UK National Level ESRA for cypermethrin
March 2024

Context and scope

FSC Pesticide Policy FSC-POL-30-001 requires you, as an FSC Forest Management certificate holder, to undertake a comparative environmental and social risk assessment (ESRA) as part of your integrated pest management to identify the lowest risk option to control a pest, weed or disease, the conditions for its use and the generic mitigation and monitoring measures to minimise the risks (FSC-POL-30-001 V3-0 EN clause 4.12.2). To help you comply with this requirement FSC UK has worked with the UK's *Hylobius* Industry Research Programme (HIRP*) to complete this UK National Level ESRA for cypermethrin, as such you can use this pre-populated template when undertaking your own ESRA. This national level ESRA for cypermethrin has been produced on this basis, to support you in complying with the Policy.

**HIRP is a UK forestry sector wide grouping of stakeholders interested in Hylobius control from state forestry services and researchers to private companies and landowners. HIRP has acted as the UK technical / expert group for the creation of this FSC UK National Level ESRA for cypermethrin.*

FSC has classified cypermethrin as a Highly Restricted Highly Hazardous Pesticide (HRHHP) (FSC-POL-30-001a V1-1) because it is included within two hazard groups *acute toxicity* and *environmental toxicity* due to:

1. **Acute Toxicity** - under criterion 2 (Acute toxicity to mammals and birds), indicator 2.1:

'Extremely hazardous' (Class Ia) or 'Highly hazardous' (Class Ib), according to World Health Organization (WHO)

And

threshold (b) on the basis that it has an acute oral LD50 for rats/birds ≤ 200 mg/kg body weight.

2. **Environmental Toxicity** – under criterion 7 (Acute toxicity to aquatic organisms), indicator 7.1.

Contains any active ingredient that: a) has aquatic toxicity LC50/EC50 < 50 µg/l, using Daphnia as the test organism or other invertebrate or vertebrate aquatic organisms that show greater sensitivity than Daphnia. Acute test duration up to 96 hours.

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This ESRA covers standard forestry uses of cypermethrin for protection of seedlings and transplants from pine weevil damage within the forest environment.

The full ESRA, setting out a range of environmental and social values, the potential risks to those values from cypermethrin usage, and the strategies to minimise those risks, is provided for context. The essential controls on cypermethrin usage are summarised across pages 4-8.

FSC has produce international generic indicators for the use of Highly Hazardous Pesticides, and these are provided in the FSC-STD-60-004 V2-1 EN International Generic Indicators (8).pdf Compliance with these indicators is compulsory. It should be noted that Generic Indicator 10.7.1 and 10.7.2 state that:

10.7.1 Integrated pest management*, including selection of silviculture* systems, is used to avoid, or aim to eliminate, the frequency, extent and amount of chemical pesticide* applications, and result in non-use or overall reductions in applications.

10.7.2 Prior to using chemical pesticides*, the requirements of the Environmental and Social Risk Assessment* framework for Organizations* (FSC-POL-30-001 V3-0 FSC Pesticides Policy clause 4.12) are met.

As such before selecting cypermethrin for pine weevil control an integrated pest management approach must be used to assess whether a non-chemical method, or combination of methods, could be adopted to avoid the use of cypermethrin or reduce the amount of pesticide applied. Forest Research have produced *The integrated management of* Hylobius abietis *in UK forestry* which gives full guidance on how to do this and the *Hylobius Management Support System (MSS) - Forest Research* – to aid decision making.

The controls in this ESRA are for guidance only, although they can be considered by auditors when assessing your compliance with the Policy requirements.

For context, in the UK, separate to any FSC classification, pesticide use is subject to strict government controls through legislation such as the Control of Pesticides Regulations, the UK implementation of the Sustainable Use Directive and the Plant Protection Products Directive,

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and the Control of Substances Hazardous to Health Regulations. Regulatory control is enforced by the Health and Safety Executive.

After expert scientific scrutiny of all available safety data, the Health and Safety Executive have judged that cypermethrin does not pose an unacceptable risk to consumers, operators, bystanders or the wider environment if applied according to the conditions they have specified on the product label, and hence have granted it a full on label approval for use in Forest situations to prevent damage to transplants by *Hylobius abietis*.

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Controls

The following are the essential controls identified in the national level ESRA. Your own management unit level ESRA should incorporate these controls, but you may also identify other controls applicable to your specific circumstances. You must incorporate controls in your site level operational plans as appropriate, adapting them where necessary to site-specific risks (FSC-POL-30-001 V3-0 EN clause 4.12.6).

General strategies

Cyp.1 Operations conform to FISA Safety Guide 202 *Application of pesticides by hand-held equipment*.

