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1 LPISQA2011

version 5.1

This is the Table of Contents for the technical documentation for the 2011 implementation of the LPIS quality assessment called for by article 6 of Commission Regulation No 1122/2009.

Chapter "2. Inspection method" and the 3 "Annexes" have been frozen at 2011-10-07 following a formal communication to the DPMM on 2011-09-22.

- You can make a pdf version of [this chapter 2 "on the fly"](#).
- You can also make a pdf version of [all LPIS QA technical documentation "on the fly"](#).

These "on the fly" documents are **NOT frozen**, and will reflect the content at the time they were created.

The 2010 technical documentation is available via [LPIS QA technical documentation v4.3](#)

1.1 Table of contents

1. Rationale

2. Inspection method

- a. Initial ATS conformance
 - ◆ i. Preparation
 - ◆ ii. Testing
 - ◆ iii. Reporting on ATS conformance
- b. Annual ETS conformance
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- d. Frequently Asked Questions

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- a MS feedback and Q&A on the draft ETSv5.0

5. Front and back matter

- a. Abbreviations
 - b. Glossary
 - c. Contacts
 - d. Release notes
 - e. Errata
-

2 Rationale 2011

2.1 Challenge

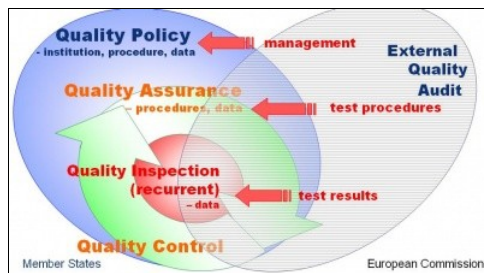
The importance of the LPIS comes from the requirement that it must channel all area based aids; the corresponding financial value exceeds €39bn for 2011 (see table 3.3.2 on page 24). For this specific purpose, LPIS quality can roughly be defined as the ability of the system to fulfill two explicit LPIS functions:

1. the unambiguous localisation of all declared agricultural parcels by farmer and inspectors,
2. and the quantification of all eligible area for crosschecks during the administrative controls by the paying agency.

Failure of an LPIS in the unambiguous localisation induces risks for double declaration of land and for ineffective inspections; inadequate quantification of eligible area renders the crosschecks ineffective for preventing and identifying over-declarations by farmers. Both failures involve financial risks for the EU Funds.

Furthermore, any well functioning LPIS will greatly facilitate operations by farmer, inspector and paying agency, resulting in a better overall performance. Obviously, a better LPIS substantially improves IACS effectiveness and management of EU Funds.

2.2 Measures



Both Member States and the EU have therefore a keen interest in demonstrating the quality of the LPIS and in addressing quality issues, if any. Such processes of planned and systematic quality demonstration form the hearth of a quality assurance (QA) system. A QA framework relies on mutually agreed quality testing between 'consumer' (the European Commission) and 'supplier' (the Member State). A test or series of tests assesses compliance for each specified quality requirement.

A distinction is made between 'prime' and 'secondary' quality elements. The prime elements are those that the European Commission considers fundamental for a correct LPIS operation and which are applicable to all LPIS systems. Secondary quality elements might not be applicable for all systems, but may provide additional substantive indications for analysing and remediating issues identified on the prime quality elements.

The Commission Regulation (EC) No 1122/2009 calls for an annual reporting on the seven prime quality elements. For each element, one or more measures, holding the inspection procedure a conformance levels has been designed.

A discussion document elaborates on these LPIS properties and the reasons they are considered essential for a good functioning and proposes a methodology to implement and integrate an adequate quality policy in the regulatory framework.

All prime quality elements have thus been developed into quantitative measures and the test results therefore represent an objective and comparable information on the different LPIS. The main application of this quantitative information is to provide an instrument for achieving business process improvement. Essentially, this quality assurance framework constitutes a yearly check-step within the commonly known plan-do-check-act (PDCA) cycle.

2.3 Implementation

To be practical, the LPIS Quality assurance framework was built using existing components, thus avoiding difficult implementation phases and other risks inherent to any new development. It also enables an easier adoption of the technologies by the Member States, who perform the actual inspection work. The resulting framework combines the following components:

- GI methodology for description of data, inspection procedures and reporting,
- Industry practices and standards for acceptance sampling and decisions
- CwRS data and CAPI know-how as a source for observations of external information
- Current Regulations as instrument for reporting procedures

Go forward to [Inspection method](#) to see the details.

Go backwards to [Table of contents](#).

3 Inspection method 2011

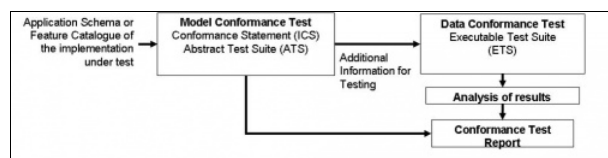
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3.1 The common Inspection method (what should be done and how?)

ISO 19105:2000(E) Geographic information ? Conformance and testing, specifies the framework, concepts and methodology for testing and criteria to be achieved to claim conformance of a data set. A first step of any data conformance testing relates to "managing the requirements".

- The functional requirements of an LPIS are laid down in the Regulations and were translated into the [LPIS Core Model \(LCM\)](#).
- The high-level quality expectations regarding LPIS data are described in a [discussion document](#)

These two documents form the basis for the two test suites: Abstract Test Suite (ATS) and Executive Test Suite (ETS), as illustrated by this simplified Conformance assessment process overview



The inspection process involves three activities.

1. **at the start**, produce a Feature Catalogue of the Implementation Under Test (IUT). This defines and clarifies data types and the relationships amongst them.
2. perform an **initial ATS**. The ATS allows for the verification of model conformance of the LPIS implementation under test through a set of abstract tests.
3. run an ETS **annually** to inspect the continued ability of the LPIS data to unambiguously geographic locate agriculture fields and to quantify the area of eligible land. The ETS operates on measures for the seven prime quality elements.

3.2 ATS, ETS and quantitative spatial data quality elements

ISO 19113:2002(E) establishes the principles for describing the quality of geographic data and specifies components for reporting quality information. It also provides an approach to organizing quantitative information in five *data quality elements*. If one tentatively maps how these five are addressed in either test suite, the results could look like:

The **Abstract Test Suite** tests **model conformity**, i.e.

- ◊ **logical consistency**: the degree of adherence to logical rules of data structure, attribution and relationships (compared to the LCM)
- ◊ **completeness**: presence and absence of features, their attributes and relationships

The **LCM ATS** describes the applicable tests to verify whether your LPIS was designed correctly.

The **Executable Test Suite (ETS)** manages the inspection of the actual (LPIS) **data values** for:

- ◊ **thematic accuracy**: accuracy of quantitative attributes and the correctness of non-quantitative attributes and of the classifications of features and their relationships.
- ◊ **temporal accuracy**: in particular **temporal validity** or validity of data with respect to time
- ◊ **completeness**: presence and absence of features, their attributes and relationships.

in accordance with the instructions and guidelines of the quality framework set in ISO 19114, 19113 and ISO/TS 19138.

These ETS activities are performed within three phases:

1. sampling: [Sample pre-selection](#)
2. inspection: [ETS](#)
3. reporting: [ETS result analysis](#)

The Commission Regulation 2010R146 calls for an **annual report** to be produced and delivered to the Commission upon completion of the ATS and ETS inspections. The report allows the MS to convey its findings to the European Commission. It holds a predefined mandatory data part and a conditional textual part.

Go forward to [Initial ATS Conformance Testing](#) to see the details.

Go backwards to [Table of contents](#).

4 Initial ATS conformance - 2011

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4.1 2011 changes

4.1.1 Your LPIS model has not undergone modifications

The 2010 ATS has not undergone any modification for the 2011 assessment. It is therefore not formally required to repeat the second step above. However, the 2010 ETS experience may have indicated some ATS interpretation issues or database model mapping imperfections that affected producing the correct scope or data values for the ETS. Therefore, it is recommended to consider your ETS analysis and feedback and improve your ATS documents where appropriate. To this respect, experience from 2010 shows that:

- some parcels should not have been in scope because somewhere an "ineligible flag" was not detected.
- the reference area was not always correctly derived from all information available in the system

4.1.2 Your LPIS model has been revised since last year

Please perform the ATS as described in the following articles to ensure correct ETS scoping and data value mapping.

4.2 Objectives

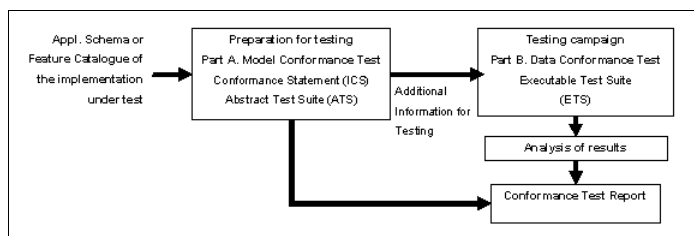
The main aim of the LPIS-ATS is to provide a comprehensive test suite that enables conformity testing of the various LPIS implementations developed to address the common requirements laid down in the CAP regulations EC 2009R73 and EC 2009R1122 and their supporting working documents. The **LPIS Core Conceptual Model (LCM Technical Specification)** has been designed to accommodate these regulatory requirements on the LPIS.

The **Abstract Test Suite (ATS)** is the set of abstract tests covering all specific requirements to be satisfied for the conformance of an implementation under test (ISO19105). In general, an **abstract test** is a generalized test for a particular requirement. Abstract tests are independent of the actual implementation values and their positional, temporal or classification accuracy.

An ATS deals with data base structure, logical and conceptual consistency and how the database design is 'fit-for-purpose'. Conformity of the model is a pre-requisite for a meaningful testing of the data values in the ETS.

The **LPIS inspection method** includes a single starting or preparation phase for database testing (see figure below): part A 'Model Conformance Test', should result in an Implementation Conformance Statement (ICS). This ICS allows the second phase - part B Data Conformance (quality) Test - **Executable Test Suite (ETS)** to start.

A final **Conformance Test Report** draws from both the ATS (part A) and the ETS (part B).



The LPIS inspection methods (elaborated after ISO19105)

4.3 Methodology overview

The ATS procedure has the following three steps:

4.3.1 Step 1: Preparation

A formal description of the LPIS under test should be prepared as an input to the remainder of the test. There are two document options for this task: an Application Schema OR a Feature Catalogue (FC) of the implementation under test

◇ An **Application Schema** is a formal description of implementation under test and the preferred data source for the ATS. According to ISO 19101, an application schema is a conceptual schema for data required for one or more applications (implementation). It specifies the spatial and non-spatial objects 'feature types' within the domain-relevant view of the real world as expressed by the information requirements. It is documented in a conceptual schema language (e.g. UML) or encoding standard as GML. Both representation ways of application schemas 'UML diagrams and GML encoding' were used for the (**LCM Technical Specification**).

◇ A **Feature Catalogue (FC)** is a formal description of implementation under test and the main data source for the ATS in case no application schema available. According to ISO 19101 it is a catalogue containing definitions and descriptions of the feature types, feature attributes and feature associations occurring in one or more sets of geographic data, together with any feature operations that may be applied.

The **Implementation Conformance Statement (ICS)** is a description of the options, which have been implemented in the LPIS under test. The ICS accompanies the primary data source: application schema and feature catalogue and may, according to the ISO standard be presented in the form of a plain text document or be generated by a structured questionnaire. In the LPIS QA context, the ICS is used as vehicle to compile and exchange the "ETS eligibility profile"

4.3.2 Step 2: Testing

The abstract test suite is composed of a series of individual abstract tests, each for a particular requirement.

During this **ATS testing**, equivalence with features and attributes of the LCM is established with the help of the schema/FC of the LPIS under test. The implementation under test can have more data sets, features and attributes than the LCM, but only those which are conceptually corresponding to the elements of the LCM shall be tested. Testing can be done by simply comparing the model description (FC) against the LCM technical specification or by application schema mapping. Test findings shall be documented in the **ATS-log** report, one record per each test and then translated into a summary **ATS scoreboard**.

ATS log

The ATS has a hierarchical structure. Tests are combined into the 3 main modules, with the last one subdivided in 3 sub-modules. A conformance statement ?Conforming/nonConforming? shall be assigned to each test and these are to be aggregated at module level. The ATS assigns a LPIS implementation as ?Conforming?, if all modules are ?Conforming?. For the data entry please use the following template: [ATS_template_v3.xls](#), and then build an XML-file according to the following schema: [4_3_AtLog_20110120.xsd](#).

ATS scoreboard

The ATS Scoreboard ([4_3_AtScoreboard_20110120.xsd](#)) represents a summary of the individual modules' ATS-log reports. For each test in the ATS, it shall specify a conformity element that can take one of the following values:

- Conforming (Conforming) - the implementation is fully conforming to the LCM specification.
- Non conforming (NonConforming) - the implementation does not conform to the LCM specification.
- Not evaluated (NotEvaluated) - conformance has not been evaluated.

The ATS Scoreboard differs from the ATS-log report, which contains detailed information on where in the LPIS database elements of the LCM can be found.

4.3.3 Step 3: Reporting

The final ATS reporting package shall hold:

- the ATS-scoreboard
- the eligibility profile (ICS)
- the list of applicable waivers (ICS)
- the ATS-log report

The ATS archiving package stored by the MS administration shall hold:

- the input documentation (application schema OR feature catalogue)
- the Implementation Conformance Statement (ICS) informative textual part as a supportive document (pdf)

Go forward to [Preparation](#)

Go backwards to [Table of contents](#).

5 ATS preparation 2011

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The preparation of the input documentation is probably the most time-consuming step of the ATS. It can trigger several iterations and involves experts dealing with different parts of the IT system.

5.1 Application Schema

How to create data base specification from UML model / application schema?

To create a UML model/application schema, modelling software shall be used (e.g. Enterprise Architect, Altova UModel). This software allows exporting the implementation model/application schema into a database/system specification document. The documentation shall contain:

- the UML diagrams illustrating the overall model and its logical parts,
- the description of each feature type (spatial and non spatial objects)
- a description of feature type properties such as attributes (definitions, data type, allowed values, constrains)
- a description of association dependencies (generalisation, aggregation, composition etc.)

The [LCM Technical Specification](#) is an example of such documentation.

The GML application schema for LPIS Core Model can be downloaded from the ftp: [LPIS Core Model Schema](#).

5.2 Feature Catalogue

How to create a Feature Catalogue?

For a template for Feature Catalogue, the template proposed by the ISO19110 (2003) standard can be used: [template_FC](#)

This template of the feature catalogue retains the original structure of the ISO standard. However, for the sake of clarity and discussion, additional, 'Non-ISO' ancillary information is included for feature types and feature attributes by means of additional fields that are specific to the LPIS Core Model (LCM). These specific entries are

- LCM_discussion: clarification of the definition.
- LCM_example: exemplary values from a MS implementation (not necessarily a 'best practice' example)
- LCM_reference: reference to the Regulation
- LCM_comment: various comments

The first worksheet of the template contains two tables: FC metadata and FC summary. The FC metadata table contains information necessary for FC identification (name, scope, responsible organisation /person etc) . The table FC summary contains information on content of the catalogue:

- feature types (usually corresponds to spatial or non spatial data set/layer/table);
- the classification of feature types such as core data ?for determination of area of reference parcel-; data for SMR or GAEC; spatial data on rural development; cartographic reference, etc..
- geometry types - such as polygon, line, point, buffer, no geometry (for tables)
- source types - such as maintained by LPIS custodian, external - integrated into LPIS from different sources, shared - on-line link/harvesting/web service to other system(s).

For each feature type in the catalogue you will need to create one separate worksheet! Feature_name X should correspond to the name of the .xls speardsheet where the feature is documented in the FC; The list of the features in the metadata FC_summary table shall corresponds to number and names of features described in catalogue.

The feature worksheet contains two types of tables: one for describing the every feature, another table for describing attribute(s) -one table per attribute. The entries of the attributes in the feature table shall correspond to the names and number of attribute tables. The template_FC contains one prefilled example of a feature worksheet.

5.3 Implementation Conformance Statement

The ICS is a supportive document and is to be provided by the authority claiming conformance with the LCM. This statement involves a mandatory and informative part:

- mandatory, structured part
 - ◇ ?eligibility profile? ? conversion table allowing raw ETS observations (mapped land cover features) to be expressed in eligibility terms (see also [ETS annex III, table 2](#));
 - ◇ List of applicable waivers, which can vindicate the "contamination" of the Reference parcel with certain non-eligible features (described in Annex I);
- informative, textual part (non-exclusive list):
 - ◇ type of payment scheme (SPS/SAPS) and presence of other CNDP schemas and coupled payments (title IV);
 - ◇ type of Reference Parcel, including national definition translated in to English, history of LPIS system development and upgrades, evolution of parcel definition and reason for changing of type of reference parcel (if applicable);
 - ◇ rules for producing the Reference Parcel identifier;
 - ◇ coordinate reference system(s) (CRS) used for LPIS/ reference parcel layer

- ◇ flowcharts for operations;
- ◇ findings of recent audit and mitigation actions, etc.

Go forward to [Testing](#)

Go backwards to [Table of contents](#).

6 ATS testing 2011

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During ATS **testing** equivalence of features and attributes of the LCM shall be established in the schema/FC of the LPIS under test. The implementation under test can have more data sets, features and attributes than the LCM, but only those which are conceptually corresponding to the elements of the LCM shall be tested. Testing can be done by simply comparing of the member state model description with the LCM technical specification or by application schema mapping. Tests' findings shall be documented in the **ATS-log** report, one record per each test.

6.1 ATS log

Use the following template for data entry: [ATS_template_v3.xls](#),

Module A_11

- Define the type of Reference Parcel in use. It requires the exhaustive definition of the reference parcel with all possible options, given in native language AND translated in English.
- Assign 'Conforming?' to module A_11 if one and only one of the tests A_1113; A_1114; A_1115; A_1122; A_1123 is 'Conforming'.

Modules A_12 and A_13

- Analyse the attributes of the reference parcel.
- Assign 'Conforming?' for each test result of the modules A_12 and A_13 if for each element of the LCM, a corresponding feature from the LPIS under testing is found with:

◇ **data set / table**

◇ **layer**

◇ **attribute**

◇ **format**

◇ **value**

◇ **definition (Eng.)** ? feature type definition translated in English, in order to prove semantic equivalence to the element in the LCM.

- Store the records for all tests findings (data set name/attribute name, format, values and definition) in the ATS-log report [ATS_template_v3.xls](#). If needed, additional description can be added in the column behind definition column.

6.2 ATS scoreboard

Build an XML-file according to the following schema: [4_3_AtScoreboard_20110120.xsd](#) based on ATS-log results.

6.2.1 Aggregation of results at the modules level

- Assign Module A_11 'Conforming?' if one of the tests A_1113 **OR** A_1114 **OR** A_1115 **OR** A_1122 **OR** A_1123 is 'Conforming' **AND** A_113 are 'Conforming'?
- Assign Module A_12 'Conforming?' if test ALL applicable tests (not optional) are 'Conforming'
- Assign Module A_13 'Conforming?' if sub-module A_131 is conforming **AND** sub-module A_132 is conforming **AND** sub-module A_133 is conforming:

◇ Sub-Module A_131 is conforming if ALL tests are 'Conforming'

◇ Sub-Module A_132 is conforming if ALL tests are 'Conforming'

◇ Sub-Module A_133 is conforming if ALL tests are 'Conforming'

6.2.2 Aggregation of results at the LPIS level

Fill in 'Conclusions' section of the ATS-scoreboard report:

- state that '<All modules are 'Conforming?>' if it all the modules passed tests successfully **OR**
- indicate all module(s) which are NonConforming, and explain the (likely) reason for the non-conformance(s), whether an alternative solution does/doesn't exist, and if the existing implementation is appropriate/ not appropriate to enable further testing (within the ETS). Finally, mitigation measures in order to deal with the observed non-conformance may be proposed here.

6.3 ICS structured part

6.3.1 Eligibility profile

Follow the instruction of [ANNEX III: The concept of land cover and 'eligible hectares'](#) to prepare the eligibility profile, relevant for the agriculture land cover types presented in the LIPS. The template for this eligibility profile is presented at the end of the document (Table 3), and can be retrieved as an XSD scheme from our FTP: [5_1_EligibilityProfile_20111027.xsd](#).

The use of a correct and complete eligibility profile in the ETS is critical for expressing raw ETS observations (mapped land cover features) in eligibility terms.

- ◇ Complete the eligibility profile table and add this to the ATS report
- ◇ Use this eligibility profile for the ETS inspection.

6.3.2 List of applicable waivers

For waivers on contamination, look up the **Detailed Instructions 2** at the end of [ANNEX I: Quality Measures](#). It contains a list of four waivers [A..D].

- ◇ Add waiver C to the list when there is a separate GIS layer to determine (in)eligibility, e.g. as indicated in ATS test A123, or on other documentation
- ◇ Add waiver D to the list when there is a separate GIS layer to delineate historical GAC, as indicated in ATS test 122

Waivers A and B are applicable to all systems and require no explicit listing.

6.4 ICS optional textual part

The optional textual describes the various options that are relevant for a better understanding of the LPIS under test.

There are no formal guidelines or templates for the layout and content of this textual part. The textual part shall be produced in Adobe pdf format.

Go forward to [Reporting](#)

Go backwards to [Table of contents](#).

