This booklet applies to broadcast air-assisted sprayers only. Different rules apply to horizontal boom sprayers. The booklet assumes that all necessary planning for the crop, the spray operation and product selection has been done in advance and that requirements of the Green Code are followed throughout.

The LERAP scheme applies only to reducing buffer zones laid down to protect water. You cannot reduce buffer zones designed to safeguard hedges, field margins etc under the LERAP scheme.

**WHY IS A LERAP IMPORTANT?**

- **IT ALLOWS YOU TO REDUCE PESTICIDE BUFFER ZONES ACCORDING TO YOUR LOCAL CIRCUMSTANCES**
- **IT HELPS PROTECT AQUATIC LIFE FROM PESTICIDE CONTAMINATION BY KEEPING PESTICIDE SPRAYS OUT OF WATER**
- **THE APPROVAL OF SOME PRODUCTS MAY DEPEND ON YOU FULLY COMPLYING WITH THE LERAP SCHEME**

**SCHEME OUTLINE**

**Pesticides**

This scheme applies to all pesticides which carry the requirement for a buffer zone to protect water and which are applied with a broadcast air-assisted sprayer. No compounds or groups of compounds are excluded from the scheme (in other words, unlike the ground crop sprayer scheme, there is no Category A or B). Look at the product label carefully – different products carry different buffer zones.

**Living Windbreaks**

You can include a living windbreak as a factor in your LERAP assessment if it meets the following conditions:

- It is formed from broad-leaved trees or shrubs, not conifers. (Conifers may deflect spray down onto the watercourse behind them).
- It is managed to protect the crop from the effects of wind or to minimise spray drift.
- It is at least 2 metres higher than the crop to be sprayed.
- It extends for the full length of the boundary between the treated crop and the watercourse.
- It has no gaps over this length including those resulting from systematic stripping of lower branches.
- Leaves are visible over its entire length.
Reduced Dose Rates

Where a reduced dose rate is used in order to reduce a buffer zone, this must be applied to the area within 50 metres of a watercourse and not just the buffer zone. This is to ensure adequate watercourse protection.

Wind Speed and Direction

Wind speed and direction have not been included as LERAPs factors. They do, of course, influence the amount of spray drift. However, they can vary over the time taken to plan and carry out a spray operation and their inclusion in the scheme would be impossible to enforce.

EQUIPMENT TYPES COVERED BY THIS SCHEME

This scheme covers broadcast air-assisted sprayers (any equipment which broadcasts spray droplets, by means of an air stream produced by forced air, which carry outwards and upwards from the source of the spray). The scheme does NOT cover horizontal boom sprayers (equipment of the spray boom type which applies pesticides via a boom operating in a horizontal plane) which have their own buffer zones and LERAP rules. Neither does it cover sprayers such as tunnel sprayers, which are neither broadcast air-assisted nor ground crop sprayers. Where sprayers such as tunnel sprayers are used to apply a pesticide for which a buffer zone is set, this buffer zone has a default of 5 metres which can not be reduced following a LERAP assessment.

At Annex A is a guide to help users identify equipment, and where appropriate, details of the NPTC Certificates are given for each sprayer type.

CROP TYPES COVERED

The scheme covers any crop to which pesticides are applied using broadcast air-assisted sprayers. All these crops are treated alike.

SITES OF SPECIAL SCIENTIFIC INTEREST (SSSI)

Under the Countryside and Rights of Way Act (2000) (England and Wales) it is an offence for any person intentionally or recklessly to destroy or damage an SSSI. Before using a pesticide within an SSSI, you must consult the appropriate conservation agency (contact details on the back cover). In view of the sensitivity of such sites, you should also consider the potential impact of applying a pesticide next to an SSSI. If you are not sure about the adequacy of the LERAP or no spray zone to protect the site, you should ask the appropriate conservation agency.
THE FOUR STEPS

If you choose a LERAP qualifying product, the following 4 steps will guide you in carrying out a full LERAP and show you if and by how much you can reduce the statutory pesticide buffer zone.

