

LPIS Quality Assurance Framework

Based on JRC IES/H04/P/PMI/pmi D(2011)(13519)

ANNEX II

Executable Test Suite (ETS)

Flow of events, related to the inspection of the Reference Parcel, version 6.1

July 2016

Developed in accordance with the LPIS data quality measures listed in Annex I

a. Release notes (changes/updates from version 6.0 2015):

- Important notes, point 2.1: the definition of the LUI has been revised to accommodate the temporal adjudication of eligible landscape features associated with the reference parcel, following the TG population (ETS Annex IX)
- Important notes, Point 2.10: the procedure for skipping in case simultaneous use of VHR and national aerial orthoimagery has been clarified.
- Important notes, point 2.23: the rules for adjudication of eligible landscape features to the particular agricultural land cover category have been clarified.
- Point V.4.v: The definitions of the skipping code C4 (in point 3.7) has been revised.
- Point VI.6.v: a clarification note has been added to avoid the double counting on the "zero eligible area found" non-conformity.

b. changes/updates following the inputs from the IACS workshop in May 2016

- Following the latest revisions of TG population guidance (Annex IX) and the extension of LPIS QA scope to all RP that are declared by any holding that applies for area based direct payments
 - The term "reference area" has been changed to "etsReferenceArea"

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- Flow of events (Points V.6 and VI.6.ii): Text has been revised to accommodate the differentiation in the reporting and assessment of declared parcels (other uses) and parcels declared for aid (SAPS/BPS).
- Important notes, point 2.13: the text has been revised to clarify that area non-comparability can be applicable only to those RP having etsReferenceArea that equals the maximum eligible area
- Important notes, point 2.23: the text has been revised to better explain the reason for the alphanumeric approach applied for the classification correctness test
- Important notes, point 226: a new point was added on the scope of the classification correctness test.
- Diagram on Figure 1 was updated (box II5)
- Point II.1: The reference to ICS has been removed.

c. changes/updates following the additional inputs received from the EU Member States

- Point 4.i.: Reference to provisions in EU CAP regulation have been revised.
- The whole document has been revised in order to provide consistency with respect to the use of the terms "agriculture land" and "agriculture area"
- Point 6.v.d. rephrased in the light of the text given in Annex I for this quality measure (Table 8.3)
- "area recorded" amended with "(etsReferenceArea)"
- Point 5.4.ii: Skipping code A3 clarified; it relates to the persistency of the thematic RP ID (TG update guidance)
- Point VI.6.iV.: A waiver "E" is introduced in the classification correctness test to address those non-conformities where agriculture land cover polygons coded as HV and wholly attributed to either AL or PG, in reality refer to an evidenced combination of AL and PG that on the reference imagery could not be separately delineated.

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Activity Diagram

The following UML diagram show the activities, related to the inspection of the Reference Parcel:

