Future CAP: New Areas and Minimum Activity Analysis

Analysis of the additional areas that could be eligible for payment in a future Basic Payment Scheme and the effects of minimum activity thresholds.

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EXECUTIVE SUMMARY

This paper reports on analyses conducted by the James Hutton Institute in support of Phase 2 of the Scottish Government's workstream on Direct Payments in summer-autumn 2013. The two specific objectives were:

1. Estimating the additional area that could become eligible (on the basis of land use) for inclusion in a future Basic Payment Scheme (BPS)
2. Estimating the area of rough and common grazings that could be excluded depending on the threshold value used to define a stocking rate based minimum activity criterion. This activity criterion would apply to both existing claimants and potential new recipients.

The paper represents a significant improvement in specificity compared with previous analyses conducted, e.g. that in support of the Pack Inquiry. The analysis better characterises the location and types of ineligible land and eliminates previous assumptions on eligibility which inflated the area and the quality of the land. The new analysis is also more specific in its sectoral and regional breakdowns of additional areas.

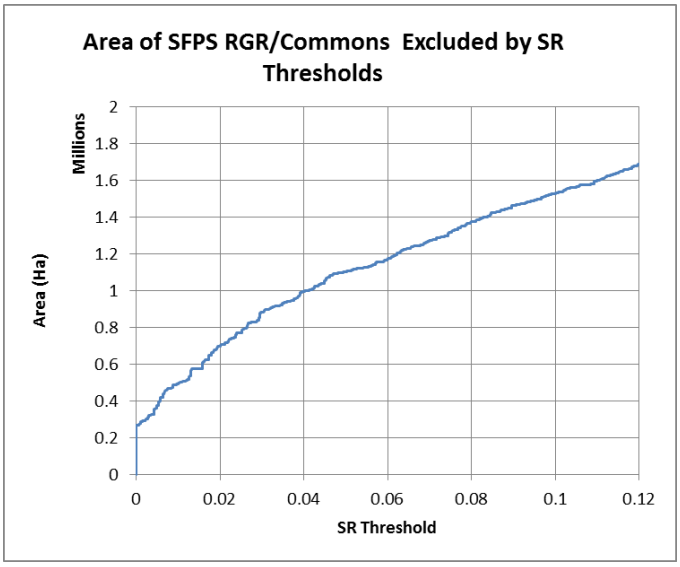
The table below summaries the existing and potential additional areas. It uses two dimensions, the source of the data and the Land Type, one of the regionalisation options identified in the Phase 1 Modelling. The source of data is presented as this provides a proxy for how likely the area is to be included in a new BPS. The existing recipients are in the **SFPS class** and this sets the baseline. The **SAF non SFPS** class are businesses that receive one or more payments in Pillar 1 or 2 of CAP, and submit a Single Application Form (SAF). The **Mapped and Unclaimed** class are mapped in IACS but have not been part of a SAF claim. JAC only are those holdings identified as agricultural in the Census with land use information but which are unmapped. **Beyond JAC** is the remaining area of land that is not explicitly excluded on the basis of ineligible land cover. The likelihood of participation declines from SAF non SFPS to Beyond JAC but on the basis of land cover all of this land could be eligible. The areas for each class are broken down into the land types used in the Phase 1 Modelling but with the addition of the LT Other class.

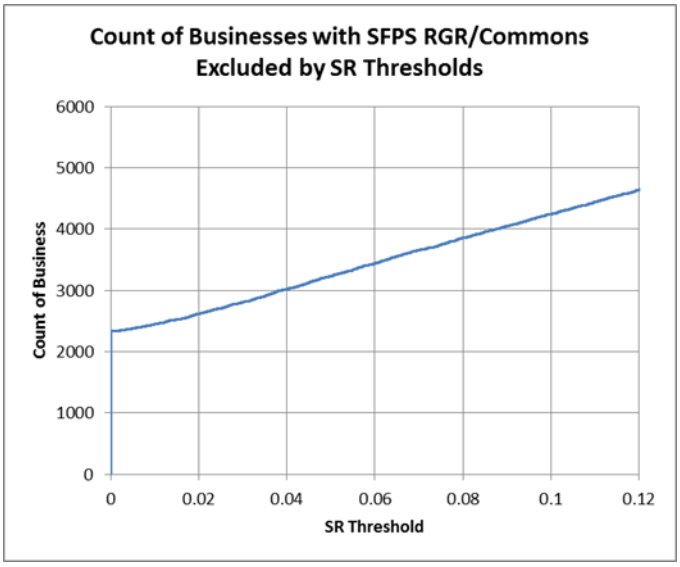
	Area (000's ha)						
Land Type	**SFPS**	**SAF non SFPS**	**Mapped and Unclaimed**	**JAC Only**	**Beyond JAC**	**All Sources**	**Increase (%)**
LT Arable	928	29	14	5	48	1,024	110%
LT Permanent Grass	845	41	42	17	78	1,023	121%
LT Rough Grazing	2,786	287	270	139	203	3,685	132%
All LT Regions	**4,559**	**358**	**325**	**161**	**329**	**5,732**	**126%**

From the table it can be seen that there are potentially significant increases in the areas of land that could occur. In terms of character the new areas are dominated in area terms by rough grazing and Land Capability for Agriculture Class 6.3, but these are extensive classes. This means that relative to the existing SFPS baseline the increases are less pronounced and potentially include significant areas of arable and grasslands that would merit support. In terms of size classes, there are large numbers of small or very small businesses (which may be eliminated by a minimum size criterion) but also small numbers of very large businesses some with extensive areas of land devoted to non-agricultural activities.

The key metric in determining inclusion of land beyond land cover is the proposed use of a minimum activity criterion based on stocking rate and applied to areas "**naturally kept in a state suitable for grazing or cultivation**". For this analysis this is interpreted as being the land declared as Rough or Common Grazing on SAF forms. The charts below show for existing businesses the relationship between area and stocking rate and between counts of businesses and stocking rate for these two land classes. The charts demonstrate that there are extensive areas of these two land classes that are lightly stocked but that there are limited areas with no stock within the current population SFPS recipients. There are several challenges in the implementation and verification of a minimum activity requirement with very low stocking rate values but higher requirements could be incompatible with good

environmental management or could be seen as *de facto* recoupling. For new areas there are larger proportions of the land classes unstocked by domestic livestock (>50%).





Despite the improvement in specificity of analysis there remain significant sources of uncertainty particularly with regard to the adaptive response from land managers. The key question is will businesses that have not to date participated in agricultural support schemes within Pillar 1 of CAP now do so. This must of course depend on the orientation of such businesses and how they see the balance of benefits set against the need to comply with application and inspection regimes. It seems highly likely that there will be at least some increase in the overall area from which applications for payment are made with consequent reductions on overall rates of payment.

Adaptive behaviour is particularly significant when considering the outcomes of using a stocking rate based, minimum activity criterion. Given the areas of land and the stocking rates investigated it is highly likely that whatever the threshold value used this will be met where to do otherwise would result in a reduced payment. The numbers of stock required are a modest percentage of the national sheep flock (~6 % of the 2012 sheep numbers for a stocking rate of 0.06 lsu/ha). In cases where the mandated stocking rate cannot be met it is also possible that a case could be made for derogation on the basis of environmentally appropriate management, especially for the extensive areas of land with environmental designations.

1 INTRODUCTION

This paper reports on the outputs of two analyses conducted to support policy development for the Direct Payments component of the current (2013) round of CAP reforms. These are:

1. Estimating the additional area that could become eligible (on the basis of land use) for inclusion in a future Basic Payment Scheme (BPS)
2. Estimating the area of rough and common grazings that could be excluded depending on the threshold value used to define a stocking rate based minimum activity criterion. This activity criterion would apply to both existing claimants and potential new recipients.

The analysis has not been combined with any of the Phase 1 Modelling scenarios to assess potential impacts. This will be undertaken as part of an overall assessment of options. As with other analyses none of the results presented here should be interpreted as final policy decisions.

2 METHODOLOGY

2.1 Data sources used to estimate additional areas

Unless otherwise noted, all data used are for 2011, keeping compatibility with the previous Phase 1 modelling analysis. The same assumptions on land use eligibility are used as in the Pack Inquiry[1].

2.1.1 SAF but not SFPS businesses

The first area considered are businesses that submit a SAF but do not make a claim for SFPS (abbreviated as **SAF non SFPS**). There are 357,850 ha of eligible area in this category. This area includes, for example, businesses that claim for Scottish Beef Calf Scheme (SBCS), Less Favoured Area Support Scheme (LFASS) or Rural Priorities (SRDP). These are considered the most likely candidates for inclusion in an area-based BPS. For these businesses there is mapped land use data and seasonal rental data that allows for assigning land to businesses on the basis of usership rather than ownership. For this land there is the greatest certainty of the user, use and quality of this land.

