



## UK National Level ESRA for Glyphosate V1-0, May 2020

### Context and scope

[FSC-POL-30-001 V3-0 EN FSC Pesticides Policy](#) 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). ESRA's are not intended for use in the field, but must inform your operational level planning (FSC-POL-30-001 V3-0 EN clause 4.12.6).

To help you comply with ESRA requirements, the Policy allows the national Standard Development Group to complete the ESRA template (FSC-POL-30-001 V3-0 EN page 24); you can then use this pre-populated template when undertaking your own ESRA. This national level ESRA for glyphosate has been produced on this basis, to support you in complying with the Policy. You are not obliged to rely on this guidance, nor are you obliged to use the FSC template for ESRA's; you may use your own template for risk assessments, provided you cover all of the content requirements of the Policy.

FSC has classified glyphosate as a Restricted Highly Hazardous Pesticide (HHP). It is included in the hazard group Chronic Toxicity under criterion 3 (Carcinogenicity), indicator 3.1, threshold (a) on the basis of its classification by the International Agency for Research on Cancer (IARC) as 'probably carcinogenic to humans' (Group 2A).

This ESRA covers standard forestry uses of glyphosate for weed control.

The full ESRA, setting out a range of environmental and social values, the potential risks to those values from glyphosate usage, and the strategies to minimise those risks, is provided for context on pages 8-20. The essential controls on glyphosate usage are summarised on pages 3-7.

In due course, FSC will produce International Generic Indicators (IGIs) for the use of Highly Hazardous Pesticides, and these will be adapted to produce national indicators for specific pesticides. Compliance with these indicators will be compulsory. In the interim, the controls in this ESRA are for guidance only, although they will be considered by auditors when assessing your compliance with the Policy requirements. For more information on the timescale for full implementation of the Policy, visit the [FSC UK Pesticides Policy webpage](#).

## Incorporating draft International Generic Indicators for the use of HHPs

The transition arrangements for the *FSC Pesticides Policy* (FSC-POL-30-001 V3-0 EN page 8) include an instruction for certificate holders to incorporate the requirements from the most recent published draft of the IGIs into their ESRA for Highly Hazardous Pesticides. This is further clarified in [interpretation](#) INT-POL-30-001\_07, which states that

In this context, 'incorporate' means that the [certificate holder] shall review the most recent draft of the IGIs for the use of HHPs published by FSC International to identify aspects applicable to the HHP they intend to use, and, if relevant, bring these aspects into their ESRA.

Note that this requirement to incorporate relevant aspects of the draft IGIs into ESRA does not mean that direct compliance with these IGIs is compulsory. Once the IGIs have been finalised and used as the basis for national indicators for specific pesticides, compliance with these indicators will be mandatory.

The first published draft of the HHP IGIs is available from the [FSC UK Pesticides Policy webpage](#). For this glyphosate ESRA, the relevant IGIs are those for all HHPS (pages 12-14) and those for Hazard Criterion 3 (pages 19-20).

High level integrated pest management requirements (draft IGIs 1.1, 1.3 and 1.4) are considered to be addressed through compliance with UKWAS section 3.4. Record keeping requirements (IGI 1.2) are considered to be addressed proportionately in controls Gly.5, 13 and 14. Minimum effective dosage (IGI 1.5) is considered to be addressed in control UKWAS 3.4.1(b). The provision of safety information to stakeholders (IGI 1.6) is considered to be addressed proportionately in controls UKWAS 2.3.1(a) and (c), and Gly.16. Buffer zones (IGI 1.7) are addressed in controls Gly.8 and 9. Free, prior and informed consent requirements (IGI 1.8) are not considered to be applicable in the UK context. Requirements relating to emergency use or use by government order (IGIs 1.9 and 1.10) are not considered to be relevant to this ESRA, which covers planned use of glyphosate.

Health and safety requirements (draft IGI 4.1) are considered to be addressed through controls Gly.1, 2, 3, 4, 12 and 15, as well as UKWAS section 5.4. Treatment/compensation (IGI 4.2) and monitoring (IGI 4.3) are considered to be addressed in a manner proportionate to the level of risk through controls Gly.13 and 14.

FSC UK will continue to monitor the development of the IGIs, and will update this national level ESRA accordingly.