7 ATS reporting 2011

[version 5.1](#)

7.1 Purpose of the report

The ATS shall be performed at the initial phase of preparation of the annual quality assessment (ETS). The ETS is an annual procedure, but the ATS isn't. There is no need to repeat the ATS testing every year, unless there were database structural changes or LCM upgrades (respectively from re-designing the LPIS or changes to the EU requirements).

In the annual LPIS assessment report, it should be mentioned when the last ATS was done and what was the conformance statement.

7.2 Data part

The ATS reporting that is necessary can be divided in two packages: the ATS reporting package that should be sent to the EU and the ATS archiving package, that is to be stored by the member state.

Example for all the files that should be provided in the different packages can be found on the download page: [Downloads](#).

7.2.1 ATS reporting package

The ATS reporting package, to be sent to the European Commission shall consist of:

1. ATS-scoreboard (xml) (XML: [4_3_AtsScoreboard_20110120.xsd](#))
2. Eligibility profile (xml) (Implementation Conformance Statement structured part) (XML: [5_1_EligibilityProfile_20111027.xsd](#))
3. List of applicable waivers (xml) (Implementation Conformance Statement structured part) (XML: [5_1_Waivers_20111027.xsd](#))
4. the ATS-log report (xml) (XML: [4_3_AtsLog_20110120.xsd](#))

7.2.2 ATS archiving package

The ATS archive package, to be stored by the Member State shall hold:

1. the input documentation (application schema OR feature catalogue)
2. the Implementation Conformance Statement (ICS) informative textual part as a supportive document (pdf)

7.2.3 Note

All elements of the ETS reporting package can be easily exchanged with the help of technical templates. These templates are available from the [LPIS QA download pages](#)

7.3 Delivery instructions

ATS reporting package shall be uploaded on the LPIS QA portal.

For instruction, please refer to [Use case: Uploading ATS Reporting Package](#)

Go forward to [Annual ETS inspection](#)

Go backwards to [Table of contents](#).

8 ETS conformance 2011

version 5.1

8.1 Objectives

The core objective of the ETS is to collect the necessary and sufficient information, in order to assess the ability of the LPIS to effectively perform its tasks. This is done through direct observation and analysis of a sample of the registered LPIS parcels against current year's terrain information.

In this respect, the ETS is targeting, by a qualitative and quantitative inspection process, those key characteristics on the LPIS objects (and their properties), which could provide a verdict on the ability of the LPIS:

- ◊ to enable the unambiguous geographic location of agriculture fields, claimed for aid by the farmer (identification and position of agriculture parcels)
- ◊ to quantify the area of eligible land at a parcel level in order to cap any undue payments and to inform the farmer on the land available for claim

Each of these key characteristics, called "prime quality elements", is assessed on the base of a specific set of measures, defined according to the quality framework set by ISO/TS 19138. The detailed description of the measures is given in [ANNEX I: LPIS data quality measures](#).

8.2 Methodology

The ETS comprises three key phases:

1. **Preparation of the reference ground data and Sampling** - Identification of the areas for inspection (on the base of the ground data available) and follow-up sampling of the reference parcels inside these areas, based on ISO2859-2
2. **Parcel Inspection** - inspection of the selected reference parcels (following the list of pre-defined quality measures), against current year's ground data
3. **Analysis of observed data** - subsequent processing and analysis of the observations made during the inspection and aggregation of the results.

The elaboration of the ETS package was based on some principle assumptions and considerations, outlined in the Chapter [Methodological background](#).

Each quality measure, implies a specific sequence of observations, which have to be made for every reference parcel inspected. These observations are collected through a land cover interpretation and delineation of the area represented by the reference parcels, either by computer-assisted photointerpretation (CAPI) of current year's orthoimagery ([1st approach](#)) or by direct field measurements ([2nd approach](#)). **The current version of the ETS methodology covers the 1st approach only.**

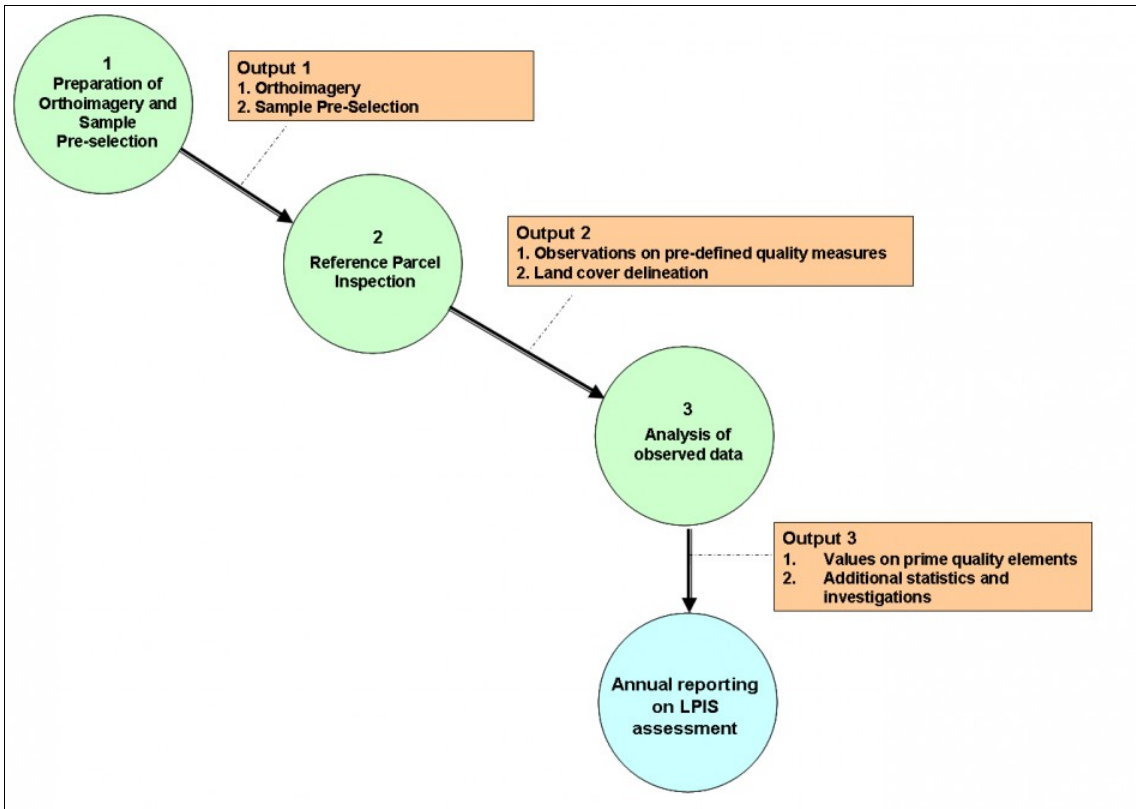
If performed in the office ? the reference parcels are not inspected on the field ? the ETS inspection requires the setting-up of appropriate GIS environment and the availability of two principle input datasets:

- the sample reference parcel data and
- an up-to-date reference orthoimagery.

The EU Member State Administration could use any available orthoimagery in the country, if acquired in the year of the inspection. Alternatively, the Commission can provide very-high resolution (VHR) satellite data, acquired in the frame of the CwRS campaign, considering that the CwRS cycle provides a well-established frame for image capture and time schedule. Upon request, a limited number of dedicated LPIS QA zones can be acquired within this framework.

As most of the process is related to photointerpretation and land cover delineation, certain general mapping rules are defined in advance, but they are not too restrictive in order to give some flexibility to the inspectors to adjust to their particular LPIS design and local environment.

A country specific "[eligibility profile](#)" is applied to the land cover features recorded in order to correctly separate the eligible from ineligible land cover. The eligibility profile constitutes a conversion table allowing raw ETS observations (mapped land cover features) to be expressed in eligibility terms. The observations' database is then cross-checked and processed against the eligibility profile, and the relevant statistics and analyses are generated through simple SQL statements. These yield the scores for each "prime" quality element for the LPIS under test. An overview of the ETS workflow is given on the diagram below.



Overview diagram of the ETS workflow

Go forward to [Methodological background](#).

Go backwards to [Table of contents](#).

9 ETS methodological background 2011

version 5.1

This methodological section introduces the key concepts behind the ETS documentation, as well as the two fundamental principles that drove the development of this ETS.

9.1 LPIS

9.1.1 Definition

There is no explicit LPIS definition in the Regulations. However, there is a clear requirement that a LPIS holds:

1. a stable identification of land cover and/or use units (i.e. the basis for eligibility for any scheme);
2. the 'eligible hectares' value for area aids, originally delineated (vectorised) by survey compatible with 1:10,000 scale or better, and subsequently updated by the various IACS processes;
3. an inventory of other features that benefit (or preclude the right) from aid, with eligibility (and value) depending on the other aid schemes: this is a database of polygons, lines or even points, that permit (spatial and alphanumeric) queries and data retrieval operations in function of the administrative cross checks required.

Considering the INSPIRE conceptual frameworks on Geographic Information in Europe, we propose to merge these requirement into one definition:

LPIS is the single GIS for IACS

9.1.2 LPIS QA Scope

For the LPIS QA, under Regulation No 1122/2009, only the first pillar of IACS is currently considered, indicated by the first two requirements. In particular any reference parcel that is mentioned on the farmer's application shall be subject to inspection. This translates to reference parcels that:

- OR
- ◇ were declared during the previous application year
 - ◇ hold a non-zero 'maximum eligible area' ; i.e. can appear on the pre-printed form or re-enter an application without triggering an additional verification procedure.

9.1.2.1 DQ_scopes

The inspection ground situation and some historic conditions can restrict what can be observed on a sampled reference parcel during inspection.

1. if image acquisition parameters are not compatible with image quality recommendation, all parcels in that zone can be **discarded**
2. if local technical image conditions prevent a clear inspection, an affected parcel can be **skipped** (for reason of cloud cover)
3. some local cropping conditions may prevent that a particular parcel is delineated and some data acquisitions methods and historical constraints can make it nonsensical to compare the ETS observed value individually to the recorded value. The ETS methodology will flag such parcels and use these flags to determine which measures are relevant and which not for the particular parcel. The **DQ_scopes** of the ETS data quality measures filter out these flags to ensure a maximum of relevant information is extracted from the sample.

9.1.2.2 Considerations on your given LPIS implementation

The LPIS QA scope restricts the LPIS population for the purpose of this LPIS quality assessment to **ONLY** those reference parcels that comply with one of the two conditions above.

1. This is not necessarily the complete set of "blocks" that are managed in the "LPIS-layer" of the GIS-environment. It can be a subset, for instance, 'blocks' that are completely urban, water or forested AND that have not been declared by farmers should not be subject for quality testing. Non-agriculture blocks should not be considered when constructing the "lot of reference parcels" (defined below) for this ETS.
2. Not all individual blocks/polygons in a system necessarily represent a single reference parcel
 1. individual landscape features can often be considered as an element of one and only one reference parcel
 2. some production blocks may have been subdivided to detail their content (e.g detailed land cover categories or cropping patterns).

It's strongly recommended to merge, where appropriate, such subdivisions into a single RP polygon to reflect the true reference parcel **FOR THE purpose of the LPIS QA.**

9.2 Other Key Definitions

For the clarity of further readings, the following basic sampling scheme terms are introduced and explained below for use in the ETS:

- **Lot of reference parcels:** a homogeneous^[1] population of reference parcels defined for each country/region (or LPIS).
- **Sample size:** the prescribed number of reference parcels to be tested by the EU Member State, based on ISO 2859/2-1985 (Procedure A, Limiting Quality = 2%),
- **Sample pre-selection:** an ordered list of reference parcels (provided by JRC) to be sequentially inspected. The pre-selection counts roughly three times the prescribed sample size.
- **LPIS Control Zone:** zone used for the ETS parcel inspection, where up-to-date national orthophoto or VHR data, acquired in the frame of the CwRS or independently, is available and considered random with respect of the underlying parcels.
 - ◇ **Proprietary Zone:** zone used for the ETS parcel inspection where a national orthophoto or VHR data independently acquired is planned/available.

◇ **CID Zone:** zone used for the ETS parcel inspection where VHR data, acquired by JRC in the frame of the CwRS or dedicated LPIS is planned/available.

1. ? Assessing whether the RP population to be inspected is homogenous and thus constitute a single "sampling lot" relates only to the processes of RP creation and RP upkeep of the reference parcels.

9.3 Principle 1: the sampling plan entails the decision on the quality

ISO2859-2, procedure A is selected as an appropriate sampling plan, offering a cost-effective compromise between the costs of inspection and the probability to come to a correct verdict on the quality.

The plan's probability performance is so that a LPIS with a marginal better quality than the required minimum still has around 5 % probability of been considered too poor, and a LPIS slightly worse than required, has around 10 % probability of being considered adequate. The precise probabilities are indicated in the standard. Better performance on the verdict would require more sampling and thus more resources.

An acceptance sampling plan is a set of rules by which a lot is to be inspected and 'sentenced'. In practice, it determines the sample size in function of the lot (LPIS) size and specifies the lot conformance based on the observed number of non-conforming items (parcels). In other words, given a minimum requirement for a specification, the plan will identify

- ◇ The sample size (the number of parcels to be inspected)
- ◇ The acceptance number (the maximum number of non-conforming parcels that are likely to be found in an acceptable lot)

The key elements and operating instructions of the selected sampling plan can be found in the section on the [acceptance decisions](#)

9.4 Principle 2: observations of agriculture land and eligibility for the scheme are distinct

LPIS is the spatial database (GIS) within IACS; its 2 prime functions are

1. a stable identification of the land use - the basis for aid application in any scheme -
2. the correct quantification of the agriculture land (cover) within; - the "cap" for crosschecks in the direct aid scheme -

Contrary to first impressions, eligibility of land for direct aid is not consistent over Europe:

- ◇ SPS and SAPS differ: e.g. on household garden, on GAEC conditions;
- ◇ Landscape features are eligible depending on national GAEC rules within a scheme.

It is therefore not feasible to develop a common pan-european inspection procedure that directly assesses eligibility. The workaround is to perform the inspection in two steps:

1. observe and measure the features on the land
2. assign eligibility to those features based on the local eligibility profile.

Further details and instructions on the land cover mapping are provided in [ANNEX III:](#)

Go forward to [Orthoimagery use](#).

Go backwards to [Table of contents](#).

10 LPIS Control Zones and reference orthoimagery 2011

version 5.1

This section describes the procedures for the definition and selection of the geographical zones in a given LPIS where the reference parcels are subject of inspection. It also outlines the specifications of the orthoimagery, suitable for the reference parcel inspection.

A correct and complete application of the sampling and inspection methodology is crucial to support a general trust in its findings.

10.1 LPIS control zone selection

- Analyse whether the LPIS under test can be considered as a single "lot", or whether it should be subdivided into several "lots" on the basis of different production processes implemented during the creation of specific parts of the LPIS.
- If the LPIS under test cannot be considered as a single "lot", decide on the number of "lots"
- For each "lot of reference parcels", randomly define geographic control zones, according to the following principles:
 - ◆ the number, position and area of the zones should ensure that the total number of reference parcels inside is at least 3 times the "Sample size" requested
 - ◆ they are covered by a current year's orthophoto suitable for LPIS update or are planned to be covered by such orthophoto well in time for this year's LPIS assessment.

When no such orthophoto is available or planned for the zones, a timely acquisition request for VHR satellite data in the frame the CwRS programme can be considered.

In all cases, to guarantee a representative inspection, the external data should be independent of LPIS creation and already performed maintenance processes. In this respect the Member State should ensure that the definition of the LPIS control zones, is independent from the LPIS status and properties, as well from any reference parcel characteristics. We repeat this is an important condition for considering those zones as randomly selected for the LPIS assessment.

In this respect, a particular attention should be paid to LPIS control zones, acquired with aerial imagery, as the planning of the aerial orthophoto can be often linked with a dedicated refresh of problematic or updated parts of the LPIS. The use of zones that are part of the CwRS programme for the LPIS QA is not considered a problem, as the CwRS zone are assumed by default to be independent from the LPIS-related issues and risks. MS Administrations not participating in the CwRS programme of the EC can order specific acquisitions for the LPIS assessment through the EC services. By default, they will have the responsibility to process/orthorectify the VHR data. The procedure of the raw VHR image ordering and delivery will be discussed and agreed with each MS Administration, bilaterally.

Once defined and selected by the EU MS, the resulting zones should be reported to the EC, as the "LPIS control zones" for the year of the assessment. The MS Administration should provide the geographic position and extend of the "LPIS control zones" in the appropriate geodata format with the official EPSG identification or the parameters of the coordinate reference system applied.

The LPIS control zone can be changed during the inspection campaign, only if:

1. JRC has used the full LPIS population to produce the new sample pre-selection.
2. Timely availability of suitable imagery for the alternative zones can be guaranteed.

More information on zone definition for the CwRS programme can be found on: [Zone Definition for the CwRS campaign](#)

10.2 Considerations regarding the orthoimage specifications

10.2.1 Ground Sampling Distance - Spatial Resolution

As stated in Art. 17 from COUNCIL REGULATION (EC) No 73/2009, the minimum scale for the cartographic information used to create and update the LPIS is 1:10 000, which corresponds to an orthoimagery of at least **1 meter** spatial resolution. The specifications of any VHR data used in the CwRS programme is compliant with the cartographic standard of 1:10 000. However, the surveys done by JRC last years, indicated that the EU MS Administrations use for the LPIS maintenance, orthoimagery with a superior spatial resolution. Most of the EU countries, rely on orthoimages with ground sampling distance (GSD) of 50 cm or less, thus resulting in cartographic scale of about 1:5 000 or larger for the spatial data recorded in the LPIS.

10.2.2 View angle

The findings of the recent [ETS pilot study](#) indicate that, under some field conditions, the ETS parcel inspection could be less than optimal when the imagery is acquired with significant off-nadir angle (more than 30-32 degrees), independent from its spatial resolution. This is because oblique acquisition results in larger ground sampling distances and also increases the probability of occlusions of the land under inspection, caused by tall features (buildings, hedges, forest belts, tree lines, etc.). The increase of the GSD results in lower spatial resolution of the final orthoimagery.

10.2.3 Mapping Unit Size

The ETS inspections methodology requires mapping of individual land cover features such as landscape features, with higher level of detail in comparison to the area-based measurements for the CwRS programme (which is often limited to re-check of the area of the agricultural parcels, determined at crop group level). Smaller mapping units require a smaller ground sampling distance.

Furthermore, mapping this variety of land cover features requires multispectral imagery.

A theoretical study on the effects of Ground Sampling Distance and polygons size on the inspection precision can be found in [this presentation](#)

10.2.4 Practical considerations

To address these considerations, please consider the following recommendations, regarding the orthoimagery, **applied in the ETS of the LPIS assessment**:

1. pay attention when using LPIS control zones, covered with orthoimagery, acquired with off-nadir angles of more than **30 degrees**. Depending on the landscape and reference parcel structure and if justified, you might decide to skip the use of such zones, prior to the ETS inspection.
2. use orthoimagery with spatial resolution **better than 1 meter**.
3. use the full spectral range of the imagery. If infrared channels are available, they should be used. Often, the proper land cover delineation for the ETS inspection requires the full use of the spectral information
4. consider the acquisition date. As no crop identification is required, LPIS QA imagery could allow for much larger acquisition windows than CwRS imagery. Still, the date has an impact on the interpretation. Each MS should assess this aspect for its observations and decisions.
5. consider consulting any available ancillary images or vector data, such as aerial orthophoto, acquired in the year under assessment, or supplementary HR data from the CwRS campaign.
6. as with any photointepretation, consider a rapid field inspection if the available information in the office is not conclusive.
7. consider your LPIS population under the zone: it goes without saying that smaller parcels are more precisely measured with higher spatial resolution imagery.

10.2.5 Recommended CwRS VHR imagery

In the light of above-given requirement and taking into account the available VHR satellite, used in the CwRS, the following VHR satellites and configurations are considered suitable for the 2011 LPIS QA:

- Sensors:

- ◊ **GeoEye-1**
- ◊ **Worldview-2**
- ◊ **Quickbird**

- View angle

The table below give the recommended range for the off-nadir/elevation angles for each of the sensors listed above.

Satellite (Sensor)	Recommended Maximum off-nadir angle (in degrees)	Recommended Minimum elevation angle (in degrees)	Comments
QUICKBIRD	25	63	restricted off-nadir angle ensuring a maximum GSD of 0.72m
GEOEYE-1	30	56	-
WORLDVIEW-2	30	56	-

- Use of the VHR data, acquired for 2011 CwRS. Skipping of zones.

- ◊ All CwRS zones, acquired by any of the sensors suitable for 2011 LPIS QA, are considered valid for the 2011 ETS, providing that the principle of randomness is respected.
- ◊ The CwRS zones, acquired by IKONOS can be exceptionally used for the 2011 ETS, providing that all of the following conditions are met:
 1. There are CwRS zones in the LPIS ?lot?, that are already programmed and acquired by IKONOS with elevation angle more than 61 degrees.
 2. There are not enough CwRS zones in the LPIS ?lot?, acquired by the spaceborne sensors suitable for LPIS QA, to ensure the number of pre-selected parcels and to guarantee the randomness of the parcel selection.
 3. There are no ?coincidental? suitable archive VHR data available, acquired by the spaceborne sensors suitable for LPIS QA over the CwRS zones, or over other areas that could become alternative LPIS control zones.
 4. There is no any suitable proprietary aerial or satellite orthoimagery, acquired and produced in the assessment year over the CwRS zones, or over other areas that could become alternative LPIS control zones.
- ◊ In addition, CwRS zones, acquired by IKONOS, should also be used when the practical considerations above have not given any counter-indication against their use. Typically this is the case of large homogenous fields with few vertical features within a level landscape.