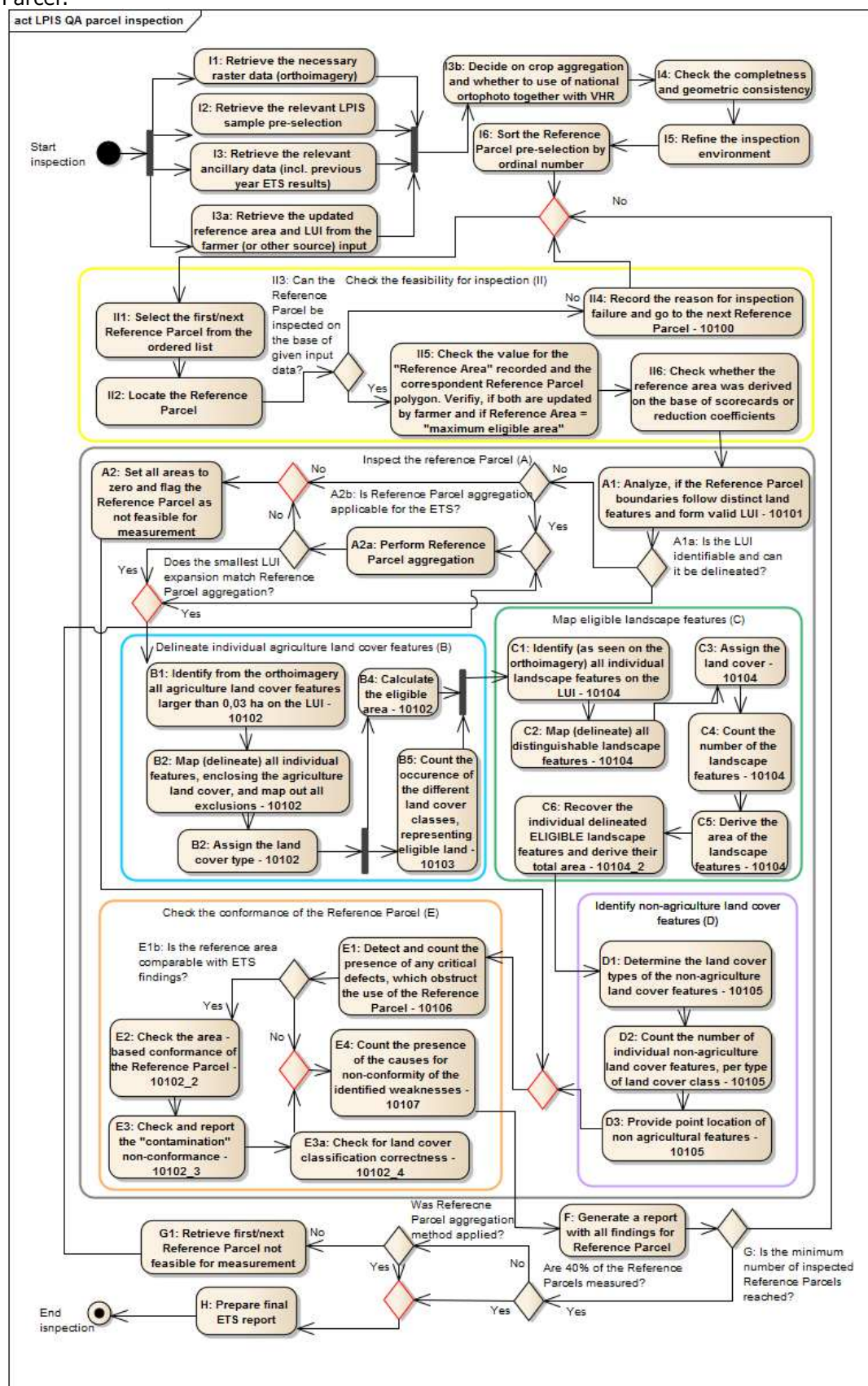


FIGURE 1: LPIS QA framework – Inspection procedure at Reference Parcel level

1 Important Notes

- 1.1 The actual land to be observed and mapped for each reference parcel should be the land represented by the [graphical representation of the Reference Parcel \(including all eligible landscape features that were temporally adjudicated to it¹\)](#), according to its definition. It will be named as Land Under Inspection (LUI).
- 1.2 The LUI is **not equal** to the land enclosed (clipped) by the reference parcel vector perimeter as the conditions for such spatial operation of the two themes are not fulfilled and the clipping would jeopardize the independence of the measurements. Indeed, LUI is the land representation on the reference image of the item for inspection. It can be further specified that:
- LUI is the land represented either by the individual reference parcel [\(and adjudicated landscape features if any\)](#) or the reference parcel aggregation that is subject to data capturing and mapping in order to derive the information needed for the RP conformity assessment
 - Item for Inspection is the particular manifestation for the inspection environment of the individual [and plain²](#), sampled reference parcel to which all quantitative and qualitative measures are associated

All quantitative checks requiring measurements or counting are performed on the Land under Inspection (LUI). All qualitative checks – critical defect, contamination, and cause for non-conformity - are performed on the **plain** reference parcel, represented by the Item for Inspection.