Caveat

1. For 110,590 ha in the whole existing SAF population there are rental-out claims for mapped land parcels but no matching rental-in record. This means that although the owner-declared land use for this area is known, the user is not. It is possible (and perhaps even likely) that the renting-in business is not submitting a SAF[2]. Since the user of the land is unknown it is not possible to determine a business level farm-type for this area.

2.1.2 Mapped and Unclaimed

There are 581,534 hectares of land mapped in the January 2012 IACS polygon snapshot which can be linked to a holding code or main farm code but for which no land use has been declared through SAF (abbreviated to Mapped and Unclaimed). It is possible to use the National Forest Inventory (2011)[3] dataset to exclude parts of those polygons which are known to be woodland. The remaining 336,558 Ha is considered to be *potentially* eligible. This remainder is made up of 4 main categories:

a) Mapped and Unclaimed – SFPS business

[1] http://www.macaulay.ac.uk/LADSS/cap_flattening.html
[2] Lacking a known user this land cannot be accounted for on a per business basis. Rather than revert this land to the owning business this area has been accounted for as a single unknown user record.
[3] http://www.forestry.gov.uk/inventory

- Polygons which belong to a business which is in receipt of SFPS but for which the land use is not known.

b) Mapped and Unclaimed – SAF business
   - Polygons which belong to a business which is not in receipt of SFPS and for which the land use is not known.

c) Mapped and Unclaimed – JAC Only
   - Polygons which belong to a holding code which only appears in the JAC.

d) Mapped and Unclaimed – not SFPS, SAF or JAC
   - Polygons which are not part of the SFPS, SAF or JAC Only populations. These may either be large estates for which the boundary of the estate has at some stage been captured in IACS mapping, or areas of Common Grazings which are not claimed against by any SFPS or SAF business.

For this category it is possible to determine an LCA mix through spatial overlay with the existing LCA layer. It is also possible to generate a Land Type mix by recoding of other land cover datasets. In this case we have used the Land Cover Map (LCM) 2007 dataset[4]. LFA categories are identified through spatial overlay with the existing LFA layer. Agricultural Regions are identified again through spatial overlay with the Agricultural Regions layer.

Caveat

2. It was expected that, when a holding was included in the mapped area, all the land parcels would be mapped and thus the JAC and mapped areas would match (at least to within tolerances of data collection). In fact there are a number of occasions when it appears that only part of a holding is mapped. Also it is not possible to know which of the land uses recorded in the JAC should be associated with the mapped area. As a result for those holdings the land use areas declared in the Mapped and Unclaimed – JAC Only category were dropped in favour of a derived Land Type mix from the LCM2007 dataset.

2.1.3 Unmapped areas – JAC Only

There is a further 160,730 ha of land that is identified as having agricultural activity being conducted in the JAC but which neither appears in the SAF returns nor the Mapped and Unclaimed area (abbreviated as JAC only). For this subset JAC areas can be used to determine eligibility and land-type areas for each holding. Farm types at holding level are available from Census calculations and regions can be assigned based on a mapping between parishes and Agricultural Regions. Note that a parish is assigned based on the postal location of the holding not an interpretation of its geographical extent so there is some scope for uncertainty and error in these assignments. For LCA since no GIS mapping is available for the holding, holding specific mixes cannot be determined. In this circumstance a holding is assigned an LCA mix based on the remainder of land in each parish once all existing claimed land and forestry has been eliminated. The proportion of whatever LCA classes are left is calculated per parish and these proportions are applied to all eligible land for each holding declared in the JAC on a parish by parish basis. In this way a holding which only appears in the JAC can be assigned an LCA mix based on the land considered most likely to be supporting that holding. Since this is a parish-based approach, this is a weaker than a per holding relationship but the process represents a considerable improvement in specificity compared with the approach used in support of the Pack Inquiry[5].

2.1.4 Beyond JAC

Lastly there is a further 562,030 ha of land that is not included in any of the previous categories. This is land which is beyond the SFPS, SAF, Mapped and Unclaimed, and JAC Only populations and which is not identified as forested land

[4] http://www.ceh.ac.uk/landcovermap2007.html
[5] http://www.macaulay.ac.uk/LADSS/cap_flattening.html

in the National Forest Inventory or as Inland Water in the Ordnance Survey MasterMap® Topography Layer[6]. This remaining land is a mixture of urban land, nature reserves, Ministry of Defence land, sporting estates, and potentially some Common Grazings which are not already part of the IACS mapping.

2.2 Estimating Stocking Rates

This is accomplished following the procedures used as part of the Pack Inquiry[7] and subsequent analysis of potential additional areas in 2012[8]. These are briefly summarised here. The process estimates the forage area per business based on land use, on owned and rented land. When rental data is not available then forage area is determined on an ownership basis. The numbers of livestock are derived from JAC and December Survey (taking the higher total). The livestock numbers are converted to livestock units using simplified weightings, 0.12 per sheep (excluding lambs), 0.3 per deer and 1.0 per cow (excluding calves). The average stocking rate per hectare for all forage land in a business is then simply the livestock units divided by the forage area.

[6] http://www.ordnancesurvey.co.uk/business-and-government/products/topography-layer.html
[7] http://www.macaulay.ac.uk/LADSS/cap_flattening.html
[8] http://www.macaulay.ac.uk/LADSS/reports/Existing%20and%20New%20Recipient%20Analysis%20v3.0%20FINAL.pdf

3 RESULTS

3.1 All Areas

Table 1 lists the maximum extents of land that, on the basis of land cover alone, could be included within the scope of an area-based Basic Payment Scheme from 2015. The sub-total line gives the totals for all areas positively identified as undertaking agricultural or related activities.

The Beyond JAC class is included in Table 1 (Row 6) to provide an absolute upper bound on the area that could be included. It is highly likely, however, a substantial share of the Beyond JAC area would not be included due to land cover (e.g. urban, transport etc.) or the orientation of users (e.g. Ministry of Defence land). In later breakdowns the explicitly excluded areas (on the basis of land cover) can be estimated as between 155,009 ha using LCA and 244,046 ha using Land Type. The Beyond JAC area will, however, include areas such as unmapped Common Grazings or sporting estates without livestock which could seek inclusion.

Table 1

Row	Source	Area (Ha)	% of Existing SFPS	% of All Sources
1	SFPS[9]	4,558,909	100.00%	79.57%
2	SAF non SFPS[10]	357,850	7.85%	6.25%
3	Mapped and Unclaimed[11]	336,558	7.38%	5.87%
4	JAC only[12]	160,730	3.53%	2.81%
5	**SUB-TOTAL**	**5,414,047**	**118.76%**	**94.50%**
6	Beyond JAC[13]	562,030	6.92%	5.51%
7	**TOTAL**	**5,976,078**	**125.68%**	**100.00%**

Table 2 lists all other areas which, together with the areas listed in Table 1, make up the total land mass of Scotland. These are areas of land which are considered to be excluded from any basic payment scheme on the basis of their land cover, either explicitly for rows one and two (woodland and water) or implicitly for row 3 (land within IACS land parcels that is not claimed).

Table 2

Row	Source	Area (Ha)
1	National Forest Inventory 2011[14]	1,383,406
2	Inland Water (OSMM)[15]	218,594
3	Unclaimed parts of IACS FIDs[16]	280,021
4	**TOTAL**	**1,882,021**

[9] Area included in Phase 1 modelling of all eligible claimed land used by businesses in receipt of single farm payment in 2011.
[10] Area of eligible declared land on SAF returns made by businesses not in receipt of single farm payment in 2011.
[11] Area of additional land in the January 2012 IACS polygon snapshot (excluding forestry) against which no declared land use exists in 2011.
[12] Area of land recorded in JAC which is not part of the SFPS, SAF or Mapped and Unclaimed areas in 2011.
[13] Area of land which is not part of SFPS, SAF, Mapped and Unclaimed, or JAC only populations in 2011. Since this land is not mapped in IACS nor listed in the JAC it is unlikely that much of this land would become eligible for payment.
[14] Area of land mapped in National Forest Inventory 2011 for which the Woodland Type is one of Woodland, Assumed Woodland, or Low Density Woodland.
[15] Area of land mapped as inland water bodies from the Ordnance Survey MasterMap® Topography Layer. The selection excludes Tidal Water features.
[16] Area calculated as the difference between mapped polygon area and total claimed area for all SFPS and SAF non SFPS polygons.