Guidance note: Owners/managers may also find it useful to refer to Pesticides: Code of practice for using plant protection products *in England and Wales,* Pesticides: Code of practice for using plant protection products in Scotland*, or* Pesticides: Code of practice for using plant protection products *in Northern Ireland.*

Cyp.2 Operators hold NPTC PA1 and PA6 certificates of competence or LANTRA equivalents.

Cyp.3 There is an appropriate COSHH assessment.

Cyp.4 Operators comply with the requirements and relevant recommendations of the product label

Cyp.5 Records of cypermethrin usage are maintained, including trade name, active ingredient, quantity of active ingredient used, period of use, number and frequency of applications, location and area of use, and reason for use. These records are kept for a minimum of five years.

Cyp.6 There is awareness of research into chemical and non-chemical alternatives to cypermethrin carried out by Forest Research, the Hylobius Industry Research Programme or other agencies.

Guidance note: Owners/managers should refer to the Forest Research web-site for the latest information which includes the guidance on “The integrated management of *Hylobius abietis* in UK forestry” and the *Hylobius* Management Support System (MSS)

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Cyp.7 Large enterprises provide financial or in kind contributions to research into chemical and non-chemical alternatives to cypermethrin carried out by Forest Research and/or the Hylobius Industry Research Programme or other agencies.

Guidance note: Large enterprises are defined in UKWAS as organisations with at least 250 employees.

In kind contributions may include providing sites for field trials.

While large enterprises and other owners/managers may consider carrying out their own investigations into chemical and non-chemical alternatives to cypermethrin, to maximise the benefits of such investigations they should be coordinated with the work of agencies and other owners/managers wherever possible.

UKWAS 4: 3.4.1(b) The use of pesticides, biological control agents and fertilisers shall be minimised.

UKWAS 4: 3.4.3 Where pesticides and biological control agents are to be used:

- The owner/manager and workers shall be aware of and implement legal requirements and non-legislative guidance for use of pesticides and biological control agents in forestry
- The owner/manager shall keep records of pesticide usage and biological control agents as required by current legislation.

Water

Cyp.8 Operations conform to *UK Forestry Standard* v4 requirements and guidelines in relation to buffer zones around watercourses, waterbodies and abstraction points. There is no usage, mixing or filling of cypermethrin within 10 m of permanent watercourses with a channel <2 m wide, within 20 m of wider watercourses or lakes, reservoirs, large ponds or wetlands, or within 50 m of abstraction points for public or private water supplies, such as springs, bore-holes, wells or surface water intakes. When using cypermethrin buffer zones should also be applied to drains / channels or boggy water source areas, even if dry at the time of application, where run off into a buffered watercourses, waterbody or abstraction point could occur.

Guidance note: Of particular relevance are UKFS good forestry practice requirement 8 for Forests and Water, and guideline 67 for Forests and Water. Within riparian zones and water supply catchments refer also to guideline 60 for Forests and Water and table 6.7.2. See also Forestry Commission Practice Guide 25 Managing forest operations to protect the water environment.

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Note that UK Forestry Standard v 5 becomes effective from the October 24 and includes the same minimum buffer zones.

Cyp.9 Impacts on water quality are monitored using data collected by drinking water inspectorates and/or statutory environment protection agencies.

Guidance note: Pesticides in water are known to be monitored by the Drinking Water Inspectorate in England and Wales, the Drinking Water Inspectorate for Northern Ireland, and the Drinking Water Quality Regulator for Scotland. Further relevant monitoring information may be available from the statutory environment protection agencies.

It is not expected that owners/managers will have the resources to collect data of the quality collected by statutory authorities, and owners/managers should rely on official data whenever possible. Owners/managers should collect their own data in response to significant incidents (e.g. spillage of pesticide etc.) where contamination of water supplies or environmental damage is likely to have occurred, and if data has not already been collected by statutory authorities, in order that any damage can be assessed, and mitigated and/or repaired.

UKWAS 3.7.2 Plans and equipment shall be in place to deal with accidental spillages of fuels, oils, fertilisers or other chemicals.

UKWAS 5.1.1(b) A precautionary approach shall be adopted in relation to water supplies.

Non-target species

Cyp.10 Applications are targeted to avoid run-off into the soil or contact with non-target plants.

Guidance note: Applications should conform to the Forest Research publication The integrated management of Hylobius abietis in UK forestry, which recommends that 'The spray should be carefully directed to cover the entire circumference of [the] lower half of the stem, allowing the solution to flow down the stem and onto the root collar.. Run-off into the soil, or drift to surrounding soil or vegetation, should be minimised through the use of low spraying pressures (around 1 bar) and suitable nozzles, such as an adjustable cone nozzle.'

High Conservation Values

Cyp.11 There is appropriate consultation with the relevant statutory nature conservation body and/or other experts to identify and mitigate potential threats to statutory designated sites within and/or adjacent to the management unit.