- 1.3 Reference parcel aggregation expands the original LUI toward the first visible crop, land cover or land use limits matching the smallest contiguous cluster of reference parcels. Still the item of inspection remains the individual reference parcel itself. The aggregation of reference parcels is used only to derive the quantitative values necessary to complete the inspection for those reference parcels having original LUI that cannot be **measured**.
- 1.4 Some (cadastral) systems support multi-polygon cadastral parcels. Derived reference parcels will represent more than one distinct LUI.
- 1.5 The operator shall ALWAYS re-delineate from scratch the agricultural land cover on the area represented by the reference parcel or aggregation of reference parcels (even in case when the primary visual check doesn't reveal changes on the land in respect to the "quatus quo" recorded in the LPIS).
- 1.6 The operator uses the description of the agriculture land cover classes in the eligibility profile, as the interpretation key for the land cover mapping.
- 1.7 EU Member State Administrations should provide the list of eligible landscape features, together with the mapping instructions and specifications, as a part of the Eligibility Profile.
- 1.8 Landscape elements with up to 2 meters of width can be considered below the minimum mappable unit for the ETS and thus might not be subject to

¹ See ANNEX IX, Technical guidance on LPIS population for LPIS QA inspection (TG population)

² Without temporal adjudication of associated landscape features

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separate mapping. Their area could be incorporated in the agriculture land cover feature adjacent to them.

- 1.9 MS should duly document the local LPIS RP specifications esp. regarding non-agricultural features and their minimum dimensions and size that constitute triggers for the contamination of a reference parcel as described in measure 10102_3.
- 1.10 MS can use higher resolution (aerial) imagery taken during the assessment period for inspection and delineation together with the VHR imagery from JRC, provided that
- such imagery is used consistently for all parcels where it is available
 - both aerial and VHR satellite images are processed, metadata documented and included within the ETS delivery
 - the feasibility for inspection is conducted on both aerial and JRC VHR images
- NOTE: If both VHR and aerial imagery are available, a positive outcome of the feasibility for inspection on only one image will **NOT** be sufficient to proceed with the inspection of the Reference Parcel. [The reference parcel will be skipped, if a condition for skipping is encountered on either of the source images, even if the inspection is found feasible on the other one.](#)
- 1.11 The observation visual scale should be larger than 1: 5 000. Different visual scales could be used depending on the minimum sizes, defined for the different land cover features, reference parcel size and local ground conditions. It is not recommended to use visual scale larger than 1:1 000.
- 1.12 The measured/observed area should be reported in square meters (rounded to a meter).
- 1.13 In this inspection procedure, the quantification of the maximum amount of agriculture [area](#), for the whole reference parcel or for each agricultural land cover type, is made through GPS/CAPI area delineation (mapping) of the cover found on the land represented by the reference parcel (LUI). [Those reference parcels for which the etsReferenceArea equals the maximum eligible area for direct payment](#) and this area value was calculated on the base of a different method/tool (for example, scorecards or sporadic pro-rata a reference parcel level) should be flagged before inspection in order to allow a separate analysis. In these cases, the area observed and the area recorded (etsReferenceArea) will not be directly comparable.
- 1.14 The ex-ante decision to apply reference parcel aggregation is based on the previous ETS results. Apply ex-ante if 50% of the reference parcels are expected to fail the feasibility for measurement test (10101) or if 40% failed the test (ex-post).
- 1.15 Alternatively, reference parcels with non-identifiable borders on the orthoimagery, can be considered suitable for measurements, if additional evidence is provided that these limits are identifiable on the ground. In case the LUI borders are detected and confirmed using GNSS measurements, the land cover mapping should be done either exclusively by field measurement, following the compatible surveying specification applicable in the EU Member States, or by appropriately merging GNSS and CAPI surveys.
- 1.16 The geometric and radiometric quality of the VHR orthoimagery and aerial used for the inspection and delineation, should be compliant with the **Orthoimage technical specifications for the purpose of LPIS**

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(http://marswiki.jrc.ec.europa.eu/wikicap/index.php/Orthoimage_technical_specifications_for_the_purpose_of_LPIS)

