



Farmplan
gatekeeper

Adding and editing field boundaries

For Gatekeeper with mapping

Proagrica

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Please read before continuing

The information in this document is applicable to customers with Gatekeeper and the mapping module. Some options described will only be applicable to customers who also have the precision farming modules.

Customers with Gatekeeper Farm Mapping Lite do not have the functionality described and should refer to the Farm Mapping Lite support documentation. This can be found on the Farmplan website

www.farmplan.co.uk/support/Gatekeeper
use the 'Guides & manuals' and 'FAQs' tabs

If you have any questions we always welcome customers to contact the support team on

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Field boundaries

- A field's boundary is the starting point of all mapping activities in Gatekeeper
- A field boundary may be drawn manually into Gatekeeper, or imported through the devices module.
- Where a field is split (has more than one cropping record), each split part can have its own boundary.

The following options are available to add a field boundary:

- Draw a field boundary manually
- Import field boundaries from RPA boundaries
- Import field boundaries from a generic format file (e.g., shape files) or precision farming controller

Adding field boundaries manually

If you are adding a boundary to a field which is split, please see [Split Field Boundaries](#).

To manually add a field boundary for the first time, using the field finder functionality:

1. Go to the field in the fields module
2. Click on the *Field* tab
3. Ensure the map sheet and NG number have been entered in the cropping record:

Operations	Fertiliser	Margin	Diary Notes	Field	Sampling
Field Information					
Field name	Back Brocastle				
Holding	Demo				
Field reference ID Number	157				
OS Area	10.53 ha				
Map/NG Number	SS9975 / 2938				
Cropping					
Part field ref	Whole field				
Split number	01				
Variety	Wheat Spring				
Crop	Wheat Spring				
Working area	10.53 ha	Official area	10.53 ha		

If they have not, click *Setup Cropping* and enter this information on the field details screen. (If this information is not known, see 'if the map sheet and field number are not known' below.)

4. Click *Setup Boundary Map*
5. In the window that opens, ensure the option 'Use MS Bing Maps Field Finder' is selected
6. In the window that opens, your field will be shown in the middle of the screen. Click *Create Boundary* to proceed.
7. A new window will open, still with your field in the centre. You can zoom the map to get closer if required by scrolling your mouse wheel. Place the mouse cursor over where you wish to start drawing the boundary, and left click.
8. A new window will open, with your field list on the left hand side and the field name highlighted. To confirm this is the field you are adding a boundary for, click *OK*.
9. Continue left clicking around the field. (See below for if you make a mistake)

10. When you have finished, right click and then select *Finish and allocate field boundary*.

Additional steps for specific circumstances:

If you make a mistake while drawing a field boundary, the following options are available:

- a. To cancel the last point you dropped, right click and select *Cancel last point*. This will remove the last point and you can continue drawing.
- b. To cancel the last five points you dropped, right click and select *Cancel last 5 points*. This will remove the last 5 points and you can continue drawing (or cancel the 5 before as well).
- c. To cancel the edit completely and go back without saving any changes, right click and select *Abort this edit*. This will not save any changes you have made, and you can start from the beginning.
- d. Alternatively, if you have made a small mistake, continue drawing the boundary and finalise as per the instructions. You can then use the point editing tools to correct your mistake once the boundary is drawn.

If the map sheet and field number are not known, follow steps 1-5 as above. When you have completed step 5, the location of the field will not be displayed. Instead:

- a. In the window that opens, you will see a map of the UK. To make the next steps easier, you may wish to change the backdrop to 'Aerial with Labels' or 'Road' from the Bing maps dropdown option on the left of the map.



- b. Use the scale to box tool to zoom in on the field location. This tool is not click and drag – make a left click to drop one corner of the zoom box, ensure you have released the mouse click, and pull the box. When it is the correct size, make a second left click and the map will zoom to the box you have just drawn. Continue doing this until you have located the field, and then click *Create Boundary*.
- c. Follow from step 7 above.