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UKWAS 2.2.1 All areas in the WMU shall be covered by management planning documentation which shall be retained for at least ten years and shall incorporate:

c) Assessment of environmental values, particularly those associated with water courses, including those outside the WMU potentially affected by management, sufficient to determine appropriate conservation measures and to provide a baseline for detecting possible negative impacts.
d) Identification of special characteristics and sensitivities of the woodland and appropriate treatments.
e) Specific measures to maintain and where possible enhance those areas identified under sections 4.1–4.5 and 4.8, considering areas where either the extent of these areas or their sensitivity to operations may be unknown.

UKWAS 2.3.1(a) Local people, relevant organisations and interested parties shall be identified and made aware that:

- New or revised management planning documentation, as specified under section 2.2.1, is being produced
- High impact operations are planned
- The woodland is being evaluated for certification.

UKWAS 2.3.1(c) The owner/manager shall consult appropriately with local people, relevant organisations and other interested parties, and provide opportunities for their engagement in planning and monitoring processes. **UKWAS 4.1.1(a)** Areas and features of high conservation value having particular significance for biodiversity shall be identified by reference to statutory designations at national or regional level and/or through assessment on the ground.

UKWAS 4.1.1(c) There shall be ongoing communication and/or consultation with statutory bodies, local authorities, wildlife trusts and other relevant organisations.

UKWAS 4.1.1(d) Statutory designated sites shall be managed in accordance with plans agreed with nature conservation agencies, and shall be marked on maps.

Health and welfare

Cyp.12 Operators have and use adequate personal protective equipment as specified on the product label and in the COSHH assessment.

Cyp.13 Operator exposure to cypermethrin is monitored using pesticide application records and site checks of use of personal protective equipment. There is appropriate follow up action if personal protective equipment is not being used.

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Cyp.14 Operator health concerns are monitored using pesticide application records and site checks. There is appropriate follow up action if health concerns are identified.

Guidance note: There are legal requirements under the Food and Environment Protection Act (FEPA) 1985 to record pesticide usage.

Cyp.15 Cypermethrin containers are stored safely and securely.

Food and water

Cyp.16 Operations conform to Forestry Commission Practice Guide 15 guidance on protecting the public.

Guidance note: Refer to section 2.3 'Protection of the public'.

Rights

Cyp.17 Where it is necessary to restrict public access to minimise health and safety risks, such restrictions are kept to the minimum extent and duration necessary to achieve their aims.

See also UKWAS 2.3.1(c) under High Conservation Values, above.

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Environmental and social risk assessment

Pesticide: Cypermethrin

Purpose of use: Protection of seedlings and transplants from weevil damage

This ESRA is based on the listing of cypermethrin as a Highly Restricted Highly Hazardous Pesticide as acutely toxic to mammals, and as such it gives significant weight to mitigating risks to human health, primarily through the pathway of direct worker exposure and protection of potential site users and protection of water supplies. There is also the high risk is to aquatic life, and the ESRA gives greatest weight to mitigating this risk. Other potential impacts are also considered, but the proposed mitigation strategies and indicators are proportionate to the perceived lower level of risk.

It applies solely to standard forestry uses of cypermethrin, i.e. those covered by the certificates of competence mentioned in the ESRA. It does not apply to non-standard uses, which may require additional safeguards. It applies not only to application of cypermethrin, but also to mixing, storage and waste disposal, all of which are covered by the best practice guidance cited in the proposed mitigation strategies and indicators.

The ESRA includes references to:

- *The integrated management of* Hylobius abietis *in UK forestry*.
- Hylobius Management Support System (MSS) - Forest Research
- *The UK Woodland Assurance Standard* (UKWAS), with cross-references to FSC-STD-GBR-03-2017 V1-0 EN *UK all forest types and scales* (the official FSC version of the standard).
- *The UK Forestry Standard* (UKFS), the governments' approach to sustainable forestry.
- Forestry Commission Practice Guide 15 *Reducing Pesticide Use in Forestry* (FCPG015).
- Forestry Commission Practice Guide 25 *Managing forest operations to protect the water environment* (FCPG025).
- FISA Safety Guide 202 *Application of pesticides by hand-held equipment* (FISA202).
- *Pesticides: Code of practice for using plant protection products*, for England and Wales.
- *Pesticides: Code of practice for using plant protection products in Scotland*.
- *Pesticides: Code of practice for using plant protection products*, for Northern Ireland.
  (note – these links are to documents available in March 2024 – you need to ensure that you always reference the most upto date versions)

