

Designation of Areas of Natural Constraint

1. The purpose of this paper is to provide an update on the process of designation of areas of natural constraint. Four maps are provided which show the agricultural land that may be defined as areas of natural constraint under the new Rural Development Regulation. The paper will also help inform the development of stakeholder views around future support framework for these areas as part of the on-going CAP Pillar I (Direct Payments) consultation exercise.
2. The maps contained within this document may be subject to further change when all formal EU legal texts and Commission guidance documents have been finalised. The final maps produced will be subject to approval by the EU Commission.

Background

3. The CAP Reform agreement includes a requirement to designate areas of natural constraint (ANC), replacing the existing “Less Favoured Areas” designation. This requirement has been developed by the Commission as part of a response to a European Court of Auditors report that found inconsistencies and different approaches to the identification and mapping of Less Favoured Areas across Europe. The new approach to designation is a consistent, EU-wide methodology that identifies constrained land based on a set of natural (biophysical) criteria and thresholds (i.e. soil, slope and climate). There are eight biophysical criteria in total. Article 33 and Annex II of the new Rural Development Regulation provides the detail on how to apply this methodology and achieve a primary map (**see Annex B**). The Regulation also requires Member States to fine tune the primary map to remove areas where the constraint has been overcome by investment or economic activity. The EU Commission has provided guidance to Member States (MS) on a range of approaches to be used to fine tune and this guidance is currently under discussion with MS. Member States have up until 1 January 2018 to designate areas of natural constraint at the latest (though earlier designation is possible).

4. The Less Favoured Area designation in Northern Ireland currently encompasses approximately 720,000ha of eligible agricultural land, of which approximately 440,000ha is designated as severely disadvantaged area (SDA) and approximately 280,000ha is designated as disadvantaged area (DA). This designation has remained unchanged since 1984.

Mapping methodology

5. Designation of ANC involves applying eight biophysical criteria based on soil, climate and slope characteristics to eligible agricultural land. Areas covered by at least one of the biophysical criteria are then mapped to a recognisable administrative unit such as a ward (LAU 2 level¹) or at the level of a clearly delineated local unit which covers a single clear contiguous geographical area with a definable economic and administrative identity (e.g. a townland). If the administrative unit has more than 60% of its eligible agricultural area meeting at least one of the biophysical criteria, it is primarily mapped as an area of natural constraint. The next step required is to undertake a fine tuning exercise to remove those administrative units where it can be demonstrated that the constraint has been overcome. This provides a final map. The guidance issued from the EU Commission provides options for fine tuning and requires Member States to provide evidence that the fine-tuning is complete and carried out correctly with adequate criteria.

Consideration of different approaches to mapping

6. Designation of ANC within the Member State will be undertaken at a regional level and form part of the approval of the new Rural Development Programme 2014-2020 either at the beginning of the Programme or as a modification to the Programme at a later date. The Department has explored the use of alternative administrative units (i.e. electoral ward and townlands) and fine tuning methods to define areas of natural constraint. A summary of the analysis to date is provided below.

¹ LAU 2 level = local administrative unit, defined by Eurostat, consisting of municipalities or equivalent units in the 28 EU Member States.

7. Local administrative units: The Rural Development Regulation provides the option to designate the administrative unit according to townlands as well as electoral wards. A townland is a recognised division of land used in Ireland (both north and south), believed to be of Gaelic origin. A townland is the smallest officially defined geographical division of land, smaller than a ward and county. There are 582 wards in Northern Ireland and 9,569 townlands. The ward boundaries² change over time, as a result of reviews by the Boundary Commission, but townland boundaries are largely fixed. Townlands may provide more appropriate administrative boundaries when designating areas of natural constraint as they are more homogenous in nature due to their smaller size, i.e. they reflect the natural constraints of the land better than electoral wards. However, using townlands as the designation does create a significant number of isolated “islands” and “inverted islands” within the draft maps. Using wards as the designation creates a more uniform coverage with fewer islands of designation.