If you are adding many fields in one go, it is not necessary to add every field individually using the field finder function. Add the two fields which are geographically the furthest apart from each other using the method on page 11, and then stay in the farm map window and follow these steps:

- a. Centre the map on the next field you wish to draw a boundary for
- b. Click on the field boundary tool (green square)
- c. Place the cursor over where you wish to start drawing the boundary, and left click.
- d. A new window will open, with the field list on the left. Select the field you wish to draw a new boundary for, and click *OK*.
- e. Continue left clicking around the field.
- f. When you have finished, right click and then select *Finish and allocate field boundary*.
- g. Repeat from c.

If you are adding a field which has an internal exclusion, such as a pond, wood, or permanently non-cropped area:

- a. When you right click at stage 10 (page 4), select *Start internal island* instead.
- b. The boundary you were drawing will still be visible, but your cursor is no longer attached to it. Make a left click at the first point you wish to exclude.
- c. Left click around the exclusion until it is surrounded.
- d. Right click and select *Finish and allocate field boundary*.
- e. The field boundary you have just drawn will be visible in a solid red line, and the exclusion will be surrounded by a dashed red line.

If you are adding a field which has two entirely separate boundaries, for example one field which is completely divided by a track or road:

- a. Follow the instructions to draw around one side of the field.
- b. When you right click at stage 10 (page 4), select *Start sub polygon* instead.
- c. The boundary you were drawing will still be visible, but your cursor is no longer attached to it. Make a left click at the first point you wish to make part of the boundary of the second area.
- d. Left click around the area until it is surrounded.
- e. Right click and select *Finish and allocate field boundary*.
- f. The two boundaries you have just drawn will be visible with solid red lines, and both are associated with the same field.

Split field boundaries

All fields in Gatekeeper have the potential to have two boundaries associated to them; the cropping year boundary, and the whole field boundary. If a field is not split, these two boundaries always look the same.

Once a field is split (the cropping record is divided), the cropping boundary layer allows you to associate a boundary to each cropping record of the field. The whole field layer is the joined cropping boundaries:



Part A cropping boundary

Part B cropping boundary

Whole field boundary

Each cropping record of a split field has its own separate boundary. The boundaries for a split field may be drawn in manually (as in steps below), or may be imported to each split – see [Importing field boundaries](#) and make sure at import that you are associating each boundary with the correct cropping record.

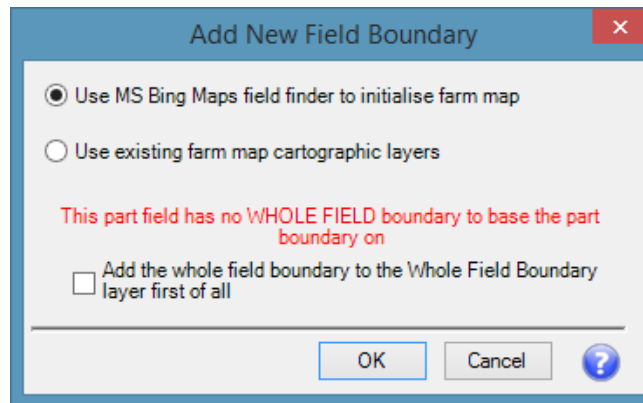
If you are adding a boundary for the first time to a field which is already split you will need to draw the whole field boundary, and then the separate cropping boundaries:

1. Go to the field in the fields module
2. Click on the *Field* tab
3. Ensure the map sheet and NG number have been entered in the cropping record:

Operations	Fertiliser	Margin	Diary Notes	Field	Sampling
Field Information					
Field name	Back Brocastle				
Holding	Demo				
Field reference					
ID Number	157				
OS Area	10.53 ha				
Map/NG Number	SS9975 / 2938				
Cropping					
Part field ref	Whole field				
Split number	01				
Variety					
Crop	Wheat Spring				
Working area	10.53 ha	Official area	10.53 ha		

If they have not, click *Setup Cropping* and enter this information on the field details screen. (If this information is not known, see the additional step on page 12.)

4. Click *Setup Boundary Map*
5. In the window that opens, ensure the option 'Use MS Bing Maps Field Finder' is selected. You will also see a warning message:



Place a tick in the box 'Add the whole field boundary' and click OK.

