

LPIS Quality Assurance Framework

Based on IES/H04/2016/21736

ANNEX IX

Technical guidance on **LPIS population for LPIS QA inspection (TG population)** **LPIS executable test suite, version 6.1** **July 2016**

Release notes (changes/updates from version v5.3 / v6.0)

- 1.1. This is an original version, it accommodates the information needs resulting from the introduction of the classification correctness test.
- 1.2. The other content of this [document](#) is mostly based the first 2 data chapters of the 2015 ETS v6.0 guidance
 - 1.2 ETS_Scope
 - 1.3 Data Structure: preparing reference parcel data
- 1.3. This re-editing of the population generation procedures has no impact on the TG ETS inspection procedures. Additional information merely prevents identified scoping issues that cannot be properly addressed by the TG ETS.
- 1.4. [The scope \(3.4 and 3.5\) has been revised to accommodate the needs associated with the separate reporting of the classification correctness test.](#)
- 1.5. [The element "referenceArea" was replaced by "etsReferenceArea" to accommodate the total amount of agricultural \[area\]\(#\) of the holding, regardless whether that land is declared for BPS/SAPS or other uses.](#)
- 1.6. [The data structure has been extended with a Boolean flag to indicate complete availability or not of the stated agriculture area as recorded in the LPIS for area based direct payments.](#)
- 1.7. [Data delivery has been extended \(8.3-8.6\) with the details and milestones of the delivery procedure.](#)

Further changes/update form the feedback receive from EU MS after IACS workshop

- 1.8. [Table of point 4.8: 4 decimal precision is added also for the 3 agriculture land cover categories.](#)
- 1.9. [Point 4.3: Number of elements of the LpisPointZeroState correctly changed to 7](#)
- 1.10. [Point 4.6: Footnote is added to clarify how to report non-agriculture areas that can represent eligible hectares](#)

2. Introduction

- 2.1. The quality assurance framework of LPIS is an integral part of LPIS management and upkeep processes. In this framework, the LPIS of a MS/Region is regarded as a system under test (SUT), and the testing procedures are under shared management by EC services and Member States as laid down by Article 6 of (EU) Regulation No 640/2014.
- 2.2. The shared management implies three distinct data exchanges between Member States and EC services as illustrated in figure 1:
 - Information about the System Under Test (SUT), described in the Model Test Suite or TG MTS. It is delivered as the MTS reporting package.
 - An extract of the population of LPIS reference parcels to act as the basis of sampling. It is delivered in the file lpisPointZeroState.gml.
 - The inspection records that result from performing the data value tests described in TG ETS on the sampled items. This set is delivered as the ETS reporting package.