10.3 Notes

The above-mentioned recommendations are relevant for the ETS parcel inspection **ONLY**, and not in general for the orthoimagery used in the LPIS update.

The specification of the orthoimagery for LPIS update should be consistent with the following two articles:

- **Specification of the orthoimagery use for the LPIS**
- **Common Technical Specifications for the 2011 CwRS Campaign**

Go forward to [Reference Parcel Sampling](#).

Go backwards to [Table of contents](#).

11 ETS reference parcel sampling 2011

version 5.1

This section describes the procedure for the generation of a random sample of reference parcels from an LPIS under test. This sample is to be inspected in the ETS ([Executable Test Suite](#)). In order to receive a sample pre-selection Member States:

- shall do **Steps 1 to Step 4**;
- shall download the sample pre-selection list in **Step 9**.

11.1 Data exchange and sampling instructions

Creating the sample pre-selection requires:

- **Step 1** (by MS): create a point representation from the reference parcel polygons (total population of parcels from the Lot);
- **Step 2** (by MS): convert reference parcels' point data into a harmonised data structure: [LpisPointZeroState.xsd](#),
- **Step 3** (by MS): prepare LPIS Control Zones data: [ApplicableCidZones.xsd \(XML\)](#) and [ApplicableProprietaryZones.xsd \(GML\)](#)
- **Step 4** (by MS): upload the PointZeroState, ApplicableCidZones and ApplicableProprietaryZones (if necessary) through the LPIS QA Web Application. For instructions, go to:

- [Logging into the LPIS QA Web Application](#)
- [Establishing LPIS Settings](#)
- [Creating a sample pre-selection](#)

- Step 5 (by EC): receive and analyse reference parcel data and LPIS Control Zones data (**by EC**),
- Step 6 (by EC): clip reference parcel data with the LPIS Control Zones,
- Step 7 (by EC): determine the sample size for the ETS inspection, based ISO 2859/2-1985, procedure A,
- Step 8 (by EC): generate a sequential list of randomly selected reference parcels, and send a notification e-mail,
- **Step 9** (by MS): download the pre-selection list [LpisSamplePreselection.xsd](#). For instruction go to:

- [Logging into the LPIS QA Web Application](#)
- [Downloading a sample pre-selection](#)

This methodology is presented in Figure 1, below.

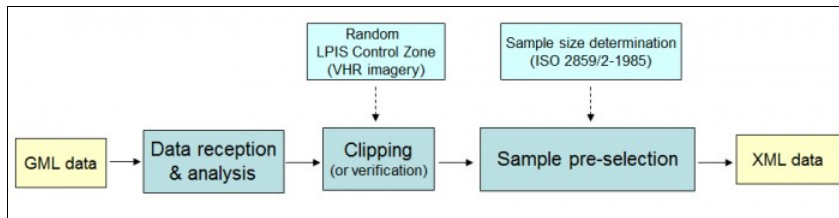


Figure 1. Workflow of the ETS sampling methodology.

Go forward to [Inspection](#)

Go backwards to [Table of contents](#).

12 ETS inspection 2011

version 5.1

12.1 Introduction

This section describes the sequence of actions (events), which has to be performed during the inspection of the reference parcels from the pre-selection set.

In order to guarantee the successful conduction of the inspection procedures, the following prerequisites have to be met and verified:

- The ATS of the LPIS data model should be performed in advance and yielded a "Conforming" statement.
- The national or region-specific "eligibility profile" must be prepared and available
- The sampled LPIS data should be readable and complete, together with any relevant ancillary data (ex. historical GAC mask, evidence of farmer-s updates, historical evidences,...)
- The reference orthoimagery should be readable and should be compliant with the relevant **technical specifications**
- Both datasets, as well as any ancillary data should be in the same national coordinate reference system
- The proper GIS environment must be available

Member States shall verify that the above prerequisites are met.

12.2 Inspection Workflow

The ETS inspection procedure - quality measures, flow of actions, decision rules - is explained in detail in three downloadable Annexes, which represent the truly technical documentation of the Executable Test Suite of the LPIS QA. Reference to these documents is given at the end of the current page.

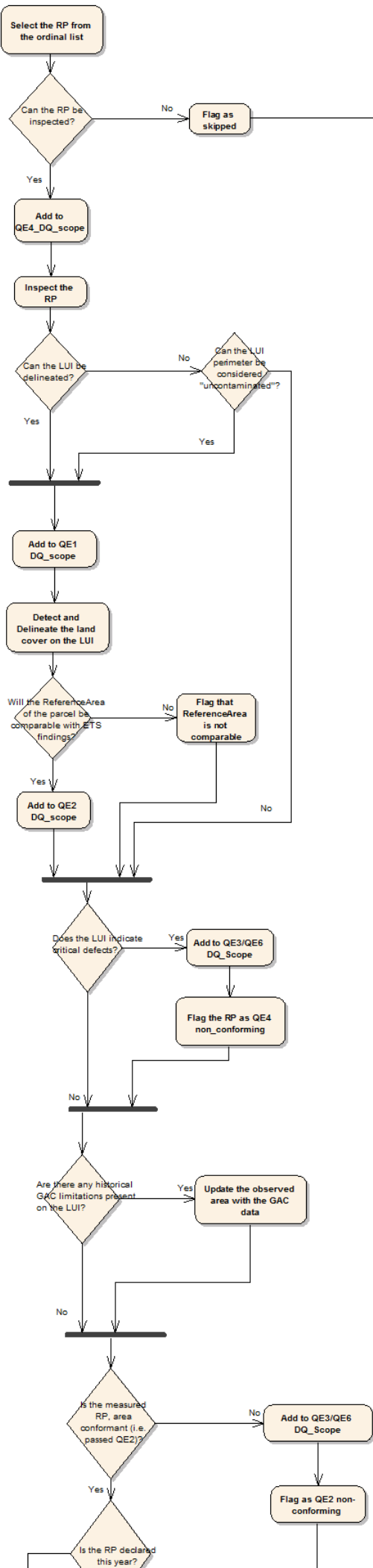
This article introduces the procedure at generic level; i.e. how an individual parcel will be inspected based on the technical, local and historical conditions.

The ETS comprises a sequence of actions applied for each reference parcels under inspection. The set of actions might differ for each reference parcel, depending on the selection rules that govern the sections of the workflow. Each selection depends on the local ground conditions observed on the orthoimage, taking into account also the particular RP design. The selection steps are of great importance, not only because they "outline" the correct inspection path of each RP, they also help to identify those quality measures at sample level (quality elements), the RP will be subject to. This approach ensures that each LPIS quality element will be tested/evaluated with the most appropriate scope of RP (DQ_Scope), based on characteristics in respect to their processing abilities in the ETS.

The ETS inspection "picks-up" and process sequentially the RPs from the sample pre-selection list, according to their ordinal number. **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).**

The diagram shown below, illustrates schematically the entire inspection process, highlighting the main actions, DQ_Scopes and selection rules.

ad Simple_Flow_Events



12.3 ETS parcel inspection

- Select the top reference parcel RP (from the ordinal list)
- Check if the RP can be inspected on the base of the available input data (LPIS vector dataset, reference orthoimagery and ancillary data)
 - ◊ If no, flag it as skipped for inspection and go to the next RP
 - ◊ If yes:
 - Add it to the scope of RPs that has to be checked for Quality Element 4 (Critical Defects)
 - Start the inspection of the RP
- Check, if the RP can be measured (the Land under Inspection - LUI - is identifiable).
 - ◊ If no, check if the LUI perimeter is contaminated with ineligible features
 - If yes, skip the measurement of the RP and check it for Critical Defects only
 - Else, proceed with the measurement of the RP
- Add it to the scope of RPs that has to be checked for Quality Element 1 (Total eligible area)
- Make an inventory of the land cover on the LUI through mapping. Derive the maximum eligible area as observed.
- Check if the ReferenceArea of the parcel is comparable with ETS findings.
 - ◊ If yes, add it to the scope of RPs that has to be checked for Quality Element 2 (Area-based conformity)
 - ◊ else: flag it as non-comparable.
- Check if the LUI indicates presence of critical defects.
 - ◊ If yes:
 - Add it to the scope of RPs that has to be checked for Quality Element 3 (Causes for non-conformity) and Quality element 6 (Cumulative land changes)
 - Flag it as non-conformant in respect to QE4
- Update the observed area with the historical GAC data, if applicable
- Check if the measured RP is area conformant (i.e. passed QE2).
 - ◊ If no:
 - Add it to the scope of RPs that has to be checked for Quality Element 3 (Causes for non-conformity) and Quality element 6 (Cumulative land changes)
 - Flag it as non-conforming in respect to QE2
 - ◊ Else:
 - Check if the RP was declared in the year under assessment
 - If yes, add it to the Scope of RPs that has to be checked for Quality Element 5 (Area Declared)
- Check if the RP is part of an application under the OTSC sample
 - ◊ If yes, add it to the scope of RPs that has to be checked for Quality Element 7 (Rate of irregularities)
- Finalize the inspection and go to the next RP from the ordinal list.

A fictitious illustration of the resulting subsets from this procedure is provided in [our FAQ pages](#)

12.4 Technical documentation on ETS

The detailed description of the ETS inspection procedure is organized in 3 different parts (documents), which are published as three separate annexes in pdf format.

ANNEX I: LPIS data quality measures contains the definition and comprehensive description of the quality measures of the LPIS data, which provide the necessary and sufficient information to properly evaluate the performance of a given LPIS. They are defined on the base of the principles and templates of ISO/TS 19138. There are two group of quality measures, stated in the document:

- quality measures at reference parcel level (with prefix RP_ in the Alias Name) - they are subject of the ETS parcel inspection
- quality measures at sample level (with prefix LPIS_ in the Alias Name) - they are derived from statistics from the "RP_" measures, through pre-defined SQL statements on the set of observations made during the ETS inspection. Some sample measures involve statistics from other sources.

ANNEX II: ETS inspection procedure ? Description of the workflow contains more detailed and comprehensive description of the ETS parcel inspection workflow, given above. The operator's steps and events are grouped into Action Packages, following the structure of an **UML Activity Diagram**, developed to visualize the sequence of the process from business use case point of view.

ANNEX III: The concept of land cover and ?eligible hectares" describes the concept of the land cover mapping used in the ETS and the way to express the raw ETS observations (mapped land cover and landscape features) in eligibility terms, using an eligibility profile to perform the conversion. A brief introduction of the FAO Land Cover Classification System, used in the semantic description of the agriculture land cover, that might represent eligible land, is also given. A template of an eligibility profile is available at the end of the document (Tables 2 and 3), but can be retrieved also as XSD scheme from [Downloads 2011](#)

Go forward to [Analysis of observed data](#) to see the details.

Go backwards to [Table of contents](#).

13 ETS Analysis of data 2011

version 5.1

13.1 Introduction

This section is aiming to provide some additional clarifications (whenever is needed) on the post-processing steps applied on the raw observation data, collected during the parcel inspection.

The following issues are discussed:

- clarifications on the calculation of the maximum eligible area (MEA) using the eligibility profile (at reference parcel level)
- subsequent analysis and further investigations of the nature of particular findings, using the data collected from the entire set of quality measures
- calculation of the values of the quality elements at LPIS sample level, on the base of the values retrieved at reference parcel level

13.2 Calculation of the maximum eligible area (MEA) using the eligibility profile

The calculation of the maximum eligible area is based on the input ("DQ_value") from the following data quality measures:

- RP_MEA (RP true eligible area) - 10102
- RP_ELF (RP landscape features area) - 10104_2

The key component allowing the raw ETS observations (mapped land cover features) to be expressed in eligibility term is the **eligibility profile**. It is in fact, a conversion table, translating the results of the land cover mapping into ?eligible hectares or features found?. As the eligibility profile is a prerequisite for the correct conduction of the ETS, it shall be prepared in advance.

The eligibility profile is embedded into the ETS inspection, in a way that allows an automatic calculation of the observed eligible area for each mapped land cover feature on the base of the geometric area of the feature and its land cover class definition. The identification and mapping of any landscape features is managed in the eligibility profile as well.

A brief description of this procedure is given below:

1. For each agriculture land cover feature, which might represent eligible land, found on the LUI:
 1. Assign to **Land cover feature X**, the correspondent *<Land Cover Class>* from your eligibility profile (prepared based on the template given in Table 2, Annex III)
 2. Get the *<Eligible Hectare Factor>* for the given *<Land Cover Class>*
 3. Calculate the eligible area by applying the formula - *<Eligible area of land cover feature X> = <Geometric area of the land cover feature>x<Eligible Hectare Factor> /100*
2. Do the same for the eligible landscape features found on the LUI (those inside or on the immediate border to the agriculture parcel)
3. Sum up the eligible area of all agriculture land cover and eligible landscape features and report the value in square meters, as *<Eligible area observed>*

A template for the eligibility profile is given in [1]

More information on that subject can be found on [2]

An example of the implementation of that procedure is given in [Practical guidelines and examples](#).

13.3 Consolidation of the data collected for the other quality measures

Although not used in the calculation of the observed eligible area, some of the other data quality measures at reference parcel level provide important information on parcel properties, which can be used if further analysis is needed.

Different statistics at LPIS sample, supporting the core part of the report can be provided from these quality measures , such as:

- diversity of the land cover inside the reference parcels
- percentage of reference parcels containing "eligible" landscape features
- type non-agriculture land cover found in the reference parcels having critical defects
- etc.

Also, the data collected at reference parcel level, is essential during the "screening" that the Commission is performing on the ETS observations (delivered by the Member State), in order to check the validity of the ETS inspection.

13.4 Further processing towards reporting of non-conforming numbers at LPIS sample level

The data quality values ("DQ_value") for the LPIS quality measures (elements) directly linked to quality expectations, can be derived from the ETS observation database collected at parcel level, following the instructions given in Annex I. There can be one or more data quality measures at reference parcel level, which are included as input arguments for the calculation of a particular LPIS quality element. It should be stressed that, depending on the quality measure (at LPIS sample level), the relevant calculation (processing) is applied to a specific DQ_Scope.

How the results of these derived quality measures are finally evaluated is presented in the [acceptance decision](#) section.

Go forward to [Acceptance decisions](#)

Go backwards to [Table of contents](#)

14 ETS acceptance decisions 2011

version 5.1

14.1 Sampling schema table

The rules and criteria for acceptance or rejection of the lot are determined by our choice of acceptance sampling schema. This is *ISO2859-2: Sampling procedures for inspection by attributes, Part 2: Sampling plans indexed by limiting quality (LQ) for isolated lot inspection*. The schema (procedure A) determines the sample size n based on the LPIS (lot) size and provides an acceptance number Ac . If the inspected sample counts more than Ac non-conforming items, the LPIS is considered of failing quality.

For details, look to table 1 that provides the sample sizes n and acceptance number Ac for any given LPIS size and various values of LQ. The table indicates that for a LPIS with more than half a million parcels, under $LQ=2$, a sample of 1250 parcels should be inspected and of this 1250, no more than 18 non-conforming parcels can be present.

Table 1: sample size 'n' and acceptance number 'AC' indexed by lot size and Limiting Quality

LIMITING QUALITY {LQ}

Lot size		1,25	2,00	3,15	5,00	8,00	12,50
501 to 1200	n	170	125	125	80	50	32
	AC	0	0	1	1	1	1
1201 to 3200	n	200	200	125	125	80	50
	AC	0	1	1	3	3	3
3201 to 10000	n	315	200	200	200	125	80
	AC	1	1	3	5	5	5
10001 to 35000	n	315	315	315	315	200	125
	AC	1	3	5	10	10	10
35001 to 150000	n	500	500	500	500	315	200
	AC	3	5	10	18	18	18
150001 to 500000	n	800	800	800	500	315	200
	AC	5	10	18	18	18	18
> 500000	n	1250	1250	800	500	315	200
	AC	10	18	18	18	18	18

14.1.1 Practical considerations

This choice for ISO2859-2 Procedure A, was driven by the following considerations:

1. Inspection by attributes: a pass/fail verdict is issued for each inspected item (parcel)

- ◇ please note that this is not the case for quality elements 1 and 5 which are in fact a variable
- ◇ also note that requirements are expressed as 'percent non-conforming items'; as a result every inspected item (parcel) either passes or fails if the non-conforming attribute occurs. Each parcel counts only once
 - two non-conformities in a single parcel are counted as one for the given measure
 - parcels entering the DQ_scope of a specific measure on more than one selection criterion (e.g. QE3: it shows a critical defect and has area non conformity) are processed and counted only once.

2. Limiting quality: the product is expected to be 'better' than the specified quality. The quality is expressed in terms of LQ in the various measures of Annex I.

- ◇ please note that the LQ value is not equal to the expectations expressed in the discussion document. In fact, the specified LQ are higher than the expectations; e.g. the expectations 'shall hold no more than 1%' is expressed as a $LQ=2$ and 'shall hold no more than 5%' is expressed as a $LQ=12.5$. In the example above, we can indeed observe that $18/1250$ is larger than the 1% quality expectation..

3. Isolated lot: there is no direct feedback to the production process. Indeed the LPIS under inspections are not sequential lots that form the output of an ongoing production process

- ◇ please note that for remedial processes or contracts, the quality control should preferably address process output where an AQL index is more appropriate than the LQ selected of the LPIS QA.

The ETS deals with expectations for 7 distinct quality elements which bear different levels of expectation. To deal with this potential complication, three choices were made:

1. The more strict the expectation (or the lower the LQ), the larger the sample needed.

- ◇ the most demanding quality element determines the final sample size; for the LPISQA this is QE4

2. For practical reasons, a single inspection procedure is proposed. In this respect, do not stop inspecting attributes for a particular quality element, even when the defined sample size for this quality element has been reached. In stead we proportionally adjust the Acceptance number for that element to match the full sample size.

- ◇ as a result, the less strict quality elements (with higher LQ) are oversampled .

3. Variable measurements (like quality element 1) require much smaller samples than attribute counting for the same effectiveness of the verdict.

◊ as a result, the quality elements that are expressed as variables (QE1 and QE5) are oversampled

Oversampling does require a little bit more inspection work, but adds to the robustness of the verdict.

14.2 Other acceptance decisions

- Quality elements 5 and 7 compare the findings of the LPIS sample with parameters derived from the complete IACS database.

◊ for QE5, no formal quality expectation has been formulated, so no conformance test is performed. All systems are considered conforming if the results data are correctly reported.

◊ for QE7, contribution of poor LPIS elements to irregular applications is assessed through a chi-squared test on the sample.

- Quality element 6 conformance depends on a multi-annual assessment of the results

14.3 LPIS QA instructions

Please remember that the number of inspected parcels has been determined by indexing on LQ 2 as required for QE4.

The Member State shall, **for quality elements 2,3,4**

1. use table 2 to determine quality expectations expressed as Limiting Quality for a particular quality element;
2. use table 1 to determine the sample size and acceptance number for a particular quality element;
3. when the prescribed sample size is smaller than the actual sample size as inspected during the ETS, increase the found acceptance number proportionally to the ratio of final sample size to pre-scribed sample size. Truncate (DO NOT round) to an integer number;
4. when the observed number on non-conforming parcels exceeds the Acceptance number from 2/ (or 1/) above, assign 'non-conforming' for that element on the scoreboard'

The Member State shall **for quality element 1**

1. use table 2 to determine quality expectations for a particular quality element;
2. assign "non-conforming" to either element when its reported value exceeds the expectation.

The Member State shall **for quality elements 5, 6, 7 report the inspection results and/or conformance verdict from the measures of annex I;**

Table 2: Quality elements and corresponding ETS quality measures (Measure ID and correspondent Table number from Annex I).

Consult the "DQ_ConformanceLevel" attribute within the ETS measure to identify the expectation / limiting quality value. or, where appropriate, the data or conformance verdict

	quality element	ETS measure	table
QE1	The correct quantification of the maximum eligible area	10201	10
QE2	The proportion of reference parcels where the maximum eligible area takes ineligible areas into account or where it does not take agricultural area into account	10202	11
	The distribution of reference parcels where the maximum eligible area takes ineligible areas into account or where it does not take agricultural area into account	10203	12
QE3	The categorisation of reference parcels where the maximum eligible area takes ineligible areas into account or where it does not take agricultural area into account	10204	13
QE4	The occurrence of reference parcels with critical defects	10205	14
QE5	The ratio of declared area in relation to the maximum eligible area inside the reference parcels	10206	15
QE6	The percentage of reference parcels which have been subject to change, accumulated over the years	10207	16
QE7	The rate of irregularities determined during on-the-spot checks	10208	17

14.4 Further reading

Further information on the effectiveness of the verdict and especially the link between LQ and AQL can be found in [this presentation](#).

Go forward to [Annual reporting](#)

Go backwards to [Table of contents](#)

15 ETS annual reporting 2011

version 5.1

15.1 Purpose of the report

The report allows the MS to convey its findings to the European Commission. It holds a predefined data part and a free-text textual part

15.2 Data part

Notwithstanding the high impact of LPIS in financial terms, the quality inspection itself was based on a relatively small sample of parcels based on a well considered compromise between inspection costs and probability of drawing a false conclusion (ISO 2859-2).