## Controls

The following are the essential controls identified in the national level ESRA. They include new controls (**Gly.x**), but also existing controls in UKWAS (**UKWAS x.x.x**). 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

**Gly.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.*

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

**Gly.3** There is an appropriate COSHH assessment.

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

**Gly.5** Records of glyphosate 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.

**Gly.6** There is awareness of research into chemical and non-chemical alternatives to glyphosate carried out by Forest Research or other agencies.

**Gly.7** Individual certificate holders or group schemes with a total certified area of more than 5,000 hectares provide financial or in kind contributions to research into chemical and non-chemical alternatives to glyphosate carried out by Forest Research or other agencies.

*Guidance note: 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 glyphosate, to maximise the benefits of such investigations they should be coordinated with the work of agencies and other owners/managers wherever possible.*

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

**UKWAS 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.

#### Soil

**UKWAS 3.1.2** The planning of woodland operations shall include:

- Taking measures to protect water resources and soils, and prevent disturbance of and damage to priority species, habitats, ecosystems and landscape values, including adapting standard prescriptions where required. Any disturbance or damage which does occur shall be mitigated and/or repaired, and steps shall be taken to avoid recurrence.

**UKWAS 4.5.1(a)** Areas and features of critical importance for watershed management or erosion control shall be identified in consultation with relevant statutory bodies.

**UKWAS 4.5.1(b)** Where critically important areas or features are identified, their management shall be agreed with the relevant statutory bodies.

#### Water

**Gly.8** Operations conform to *UK Forestry Standard* requirements and guidelines in relation to buffer zones around watercourses, waterbodies and abstraction points. Subject only to Gly.9, there is no usage, mixing or filling of glyphosate 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: This control is based on the recommended buffer widths in table 6.7.2 of UKFS. Also particularly relevant are UKFS good forestry practice requirement 8 for Forests and Water, and guidelines 62, 67 and 69 for Forests and Water. See also Forestry Commission Practice Guide 25 Managing forest operations to protect the water environment.*

**Gly.9** Glyphosate is used within buffer zones around watercourses or waterbodies only if such usage will result in demonstrable enhancement of biodiversity, and only following consultation with the relevant statutory environment protection agency. Glyphosate is used to control aquatic weeds only with the agreement of the relevant statutory environment protection agency.

**Gly.10** 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, 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

**Gly.11** Operators take reasonable steps to avoid spray drift.

*Guidance note: Refer to FISA Safety Guide 202 paragraphs 32, 33 and 57.*

**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, 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.

**UKWAS 2.5.1(a)** The impacts of new planting and other woodland plans on environmental values shall be assessed before operations are implemented, in a manner appropriate to the scale of the operations and the sensitivity of the site.

**UKWAS 2.5.1(b)** The results of the environmental assessments shall be incorporated into planning and implementation in order to avoid, minimise or repair adverse environmental impacts of management activities.

*See also UKWAS 3.4.1(b) and 3.4.3 under general strategies, above.*

#### Non-timber forest products

**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:

- b) Assessment of relevant components of the woodland resource, including potential products and services which are consistent with the management objectives.

#### High Conservation Values

**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, 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(b)** Adopting a precautionary approach, the identified areas, species and features of high conservation value shall be maintained and, where possible, enhanced.

**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.

**UKWAS 4.1.2** Appropriate measures shall be taken to protect identified priority habitats and species in accordance with plans agreed with nature conservation agencies. In planning and implementing measures within the WMU, the owner/manager shall take into account the geographic range and ecological requirements of priority species beyond the boundary of the WMU.

**UKWAS 4.2.1(a)** Ancient semi-natural woodland shall be identified by reference to published maps and/or by assessment on the ground.

**UKWAS 4.2.1(b)** Adopting a precautionary approach, the high conservation value of ancient semi-natural woodlands shall be maintained and, where possible, enhanced.

**UKWAS 4.3.1(a)** The owner/manager shall maintain and enhance or restore features and areas of high conservation value within plantations on ancient woodland sites.

**UKWAS 4.3.1(b)** The owner/manager shall:

- Identify and evaluate remnant features
- Identify and evaluate threats

- Adopting a precautionary approach, prioritise actions based on the level of threat and the value of remnants, and
- Implement targeted actions.

