

# 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 6.4

July 2019

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

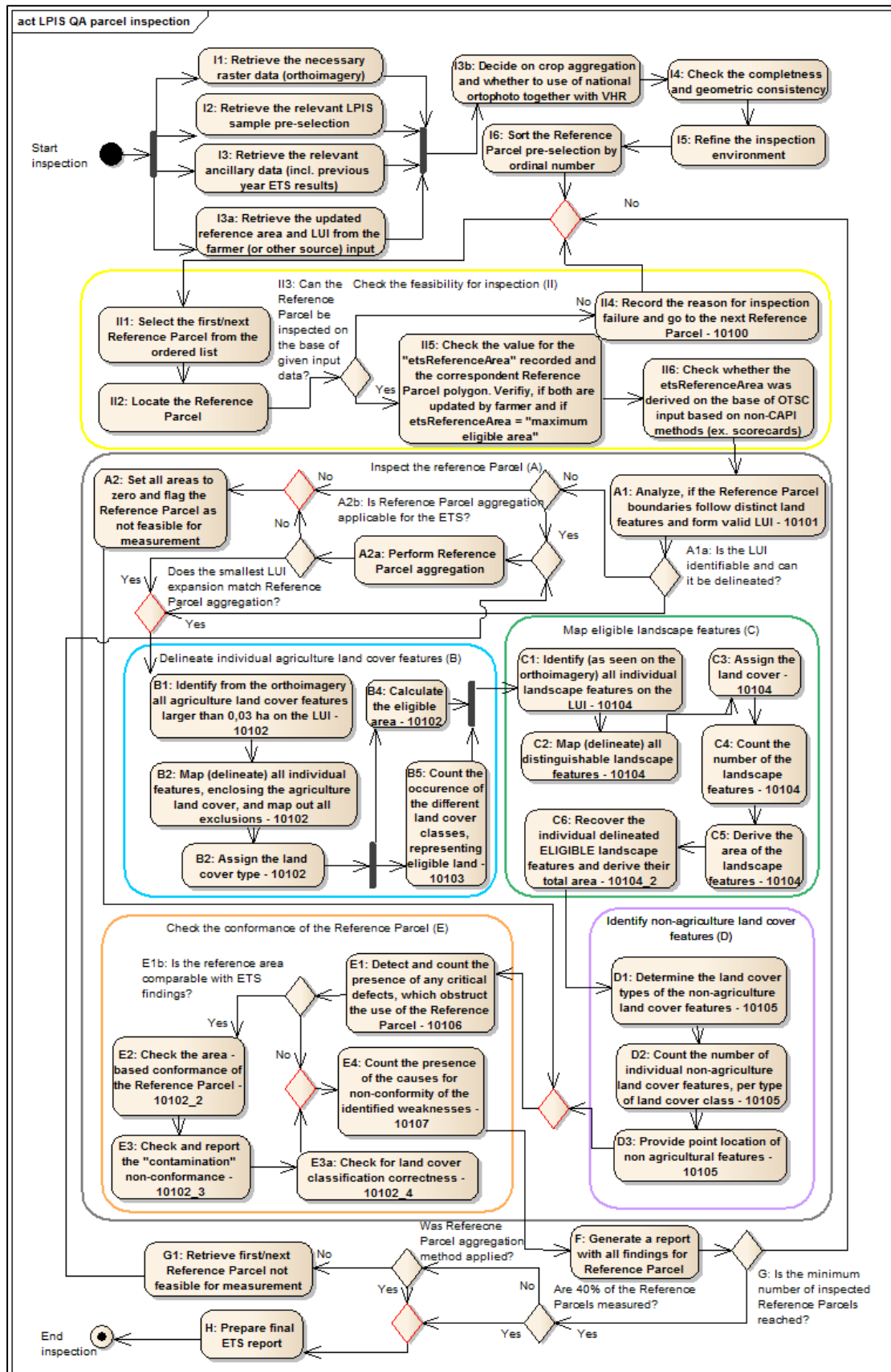
##### a. Release notes (changes/updates from version 6.3 2018)

- Flow of events: point VI.3.i. and VI.3.ii.: Clarification made to account the dimensions of the features part of traditional practices and technical areas inside and along the LUI
- Flow of events: point VI.6.iv.: Scope of the use of Waiver E is specified to those cases when PG is observed but not found recorded in LPIS

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**1 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.**

## **2 Important Notes**

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- 2.1 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 it<sup>1</sup>), according to its definition. It will be named as Land Under Inspection (LUI).
- 2.2 The LUI is **not equal** to the land enclosed (clipped) by the reference parcel's 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 plain**<sup>2</sup>, 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.

- 2.3 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**. All remaining parcels that participate in an RP aggregation should be skipped for further ETS inspection if they appear on a succeeding ordinal QC preselection list (skipping code S1 should be given).
- 2.4 Some (cadastral) systems support multi-polygon cadastral parcels. Derived reference parcels will represent more than one distinct LUI.
- 2.5 The operator shall ALWAYS re-delineate from scratch the agricultural land cover on the area represented by the reference parcel or RP aggregation of reference parcels (even in case when the primary visual check does not reveal changes on the land in respect to the "quatus quo" recorded in the LPIS).
- 2.6 The operator uses the description of the land cover classes in the eligibility profile, as the interpretation key for the land cover mapping.
- 2.7 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.
- 2.8 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

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

<sup>2</sup> Without temporal adjudication of associated landscape features

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

2.9 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.

2.10 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.

2.11 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.

2.12 The measured/observed area should be reported in square meters (rounded to a meter).

2.13 In this inspection procedure, the quantification of the maximum amount of agricultural 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 recorded area value was updated due to OTSC input based on a different method/tool (for example, scorecards), 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. Permanent grasslands subject to the sporadic pro-rata assessment are in principle area comparable.

