



# **Local environment risk assessment for plant protection products (LERAP)**

## **Horizontal boom sprayers**

A step-by-step guide to reducing aquatic  
buffer zones in the arable sector

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## LERAP: Overview

- You only need to do a LERAP if you are spraying near a watercourse and you want to reduce the buffer zone shown on the product label.
- If the watercourse is dry at the time of spraying, just apply a 1-metre buffer zone.
- If using a 3-star sprayer, just apply a 1-metre buffer zone.
- If using no more than  $\frac{1}{4}$  of the maximum permitted dose rate, just apply a 1-metre buffer zone.
- Consider using a plant protection product (PPP) with no buffer zone requirement or designating the strip alongside the watercourse as set-aside.

## Introduction

This guidance applies to horizontal boom sprayers only. Different rules apply to broadcast air-assisted sprayers. The buffer zone for products applied by hand-held and knapsack sprayers (where use via this equipment is permitted) is 1 metre from the top of the bank as long as the nozzle points down and is no more than 0.5 metres above the crop.

The guidance assumes that all necessary planning for the crop, the spray operation and product selection has been done in advance and that requirements of the Code of Practice for Using Plant Protection Products are followed throughout. The LERAP scheme applies only to reducing the 5-metre buffer zones laid down to protect water. You cannot reduce buffer zones designed to safeguard hedges, field margins and the like under the LERAP scheme.

If the product label does not have an aquatic buffer zone requirement, then the LERAP scheme does not apply.

If the product label states that you cannot reduce the aquatic buffer zone, then you **must** apply the standard buffer zone and record this decision. **This is a legal requirement.**

If the product label states you can reduce the statutory aquatic buffer zone using the LERAP scheme and you want to reduce it, then **follow the guidance in this booklet.**

## What is a LERAP and why is it important?

- A LERAP helps protect aquatic life from contamination by keeping PPP sprays out of water.
- A LERAP allows you to reduce aquatic buffer zones according to your local circumstances.
- **Ttthe continuing authorisation of some products may depend on you fully complying with the LERAP scheme.**

## Sites of special scientific interest (SSSI)

Before using a PPP within an SSSI, you must consult the appropriate conservation agency. In view of the sensitivity of such sites, you should also consider the potential impact of applying a PPP 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 (see Contacts).

### Can you apply a LERAP to your chosen PPP?

**Yes:** if the PPP carries an aquatic buffer zone requirement **and** the product's label clearly states that the product qualifies for buffer zone reduction under the LERAP scheme. In this case you can choose between applying the full buffer zone on the label **or** reducing it by following the LERAP process below.

**No:** if the 'Precautions' section of the label says, 'DO NOT ALLOW DIRECT SPRAY...' to fall within certain distances of surface waters or ditches, **and** that the product is 'NOT ELIGIBLE FOR BUFFER ZONE REDUCTION UNDER THE LERAP SCHEME.'

**Note:** If you are using a PPP that does not carry an aquatic buffer zone restriction, there are no LERAP requirements.

You can find details of the products on the HSE website ([www.hse.gov.uk/pesticides](http://www.hse.gov.uk/pesticides)).

Your agronomist or product supplier should also be able to tell you whether a product requires a buffer zone. The product label will also indicate this.

### How to carry out a LERAP

If you choose to use 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 5 m aquatic buffer zone.

## **Step 1: Gathering Information**

### ***Will you be spraying near a watercourse?***

The size of the buffer zone reduction may depend on the width of the watercourse so you will need to measure this. Measure it at its narrowest point next to the spray area; you only need to find out if the narrowest point is less than 3 m, between 3 and 6 m, or wider than 6 m at the time of spraying. You must record this measurement as part of the LERAP record. If it helps you, you can mark it on your field or farm map, but this is not compulsory. You do not need to measure watercourses every time you spray if the width of the water has not increased or decreased. Figure 1 explains in a diagram the buffer zone, watercourse widths and measurements.