*See also UKWAS 4.5.1(a) and 4.5.1(b) under soils, above.*

#### Health and welfare

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

**Gly.13** Operator exposure to glyphosate 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.

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

#### Food and water

**Gly.15** Operations conform to Forestry Commission Practice Guide 15 guidance on protecting the public, particularly around recreational infrastructure or where wild foods that are likely to be picked are present.

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

#### Social infrastructure

**UKWAS 5.2.1** The owner/manager shall mitigate the risks to public health and safety and other negative impacts of woodland operations on local people.

*See also Gly. 15 under food and water, above.*

#### Rights

**Gly.16** 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 UKWAS 2.3.1(c) under High Conservation Values, above.*

## Environmental and social risk assessment

Pesticide: Glyphosate

Purpose of use: Weed control

This ESRA is based on the listing of glyphosate as a Highly Hazardous Pesticide as a probable carcinogen, and as such it gives greatest weight to mitigating risks to human health, primarily through the pathway of direct worker exposure but also through water and wild foods. Other potential impacts are also considered, but the proposed mitigation strategies and indicators are proportionate to the perceived lower level of risk.

It applies to glyphosate itself and not to individual formulations, which may present other hazards.

It applies solely to standard forestry uses of glyphosate, 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 glyphosate, 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 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.

Exposure Elements	Minimum list of values	Description of why/why not a risk	Mitigation strategies defined to minimize risk	Controls
			<p><b>Overview</b>  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 for soil erosion, effects on non-target vegetation, the potential for the contamination of wild foods, risks to public health, and effects on public access.</p> <p><b>General strategies</b>  While this ESRA comes at a point in the IPM process where it has already been decided that the use of glyphosate is necessary, most of the risks described can be mitigated to some degree by minimising the volume used, both in terms of the total used on a site and the amount applied in individual spots and strips. 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].</p> <p>Mitigation of risks to worker safety and water, as well as risks such as spray drift affecting non-target vegetation, can be achieved largely through conformance to FISA Safety Guide 202 <i>Application of pesticides by hand-held equipment</i>, which addresses the following issues:</p> <ul style="list-style-type: none"> <li>• Certificates of competence,</li> <li>• Personal protective equipment (PPE) and hygiene requirements,</li> <li>• The applicator,</li> <li>• Emergency procedures,</li> <li>• Planning to spray,</li> <li>• Preparing to spray,</li> <li>• Spraying,</li> <li>• After spraying, and</li> <li>• Weather conditions.</li> </ul>	<p><b>Gly.1</b> Operations conform to FISA Safety Guide 202 <i>Application of pesticides by hand-held equipment</i>.</p> <p><i>Guidance note:</i>  Owners/managers may also find it useful to refer to Pesticides: Code of practice for using plant protection products <i>in England and Wales</i>, Pesticides: Code of practice for using plant protection products in Scotland, or Pesticides: Code of practice for using plant protection products <i>in Northern Ireland</i>.</p> <p><b>Gly.2</b> Operators hold NPTC PA1 and PA6 certificates of competence or LANTRA equivalents.</p> <p><b>Gly.3</b> There is an appropriate COSHH assessment.</p> <p><b>Gly.4</b> Operators comply with the requirements and relevant recommendations of the product label.</p> <p><b>Gly.5</b> Records of glyphosate usage are maintained, including trade name, active ingredient, quantity of active</p>

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			<p>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.</p> <p>All risks are mitigated to some degree by appropriate operator training, as evidenced by certificates of competence. All operators working with glyphosate 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.</p> <p>PA1 leads to the following outcomes:</p> <ul style="list-style-type: none"> <li>• Outcome 1. Know the legislative requirements and codes of practice relating to the use of pesticides</li> <li>• Outcome 2. Understand the relevance of product information</li> <li>• Outcome 3. Know how to minimise the risk of human contamination and implement emergency procedures</li> <li>• Outcome 4. Know how to store and transport pesticides safely</li> <li>• Outcome 5. Know how to manage and dispose of surplus pesticide and waste materials</li> <li>• Outcome 6. Know the record keeping requirements</li> <li>• Outcome 7. Know how to minimise the risk of environmental contamination and implement emergency procedures</li> </ul> <p>PA6 leads to the following outcomes:</p>	<p>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.</p> <p><b>Gly.6</b> There is awareness of research into chemical and non-chemical alternatives to glyphosate carried out by Forest Research or other agencies.</p> <p><b>Gly.7</b> Individual certificate holders or group schemes with a total certified area of more than 5,000 hectares provide financial or in kind contributions to research into chemical and non-chemical alternatives to glyphosate carried out by Forest Research or other agencies.</p> <p><i>Guidance note: In kind contributions may include providing sites for field trials.</i></p> <p><i>While large enterprises and other owners/managers may consider carrying out their own investigations into chemical and non-chemical alternatives to glyphosate, to maximise the benefits of such</i></p>