- 1.17 National aerial imagery can be used for delineation (spatial reference) but the VHR satellite imagery will be considered the “temporal reference”. As a result, ETS inspection should always start with the VHR image as prime source of reference information, and it can be further completed with information from the aerial imagery. Also, feature inconsistencies between the two images should be always addressed by field observations. Such use should be done for all measured items.
- 1.18 Any updates of the Reference parcels (that are part of the sample), made one day before the inspection can be taken into account for the ETS, provided that this update had been triggered “in tempore non suspecto”³. Ancillary (metadata) information on the update must be provided.
- 1.19 The inspection cycle (loop) continues until the number of the RP inspected reaches the number required for the DQ_Scope of Quality element 4 (Critical Defects).
- 1.20 If the reference parcel aggregation method was not applied and if less than 40% of the parcels passed the feasibility for measurement criterion (10101), a secondary cycle of inspections with the parcel aggregation method- should process ALL parcels that failed the feasibility for measurement in the first cycle. (ex-post decision on reference parcel aggregation).
- 1.21 At the end of inspection process, an independent operator (different from the inspector involved in the ETS) shall perform a verification and confirmation of all ETS observations. This is described in Annex IV and addresses:
 - RP Feasibility for inspection (10100)
 - RP Feasibility for measurement (10101)
 - RP true eligible area and presence of contamination (10102)
 - correct classification of the presence of critical defects (10106)
- 1.22 In case of any detected problem, the observations concerned should be re-performed by the operator responsible for the ETS and will be made available for a new verification and confirmation. The iterative process continues until all observations are confirmed by the independent operator.
- 1.23 The “classification correctness” is an alphanumeric check aiming to verify the correctness of the area per agriculture land cover category attributed to the item of inspection as recorded in the LPIS. **It reflects the option given in the LPIS guidance (DSCG/2014/33) to EU MS Administrations allowing them to record the agriculture land cover area only alphanumerically. For that reason, no verifications of the geolocation accuracy of the agriculture land cover categories (if delineated in the LPIS) is conducted. When appropriate, the rules for attribution of eligible landscape features given in LPIS guidance (DSCG/2014/33) can be used.**
- 1.24 If the code HV for generic herbaceous vegetation is used to delineate one or more herbaceous land cover features during ETS inspection of the reference parcel, then for RP_CLS the total area of each HV delineation is added to

³ Information is obtained at a moment of time when the person giving the information has nothing to lose by telling the truth

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the area sum to be compared to either the recorded AL area, or recorded PG area, depending on the individual choice made by the ETS operator.

- 1.25 Reference parcels skipped for inspection, although not being inspected, are still considered as "processed" in the ETS and should be included in the ETS reporting package.
- 1.26 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 land 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.

2 Flow of events:

- I. Data preparation (I1-I3b)
 1. Retrieve the necessary orthoimagery
 2. Retrieve the relevant LPIS sample pre-selection
 3. Retrieve the relevant ancillary (and historic) data, including any performed field observations and previous year ETS results)
 4. For the Reference Parcels, part of the sample pre-selection, retrieve the up-to-date **etsReferenceArea** and the correspondent LUI, as recorded in the LPIS that was:
 - i. provided by the farmer at the moment of his application or
 - ii. obtained from any other relevant source "in tempore non suspecto".
 5. If the sum of the rate of reference parcels that failed measurement (10101) exceeds 50% from previous year ETS results, apply the parcel aggregation method consistently throughout the current LPIS QA exercise. Decide on the use of national orthophoto as supplementary to VHR satellite imagery
- II. Check for data completeness and geometric consistency (I4)
 1. Check the conformance statement of the MTS and for the availability of the Eligibility Profile. This includes also any methodological decisions with relevance to ETS (such as: previous results, approach to the calculation of pro-rata)
 2. Check for completeness and geometric consistency of the vector and raster data
 - i. Navigate through the data (LPIS vectors, orthoimages) using the GIS tools and interface
 - ii. Check the vector and raster datasets for the relevant metadata
 - iii. Check for completeness of the vector, raster and alphanumeric data (fields and attributes)
 - iv. Check for geometric coherence (fit) between the different spatial datasets
 - v. Check the orthoimage properties and perform image acceptance
- III. Refine the Inspection Environment (I5)
 - i. Enhance or change, if necessary, the radiometric and spectral parameters of the orthoimage
 - ii. Set the ranges for the visual scale
 - iii. Adapt the visual appearance of the graphical data (modify colours, add labels if necessary)
- IV. Sort the parcel pre-selection by ordinal number (I6)
- V. Check the feasibility for inspection (II1 – II6)
 1. Select the first/next sequential Reference Parcel from the ordered list of the sample pre-selection.
 2. Navigate through the data (LPIS vectors, orthoimages) using the GIS tools and interface, in order to locate the selected Reference Parcel.
 3. Set the appropriate visual scale (see Important Notes).
 4. Check the feasibility for inspection (II3 - II4)
 - 1) Analyze visually if the area represented by the parcel (LUI) can be inspected based on the available input information.
 - i. Check if the Reference parcel **thematic** ID is persistent in the LPIS
 - ii. Check if the geometry of the Reference Parcel is valid