### ***What dose of PPP will you use?***

The need for a buffer zone is assessed using the maximum permitted dose for a single application to any crop. If you intend to use less than the maximum dose 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 dose shown on the label for any crop. For the purposes of a LERAP: 0-25% is considered to be  $\frac{1}{4}$  rate; 25.1-50% is considered to be  $\frac{1}{2}$  rate; 50.1-75% is considered to be  $\frac{3}{4}$  rate and 75.1-100% is considered to be full rate.

Using a  $\frac{1}{4}$  rate allows you to apply the minimum buffer zone of 1 m for all types of equipment and all watercourses. If you use a reduced dose rate to reduce the buffer zone you cannot repeat an application of that product within 48 hrs on that same area.

### ***Will you use a LERAP Low Drift sprayer?***

Manufacturers of ground crop sprayers can apply to have their equipment granted an official star rating for LERAP Low Drift status. 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, which are usually a standard forward speed and boom height with certain pressure limits (refer to the operating instructions supplied with individual types of equipment).

Using 3-star equipment always allows you to apply the minimum buffer zone of 1 m alongside all watercourses regardless of their width.

Don't forget to record the LERAP Low Drift star rating as part of your LERAP record. A [list of spray equipment](#) that has achieved a star rating is at <https://secure.pesticides.gov.uk/SprayEquipment/Search.aspx>. It may be sufficient just to change the nozzles, but always check with your adviser.

**Step 2: Work out the width of the buffer zone for your spraying operation**

Using the information from Step 1, you can now work out what unsprayed buffer zone reduction may be allowed. If you intend to use a LERAP Low Drift 3-Star rated sprayer, apply a 1 m buffer zone for all dose rates regardless of the width of watercourse or pond. In this case you don't need to refer to the tables. If a ditch is dry at the time of application simply apply a 1 m unsprayed buffer zone.

**In other cases:**

1. Identify the appropriate table. This will depend on the star rating of the equipment you intend to use.
2. From the first downward column of the table, identify the size of the watercourse.
3. Reading across the top row of the table, identify which column applies to the dose rate you intend to use.
4. The box at which the row and the column crosses, gives the width of the buffer zone in metres.

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.

**Table 1 Standard Reference Sprayer**

Dose Rate	Full Rate (75.1-100%)	$\frac{3}{4}$ Rate (50.1-75%)	$\frac{1}{2}$ Rate (25.1-50%)	$\frac{1}{4}$ Rate (0-25%)
Size of watercourse				
less than 3 metres	5m	4m	2m	1m
3-6 metres	3m	2m	1m	1m
6 metres or wider	2m	1m	1m	1m
dry ditch	1m	1m	1m	1m

**Table 2 LERAP Low-Drift 1-star Sprayer**

Dose Rate	Full Rate (75.1-100%)	$\frac{3}{4}$ Rate (50.1-75%)	$\frac{1}{2}$ Rate (25.1-50%)	$\frac{1}{4}$ Rate (0-25%)
Size of watercourse				
less than 3 metres	4m	2m	1m	1m
3-6 metres	2m	1m	1m	1m
6 metres or wider	1m	1m	1m	1m
dry ditch	1m	1m	1m	1m

**Table 3 LERAP Low-Drift 2-star Sprayer**

Dose Rate	Full Rate (75.1-100%)	$\frac{3}{4}$ Rate (50.1-75%)	$\frac{1}{2}$ Rate (25.1-50%)	$\frac{1}{4}$ Rate (0-25%)
Size of watercourse				
less than 3 metres	2m	2m	1m	1m
3-6 metres	1m	1m	1m	1m
6 metres or wider	1m	1m	1m	1m
dry ditch	1m	1m	1m	1m

### ***Step 3: Record your LERAP decision***

The LERAP scheme legally requires you to record each LERAP you conduct. Even if you decide merely to apply the standard 5 m buffer zone, you **must** still record this decision.

Your LERAP record must include the following information as a minimum:

- date of assessment;
- type of sprayer used (in particular any LERAP Low Drift star rating);
- the PPP you applied;
- the dose at which it was applied;
- the result of the LERAP decision (namely, the width of unsprayed buffer zone set);
- the name of the person who carried out the LERAP;
- width of the watercourse.