8. Use of Super Output Areas rather than electoral wards as the basis of designation has also been explored. Super Output Areas (SOAs) are single, clear, contiguous geographical areas designed by Northern Ireland Statistical Research Agency (NISRA), and used primarily for the production of multiple deprivation maps. They can be equivalent to, larger than, or sub-divisions of wards and are designed to ensure they are as similar as possible in terms of population size (average population of 2,000 people). The current 582 electoral wards are split into 890 SOAs. The rural SOAs have largely similar boundaries to the current electoral wards. They are not recognised administrative units, but are simply statistical units with no legal basis. Therefore, they do not meet the requirement of “a clearly delineated local unit which covers a clear contiguous area with a definable economic and administrative identity”. Moreover, given the boundary similarities between rural SOAs and rural electoral wards, it can be concluded that in practical terms, there would be no significant difference between the maps developed using SOAs or wards as the basis of designation.

² Ward boundaries have been redrawn and will come into effect with the local council election planned for 2014. Ward numbers will reduce from 582 to 462. For this exercise current ward boundaries, agreed in 1992, were used.

9. Fine tuning approaches: Fine tuning is undertaken for the purpose of excluding areas in which the significant natural constraints have been overcome by investments or by economic activity. The EU Commission has issued guidance on the application of fine tuning – how to choose indicators, how to apply them, what thresholds to use, where to retrieve data, etc. The guidance splits the indicators into two sections; 1) overcoming of constraints due to investments (irrigation, artificial drainage or greenhouses) and 2) economic activity (standard output, average yield of a dominant crop, livestock density, tree density, normal land productivity or farming systems and production methods).

10. The application of fine tuning using indicators based on overcoming constraints due to investments is not relevant in a Northern Ireland context. Northern Ireland has no significant irrigated land and although artificial drainage has been a feature of farming in Northern Ireland for many years and a lot of land will have been drained at some stage, there are no comprehensive records to determine whether drainage systems exist and whether they are functional. Northern Ireland also does not have greenhouse cover at a significant level to contribute towards fine tuning.

11. Fine tuning using economic indicators must be undertaken to remove land where its natural constraint has been overcome. The most comprehensive and complete data set that is held by DARD in respect of economic activity on farms is the standard output (SO) indicator. SOs are calculated as reference values for a variety of farm products. The SO is the average monetary value (per ha or head) of agricultural output based on regional farm-gate prices over a 5 year period. For the purposes of this exercise, the most up to date SO data set available for Northern Ireland was used; the SO 2007. This was calculated using the average of 2005, 2006, 2007, 2008 and 2009 prices. The SO data set held by DARD, and used in the fine tuning exercise, reflects all agricultural activity in Northern Ireland.

12. EU Commission guidance suggests that 80% of the SO regional average should be used as the threshold for fine-tuning (i.e. administrative units with a SO per hectare that is above 80% of the regional average should be removed from the

designated constrained area). Given that the majority of land in Northern Ireland is defined as constrained under the primary mapping stage, it is believed that to fine tune out land that has more than 80% of the regional average SO would result in some land being excluded that is still in effect “constrained”. This is because when calculating the SO average, a significant amount of constrained land data are included in the calculation. This is known as a “recursive effect”. In order to minimise this, the Department has used fine tuning at a 100% threshold. If the 80% threshold was used, the effect would be to fine tune out significantly more land. This paper includes maps at both the 100% and 80% fine tuning thresholds to show the impact of these alternative approaches. Clearly, a robust case will be needed to defend the use of fine tuning at 100% as the best approach in a Northern Ireland context.