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- iii. Check if the Reference Parcel is fully or partly outside the active area of the image (the active area is the area of the image, which contains meaningful pixel information)
 - iv. Check for presence of cloud cover or haze, which prevent the inspection of the parcel
 - v. Check for the occurrence of isolated image processing-related artifacts that cannot be attributed to a particular land cover or land use phenomenon (ex. smoke from a chimney or passing airplane).
 - vi. Check for presence of any force majeure circumstances occurring on the land that prevent the inspection of the RP (floods, fires).
 - vii. Check if RP belongs to the scope
- 2) Assign a code to the Reference Parcel as a result of the analysis, based on a pre-defined code list.
 - 3) Report additional evidence when field "F1" is true in a separate "Comment" field.
 - 4) If the area represented by the parcel (LUI) is not affected by the above technical issues (all occurrences are set as FALSE),
 - flag the parcel as feasible for inspection
 - flag the parcel as belonging to the QC sample (set to "true") and,
 - proceed with the ETS inspection for that Reference Parcel.
 - 5) Else, flag the Reference Parcel as skipped
5. Check the value of the **etsReferenceArea**, as recorded in the LPIS. Verify that the **etsReferenceArea** and the correspondent RP polygon are updated with the most recent information from the farmer, related to explicit Reference Parcel change notification or from any other relevant source "in tempore non suspecto".
6. **For those reference parcels where the etsReferenceArea equals the maximum eligible area for direct payment, flag** the reference parcel, when there is a recorded evidence that the **maximum eligible area**, as recorded in the LPIS, was established based on means different from GPS/CAPI area delineation or mapping (for example, use of scorecards or observed reduction coefficients, specific for each reference parcel).
- VI. Inspect the Reference Parcel (A)
- 1. To check if the LUI can be inspected, perform a visual verification to ascertain all reference parcel boundaries match distinctive land features or follow well identifiable limits of land cover and/or land use. If affirmative, flag it as suitable for measurement, consider this reference parcel henceforth as "item for inspection" and proceed to the next Step VI.4.
 - 2. Else, check if II.2 foresees application of the reference parcel aggregation:
 - i. If negative, flag the Reference Parcel as not feasible for measurement and put the observed eligible area, area declared and the **etsReferenceArea** to value zero. Put also both values for RP_CNF (Area Percentage and Area Difference) to zero. Go to step VI.6.i and proceed with the instructions.
 - ii. If affirmative, expand the LUI to completely cover any and all visible crops, agricultural land cover type or land use units, whichever is smaller, occurring partially or completely inside the original LUI.

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- If any continuous aggregation of reference parcels (cluster) matches the smallest LUI expansion, substitute the original LUI with this resulted cluster and use it as new LUI in steps VI.3 and VI.4.
- Register and link in a separate file all RPid's belonging to the correspondent aggregation of reference parcels (RPid). Proceed to the next Step VI.3.
- Else, flag the Reference Parcel as not feasible for measurement and put the observed eligible area, area declared and the **etsReferenceArea** to value zero. Put also both values for RP_CNF (Area Percentage and Area Difference) to zero. Go to step VI.6.i and proceed with the instructions.