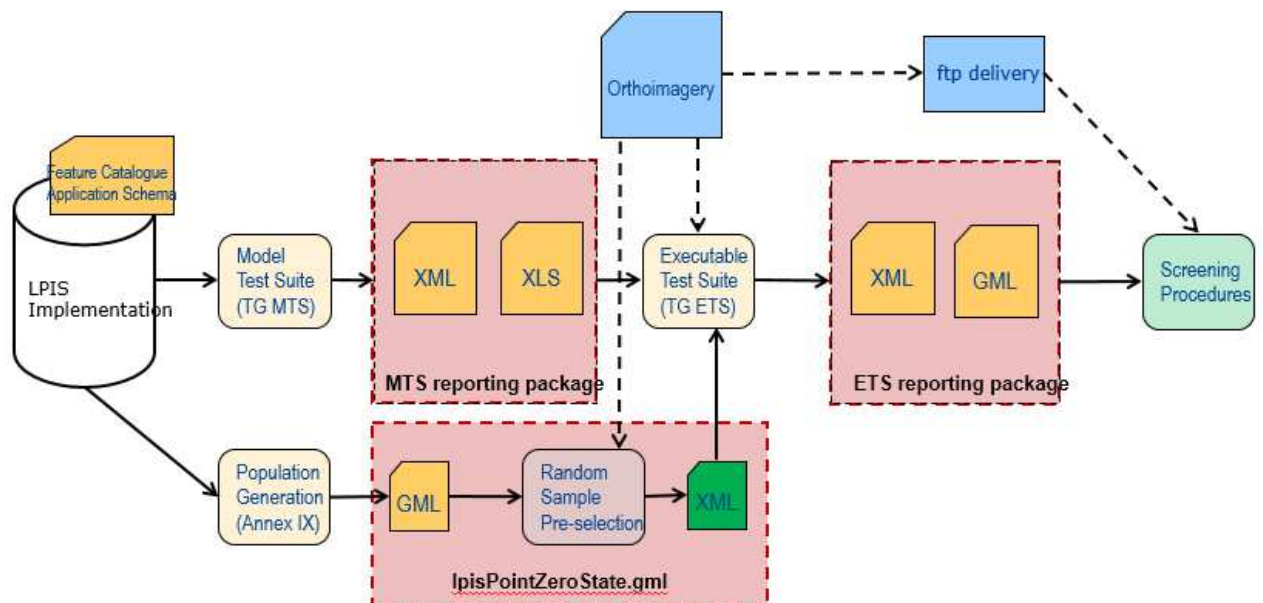


Figure 1: Main LPIS QA data exchange packages through the LPIS QA portal

- 2.3. This technical guidance describes the data product specification of the lpisPointZeroState.gml file that holds a population of reference parcels that will be subject to sampling.

3. Data scope

Reference parcel as item for inspection

- 3.1. A reference parcel is “a geographically delimited area retaining a unique identification as registered” that contains “a unit of land representing agricultural area” and where appropriate, includes other eligible hectares. Agricultural area means “taken up by arable land, permanent grassland and permanent pasture, or permanent crops”.
- 3.2. From these definitions follows that any reference parcel, for the purpose of inspection of ETS, must include at least one occurrence of agricultural **land**. Landscape features, although representing eligible hectare resulting from their adjacency to agricultural **land**, should not be submitted as an individual reference parcel even if they are implemented as a standalone polygons in the SUT. For the purpose of **each annual LPIS quality assessment**, SUT where IXIT feature C (**integrating eligible hectares from GAEC landscape features**) yielded “complementary” LF implementation shall follow the adjudication procedure below to compile the reference parcel in scope and to ensure sizeable and measureable item for inspection. In the context of this document it is assumed that the temporary adjudication of landscape features has been performed unless stated differently.
- 3.3. Furthermore, the definitions relate to “a unit of land representing agricultural area”, which is not necessarily the unit of “identification as registered” and state that a reference parcel “is measurable, enables the unique and unambiguous localisation ... and as a principle, is stable in time”. MS are invited to reflect how these considerations that constitute the foundation of all data value tests of TG ETS, are implemented in their SUT.

Relevance for the assessment year

- 3.4. For the LPIS QA only the first pillar of IACS is currently considered. In particular, any reference parcel that is **part or can be part of a holding applying for first pillar area based payments (BPS/SAPS)** shall be subject to inspection. This translates the scope into **reference parcels** that:
 - were declared during the previous direct payment application year for **either 1st pillar area support or for other uses OR**
 - **present** “eligible area” **available for payment**; i.e. can appear on the pre-printed form or re-enter an application for 1st pillar support without triggering an additional verification procedure **OR**
 - **are the object of a declared exclusion from 1st pillar aid (previous year) in favour of 2nd pillar support (in the current year).**
- 3.5. Correct execution of this combined query on an appropriately implemented LPIS should result that this “scope of the LPIS QA”, does **NOT include reference parcels holding agricultural land, that are not available for direct aid applications** as their standalone size is below the minimum threshold established in the national/regional eligibility profile.
- 3.6. Pending on the reference parcel design (IXIT feature A), the resulting set of reference parcels in scope is therefore not necessarily the complete set of “blocks” that are managed in the “LPIS-layer” of the GIS-environment. In many cases it will be a subset.