Presentation of the maps

13. All maps have been produced by AFBI Agri Environment Branch using the criteria set by the new Rural Development Regulation and the draft guidelines produced by the EU Commission Joint Research Council. Agricultural land has been identified using the land parcel identification system (LPIS) data (2013) and current ward and townland boundaries have been used as the local administrative units.
14. Over one million hectares of eligible agricultural land was assessed using the eight biophysical indicators, including approximately 36,000ha of common land. Once a map was produced showing land designated by at least one biophysical criteria, a further cumulative map of agricultural area designated was produced aggregated to the 60% administrative unit, thus identifying those units where 60% or more of the agricultural area exhibits some sort of natural constraint.
15. The second stage was the application of fine tuning using the standard output methodology. SOs were calculated and divided by the agricultural area to provide an average standard output of €1499/ha for Northern Ireland as a whole. For the 100% fine tuned maps, the average SO/ha was calculated at ward level and each ward was assigned an indicator to show whether it was above or below the Northern Ireland average. This was then applied to the primary stage

designation map, and wards with a SO above the regional average were fine tuned out. This fine-tuning process removed approximately 200,000 ha of land, leaving a final ANC designation of approximately 490,000ha (**Annex A, Map 1**).

16. When the 80% fine tuning threshold is applied, the threshold is €1199/ ha. The effect of using this would be to fine tune out significantly more land, leaving a final designation of approximately 350,000ha (**Annex B, Map 2**).

17. It is not possible to calculate SO data at townland level due to the errors and anomalies this would create (e.g. the location of the farm business and the associated SO may be associated with one townland, but a significant proportion of the agricultural area of that holding may be located in a different townland). Therefore, as fine tuning using standard output can be applied only at ward level, the use of townlands for the primary mapping stage will exclude further areas from certain wards that would otherwise have been designated but cannot add back parts of wards that are fine tuned out. When ward level fine tuning (using the 100% threshold) was applied to the townland map, it resulted in a final designation of approximately 480,000ha (**Annex C, Map 3**). When fine tuning was applied using the 80% threshold, approximately 340,000ha was designated (**Annex D, Map 4**).

Next steps

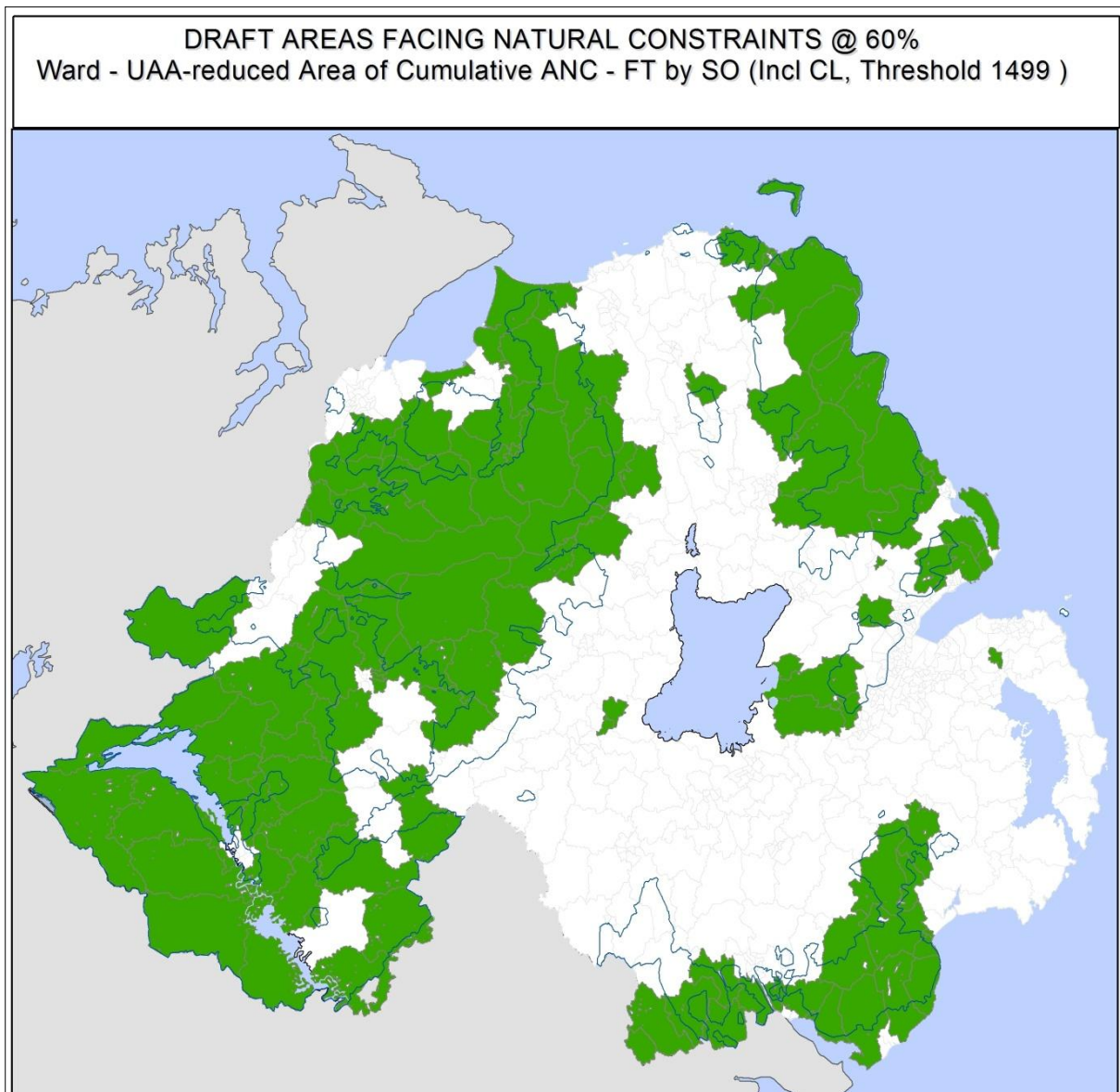
18. Further work exploring the use of fine tuning methods is continuing, although at this stage, they are not expected to alter the overall designation to any great extent. Final maps using the most up to date data will need to be developed prior to implementation and when all formal legal texts and guidance have been finalised. No decision has been taken on the timescale for implementation. However, the new Rural Development Regulation makes it clear that the new designation must be in place by 1 January 2018 at the latest.