You will already be recording much of this information as part of your standard operating procedures for applying PPPs, as recommended in the Code of Practice for Using Plant Protection Products. An example record layout is shown in Figure 2, which you can use if you wish.

You must keep all records of LERAPs conducted on your land for 3 years from the date of the spray operation for inspection because it is a legal requirement to do so (see the Code of Practice for Using Plant Protection Products section 6 'Keeping Records' for further details).

No matter how you decide to apply the PPP, you are **legally required to record your decision**.

### ***Step 4: Carry out the spray operation***

Check 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.

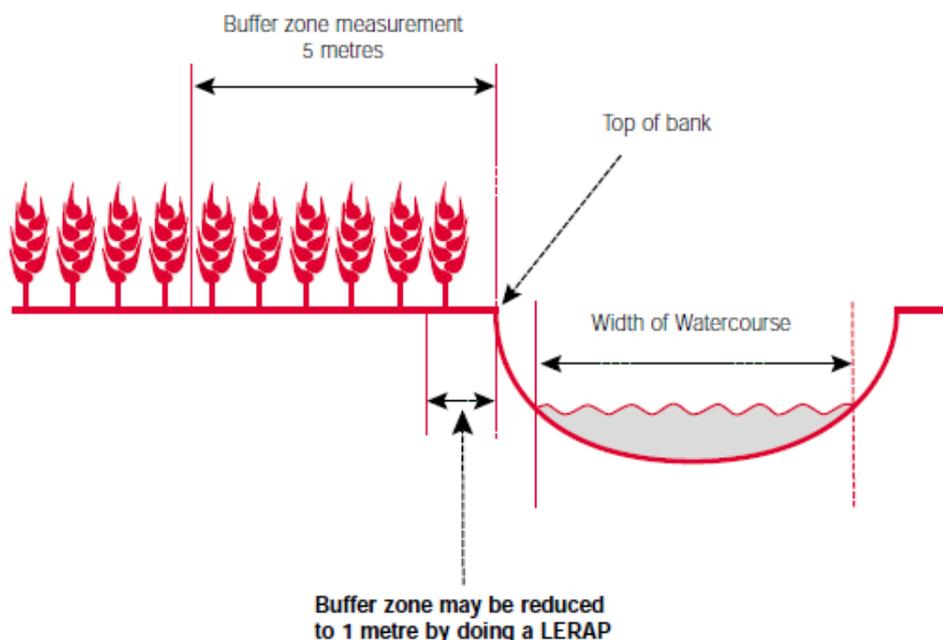
If you use LERAP Low Drift spraying equipment to reduce the width of a buffer zone, the same equipment must be used to spray the 12 m nearest to the watercourse measured from the top of the bank.

## Record keeping

Extra paperwork can be a burden, but this can be reduced as follows:

- If the watercourse is a dry ditch, you may use and record an unsprayed buffer zone width of 1 m for all PPPs covered by the LERAP scheme regardless of the rating of the sprayer.
- If using LERAP Low Drift 3-star equipment for products with a 5 m aquatic buffer zone only, use and record an unsprayed buffer zone width of 1 m regardless of the width of the watercourse.
- If applying a product at  $\frac{1}{4}$  of the maximum dose rate, record a buffer zone width of 1 m regardless of the width of the watercourse.
- If applying the same PPP, at the same dose rate, using the same equipment on subsequent sprays in the same area, there is no need to recalculate the LERAP unless the width of the watercourse changes but you must still record the spray operation and the LERAP decision.
- If you want to stick to the standard 5 m unsprayed buffer zone rather than using a LERAP to reduce it, just make a single entry of this LERAP decision in the spray records for that area.

**Figure 1: Buffer zone and watercourse widths**



## Figure 2: Example LERAP Records

If you applied the buffer zone shown on the label complete section A only. If you used LERAP to reduce your aquatic buffer zone, only for products with 5 m buffer zones, complete Section B as well. Distances for products with buffer zones greater than 5 m cannot be reduced.