NOTE: In case the visual verification on the orthoimage cannot reveal or confirm the presence of distinct limits, supplementary verification on the field can be optionally made. Field evidence that the FULL perimeter is identifiable and measurable by GNSS needs to be provided. This dataset should comprise: RP vertices measured with GNSS, pictures revealing the existence of these vertices on the ground and any relevant metadata). Mark in the LpisPreselectionStatus file that the ancillary data for the given item is available.

3. Delineate individual agriculture land cover features, which represent eligible land (B) **on the LUI**
 - i. Individually identify on the orthoimagery all single agriculture land cover features larger than 0.03 ha. Use the reflectance (pixel grey values), color combination; shape; texture; location; and any other context-related information to determine the agriculture land cover features, based on the pre-defined land cover types and photo interpretation keys, listed in the eligibility profile (for more information see the Annex III). NOTE: In case the LUI limits are detected and confirmed using GNSS measurements, perform the land cover mapping either exclusively by field measurement, following the compatible surveying specification applicable in the EU Member States, or by combining GNSS and CAPI measurements, by applying the procedure described in the technical guidance to ensure compatible relative accuracy.
 - ii. Map (delineate) all single features, enclosing the agriculture land cover that are larger than 0.03 ha. Take into account useful permanent features, as rural roads, river banks, limit of forest or build up areas visible on the orthoimage. Consider also the possible visual obstruction of features and boundaries, due to oblique image acquisition (image taken with low elevation angle).
 - iii. Identify by visual inspection, map out and exclude from the area of the agriculture land cover, all non-agriculture land cover features bigger than 0.03 ha (or 0.01 ha, if the spatial resolution of the reference orthoimage and the nature of the feature allow), as well as all non-agriculture linear features wider than 2 meters. Use the reflectance (pixel grey values), color combination; shape; texture; location; and any other context-related information to determine the non-agriculture land cover features (see the pre-defined list in Table 6 of Annex I). Exclude by mapping (as polygons, lines or points) the area of any distinguishable landscape features given in the eligible profile from the inner area of the mapped

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- agriculture land cover features. Use the mapping instructions and specifications, defined by the EU Member State Administration in their Eligibility Profile. NOTE: The area of Landscape elements with up to 2 meters of width could be incorporate in the agriculture land cover feature adjacent to them.
- iv. Assign the land cover type for each agriculture land cover feature according to the Eligibility Profile.
 - v. Calculate and sum up the area (in square meters) of the agriculture land cover features (digitized polygons), taking into account any mappable exclusion found (all non-agriculture land cover features, as well as landscape features). This area will be calculated by the GIS using the applicable national projection and ellipsoid. Calculate the eligible area for each of the agriculture land cover feature, using the information from the eligibility profile. Sum up to derive the maximum eligible area.
 - vi. Sum up by land cover type, the eligible area of the digitized agriculture land cover polygons.
 - vii. Count the occurrence of the different land cover class types, eligible for payment **on the LUI**. Use up to two letter abbreviation code from the "User-defined Legend Code" field of the Eligibility Profile.
4. Map (or detect, if already mapped) and account for any landscape features (subject to [Article 9 \(2\) of Reg. 640/2014](#)), found **on the LUI** (C)
- i. Identify by visual inspection (as seen on the orthoimagery) any individual landscape features, based on the list of landscape features (subject to [Article 9 \(2\) of Reg. 640/2014](#)), as defined by the EU Member State Administration in their Eligibility Profile. Use the reflectance (pixel grey values), color combination; shape; texture; location; and any other context-related information to determine these features. Adjust the visual scale, if necessary.
 - ii. Map (as polygons, lines and points) all remaining (not yet mapped) distinguishable landscape features, using the mapping instructions and specifications, defined by the EU Member State Administration in their Eligibility Profile. Take into account useful permanent features, as rural roads, river banks, limit of forest or built up areas visible on the orthoimage. Consider also the possible visual obstruction of features and boundaries, due to oblique image acquisition (image taken with low elevation angle).
 - iii. Assign the land cover type for each landscape feature according to the Eligibility Profile.
 - iv. Count and report the occurrence of the different landscape features types.
 - v. Derive the area in square meters of the landscape features, using the mapping instructions and specifications, defined by the EU Member State Administration in their Eligibility Profile. This area will be calculated by the GIS using the applicable national projection and ellipsoid.
 - vi. Select the individual delineated eligible landscape features, found, which are within OR on the immediate border of the agriculture [land](#) already determined in VI.3. Retrieve their area.