3.2 Character of the Additional Areas

This section provides a breakdown of the areas contained in Table 1 by Land Type, LCA, LFA, Farm Type and Agricultural Region.

3.2.1 Land Type

Table 3 breaks down the additional areas into the Land Type (LT) regions as defined in the Phase 1 Modelling. Existing SFPS areas are included for comparison. Results are presented individually by source. Values are in hectares. The LT Other classification (Row 4) includes areas outwith the Arable, Permanent Grass, or Rough Grazing categories. This includes urban and suburban areas and areas of bare ground. This classification forms a small proportion of the Mapped and Unclaimed category but a much higher proportion (41%) of the Beyond JAC category. It is readily apparent from this table that the large majority of the additional area lies in the Rough Grazing land type classification.

Table 3

Row	Land Type	SFPS	SAF non SFPS	Mapped and Unclaimed	JAC Only	Beyond JAC	TOTAL
1	LT Arable	927,935	29,126	13,773	5,027	48,111	1,024,006
2	LT Permanent Grass	845,321	41,354	41,655	17,050	77,719	1,023,098
3	LT Rough Grazing	2,785,653	287,335	270,056	138,654	203,230	3,684,928
4	LT Other	-	-	11,075	-	232,971	244,046
5	All LT Regions	**4,558,909**	**357,850**	**336,558**	**160,730**	**562,030**	**5,976,078**

3.2.2 Land Capability for Agriculture

Table 4 breaks down the existing SFPS and additional areas into constituent LCA classes. The LCA Other classification (Row 14) combines areas in the LCA mapping that are assigned to either built-up land, inland water, or uncoded islands (i.e. small islets which lie beyond the extent of the LCA mapping). In each category, the largest area is within LCA class 6.3.

Table 4

Row	LCA Class	SFPS	SAF non SFPS	Mapped and Unclaimed	JAC Only	Beyond JAC	TOTAL
1	LCA 1	2,571	432	254	48	808	4,112
2	LCA 2	82,298	4,128	2,779	1,659	10,737	101,601
3	LCA 3.1	262,399	10,920	7,564	4,586	26,575	312,043
4	LCA 3.2	538,388	17,322	21,624	9,846	59,196	646,377
5	LCA 4.1	259,320	8,587	12,498	5,029	23,873	309,307
6	LCA 4.2	314,470	12,179	16,749	8,365	30,011	381,774
7	LCA 5.1	96,531	3,674	4,042	1,923	7,549	113,719
8	LCA 5.2	342,345	14,476	16,306	7,236	22,970	403,334
9	LCA 5.3	378,954	20,883	24,814	8,485	28,472	461,608
10	LCA 6.1	94,970	6,355	4,805	1,613	8,047	115,789
11	LCA 6.2	355,799	30,495	32,390	11,706	29,510	459,900
12	LCA 6.3	1,672,090	206,093	162,928	89,712	157,103	2,287,927
13	LCA 7	158,774	22,306	22,568	10,522	9,379	223,549
14	LCA Other	-	-	7,239	-	147,771	155,009
15	All LCA Classes	**4,558,909**	**357,850**	**336,558**	**160,730**	**562,000**	**5,976,048**

3.2.3 Less Favoured Area Regions

Table 5 breaks down the existing and additional areas into the classes within the LFA regionalisation. In all cases the largest area is within the LFA-HIE classification.

Table 5

Row	LFA Region	SFPS	SAF non SFPS	Mapped and Unclaimed	JAC Only	Beyond JAC	TOTAL
1	LFA	1,829,214	60,405	79,300	33,894	166,104	2,168,917
2	Non-LFA	606,723	23,462	23,356	10,329	183,414	1,057,829
3	LFA-HIE	2,122,972	273,984	233,902	116,507	212,483	2,749,302
5	All LFA Regions	**4,558,909**	**357,850**	**336,558**	**160,717**	**562,000**	**5,976,048**

3.2.4 Farm Type

Table 6 breaks down the additional areas by main farm type (where possible). Note that it is not possible to determine a farm type for the Beyond JAC category. The Mapped and Unclaimed and JAC Only categories indicate a large area of land in the additional area belongs to farms classed as Specialist Grass and Forage.

Table 6

Row	Main Farm Type	SFPS	SAF non SFPS	Mapped and Unclaimed	JAC Only	Beyond JAC	TOTAL
1	Cattle and Sheep (DA)	8,234	69	727	308	N/A	9,338
2	Cattle and Sheep (Lowland)	49,576	510	2,991	872	N/A	53,950
3	Cereals	355,926	5,991	6,938	1,575	N/A	370,430
4	Cropping and Dairy	16,904	-	85	-	N/A	16,989
5	Cropping and Mixed Livestock	4,178	547	192	59	N/A	4,946
6	Cropping, Cattle and Sheep	324,234	4,266	1,370	80	N/A	329,950
7	Cropping, Pigs and Poultry	23,938	-	70	10	N/A	24,018
8	Dairy (LFA)	184,842	2,175	1,336	50	N/A	188,404
9	Dairy (Lowland)	1,791	-	261	49	N/A	2,101
10	General Cropping	391,597	4,004	4,751	750	N/A	401,102
11	Mixed Cattle and Sheep (SDA)	1,050,377	7,090	5,953	1,696	N/A	1,065,116
12	Mixed Livestock	23,670	3,520	1,240	351	N/A	28,781
13	Non-classifiable – Fallow	61,082	37,296	740	521	N/A	99,639
14	Non-classifiable - Other	1,014	798	7,740	35	N/A	9,587
15	Other Horticulture	7,449	477	831	642	N/A	9,399
16	Specialist Beef (SDA)	846,807	19,799	18,850	1,019	N/A	886,476
17	Specialist Fruit	136	43	128	89	N/A	397
18	Specialist Glass	7,030	441	767	640	N/A	8,878
19	Specialist Grass and Forage	173,281	105,004	157,398	143,642	N/A	579,325
20	Specialist Horses	218	98	547	100	N/A	962
21	Specialist Pigs	1,965	185	1,458	118	N/A	3,725
22	Specialist Poultry	14,382	1,229	3,360	1,640	N/A	20,611
23	Specialist Sheep (SDA)	1,010,275	53,719	31,300	6,486	N/A	1,101,780
24	Unknown	-	110,590	87,553	-	562,000	760,143
25	All Main Farm Types	**4,558,909**	**357,850**	**336,558**	**160,730**	**562,000**	**5,976,048**

3.2.5 Agricultural Regions

Table 7 breaks down the additional areas by Agricultural Region. Areas reported in the additional area categories are generally a reflection of the size of the regions with Highland containing the largest area in each case.

Table 7

Row	Ag Region	SFPS	SAF non SFPS	Mapped and Unclaimed	JAC Only	Beyond JAC	TOTAL
1	Argyll & Bute	362,323	10,221	26,691	15,828	44,954	460,017
2	Ayrshire	194,910	4,718	9,732	4,040	40,249	253,649
3	Clyde Valley	180,758	3,239	13,391	2,723	72,651	272,762
4	Dumfries & Galloway	396,722	12,078	12,687	3,187	35,631	460,306
5	East Central	152,895	2,183	20,040	1,648	24,803	201,570
6	Eileanan an Iar	141,841	43,379	12,832	13,355	10,866	222,274
7	Fife	83,597	826	3,523	810	22,480	111,237
8	Highland	1,323,765	239,827	183,545	83,151	141,061	1,971,348
9	Lothian	104,952	1,425	5,138	1,648	35,115	148,277
10	North East Scotland	575,831	17,244	22,712	22,486	53,787	692,060
11	Orkney	78,652	1,089	2,753	659	10,083	93,236
12	Scottish Borders	335,907	8,103	6,425	2,246	17,657	370,338
13	Shetland	116,104	1,759	3,950	1,825	5,297	128,936
14	Tayside	510,651	11,759	13,139	7,124	47,391	590,064
15	All Ag Regions	**4,558,909**	**357,850**	**336,558**	**160,730**	**562,025**	**5,976,073**

3.3 Character of the Additional Area from SAF

This section describes the character of the additional area from data drawn from SAF returns. This is the **SAF non SFPS** row (2) from Table 1 and constitutes data collected on the same basis as the SFPS claim data. These are records for which:

- The land use is known on a field-by-field basis.
- The land use is known to be eligible from declared land uses.
- The data can be directly linked to mapped polygons.