It is therefore imperative that the Commission is able to re-perform the ETS to verify that the sample was drawn in a random manner and that the inspection procedure was correctly implemented. This is not different from the EC audit procedure of the OTSC inspection through the control files of farmer claims.

15.2.1 The ETS reporting package

To enable verification of the inspection method applied, **the ETS reporting package, to be sent to the European Commission, to the unit responsible for IACS, shall hold:**

1. A statement on the ATS conformity, if the LPIS conceptual model has NOT been changed since previous year (pdf)
2. The ETS scoreboard, holding the summary of findings (~~XML: Schema under revision~~)
3. ETS observations: raw observations (observed values) for all measures on all inspected parcels of the sample (~~XML: Schema under revision~~)
4. ETS inspection measurements: geographical features mapped during the ETS inspection for all measures on all inspected parcels of the sample (~~GML: Schema under revision~~)
5. Orthorectified imagery access for the images actually used for the LPIS QA via an INSPIRE compliant WMS (~~Schema under revision~~). If a Member State doesn't yet have such online service available: alternatively indicate the relevant orthorectified images as delivered to JRC's CID portal: ~~Schema under revision~~;
6. Rapid Field Visit form containing a description of a field visit and a link to its graphical documentation (~~GML: Schema under revision~~)
7. Sample pre-selection status containing a list of the inspected and skipped (with a valid reason) reference parcels (~~XML: Schema under revision~~)
8. LPIS polygon zero state: extract from the LPIS data under inspection, i.e. reflecting the state at the first step of the ETS (~~GML: Schema under revision~~): with the selected reference parcels (geographical and alphanumeric attributes) as well as boundaries, identifier and reference area of **any** parcel (not restricted to parcels within the scope of the current assessment year) within a distance of 100 meters from the boundary of the inspected parcel
9. for cadastral parcel or topographic block only: Land administration: all original third party land identification polygons within a distance of 100 meters from the boundary of the inspected parcel (GML: [INSPIRE Annex I, cadastral parcel](#)):

15.2.2 The ETS archiving package

The ETS archiving package, to be stored by the Member State, shall hold:

1. inspection records, i.e. the observation logs, source data and ancillary data used for filling in the tables of raw observations
2. an ETS inspection log: i.e. documentation on the environment, tools and activities involved during the inspection

15.2.3 Note

All elements of the ETS reporting package can be easily exchanged with the help of technical templates. These templates are available from the [LPIS QA download pages](#)

15.3 Textual part

The **assessment report shall contain a summary of the member states' analysis of its scores for each of the 7 quality elements**, in particular relating the scores to the MS context. This assessment report should hold not more than 3 pages (scoreboard is separate)

Where appropriate, i.e. **when either of quality elements E1, E5 or E7 fails to meet the acceptance threshold, a plan with the remedial actions and the timetable for their implementation shall be added**, This summary plan shall build upon the analysis and differentiate between 2011 and after actions. Special consideration shall be given to ongoing refresh projects, if present. The remedial action plan shall hold not more than 2 pages.

The remedial plan should be inspired by the PDCA (Plan, Do, Check, Act) cycle, so possible chapters are:

1. **check**: explain the observed failure to meet the expectation; provide results of additional tests or outcome of a study for a better understanding
2. **act**: correct obvious failures; implement immediate mitigating actions
3. **plan**: explain what the MS intends to do on the long run to address issues not dealt with by the immediate actions
4. **do**: point out elements of that plan, that have been completed in the meantime

15.4 Delivery instructions (~~Under revision~~)

For the 2011 implementation, the following delivery instructions apply:

- **The ATS scoreboard (if needed), the ETS scoreboard, the assessment report and, where appropriate, the remedial action plan shall be emailed to agri-direct-support@ec.europa.eu by 31 January 2012 at the latest in both Adobe PDF and MS Word DOC format.**

• **Orthorectified Imagery** should not be uploaded but access should be provided via an INSPIRE compliant web mapping service. If a Member State doesn't yet have such online service available, it may deliver the orthorectified images to the JRC. The following instructions and delivery dates apply:

1. **EU-financed: 31 December 2011 through delivery to CID by CwRS contractors:** the CwRS contractor should follow CID's instructions of the [imagery delivery CTS2011](#)
2. **MS-financed: 31 March 2012 through provision of an appropriate URL for the WMS or alternatively delivery to CID :** For the latter, please follow the procedure described in [non CwRS image delivery](#)
After 31 March 2012, please follow the [2012 image delivery instructions](#)
Needless to state that if the imagery used by the CwRS contractors is processed differently than the orthoimagery actually used for LPIS QA, a separate delivery of both sets will be required.

• **The ETS reporting package and ATS reporting package shall be uploaded on the LPIS QA portal by 30 April 2012 at the latest**

Go forward to [Non CwRS-imagery upload](#)

Go backwards to [Table of contents](#)

16 Non CwRS image delivery or upload 2011

[version 5.1](#)

NOTE: This instruction only applies to imagery that was **not** acquired by the JRC under its annual CwRS or LPIS QA campaigns. It therefore relates only to the aerial and other imagery that was independently acquired by the Member State for use in support of its inspection of the sample of reference parcels.

For the JRC Imagery, instructions of the Common Technical Specifications for the 2011 CwRS Campaign apply [CTS 2011](#)

16.1 Step 1: Document the metadata

Prepare an entry for control zone and preparation of XML file according to (~~XML schema under revision~~), as available on the download article.

This xml-file is a part of the ETS reporting package

◇ **ZoneID** of this xml is the MS's identification of the zone, analogue to the CwRS zone naming and mostly linked to acquisition processes.

16.2 Step 2: Check format

Make sure your image is in one of the supported file formats for the image datasets.

- ◇ GeoTIFF
- ◇ ERDAS Imagine (HFA)
- ◇ ECW

Convert or export your imagery to one of these three formats if needed.

16.3 Step 3: Organise your datasets/files per zone

Group all imagery produced in a single CRS that is relevant for a particular ETS reporting package (i.e. LPIS Authority/reporting year). Please note that

- ◇ a dataset can be provided as a single large image file or as a mosaic of non-overlapping image tiles.
- ◇ all image tiles of the same dataset must have the same coordinate reference system, else the zone needs to be split up in sub-zones.

To compile your complete dataset:

1. Name the dataset: if you have sub-zones, create a unique ID for each individual dataset, otherwise use the LPIS zone ID;
2. Create a folder with the name determined above;
3. Place all files of the dataset (=same CRS,LPIS,year) into that folder;
4. Place the XML file of step 1 in the folder and rename it to ***?lpis_ortho_meta.xml?***

16.4 Step 4: Deliver

Deliver the compiled folder(s) either by FTP upload to the JRC CID server or by shipping DVD's:

◇ **FTP-upload:** This requires the creation of a personal FTP account. Contact Juergen Breunig (juergen.breunig@ext.jrc.ec.europa.eu) and Pavel Milenov (pavel.milenov@jrc.ec.europa.eu) by email to follow-up. Indicate the approximate amount of data in GigaByte.

◇ **Shipping of DVD's or hard disks:** The shipping address is
Juergen Breunig
TP 266
Via E. Fermi 2749
I-211027 Ispra (VA)
Italy

Please inform this responsible person via mail about the shipment (<mailto:juergen.breunig@ext.jrc.ec.europa.eu>).

16.5 Aftermath

- JRC will return harddisks if the MS provides a shipping address.
- The imagery will exclusively be used for screening of the ETS observations by EC staff and will not be available through the CID portal for any other application.

Go forward to [Support \(how in practice?\)](#)

Go backwards to [Table of contents](#)

17 Support 2011

version 5.1

Support (how in practice?)

These pages provide supporting information and templates for the implementation of the ATS and ETS inspection procedures. These pages are meant to be informative only.

- ◇ The first section provides an inventory of all download files: discussion documents, references, instructions and templates. Check here that you have all information available
- ◇ The second part covers the tools such as services that are available via the LPIS portal.
- ◇ The third section offers guidelines and practical examples of the full testing procedure. It provides a deeper practical insight in the testing procedures and clarifies the instructions.
- ◇ Finally a FAQ-section offers answers to previous questions regarding the LPIS quality assurance framework.

Go forward to [Download pages](#) to see the details.

Go backwards to [Table of contents](#).

18 Downloads 2011

[version 5.1](#)

Technical note: Downloads are realized using FTP protocol, with "Anonymous" login. Please, configure your software correctly if needed.

This section presents a summary of the available supporting documents and templates which are used in the LPIS Quality Assurance Framework. These downloads might be helpful to understand and carry on with the ATS and ETS inspection procedures.

Please look at the validity start date. Updates, bug-fixes and minor modifications will be identifiable on this page by a more recent validity start date "-yyyy-mm-dd".

Please note that when ETS v5.1 will adapt GML2.1.2.1 instead of the current GML2.1, all schemas will be converted and labeled v5.1.

Warning: Internet Explorer can store the download in the "temporary internet files" folder. Later on, IE will prefer to access the temporarily stored file upon downloading the revised version from our ftp. To ensure a download, remove the stored file from the folder.

18.1 Documents

18.1.1 Background

The discussion document on LPIS quality elements

- October 2011: [printable version](#)
- September 2011: [printable version](#)
- June 2011: [printable version](#)
- June 2011: [version with revision markup](#) (please note deletions or moved paragraphs are not highlighted)
- April 2010: [printable version](#)
- April 2010: [version with revision markup](#)
- November 2009: [formerly known as 11164](#)

18.1.2 Feasibility report

The Report on LPIS Quality Assessment feasibility trial is available at [LPIS QAF feasibility](#).

18.1.3 2010-2011 report

The Report on first implementation of the LPIS Quality Assessment is available at [2010-2011 LPIS QA results](#).

18.1.4 Peer review report

The peer review report on LPIS Quality Assessment framework by Sytze de Bruin and Gábor Csornai is available at [peer review report](#).

18.1.5 Feature Catalogue documents

UML diagrams and GML encoding for the LPIS Core Model (LCM) are available at: [LCM Technical Specification](#).

The GML application schema for LPIS Core Model can be downloaded from the ftp: [LPIS Core Model Schema](#).

18.1.6 ATS documents

- The LPIS Core Conceptual Model: [LCM Technical Specification](#)

18.1.7 ETS version 5.1 documents

- ANNEX I: LPIS data quality measures [ANNEX I - 2011-10-07](#)
- ANNEX II: ETS inspection procedure ? Description of the workflow [ANNEX II - 2011-10-07](#)
- ANNEX II: UML Activity Diagram visualizing the sequence of the process [UML Activity Diagram - 2011-10-07](#)
- ANNEX III: The concept of land cover and ?eligible hectares" [ANNEX III - 2011-10-07](#)
- ANNEX IV: IACS data quality measures is obsolete in v5.1
- ANNEX V: SAPS with historical GAC supplemental Test Suite is obsolete in v5.1

Related guidance

- Common Technical Specifications for the 2011 CwRS Campaign [CTS 2011](#)
- Guidelines for Best Practice and Quality Checking of Ortho Imagery, v 3.0 [Orthoguidelines](#)
- Zone definition for the CwRS programme [Zone Definition for the CwRS campaign](#)
- Example of a design of specific land cover class, using LCCS 2.4.5 [Appendix A](#)
- Example of the use of the eligibility profile in the calculation of the maximum eligible area for a given Reference Parcel [Appendix B](#)
- Presentations from the ETS-training, held in Tallinn on 22 November 2011 [ETS Training](#)

18.2 Schemas, templates and examples

In order to assure an appropriate file transfer and information exchange between the Member States (Paying Agencies) and the Commission, a Web-based Portal is under development. The data exchange is performed following the established schemas:

Name	Description	Schemas/Templates for v5.1	Example	Date*
------	-------------	----------------------------	---------	-------

	Reporting package				
Feature Catalogue template	ATS archiving package	A Feature Catalogue template compliant to the proposed by ISO19110 (2003) standard	template_FC.xls		2010-01-01
LPIS Core Model	ATS archiving package	LCM Schema defined as GML Application Schema is used for describing the structure of the LPIS under the Abstract Test Suite.	LCMSchema.xsd		2010 01 01
ATS-log	ATS reporting package	A template for all tests findings: data set name/ attribute name, format, values and definition (ATS-log report)	AtsLog.xsd illustration template (xls)	AtsLog.xml	2011-01-20
ATS scoreboard	ATS reporting package	A template for the final ATS-scoreboard	AtsScoreboard.xsd template (doc)	AtsScoreboard.xml	2011-01-20
LPIS point zero state	Reference Parcel Sampling	A schema for a point representation of reference parcels (point being inside a parcel)	LpisPointZeroState.xsd	LpisPointZeroState.gml	2010-12-20
LPIS sample pre-selection	Reference Parcel Sampling	A schema for a sample pre-selection sent to a MS	LpisSamplePreselection.xsd	LpisSamplePreselection.xml	2010-12-21
LPIS polygon zero state	ETS reporting package	A schema for storing polygons representing reference parcels of a MS	LpisPolygonZeroState.xsd	LpisPolygonZeroState.gml	2011-10-27
ETS inspection measurements	ETS reporting package	A schema for storing ETS inspection measurements as geographical features	EtsInspectionMeasurements.xsd	EtsInspectionMeasurements.gml	2011-10-27
ETS observations	ETS reporting package	A schema for storing ETS observations as simple or complex values	EtsObservations.xsd	EtsObservations.xml	2011-10-27
ETS scoreboard	ETS reporting package	A schema for storing ETS Scoreboard	EtsScoreboard.xsd illustration (pdf) template (doc)	EtsScoreboard.xml	2011-12-07
LPIS sample pre-selection status	ETS reporting package	A schema for storing the final status of parcels in the sample pre-selection	LpisSamplePreselectionStatus.xsd	LpisSamplePreselectionStatus.xml	2011-10-27
Rapid Field Visit	ETS reporting package	A file storing observations from a Rapid Field Visit	No such file!	No such file!	2011-10-27
GAC Mask	ETS reporting package	A schema for storing GAC Mask polygons	GacMask.xsd	GacMask.gml	2011-12-07
Waivers	ATS reporting package	A schema for storing waivers in use	Waivers.xsd	Waivers.xml	2011-10-27
Eligibility Profile	ATS reporting package	A schema for storing an Eligibility Profile	EligibilityProfile.xsd template (xls)	EligibilityProfile.xml	2011-10-27
LPIS Common Types	NA	A common schema referred to by other schemas	LpisCommonTypes.xsd	N/A	2011-10-27
Orthoimagery set	ETS reporting package	A schema for storing metadata about orthoimagery set	OrthoimagerySet.xsd	OrthoimagerySet.xml	2011-10-27
Orthoimagery URL	ETS reporting package	A schema for storing access information to orthoimagery	OrthoimageryUrl.xsd	OrthoimageryUrl.xml	2011-10-27
Applicable CID Zones	Reference Parcel Sampling	A schema for selecting applicable zones stored in the CID portal	ApplicableCidZones.xsd	ApplicableCidZones.xml	2011-06-30
Applicable Proprietary Zones	Reference Parcel Sampling	A schema for additional applicable zones MS will use	ApplicableProprietaryZones.xsd	ApplicableProprietaryZones.gml	2011-07-05

* The date column represents the last modification date of either the schema or its corresponding example. Please, verify the date indicated in the file name after downloading.

18.3 Schema versions log

A list of modification and dates on each of the above schemas can be found in this [standalone log 2011](#).

The schema set change logs are intended for the IT developers' information only. The article will be updated whenever modifications are implemented to any of the schemas.

Go forward to [Tools \(via Portal\)](#) to see the details.

Go backwards to [Table of contents](#).

19 LpisSchemaSetChangeLog 2011

version 5.1

19.1 EtsInspectionMeasurements.xsd (GML)

1. SchemaLocation changed to: schemaLocation="<http://schemas.opengis.net/gml/2.1.2.1/feature.xsd>"/ This is an official OGC bugfix (geometry problems)
2. A reference to the new Common Types added: 5_1_LpisCommonTypes_20111027.xsd
3. Definition of AgricultureLandCoverType moved to Common Types
4. Element: ?agricultureLandCoverClassCode? renamed to ?agricultureLandCoverClass?
5. Attribute: ?name? renamed to ?userDefinedLegendCode? to have an unambiguous correspondence to the Eligibility Profile naming convention.
6. contWaivered replaced rpWaivered
7. To exclude LUI since it?s not spatial object ? migrate rpID
8. rpID defined as an additional and mandatory attribute for every feature

19.2 EtsObservations.xsd (XML)

1. A reference to the new Common Types added: 5_1_LpisCommonTypes_20111027.xsd
2. A complex type renamed: AgricultureLandCoverClassOccurenceType
3. Removed: RP_CRF (unwaivered potential critical defect).
4. Added: RP_FSM (RP feasibility for measurement).
5. Added: RP_MEA_GAC (RP Historical GAC area).
6. LandscapeFeatureAbundanceType ? name restriction added: AgricultureLandCoverClassCodeType
7. Element: ?agricultureLandCoverClassCode? renamed to ?agricultureLandCoverClass?
8. Attribute: ?name? renamed to ?userDefinedLegendCode? to have an unambiguous correspondence to the Eligibility Profile naming convention.
9. Nominator and Denominator replaced foundCases and sampleSize.

19.3 EtsScoreboard.xsd (XML)

1. A reference to the new Common Types added: 5_1_LpisCommonTypes_20111027.xsd
2. Added: LPIS_RP_NEA_B (number of non-conforming reference parcels in LPIS with reference area larger than 0.10 ha)
3. Removed: LPIS_RP_CRF
4. Added: LPIS_RP_CMC (LPIS Cumulative land changes).
5. Added: OTSC_RIG (OTSC rate irregularities).
6. Added: LPIS_RP_DCA
7. Modified: LPIS_RP_SEA. A two-sided interval for the distribution of area non-conforming parcels added.

19.4 LpisSamplePreselectionStatus.xsd (XML)

1. A reference to the new Common Types added: 5_1_LpisCommonTypes_20111027.xsd
2. Quality Measure RP_FSI (10100) accommodated from Annex I. It replaced 2 previous elements: status and reason for skipping.
3. Additional Comment field to the Status, 10100.
4. Added: belongsToQC_Sample

19.5 EligibilityProfile.xsd (XML)

1. Adjusted: <xs:element name="userDefinedLegendCode" type="UserDefinedLegendCodeType"/>
2. Removed: <xs:enumeration value="no"/> from the following enumeration: RepresentationOfEligibleLandEnum

19.6 Lpis Polygon Zero State (GML)

1. A reference to the new Common Types added: 5_1_LpisCommonTypes_20111027.xsd
2. SchemaLocation changed to: schemaLocation="<http://schemas.opengis.net/gml/2.1.2.1/feature.xsd>"/ This is an official OGC bugfix (geometry problems)
3. Added: ?declaredArea?
4. Added: ?referenceAreaEtsIncomparable? (All/V/6 GPS-CAPI)

19.7 Rapid Field Visit (GML)

1. A reference to the new Common Types added: 5_1_LpisCommonTypes_20111027.xsd
2. SchemaLocation changed to: schemaLocation="<http://schemas.opengis.net/gml/2.1.2.1/feature.xsd>"/ This is an official OGC bugfix (geometry problems)
3. Changed name: photoDirection to photoDirectionAzimuth
4. Element: ?agricultureLandCoverClassCode? renamed to ?agricultureLandCoverClass?
5. Attribute: ?name? renamed to ?userDefinedLegendCode? to have an unambiguous correspondence to the Eligibility Profile naming convention.

19.8 GacMask.xsd (GML)

1. SchemaLocation changed to: schemaLocation="<http://schemas.opengis.net/gml/2.1.2.1/feature.xsd>"/ This is an official OGC bugfix (geometry problems)
2. Added: A reference to the new Common Types: 5_1_LpisCommonTypes_20111027.xsd

19.9 Waivers.xsd (XML)

1. A reference to the new Common Types added: 5_1_LpisCommonTypes_20111027.xsd
2. Removed: potentialCriticalDefectsWaivers
3. Removed: Waiver B

19.10 OrthoimagerySet.xsd (XML)

1. A reference to the new Common Types added: 5_1_LpisCommonTypes_20111027.xsd
2. Added element type: "platform"
3. Added type: "platformType"
4. Renamed: ?imageType? to ?imageInfoType?
5. Added element: ?image?
6. Added type: ?imageType?
7. Added element: ?pixelSizeM?

19.11 OrthoimageryUrl.xsd (XML)

1. A reference to the new Common Types added: 5_1_LpisCommonTypes_20111027.xsd
2. Xml ?choice? changed to Sequence, where imageryUploadedToCid is mandatory and wmsAccessInformation is optional.

19.12 CommonTypes.xsd

1. Deleted: PotentialCriticalDefectsWaiverCodeType
2. Deleted: LpisAnnualReportIdentificationAttributeGroup
3. Element: ?agricultureLandCoverClassCode? renamed to ?agricultureLandCoverClass?
4. Attribute: ?name? renamed to ?userDefinedLegendCode? to have an unambiguous correspondence to the Eligibility Profile naming convention.
5. ContaminationWaiverCodeType: Removed: Waiver B

Go backwards to [Download](#).

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20 Tools 2011

[version 5.1](#)

20.1 JRC Tools

20.1.1 Web-application for data exchange

A secure web-application is available at: [LPIS QA Web-application](#) to facilitate and assist Member States in the LPIS QA implementation. This platform is used for:

- upload of LPIS GML data (MS-to-JRC),
- download of Sample Pre-selection XML data (JRC-to-MS).