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- vii. Sum up and report the assigned area (from 3.vi.) by type of the eligible landscape feature.
- 5. Identify non-agriculture land cover features **on the LUI** (D)
 - i. Assign the land cover types of the non-agriculture land cover features, using the pre-defined list given in Table 6 of Annex I. Use the reflectance (pixel grey values), color combination; shape; texture; location; and any other context-related information to determine the land cover type of the non-agriculture land cover features, based on certain pre-defined criteria.
 - ii. Count the number of individual non-agriculture land cover features, which has been already identified in Actions (B) and (C) given in the flow diagram of Fig.1, by type of major land cover class, according to the predefined class list. Count and report the presence of **any other not delineated individual non-agriculture feature** found.
 - iii. Provide point location for each of the individual non-agriculture features found.

NOTE: Only individual and distinct non-agriculture land cover features should be considered. Small intrusions of non-agriculture land cover at the border of the LUI, due to imprecise matching with the reference orthoimage and delineation artefacts are not counted.
- 6. Check the conformance of the Reference Parcel (E)
 - i. Detect and count the presence of any critical defects, which obstruct the use of the Reference Parcel (Item for Inspection). Check for the occurrence of a given critical defect on the Item for Inspection, starting from the first defect listed at the top and going sequentially to the last one at the bottom (see Detailed Description 1 of Annex I).
 - Identify and report on lack of any eligible area
 - Report on the occurrence of invalid perimeter
 - Report on the occurrence of invalid common boundary
 - Report on the occurrence of incomplete block
 - Report on the occurrence of a multi-polygon
 - Report on the occurrence of multi-parcel

Use the reflectance (pixel grey values), color combination; shape; texture; location; and any other context-related information, as well as the information on the RP type. Use also any data collected on the field revealing the LUI limits that should comprise: RP vertices measured with GNSS, pictures revealing the existence of these vertices on the ground and any relevant metadata).
 - ii. **For those reference parcels where the etsReferenceArea equals the maximum eligible area for direct payment**, check and report the area-based conformance of the Reference Parcel (Item for Inspection) respect to the area recorded (etsReferenceArea). Sum up the area found to be eligible on the orthoimagery, using the values derived in points 3.vi and 4.vii. – Aobs. Then:
 - Divide the result (Aobs) by the area recorded as eligible (etsReferenceArea) in the attribute table of the individual reference parcel or aggregation of reference parcels (Arec). Multiply by 100. Report the value.

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- Subtract (Aobs) from the area recorded as eligible (etsReferenceArea) in the attribute table of the individual reference parcel or aggregation of reference parcels (Arec). Report the value (in absolute terms)
- Report the presence of non-conformity (if any), based on the conformance levels given in Table 8 of Annex I (Area purity)
- iii. If the Reference Parcel (Item for Inspection) is found to be conforming for quality measure 10102_2, check and report the contamination based conformance of the Reference Parcel in respect to the occurrence of triggers for contamination based on the information collected in VI.5.
 - Select those non-agriculture land cover features found on the area represented by the Item for Inspection that can be considered triggers for contamination. These features can be:
 - a. any feature artificial in origin that seal the soil surface (buildings, roads), (regardless its size)
 - b. any natural non-agriculture features or man-made features that do not seal the soil that cannot be taken up by any agriculture activity and cannot be considered part of the local established practices of the region (EFA, Agro-forestry, PG-ELP etc.), which
 - i. split the reference parcel (functional objects), (regardless the size)
 - ii. violates the local LPIS RP specifications esp. regarding non-agricultural features and their minimum dimensions and size
 - Recover the point location for those triggers for contamination and report their occurrence per land cover type using the predefined list of 10105
 - Flag the "Reference parcel as "contaminated" if for any of the given land cover types, the value for the occurrence is true
 - For each occurrence check if the observation violates the relevant general and local ETS condition for the waiver
 - Indicate whether the waiver vindicates the observed contamination, where applicable,
 - Flag the parcel as non-conforming, if at least one occurrence of observed contamination remains "unwaivered".