Exposure Elements	Minimum list of values	Description of why/why not a risk	Mitigation strategies defined to minimize risk	Controls
			Overview From the descriptions of risk, it is clear that the principal issues are worker safety/welfare and the potential for the contamination of water. Mitigation strategies are focussed on these key risks, but also address the other, lesser risks identified: the potential impacts on non-target insect species, the potential for the contamination of wild foods, and effects on public access. **General strategies** While this ESRA comes at a point in the IPM process where it has already been decided that the use of cypermethrin is necessary, most of the risks described can be mitigated to some degree by minimising the volume used, in terms of the number of seedlings / transplants treated, the volume applied to each seedling /transplant , and the frequency of application. For this reason, the overarching UKWAS requirement to minimise pesticide use (UKWAS 3.4.1(b) [FSC 10.7.2]) is a key general mitigation strategy. This is monitored via UKWAS 3.4.3 [FSC 10.7.8]. The key strategies to minimise the risk of harm to any environmental or social value are to read and comply with the cypermethrin product label; to read and comply with FISA Guide 202 and hence the pesticides code of practice; and to make sure operators are suitably trained.	**Cyp.1** Operations conform to FISA Safety Guide 202 *Application of pesticides by hand-held equipment*. Guidance note: *Owners/managers may also find it useful to refer to* Pesticides: Code of practice for using plant protection products *in England and Wales,* Pesticides: Code of practice for using plant protection products in Scotland*, or* Pesticides: Code of practice for using plant protection products *in Northern Ireland.* **Cyp.2** Operators hold NPTC PA1 and PA6 certificates of competence or LANTRA equivalents. **Cyp.3** There is an appropriate COSHH assessment. **Cyp.4** Operators comply with the requirements and relevant recommendations of the cypermethrin product label. **Cyp.5** Records of cypermethrin usage are maintained, including trade name, active ingredient,

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			After expert scientific scrutiny of all available safety data, the Health and Safety Executive have judged that cypermethrin does not pose an unacceptable risk to consumers, operators, bystanders or the wider environment if applied according to the conditions they have specified on the product label. Risks associated with cypermethrin can be reduced to an acceptable level through using it as specified on the product label. This specifies how to use the product safely, including the minimum levels of Personal Protective Equipment (PPE) required. Mitigation of risks to worker safety and water, as well as risks such as poorly targeted applications affecting non-target insect species, can also be achieved through conformance to FISA Safety Guide 202 *Application of pesticides by hand-held equipment*, which ensures conformance with the pesticides codes of practice, and addresses the following issues: • Certificates of competence, • Personal protective equipment (PPE) and hygiene requirements, • The applicator, • Emergency procedures, • Planning to spray, • Preparing to spray, • Spraying, • After spraying, and	quantity of active ingredient used, period of use, number and frequency of applications, location and area of use, and reason for use. These records are kept for a minimum of five years. **Cyp.6** There is awareness of research into chemical and non-chemical alternatives to cypermethrin, carried out by Forest Research, the Hylobius Industry Research Programme or other agencies. *Guidance note: Owners/managers should refer to the Forest Research note* The integrated management of *Hylobius abietis* in UK forestry and the Hylobbius Management Support System (MSS) **Cyp.7** Large enterprises provide financial or in kind contributions to research into chemical and non-chemical alternatives to cypermethrin carried out by Forest Research, the Hylobius Industry Research Programme or other agencies.

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			• Weather conditions. Checking conformance with FISA202 ensures adherence to the COSHH assessment (i.e. an assessment carried out in accordance with the Control of Substances Hazardous to Health Regulations 2002); the use of a suitable, properly maintained and calibrated applicator; appropriate emergency planning and safety signage; safe transport and storage; and appropriate waste disposal. Most of this will be achieved through suitable contracts and supervision. All risks are mitigated to some degree by appropriate operator training, as evidenced by certificates of competence. All operators working with cypermethrin should hold the National Proficiency Tests Council (NPTC) or Scottish Skills Testing Service (SSTS) certificates PA1 (Foundation module) and PA6 (Hand-held applicators) or LANTRA equivalents. PA1 leads to the following outcomes: • Outcome 1. Know the legislative requirements and codes of practice relating to the use of pesticides • Outcome 2. Understand the relevance of product information • Outcome 3. Know how to minimise the risk of human contamination and implement emergency procedures • Outcome 4. Know how to store and transport pesticides safely	*Guidance note: Large enterprises are defined in UKWAS as organisations with at least 250 employees.* *In kind contributions may include providing sites for field trials.* *While large enterprises and other owners/managers may consider carrying out their own investigations into chemical and non-chemical alternatives to cypermethrin, to maximise the benefits of such investigations they should be coordinated with the work of agencies and other owners/managers wherever possible.* *See also UKWAS 3.4.1(b) and 3.4.3 [FSC 10.7.2 and 10.7.8 respectively].*