6. In the window that opens, your field will be shown in the middle of the screen. Click *Create Boundary* to proceed.
7. A new window will open, still with your field in the centre. You can zoom the map to get closer if required by scrolling with your mouse wheel.
8. Left click to drop the first point in the whole field boundary. A new window will open with your field list on the left hand side and the field name highlighted. To confirm this is the field you are adding a boundary for, click *OK*.
9. Continue left clicking around the whole field.
10. When you have finished, right click and then select *Finish and allocate field boundary*.
11. The whole field boundary will be visible in off-white.
12. Select the layers menu from the left hand side, and in the layer order box, move *Field Boundaries Cropping Year* to the top.
13. Follow one of the scenarios below:

If the field is split into two parts along a straight line: the split function lets you draw a line to divide the underlying whole field boundary, and specify which cropping records should have the boundaries to the left and right of that line.

14. Make sure the whole field boundary is visible and centred in the mapping window.
15. Click on the field boundary tool (plain green square) and then click once on the map window (it doesn't matter where).
16. A new window will open. Select the first split part of the field from the list on the left hand side (e.g., Field Part A).
17. Under the heading 'Use Existing Region Boundary', select the option *Split*. The preview box will now show you the whole field boundary shape.
18. The box 'Left of Splitting Line' will have the field name you have just selected in it. To specify which boundary should be put on the right of the line you are about to draw, put a tick in the box 'Right of Splitting Line' and this will enable the dropdown list. Select the second part of the field.
19. Click *OK* and you will be returned to the farm map view.
20. Make a left click in line with the splitting line you wish to draw, but outside the field boundary.
 - a. If the division is along a straight line, pull the cursor so that the line divides the field at the point you wish to split the boundary, and then make a second left click outside the field boundary.

- b. If the division has an angle in it, click inside the field at the point you wish to change the direction of the line, and then make a final left click outside the field boundary.
21. *Optional:* if the splitting line is not quite in the right place, right click and select *Drag splitting line to final position*. The line will be duplicated and move with your cursor, and you can drop it where you want it to be.
 22. Right click and select *Split polygon along the line*.

If the field is split into three or more parts; it's only possible to use the split function to assign one part of the field. The remaining parts must be drawn, but it is possible to copy underlying shapes and lines.

If you wish to use the splitting line to allocate the main part of a field, follow the steps above but do not select a cropping record to use the other side of the splitting line in step 18.

To free-draw a field boundary, follow the steps on page 12-13. You may find it useful to use the line grabber function to copy the underlying parts of the whole field boundary that apply.

If the field has previously been split then at the time you split the cropping record you will be offered the change to re-use a previous field region and thereby associate any boundaries that are the same. For any split field parts which are a new shape, chose to add a new part field region to start with a clean sheet, and follow the steps above to add the new boundary.

Importing field boundaries

The following steps will look at importing field boundaries from generic file formats or precision farming controllers. If you wish to import RPA field boundaries, please refer to our [RPA boundary guide](#).

If you have the mapping module but not the precision farming actual module, you can import field boundaries in any of the following generic file format types:

- CSV file
- KML file
- SHP file (using either WGS84 or OS co-ordinate projections)

A 'shape' file is always comprised of at least three separate files: a .shp file, a .shx file, and a .dbf file. You must have all three components in order to be able to import a shape file.

If you also have the precision farming actual module, you can import field boundaries as above but also in manufacturer specific file types (in the format they are saved by on the screen).

The steps below assume you have SHP files to import. If you are using a different file type, you will just need to navigate to a different node at step 2.

To import field boundaries:

1. Go to the devices module



2. From the list on the left hand side, select *Farmplan/Generic > Field Boundaries > Boundary Shape SHP (WGS84)*
3. Click *Device Sync*
4. On the device tab, you may wish to untick the 'Move source to archive after import' option.
5. Go to the import tab
6. Using the '...' icon next to path, select the folder where your files are saved.
7. Match the files to the fields you want to import them against by double clicking in the 'Gatekeeper destination field' column.
8. A new window will open with the field list on the left hand side: select the required field and click *OK*. When you return to the import screen, your field will have a tick in the 'Import' column.
9. *Optional:* if you need to preview a file's contents to check them, put a tick for that field in the column 'Map Preview' and click *Map Preview*. To close the preview, click *Close*.
10. Once you have matched the files and fields, click *Import with Preview*.
11. You will be shown each boundary in turn; to accept and import, click *OK* and the next field will show.

