and Local Authorities are conversant with the contents of this Contingency Plan so that effective and immediate action is implemented.
- To ensure that good communications are put in place so that all stakeholders (including the media) are kept fully informed of the scale of infestation both at regional and national levels.

PEST BACKGROUND INFORMATION

Thaumetopoea processionea (Linnaeus) is a major defoliating pest of oak in parts of Europe. Native to central and southern Europe, its range has been expanding northwards, where it is causing significant problems in other European countries. The larvae have irritating hairs that can cause skin problems, conjunctivitis, respiratory congestions and asthma in humans. Contact with dead larvae, cocoons, nests and debris-infested oak trees can cause dermatitis and other symptoms. Their hairs are also carried on air currents, and therefore direct contact is not necessary to cause health problems (FAO 2009).

Identity of organism and quarantine status

Species name:	<i>Thaumetopoea processionea</i> (Linnaeus, 1758) (Lepidoptera: Thaumetopoeidae)
Synonyms:	<i>Cnethocampa processionea</i> ;
Common name:	Oak processionary moth
UK risk rating:	Unmitigated risk High – 100 out of 125; Mitigated risk 45 out of 125
EU status:	<i>Thaumetopoea processionea</i> is listed as a harmful organism under Part B of Annex I of Directive 2000/29/EC.

UK status: Parts of the country have protected zone status introduced in October 2014. Any tree being moved into or within the UK protected zone must be free from oak processionary moth, and movement must be accompanied by an official document.

Hosts

Oak trees (*Quercus* spp.) are the main hosts (except *Q. suber*). However, other broadleaved trees such as hornbeam (*Carpinus* spp.), hazel (*Corylus* spp.), beech (*Fagus* spp.), sweet chestnut (*Castanea* spp.) and birch (*Betula* spp.) have also been attacked by this pest, mainly when they are grown next to severely defoliated oaks. OPM tends to be more abundant on urban trees, because outbreaks are often linked with imported mature or semi-mature trees which have eggs already present in the bark and which are usually planted in urban, public situations. It is also more frequent along forest edges, and in both situations there is a high probability of its coming into contact with humans.

Distribution of the organism

It is native to central and southern Europe. Its distribution is expanding northwards, and it is now firmly established in Belgium, northern France and the Netherlands. It has been reported in southern Sweden. In 2006 it was found in London in two locations, to the north of Kew Gardens and Hanger Lane in Ealing. There are three confirmed outbreaks of breeding OPM in Great Britain, all of them in southern England: several boroughs in West and South-West London and the Elmbridge and Spelthorne districts of Surrey (discovered 2006), Bromley and Croydon Boroughs in South London (2012), and Pangbourne in West Berkshire (2010). Current Government policy on OPM is to contain the outbreak in south-west London and elsewhere seek to eradicate outbreaks. These include sites at Pangbourne and Bromley in South East London, together with eradication of any new outbreaks.

Damage impact and controls

If OPM were to become widely established in Britain, it could pose a serious threat to native oaks, particularly if repeated cycles of defoliation occur. It could also provide significant management problems for arboriculturalists, local authorities and tree owners in both urban and rural situations. In addition, public health bodies have identified that the larvae, in particular their hairs, may pose a health risk to vulnerable individuals as well as domestic pets and wildlife.

There are various direct ways in which the tree can be affected: defoliation is frequent, but the tree generally recovers from this. Repeated defoliation may leave the tree susceptible to secondary stresses.

Given the potential health risks associated with OPM, there are also indirect impacts from an outbreak, including reduced woodland/tree management due to occupational health concerns, with parks and woods closed during severe outbreaks. Public perceptions of woods may be altered during an outbreak, although the actual risk is generally lower than what is perceived.