3.3.1 Land Type (SAF – Non SFPS)

Table 8 breaks down the additional eligible areas by land-type as defined in the Phase 1 modelling. The breakdown is in terms of area (ha) and the share (%) of each land-type in the additional eligible area. To assess the relative importance of these additional eligible areas it is useful to compare these with the total area of the land type (SFPS+SAF Eligible). It can be seen that while the additional area of rough grazing is nearly ten times the size of arable, as a share of the total area, it is only three times larger (9% vs 3%). This relative importance measure is used in all the tables that follow.

Table 8

LT Region	Additional Eligible Area (SAF)	% of Additional Area (SAF)	% of LT Region (SFPS+SAF Eligible)
LT Arable	29,161	8%	3%
LT Permanent Grass	41,354	12%	5%
LT Rough Grazing	287,335	80%	9%
All LT Regions	**357,850**	**100%**	**7%**

3.3.2 Land Capability for Agriculture (SAF – Non SFPS)

Table 9 presents the LCA mix of the additional eligible area. Here again it can be seen that while in area terms the additional eligible area is dominated by LCA 6.3 (58%), the relative importance is still larger but much less pronounced. Most LCA classes see between 3% and 6% increase in area with the exceptions being LCA 1 at 14% (from a very small base) and LCA 7 at 12%.

Table 9

LCA Class	Additional Eligible Area (SAF)	% of Additional Area (SAF)	% of LCA Region (SFPS+SAF Eligible)
LCA 1	432	0%	14%
LCA 2	4,128	1%	5%
LCA 3.1	10,920	3%	4%
LCA 3.2	17,322	5%	3%
LCA 4.1	8,587	2%	3%
LCA 4.2	12,179	3%	4%
LCA 5.1	3,674	1%	4%
LCA 5.2	14,476	4%	4%
LCA 5.3	20,883	6%	5%
LCA 6.1	6,355	2%	6%
LCA 6.2	30,495	9%	8%
LCA 6.3	206,093	58%	11%
LCA 7	22,306	6%	12%
All LCA Classes	**357,850**	**100%**	**7%**

3.3.3 LFA Regions (SAF – Non SFPS)

For comparability with Phase 1 Modelling the breakdown of additional eligible land by LFA status has been included (Table 10). The great majority is within the LFA-HIE area, though again this dominance is less in relative share than absolute area.

Table 10

LFA Region	Additional Eligible Area (SAF)	% of Additional Area (SAF)	% of LFA Region (SFPS+SAF Eligible)
Non LFA	23,462	7%	4%
LFA	60,405	17%	3%
LFA-HIE	273,984	77%	11%
All LFA Regions	**357,850**	**100%**	**7%**

3.3.4 Farm Types (SAF – Non SFPS)

The sectoral mix as defined by main farm type is illustrated in Table 11. For this analysis there is a significant caveat that for 31% of the additional eligible area it has not been possible to definitively determine the land user and thus the main farm type. Within these limitations the farm type mix is dominated in area terms by specialist sheep and specialist grass and forage (graziers) the latter being nearly twice the size of the next nearest farm type. In relative terms there are a number of enterprises that show large increases in shares but from very small base levels (e.g. Specialist Fruit). Specialist Grass and Forage and Non-Classifiable show large percentage increases.

Table 11

Main Farm Type	Additional Eligible Area (SAF)	% of Additional Area (SAF)	% of Farm Type (SFPS+SAF Eligible)
Cattle and sheep (DA)	69	0%	1%
Cattle and sheep (Lowland)	510	0%	1%
Cereals	5,991	2%	2%
Cropping and dairy	-	-	-
Cropping and mixed livestock	547	0%	12%
Cropping, cattle and sheep	4,266	1%	1%
Cropping, pigs and poultry	-	-	-
Dairy (LFA)	2,175	1%	1%
Dairy (Lowland)	-	-	-
General Cropping	4,004	1%	1%
Mixed cattle and sheep (SDA)	7,090	2%	1%
Mixed livestock	3,520	1%	13%
Non-classifiable - fallow	37,296	10%	38%
Non-classifiable - other	798	0%	44%
Other horticulture	477	0%	6%
Specialist beef (SDA)	19,799	6%	2%
Specialist fruit	43	0%	24%
Specialist glass	441	0%	6%
Specialist grass and forage	105,004	29%	38%
Specialist horses	98	0%	31%
Specialist pigs	185	0%	9%
Specialist poultry	1,229	0%	8%
Specialist sheep (SDA)	53,719	15%	5%
Unknown	110,590	31%	-
All Farm Types	**357,850**	**100%**	**7%**

3.3.5 Agricultural Regions (SAF – Non SFPS)

Typically regions add between 1% and 3% to their eligible area (Table 12). Exceptions are Highland with 15% (and since Highland is the largest region this is 67% of the total increase in area) and Western Isles with 23%.

In the Highlands and Islands there are several instances where additional area could bring in large numbers of small and medium sized businesses that would be conventionally recognised as farms conducting agriculture but also large and very large businesses that may have active agricultural enterprises as part of their mix but will also have extensive areas devoted exclusively to sporting enterprises. There are significant challenges in using stocking rate based activity measures alone to ensure that appropriate land is included. There is also considerable uncertainty in whether some large enterprises would wish to be part of agricultural support schemes with their associated regulation and inspection regimes. The latter is significant in that final rates paid in a new BPS scheme may be higher than those estimated based on an assumption that all eligible land will be claimed.

Table 12

Ag Region	Additional Eligible Area (SAF)	% of Additional Area (SAF non SFPS)	% of AgRegion (SFPS+SAF Eligible)
Argyll & Bute	10,221	3%	3%
Ayrshire	4,718	1%	2%
Clyde Valley	3,239	1%	2%
Dumfries & Galloway	12,078	3%	3%
East Central	2,183	1%	1%
Eileanan an Iar	43,379	12%	23%
Fife	826	0%	1%
Highland	239,827	67%	15%
Lothian	1,425	0%	1%
North East Scotland	17,244	5%	3%
Orkney	1,089	0%	1%
Scottish Borders	8,103	2%	2%
Shetland	1,759	0%	1%
Tayside	11,759	3%	2%
All Ag Regions	**357,850**	**100%**	**7%**

3.4 Character of the Additional Area from other sources

This section describes the character of the additional area from data which is not part of existing SFPS or SAF returns. This covers Rows 3, 4 and 6 from Table 1. For these records there are varying degrees of certainty regarding both the regionalisations (in terms of LCA, LFA and Land Type) and also in terms of eligibility (i.e. whether all land area would be eligible for payment)

Mapped and Unclaimed (Row 3) – since there are mapped polygons it is possible to assign an LCA mix and LFA status through spatial overlay with the LCA and LFA layers. It is not, however, possible to directly attribute a Land Type to these polygons since there is no claimed land use associated with them from IACS returns. Instead a recode of the LCM2007 land cover dataset is used as a proxy to derive a Land Type for these polygons. Where a holding code exists in the JAC for these polygons a farm type can be determined.

JAC Only (Row 4) – for these records the constituent land uses can be grouped into Land Types. Farm types for these records are also known at the holding level. However since no mapping exists for these areas it is not possible to directly calculate the LCA mix or LFA status through spatial overlay. Instead the remaining land which is not part of the SFPS or SAF populations, the mapped and unclaimed area, or forested land contained in the National Forest Inventory is calculated in each parish. This results in a residual area per parish, broken down by LCA class and LFA status. The proportions for each LCA class and LFA status of the residual area in each parish were calculated and

these proportions were applied to all eligible land per holding where the parish code matches the first three figures of the holding code. In this way LCA classes and LFA statuses are indirectly defined for each holding in the JAC Only subset.

Beyond JAC (Row 6) – the total area of all land not part of any current mapping is known. This is the area beyond: SFPS/SAF and Mapped and Unclaimed; woodland areas in the National Forest Inventory and mapped inland water according to the Ordnance Survey MasterMap® Topography Layer. This area has been intersected with the LCM2007 dataset to derive a Land Type mix for this area. This remaining area has also been intersected with the LCA and LFA layers. The area of land apportioned to the JAC Only category is subtracted and residual totals are assigned to this Beyond JAC category.

The following sections provide area and percentage area breakdowns of the Mapped and Unclaimed, JAC Only, and Beyond JAC categories in terms of Land Type, LCA, and LFA regionalisations and also by Farm Type and Agricultural Region.

3.4.1 Land Type (Other Sources)

Table 13 contains a breakdown by Land Type of all additional areas part of the Mapped and Unclaimed, JAC Only, or Beyond JAC categories. It can be seen that in excess of 80% of the land which may be eligible belongs to the Rough Grazing land type classification.