Homogenous lots

- 3.7. An assessment based on sampling implies and requires a homogenous population of reference parcels. There are situations that clearly contradict these requirements to constitute a single "sampling lot" within the nominal territory of the LPIS:
 - Simultaneous occurrence of different RP-design or eligibility profiles
 - Simultaneous occurrence of different update rules
- 3.8. If any of the above conditions occur, most likely identified via [the presence of several possible](#) answers to the IXIT polychotomy, MS are invited to subdivide the nominal territories in smaller parts and
 - prepare separate lots for inspection; for each lot, the model test suite should be performed and a separate `lpisPointZeroState` produced.
 - Inform the EC services, so appropriate imagery can be obtained
- 3.9. Although inspecting and analysing two or more sub-lots will require more resources than testing the combined set of heterogeneous reference parcels, it is the only to obtain meaningful, reliable and useful assessment results.

4. Data structure

- 4.1. The key characteristics of each references parcel are described in the combination of its identification, location and reference area values. This limited set of attributes provides all information the EC services need to verify the integrity of the sampling to inspection process in a given assessment year and to monitor the evolution of the population between assessment years.
- 4.2. This verification and monitoring is essential to help Member States prevent scoping problems.
- 4.3. The resulting IpiPointZeroState holds seven elements; after introduction of the classification correctness test, area values of arable land, permanent grassland and permanent crops have been introduced.
- 4.4. Classification correctness verifies the threshold for greening obligations and applies to the holding as a whole. This extends the object of ETS inspection to all agricultural area of the holding, regardless whether that land is declared for BPS/SAPS or other uses. The value tested (formerly the field "ReferenceArea") should now reflect all available agricultural area as defined in Article 4(1)(e) of EC 1307/13, within the reference parcel.
- 4.5. To avoid confusion, the former element <cap:ReferenceArea> in the IpiPointZeroState is replaced by <cap:etsReferenceArea> to make it distinct from the element ReferenceArea defined in the MTS, referring to the maximum area for which payment can be made. The value in <cap:etsReferenceArea> is directly derived from the values stored in the corresponding attributes in the SUT as reported in the executable test "checkAgriculturalLandAreaValue" of the MTS. This synonym is introduced for ETS purposes only.
- 4.6. The IpiPointZeroState includes a Boolean flag to indicate whether the available agricultural area reported in the <cap:etsReferenceArea> for that reference parcel represents the maximum eligible area for direct aid payment or not; If "True", cap:etsReferenceArea> for the RP is identical to <cap:reference area>¹.
- 4.7. In previous ETS versions, only RP that were involved in the area payment (utilized for SAPS or active entitlements for BPS) were in scope, the Boolean flag thus indicates which parcels would have belonged to the previous, more restrictive scope and only these items will be inspected for eligibility related tests.
- 4.8. Note that, as the <etsReferenceArea> can hold contributions from landscape features, the sum of the three partial areas must be less or equal than the etsReferenceArea.

¹ For former agriculture area converted to forest or NATURA 2000 that can represent eligible hectares (Art. 32(2)(b) of EC 1307/13), etsReferenceArea will be zero, while the Boolean flag will be FALSE.

Element name	Definition	Description
<cap:geometryProperty>	Spatial representation of the reference parcel as referred to in Art.5 of (EU) R 640/2014.	Geometry of reference parcel, representing its geographical position. For this entry the representation GM_Point is required.
<cap:rpID>	Unique thematic ID of reference parcel referred to in Article 70 of Regulation (EU) No 1306/2013.	Nation-wide unique alphanumerical thematic identification code of reference parcel (thematic identifier or GUID as defined by the MTS model).
<cap:etsReferenceArea>	Value for the quantification of agricultural area as referred to in Art. 4 of (EU) R 1307/2013.	Officially known area taken up by arable land, permanent grassland and permanent pasture or permanent crops (and/or other features eligible for payment) for which an aid application can be made or which can be declared as part of the holding. NOTE 1: Reference area value shall be expressed in hectares with 4 decimals.
<cap:arableLandArea>	Point 2.1.2 of LPIS guidance (DSCG/2014/33 – FINAL REV 2)	Officially known area of the arable land within the RP NOTE 1: Reference area value shall be expressed in hectares with 4 decimals.
<cap:permanentCropArea>	Point 2.1.2 of LPIS guidance (DSCG/2014/33 – FINAL REV 2)	Officially known area of the permanent grassland within the RP NOTE 1: Reference area value shall be expressed in hectares with 4 decimals.
<cap:permanentGrasslandArea>	Point 2.1.2 of LPIS guidance (DSCG/2014/33 – FINAL REV 2)	Officially known area of the permanent crop within the RP NOTE 1: Reference area value shall be expressed in hectares with 4 decimals.
<cap:etsReferenceAreaAvailability>	Boolean related to availability for payment (TG IXIT feature G)	If etsReferenceArea = MEA, True else False