A number of control options exist, including: the destruction of egg masses if found before they hatch the following spring; the application of biological pesticides against the larval stages soon after they hatch; destruction of the nests during the brief pupal stage during the summer to reduce the number of adult moths that will emerge; and debarking of roundwood to reduce the spread of this pest to new areas (FAO 2009). The [OPM control plan](#) outlines detailed options for control, but for the purposes of this contingency plan, the focus is on rapid methods of control such as destructive felling and spraying with deltamethrin to eliminate populations before they become established.

Life history

T. processionea has one generation per year. Females lay their eggs, between 100 to 200, from July to early September on twigs and small branches in the canopy. They are deposited in groups forming plaques of a single layer of eggs, which are covered with greyish scales and remain on the branches over the winter.

Larvae can be found from April to June. They feed in groups and congregate in communal white silken nests under branches or on the trunk when not feeding. Larval nests are typically small, about the size of a tennis ball, but much larger ones have been reported. The larvae pass through 6 instars, shedding their skin between each stage as they grow. The cast skins and hairs accumulate in the nests, leading them to take on an orange-brown colour over time. The larvae typically migrate in procession, following one another head-to-tail in long lines to and from the nest and from one feeding position to another, which gives rise to the common name.

Pupation takes place in the nest, typically during late June or early July. Adults typically emerge in August. They are nocturnal and live for only a day or two.

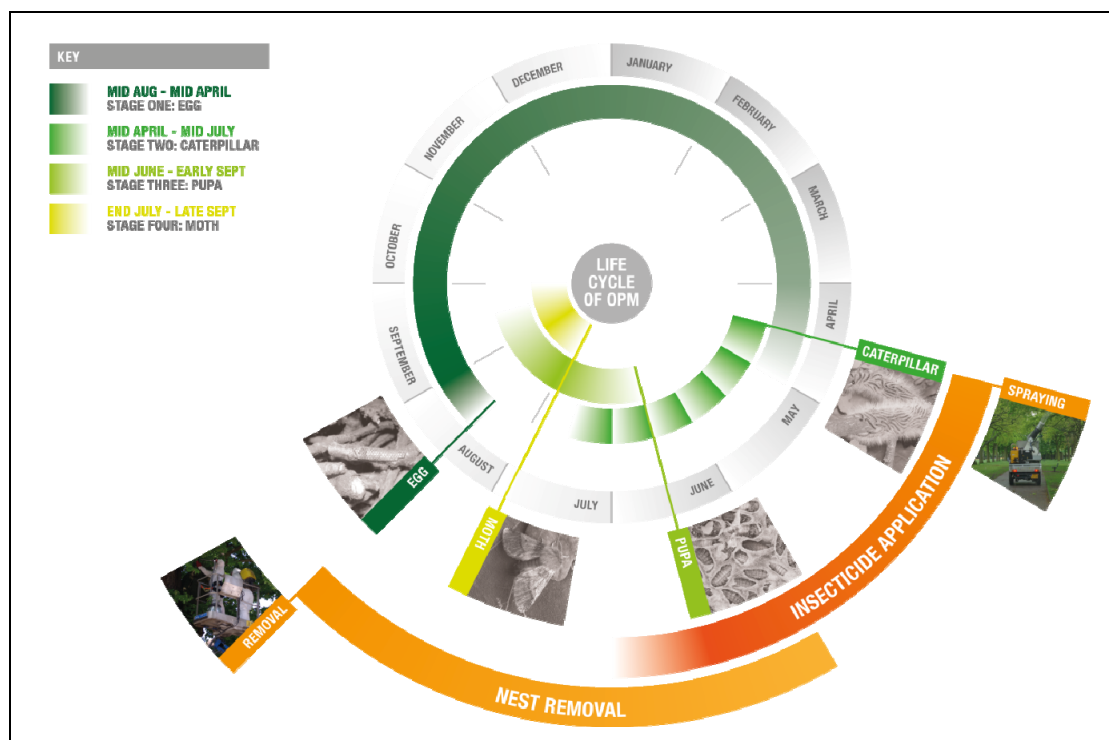


Figure 1: Timings of different stages of the lifecycle and when control methods are best applied.