Policy and Economics Division

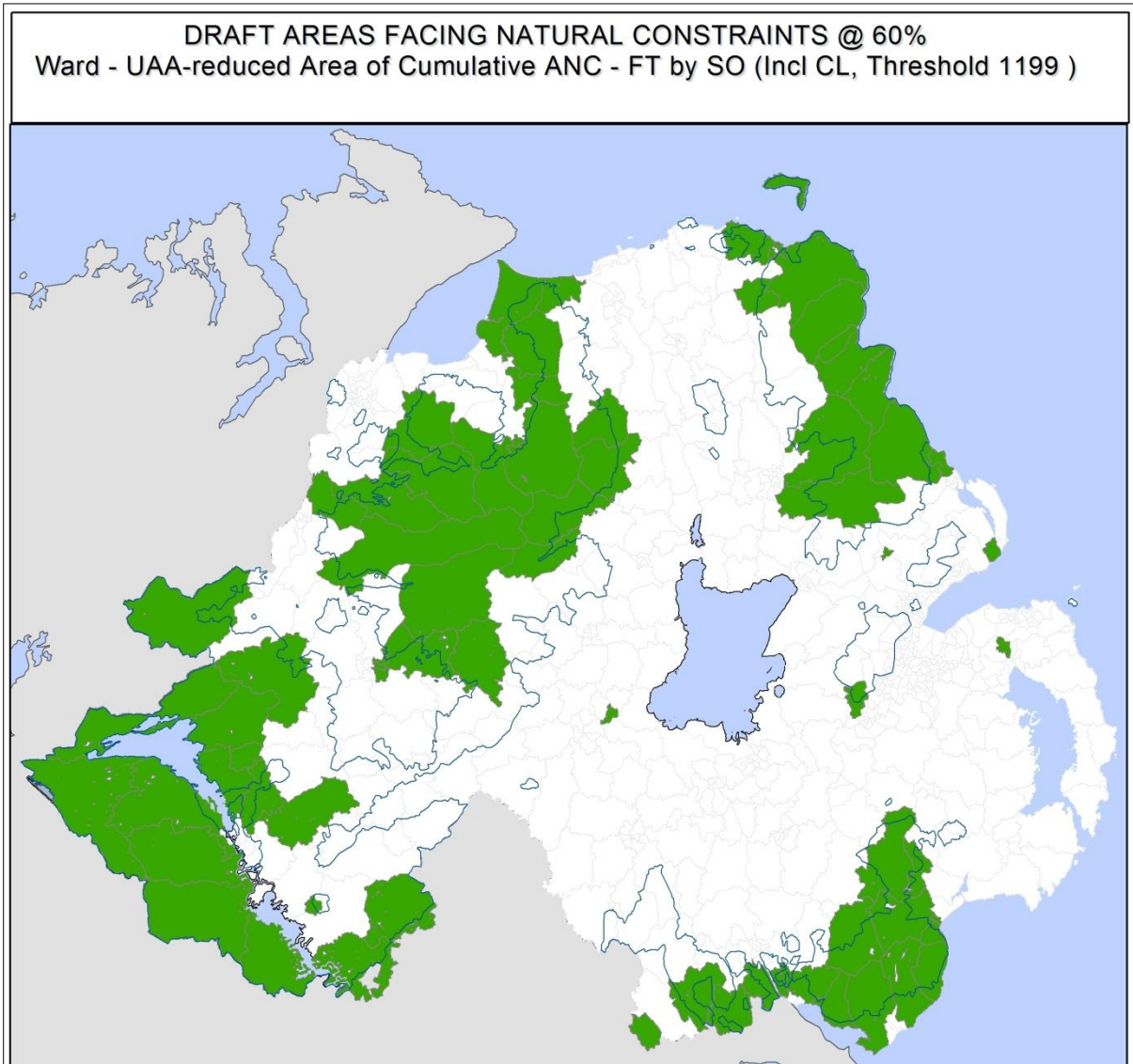
16 December 2013

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