Table 13

	Mapped and Unclaimed		JAC Only		Beyond JAC	
LT Region	**Area**	**% Area**	**Area**	**% Area**	**Area**	**% Area**
LT Arable	13,773	4%	5,027	3%	48,111	9%
LT Permanent Grass	41,655	12%	17,050	11%	77,719	14%
LT Rough Grazing	270,056	80%	138,654	86%	203,230	36%
LT Other	11,075	3%	-	0%	232,971	41%
All LT Regions	**336,558**	**100%**	**160,730**	**100%**	**562,030**	**100%**

3.4.2 Land Capability for Agriculture (Other Sources)

Table 14 contains a breakdown by LCA class of all additional areas part of the Mapped and Unclaimed, JAC Only, or Beyond JAC categories. Approximately half of this area is in LCA class 6.3.

Table 14

	Mapped and Unclaimed		JAC Only		Beyond JAC	
LCA Class	**Area**	**% Area**	**Area**	**% Area**	**Area**	**% Area**
LCA 1	254	0%	48	0%	808	0%
LCA 2	2,779	1%	1,659	1%	10,737	2%
LCA 3.1	7,564	2%	4,586	3%	26,575	5%
LCA 3.2	21,624	6%	9,846	6%	59,196	11%
LCA 4.1	12,498	4%	5,029	3%	23,873	4%
LCA 4.2	16,749	5%	8,365	5%	30,011	5%
LCA 5.1	4,042	1%	1,923	1%	7,549	1%
LCA 5.2	16,306	5%	7,236	5%	22,970	4%
LCA 5.3	24,814	7%	8,485	5%	28,472	5%
LCA 6.1	4,805	1%	1,613	1%	8,047	1%
LCA 6.2	32,390	10%	11,706	7%	29,510	5%
LCA 6.3	162,928	48%	89,712	56%	157,103	28%
LCA 7	22,566	7%	10,522	7%	9,379	2%

LCA Other[17]	7,238	2%	-	0%	147,771	26%
All Classes	**336,558**	**100%**	**160,730**	**100%**	**562,000**	**100%**

3.4.3 LFA Regions (Other Sources)

Table 15 contains a breakdown by LFA region of all additional areas part of the Mapped and Unclaimed, JAC Only, or Beyond JAC categories. Between two thirds and three quarters of the additional area belongs to the LFA-HIE classification.

Table 15

	Mapped and Unclaimed		JAC Only		Beyond JAC	
LFA Region	**Area**	**% Area**	**Area**	**% Area**	**Area**	**% Area**
Non LFA	23,356	7%	10,329	6%	183,414	33%
LFA	79,300	24%	33,894	21%	166,104	30%
LFA-HIE	233,902	69%	116,507	72%	212,483	38%
All Regions	**336,558**	**100%**	**160,730**	**100%**	**562,000**	**100%**

3.4.4 Farm Types (Other Sources)

Table 16 contains a breakdown by Main Farm Type of all additional areas part of the Mapped and Unclaimed, JAC Only, or Beyond JAC categories. Note that it is not possible to define a farm type for any land in the Beyond JAC category. There are a number of businesses in the Mapped and Unclaimed category which are not part of the JAC (31%). For these businesses it has not been possible to assign a farm type. Of the remainder almost half of the land belongs to businesses classified as Specialist Grass and Forage or Specialist Sheep (SDA). In the JAC category 89% of the area belongs to business classified as Specialist Grass and Forage.

Table 16

	Mapped and Unclaimed		JAC Only		Beyond JAC	
Main Farm Type	**Area**	**% Area**	**Area**	**% Area**	**Area**	**% Area**
Cattle and sheep (DA)	727	0%	308	0%	N/A	-
Cattle and sheep (Lowland)	2,991	1%	872	1%	N/A	-
Cereals	6,938	2%	1,575	1%	N/A	-
Cropping and dairy	85	0%	-	0%	N/A	-
Cropping and mixed livestock	162	0%	59	0%	N/A	-
Cropping, cattle and sheep	1,370	0%	80	0%	N/A	-
Cropping, pigs and poultry	70	0%	10	0%	N/A	-
Dairy (LFA)	1,336	0%	50	0%	N/A	-
Dairy (Lowland)	261	0%	49	0%	N/A	-
General Cropping	4,751	1%	750	0%	N/A	-
Mixed cattle and sheep (SDA)	5,953	2%	1,696	1%	N/A	-
Mixed livestock	1,240	0%	351	0%	N/A	-
Non-classifiable - fallow	740	0%	521	0%	N/A	-
Non-classifiable - other	7,740	2%	35	0%	N/A	-
Other horticulture	831	0%	642	0%	N/A	-
Specialist beef (SDA)	18,850	6%	1,019	1%	N/A	-
Specialist fruit	128	0%	89	0%	N/A	-
Specialist glass	767	0%	640	0%	N/A	-
Specialist grass and forage	157,398	29%	143,642	89%	N/A	-
Specialist horses	547	0%	100	0%	N/A	-
Specialist pigs	1,458	0%	118	0%	N/A	-
Specialist poultry	3,360	0%	1,640	1%	N/A	-

[17] This describes areas of LCA classes 888 (Built-Up Land), 999 (Inland Water) and 9500 (Uncoded Islands) or coastline differences between the IACS and LCA mapping.

Specialist sheep (SDA)	31,300	15%	6,486	4%	N/A	-
Unknown	87,553	31%	-	0%	562,000	100%
All Farm Types	**336,558**	**100%**	**160,730**	**100%**	**562,000**	**100%**

3.4.5 Agricultural Regions (Other Sources)

Table 17 contains a breakdown by Agricultural Region of all additional areas part of the Mapped and Unclaimed, JAC Only, or Beyond JAC categories. A little over half of the area exists within Highland region (a reflection of the size of this region) with further significant areas within North East Scotland and Argyll & Bute. In the JAC Only category 8% of the area is in the Western Isles. It should be borne in mind that no size threshold has been applied to any of the areas reported in these tables, so if the existing 3ha minimum area threshold is applied in a new BPS then it is likely that the 8% Western Isles value may be reduced given the large number of crofts and small enterprises in this region.

Table 17

	Mapped and Unclaimed		JAC Only		Beyond JAC	
Ag Region	**Area**	**% Area**	**Area**	**% Area**	**Area**	**% Area**
Argyll & Bute	26,691	8%	15,828	10%	44,954	8%
Ayrshire	9,732	3%	4,040	3%	40,249	7%
Clyde Valley	13,391	4%	2,723	2%	72,651	13%
Dumfries & Galloway	12,687	4%	3,187	2%	35,631	6%
East Central	20,040	6%	1,648	1%	24,803	4%
Eileanan an Iar	12,832	4%	13,355	8%	10,866	2%
Fife	3,523	1%	810	1%	22,480	4%
Highland	183,545	55%	83,151	52%	141,061	25%
Lothian	5,138	2%	1,648	1%	35,115	6%
North East Scotland	22,712	7%	22,486	14%	53,787	10%
Orkney	2,753	1%	659	0%	10,083	2%
Scottish Borders	6,425	2%	2,246	1%	17,657	3%
Shetland	3,950	1%	1,825	1%	5,297	2%
Tayside	13,139	4%	7,124	4%	47,391	10%
All Ag Regions	**336,558**	**100%**	**160,730**	**100%**	**562,025**	**100%**

3.5 Effects of use of stocking rate based minimum activity criterion

3.5.1 Intentions and regulation limitations

The intention of a minimum activity criterion is to ensure that payments are made where farming is taking place. For Scotland these apply only to land that is "**naturally kept in a state suitable for grazing or cultivation"**. For this analysis this is interpreted as being the land declared as Rough or Common Grazing on SAF forms.

A threshold value for the criterion defines the minimum appropriate levels of activity that allow for inclusion. If the threshold is not met then none of the RGR/Commons land in the business is included. This is the so called "guillotine". There is no option to use a "scale back" approach as proposed in the Pack Inquiry. It is possible that the scale-back mechanism was seen as too close to production coupling for the measure to be compatible with WTO green box status. This analysis calculates the area of RGR/Commons that is excluded for a range of stocking rates from 0.0 lsu/ha to 0.12 lsu/ha.

Where land is more lightly stocked then it may, however, be included when other circumstances override the activity criterion. For example where there is an environmental management agreement in place that prescribes a stocking rate below the threshold value. In such circumstances this could mean the land manager seeking "derogation" from the rule and having the area included in the claim. Such derogations are expected to be the exception rather than the rule. While the maximum share is not defined, the interpretation from RPID is that the proportion of businesses seeking derogations should be small. The analysis therefore also reports the number of businesses affected by each threshold value for the activity criterion. This is not to say that all would have a case for derogation but the counts give an indication of the potential numbers.