5. Data capture of a reference parcel with complementary landscape features

- 5.1. When the SUT GIS has implemented landscape features, protected under GAEC, as a separate reference parcel with standalone identification and polygon (IXIT revealed “complementary” landscape feature design), that LF polygon not containing agricultural **land** shall not be presented as a standalone item of inspection in the context of the LPIS QA assessment.
- 5.2. Performing the ETS inspection with such individual landscape features as items for inspection would violate the requirements of homogeneity of the lot and could hence jeopardize the reliability and usefulness of the assessment results.
- 5.3. The purpose of the procedure is to uniquely and temporarily adjudicate all eligible hectares of the landscape features to one or more SUT reference parcels that contain agricultural **land**. In this process, and in the context of reference parcel inspection, the landscape feature ceases to exist as an individual item as it is graphically and alphanumerically appended to the adjacent reference parcel with agricultural **land**.
- 5.4. The result of the temporary adjudication is the reduction of the number of reference parcels / items for inspection, to the number of reference parcels in the SUT that contain agricultural **land**.
- 5.5. However, the eligible hectares of the SUT is not affected. Because the sum of agricultural **land** in the traditional blocks and sum of eligible hectares in adjacent LF will be combined in the sum of eligible area of the resulting combinations/RP/items. Any area/hectares can only be counted once in the process.
- 5.6. The temporary adjudication should **be performed upon a** complete polygon (i.e. **individual** landscape feature) as this represents the physical reality that will be visible during inspection. This temporary adjudication as a physical aggregation is unrelated to the declaration processes or possible tenure rights.
- 5.7. LPIS custodians can use their internal rules, in case based on those to accommodate the spatial dissolve of the DGAgri Guidance , to temporarily adjudicate a given landscape feature to a particular reference parcel that contains agricultural **land**.
- 5.8. In absence of appropriate spatial dissolve rules, in view of the requirements of the ETS measurement methodology, LPIS custodians shall temporarily adjudicate a landscape feature to that reference parcel containing agricultural **land** with which it has the longest shared border. In a GIS, this can be automatically calculated.
- 5.9. The table that holds the temporary adjudication of landscape features should be carefully stored internally as this information will be needed to determine the LUI during ETS inspection and to produce the `lpisPolygonZeroState.gml` data of the ETS reporting package.

6. Data capture of the point coordinates

- 6.1. The point geometry of the reference parcel/item of inspection must be generated by an algorithm that satisfies the three following conditions:
- **Membership:** The generated geometry must be located **inside the agricultural land** of the originating polygon (i.e. inside or on the polygon shape itself, not in a doughnut or cavity);
 - **Uniqueness:** Each generated geometry must be unique (i.e. two reference parcels cannot share a common point geometry);
 - **Deterministic:** The generated point cannot be random (i.e. applying the algorithm on the same polygon must always generate the same point geometry).
- 6.2. Provided, the three conditions remain satisfied, each LPIS custodian remains free to choose its algorithm. However, the same algorithm should be kept from year to year unless the LPIS custodian duly motivates a change in algorithm.

7. Data capture example

- 7.1. The data capture using temporary adjudication is illustrated in figure 2. This example describes a situation where SUT has 2 reference parcels that contain agricultural area (RP1 and RP2) and two LF that hold eligible hectares. Note that the features visible in Figure 2 will be delineated during the ETS inspection and will later be reported in the etsObservations.gml.