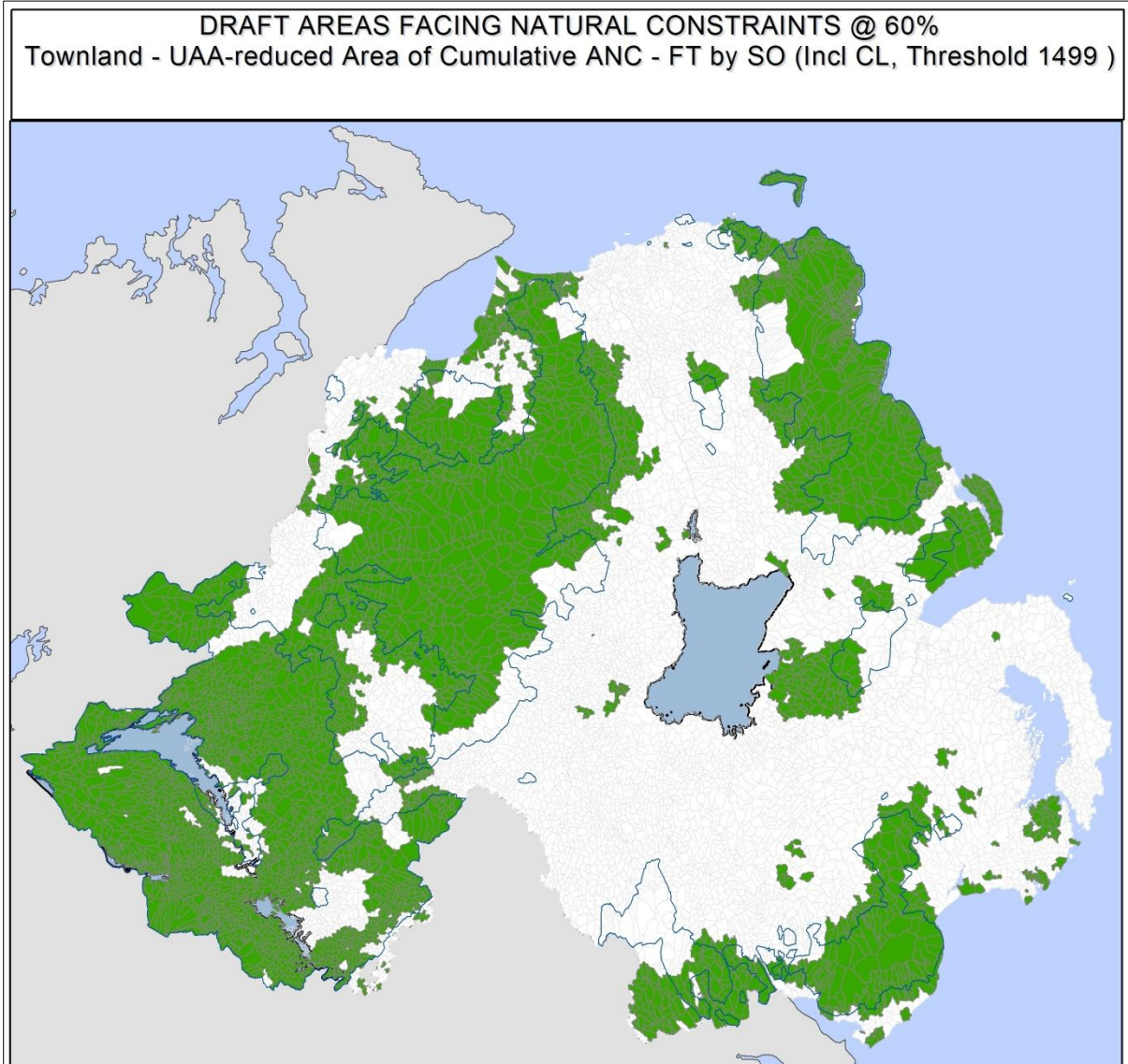
Map 1. Draft Area of Natural Constraint at ward level fined tuned using SO threshold at 100% (blue line is current SDA boundary)