It should be noted that the timings of the various stages can vary considerably, depending on conditions such as the weather. There may also be staggering of the lifecycle such that the same tree may host stage 3 to 5 caterpillars at the one time.

Main pathways

Adult males are strong fliers, capable of moving up to 20km in favourable conditions, and are thus capable of natural dispersal to new areas. However, the females are not strong fliers, making it unlikely that they would be able to migrate directly to the UK. Possible pathways to introduction include the movement of nursery stock, live oak trees, branches and roundwood (with bark) which is infested with eggs or larvae.

Import controls

In October 2014, Great Britain was granted protected zone status against OPM. Any oak trees, other than seeds, of *Quercus* spp other than *Quercus suber* entering a protected zone must be accompanied by an official document confirming that they are free from *Thaumetopoea processionea*. The protected zone includes all regions of GB and Ireland excluding infested local authorities in and around London as follows: Barnet, Brent, Bromley, Camden, City of London, City of Westminster, Croydon, Ealing, Elmbridge, Epsom & Ewell, Hackney, Hammersmith & Fulham, Haringey, Harrow, Hillingdon, Hounslow, Islington,

Kensington & Chelsea, Kingston upon Thames, Lambeth, Lewisham, Merton, Reading, Richmond upon Thames, Runnymede, Slough, South Oxfordshire, Southwark, Spelthorne, Sutton, Tower Hamlets, Wandsworth and West Berkshire.

The Plant Health (England) (Amendment) Order 2013, which came into force on 17 January 2013, requires that pending landings of oak plants in England must be pre-notified to the plant health authorities.

Identification

The larvae are most easily recognised by their distinctive habit of moving about in late spring and early summer in nose-to-tail processions, from which they derive their name, and the fact that they almost exclusively live in and feed on oak trees.

They also build distinctive white, silken webbing nests in oak trees and leave white, silken trails on the trunks and branches in early summer. These become discoloured after a short time, and more difficult to see as a result.

The adult moth is an indistinctive, brown moth very similar in appearance to other, harmless species. They are active from mid to late summer, and lay their eggs on the smaller twigs and branches in oak trees.

A number of images taking you through the different life stages can be found here: [link](#)

OFFICIAL ACTION FOLLOWING A PRESUMPTIVE DIAGNOSIS

Determining the response

A new outbreak is determined as the presence of a breeding population or evidence of a breeding population (eggs, female moths, nests), located further away from an existing outbreak than 1 year's worth of reasonable travel, which is normally determined as a rate of 1km/year.

In England, a duty officer (FC England or APHA) will act as a point of contact for incidents, and it is their job to assign a response officer to incidents when they occur. Similar arrangements are expected to be in place in Scotland and Wales. The response officer investigates and reports back to the Defra contingency core group, which is an 'ad hoc' group put together in response to a notification and which is usually chaired by the Chief Plant Health Officer. For outbreaks in Scotland and Wales, respective country teams will fully manage the outbreak as per their own generic contingency plans, but will provide updates to

the Defra contingency core group for information purposes, and for Defra to report to the European Commission.

The response officer will gather information including the: location, likely origin, host or commodity, level of damage, extent of outbreak and chance of spread. The contingency core group will be dependent upon the pest/disease in question and will comprise plant health officials and specialists from the risk group. Based on the information fed back to the contingency core group, in England they will decide upon the alert status given (black, amber or red), which will determine the level of response. (See Annex 1 for alert status table). In Scotland and Wales, the core contingency group can advise on alert status and the appropriate response. If required the Contingency Core Group will request the relevant organisation/s to set up an Incident Management Team to resolve the incident.

Holding consignments and movement / planting restrictions

Until further investigation, no material shall leave the site, and local operations will be halted until such time as the suspected case is confirmed as a false alarm.