Editing field boundaries

Once you have a field boundary, it can be altered if required – for example, to remove GPS errors.

Changes made to a field boundary will affect that boundary across multiple cropping years, not just in the current cropping year. If you wish to make a change that only applies from this point forward – for example, because a margin has changed – you must [change the field region](#) first.

In the mapping window, with the field boundary layer on top, you will see a number of tools which have purple circles behind them. These are point editing tools:



1. *Insert Points* lets you add more points into an existing line (for example, to smooth a corner).
2. *Move Point* lets you pick up existing points in a line and change their position.
3. *Move Entity* lets you pick up an entire entity and change its position (rarely appropriate for field boundaries)
4. *Delete Point* lets you delete an existing point from a line (for example, to remove a GPS error).
5. *Delete Entity* does not work on field boundaries as it is not possible to delete a field boundary.

Generally speaking, all point editing tools are easier to use if you have the Snap On function switched on. This means you can quickly identify the points in an existing boundary entity. You can check it is on either by looking in the Active Tools menu, or by right clicking in the mapping window and seeing if Snap On has a tick beside it.

For more information on using these tools, see [Mapping Tools](#).

Field regions

- The field region connects the boundary (shape of the field) to the cropping record.
- If you change a field boundary, it will change in every year where the cropping record uses the same region.
- If you wish to make a change to the field boundary that only applies to certain years, or from this year forward, it is necessary to change the field region **before** making the change.
- It is the same process for if a field that has previously been split into two parts is split into two again, but in different locations.
- This is also the case if you are importing new boundaries captured with precision farming equipment.

Scenario 1: part of an existing field is permanently removed from the field:



Up to 2018, original field boundary



From 2018, new field boundary with new region

Scenario 2: a field is split in two different ways in different cropping years:



2016, field split



2017-2018 whole field



2019, field split differently

Regions are controlled through the cropping record. To change a field region:

1. Go to the cropping record
2. Click on the *Region* tab
3. Click *Swap Field Region*
4. Click *Setup Field Regions*
5. To change the boundary for a whole field, click *Add Whole Field Region*. To change the boundaries for part field cropping records, click *Add Part Field Region* for the number of new regions required.
6. If you use the buffer zone information on the field records, you will need to reselect the information for the new region(s).

7. If you are setting up part field regions, you may wish to edit the letter assigned to the region so that A and B are always the current field regions. To do this:
 - a. From the left hand side of the screen, click on the region currently labelled A.
 - b. In the 'Part Field Reference' box, change A (for example, make it 'A2', 'A.', or 'A 2017')
 - c. From the left hand side, click on the new region you wish to make A.
 - d. In the 'Part Field Reference' box, change the current region label to A.
 - e. Repeat for any other regions as required.
8. Once you have the required region(s) set up, click *OK* from the next two screens.
9. Click *OK* to close the cropping record. On the field tab, the 'Field Map' button will now say 'Setup Boundary Map'. Click to add the new boundary, or import the boundary from a shape file (or for precision module users, GPS unit).


Removing field boundaries

It is not possible to delete a field boundary in Gatekeeper once it exists.

If you wish to disassociate a boundary from a field, [add a new field region](#) and do not add a boundary to the new region.