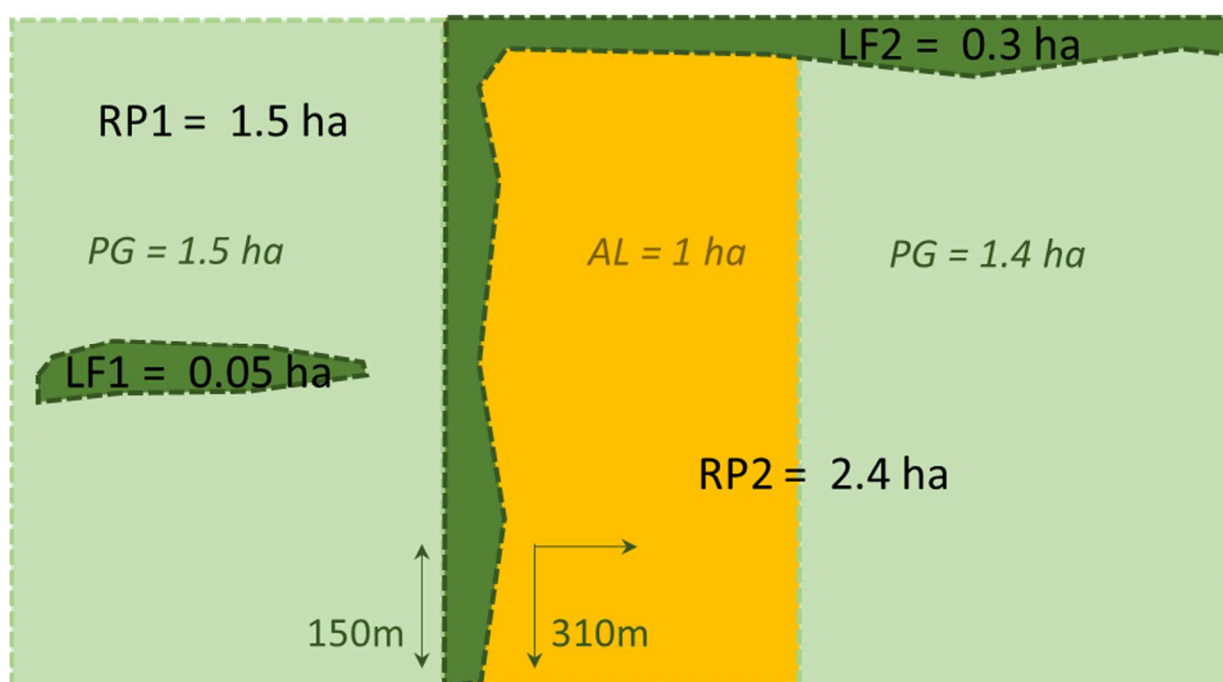


Figure 2: 4 reference parcels (RP1, RP2, LF1 and LF2) in a SUT design with “complementary” landscape features

- 7.2. LF1 and LF2 contain no agricultural area, **but represent eligible hectares**; **thus** they have to be temporarily adjudicated to either RP1 or RP2 for the duration of the quality assessment.
- LF1 is engulfed by RP1, and totally adjudicated to RP1
 - LF2 has 310m of shared border with RP2 and only 150m with RP1 so it is totally adjudicated to RP2

Figure 3 shows the result of this adjudication and the resulting IpisPointZeroState values, note that only two point coordinates (+) are delivered for the original 4 SUT entities and that the etsReferenceArea for LPIS QA reference parcel is the sum of all contributing areas.