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			• Outcome 5. Know how to manage and dispose of surplus pesticide and waste materials • Outcome 6. Know the record keeping requirements • Outcome 7. Know how to minimise the risk of environmental contamination and implement emergency procedures PA6 leads to the following outcomes: • Outcome 1. Know the legislative and safety regulations relating to applicator use • Outcome 2. Be able to assess the environmental factors relating to mixing and application • Outcome 3. Be able to read and interpret product information • Outcome 4. Be able to prepare and calibrate a hand held pedestrian applicator • Outcome 5. Be able to operate the application equipment • Outcome 6. Know how to carry out post-operational procedures All risks are also mitigated to some degree by complying with the product label and, in the case of forestry usage of cypermethrin, the extension of authorisation for a minor use of a plant protection product.	
Environmental	Soil (erosion, degradation, biota, carbon storage)	Standard forestry usage of cypermethrin is **not** considered to have any significant impacts. There	N/A	N/A

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		may be positive effects from promoting prompt reestablishment of tree cover.		
	Water (ground water, surface waters, water supplies)	Cypermethrin is known to be **harmful to aquatic life with long lasting effects** (CLP H412). The greatest risk of harm comes from mixing and filling undiluted products.	Water protection is addressed explicitly in FISA guide 202 (see earlier), reflecting the requirements in the Pesticides Codes of Practice. While a wide range of measures, including careful transport and storage, are important in protecting water resources, the principal measure to protect surface waters and water supplies is to identify them and to respect appropriate buffer zones around them. Minimum necessary buffer zones to protect water are set by regulators and listed on product labels after careful consideration of all of the safety data, and in the case of applications of cypermethrin this is 1 m from the top of the watercourse bank. However, the UK Forestry Standard recommend much larger precautionary buffer zones are put in place, to further reduce the risk. Attention to the following specific measures, taken from the UK Forest Standard, and the Pesticides Codes of Practice / FISA Guide 202 and product labels, and implemented in the controls Cyp. 1-9 will adequately control any risk to aquatic habitats or drinking water from the use of cypermethrin. • Read and comply with the instructions on the product label. • Do not use pesticides within 10 m of permanent watercourses with a channel <2 m wide, 20 m for wider watercourses and for	**Cyp.8** Operations conform to *UK Forestry Standard* requirements and guidelines in relation to buffer zones around watercourses, waterbodies and abstraction points. There is no usage, mixing or filling of cypermethrin within 10 m of permanent watercourses with a channel <2 m wide, within 20 m of wider watercourses or lakes, reservoirs, large ponds or wetlands, or within 50 m of abstraction points for public or private water supplies, such as springs, boreholes, wells or surface water intakes. *Guidance note: Of particular relevance are UKFS good forestry practice requirement 8 for Forests and Water, and guideline 67 for Forests and Water. Within riparian zones and water supply catchments refer also to guideline 60 for Forests and Water and table 6.7.2. See also Forestry Commission Practice Guide 25* Managing forest

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			lakes, reservoirs, large ponds and wetlands, and 50 m around abstraction points for public and private water supplies, such as springs, boreholes, wells and surface water intakes. • Before spraying pesticides, check that the drainage channels in the area to be treated do not discharge directly into watercourses; extend buffer areas to incorporate individual drains where they are not separated from watercourses. Boggy source areas and flushes, even if dry at the time of pesticide application, should also be protected by the buffer area, in addition to the visible watercourse or drain itself. • Consult or liaise with, and obtain consent if necessary from, the relevant water regulatory authority (i.e. the Scottish Environment Protection Agency (SEPA) or the Environment Agency), water undertaker or others, as appropriate. It is good practice to consult the relevant water authority and users of private water supplies before any application on land draining to public or private supplies. Formal consent is required from the water regulatory authority for any proposed applications of approved chemicals in or near water (within 1 m of the top of the watercourse bank). • Buffer zones apply to all use of pesticides including application, storage, mixing and filling, wash down and disposal. Special care is required when mixing, filling and diluting pesticide concentrates ready for application. In forestry, pesticides are usually mixed on or near to the treatment site, so it is	operations to protect the water environment. **Cyp.9** Impacts on water quality are monitored using data collected by drinking water inspectorates and/or statutory environment protection agencies. *Guidance note: Pesticides in water are known to be monitored by the Drinking Water Inspectorate in England and Wales, the Drinking Water Inspectorate for Northern Ireland, and the Drinking Water Quality Regulator for Scotland. Further relevant monitoring information may be available from the statutory environment protection agencies.* *It is not expected that owners/managers will have the resources to collect data of the quality collected by statutory authorities, and owners/managers should rely on official data whenever possible. Owners/managers should collect their own data in response to significant incidents (e.g. spillage of*