To correctly use it, please refer to the sampling pre-selection procedure at: [Instructions on data exchange](#).

20.1.2 JRC custom built tools

JRC offers these tools as demonstration tools only. They help to understand the GML creation process and helps to create a valid GML file from the original Member State data. The tools are in a draft version, therefore some minor problems can occur (if so, please contact the JRC team with a problem description and a bug report as a print-screen).

When an updated version of a tool is available, the corresponding link will be updated. Please, verify if you are using the latest version.

JRC Tool	Description	Requirements	Link	Date
LPIS Point Zero State	A customized script that creates a valid LPIS Point Zero State GML file from a point-type shapefile.	ArcMap v9.3: Tested on ArcMap version 9.3 service pack 1	LpisPointZeroStateTool - Installation	2011 07 15
LPIS Polygon Zero State	A customized script that creates a valid LPIS Polygon Zero State GML file from a polygon-type shapefile. BETA version, compatible with the gml schema v5.1	ArcMap v9.3: Tested on ArcMap version 9.3 service pack 1 (also ArcGis v10; SP2)	Tools_v51 - Installation	2012-03-23
ETS Inspection Measurements	A customized script that creates a valid ETS Inspection Measurement GML file from a set of corresponding layers/shapefiles. BETA version, compatible with the gml schema v5.1	ArcMap v9.3: Tested on ArcMap version 9.3 service pack 1 (also ArcGis v10; SP2)	Tools_v51 - Installation	2012-03-23
XML (GML) Validator	An application that validates XML and GML files against their schemas.	Microsoft.NET Framework 3.5 or later link	JrcXmlValidator	2010-12-07

20.2 Third party commercial tools

These tools are on the commercial market and may help Member States during the implementation of the LPIS QA inspection or further analyses thereafter.

These are commercial products and the entries are provided for information only. JRC does not "certify" or "guarantee" any of these third party tools.

Tool	Description	Requirements	More...
GDV ETS-reporter	Java-based stand-alone software application that covers the process of the LPIS data quality measures (Executable Test Suite).	Standalone, needs Java 1.6 installed	link
Sinergise TopoCheck	tool for spatial and meta-data validation of various datasets. It analyses the data and finds inconsistent records, problematic topologies and it also estimates an area uncertainty of each polygon.	Standalone, needs Java 1.6 installed.	link
Abaco QA ETS Exchange	web application providing the import/export of the Commission selected sample according to ETS guidelines	Any J2EE web container, Oracle Spatial 10g or 11g	link
Abaco QA ETS Inspection	web application managing the Quality Control workload distribution among inspectors. Provides also a tailored ETS GIS editor and the ETS scoreboard in PDF format	Any J2EE web container, Oracle Spatial 10g or 11g.	link
Wageningen UR - Alterra ETS Manager	The ETS Manager is build as an addin for ArcGIS 9.3.1. The current version it tailored to the Dutch and Northern-Irish workflow, but can easily be adjusted according to your specific situation. Multi-user tool for the entire process of LPIS Quality Assessment. Based on file-geodatabase usage. For more detailed information please contact Inez.Woltjer@wur.nl	ArcGIS 9.3.1.	link

20.3 Third party free tools

20.3.1 Ogr2ogr

IMPORTANT: The following conversion does NOT give 100% valid GML file, some small changes are still required to tune the file: "ogr" namespace to "cap" namespace, together with "targetNamespace".

Now we are able to convert the newly created shapefile to a GML file. A tool that could be used for this purpose is ogr2ogr, from [Geospatial Data Abstraction Library](#). Basically, one provides ogr2ogr with the input shapefile, specifies the additional fields (other than spatial ones) that are contained in the GML file, and provides the name of the GML output file:

```
ogr2ogr -f "GML" -a_srs "EPSG:31300" ?nln ?ReferenceParcel? CountryRefParcelPoints.gml CountryShapefilePoints.shp ?sql ?SELECT CAST(ReferenceParcelID AS character)AS rpID, CAST(ReferenceParcelArea AS float) AS referenceArea FROM CountryShapefilePoints?
```

The GML file shall be then zipped and shipped through the LPIS QA web-application to JRC.

20.3.2 FAO LCCS

Software installation setup

The software is freely distributed by FAO and comes with a self-extracting executable file, which produces the entire set of files necessary to run the setup.

The latest stable release of the LCCS (version 2), currently used in the LPIS QA, can be found [here](#)

Classification concepts and user manual

The LCCS software manual provides information on the classification concepts and the practical software use. The first part of the manual fully describes the LCCS used definitions and the conceptual basis. The second part of the manual deals with the LCCS operative use, from installation to extensive explanation of the functioning mode of each one of the program modules.

It is available on the FAO Web site: [LCCS Manual](#).

20.3.3 XML Marker 1.1

XML Marker is a freeware XML Editor that uses a synchronized table-tree-and-text display to show you both the hierarchical and the tabular nature of your XML data.

It automatically produces a tabular display of any selected tag by collecting repeating attribute and tag names and then arranging them into columns. The result is a clutter-free and informative tabular display.

The tool is [here](#) available for downloading.

20.3.4 LPIS-QA-Reporter

In Belgium-Flanders we created a little tool to help creating some xml files for the ETS. Two of the necessary ?ETS Reporting package? xml files are supported at the moment, because they are the most difficult to create manually:

- EtsObservations.xml
- LpisSamplePreselectionStatus.xml

The tool needs a shape file with certain mandatory columns as input (a template shape file and a description of the needed fields is included in the download). Based on this file xml files are generated... Mind: the tool doesn't do an xsd validation, so you still need to use eg. the JrcXmlValidator to validate the xmls!

BTW: This tool is provided free of charge, as is without any guarantees or warranty. The author is not responsible for any damage or losses of any kind caused by the use or misuse of the programs. The author is under no obligation to provide support, service, corrections, or upgrades to the software ;-)...

If you would like to use the tool and want to be notified of new versions or have any remarks, you can contact me here: pieter.roggemans@lv.vlaanderen.be...

You can download the newest version of the tool on this page: [LPIS-QA-Reporter](#)

20.4 Tips and tricks

20.4.1 How to install a JRC ArcGIS script

LPIS Point Zero State and LPIS Polygon Zero State tools consist of several files under a ZIP archive. They run within the ArcMap environment (built for the ArcMap version 9.3). It is a prototype that has not been largely tested yet.

To install the tools in your ArcMap component, you need to:

1. Download the ZIP files from WikiCAP - see above links.
2. Open ArcMap.
3. Go to Tools>Macros>Visual Basic Editor.
4. Delete all the files installed for the previous version of the JRC tools.
5. Import all the files from the new installation (.cls, .bas and .frm) within Normal Project - Normal.mxt - to make it always available to ArcMap.
6. Make sure the the following reference called "Microsoft Scripting Runtime" is checked: Visual Basic>Tools>References>Microsoft

- Scripting Runtime
7. Save the project.
 8. Go to ArcMap, Tools>Customize>[Macros]>...find our Tool (indicated as Normal.ToolName.Run).
 9. Drag&drop it on your ArcMap toolbar.
 10. Click on the button you have just dropped into the toolbar or alternatively, run the tool from Tools>Macros>Macros>[Macro name]>Run.
 11. The tool's window should be opened and ready to be used.

20.4.2 How to run a JRC ArcGIS script (Point/Polygon Zero State)

1. Install a tool correctly.
2. Click on it to open its interface.
3. Select the shapefile/layer you want to convert.
4. Map your corresponding attribute fields.
5. Convert the file by clicking on the Create GML File button.

The **input files** should be:

- ◇ for Point Zero State and Polygon Zero State a simple-point-type or simple-polygon-type shapefile with a defined geographic coordinate system or a projected coordinate system.

The **output file** is a GML-file, compliant with one of the following schemas:

- ◇ [LpisPointZeroState.xsd](#)
- ◇ [LpisPolygonZeroState.xsd](#)

20.4.3 How to run the ETS Inspection Measurements JRC ArcGIS script

1. Install the tool as described in [1].
2. Prepare your ArcGIS project with layers/shapefiles where each layer/shapefile contains only Agriculture Land Cover Features or only Landscape Features of one geometry type (Figure 1).
3. Prepare the required attributes in all your layers/shapefiles as indicated in Table 1.
4. Click on the installed EtsInspectionMeasurement tool to open its interface.
5. Click on the "Build the mapping" button.
6. (Required) Select the layer/shapefile containing Agriculture Land Cover Features (polygons)
7. (Required) Map the attributes from your layer/shapefile to the GML corresponding attributes
8. Select the layer/shapefile containing Landscape Features (polygons). If you do not have landscape features mapped as polygons, leave it empty.
9. Map required attributes
10. Select the layer/shapefile containing Landscape Features (lines). If you do not have landscape features mapped as lines, leave it empty.
11. Map required attributes
12. Select the layer/shapefile containing Landscape Features (points). If you do not have landscape features mapped as points, leave it empty.
13. Map required attributes
14. Select the layer/shapefile containing Landscape Features (multipoints). If you do not have landscape features mapped as multipoints, leave it empty.
15. Map required attributes
16. Convert your data by clicking on the Create GML File button.
17. Validate your GML file with JRC XML Validator

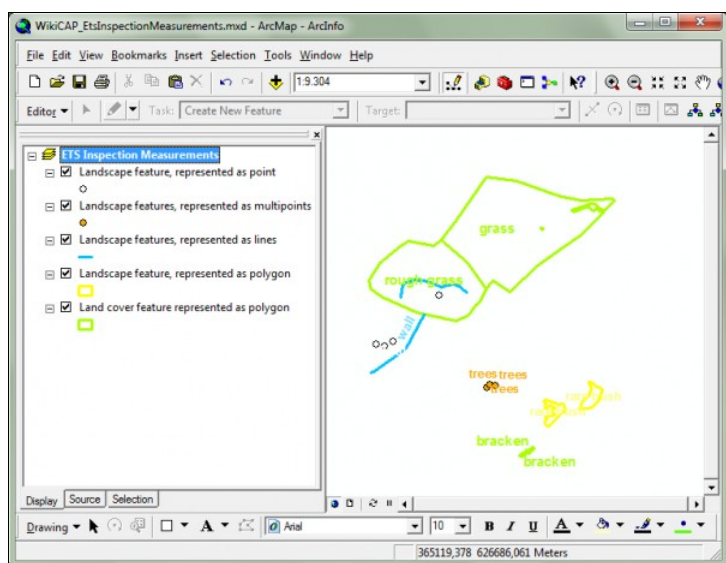


Figure 1. Prepared ArcGIS project for ETS Inspection Measurements conversion. Each layer/shapefile contains only one feature type of one geometry.

Table 1. Mandatory GML attributes

Required GML attribute	Description
rpID	Reference Parcel Unique Identifier
landCoverFeatureID	an internal unique identifier of mapped land cover types (i.e. OBJECTID)
agricultureLandCoverClassCode	Land Cover Class Code from your eligibility profile
codeSpace	urn:ec:lpisqa: REPORTING_YEAR:YOUR_LPIS_CODE:LOT_NUMBER :EligibilityProfile where you need to replace the bold elements with your actual data, i.e. urn:ec:lpisqa:2010:TEST-LPIS:1:EligibilityProfile

The **input files** should be:

- ◇ separate ArcGIS layers or shapefiles containing only Agriculture Land Cover Features or only Landscape Features. Please note that each of the layers/shapefile may only contain features of the same geometry type (polygon/multipolygon, line/polyline, point/multipoint) and should have a defined geographic coordinate system or a projected coordinate system.

The **output file** is a GML-file, compliant with one of the following schema:

- ◇ [EtsInspectionMeasurements.xsd](#)

20.4.4 How to create the point representations of the parcels in ArcGIS

In order to determine the points, a command line function from ArcGIS (under the ArcInfo license) could be used: FeatureToPoint
d:\workspace.mdb\parcels d:\workspace.mdb\parcels_pt INSIDE The syntax for the command is as follows: *FeatureToPoint <in_features> <out_feature_class> {CENTROID | INSIDE}*

Using the function (choosing INSIDE option), a new shapefile will be created. The only difference is that it will contain some point representation of the parcels instead of polygons, for each of the parcels in the original shapefile.

20.4.5 How to open a XML Sample pre-selection in ArcGIS

If you want to relate an XML sample pre-selection file to your ArcGIS project, you need to first open the XML file in the Excell, and then save it in the DBF format. Then, you will be able to relate it to your ArcGIS layers.

20.4.6 How does a correct GML look like?

Download an example: [4_3_LpisPointZeroState_20101220_example.gml](#) The GML file content is illustrated below:

```
<?xml version="1.0" encoding="utf-8" ?>
<cap:FeatureCollection
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://ec.europa.eu/dgagri/cap ftp://mars.jrc.ec.europa.eu/LPIS/Schemas/4_3_LpisPointZeroState_20101220.xsd"
  xmlns:cap="http://ec.europa.eu/dgagri/cap" xmlns:gml="http://www.opengis.net/gml"
  lpis_code="TEST-LPIS"
  lpis_lot="1"
  reporting_year="2010">
  <gml:boundedBy>
    <gml:Box srsName="EPSG:4326">
      <gml:coord>
        <gml:X>10.131254635</gml:X>
        <gml:Y>34.055141255</gml:Y>
      </gml:coord>
      <gml:coord>
        <gml:X>14.144205386</gml:X>
        <gml:Y>44.831708765</gml:Y>
      </gml:coord>
    </gml:Box>
  </gml:boundedBy>
  <gml:featureMember>
    <cap:ReferenceParcel fid="F0">
      <cap:geometryProperty>
        <gml:Point srsName="EPSG:4326">
          <gml:coordinates>12.970463244,44.292817075000002</gml:coordinates>
        </gml:Point>
      </cap:geometryProperty>
      <cap:rpID>GH832_A.0305.14/7</cap:rpID>
      <cap:referenceArea>54.231</cap:referenceArea>
    </cap:ReferenceParcel>
  </gml:featureMember>
  <gml:featureMember>
    <cap:ReferenceParcel fid="F1">
      <cap:geometryProperty>
        <gml:Point srsName="EPSG:4326">
          <gml:coordinates>13.016643059,44.277870450000002</gml:coordinates>
        </gml:Point>
      </cap:geometryProperty>
      <cap:rpID>FD832_A.0305.14/3</cap:rpID>
      <cap:referenceArea>2.9903</cap:referenceArea>
    </cap:ReferenceParcel>
  </gml:featureMember>
</cap:FeatureCollection>
```

Figure 2. Example of an LPIS point zero state file.

20.4.7 What are the correct GML attributes?

The INSPIRE Directive, imposes the GML format for the exchange of geospatial data. The following GML Application Schema is defined for LPIS point data [4_3_LpisPointZeroState_20101220.xsd](#). It must be referenced inside the GML:

```
xsi:schemaLocation="http://ec.europa.eu/dgagri/cap ftp://mars.jrc.ec.europa.eu/LPIS/Schemas/4_3_LpisPointZeroState_20101220.xsd"
xmlns:cap="http://ec.europa.eu/dgagri/cap"
```

The GML file created by each LPIS custodian should contain, sequentially the following elements:

```
<gml:featureMember>
  <cap:ReferenceParcel fid="F0">
    <cap:geometryProperty>
      <gml:Point srsName="EPSG:4326">
        <gml:coordinates>12.970463244,44.292817075000002</gml:coordinates>
      </gml:Point>
    </cap:geometryProperty>
    <cap:rpID>GH832_A.0305.14/7</cap:rpID>
    <cap:referenceArea>54.231</cap:referenceArea>
  </cap:ReferenceParcel>
</gml:featureMember>
```

Where:

- **fid**: required by good GML practice. If it is provided, it must be a string that starts with either a letter or the underscore (_) character, followed by printable characters or numbers. fid attribute values must also be unique among all elements in the document.
- **geometryProperty**: a point representation of the reference parcel, giving X and Y coordinates (points shall be INSIDE reference parcels)
- **srsName**: information on the coordinate reference system, given such as an EPSG code, i.e. EPSG 4326
- **rpID**: the unique identification of the reference parcel,
- **referenceArea**: the ?maximum eligible? area of the reference parcel, given in hectares.

Member States shall provide their reference parcels with the above information in the GML format, after they have performed a standard XML validation process (well-formedness and validity).

Go forward to [Practical guidelines and examples](#) to see the details.

Go backwards to [Table of contents](#).

21 LPIS QA portal - user's manual

The LPIS QA Web Application (<https://lpis.jrc.ec.europa.eu/lq/index.php>) has been developed to support MS with exchange of non-spatial and spatial data with the EC. Its main functionalities are:

- creation and download of sample pre-selection (JRC-to-MS),
- upload of LPIS QA XML and GML data (MS-to-JRC),
- approval if ATS/ETS reporting packages (MS).

21.1 Use case: Registering/recovering of a new user account

1. Fill in the template: [Account_data.doc](#) and send it to Piotr.Wojda@jrc.ec.europa.eu
2. You will receive by e-mail your login and password, usually within 48 working hours

21.1.1 Use case: Logging into the LPIS QA Web Application

1. Login to the application using your credentials (username and password)
2. Verify the LPIS Authority set in the left-hand side context menu, under the name of your Member State

21.1.2 Use case: Establishing LPIS Settings

1. Register a lot (lots) of reference parcels for the corresponding reporting year
 - Choose a reporting year
 - Add a new lot
 - Assign a lot ordinal number
 - Provide an exact number of reference parcels for this lot
 - Provide a short name
 - Save all the settings
 - Add new lot if there are several lot defined for the LPIS and repeat the procedure
 - Approve a complete list of lots that are defined for the LPIS. This process will automatically disable a possibility of further changes and send information to the JRC.
2. Register an LPIS Implementation Version (already registered versions will be indicated in a table)
 - Provide a unique name
 - Provide a starting validity date (dd.mm.YYYY)
 - Save all the settings
3. Link registered implementation versions with the pre-defined lots and save your choices
 - Link an appropriate lot to the implementation version from a drop-down menu
 - Save all the settings

21.1.3 Use case: Uploading ATS Reporting Package

1. Select your implementation version for which you want to upload an ATS package
2. Select items to be uploaded from a drop-down menu and upload a selected file. All mandatory items will be listed with asterisk
3. Wait for the confirmation message for each item. You can navigate to the same page in order to edit or deactivate the file
4. Approve the ATS reporting package by clicking 'approve button?'. If there are missing elements they will be indicated in the appropriate table.

21.1.4 Use case: Creating a sample pre-selection

1. Select a reporting year from a drop-down menu
2. Select an LPIS lot from a drop-down menu
3. Select items to be uploaded from a drop-down menu. All mandatory items will be listed with asterisk.
4. Upload a selected file (GML***). All the files will be validated against the appropriate schemas and an e-mail notification will be sent with the validation results.
5. Approve the reporting package by clicking 'approve button?'. If there are missing elements, they will be indicated in the appropriate table. Please note that the package could be reopened, if one of the file turns to be invalid. If so, correct the file and reupload it.
6. The web application will automatically generate a sample pre-selection for you and you will be notified by an e-mail usually within 3 working days

21.1.5 Use case: Downloading a sample pre-selection

1. Download the sample pre-selection file after you have received an e-mail notification.
 - Read an e-mail notification
 - Login to the Web Application
 - Select a reporting year from a drop-down menu
 - Select an LPIS lot from a drop-down menu
 - Download the xml file(s) with sample pre-selection available for you

21.1.6 Use case: Uploading an ETS reporting package

1. Select a reporting year from a drop-down menu.
2. Select an LPIS lot from a drop-down menu.
3. Select ETS reporting package items to be uploaded from a drop-down menu.
4. Upload a selected file (GML***). All the files will be validated against the appropriate schemas and an e-mail notification will be sent with the validation results.
5. Approve the reporting package by clicking ?approve button?. If there are missing elements, they will be indicated in the appropriate table. Please note that the package could be reopened, if one of the file turns to be invalid. If so, correct the file and reupload it.

21.1.7 Use case: Verifying a dashboard

1. Verify the status of the uploaded files for your packages: pending and approved files will be indicated in yellow or green respectively.

***For GML files:

If you are using a standard EPSG code, click on the appropriate choice button.

The only valid EPSG definitions should be, those available on: <http://www.epsg-registry.org/>

If you don't use a standard EPSG code, first upload a projection file through a projection menu.

Then connect an uploaded projection file with your GML file by clicking on a drop-down menu.

IMPORTANT NOTE:

1. When a GML file with specific SRS is uploaded (using .PRJ file), the ESRI-style description of the PRJ (assumed correct by default) might be incompatible with the syntax required by the conversion engine (OGR2OGR) of the web application.

2. OGR2OGR works with SRS having well known definition (ie. EPSG:4326) or described in a file with a WKT (Well-Know Text) definition.

Furthermore the SRS in question should be supported by PROJ.4 (<http://trac.osgeo.org/proj/>)

Go forward to [Practical guidelines and examples](#).

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22 ETS Practical guidelines and examples 2011

[version 5.0](#)

This Chapter offers a collection of guidelines and examples for a better and further understanding of the LPIS quality assesment methodology

Go forward to [Examples of parcel inspection](#).