Preliminary trace forward / trace backward

The most likely source of entry is the import of live trees from continental Europe.

Depending upon the pathway of entry, tracing forward and backward to identify suspect material will be conducted to identify other potentially contaminated stock or sites.

How to survey to determine whether there is an outbreak

Oak trees are being individually surveyed in a 2km buffer around the current outbreak zone in London, and there is heightened awareness across the London area.

A new outbreak of *Thaumetopoea processionea* outside the London area will be most likely detected either by general surveillance using pheromone traps to attract flying male, by following a report from a landowner/manager or the public of a confirmed sighting, or public health incidents as a result of *Thaumetopoea processionea*. Confirmation that *Thaumetopoea processionea* is present will require examination of samples and follow-up inspections.

Follow-up inspections, either by APHA for non-woodland situations and by an FC England Plant Health Officer for woodlands in England should gather information on:

- likely origin of the pest and, if a consignment of plant and plant product is suspected to be at the origin of the outbreak, details such as other points of destination;

- geographical location and ownership of the affected site, including any abiotic factors that may influence the outbreak, e.g. public access, presence of watercourses, etc. Include maps if possible,
- hosts infested at the site (species, variety, development stage, etc.),
- when and how the pest was detected and identified (including photographs of symptoms),
- level of pest incidence and, where appropriate, life stages present;
- extent and impact of damage (including part of host affected),
- recent import or movement of host plants or host plant products into and out of the affected site,
- movement of people, products, equipment and vehicles, where appropriate,
- relevant treatments applied to host plants which might affect development of symptoms or detection and diagnosis of the pest;
- history of the pest on the site, place of production or in the area; and
- likely biodiversity impacts of any control, including any duty of care obligations under NERC (2006) Act.

Nests or larvae should not be approached without proper training and equipment, due to the human health risk posed by the irritating hairs.

Confirmation of a new outbreak

Positive identification of *Thaumetopoea processionea* will be conducted on site b, ideally, an entomologist, although this could also be determined by an experienced FC Plant Health officer or OPM surveyor. Samples should not be removed from the site unless done so by an individual trained to do so and with the relevant safety equipment.

OFFICIAL ACTION FOLLOWING THE CONFIRMATION OF AN OUTBREAK

In most instances, the Forestry Commission (England and Scotland) is likely to appoint an Incident Controller and an Incident Management Team. In Wales, the Welsh Government would take the lead. Forestry Commission England's Forest Services have developed a Specific Contingency Plan for Plant Health Pest and Disease Outbreaks which will be enacted in response to a confirmed OPM outbreak. Forestry Commission Scotland and the Welsh Government will have similar documents detailing their management of outbreaks.

Initial efforts will be towards eradication of new outbreaks following the procedures set out below, failing which, eradication efforts will concentrate upon containment. Details of the exact timing of surveys and eradication procedures can be found in the Forestry Commission note [Survey and intervention in relation to different phases of the oak processionary moth life cycle](#).

Communication

Incident controller sets up a management structure to deliver functions of incident management. The outbreak will determine the size and nature of the management structure. Identification of and liaison with key stakeholders is a crucial part of this process.

The OPM 'manual' [link](#) developed by FC England under their control plan for landowners and managers includes information on:

- health advice
- OPM management zones
- biology, life cycle, habitat and spread
- surveying of trees and timing of control and treatment
- chemical control of larvae
- nest and larvae removal
- pheromone trapping
- other work on oak trees
- sources of further information.

Surveillance

To determine the extent of the outbreak, all oak trees within a 2 km radius of infected oak trees are to be inspected for signs of OPM. It should be noted that nests or larvae should not be approached without proper training and equipment due to the human health risk posed by the irritating hairs.