Step 1

GATHER SOME INFORMATION:

Is the watercourse dry at the time of spraying?

If a ditch is dry at the time of spraying, a 5-metre buffer zone applies which you can not reduce further with a LERAP assessment.

You can not use the width of a watercourse as a factor to reduce the pesticide buffer zone because, as the watercourse widens, drift-fallout levels do not decrease rapidly enough to reduce the total amount of drift entering the water.

Will you be spraying near a watercourse shielded by a living windbreak?

You can reduce the buffer zone if the watercourse is protected by a living windbreak which satisfies those conditions on page 1.

What dose of pesticide will you use?

You should always apply the lowest dose that is appropriate to control the target weed, pest or disease. Seek advice on this if necessary. If the dose you intend to use is less than the maximum permitted dose for a single application then you may be able to reduce the buffer zone. If unsure, seek advice on the most appropriate dose to control the target weed, pest or disease.
Calculate the dose you intend to use as a percentage of the maximum permitted dose shown on the label for your crop. For the purposes of a LERAP: 0-25% is considered to be 1/4 rate; 25.1-50% is considered to be 1/2 rate; 50.1-75% is considered to be 3/4 rate and 75.1-100% is considered to be full rate.

You can reduce the buffer zone if you reduce the dose for all applications within 50 metres of a watercourse. The minimum buffer zones permitted on the basis of reduced doses alone is 7 metres for all crops. When including other reduction aspects e.g. reduced dose, low-drift sprayers and living windbreaks, the absolute minimum buffer zone is 5 metres.

If you use a reduced dose rate to reduce the buffer zone you cannot repeat the application within 48hrs.

If you are applying more than one product in a tank mix the product with the widest buffer zone requirement will determine the buffer zone for the tank mix as a whole. You do not have to add the buffer zones of the individual products together.

**Will you use a sprayer that qualifies as a ‘LERAP-Low Drift’ sprayer?**

Manufacturers of broadcast air-assisted sprayers can apply to have their equipment officially graded for ‘LERAP-Low Drift’ status, and grading is by star ratings. Equipment that offers the greatest reduction in spray drift gets a 3-star rating. You must use the equipment according to the conditions applied to the official grading, referring to the operating instructions supplied with individual types of equipment. Don’t forget to record the LERAP-Low Drift star rating as part of your LERAP record.

**N.B.** At the time of going to press, there is no star rated spray equipment. If and when star ratings are awarded, a list of spray equipment that has achieved a star rating will be placed on the Pesticides Safety Directorate’s web page (web address is on the back cover) and in the Pesticides Monitor.
Step 2

WORK OUT THE WIDTH OF THE BUFFER ZONE

Using the information from Step 1, you can now work out what unsprayed buffer zone reduction may be allowed. If the watercourse is dry at the time of application, you can reduce the buffer zone to 5 metres. However, if you are using a star-rated LERAP low-drift sprayer, applying the pesticide at less than the maximum permitted rate or if there is an eligible living windbreak, you will need to work out the minimum buffer zone. In order to do this, you will now need to refer to tables 1 and 2 (pages 5 and 6) as follows:

1. Identify the appropriate table (1 or 2). This will depend on whether you wish to an eligible living windbreak to reduce the buffer zone.

2. Read down the left-hand column of the table to select the row that matches your sprayer type.

3. Read across the top row of the table, to select the column which matches the dose rate you want to apply.

4. The box at which the row and the column intersect gives the amount (in metres) by which the buffer zone shown on the label may be reduced. (because different products carry different buffer zones for use with broadcast air-assisted sprayers, it is not possible to show the reduced buffer zone distance in the table. Nor is it practicable to show ‘final distance’ tables owing to the number of products and buffer zones.)