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			extremely important to choose the mixing area carefully, make sure it is outside aquatic buffer zones, and take precautions to avoid contaminating the wider environment. Check that any drainage channels within 20m of the mixing and filling site do not discharge directly into watercourses; extend buffer areas to incorporate individual drains where they are not separated from watercourses with the required buffer. Do not spray washings out on the ground next to the mixing and filling area. • Do not apply pesticides during very wet weather or when heavy rainfall is forecast. Avoid applications to ground that is waterlogged, frozen, snow-covered or baked dry after drought. • In local groundwater catchment areas used for water supply (for example groundwater protection zones), do not apply pesticides to exposed, un-vegetated, quick-draining surfaces, such as gravel, sandy soil or hard standings, or to cracked, frozen or waterlogged ground, to avoid the risk of groundwater contamination. • Where possible, consistent with effective use of the pesticide and minimising run-off, and where permitted by the product label, choose larger nozzles that produce larger droplets with a coarser spray quality, select low-drift nozzles, use lower spraying pressures, increase volume rates and lower boom heights, and consider the use of drift reducing adjuvants. • Wherever possible, restrict spray operations to periods with no more than a	*pesticide etc.) where contamination of water supplies or environmental damage is likely to have occurred, in order that any damage can be assessed, and mitigated and/or repaired.* *See also UKWAS 3.7.2 and 5.1.1(b) [FSC 6.3.3 and 9.3.9 respectively].*

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			constant, light breeze (Force 2 on the Beaufort Scale, 3.2–6.5 kph) and when the wind direction is away from the adjacent watercourse. • Pause, adjust, or abandon spraying if weather conditions unexpectedly change. • Do not apply pesticides to actively eroding soils. Take corrective action to minimise further erosion and prevent sediment from entering streams, for example by installing silt traps. • Do not wash out sprayers, personal protective equipment, containers or the like near any watercourse, however small. Do not ford watercourses wearing contaminated personal protective equipment. Never fill sprayers directly from watercourses. • Ensure that containers of pesticide concentrates are safely stored outside of the buffer area. • Seek advice from the appropriate water or waste regulatory authority about the safe disposal of unwanted pesticides. • Do not puncture, bury or burn empty containers or waste packaging. Ensure they are disposed of by prior arrangement with the local authority or by a licensed waste disposal contractor, in line with Waste Regulations. • Prepare a detailed plan for the safe handling of concentrates during mixing and filling, and stick to it. • Prepare a detailed contingency plan to deal with accidental spillage. A spill kit (for example protective gloves, adsorbent material, such as sawdust or cat litter, shovel and brush, and plastic bag to collect any	

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			contaminated absorbent material) should be available at all times. UKWAS 3.7.2 also requires that plans and equipment must be in place to deal with accidental spillages of chemicals. In addition, UKWAS 5.1.1(b) requires that a precautionary approach be adopted in relation to water supplies. UKWAS 3.7.2 [FSC 6.3.3] requires that plans and equipment must be in place to deal with accidental spillages of chemicals. In addition, UKWAS 5.1.1(b) [FSC 9.3.9] requires that a precautionary approach be adopted in relation to water supplies.	
	Atmosphere (air quality, greenhouse gasses)	Standard forestry usage of cypermethrin is **not** considered to have any significant impacts.	N/A	N/A
	Non-target species (vegetation, wildlife, bees and other pollinators, pets)	The approved formulated cypermethrin product itself (Forester) is classified as not toxic to bees. In common with most insecticides the active ingredient cypermethrin could, in theory, be toxic to bees if it were to be ingested by them. However, once the sprayed product has dried on	Risks to bees and other pollinators can be mitigated by carefully targeting applications to the planted trees only, following the guidance in the Forest Research publications 'The Integrated Management of *Hylobius abietis* in UK forestry'.	**Cyp.10** Applications are targeted to avoid excessive run-off into the soil or contact with non-target plants. *Guidance note: Applications should conform to the Forest Research note* Theintegrated management of *Hylobius abietis* in UK forestry*, which recommends that 'The spray should be carefully directed to*

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		the planted trees, it is likely that bees would have to ingest parts of the plant to have significant exposure to the insecticide. Since they do not feed on trees and are unlikely to land on the tree stems or foliage when foraging, cross contamination is therefore highly unlikely. No deliberate spraying of surrounding soil or vegetation should take place, so that even if other flowering plants that bees might forage from for nectar and pollen establish on a clearfell site, these plants would not be sprayed, although there is a theoretical risk of misapplication causing spray drift onto these flowering plants. Similarly, no spraying of any small puddles of water that are on the restock site should take place, and there will be little water retained on tree needles, so bees foraging for water are also very unlikely to come in to contact with cypermethrin from treated trees. Honey bees are also unlikely to visit treated trees while sourcing resin to make propolis since they are more likely to obtain resin from the		*cover the entire circumference of [the] lower half of the stem, allowing the solution to flow down the stem and onto the root collar. Run-off into the soil, or drift to surrounding soil or vegetation, should be minimised through the use of low spraying pressures (around 1 bar) and suitable nozzles, such as an adjustable cone nozzle.'*