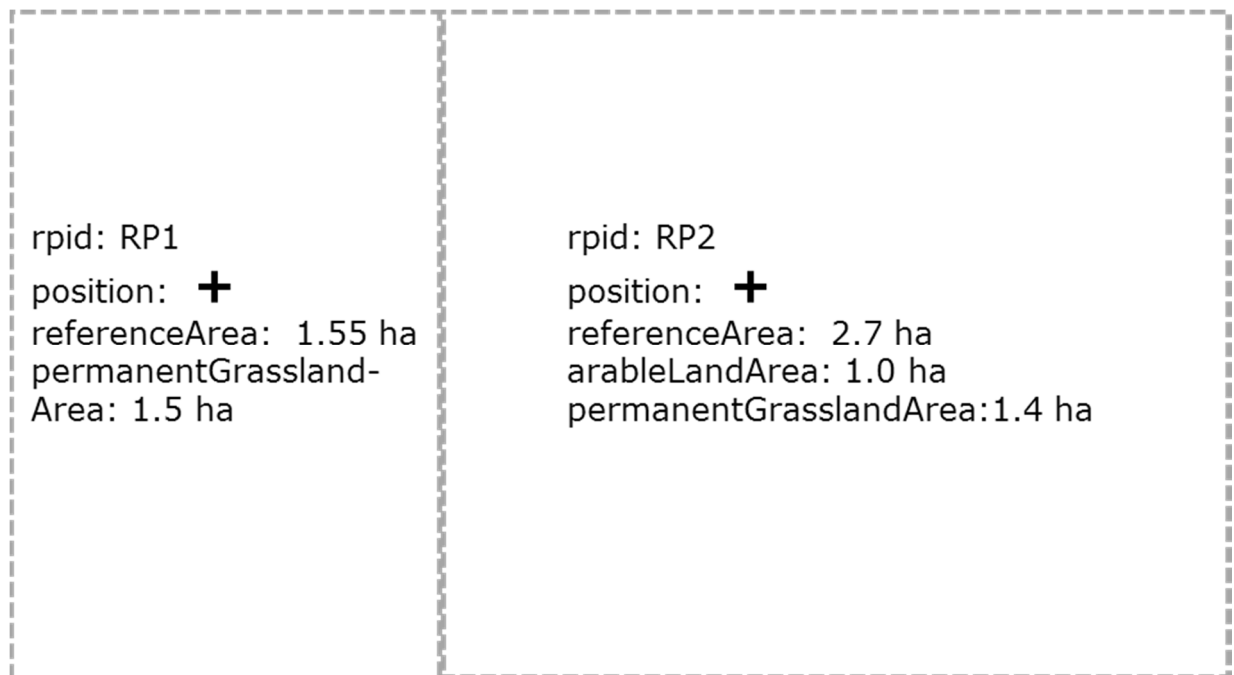


Figure 3: result of adjudication of landscape feature LF1 into RP1 and LF2 into RP2

- 7.3. Full lines of figure 4 show the resulting ETS LUI and the polygons included in the IpisPolygonZeroState.gml. Hashed lines represent original SUT polygons.