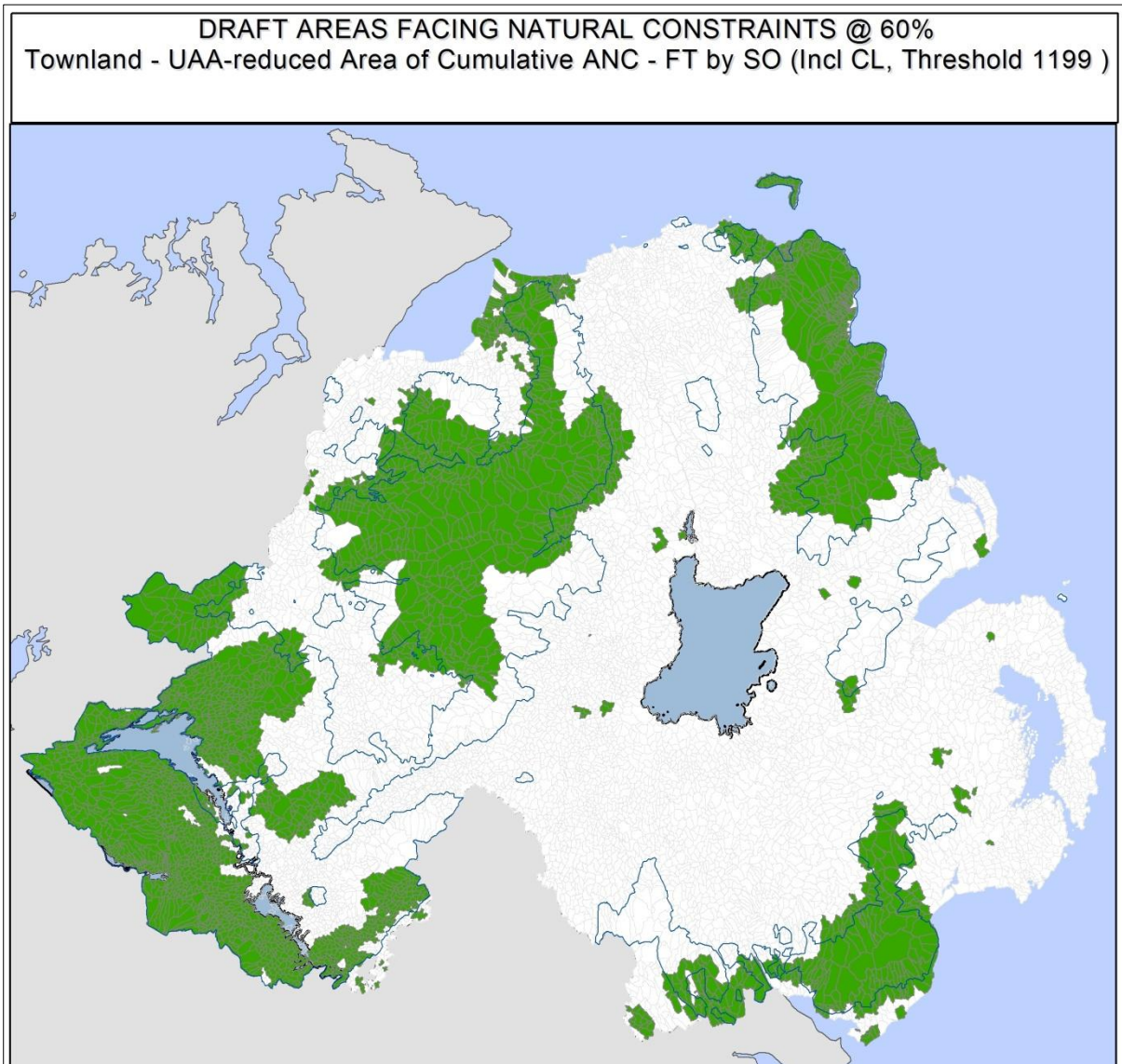
Map 2. Draft Area of Natural Constraint at ward level fined tuned using SO threshold at 80% (blue line is current SDA boundary)