### Table 1 Reduced dose WITHOUT windbreak

<table>
<thead>
<tr>
<th>Sprayer type</th>
<th>Applied Dose</th>
<th>Full Rate (75.1-100%)</th>
<th>3/4 Rate (50.1-75%)</th>
<th>1/2 Rate (25.1-50%)</th>
<th>1/4 Rate (0-25%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>no reduction</td>
<td>reduce buffer zone by 3m</td>
<td>reduce buffer zone by 6m</td>
<td>reduce buffer zone by 12m</td>
<td></td>
</tr>
<tr>
<td>LERAP Low drift 1 star</td>
<td>reduce buffer zone by 3m</td>
<td>reduce buffer zone by 6m</td>
<td>reduce buffer zone by 9m</td>
<td>reduce buffer zone by 15m</td>
<td></td>
</tr>
<tr>
<td>LERAP Low drift 2 star</td>
<td>reduce buffer zone by 6m</td>
<td>reduce buffer zone by 9m</td>
<td>reduce buffer zone by 12m</td>
<td>reduce buffer zone by 18m</td>
<td></td>
</tr>
<tr>
<td>LERAP Low drift 3 star</td>
<td>reduce buffer zone by 9m</td>
<td>reduce buffer zone by 12m</td>
<td>reduce buffer zone by 15m</td>
<td>reduce buffer zone by 21m</td>
<td></td>
</tr>
</tbody>
</table>
5. Please note that **there is a minimum permitted buffer zone distance which cannot be further reduced** even if a smaller buffer zone is suggested by using the tables below:

- the absolute minimum buffer zone is 5 metres. This cannot be reduced further even if you use a reduced dose, a LERAP low-drift star-rated sprayer and an eligible living windbreak;

- if you only reduce the applied dose - and do not use a LERAP low-drift star-rated sprayer or an eligible living windbreak - the minimum buffer zone is 7 metres.

At Annex B are two example tables showing the actual buffer zones that can be applied when a LERAP assessment is carried out for a product with an 18-metre buffer zone.

<table>
<thead>
<tr>
<th>Sprayer type</th>
<th>Applied Dose</th>
<th>Full Rate (75.1-100%)</th>
<th>3/4 Rate (50.1-75%)</th>
<th>1/2 Rate (25.1-50%)</th>
<th>1/4 Rate (0-25%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>reduce buffer zone by 6m</td>
<td>reduce buffer zone by 9m</td>
<td>reduce buffer zone by 12m</td>
<td>reduce buffer zone by 18m</td>
<td></td>
</tr>
<tr>
<td>LERAP Low drift 1 star</td>
<td>reduce buffer zone by 9m</td>
<td>reduce buffer zone by 12m</td>
<td>reduce buffer zone by 15m</td>
<td>reduce buffer zone by 21m</td>
<td></td>
</tr>
<tr>
<td>LERAP Low drift 2 star</td>
<td>reduce buffer zone by 12m</td>
<td>reduce buffer zone by 15m</td>
<td>reduce buffer zone by 18m</td>
<td>reduce buffer zone by 24m</td>
<td></td>
</tr>
<tr>
<td>LERAP Low drift 3 star</td>
<td>reduce buffer zone by 15m</td>
<td>reduce buffer zone by 18m</td>
<td>reduce buffer zone by 21m</td>
<td>reduce buffer zone by 27m</td>
<td></td>
</tr>
</tbody>
</table>
Step 3

Record your LERAP decision

It is recognised that paperwork can be a burden. However, you are legally required to keep spray records, as set out in Part 4 of the Green Code. You can, however, reduce the burden of recording as follows:

- If the watercourse is a dry ditch, you may use and record an unsprayed buffer zone width of 5 metres for all pesticides covered by the LERAP scheme regardless of the rating of the sprayer.

- If using a tunnel sprayer, use and record an unsprayed buffer zone width of 5 metres.

- If applying the same pesticide, at the same dose rate, using the same equipment on subsequent sprays in the same area, there is no need to recalculate the LERAP but you must still record the spray operation and the LERAP decision.

- If you want to stick to the product label buffer zone rather than using a LERAP to reduce it, just make a single entry of this decision in the spray records for that area.

- There is no laid-down record format, but your record must include the information set out in the example record sheet on page 9.

You should already be recording much of this information as part of your standard operating procedures for applying pesticides, as recommended in Part 4 of the Green Code.