2.14 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).

2.15 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.

2.16 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** ([http://marswiki.jrc.ec.europa.eu/wikicap/index.php/Orthoimage\\_technical\\_specifications\\_for\\_the\\_purpose\\_of\\_LPIS](http://marswiki.jrc.ec.europa.eu/wikicap/index.php/Orthoimage_technical_specifications_for_the_purpose_of_LPIS))

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- 2.17 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.
- 2.18 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”<sup>3</sup>. Ancillary (metadata) information on the update must be provided.
- 2.19 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).
- 2.20 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 RP aggregation method- should process ALL parcels that failed the feasibility for measurement in the first cycle. (ex-post decision on reference parcel aggregation).
- 2.21 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)
- 2.22 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.
- 2.23 The “classification correctness” is an alphanumeric check aiming to verify the correctness of the area per agricultural land cover category attributed to the item of inspection as recorded in the LPIS. Even though, the current LPIS guidance (DSCG/2014/33) requires the EU MS Administrations to record the agricultural land cover area spatially, **no verifications** of the geolocation accuracy of the agricultural land cover categories is conducted in the ETS. When appropriate, the rules for attribution of eligible landscape features given in LPIS guidance (DSCG/2014/33) can be used.
- 2.24 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 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.
- 2.25 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.

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<sup>3</sup> 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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2.26 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.

**3 Flow of events:**

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- 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
- 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 (validityStatus)
      - ii. Check if the geometry of the Reference Parcel is valid
      - iii. Check if the Reference Parcel is fully or partly outside the active area of the image (the active area is the

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- 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 does not belong to the scope and check if the RP was part of an **a priori** RP aggregation (remaining part of the aggregation)
- 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 updated due to OTSC input based on means different from GPS/CAPI area delineation or mapping (for example, use of scorecards), 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 feasible 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/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 land cover features, which represent eligible land (B) **on the LUI**

- i. Individually identify on the orthoimagery all single agricultural 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 agricultural 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). Take into account the dimensions of the features part of traditional practices and technical areas inside and along the LUI. 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 agricultural 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).

NOTE: Land cover features representing non-agricultural eligible area (Art. 32(2)(b) of 1307R2013) are also delineated in this step.

- iii. Identify by visual inspection, map out and exclude from the area of the agricultural land cover, all non-agricultural 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-agricultural linear features wider than 2 meters. Take into account the dimensions of the features part of traditional practices and technical areas

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- inside and along the LUI. Use the reflectance (pixel grey values), color combination; shape; texture; location; and any other context-related information to determine the non-agricultural 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 land cover features representing eligible area. 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 eligible land cover feature adjacent to them.
- iv. Assign the land cover type for each land cover feature according to the Eligibility Profile.
  - v. Calculate and sum up the area (in square meters) of the land cover features representing eligible area (digitized polygons), taking into account any mappable exclusion found (all non-agricultural 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 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 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.  
NOTE: Land cover features representing non-agricultural eligible area (Art. 32(2)(b) of 1307R2013 are also reported in this quality measure.
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.

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- 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 eligible area already determined in VI.3. Retrieve their area.
  - vii. Sum up and report the assigned area (from 3.vi.) by type of the eligible landscape feature.
5. Identify non-agricultural land cover features **on the LUI** (D)
- i. Assign the land cover types of the non-agricultural 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-agricultural land cover features, based on certain pre-defined criteria.
  - ii. Count the number of individual non-agricultural 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 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-agricultural land cover features should be considered. Small intrusions of non-agricultural 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-parcelUse 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:

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- 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.
- 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)

NOTE: For those reference parcels with total lack of agricultural land cover, report the maximum eligible area as zero (0), RP\_CNF v1 as 0% and v2 as negative value of Arec. Flag them having a critical defect (total absence of agriculture land).

- 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-agricultural 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 three main agricultural land

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categories (AL, PG and PC) and, where appropriate, pro rata PG category.

- For each agricultural land cover category observed:
  - a. Check if present as recorded in the LPIS.
  - b. If affirmative, sum all areas of the agricultural land cover features mapped within the LUI belonging to a that category
  - c. Add to the total area for each category (Aobs LCcat) the corresponding area of the landscape features found within or adjacent to the agricultural 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 agricultural land cover categories not recorded in LPIS but found on ETS
- Record the findings
- 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 any of the following:**
  - a. PG area values are observed, but AL is recorded in the LPIS instead
  - b. The area difference for PG values observed and recorded 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 each of the non-conformities (possible weaknesses) identified in the previous ETS steps within 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

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- 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 three main agricultural land cover categories, defined for BPS/SAPS, is correct with respect to the correspondent values recorded in the LPIS (BPS/SAPS layer).
- If any of the above statements are true, assign to each individual weakness found in the Reference Parcel, one and only one pre-defined cause from the cascade list given in Detailed Instruction 3 (Annex I). Consult MTS results, ancillary and historical data, wherever is needed.
- a. Start with the first listed cause.
  - b. If the cause is not applicable, proceed with the next cause from the cascade list.
  - c. Stop when the correct cause is determined.
  - d. Geo-locate with a point the approximate location of the non-conformity.

NOTE 1: Each individual contamination reported in quality measure 10102\_3 for the item of inspection is reported as an individual weakness (i.e. 5 contaminations found in a RP result as 5 weaknesses). Also, a reference parcel can have one contamination, can have a critical defect and its land can be wrongly classified. This will result in three individual weaknesses.

Note 2: The Total absence of agricultural area for a given Reference Parcel is reported as critical defect, but also as area-based and classification correctness non-conformities. However, such observation (no agricultural area found) is reported only as one single weakness (as critical defect).

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)