### Section A:

Date	<input type="text"/>
Field name or number	<input type="text"/>
Crop to be treated	<input type="text"/>
Reason	<input type="text"/>
Product Used	<input type="text"/>
Weather conditions	<input type="text"/>
Specify buffer zone distance in metres e.g. 7m	<input type="text"/>

### Section B:

<b>Dose</b>	Full	<input type="checkbox"/>	3/4	<input type="checkbox"/>	1/2	<input type="checkbox"/>	1/4	<input type="checkbox"/>
<b>Sprayer</b>	Standard	<input type="checkbox"/>	1-star	<input type="checkbox"/>	2-star	<input type="checkbox"/>	3-star	<input type="checkbox"/>
<b>Watercourse width</b>	Dry ditch	<input type="checkbox"/>	≤ 3m	<input type="checkbox"/>	3 to 6m	<input type="checkbox"/>	≥ 6m	<input type="checkbox"/>
<b>Width of buffer zone after LERAP</b>	1m	<input type="checkbox"/>	2m	<input type="checkbox"/>	3m	<input type="checkbox"/>	4m	<input type="checkbox"/>
<b>Date of LERAP</b>	<input type="text"/>							
<b>Name of person who carried out LERAP</b>	<input type="text"/>							

## Contacts

### Sites of Special Scientific Interest (SSSIs)

For England:

[Natural England](http://www.gov.uk/government/organisations/natural-england)

([www.gov.uk/government/organisations/natural-england](http://www.gov.uk/government/organisations/natural-england))

For Scotland:

[ScotNature](http://www.nature.scot/) ([www.nature.scot/](http://www.nature.scot/))

For Wales:

[Natural Resources Wales](https://naturalresources.wales/?lang=en)

(<https://naturalresources.wales/?lang=en>)

For Northern Ireland (ASSIs): [DAERA](http://www.daera-ni.gov.uk/topics/land-and-landscapes/areas-special-scientific-interest) ([www.daera-ni.gov.uk/topics/land-and-landscapes/areas-special-scientific-interest](http://www.daera-ni.gov.uk/topics/land-and-landscapes/areas-special-scientific-interest))

HSE

Chemicals Regulation Division

Mallard House

Kings Pool

3 Peasholme Green

York

YO1 7PX

Email: [CRD.Information.Management@hse.gov.uk](mailto:CRD.Information.Management@hse.gov.uk)

## Further information

- PPP Codes of Practice  
(<http://hseonline/website/drafts/lee/pesticides/topics/using-pesticides/codes-of-practice.htm>)
- Code of Practice for Using Plant Protection Products  
(<http://hseonline/website/drafts/lee/pesticides/topics/using-pesticides/codes-of-practice/code-of-practice-for-using-plant-protection-products.htm>)
- [Plant Protection Product Search](https://secure.pesticides.gov.uk/pestreg/PMSearch.asp)  
(<https://secure.pesticides.gov.uk/pestreg/PMSearch.asp>)
- [HSE LERAP \(Local Environment Risk Assessment for Pesticides\)](https://www.hse.gov.uk/pesticides/using-pesticides/spray-drift/local-environment-risk-assessment-for-pesticides-le.htm)  
(<https://www.hse.gov.uk/pesticides/using-pesticides/spray-drift/local-environment-risk-assessment-for-pesticides-le.htm>)

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This guidance is issued by the Health and Safety Executive. Following the guidance is not compulsory, unless specifically stated, and you are free to take other action. But if you do follow the guidance you will normally be doing enough to comply with the law. Health and safety inspectors seek to secure compliance with the law and may refer to this guidance.

This PDF is available at:

[www.hse.gov.uk/pesticides/resources/L/LERAP\\_Horizontal\\_boom\\_sprayers\(1\).pdf](http://www.hse.gov.uk/pesticides/resources/L/LERAP_Horizontal_boom_sprayers(1).pdf)

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