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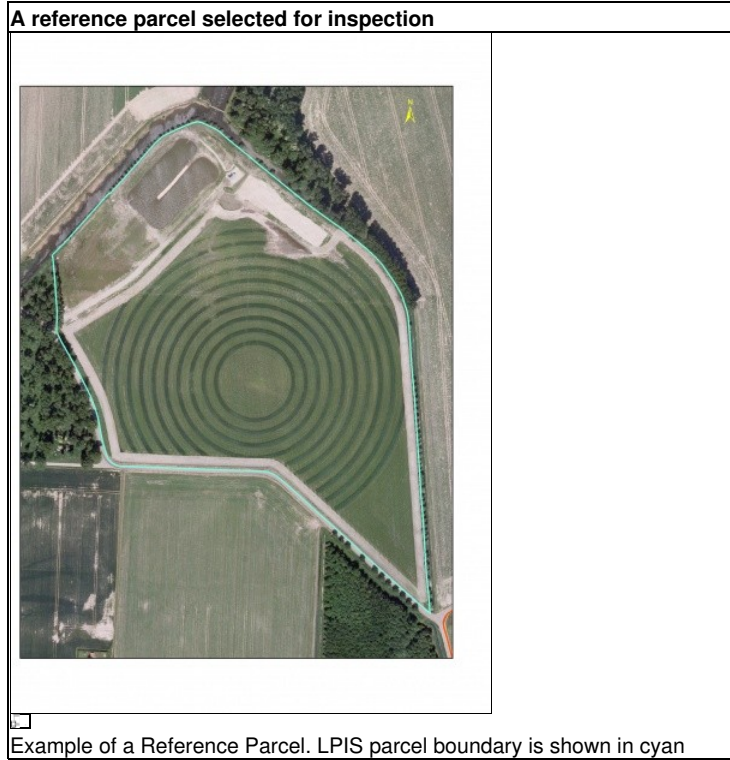
23 ETS parcel inspection example 2011

version 5.1

This section presents an example of inspection of a Reference Parcel. It is limited to the actions applied to data collection only - after the initial inspection feasibility check and prior to the move to the next reference parcel.

This article has not changed since its ETSv4.3 edition

23.1 Prepare the inspection environment



23.2 Determination of the agriculture land cover, that might represent eligible land

Action	Example	Result
<p>Identification of individual agriculture land cover features on the land represented by the Reference Parcel. Current year orthophoto (natural color) is used as reference ground data. Additional VHR satellite imagery (acquired in the same year, different month) is used to assess the seasonal aspect of land cover, though the different stages of the vegetation growth. See "the multi-temporal analysis"</p>	<p>Agriculture land cover features shown with letters</p>	<p>Clearly distinct and identifiable agriculture land cover features (A - Arable land; G - Grassland)</p>

Delineation (from scratch) of the identified individual agriculture land cover features on the land represented by the Reference Parcel, using information from both image datasets



Polygons, enclosing agriculture land cover

Contour of the digitized polygon shown in green

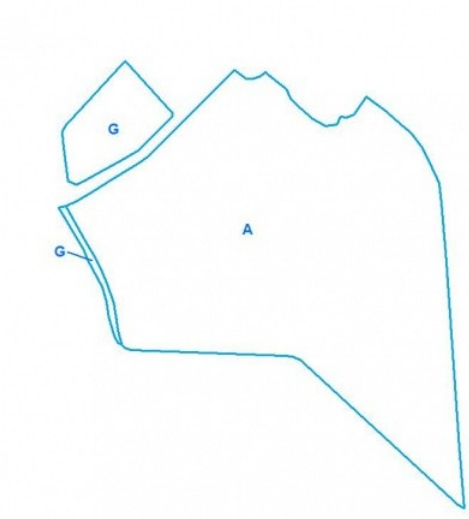
Determination of the land cover type



A - Agricultural land; G - Grassland

Agriculture land cover features shown with letters

Calculation of the maximum eligible area for the inspected reference parcel, using the country specific eligibility profile. See "[Use of Eligibility Profile](#)"



*Area of A + Sum Area of G =
112941 + 7257
= 120198 sq. m.*

Polygons of the agriculture land cover


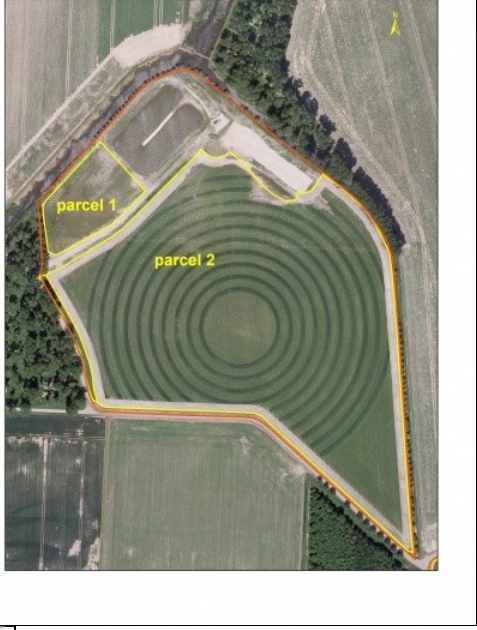
Count the occurrence of the different land cover class types

Arable land ? 1;
Grassland - 1

23.3 Determination the landscape features

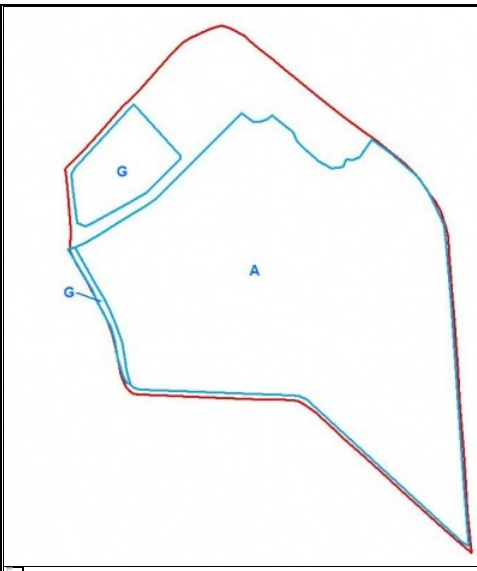

No landscape features in this Reference Parcel

23.4 Identifcation of non-agriculture land cover types and critical anomalies

Action	Example	Result
<p>Determination of the land cover types of the non-agriculture land cover features found on the land represented by the Reference Parcel</p>	 <p>Contours of the digitized agriculture land cover are shown in yellow. LPIS parcel boundary is shown in red.</p>	<p>Several types of non-agriculture land cover types found: woodland, water body, bare areas, sparsely vegetated bare areas</p>
<p>Counting the abundance of the individual non-agriculture land cover features</p>		<p>woodland - 1; water body - 1; bare areas - 1; sparsely vegetated marginal areas - 1</p>
<p>Identification and counting of the occurrence of any critical defects, which obstruct the use of the Reference Parcel</p>	 <p>Contours of the digitized agriculture land cover are shown in yellow. LPIS parcel boundary is shown in red</p>	<p>No critical defect found. The inspected Reference Parcel has only two distinctive parts, which could be considered as separate agriculture parcels.</p>

23.5 Check the conformance of the Reference Parcel

Action	Example	Result
--------	---------	--------

<p>Check and report the conformance of the Reference Parcel in respect to the maximum eligible area recorded</p>	 <p>Contours of the digitized agriculture land cover are shown in blue. LPIS parcel boundary is shown in red</p>	<p><i>Area Observed = 94513 sq.m.; Area Recorded = 120198sq.m.; Area Observed/ Area Recorded = 0.79; 21% of ineligible land found; Reference Parcel is non-conformant, as it contains more than 3% ineligible land</i></p>
<p>Identify the causes for the non-conformity of the Reference Parcel</p>	 <p>Area of the parcel, acquired in 2009 (top). Area of the parcel acquired in the previous years (bottom), image from Google Earth</p>	<p><i>Changes of the underlying land were not applied. The reference parcel was not updated</i></p>

Go forward to [Specific examples of ETS observations.](#)

Go backwards to [Table of contents.](#)

24 ETS specific inspection examples 2011

version 5.1

This section presents a series of typical examples of ETS observation, grouped thematically. The yellow contour represents the observed agriculture land cover on the orthoimage. The red contours, represent LPIS parcel boundary. For more examples and explanations, see also [S9_Quality_measures_Milenov.pdf](#)

24.1 Examples of agriculture land cover representing eligible land



Permanent crop (example), LCCS code: 10566-1891-S0610 "Permanent crops (vineyards)"

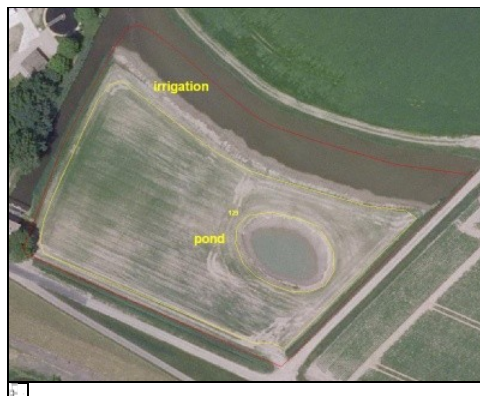


Family gardens (land cover labelled with K), LCCS code: 11135 "Kitchen Gardens"

24.2 Examples of landscape features



Single Trees, LCCS code: 20274-T1(1)[Z11] "Single tree"



Ponds, LCCS code: 7001-5-U1(3)[Z2] "Ponds"



Hedges, LCCS code: 10176(3)[Z1] // 1021110285 "Hedgerows"



Trees in line, LCCS code: 20282-T2(3)[Z4] "Row of trees"

24.3 Examples of non-agriculture land cover



Urban Vegetated Areas (Airport Area)



Wetlands

24.4 Example of parcel with an unclear LUI with no presence of ineligible features in the 5 meters buffer of the LUI perimeter.



A cadastral parcel used as LPIS reference parcel, is located inside a large agriculture block. The boundaries of the reference parcel do not follow any distinctive land feature or well identifiable land cover / land use boundary. In stead, the perimeter of this reference parcel just represents legal boundaries of the real property.

In this condition, the reference parcel is not suitable for the correct localization of the land for the ETS inspection, but this particular defect does not cause a issue in respect to its maximum eligible area, because the complete parcel and all immediate surroundings are pure agricultural lands. Thus, the polygon area is accepted as the eligible area observed.

24.5 Examples of mixed land cover, where application of an appropriate reduction coefficient could be considered to determine the maximum eligible area in accordance with the definitions in R.1122/2009 and R.73/2009



Grassland with sparse shrubs, LCCS code: 20443-13151-T2
"Permanent pasture (self-seed with shrubs)"



Grassland with bare areas and waterlogged vegetation, LCCS code:
40409-4732 "Temporary flooded open grassland"

Go forward to [Sampling: practical considerations.](#)

Go backwards to [Table of contents.](#)

25 Sampling: practical considerations 2011

version 5.1

25.1 Additional reading: some detailed considerations on the Sampling procedure

The following considerations are non-essential, but provide some broader context on the sampling plan selected for the LPIS QAF

25.1.1 acceptance sampling for inspection of discrete items in lots

ISO2859-2 is one of a series of sampling systems, schemes and plans presented in a number of Standards as ISO2859-x, ISO3951-x, ISO8422 and ISO8423. Each standard offers one or more sampling procedures and explains how these are to be used. The technical report ISO/TR 8550 guides towards an appropriate procedure for use in a particular situation

25.1.2 AQL vs LQ

ISO 2859-2 is indexed on LQ (limiting quality), Many acceptance sampling standards of the series use the more commonly known AQL (acceptance quality limit). The two concepts are different.

- ◇ AQL = quality level that is the worst tolerable process average when a continuing series of lots is submitted for acceptance
- ◇ LQ = when a lot is considered in isolation, a quality level which for the purposes of sampling inspection is limited to a low probability of acceptance

AQL provides a guide for the producer on the level or quality he needs to produce so that he can satisfy the acceptance criteria (sampling clause) most of the time for a given desired quality. He must aim to produce better than the AQL. By contrast, the LQ does not provide a reliable guide for the consumer as to the true quality of the accepted lots. Acceptance only indicates the quality of the accepted lot is better than the LQ, it does not say how much better. The limiting quality should be chosen realistically at a minimum of three times the desired quality (often expressed as AQL).

25.1.3 Producer's risk vs Consumer's risk

The verdict on a lot can be false in either of two ways.

- ◇ Occasionally a 'good' lot may not be accepted because the sample inspected, though randomly selected, does not reflect the true quality of the lot. The risk of this happening is known as 'producer's risk' (PR). (type I error / ? error / false positive).
- ◇ Conversely, a 'poor quality' lot may pass inspection because of the limited data available in the sample. This eventuality is known as 'consumer's risk' (type II error / ? error / false negative).

The MS require a high probability of acceptance if the quality is good while the Commission would want a low probability of acceptance if the quality is poor. Conventionally these probabilities have been set at 0,95 and 0,10, respectively. This gives a PR of non-acceptance of 0.05 or 5%, and a CR of accepting poor quality of 0,10 or 10%.

These probabilities represent the risk of false decisions for an LPIS that balances around the desired quality. Much 'better' LPIS lots obviously have a much smaller chance to be rejected, 'poorer' lots have a smaller chance to be accepted.

25.1.4 Procedure A vs Procedure B

ISO 2859-2 offers two distinct procedures: Procedure A, to be used when both supplier and consumer regard the lot in isolation and Procedure B, when the supplier regards the lot as just one of a continuing series and wishes to maintain consistent procedures for all customers

- ◇ the tables for procedure A (lot in isolation) are based on random sampling from finite lots for both consumer's and producer's risk.
- ◇ for procedure B, tables are based on
 - random sampling from a finite lot for the consumer's risk at the LQ,
 - random sampling from a process for the producer's risk and the tabulated values of the operating characteristic curves.

Applying Procedure B could eventually be considered when a MS considers it continuously captures all updated parcels during its daily operations and is running a formal quality reporting to other LPIS users than the Commission.

25.1.5 Acceptance ? Rejection

In the LPIS QAF, of course, the test result is not mechanically applied i.e. failure to meet a requirement doesn't involve the literal 'rejection' and re-submittal of the LPIS or trigger a financial correction. When a LPIS is found not to meet the desired quality, the MS is invited to further investigate the found issues and report on it.

Go forward to [The "Critical Defects" issue](#).

Go backwards to [Table of contents](#).

26 ETS critical defects 2011

version 5.1

26.1 Introduction

As it was stated in the [discussion document](#), critical defects are non-compliances having properties that obstruct the use of the parcel regarding:

- either the functions of unambiguous localisation of agricultural parcels, or
- the unique identification for crosschecks of claims.

The nature of a critical defect can differ - non-persistent identifiers, incorrect topology, improper parcel design, etc. Some can be easily detected by spatial or alphanumeric analysis of the geodata stored in the LPIS (for example, errors in topology). Others can be revealed only after an inspection of the Reference Parcel against up-to-date (current year) ground data.

26.2 Detection of the critical defects (examples)

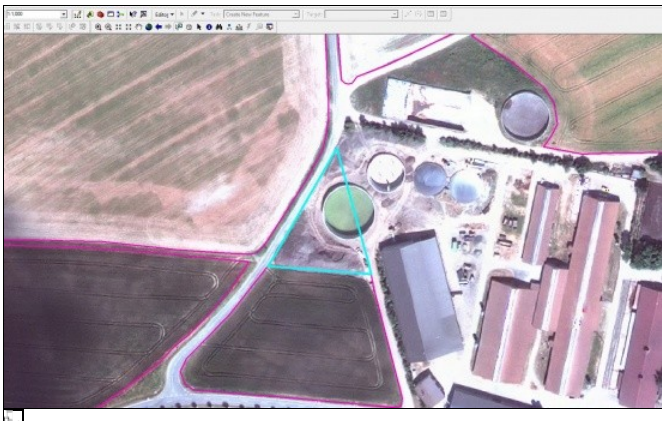
The ETS v5.0 detection of the critical defects (quality measure RP_CRA), is driven by a positive observation of local ground conditions (expressed through the observed land cover and land use), i.e. hard evidence of the occurrence of the above-mentioned non-compliances. This detection considers the context of the particular LPIS design (for example the type of reference parcel applied.) If the information from the ground, obtained through the reference orthoimage, is not sufficient for a conclusive decision (i.e. not all conditions were verified), no defect is reported.

This article present real world examples of reference parcels that are subject to such defects:

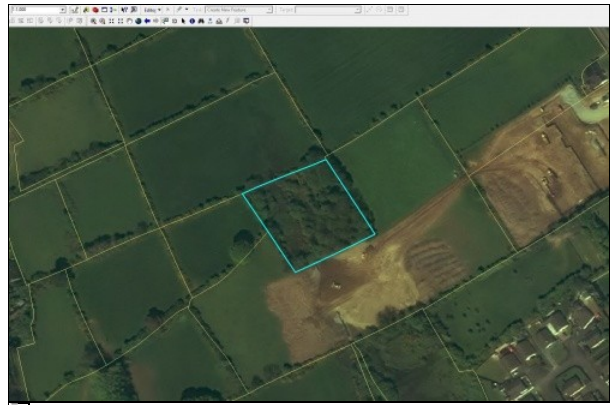
1. a defective parcel on the left i.e. all conditions are positively "CONFIRMED"
2. a normal parcel. i.e. some but not all conditions have been evidenced - "UNCONFIRMED"

26.2.1 Total absence of eligible features (or land)

- Applicable only for reference parcels, holding "non zero" maximum eligible area ReferenceArea.
- Total lack of agriculture land cover, which might represent eligible land on the area represented by the Reference Parcel.



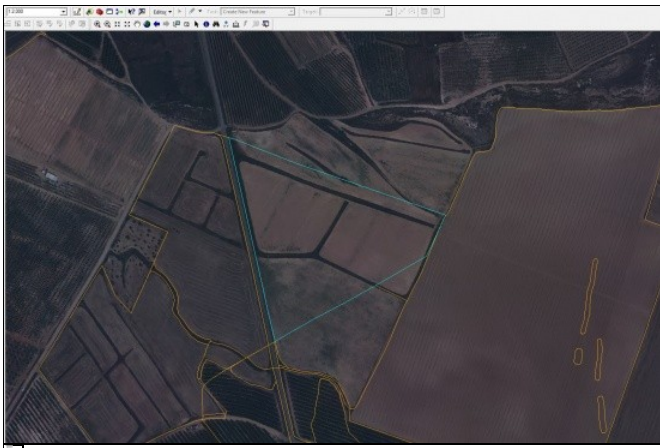
CONFIRMED: The LUI of the inspected RP refers to an area with no agriculture land available (the area represented by the LUI, is part of an industrial site). No eligible land is present. Also, the reference Area of the RP holds a non-zero value.



UNCONFIRMED: The LUI of the inspected RP refers to an area covered with open forest. Although it seems from the orthoimage that no eligible land is present, a Rapid Field Visit (RFV) confirmed eligibility of the land. ACTION: the agriculture land cover on the RP's LUI is mapped (eventually using pro-rata approach) and the RP_MEA is quantified. No critical defect is assigned.

26.2.2 Invalid RP perimeter

- Applicable only for reference parcels that cannot be measured
- and have non-agricultural elements within 5m of the LUI boundary
- and where none of the RP perimeter prime vertices, which outline the LUI, corresponds to an observable ground truth (as visible through the existing land cover, land use features).



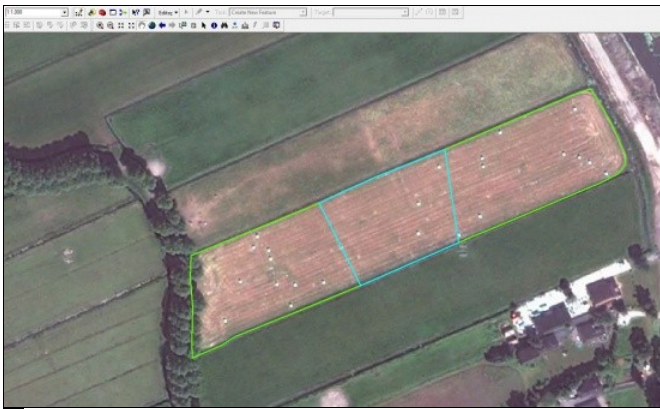
CONFIRMED: The LUI (it's South-Eastern part) doesn't match distinctive land features or follow well identifiable limits of land cover and/or land use, thus it cannot be measured. Also there are non-agriculture features located less than 5 meters from the LUI perimeter. Although parts of the contour (line segments) follow certain limits in land cover (roads), none of the RP perimeter vertices corresponds to the observed ground truth (as visible through the existing land cover, land use features).



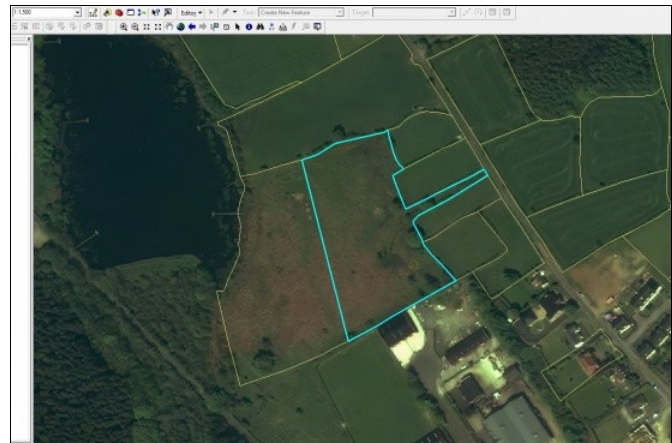
UNCONFIRMED: The LUI (it's South-Western part) doesn't match distinctive land features or follow well identifiable limits of land cover and/or land use. However, the rest of the perimeter match terrain features. ACTION: As there is a non-agriculture land cover feature in the 5-meter buffer on the Northern and Eastern sides of the displayed boundary of the Reference Parcel, the parcel is not measured (the observed eligible area, area declared and the reference area are set to value zero). No critical defect is assigned.