Deployment of pheromone traps, baited with the female sex attractant pheromone of OPM, will provide an indication of population size and distribution. However, the traps only capture males and, since they are strong fliers, it is uncertain whether the distribution of captures in the traps is an accurate reflection of the local distribution of the breeding population of the moth. Consequently, captures soon after initial adult emergence will tend to provide the most accurate measure of the distribution of OPM in the local area. Pheromone traps should be left in situ for a few years after nest removal to assess whether any moths remain present in the area.

Other surveillance includes a winter follow-up survey to identify any missed nests and to determine the outer extent of the outbreak outwith the flight season. Details of this standard method are available in the control plan, along with details of further survey work in summer months. The public can be encouraged to look for any signs of outbreaks and warned of the health implications through information notes, leaflets and posters at sites of high public usage.

Demarcated zones

A 2 km buffer zone will be established around infested trees where all oak trees are assessed for the presence of OPM, and all oak trees within a 50-metre radius of infested trees are treated with insecticides.

Nurseries within the 2km demarcated zone will be inspected for the presence of OPM and have their plant passporting for oak plants suspended until the presence or absence of OPM, both within the nursery and within the 2km, can be determined.

Tracing forwards / backwards

If the infested trees have been recently planted, i.e. within the last two years, then the source of the plants must be traced back to the supplying nursery and the nursery visited and inspected for the presence of OPM. In addition, any supplies of oak planting material from the nursery over the previous two years should be traced to the final planting site and inspected for the presence of OPM.

Pest management procedures

Old cases of OPM will be contained by treating the leading front in an effort to control the spread of the disease and minimise its impact. Experience shows that the costs and wider impacts are far greater if the outbreak is not quickly brought under control.

Depending on location of the new outbreak, statutory plant health notices (SPHN's) will be issued by either the Forestry Commission (in woodland situations) or APHA. Timely issue of and response to these, and subsequent action, are vital if new outbreaks are to be contained and eradicated. It should be made clear at the outset that the costs of any remedial actions required will be borne by the landowner. The Forestry Commission or APHA will need to consider whether direct intervention by government is needed in terms of actions to ensure a rapid response to reduce the risk of spread and impact on human and animal health. New trees found to be infested the previous season will be sprayed for a minimum of 2 years. Where infested trees have been identified, the current policy is that from 2014 onwards, all potential host oak trees within 50m will be sprayed. A mixture of application methods will be employed to ensure maximum control capacity during the small window of opportunity for

spraying (mid-April to May). For large areas of oak woodland, aerial spraying with **Bacillus thuringiensis (Bt)** is the most effective method of control, because seeing nests in the upper canopy of dense woodland can be difficult. There has been no evidence that Bt has an impact on vertebrates, and whilst it might affect Lepidoptera species, this impact is short lived. Application rates are 1.5 kg/ha, and reference should be made to the specific plant protection product regulations in Annex 1.

Current thinking is that whilst spraying deltamethrin is the most effective insecticide control method, it is only suitable for isolated locations well away from water, due to the threat it poses to aquatic species. There are no toxic effects on vertebrates and, like Bt, any impacts on Lepidoptera are short lived. For general control, *Bacillus thuringiensis* should be used.

Later in the season (June to August) larvae and nests may be removed manually, by vacuum equipment or by hand. Removal of nests can be very effective in reducing OPM populations, but this method alone is unlikely to lead to eradication, because it might 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. If insecticide application is not considered effective for any reason, infested trees should be removed and destroyed promptly to ensure eradication can be achieved and costs minimised.

Disposal

OPM nest material is classified as hazardous waste and its transport and destruction is regulated. Current practice is to destroy the material at a licensed incinerator, or by burying it deeply in the ground at an approved landfill site.

Trees, including the branch material and roundwood that are to be felled to eradicate OPM infestation, should be destroyed, preferably on site, by either:

(a) burning in a nearby location within the demarcated area designated for this purpose. (burning must comply with appropriate Waste management regulations, Environment Agency in England, Scottish Environment Protection Agency and Natural Resources Wales); or

(b) deep burial (to a minimum depth of 2m) within the demarcated site.