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		much larger source associated with any nearby mature trees. Aside from potential impacts on aquatic life as described earlier, standard forestry usage of cypermethrin is not considered to have any other significant impacts on non-target species. .		
	Non-timber forest products (as FSC-STD-01-001 V5-2 FSC Principles and Criteria, criterion 5.1)	Standard forestry usage of cypermethrin is **not** considered to have any significant impacts, on the basis that it presents no specific risk to honey bees and therefore honey production.	N/A	N/A
	High Conservation Values (particularly HCV 1-4)	As noted previously, there are **potential impacts on non-target insect species (HCV 1)**. HCV 2 is **not** considered to be present in the UK. Standard forestry usage of cypermethrin is **not** considered to have any	In the UK context, HCV 1 (concentrations of biological diversity including endemic species, and rare, threatened or endangered species, that are significant at global, regional or national levels) is taken to be represented by biological Sites of Special Scientific Interest (SSSIs, in England, Scotland and Wales) and Areas of Special Scientific Interest (ASSIs, in Northern Ireland). For more information, see the *National High Conservation Value Framework for the United*	**Cyp.11** There is appropriate consultation with the relevant statutory nature conservation body and/or other experts to identify and mitigate potential threats to statutory designated sites within and/or adjacent to the management unit.

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		significant impacts on HCV 3 and 4.	*Kingdom*, available at https://www.fsc-uk.org/en-uk/business-area/fsc-certificate-types/forest-management-fm-certification/forest-certification. If a SSSI or ASSI is designated in whole or in part because of individual insect species or species assemblages, risks to non-target insect species could also threaten the High Conservation Value. The *National HCV Framework* includes sources of mapping information for identifying SSSIs and ASSIs. Maps will often provide direct links to site descriptions, including the reasons for designation and lists of operations likely to damage the special interest (and which, within the boundary of the site, require the consent of the relevant statutory nature conservation body). Within a SSSI or ASSI, consultation with the relevant statutory nature conservation body is essential. In areas adjacent to SSSIs or ASSIs, recognising that the capacity of statutory bodies is limited, it may also be possible to seek the advice of other experts, for example from organisations such as BugLife or Butterfly Conservation. They may be able to advise on suitable mitigation measures such as temporary or permanent buffer zones. UKWAS requirements 2.2.1(c) [FSC 7.2.1.3], 2.2.1(d) [FSC 7.2.1.4] and, in particular, 2.2.1(e) [FSC 7.2.1.5] and 4.1.1(a) [FSC	*See also UKWAS 2.2.1(c), 2.2.1(d), 2.2.1(e), 2.3.1(a), 2.3.1(c), 4.1.1(a), 4.1.1(c) and 4.1.1(d) [FSC 7.2.1.3, 7.2.1.4, 7.2.1.5, 9.1.1, 4.1.1, 9.4.2, 9.1.2 and 9.3.2 respectively].*

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			9.1.1] address awareness of potentially affected sites. Consultation is addressed in UKWAS 2.3.1(a) [FSC 4.1.1], 2.3.1(c) [FSC 9.4.2] and 4.1.1(c) [FSC 9.1.2], and appropriate management of designated sites within the management unit is addressed in UKWAS 4.1.1(d) [FSC 9.3.2].	
	Landscape (aesthetics, cumulative impacts)	Standard forestry usage of cypermethrin is **not** considered to have any significant impacts. There may be positive effects from promoting prompt reestablishment of tree cover.	N/A	N/A
	Ecosystem services (water, soil, carbon sequestration, tourism)	As noted previously, there are **potential impacts on water**. Standard forestry usage of cypermethrin is **not** considered to have any significant impacts on soil, carbon sequestration or tourism.	See the strategies for water, above.	See the controls for water, above.
Social	High Conservation Values (especially HCV 5-6)	As noted previously, there are **potential impacts on water supplies (HCV 5)**. Standard forestry usage of cypermethrin is **not** considered to have any significant impacts on cultural values (HCV 6).	See the strategies for water, especially in relation to water supplies, above. Appropriate communication and consultation as per UKWAS 2.3.1(a) [FSC 4.1.1] and 2.3.1(c) [FSC 9.4.2] will be important to ensure that neighbours with private water supplies are suitably informed and able to discuss mitigation measures.	See the controls for water, above. *See also UKWAS 2.3.1(a) and 2.3.1(c) [FSC 4.1.1 and 9.4.2 respectively].*