You must keep for inspection all records of LERAPs conducted on your land for 3 years from the date of the spray operation. This is a legal requirement (see Part 4 of the Green Code ‘Record Keeping’ for further details).

However should you decide to apply the pesticide, you are legally required to RECORD YOUR DECISION.
Step 4

*Carry out the spray operation.*

Ensure that the spray operation is carried out according to the results of your LERAP and that the spray operator knows the width of the unsprayed buffer zone to be used.

If a row is just inside the buffer zone you must not spray it. Spray up to and including the outermost row only. In other words, the distance between the outermost row to be treated and the top of the bank, must match the width of the buffer zone.

You must switch off the sprayer output on the watercourse side when treating the outermost row to the buffer zone, to protect the watercourse from spray drift fallout.

See Figure 1 below.

*Figure 1 – Buffer zone measurement*

- Row nearest the edge of the buffer zone is the ‘outermost row’
- Living windbreak
- Example buffer zone
- Measure from the top of the bank inwards. Reduce the label buffer zone width by the distances given in the tables, according to star rating, dose rate and living windbreak.
Figure 2 – Example LERAP record

If you applied the buffer zone shown on the label, complete **Section A only**

### Section A

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>Field name or number</td>
<td></td>
</tr>
<tr>
<td>Crop to be treated</td>
<td></td>
</tr>
<tr>
<td>Reason (name pest or disease)</td>
<td></td>
</tr>
<tr>
<td>Product(s) used</td>
<td></td>
</tr>
<tr>
<td>Weather conditions</td>
<td></td>
</tr>
<tr>
<td>Buffer zone shown on the label</td>
<td></td>
</tr>
</tbody>
</table>

If you used a LERAP to reduce your pesticide buffer zone please complete **Section B** as well.

### Section B

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dose</td>
<td>[Full, 3/4, 1/2, 1/4]</td>
</tr>
<tr>
<td>Sprayer</td>
<td>[Standard, 1-star, 2-star, 3-star]</td>
</tr>
<tr>
<td>Living windbreak included</td>
<td>[Yes, No]</td>
</tr>
<tr>
<td>Width of buffer zone after LERAP</td>
<td></td>
</tr>
<tr>
<td>Date of LERAP</td>
<td></td>
</tr>
<tr>
<td>Name of person who carried out LERAP</td>
<td></td>
</tr>
</tbody>
</table>
Annex A

Equipment included in the term ‘broadcast air-assisted’ to which any stipulated broadcast air assisted buffer zone distance applies:

Examples: (not an exhaustive list)

Standard axial flow sprayer
Commonly referred to as ‘air blast’. Uses an axial fan to produce a large volume of air at low pressure to propel spray formed by standard hydraulic nozzles.
NPTC Module PA3A

Cross flow sprayer
Uses a cross flow fan to produce a low-pressure air stream to project spray laterally from standard hydraulic nozzles.
NPTC Module PA3A

Spinning disc or cage atomisers used with sideways and upwards air assistance
A CDA nozzle / assembly that is positioned in an air stream. This produces an evenly sized spray that is propelled by a simple fan.
NPTC Module PA3A

Air shear nozzle type with sideways and upwards air assistance
Uses a fan (normally centrifugal) to produce a high-pressure air stream of varying volumes. This air stream is used to break up the spray liquid into droplets and to project the spray to the target.
NPTC Module PA3A

Air knife with sideways and upwards air assistance
Uses a standard flat fan hydraulic nozzle and a separate stream of air of low volume and pressure.
NPTC Module PA3A

Sprayer with air assistance where the boom is designed to be used between the horizontal and the vertical planes
Conventional nozzles or other atomisers that operate on a boom with air assistance along the length of the boom or at each nozzle. Similar to ground based sprayers, they can be included in this scheme when operating in a non-horizontal boom mode.
NPTC Module PA3B

Hand held mistblowers
Conventional nozzles or other atomisers operating on a hand held sprayer that use air assistance to project the spray to the target.
NPTC Module PA6

Not included in ‘broadcast air-assisted’ definitions, above, but to which the vehicle mounted/drawn buffer zone default of 5 metres applies:

Tunnel sprayers
With or without air assistance.