If material has to be moved from site it should be transported, with a protective covering ensuring all material is contained, to a licensed incinerator, or buried deeply in the ground at an approved landfill site.

Public outreach

It is crucial to have public support for the management programme and to help with general surveillance and awareness of the health implications. Engaging the public will require the provision of timely, balanced and accurate information regarding monitoring and control. It is important that a careful balance is made between providing sufficient information without causing alarm in the public regarding the health implications. Information, subject to available budget, can be made available through newspapers, radio, TV, the internet, social media, posters and leaflets, and should be targeted locally, especially within the infested and regulated areas, and at a national level.

It is important to provide information on the location and size of the infested and regulated areas, statutory and voluntary responsibilities, rates of spread, management options, pathways and how the pest might have arrived and could be transported, the prospects for GB forestry, and what people can do to help, especially in terms of monitoring. Managing this level of public engagement will require a central administration office capable of handling a large number of enquiries and able to provide general and specific information. Liaison with communications and press teams from other countries may be required for cross-border outbreaks.

Recovery

A site can be deemed as recovered from an outbreak if, after 3 years of monitoring, there are no indications of moth presence. This includes nests as well as presence of male and female moths.

Review measures in the case of prolonged official action

Where eradication attempts prove ineffective, efforts should shift to containment. The focus should then move to using the FC Control plan for existing OPM populations and the methods prescribed therein. A review of the management programme should be undertaken regularly (e.g. annually) to determine the success and cost-effectiveness of the measures in the longer term. This review will involve consultation with stakeholders and should include:

- evaluation of the effectiveness of current measures;
- evaluation of the economic impact and cost-effectiveness of continuing existing measures;
- consideration of further measures to strengthen containment and eradication actions;
- consideration of statutory obligations and impact on import and export procedures;
- consideration of alternative approaches or the cessation of statutory action; and

- consideration of biodiversity impacts following control.

In circumstances where official action is no longer considered appropriate, stakeholders should be consulted and a timetable and mechanism agreed for the removal of official measures and for the dissemination of pest management information as appropriate.

Evaluation and review of the contingency plan

The plan will be reviewed annually to take account of:

- any new legislative measures or amendments to measures implemented to reduce the risk of introduction;
- changes in the geographic distribution of OPM;
- new or updated research information on the range and life cycle of OPM; and
- any new pathways identified.

Supporting information

[Identification guide](#)

[Control proposals for 2015](#)

[OPM Control Plan](#)

[Good Practice Guide for handling Oak material in areas affected by Oak processionary moth](#)

[Public information poster](#)

[Public Information Leaflet](#)

[Survey and intervention in relation to different phases of the Oak processionary moth life cycle](#)

[Removal of Oak Processionary Moth material by professional vacuum cleaner](#)

[Oak tree owners' manual for managing OPM](#)

Annex 1 – Alert status levels

ALERT	STATUS	COMMAND LEVEL
White	Plant pest/disease with potential for limited geographical spread	Instigation of Incident management plan involving Operational command at appropriate level and follow Standard Operating Procedures or scientific advice where applicable
Black	Significant plant pest/disease with potential for limited geographical spread	Instigation of Incident management plan usually involving joint Tactical and Operational command at appropriate level and follow plant pest/disease specific response plans where applicable
Amber	Serious plant pest/disease with potential for relatively slow but extensive spread leading to host death and/or major economic, food security or environmental impacts	Instigation of Incident management plan usually involving joint Strategic and Tactical command and follow plant pest/disease specific response plans where applicable
Red	Serious or Catastrophic plant pest/disease with potential for rapid and extensive geographical spread leading to host death and/or major economic, food security or environmental impacts	Instigation of Incident management plan involving Strategic, Tactical and Operational command and follow plant pest/disease specific response plans where applicable