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			<ul style="list-style-type: none"> <li>• Outcome 1. Know the legislative and safety regulations relating to applicator use</li> <li>• Outcome 2. Be able to assess the environmental factors relating to mixing and application</li> <li>• Outcome 3. Be able to read and interpret product information</li> <li>• Outcome 4. Be able to prepare and calibrate a hand held pedestrian applicator</li> <li>• Outcome 5. Be able to operate the application equipment</li> <li>• Outcome 6. Know how to carry out post-operational procedures</li> </ul> <p>All risks are also mitigated to some degree by complying with the product label.</p>	<p><i>investigations they should be coordinated with the work of agencies and other owners/managers wherever possible.</i></p> <p><i>See also UKWAS 3.4.1(b) and 3.4.3 [FSC 10.7.2 and 10.7.8 respectively].</i></p>
<b>Environmental</b>	Soil (erosion, degradation, biota, carbon storage)	<p>Control of vegetation using glyphosate may create bare soil, which <b>may potentially lead to soil erosion or degradation.</b></p> <p>Standard forestry usage of glyphosate is <b>not</b> known to have significant impacts on soil biota or carbon storage.</p>	The risk of soil erosion or degradation is considered to be relatively minor, and adequately addressed by UKWAS 3.1.2, 4.5.1(a) and 4.5.1(b) [FSC 10.10.2, 9.1.6 and 9.3.7 respectively].	See UKWAS 3.1.2, 4.5.1(a) and 4.5.1(b) [FSC 10.10.2, 9.1.6 and 9.3.7 respectively].
	Water (ground water, surface waters, water supplies)	Glyphosate is known to be <b>toxic to aquatic life with long lasting effects</b> (CLP H411).	Water protection is addressed explicitly in paragraphs 20, 26 and 33 of FISA202, but also throughout the guide. 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	<b>Gly.8</b> Operations conform to <i>UK Forestry Standard</i> requirements and guidelines in relation to buffer zones around watercourses, waterbodies and abstraction

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		<p>Glyphosate usage has the <b>potential to contaminate ground water, surface water and water supplies.</b></p> <p>The greatest risk of harm comes from mixing and filling undiluted products.</p>	<p>supplies is to identify them and to respect appropriate buffer zones around them, as per paragraph 20:</p> <p>20 Check the precise location of any domestic water supply, rivers, streams, ditches or ponds. Plan to leave a suitable buffer strip (see product label) to avoid contamination.</p> <p>Glyphosate product labels do not specify buffer widths, but various minimum distances between operations and surface water etc. are set out in the <i>UK Forestry Standard</i> Guidelines on Forests and Water 62, 67 and 69:</p> <p>62 The preparation of pesticide for application and the filling, cleaning or maintenance of pesticide sprayers shall be undertaken in conditions such that any spillage, run-off or washings will be prevented from entering any surface water or wetland; these activities shall not be undertaken within 10 m of any surface water or wetland, or any opening into a surface water drainage system.</p> <p>67 No pesticide shall be applied in, onto or over ground, or allowed to drift onto or over ground that is within 1 m of any surface water or wetland; is within 50 m of any spring, well or borehole; is frozen, waterlogged or covered with snow (except where the application in, onto or over waterlogged ground is necessary to control fungal disease and all precautions are taken to minimise the risk of contamination of any surface water or wetland); is sloping (unless it is ensured that any run-off of pesticide will be intercepted by a sufficient buffer zone); has an impermeable surface which drains directly into a surface water drainage system (unless measures are taken to minimise this risk); or is along roads, railway lines, permeable surfaces or other infrastructure (unless</p>	<p>points. Subject only to Gly.9, there is no usage, mixing or filling of glyphosate within 10 m of permanent watercourses with a channel &lt;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.</p> <p><i>Guidance note: This control is based on the recommended buffer widths in table 6.7.2 of UKFS. Also particularly relevant are UKFS good forestry practice requirement 8 for Forests and Water, and guidelines 62, 67 and 69 for Forests and Water. See also Forestry Commission Practice Guide 25 Managing forest operations to protect the water environment.</i></p> <p><b>Gly.9</b> Glyphosate is used within buffer zones around watercourses or waterbodies only if such usage will result in demonstrable enhancement of biodiversity, and only following consultation with the relevant</p>