If higher thresholds are used with significant numbers of derogations then it could be argued that, even with the guillotine mechanism, the minimum activity criterion is being used as a form of *de facto* recoupling to production and this is explicitly prohibited by the regulations. The level at which this interpretation could occur is not defined but it is unlikely that the highest values used in this analysis would be acceptable as minimum activity thresholds.

3.5.2 Assumptions for the SR-based minimum activity criterion analysis

Assumption 1 – Regional Budgets are not ring-fenced

While strictly going beyond the remit of the analysis it is important that the mechanism of the activity criterion is clearly understood otherwise it is possible to misinterpret the outcomes of the analysis. A key factor here is that a Regional Budgets (such as that for RGR) is not ring fenced. That is the size of the budget is not determined and then allocated across the area within the region so that a smaller area would mean higher rates for the land that remains. Rather the areas per region are defined (including the use of minimum activity criterion) and then the budgets per region are set in an independent process (one option for which is a land-area weighting as used in the Phase 1 Modelling). A reduced area for a region could mean an increased rate of payment for the remaining area but only if the independent budgeting process makes that decision. It is possible that the rate would remain the same and the funds "saved" from the region could be used to increase rates in other regions or that funds saved could be shared between regions. The consequences for rates are thus determined by the budgeting process not by the definition of region size.

Assumption 2 – No Adaptive Response

To make the analysis tenable within the time available this assumption was necessary. Yet it is important to recognise in interpreting the exclusions that these represent the maximum extent of exclusions assuming no change in management practice. In reality it is highly likely that stocking levels would be increased (or land declarations decreased) where necessary to avoid exclusion.

If the minimum activity threshold is a stocking rate of 0.04 lsu/ha then 40,000 lsu are required to activate 1,000,000 ha. The 40,000 lsu would be an additional 333 thousand sheep or just under 5% of the 6.7 million sheep reported in ERSA 2013 (for Census year 2012). Even if a threshold of 0.12 lsu/ha were to be used then this would require just under 15% of the 2012 national flock. Given the numbers involved it is also possible that simply by movement of existing stock the minimum stocking rates could be achieved. It is thus highly likely, whatever the minimum activity criterion set, that all currently claimed land, eligible on the basis of land use, will be included in a payment region.

This adaptation is more certain for existing (historic) SFPS claimants but is also potentially the case for potential new claimants depending on the orientation of their business. Where there are no livestock present, this may indicate a business oriented to non-agricultural activity – e.g. estates with exclusively sporting interests, particularly for new SAF non SFPS areas. The area of zero stocking-rate RGR may thus give some indication of areas that may remain excluded.

Yet even here there is the need for care in interpreting the exclusion values. While zero SR in the case of new (SAF only) areas may indicate a non-agricultural business orientation, in the existing SFP population this may not be the case. The RGR land of Specialist Graziers who currently make a claim for SFP but have no livestock included in their JAC returns (and thus a zero SR) would be excluded using the data and methodology of this analysis. Yet in many cases this land is grazed, just not by stock owned by the land owner claiming SFP. It is likely that introducing a minimum activity criterion would mean stocking of Specialist Grazier businesses by the current SFP claimant to at least the threshold value. There may also be adaptive responses in seasonal rentals though the nature and outcomes of such adaptation are not yet clear.

3.5.3 Existing areas

The existing graphs in Figure 1 below show the area of existing RGR and Common Grazings that would be excluded by using minimum activity criterion based on stocking rate with threshold values from 0.0 lsu/ha (unstocked) to 0.12 lsu/ha (approximately one sheep-lamb unit per hectare). The area excluded is also expressed as the share (percentage) of the total RGR/Commons area to show the relative effects of the SR thresholds. The lower graphs show the count (and share) of businesses with RGR/Commons that have land excluded for the SR thresholds.

From the charts it can be seen that for existing SFPS claims there are significant areas of RGR/Commons with no stock (~10% of area and ~18% of businesses). It is also clear that there are extensive areas of Scotland where stocking rates are low. For example 1M ha of RGR/Commons have a SR of 0.04 lsu/ha or less and this is 35% of the RGR/Commons area. This is 3,000 businesses or just under 25% of those with RGR/Commons land. Larger threshold values could exclude more than 60% of the RGR/Commons areas though a lesser share of businesses (~35%).

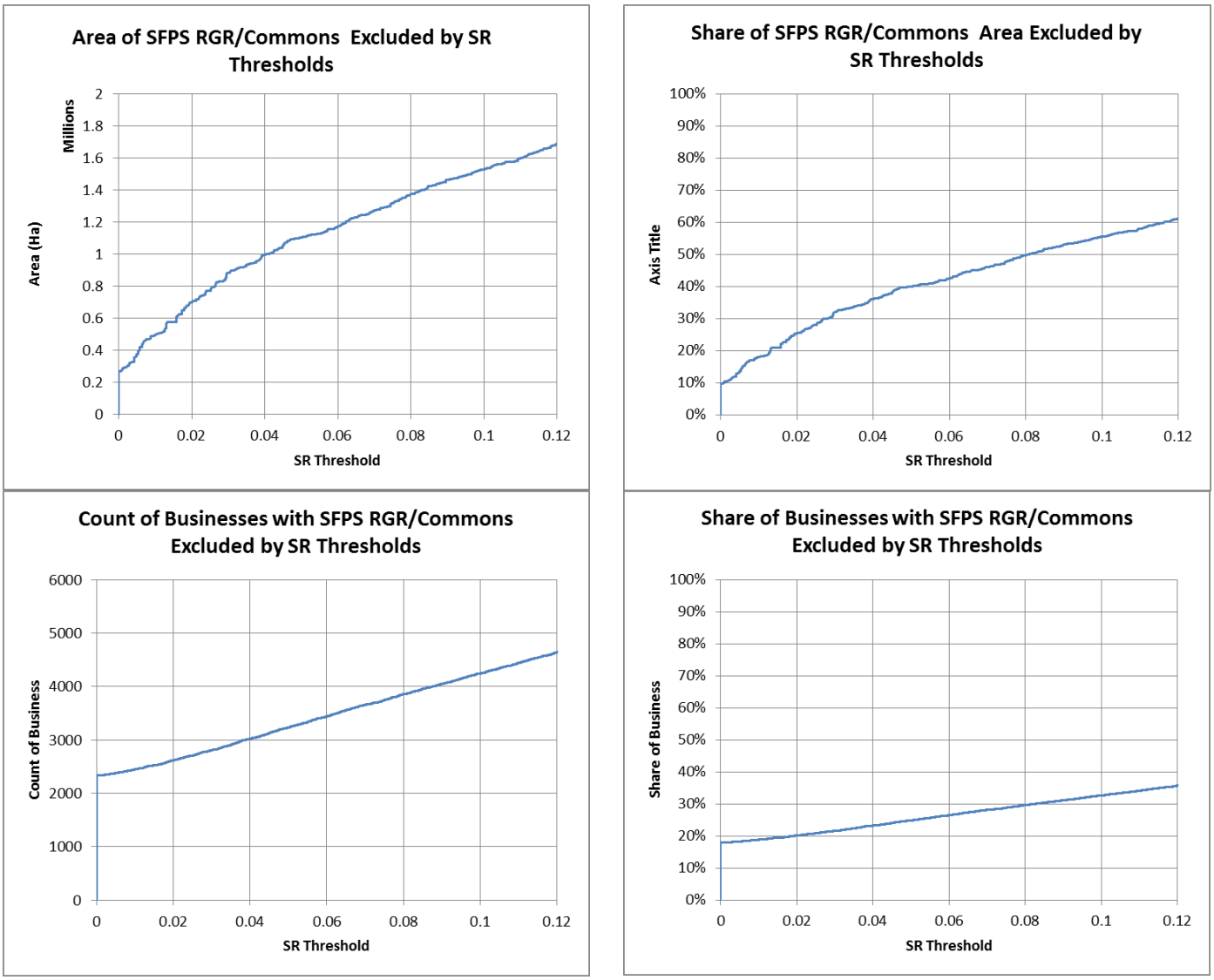
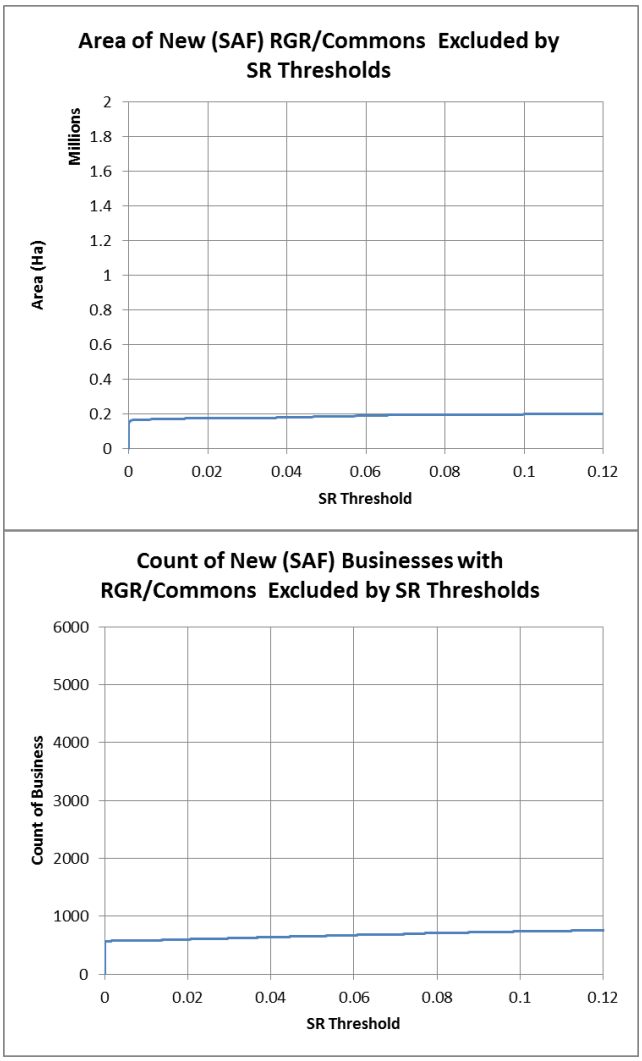