26.2.3 Invalid common RP boundaries

- Applicable only for physical and topographic block systems (PB, TB),
- where the Land use / land cover counter-indicates the presence of common stable physical boundary between the inspected reference parcel and at least two of its neighbouring reference parcels.
- and the common boundary location cannot be derived from surrounding land cover / land use elements.



CONFIRMED: The RP (highlighted in blue) is situated in the middle of the larger production block, which is cultivated as single unit (lines of ploughing are clearly visible). Thus, the observed land use counter-indicates the presence of common stable physical boundary between the inspected reference parcel and two of its neighbouring ones (shown in green). The surrounding land cover / land use feature cannot provide sufficient evidence on the presence or position of the common boundaries on the field.

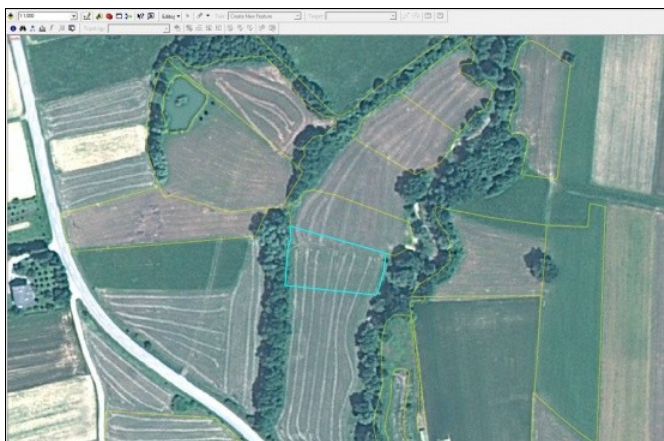


UNCONFIRMED: The common boundary between the RP under inspection (highlighted in blue) and its neighbouring RP on the west, is not present as both clearly constitute a single grassland. But the common boundaries of the inspected RP and all its other neighbours are present. ACTION: As there is a non-agriculture land cover feature in the 5-meter buffer on the Southern side of the displayed boundary of the Reference Parcel, the parcel is not measured (the observed eligible area, area declared and the reference area are set to value zero). No critical defect is assigned.

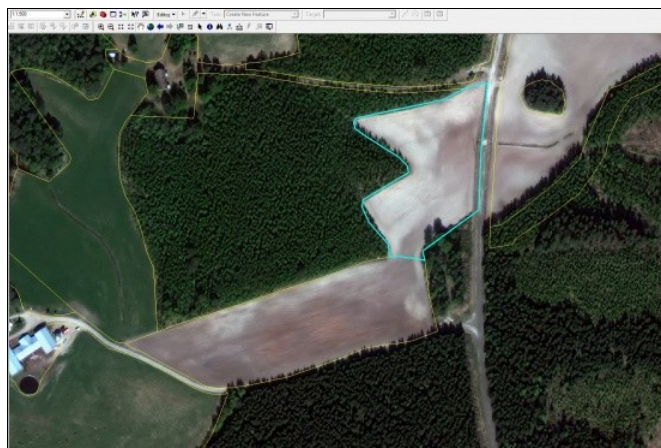
26.2.4 Incomplete block

- Applicable only for (production) block systems (AP/FB/TB//PB)
- where the Land use / land cover counter-indicates the presence of a true stable physical boundary of the block
- and the LPIS does not hold a neighbouring non-zero MEA parcel where the farmer can declare that land clearly in his use. The presence of a reference parcel is **not** restricted to parcels within the scope of the current assessment year.
- and this unaccounted land use indicates that more than 10 percent or 2000m² (whichever is LARGER) of the block area value is missing from the LPIS.
- and the LPIS QA inspection cannot produce external evidence that the land tenure of this unaccounted part of the block is held by a farmer who is not receiving any aid for the assessment year.

The external evidence (5th bullet) vindicating parcels that seem to be incomplete on account of the other visual criteria, needs to be reported for each parcel concerned by the LPIS QA inspector in a separate package.



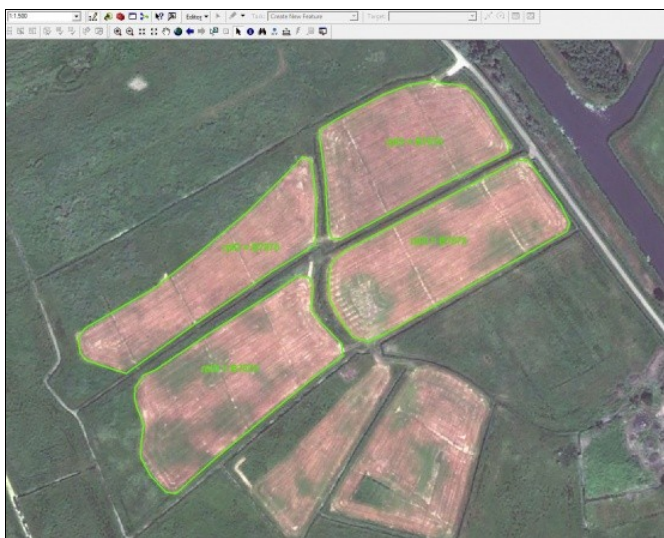
CONFIRMED: The RP (highlighted in blue) is situated in the middle of the larger production block, which is cultivated at once (line of ploughing are clearly visible). Thus, the observed land use counter-indicates the presence of true stable physical boundary. In addition, the LPIS (yellow parcels) does not contain a neighbouring parcel where the farmer could have declared that land upon, and the unaccounted land use indicates that more than 10 percent of the reference area value is missing from the LPIS.



UNCONFIRMED: The RP (highlighted in blue) is situated in the middle of the larger production block, which is cultivated at as a single unit (ploughing lines are clearly visible). Thus, the observed land use counter-indicates the presence of a true stable physical boundary. However, the LPIS (yellow parcels) does contain a neighbouring block where the farmer can declare land upon. ACTION: As there is a non-agriculture land cover feature in the 5-meter buffer on the outer side of the displayed boundary of the Reference Parcel, the parcel is not measured (the observed eligible area, area declared and the reference area are set to value zero). No critical defect is assigned.

26.2.5 Multi-polygon

- Applicable only for (production) block systems (AP/FB/TB//PB)
- where one block (i.e. one RP identifier for is actually composed of two or more disjoint polygons. NOTE: Internal or adjacent polygons representing sub-divisions in a single production block are not multi-polygon defects, but could indicate an ATS or scoping problem (see [our FAQ](#)).



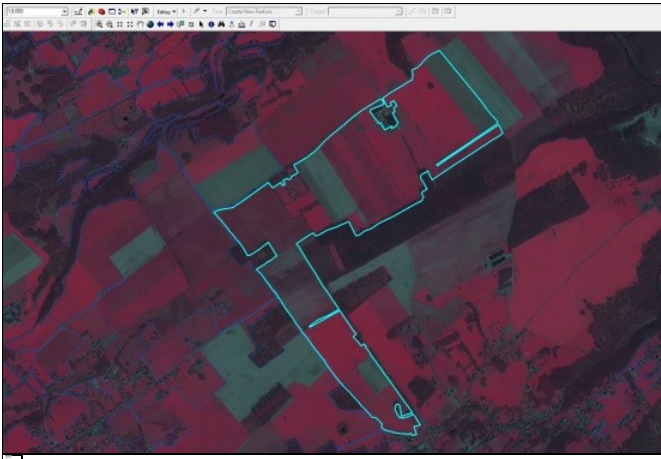
CONFIRMED: The four disjoint polygons (highlighted in green) are identified (associated to) a single single Reference Parcel ID. The LPIS holds no information on the dividing "cross".

26.2.6 Multi-parcel

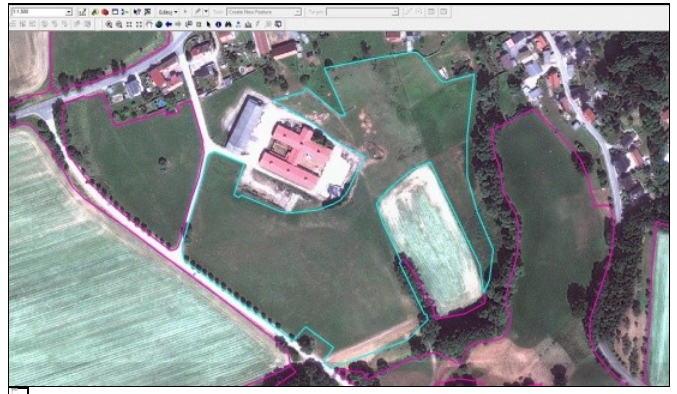
- Applicable only for (production) block systems (AP/FB/TB//PB)
- that are an amalgamate of 10 (ten) or more clearly distinct parcels (i.e. units of agriculture land which according to the internal rules should have been processed separately).



UNCONFIRMED: The two adjacent polygons (highlighted in green, associated to one and the same RP ID, are in fact representing sub-divisions in a single production block and therefore are not multi-polygon defects. Note that there is still a scoping problem as the polygons should have been merged into a single LUI for their common RPID. ACTION: the agriculture land cover on the RP's LUI is mapped and the RP_MEA is quantified. No critical defect is assigned.



CONFIRMED: The inspected RP (highlighted in blue) is a physical block that was composed by more than 10 more clearly distinct parcels (based on the cropping pattern in the adjacent parcels).



UNCONFIRMED: The inspected RP (highlighted in blue) is a farmer block that was composed by few (less than 10) clearly distinct parcels (delimited by fences). ACTION: the agriculture land cover on the RP's LUI is mapped and the RP_MEA is quantified. No critical defect is assigned.

Go forward to [Impact of the orthoimage quality on the ETS](#)

Go backwards to [Table of contents](#).

27 Impact of the orthoimage quality on the ETS

version 5.1

27.1 General

The quality of the VHR orthoimagery, provided in the frame of the CwRS, is very much dependent on the ortho-production process. Contrary to the production of aerial orthoimagery, where the process can be assumed straightforward and the producer is in control of the relevant internal and external conditions, the quality of the satellite orthoimagery is very much dependent of ancillary data (GCPs, DEM) over which the producer often is not having direct control. Thus, in order to analyse whether a particular sensor or acquisition conditions are not appropriate for the ETS, we first need to evaluate, if the derived orthoimage used in the ETS is of optimal quality. The image content can be seriously downgraded, if an inappropriate orthoproduction process or irrelevant ancillary data are used. It has been observed, that often the orthoimage producers pays usually little attention to radiometric quality, colour balance and the preservation of the image detail, at the expense of thorough check of geometric quality. An explanation of the phenomenon could be the fact that there are no clear and standardized metric developed worldwide in respect to the quality check of the radiometry.

In this respect, JRC revised its Guidelines for Best Practice and Quality Checking of Ortho Imagery and the Orthoimage technical specifications for the purpose of LPIS [Orthoguidelines](#). These guidelines and specifications can be revised in the light of the findings from the ongoing ?screening? of the ETS results, and specific, more stringent, requirements can be proposed for the orthoimagery used in the LPIS QA. In that respect, JRC is planning to perform an evaluation of the orthoimagery used in the ETS 2010 whether it meets the current orthoimage specification.

The following discussion points aim to clarify some questions raised by the MS Administration on the impact of the orthoimage quality and operator subjectivity on the ETS performed in 2010.

27.2 Poor relative coordinate accuracy of the orthoimage could affect the ETS

A list of possible metrics to assess the relative accuracy, as residual plots or visual inspection of the planimetric fit between the vector and raster data, are given in the Guidelines for Best Practice and Quality Checking of Ortho Imagery. See also Annex II (point II.3).

27.3 Satellite image quality is not always sufficient to distinguish certain types of and cover features (for example bracken vs. rush)

ETS maps and classifies the land cover features, based on their structural-physiognomic aspect. For example, distinction of the bracken from rush can be very difficult (even sometimes impossible) from one single image snapshot, even if 25cm aerial orthophoto is used, as both are herbaceous plants and share the same structural-physiognomic properties (plants belonging to the rush family (Juncaceae), may superficially resemble grasses). Differences might come evident, if we consider as well the floristic aspect, but in this case we might need multi-temporal image data in order to trace the specific phenological development of each of the plant under investigation. The specific location can be another factor which might give us indication on the correct type of plant. However, the most important question is whether we need this distinction, as both are invasive plants which are considered not part of the agriculture land cover ?envelope?.

27.4 The uncertainty in image photo-interpretation due to the operator subjectivity has to be accounted in the ETS results

Subjectivity is inevitable when the interpretation is done by human ? but it is the best approach we still have. In any case, the human-inherited cognitive reasoning is superior to any machine-learning method of interpretation and classification. The uncertainty in interpretation could be reduced by acquiring knowledge on the subject (trained operators) and by following strictly the inspection procedures. Also the uncertainty of the feature or border identification is not an inherent problem of remote sensing detection only, but also of the measurement process on the field.

27.5 Inappropriate elevation angle cause poor orthorectification

The question whether the elevation angle is inappropriate or not, often depends on the specific application of the imagery collected. In any case, image data acquired with lower elevation angle is more demanding in respect to the scope and quality of the ancillary data, used for the production of the orthoimagery. But this doesn't prevent images acquired with lower elevation, to be orthorectified with the desired quality, once the adequate ancillary data and orthorectification methods are used.

27.6 Occlusion of tree and buildings and shadows effect cause ambiguity in the CAPI

Occlusions caused by land features with certain height and shape are generally common issues in the use of remote sensing. Although the obstruction of certain part of the land cause by leaning artificial structure could be resolved at certain extend using true orthos, the obstruction caused by the tree canopies could be eventually prevented (always partly) only if the image is acquired in a particular period of the year, where the leaves are not present (an ortho-acquisition strategy commonly used for cadastral projects). The problem of occlusion and its impact on the CAPI ambiguity was already identified during the ETS feasibility study done in 2010 [1], where it was found that most of the cases of occlusion can be attributed to the fact that the VHR imagery was acquired with low elevation angles.

However, the image oblique view (caused by acquisition with lower elevation angle), taken as isolated factor, cannot be responsible alone for the observed ambiguity of the CAPI. In many cases, even when certain portion of the land is not visible due to obstruction from ?leaning? features, there might be still enough information content on the image, which could allow the operator to make correct interpretation. The problem is related to the fact that the elevation angle primary determines the Field of View (FOV) of the sensor scanner (FOV - The area or solid angle which can be viewed through an optical instrument), and in particular the Instantaneous Field Of View (IFOV) , which is an altitude dependent measure of the ground resolution of the scanner. In summary, it means the ground sampling distance (GSD) of an image, increases with the decrease of the elevation angle of acquisition. Larger GSD means lower spatial resolution, which by default cannot be compensated by resampling of the original image, to an image with smaller pixel size, than the GSD.

Thus, the combination between the oblique viewing and the decreased spatial resolution is reason for the observed deterioration of the image information content to a level when it is not sufficient for the CAPI operator to draw a conclusion. The magnitude of this degradation highly depends by the type of sensor and its flying altitude. Obviously images collected by sensors, acquiring at higher spatial resolution (GE-1, WV-2) will be less prone to the impact of the lower elevation angle than the images collected by sensors, acquiring at lower spatial resolution (IKONOS). This was observed also during the feasibility trials, which further lead to the elaboration of some recommendations in respect to the elevation angle and the type of sensors, found suitable for the LPIS QA.

27.7 Time of the acquisition is an important factor in the ETS decision process

As written in point 4.1.5. of Annex III, temporal variations influence the appearance of the land cover but should not influence its nature or description, because that particular type of land inventory is independent of the time of observation. For that reason the ETS operator should not solely rely on brightness or colour appearance when interpreting the given land cover, but also has to take into account the full range of abundant information the imagery at that spatial resolution is able to provide on shape, texture, location, and spatial context (see Annex II).

27.8 Phenological development is an important factor in the ETS

True indeed, but as far the ETS is based on classifying the land cover from the point of view of its structural-physiognomic, and not floristic, aspect, it should not be too sensitive to the variation in the phenological development of the vegetation. Of course, as said above, it can have an impact on the rate of occlusions of land features from tree canopies.

27.9 Can multi-temporal CwRS data bring significant added-value in support to the ETS decision process?

Multiple acquisitions of VHR data is highly unfeasible with respect, and might be done in the frame of the CwRS programme, only if size and number of CwRS zone is reduced significantly. The use of CwRS HR multi-temporal (for example Rapideye) data can be an alternative, but needs to be further investigated. See RapidEye project results (Bergamo proceedings).

Go forward to [Results from 2011 screening](#)

Go backwards to [Table of contents](#).

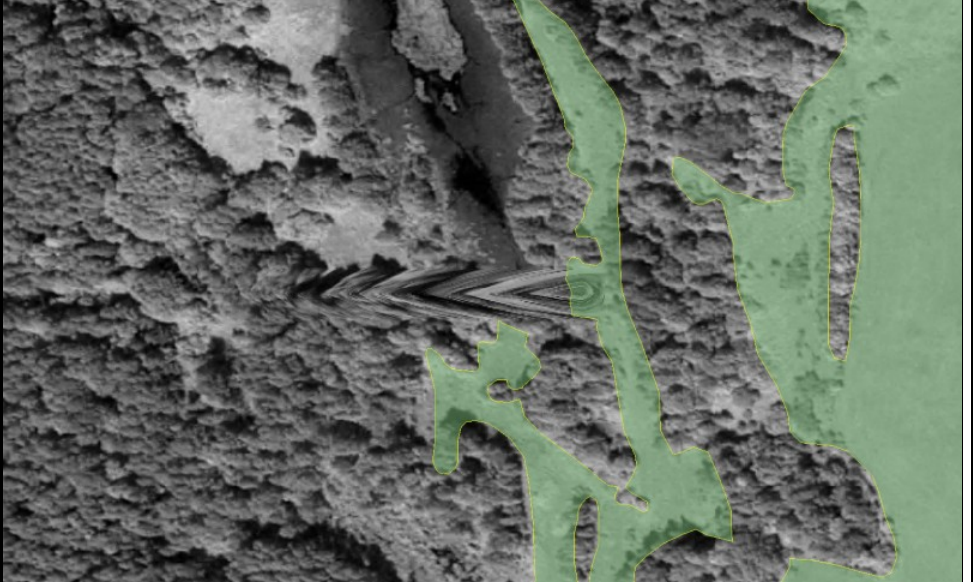

28 ETS inspection errors 2010-2011

versions 4.3 and 5.1

This page presents typical examples of each type of methodological / technical shortcomings identified during the screening of the 2010 ETS packages. The codes relate to the methodological steps of the 2010 ETS v4.3 in [Annex II](#). Please note that some of these steps have been complete revised for ETS v5.0 in which case this will be indicated for the code concerned.

Each Member state that has successfully uploaded an ETS-package has received an individual screening report as described in [this article](#). Contact your LPIS QA portal contact for a copy.

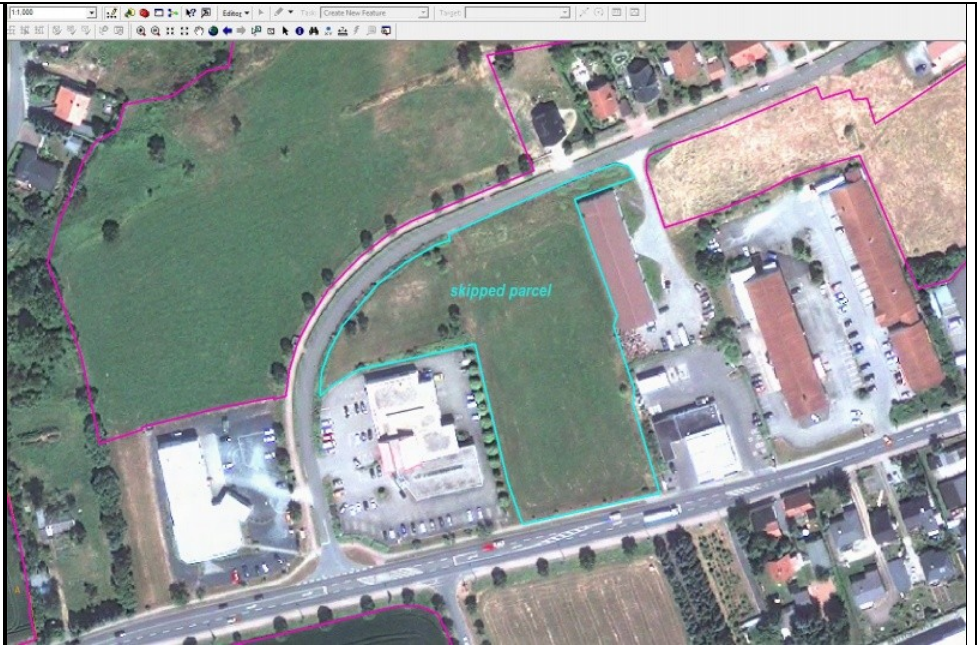
A template of the screening report is available [here](#)

Issues in data preparation (I)	Example
I1 (I4)/Raster data (orthoimagery)/_a. missing orthoimagery (whole or partially)	-
	
I1 (I4)/Raster data (orthoimagery)/_b. errors in orthoimagery processing (f.ex. DEM errors)	
I1 (I4)/Raster data (orthoimagery)/_c. number of orthoimages with poor information content	-
I1 (I4)/Raster data (orthoimagery)/_x. other error	-

I2/LPIS sample pre-selection/possible problem with the scope

The reference parcel (blue line) has been skipped from the inspection. Although no technical reason for such decision can be observed or found (imagery provides full and correct information), the parcel inspection is expected.