NOTE: each LPIS custodian should duly document the criteria on "local LPIS RP specifications esp. regarding non-agricultural features and their minimum dimensions and size"

- iv. Check and report the correctness of the land cover classification with respect to the 3 main agricultural land categories (AL, PG and PC) and, where appropriate, pro rata PG category.
 - For each agriculture land cover category observed:
 - a. Check if present as recorded in the LPIS.
 - b. If affirmative, sum all areas of the agriculture land cover features mapped within the LUI belonging to a that category

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- c. Add to the total area for each category (Aobs LCcat) the corresponding area of the landscape features found within or adjacent to the agriculture land belonging to that category
 - d. Divide the result (Aobs LCcat) for each category by the area attributed to this category as recorded in the LPIS for the individual reference parcel or aggregation of reference parcels (Arec LCcat). Multiply by 100. Report the value in percentage
 - e. Subtract (Aobs LCcat) from the area attributed to this category as recorded in the LPIS for the individual reference parcel or aggregation of reference parcels (Arec LCcat). Report the value (in absolute terms)
- Check for agriculture land cover categories not recorded in LPIS but found on ETS
- Report the presence of non-conformity (if any), based on the conformance levels given in Table 8.3 of Annex I (Area classification)
- Verify if the land cover inventory of the LUI returns HV polygons AND the item is non-conforming due to:
 - a. AL OR PG recorded in the LPIS is not detected
 - b. AL OR PG area values observed are not as recorded in the LPIS
 - c. The area difference for AL or PG values is above the conformance threshold
- If so, retrieve the available historical records that evidence the recorded presence of any AL over the last 5 years preceding the ETS assessment for each HV polygon in the LUI. These records shall be either :
 - a. historical orthoimagery, less than 6 years old,
 - b. farmer's declarations, less than 6 years old
 - c. conclusive third party evidence
- If such evidence is present for each HV polygon
 - a. Vindicate the non-conformity found by using waiver E (see Detailed Instruction 4)
 - b. Else, keep the non-conformity found
- Record your findings and provide evidence for the use of waiver E as PDF document, including the relevant ID of the reference parcel.
- Flag the parcel as non-conforming, if at least one classification error remains "unwaivered".
- v. Detect the causes for the presence of the contained problems (possible weaknesses) in the Reference Parcel (Item of Inspection), if it is flagged as non-conforming.
 - For the given Reference Parcel check if:
 - a. it holds a critical defect
 - b. the difference between the eligible area observed and recorded exceeds the threshold
 - c. its contains unwaivered contaminations
 - d. the observed area attributed to the 3 main agriculture land cover categories, defined for BPS/SAPS, is correct with respect to the correspondent values recorded in the LPIS (BPS/SAPS layer).
 - If yes, assign to each identified and geo-located weakness, one and only one pre-defined cause,

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starting from the first cause listed at the top and going sequentially to the last one at the bottom (see Table 9 of Annex I). Consult ancillary and historical data, wherever is needed.

NOTE 1: Each individual contamination reported in quality measure 10102_3 for the item of inspection is counted as one possible weakness.

Note 2: The total absence of eligible land for a given Reference Parcel is reported as critical defect only. Such observation (no eligible area found) is reported only as one single weakness.

7. Generate a report with all findings, associated to the Reference Parcel. (F)
8. Check whether you have reached the minimum number of Reference Parcels from the total population, to inspect, according to the Limiting Quality, as defined in quality measure 10205. If not, go to the next item for inspection. (G)
9. If reference parcel aggregation was not applied, check whether 40% of the reference parcels was measured. If not, re-inspect all reference parcels not feasible for measurement applying the reference parcel aggregation method. (G1)
10. Else, finalize the inspection and pass the package for verification (see Chapter 3).(H)