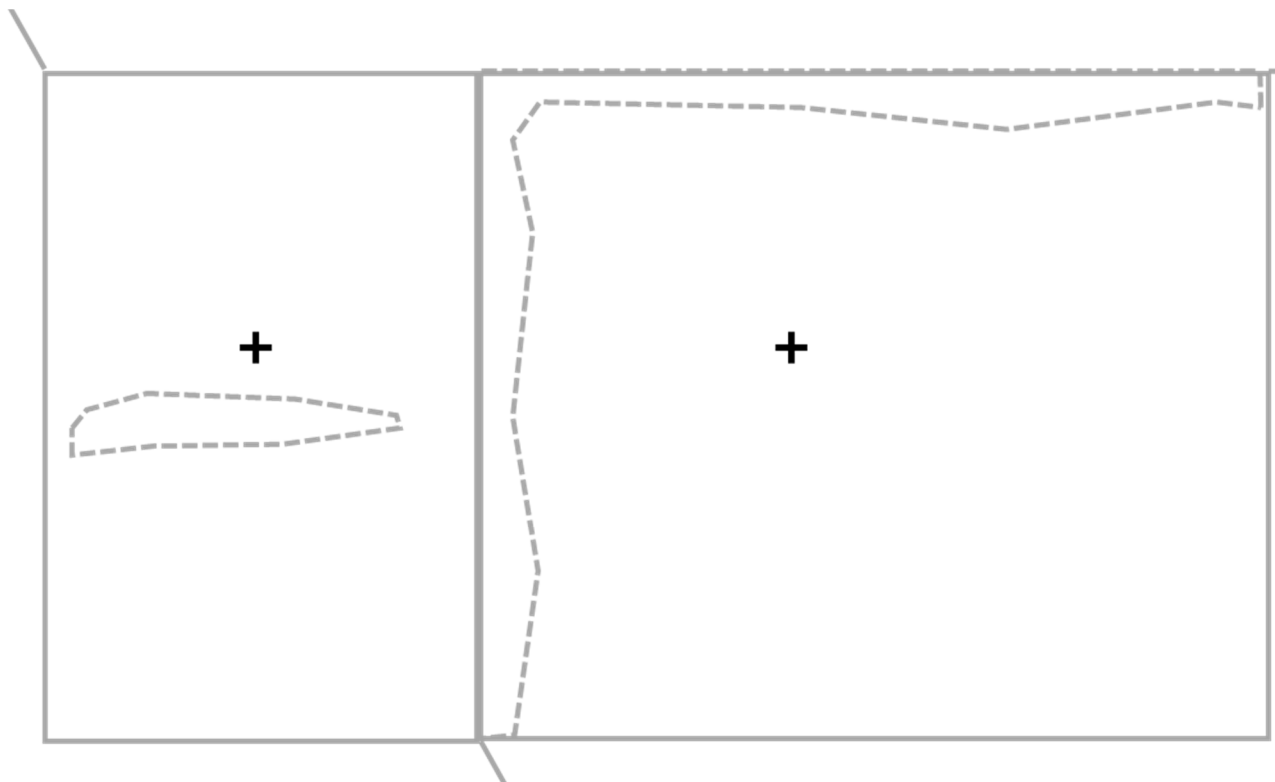


Figure 4: IpisPolygonZeroState.gml content for the RP/ETS LUI for RP1 and RP2 and neighbours after the adjudication procedure. The "+" mark the 2 corresponding point locations that were delivered in the IpisPointZeroState.gml for reference only.

8. Data Delivery

- 8.1. In the past, LPIS QA had to be performed yearly, at a specific reference date, originally the data of the pre-established form, later than the deadline for the farmer's declaration. With the arrival of independent LPIS QA imagery and the ability to correctly report changes due to the ongoing upkeep processes, the impact of the reference data has weakened.
- 8.2. From 2016 onwards, the LPIS assessment can be performed at any time as soon as the inspection methodology is laid down and the necessary imagery become availability. In practice, upload of the population via the LPIS QA portal is allowed from July.
- 8.3. DG JRC who has already started acquiring LPIS QA imagery in early spring, will use the previous' year population to establish whether a bonus image would be needed to ensure the coverage of a sufficient number of reference parcels. **The LPIS custodian shall contact DG JRC without delay in case the previous population should not be used as a proxy for the current population.**
- 8.4. When all planned and bonus imagery passed the IDQA by DG JRC, DG JRC will issue a confirmation of that acquisition completion. From that point on, the LPIS custodian alone will be responsible for the completion of his assessment reports by 31st of January.
- 8.5. If not already done earlier, the LPIS custodian shall upload his TG population data from which **DG JRC will produce a sample pre-selection within 10 working days after both the complete image set and population become available to DG JRC.**
- 8.6. Upon creation of the sample pre-selection, DG JRC will produce and send an informative report that compares the previous and current population. The LPIS custodian is invited to study this comparison to detect possible scoping issues.

9. Additional Information

- 9.1. The quality assessment is based on a sample of a delivered LPIS population and from 2015 EC services are responsible of both the sample selection and the images provision. Sample selection are based on industry standard sampling plan following ISO 2859-2 standards. Upon reception of the population in the lot of reference parcels and availability of all necessary imagery, a subset of items (reference parcels) for quality assessment will be returned to the MS. This subset or "sample pre-selection" will on purpose be bigger than the minimum corresponding sampling needed in order to overcome the skipping of parcels due to technical issues.
- 9.2. The TG ETS procedures describe how to process the subsets and item substitution based on the ground situation and some historic conditions that influence suitability for inspection.
 - when local technical image conditions prevent a clear inspection, a pre-selected reference parcel can be skipped (ie. for technical reason such as incomplete LUI coverage by the image). The parcels that are not skipped are fit for inspection.
 - when local cropping conditions prevent the delineation of a particular segment of a reference parcel, such reference parcels can be either flagged

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as not fit for measurement or subject to the parcel aggregation variant, using a new, aggregated item of inspection.

- 9.3. The application of the parcel aggregation variant is systematic: if applied, it needs to be applied to all reference parcels where the conditions are right and is optional unless the rate of parcels "not fit for measurement" is expected to exceed 50% from past experiences.
- 9.4. Adjudication of landscape features, skipping of items or parcel aggregation for measurement are all temporary actions and qualities that persist only during the context of the ongoing quality assessment.