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	Health (fertility, reproductive health, respiratory health, dermatologic, neurological and gastrointestinal problems, cancer and hormonal imbalance)	Cypermethrin is known to be **harmful if swallowed** (CLP H302). Contact with skin and breathing in spray/vapour can cause an allergic reaction. There is no obvious pathway for workers to ingest harmful quantities in normal use. There is no obvious pathway for members of the public to ingest harmful quantities unless they have direct access to stored chemical. Correct PPE and use of PPE will minimise skin/spray contact or inhalation. Correct spray equipment and spray calibration will minimise spray contact.	Worker safety and welfare are addressed primarily in the PPE and hygiene requirements of FISA202 (paragraphs 2-11), but also throughout the guide, including paragraph 58 regarding the effects of PPE and weather on worker stress. Minimum PPE requirements for application, handling of product concentrate and handling of contaminated surface must be based on the product label, , the COSHH assessment and FISA202. (Engineering controls may replace personal protective equipment if the COSHH assessment shows they provide an equal or higher standard of protection. As a minimum, PPE should include suitable chemical proof boots, coveralls, gloves. A visor and respirator may be required for mixing and filling, or application, if breathing in the spray cannot otherwise be avoided. Public safety is addressed primarily through the requirement for safe storage of pesticides on site in FISA202 (paragraph 30).	**Cyp.12** Operators have and use adequate personal protective equipment as specified on the product label and in the COSHH assessment. **Cyp.13** Operator exposure to cypermethrin is monitored using pesticide application records and site checks of use of personal protective equipment. There is appropriate follow up action if personal protective equipment is not being used. **Cyp.14** Operator health concerns are monitored using pesticide application records and site checks. There is appropriate follow up action if health concerns are identified. *Guidance note: There are legal requirements under the Food and Environment Protection Act (FEPA) 1985 to record pesticide usage.* **Cyp.15** Cypermethrin containers are stored safely and securely.
	Welfare	Standard forestry usage of cypermethrin **may have indirect effects on worker welfare through the weight of spraying gear or overheating as a result of wearing personal protective equipment**. In addition, workers must have access to clean water for both washing and drinking.		

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	Food and water	*Note: This value is taken to refer to wild forest foods (rather than agricultural crops) and to drinking water.* Standard forestry usage of cypermethrin is unlikely to lead to any contamination of fruits etc., and even if it did occur, contact with residues immediately after treatment or consumption of foods is not known to be harmful. As noted previously, there are **potential impacts on water supplies**.	Risks to food are best mitigated by carefully targeted application; see the strategies for non-target species, above. The risk of members of the public picking fruit or fungi which have been recently contaminated with pesticides can be further mitigated through conformance to Forestry Commission Practice Guide 15 *Reducing Pesticide Use in Forestry*. Section 2.3 'Protection of the public' explicitly addresses this issue: In all cases, if practical and legally possible, it is preferable to totally exclude forest users from the work-site, or close the recreation site or footpath/right of way on the work-site margins. The method of exclusion, through barriers or signage, will depend on the type of user identified… The duration of exclusion will depend on the presence or absence of edible fruit or fungi. (i) If edible fruit or fungi that are likely to be picked are present, close the site until the produce dies. Alternatively, treat the site at a time of year when no edible produce is present, or strim off the plants to prevent fruiting. (ii) If no edible fruit or fungi are present, close the site for 48 hours after spraying, or until the pesticide dries and there is no liquid residue that might cause accidental contamination of the public.	**Cyp.16** Operations conform to Forestry Commission Practice Guide 15 guidance on protecting the public. *Guidance note: Refer to section 2.3 'Protection of the public'.*

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			See also the strategies for water, above.	
	Social infrastructure; (schools and hospitals, recreational infrastructure, infrastructure adjacent to the management unit)	Standard forestry usage of cypermethrin is **not** considered to have any significant impacts.	N/A	N/A
	Economic viability (agriculture, livestock, tourism)	Cypermethrin usage **may potentially have impacts on some water-based enterprises (such as fish farming), or on water supplies for enterprises (such as breweries or distilleries)**.	See the strategies for water, above.	See the controls for water, above.
	Rights (legal and customary)	Standard forestry usage of cypermethrin **may lead to actual or perceived restrictions on rights of access**. Cypermethrin usage **may potentially have impacts on rights to uncontaminated water**.	Some restrictions to public access, in line with section 2.3 of FCPG015, are desirable in order to minimise other risks. However, where such restrictions are imposed, they should be kept to the minimum extent and duration necessary to achieve their aims. In addition to actual restrictions on public access, some forest users may feel excluded because of their uncertainties about operations or their concerns about safety. This risk is best mitigated through appropriate stakeholder engagement, as addressed by UKWAS 2.3.1(c) [FSC 7.6.1]. See also the strategies for water, above.	**Cyp.17** Where it is desirable to restrict public access to minimise health and safety risks, such restrictions are kept to the minimum extent and duration necessary to achieve their aims. See also the controls for water, above. *See also UKWAS 2.3.1(c) [FSC 7.6.1].*
	Others	No other risks have been identified.	N/A	N/A