Map 3. Draft Area of Natural Constraint at townland level fined tuned using SO threshold at 100% (blue line is current SDA boundary)



Map 4. Draft Area of Natural Constraint at townland level fined tuned using SO threshold at 80% (blue line is current SDA boundary)



Extract from the new draft Rural Development Regulation

Article 33

Designation of areas facing natural and other specific constraints

1. Member States shall, on the basis of paragraphs 2, 3 and 4, designate areas eligible for payments provided for in Article 32 under the following categories:
 - (a) mountain areas;
 - (b) areas, other than mountain areas, facing significant natural constraints; and
 - (c) other areas affected by specific constraints.
2. In order to be eligible for payments under Article 32, mountain areas shall be characterized by a considerable limitation of the possibilities for using the land and by an appreciable increase in production costs due to:
 - (a) the existence, because of altitude, of very difficult climatic conditions, the effect of which is substantially to shorten the growing season;
 - (b) at a lower altitude, the presence over the greater part of the area in question of slopes too steep for the use of machinery or requiring the use of very expensive special equipment, or a combination of these two factors, where the constraints resulting from each taken separately **are** less acute but the combination of the two gives rise to an equivalent constraints. Areas north of the 62nd parallel and certain adjacent areas shall be regarded as mountain areas.
3. In order to be eligible for payments under Article 32, areas, other than mountain areas, shall be considered as facing significant natural constraints if, at least **60%** of the **agricultural area** meets at least one of the criteria listed in Annex II at the threshold value indicated.

Respect of **those conditions** shall be ensured at the level of local administrative units ("LAU 2" level) **or at the level of a clearly delineated local unit which covers a single clear contiguous geographical area with a definable economic and administrative identity.**

When delimiting the areas concerned by this paragraph, Member States shall undertake a fine-tuning exercise, based on objective criteria, with the purpose of excluding areas in which significant natural constraints, in accordance with the first subparagraph have been documented but have been overcome by investments or by, economic activity, **or by evidence of normal land productivity, or if production methods or farming systems offset the income loss or added costs referred to in Article 32(1).**

4. Areas other than those referred to in paragraphs 2 and 3 shall be eligible for payments under Article 32 if they are affected by specific constraints and where land management should be continued in order to conserve or improve the environment, maintain the countryside and preserve the tourist potential of the area or in order to protect the coastline.