Figure 1

3.5.4 New areas

The graphs in Figure 2 below present the same analysis as in the last section but for the new (SAF only) area. They use the same axis ranges to allow direct comparability with the figures above for the existing SFPS areas. Note the relatively small area being considered (~200k ha) and that a majority of the area and count of businesses have a zero SR. The new (SAF only) area is also sensitive to the threshold value used with a value of 0.06 lsu/ha excluding ~65% of area and businesses.



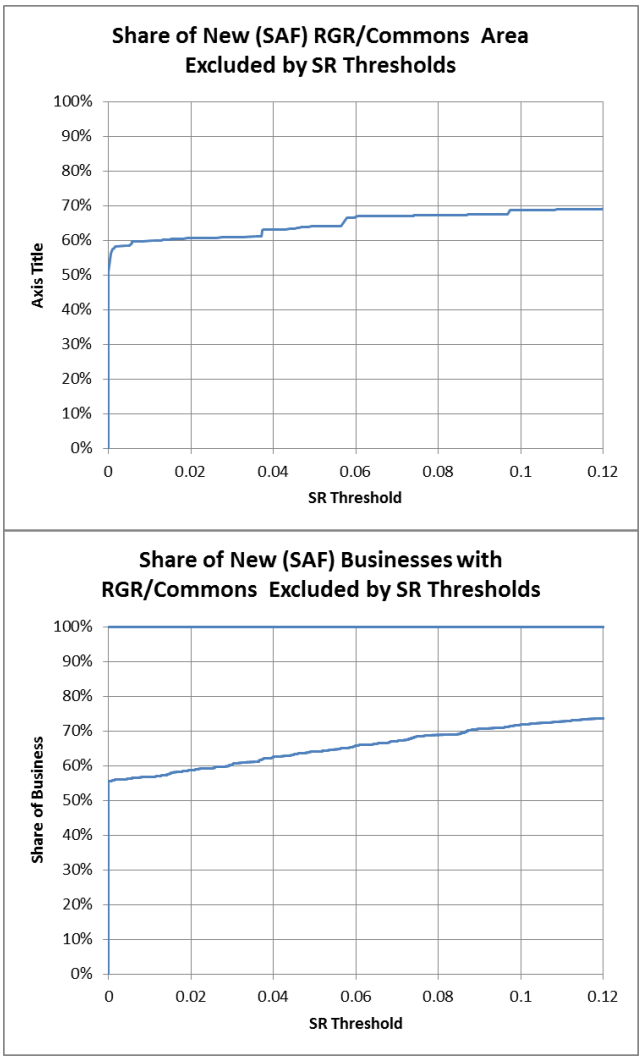
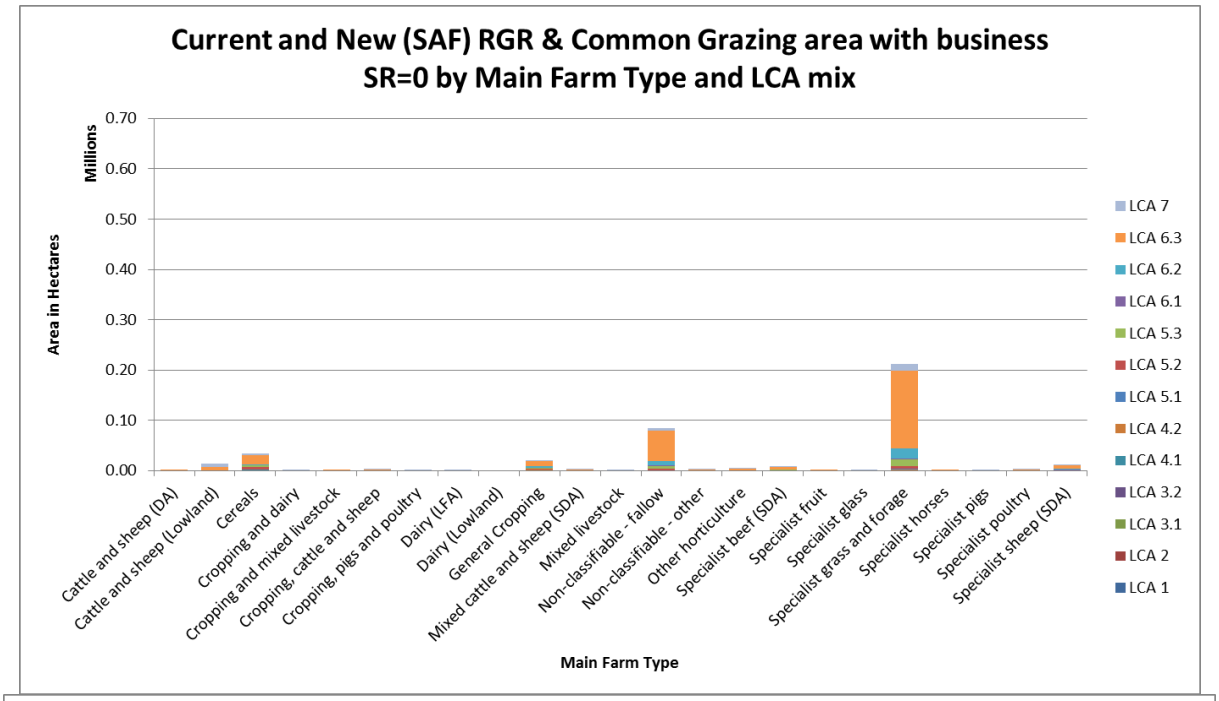
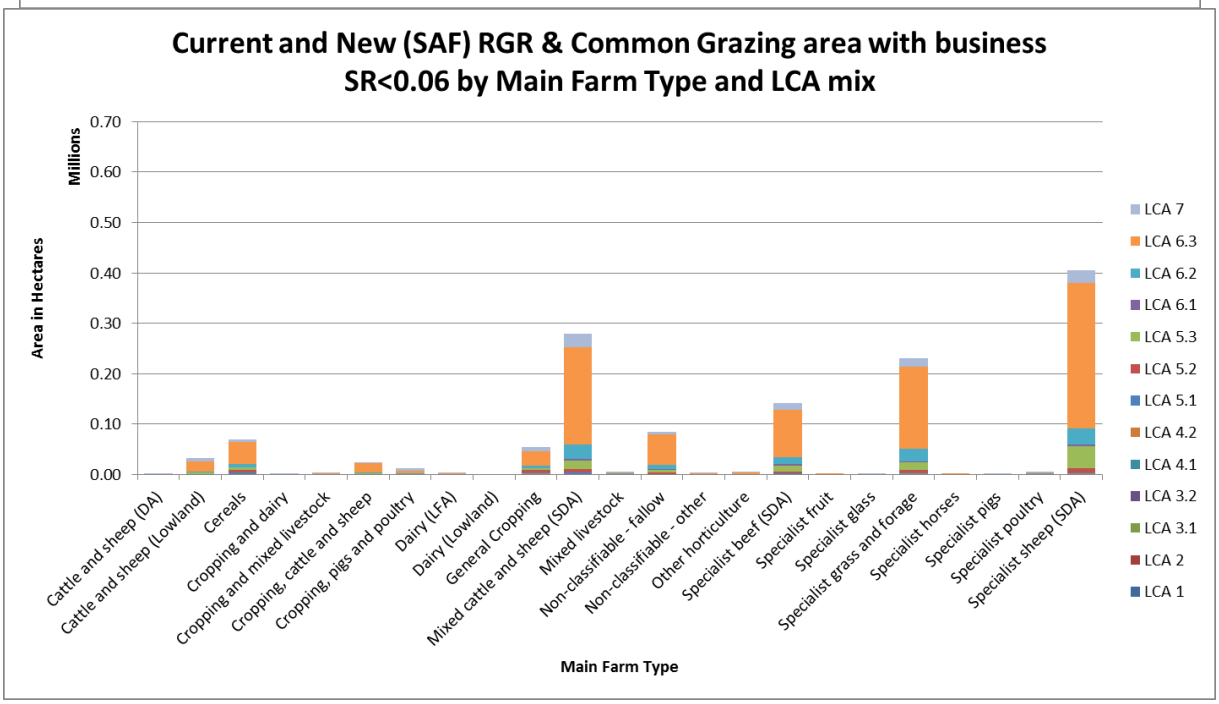