Sprayers without air assistance where the boom is designed be used between the horizontal and the vertical planes
When operating in non-horizontal boom mode.
NPTC Module PA3C
Annex B

Example 1: Buffer Zone reduction for star-rated equipment for a product with an 18-metre buffer zone without windbreak

Unlike Tables 1 and 2, (which show how much you can reduce buffer zones by), this table shows what you can reduce the 18-metre buffer zone to.

<table>
<thead>
<tr>
<th>Applied Dose</th>
<th>Full Rate (75.1-100%)</th>
<th>3/4 Rate (50.1-75%)</th>
<th>1/2 Rate (25.1-50%)</th>
<th>1/4 Rate (0-25%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>18m</td>
<td>15m</td>
<td>12m</td>
<td>7m</td>
</tr>
<tr>
<td>LERAP Low drift</td>
<td>1 star</td>
<td>15m</td>
<td>12m</td>
<td>9m</td>
</tr>
<tr>
<td>LERAP Low drift</td>
<td>2 star</td>
<td>12m</td>
<td>9m</td>
<td>6m</td>
</tr>
<tr>
<td>LERAP Low drift</td>
<td>3 star</td>
<td>9m</td>
<td>6m</td>
<td>5m</td>
</tr>
</tbody>
</table>

Example 2: Buffer Zone reduction for star-rated equipment for a product with an 18-metre buffer zone with windbreak.

As with Table 3, this table shows what width you can reduce your buffer zone to.

<table>
<thead>
<tr>
<th>Applied Dose</th>
<th>Full Rate (75.1-100%)</th>
<th>3/4 Rate (50.1-75%)</th>
<th>1/2 Rate (25.1-50%)</th>
<th>1/4 Rate (0-25%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>12m</td>
<td>9m</td>
<td>6m</td>
<td>5m</td>
</tr>
<tr>
<td>LERAP Low drift</td>
<td>1 star</td>
<td>9m</td>
<td>6m</td>
<td>5m</td>
</tr>
<tr>
<td>LERAP Low drift</td>
<td>2 star</td>
<td>6m</td>
<td>5m</td>
<td>5m</td>
</tr>
<tr>
<td>LERAP Low drift</td>
<td>3 star</td>
<td>5m</td>
<td>5m</td>
<td>5m</td>
</tr>
<tr>
<td>Application by tunnel sprayer</td>
<td>5m</td>
<td>5m</td>
<td>5m</td>
<td>5m</td>
</tr>
<tr>
<td>Dry ditch connected to river system</td>
<td>5m</td>
<td>5m</td>
<td>5m</td>
<td>5m</td>
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</tbody>
</table>
Further Information & Contacts

Further Information

<table>
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<th>Title</th>
<th>Reference</th>
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<th>Cost</th>
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<tr>
<td>Code of Practice for the Safe Use of Pesticides on Farms and Holdings (The Green Code)</td>
<td>PB 3528</td>
<td>DEFRA Publications ADMAIL 6000</td>
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<td></td>
<td></td>
<td>London SW1A 2XX</td>
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<tr>
<td></td>
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<td>Tel: 0645 556 000</td>
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<tr>
<td>Pesticides and Integrated Farming</td>
<td>PB 2489</td>
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<tr>
<td>The Pesticides Monitor</td>
<td></td>
<td>The Stationery Office PO Box 29, Norwich NR3 1GN</td>
<td>Annual Subscription £85.00</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tel orders: 0870 600 5522</td>
<td>Single Issue £7.95</td>
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<td></td>
<td></td>
<td>Fax orders: 0870 600 5533</td>
<td></td>
</tr>
</tbody>
</table>

Contacts

Sites of Special Scientific Interest (SSSIs)
The local offices of:

for England: English Nature
for Scotland: Scottish Natural Heritage
for Wales: Countryside Council for Wales
for SSSIs in Northern Ireland: The Environment and Heritage Service of the Department of the Environment

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Fax: 01904 455733
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web site: www.pesticides.gov.uk