Areas affected by specific constraints shall comprise farming areas **within** which the-natural **production** conditions **are similar** and their total extent shall not exceed 10% of the area of the Member State concerned.

In addition, areas may also be eligible for payments under this paragraph, where:

- ***at least 60% of the agricultural area meets at least two of the criteria listed in Annex II each within a margin of not more than 20% of the threshold value indicated, or***
- ***at least 60% of the agricultural area is composed of areas meeting at least one of the criteria listed in Annex II at the threshold value indicated, and areas meeting at least two of the criteria listed in Annex II each within a margin of not more than 20% of the threshold value indicated.***

Respect of these conditions shall be ensured at LAU2 level or at the level of a clearly delineated local unit which covers a single clear contiguous geographical area with a definable economic and administrative identity. When delimiting areas concerned by this subparagraph, Member States shall undertake a fine-tuning exercise as described in Article 33(3). Areas considered eligible pursuant to this subparagraph, shall be taken into account for calculating the 10% limit referred to in the second subparagraph.

By way of derogation, the first sub-paragraph shall not apply to Member States the entire territory of which was considered as an area facing specific handicaps under Regulations 1698/2005 and 1257/1999.

5. Member States shall attach to their rural development programmes:
- (a) the existing or amended delimitation pursuant to paragraphs 2 and 4;
 - (b) the new delimitation of the areas referred to in paragraph 3.

ANNEX II

Biophysical criteria for the delimitation of areas facing natural constraints

CRITERION	DEFINITION	THRESHOLD
CLIMATE		
Low Temperature *	Length of Growing Period (number of days) defined by number of days with daily average temperature > 5 °C (LGP _{t5}) OR	≤ 180 days
	Thermal-time sum (degree-days) for Growing Period defined by accumulated daily average temperature > 5 °C.	≤ 1500 degree-days
Dryness	Ratio of the annual precipitation (P) to the annual potential evapotranspiration (PET)	P/PET ≤ 0.5
CLIMATE AND SOIL		
Excess Soil Moisture	Number of days at or above Field capacity	≥ 230 days
SOIL		
Limited Soil Drainage *	Areas which are water logged for significant duration of the year	Wet within 80cm from the surface for over 6 months, or wet within 40cm for over 11 months OR Poorly or very poorly drained soil OR Gleyic colour pattern within 40cm from the surface

Unfavourable Texture and Stoniness *	Relative abundance of clay, silt, sand, organic matter (weight %) and coarse material (volumetric %) fractions	≥ 15% of topsoil volume is coarse material, including rock outcrop, boulder OR
		-texture class <i>in half or more (cumulatively) of the 100 cm soil surface is</i> sand, loamy sand defined as: silt% + (2 x clay%) ≤ 30% OR
		Topsoil texture class is heavy clay (≥ 60% clay) OR
		Organic soil (organic matter ≥ 30%) of at least 40cm OR
		Topsoil <i>contains 30% or more</i> -clay, and <i>there are</i> vertic properties within 100cm of the soil surface
Shallow Rooting Depth	Depth (cm) from soil surface to coherent hard rock or hard pan.	≤ 30cm
Poor Chemical Properties *	Presence of salts, exchangeable sodium, excessive acidity	Salinity: ≥ 4 deci-Siemens per meter (dS/m) <i>in topsoil</i> OR
		Sodicity: ≥ 6 Exchangeable Sodium Percentage (ESP) <i>in half or more (cumulatively) of the 100 cm soil surface layer</i> OR
		Soil Acidity: pH ≤ 5 (in water) <i>in topsoil</i>

TERRAIN		
Steep Slope	Change of elevation with respect to planimetric distance (%).	$\geq 15\%$

*** Member States need only check fulfilment of this criterion against those of the thresholds that are relevant to the specific situation of an area**