Figure 2

3.5.5 Characteristics of excluded areas

It is possible to make some limited interpretation of the nature of the businesses being affected by the minimum activity requirements as implemented here and with the caveats noted. Figure 3 below compares the areas excluded per farm type (main) for three minimum activity thresholds, 0.0 lsu/ha, 0.06 lsu/ha and 0.12 lsu/ha. Comparing the first two graphs (0.0 lsu/ha and 0.06 lsu/ha) it can be seen that for the lower value the types of business experiencing exclusions are in the main specialist grass and forage and non-classifiable (fallow) whereas for the higher threshold specialist sheep, mixed sheep and cattle and specialist beef businesses are affected. In the main the quality of land being excluded is the least productive (LCA 6.3 and 7) but for the higher threshold there is some improvable land also excluded (LCA class 5.3 and 5.2). Note that, as referred to previously, there are challenges in interpreting specialist grass and forage businesses in all cases as unstocked. This may be an artefact of how livestock numbers are assigned to the land area, but could also indicate businesses where no agricultural activity is taking place. Increasing the threshold value to 0.12 lsu/ha does not change the balance of the business types being affected but sees the overall area that could be affected increase.


Current and New (SAF) RGR & Common Grazing area with business SR=0 by Main Farm Type and LCA mix
Millions
Area in Hectares
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Cattle and sheep (DA)
Cattle and sheep (Lowland)
Cereals
Cropping and dairy
Cropping and mixed livestock
Cropping, cattle and sheep
Cropping, pigs and poultry
Dairy (LFA)
Dairy (Lowland)
General Cropping
Mixed cattle and sheep (SDA)
Mixed livestock
Non-classifiable - fallow
Non-classifiable - other
Other horticulture
Specialist beef (SDA)
Specialist fruit
Specialist glass
Specialist grass and forage
Specialist horses
Specialist pigs
Specialist poultry
Specialist sheep (SDA)
Main Farm Type
LCA 7
LCA 6.3
LCA 6.2
LCA 6.1
LCA 5.3
LCA 5.2
LCA 5.1
LCA 4.2
LCA 4.1
LCA 3.2
LCA 3.1
LCA 2
LCA 1


Current and New (SAF) RGR & Common Grazing area with business SR<0.06 by Main Farm Type and LCA mix
Millions
Area in Hectares
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Cattle and sheep (DA)
Cattle and sheep (Lowland)
Cereals
Cropping and dairy
Cropping and mixed livestock
Cropping, cattle and sheep
Cropping, pigs and poultry
Dairy (LFA)
Dairy (Lowland)
General Cropping
Mixed cattle and sheep (SDA)
Mixed livestock
Non-classifiable - fallow
Non-classifiable - other
Other horticulture
Specialist beef (SDA)
Specialist fruit
Specialist glass
Specialist grass and forage
Specialist horses
Specialist pigs
Specialist poultry
Specialist sheep (SDA)
Main Farm Type
LCA 7
LCA 6.3
LCA 6.2
LCA 6.1
LCA 5.3
LCA 5.2
LCA 5.1
LCA 4.2
LCA 4.1
LCA 3.2
LCA 3.1
LCA 2
LCA 1

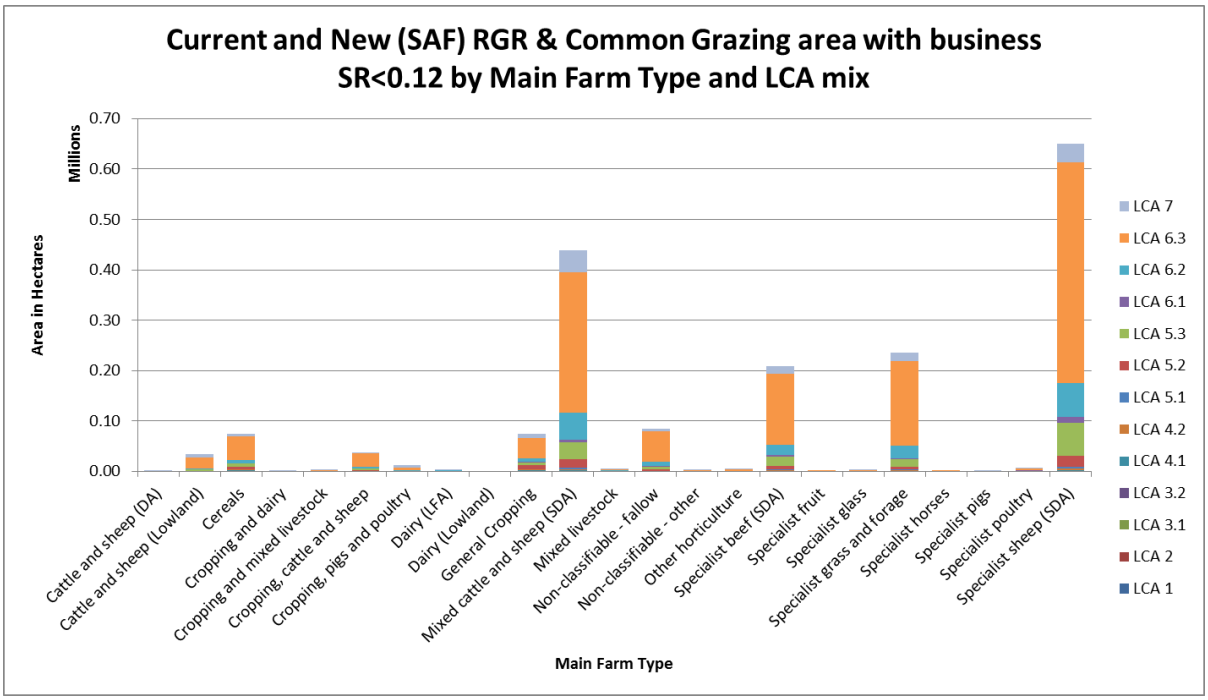

Current and New (SAF) RGR & Common Grazing area with business SR<0.12 by Main Farm Type and LCA mix
Millions
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
Area in Hectares
Cattle and sheep (DA)
Cattle and sheep (Lowland)
Cereals
Cropping and dairy
Cropping and mixed livestock
Cropping, cattle and sheep
Cropping, pigs and poultry
Dairy (LFA)
Dairy (Lowland)
General Cropping
Mixed cattle and sheep (SDA)
Mixed livestock
Non-classifiable - fallow
Non-classifiable - other
Other horticulture
Specialist beef (SDA)
Specialist fruit
Specialist glass
Specialist grass and forage
Specialist horses
Specialist pigs
Specialist poultry
Specialist sheep (SDA)
Main Farm Type
LCA 7
LCA 6.3
LCA 6.2
LCA 6.1
LCA 5.3
LCA 5.2
LCA 5.1
LCA 4.2
LCA 4.1
LCA 3.2
LCA 3.1
LCA 2
LCA 1

Figure 3