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			<p>measures are taken to minimise the risk of pollution of any surface water or wetland).</p> <p>69 No pesticide, including any used packaging that has been stored in contact with pesticide, shall be stored on land that is within 10 m of any surface water or wetland, or 50 m of any spring, well or borehole; or on an impermeable surface draining to a surface water drainage system.</p> <p>Risks can be reduced by going beyond these minimum requirements and observing the recommended buffer widths in table 6.7.2 of UKFS.</p> <p>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 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.</p> <p>FISA202 also requires that safe areas be identified for diluting and mixing pesticides and for filling applicators, and that appropriate arrangements are in place to deal with spillages (paragraph 24).</p> <p>UKWAS 3.7.2 [FSC 6.3.3] requires that plans and equipment must be in place to deal with accidental spillages of chemicals.</p> <p>In addition, UKWAS 5.1.1(b) [FSC 9.3.9] requires that a precautionary approach be adopted in relation to water supplies.</p>	<p>statutory environment protection agency. Glyphosate is used to control aquatic weeds only with the agreement of the relevant statutory environment protection agency.</p> <p><b>Gly.10</b> Impacts on water quality are monitored using data collected by drinking water inspectorates and/or statutory environment protection agencies.</p> <p><i>Guidance note: Pesticides in water are known to be monitored by the <a href="#">Drinking Water Inspectorate in England and Wales</a>, the <a href="#">Drinking Water Inspectorate for Northern Ireland</a>, and the <a href="#">Drinking Water Quality Regulator for Scotland</a>. Further relevant monitoring information may be available from the statutory environment protection agencies.</i></p> <p><i>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</i></p>

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			<p>Some products containing glyphosate are approved for use on enclosed waters, open waters, or land immediately adjacent to aquatic areas. While the best way to protect surface waters is to respect buffer zones, as described above, there may be circumstances under which it is desirable to use glyphosate on or near water, for example to control invasive non-native species. In such situations it is vital to consult with the relevant statutory environment protection agency – the Environment Agency (in England), the Scottish Environment Protection Agency, Natural Resources Wales, or the Northern Ireland Environment Agency – and to obtain their agreement before using glyphosate to control aquatic weeds.</p>	<p><i>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, in order that any damage can be assessed, and mitigated and/or repaired.</i></p> <p><i>See also UKWAS 3.7.2 and 5.1.1(b) [FSC 6.3.3 and 9.3.9 respectively].</i></p>
	<p>Atmosphere (air quality, greenhouse gasses)</p>	<p>Impacts on the atmosphere are likely only if glyphosate is sprayed at height. As this is not the case in standard forestry usage of glyphosate (where application is by spot spraying or low boom), there are <b>not</b> considered to be any significant impacts.</p>	<p>N/A</p>	<p>N/A</p>
	<p>Non-target species (vegetation, wildlife, bees and other pollinators, pets)</p>	<p>Control of vegetation using glyphosate <b>may potentially have impacts on non-target vegetation.</b></p>	<p>The purpose of glyphosate applications is to control vegetation. Inappropriate damage to vegetation may be avoided, firstly, by correctly identifying environmental values and potential products which should be protected and, secondly, by ensuring that applications are targeted as intended by avoiding issues such as spray drift.</p>	<p><b>Gly.11</b> Operators take reasonable steps to avoid spray drift.</p>