Mapping tools

Icon	Name	Function	Use and tips
	Show second library map	<i>Splits the mapping screen in two</i>	Take care to keep cursors on respective sides of screen.
	Save data	<i>Save</i>	Use regularly. Same function as the 'Save' button in bottom right.
	Import RPA boundaries	<i>Import boundaries provided by RPA</i>	See guide before proceeding.
	Reports	<i>Run reports</i>	Useful to automatically split maps into field groups.
	Print map	<i>Print map</i>	Useful to print the map as it appears on screen.
	Copy to clipboard	<i>Copy screen</i>	Copies the visible map window so that it can be pasted into another place.
	Publish map layers	<i>Publish layer to another Gatekeeper user</i>	May be layer including contents, or just layer styles
	Cancel back to last saved data	<i>Takes you back to the last save</i>	Take care – this is not an 'undo' button!
	Scale in	<i>Zoom in</i>	Zooms the map in, focusing on the centre of the screen
	Scale out	<i>Zoom out</i>	Zooms the map out, from the centre of the screen
	Clear measurements	<i>Deletes any measuring lines</i>	Measuring lines are only ever temporary: they will disappear if you close the mapping window.
	Scale to box	<i>Zooms map to box drawn</i>	This tool is not click and drag – click to mark the first corner of the box you wish to zoom to, pull the mouse to draw a zoom box, and then make a second click.
	Field view	<i>Shows field records</i>	From farm map you will need to click twice – once to open the field map, then once to open the field records.
	Field boundary polygon	<i>Draw a field boundary</i>	Using this tool when a field boundary already exists will cause the previous boundary to be replaced.
	Insert sub polygon	<i>Draw a secondary boundary associated with an existing boundary</i>	Use to draw a second distinct boundary for a single field record. First click must be inside the boundary you wish to associate a sub polygon to. Also

			accessible from the right click menu after using the field boundary polygon tool.
	Insert island polygon	<i>Draw an exclusion from an existing boundary (cut out an area)</i>	First click must be inside the shape you wish to mark an exclusion from. Also accessible from the right click menu after using the field boundary polygon tool.
	Polygon shift	<i>Increase or decrease a boundary by a set width</i>	Enter the width you wish to change width by in active tools menu. Select 'inside' to make the shape smaller, or 'outside' for larger. First click must be inside the shape, second click applies the increase/decrease.
	Parallel line	<i>Draw a pair of enclosed lines a set distance apart.</i>	Enter the width you want the lines to be separated by in active tools menu. Useful for drawing margins from the edge of existing field boundaries.
	Insert points	<i>Insert points into an existing line</i>	Right click over an existing snap point, and select either <i>Insert point BEFORE</i> or <i>Insert point AFTER</i> . Before and after refer to the order the points were originally drawn – if this is not known, you can check the point references by turning on the <i>Headup Display > Display data</i> option and hovering over points.
	Move point	<i>Move a point</i>	Left click to pick up a point, move it, and then left click again to drop it in the new position.
	Move entity	<i>Move an entire entity</i>	Left click on a snap point to pick up an entity, left click again to drop it in the new position.
	Delete point	<i>Delete a point</i>	Left click on a snap point to select it, second left click to delete it.
	Delete entity	<i>Delete an entire entity</i>	This tool cannot be used to delete a field boundary. Sub polygons or islands may be deleted – left click on a snap point to select the entity, left click again to confirm delete.
	Measuring polyline	<i>Measure length</i>	To trace an existing line, make sure the snap on and line grabber functions are turned on. You can specify a maximum length of the measuring line under 'Options' in the active tools menu.

	Measuring polygon	<i>Measure area</i>	Freehand draw the area to be measured, or copy an existing polygon by right-clicking inside it and selecting <i>Find complex polygon</i> . Right click again and select <i>Finish this entity</i> . Measured area will be displayed around the cursor if 'Display Data' is turned on, and on the active tools menu
	Measuring circle	<i>Measure area of a circle</i>	Enter the radius required on the active tools menu; left click on the map to draw the circle. Area and radius are displayed on the active tools menu.
	Measuring headland	<i>Measure area within a headland or the rest of the field</i>	After you have selected the tool, specify the width, whether you wish to measure inside or outside the selected polygon, and whether you wish to mark the headland or field remainder.
	Measuring parallel line	<i>Measure length of two parallel lines, or area between them</i>	Enter the width that you want the lines to be separated by. For two single lines, select the mode 'Separate parallel lines', for a joined shape, use enclosed.
	Measuring grid lines	<i>Measure grids or multiple lines across a polygon</i>	If using sampling mode: set axis spacing to size of grids required (1ha grids = 100x100m). Offset options control how the grids are placed within the polygon. To measure tramlines across a field, use polylines mode.
	Drag visible map	<i>Click and drag the map</i>	Click once to pick up the map, pull it to move, click again to drop.
	Pointer	<i>Return to pointer tool</i>	