Exposure Elements	Minimum list of values	Description of why/why not a risk	Mitigation strategies defined to minimize risk	Controls
		<p>Standard forestry usage of glyphosate is <b>not</b> considered to present a hazard to bees.</p> <p>Standard forestry usage of glyphosate may present a potential pathway to affect wildlife and pets, but this is <b>not</b> considered to be a significant issue.</p>	<p>The identification of environmental values, including those outside the management unit and potentially affected by spray drift, is considered to be adequately addressed by UKWAS 2.2.1(c), 2.5.1(a), 2.5.1(b), 3.4.1(b) and 3.4.3 [FSC 6.1.1, 6.2.1, 6.3.1, 10.7.2 and 10.7.8 respectively].</p> <p>Spray drift is addressed in FISA202, notably in paragraphs 32, 33 and 57:</p> <p style="padding-left: 40px;">32 Check the wind speed is within the prescribed limits (see the Code of Practice for Using Plant Protection Products for guidance).</p> <p style="padding-left: 40px;">33 Allow for wind direction to avoid overspraying water courses, water supplies, non-target crops and livestock.</p> <p style="padding-left: 40px;">57 Stop operations if the wind speed exceeds the range specified or changes to an unsuitable direction.</p>	<p><i>Guidance note: Refer to FISA Safety Guide 202 paragraphs 32, 33 and 57.</i></p> <p><i>See also UKWAS 2.2.1(c), 2.5.1(a) and 2.5.1(b) [FSC 6.1.1, 6.2.1 and 6.3.1 respectively], and UKWAS 3.4.1(b) and 3.4.3 [FSC 10.7.2 and 10.7.8 respectively] under general strategies, above.</i></p>
	<p>Non-timber forest products (as FSC-STD-01-001 V5-2 FSC Principles and Criteria, criterion 5.1)</p>	<p>Control of vegetation using glyphosate <b>may potentially kill moss or berry producing plants</b>, although in the case of bramble (<i>Rubus fruticosus</i> agg.) this may be the purpose of application.</p>	<p>The identification of potential non-timber forest products is considered to be adequately addressed by UKWAS 2.2.1(b) [FSC 5.1.1].</p> <p><i>Note: It is assumed that owners/managers will not without good reason deliberately target NTFPs they intend to harvest. Effects on wild foods which may be harvested by other parties are considered below.</i></p>	<p><i>See UKWAS 2.2.1(b) [FSC 5.1.1].</i></p>
	<p>High Conservation Values (particularly HCV 1-4)</p>	<p>As noted previously, there are <b>potential impacts on non-target plant species (HCV 1 and 3) and on soil erosion (HCV 4)</b>.</p>	<p>In extremis, poorly thought out or careless applications of glyphosate have the potential to cause significant damage to HCV 1 or HCV 3 sites, but this risk is considered to be adequately addressed by the strength of UKWAS requirements including 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], 4.1.1(a) [FSC 9.1.1] 4.2.1(a) [FSC 9.1.3] and 4.3.1(a) [FSC 9.1.4] with regard to awareness of potentially affected sites, and</p>	<p>See the controls for soil, above.</p> <p><i>See also UKWAS 2.2.1(c), 2.2.1(d), 2.2.1(e), 4.1.1(a), 4.1.1(b), 4.1.1(d), 4.1.2, 4.2.1(a), 4.2.1(b), 4.3.1(a) and 4.3.1(b) [FSC 7.2.1.3,</i></p>

Exposure Elements	Minimum list of values	Description of why/why not a risk	Mitigation strategies defined to minimize risk	Controls
		HCV 2 is <b>not</b> considered to be present in the UK.	UKWAS 4.1.1(b) [FSC 9.3.1], 4.1.1(d) [FSC 9.3.2], 4.1.2 [FSC 6.4.1], 4.2.1(b) [FSC 9.3.3] and 4.3.1(b) [FSC 9.3.6] in relation to appropriate management of sites.  For HCV 4, see the strategies for soil, above, and UKWAS 3.1.2, 4.5.1(a) and 4.5.1(b) [FSC 10.10.2, 9.1.6 and 9.3.7 respectively].	7.2.1.4, 7.2.1.5, 9.1.1, 9.3.1, 9.3.2, 6.4.1, 9.1.3, 9.3.3, 9.1.4 and 9.3.6 respectively].
	Landscape (aesthetics, cumulative impacts)	Standard forestry usage of glyphosate is <b>not</b> considered to have any significant impacts.	N/A	N/A
	Ecosystem services (water, soil, carbon sequestration, tourism)	As noted previously, there are <b>potential impacts on water and soil</b> .  Standard forestry usage of glyphosate is <b>not</b> considered to have any significant impacts on carbon sequestration or tourism.	See the strategies for water and soil, above.	See the controls for water and soil, above.
<b>Social</b>	High Conservation Values (especially HCV 5-6)	As noted previously, there are <b>potential impacts on water supplies (HCV 5)</b> .  Standard forestry usage of glyphosate is <b>not</b> considered to have any significant	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.  <i>See also UKWAS 2.3.1(a) and 2.3.1(c) [FSC 4.1.1 and 9.4.2 respectively].</i>

Exposure Elements	Minimum list of values	Description of why/why not a risk	Mitigation strategies defined to minimize risk	Controls
		impacts on cultural values (HCV 6).		
	Health (fertility, reproductive health, respiratory health, dermatologic, neurological and gastrointestinal problems, cancer and hormonal imbalance)	<p>Glyphosate is a probable carcinogen, with <b>professional users potentially at risk through direct contact.</b></p> <p><i>Note: This risk is considered particularly significant as it is the basis for the listing of glyphosate as a Highly Hazardous Pesticide.</i></p> <p>Glyphosate is also known to <b>cause serious eye damage</b> (CLP H318).</p>	<p>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.</p> <p>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.</p>	<p><b>Gly.12</b> Operators have and use adequate personal protective equipment as specified on the product label and in the COSHH assessment.</p> <p><b>Gly.13</b> Operator exposure to glyphosate 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.</p> <p><b>Gly.14</b> Operator health concerns are monitored using pesticide application records and site checks. There is appropriate follow up action if health concerns are identified.</p>
	Welfare	Standard forestry usage of glyphosate <b>may have indirect effects on worker welfare through the weight of spraying gear or overheating as a result of wearing personal protective equipment.</b>		

Exposure Elements	Minimum list of values	Description of why/why not a risk	Mitigation strategies defined to minimize risk	Controls
		In addition, workers must have access to clean water for both washing and drinking.		
	Food and water	<p><i>Note: This value is taken to refer to wild forest foods (rather than agricultural crops) and to drinking water.</i></p> <p>Standard forestry usage of glyphosate <b>may potentially lead to contamination of fruits etc.</b>, and contact with residues immediately after treatment may be harmful.</p> <p>As noted previously, there are <b>potential impacts on water supplies</b>.</p>	<p>The risk of members of the public picking fruit or fungi which have been recently contaminated with pesticides can be mitigated through conformance to Forestry Commission Practice Guide 15 <i>Reducing Pesticide Use in Forestry</i>. Section 2.3 'Protection of the public' explicitly addresses this issue:</p> <p>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.</p> <p>(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 trim off the plants to prevent fruiting.</p> <p>(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.</p>	<p><b>Gly.15</b> Operations conform to Forestry Commission Practice Guide 15 guidance on protecting the public, particularly around recreational infrastructure or where wild foods that are likely to be picked are present.</p> <p><i>Guidance note: Refer to section 2.3 'Protection of the public'.</i></p>
	Social infrastructure; (schools and hospitals, recreational infrastructure, infrastructure adjacent to the management unit)	Glyphosate usage <b>may potentially have impacts on human health through application on and around recreational infrastructure or through spray drift</b>	Risks to public health can be mitigated by reducing the potential for contact with deliberately or accidentally contaminated surfaces. This can be achieved through a combination of careful control of operations in public areas, in conformance to section 2.3 of FCPG015, and avoidance of spray draft, in conformance to paragraphs 32, 33 and 57 of FISA202. This is also addressed in general terms by UKWAS 5.2.1 [FSC 4.5.2].	<p>See UKWAS 5.2.1 [FSC 4.5.2].</p> <p>See also Gly.15 under food and water, above.</p>

Exposure Elements	Minimum list of values	Description of why/why not a risk	Mitigation strategies defined to minimize risk	Controls
		onto neighbouring properties.		
	Economic viability (agriculture, livestock, tourism)	Glyphosate 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)	<p>Standard forestry usage of glyphosate may lead to actual or perceived restrictions on rights of access.</p> <p>Glyphosate usage may potentially have impacts on rights to uncontaminated water.</p>	<p>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.</p> <p>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].</p> <p>See also the strategies for water, above.</p>	<p><b>Gly.16</b> 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.</p> <p>See also the controls for water, above.</p> <p><i>See also UKWAS 2.3.1(c) [FSC 7.6.1] under High Conservation Values, above.</i></p>
	Others	No other risks have been identified.	N/A	N/A