Note: The parcel might have been skipped because it is not in the scope any more (not belonging to 1st pillar/not declared). However, it is still an issue, as skipping during the inspection without technical grounds is not supported. Parcels that are not in scope should not have been in the lot from the beginning.



I3/Ancillary data

I4/Completeness and geometric consistency/_a. topological errors in the data base

Neighboring polygons representing eligible area (with FR as land cover type) overlap. As a result the overlapping parts of eligible area will be erroneously calculated double in the results.



I4/Completeness and geometric consistency/_b. lack of 100m buffer in Zero State Polygon GML (yes/no)

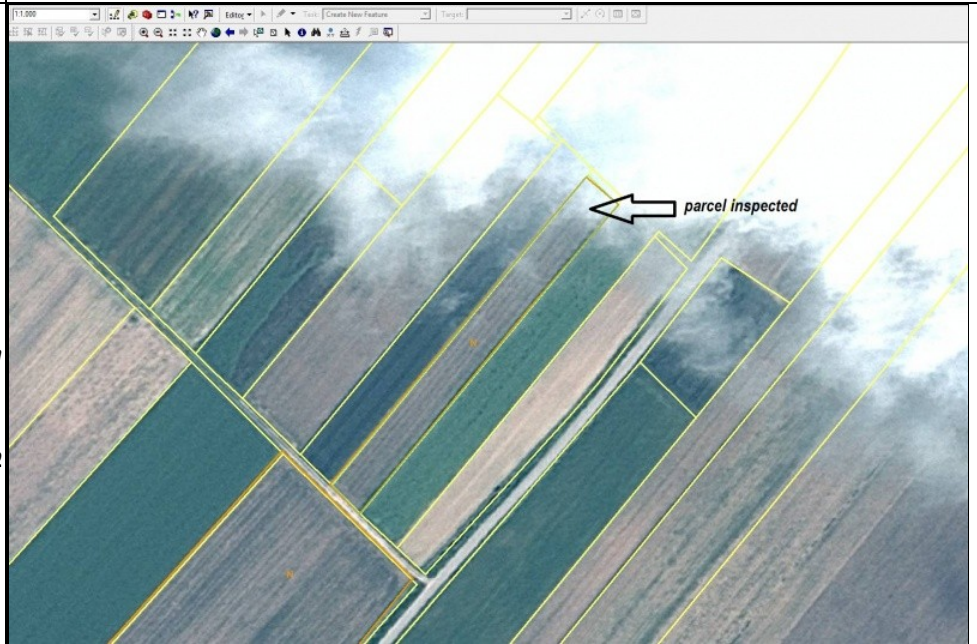
The yellow line indicates inspected parcels. A lack of the neighboring parcels (as selected within the 100m buffer) prevents proper validation of the inspected parcel. As a result, tracking specific issues during the screening process may be incomplete.

I14/Parcel inspection feasibility/_b. number of skipped parcels (total)

I15/Parcels with inspection failure/_a. number of incorrectly inspected parcels that should have been skipped

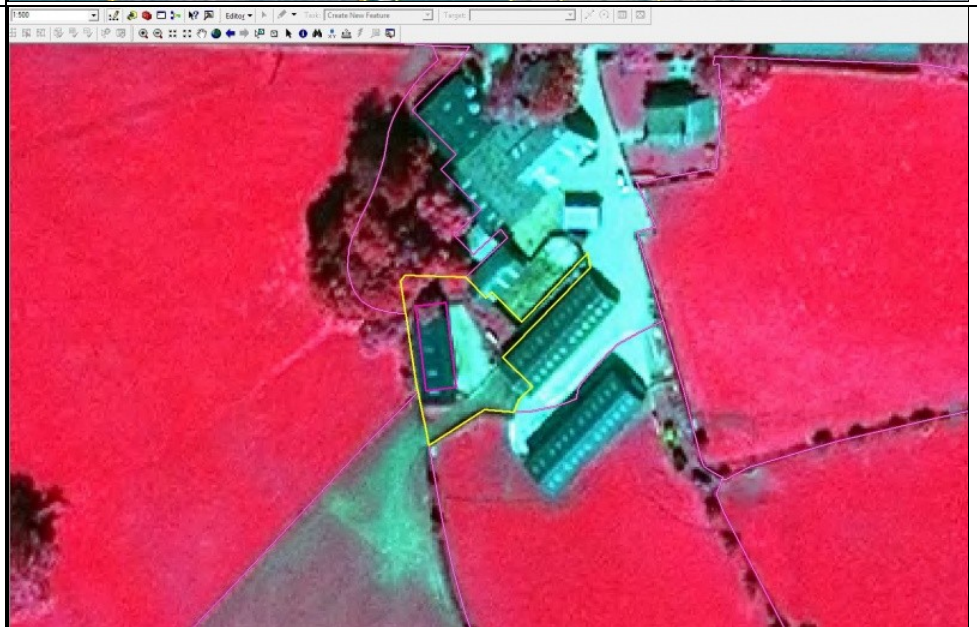
The parcel indicated with an arrow has been inspected although its northern part of the delivered orthoimage is hidden under cloud cover. This parcel is expected to be skipped with the reason of skipping T4 (?Parcel partially or wholly covered by clouds?).

Note: Alternative explanation: the MS may have used an alternative ?suitable- image but failed to provide access to the screening operator.



I15/Parcels with inspection failure/_b. number of incorrectly skipped parcels

The parcel marked with yellow boundary has been skipped from the inspection. No technical failure on the imagery can be detected. The parcel is expected to be inspected and flagged as one with total absence of eligible features.

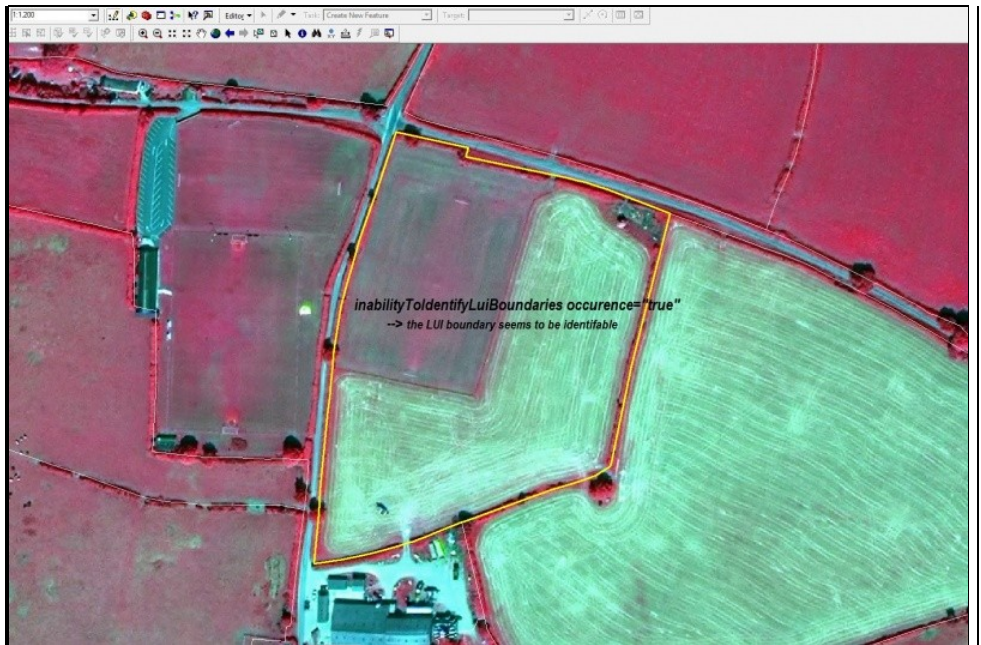


Issues in Reference Parcel inspection (A)

A1/Reference parcel boundaries following land features analyses/incorrect clear or unclear LUI boundary decision

The parcel marked with yellow boundary has been flagged as one with ?inability to identify LUI boundaries occurrence?. The screening process of the parcel evidences the opposite ? the LUI is identifiable and the RP can be measured.

Example



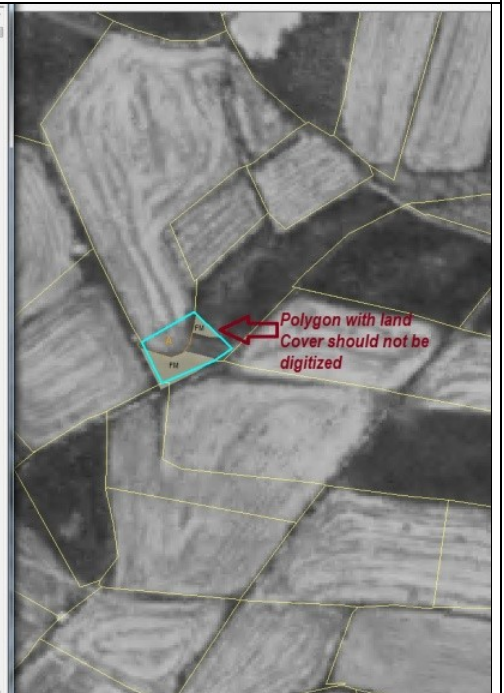
A2/Value of eligible area observed in case of parcel with unclear boundary/incorrect area value assigned

The parcel (blue line) has been correctly flagged as one with ?inability to identify LUI boundaries occurrence = true?. As a consequence, no polygon with eligible area is expected (neither agriculture land cover class nor landscape element). As the parcel is not bordering on non-eligible features, only a numeric number of reference area is expected to appear in RP_MEA field.

Note: ETSv5.1 does require a copy/pasted polygon in this particular case, as a substitute of the LUI external boundary (see also FAQ). It will not be picked up as an issue in LPIS QA 2011.

```

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  <cap:agricultureLandCoverClass name="S" codeSpace="urn:ec:lpisqa">
  <cap:agricultureLandCoverClass name="T" codeSpace="urn:ec:lpisqa">
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  <cap:landscapeFeature abundance="0" codeSpace="urn:ec:lpisqa">
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  <cap:multiPolygonReferenceParcel waived="true"/>
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  <cap:observedRecordedAreaDifference>-78</cap:observedRecordedAreaDifference>
</cap:RP_CNF>
  
```



Issues in individual land cover features delineation (B)

Example

B1/Agriculture land cover feature delineation/incomplete land cover identification

The parcel under inspection is marked with green line. The measured and mapped eligible area is marked with yellow line. The screening process of the parcel, suggested an inclusion of the omitted eligible land as belonging to the LUI of the RP (no additional evidence, such as RFV.gml has been provided).



B2/Land cover mapping/_a. imprecise mapping (e.g. not precise enough)

The yellow line represents mapped eligible land polygon. Neither the outer boundaries nor the inner polygon (depicting ineligible house inside) consistently follow the features identified on the imagery. More precise mapping is suggested.



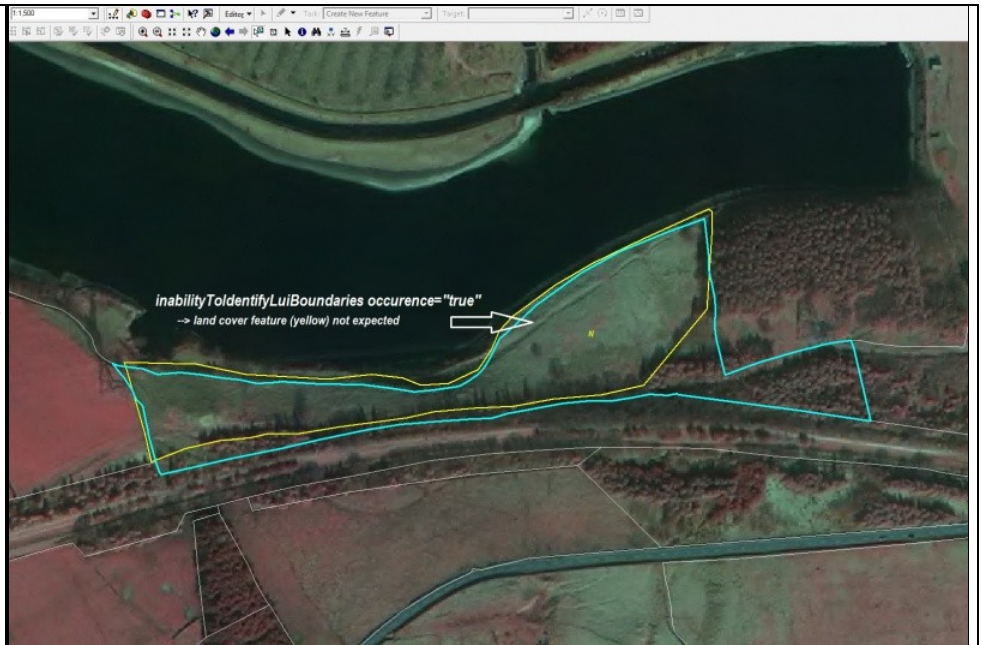
B2/Land cover mapping/_b. inaccurate mapping (e.g. border of a land cover not followed, 'copy-pasting', incorrect snapping)

The parcel under inspection is marked with blue line. Whitish polygons represent the mapped eligible land. The digitized polygons are snapped to the outer boundary of the reference parcel and disregard land cover borders identified on the imagery.



B2/Land cover mapping/_c. presence of unexpected land cover feature

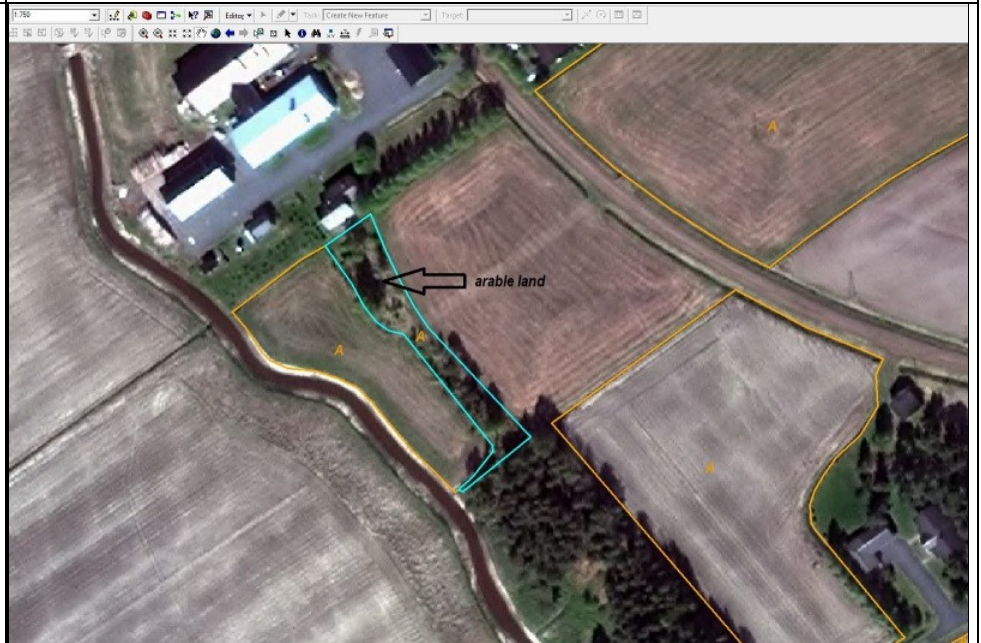
The parcel under inspection (blue line) has been correctly flagged as one with ?inability to identify LUI boundaries occurrence = true?. As the parcel is bordering non-eligible features, no polygon with eligible area is expected (neither agriculture land cover class nor landscape element).



B2/Land cover mapping/_d. incorrect mapping of features below 0,1 ha

B3/Land cover class assignment/incorrect land cover type (attribute) associated with the feature

On the imagery, the mapped land cover polygons incorrectly depict arable land. A different land cover type for the highlighted-blue polygon would be suggested.



B3a/Non-agriculture features smaller then 0,1 ha area estimation/incorrect estimation

B4/Eligible area counting/_a. incorrect eligible area counting

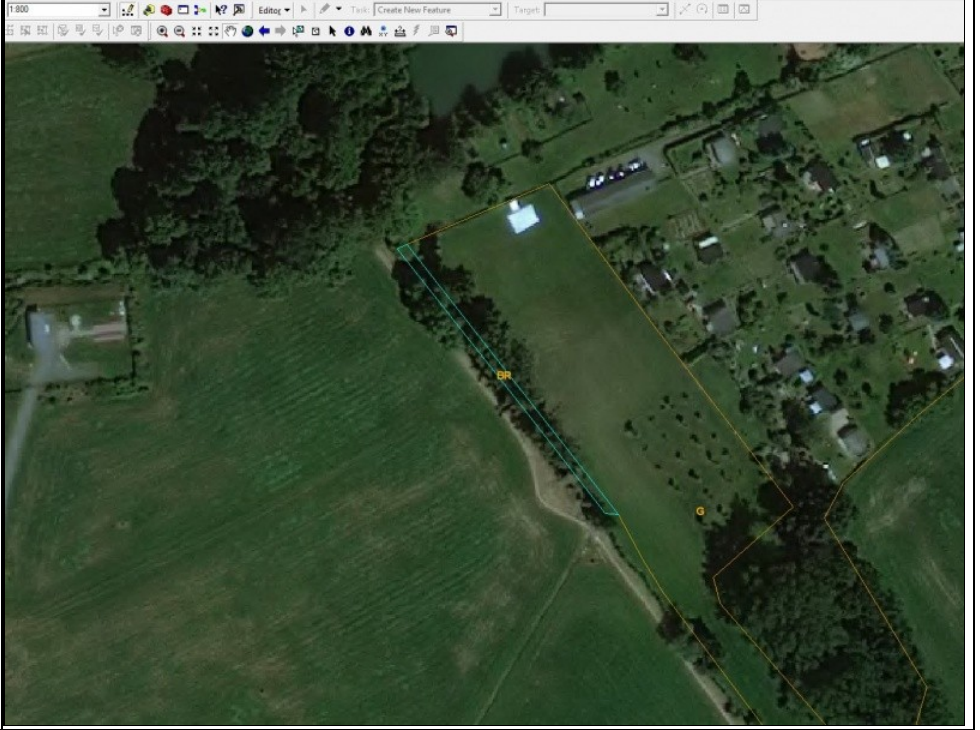
B4/Eligible area counting/_b. incorrect area rounding

For all inspected parcels RP_MEA has been rounded to 100m2. The specified resolution of polygon area is 1m2.

ns1-RP_MEA	name
98200	
20000	N
18100	G
0	
57000	N
21600	A
5600	N
109700	N
8300	N
9900	N
20300	N
700	N
31700	G
0	
29000	G
0	
29900	N
9800	N
2800	N
7500	N
9600	N
7000	G
1100	N

B5/Occurrence of land cover classes appearance/_a. one or more land cover classes

<p>not counted</p> <p>B5/Occurrence of land cover classes appearance/_b. one land cover class mentioned more then once in the data base</p> <p><i>The parcel under inspection has 2 polygons with land cover type ?A? and two polygons land cover type ?B?. In the "RP_ELC" measure, only an occurrence of land cover type should be reported. In this particular example, type ?A? and type ?B? are both expected to be reported only once.</i></p>	<pre> <cap:RP_MEA>226536</cap:RP_MEA> <cap:RP_ELC> <cap:agricultureLandCoverClass name="A" codeSpace="urn:ec:EligibilityProfile" occurrence="true"/> <cap:agricultureLandCoverClass name="B" codeSpace="urn:ec:EligibilityProfile" occurrence="true"/> <cap:agricultureLandCoverClass name="A" codeSpace="urn:ec:EligibilityProfile" occurrence="true"/> <cap:agricultureLandCoverClass name="B" codeSpace="urn:ec:EligibilityProfile" occurrence="true"/> </cap:RP_ELC> <cap:RP_ALF/> <cap:RP_ELF>0</cap:RP_ELF> <cap:RP_ANF> <cap:artificialSealedSurface abundance="0"/> <cap:forestAndWoodland abundance="0"/> <cap:naturalVegetation abundance="0"/> <cap:waterBodies abundance="0"/> <cap:naturalBareAreas abundance="0"/> <cap:wetland abundance="0"/> </cap:RP_ANF> <cap:RP_CRA> <cap:inabilityToIdentifyLuiBoundaries occurrence="false"/> <cap:discontinuity occurrence="false"/> <cap:totalAbsenceOfEligibleFeatures occurrence="false"/> <cap:multiParcel occurrence="false"/> <cap:multiPolygonReferenceParcel occurrence="false"/> </cap:RP_CRA> <cap:RP_CRF/> <cap:RP_CNF/> </pre>
--	---

Issues in eligible landscape features mapping (C)	Example
C1/Landscape feature identification/_a. existing landscape features not identified	
C1/Landscape feature identification/_b. incorrect identification of landscape features	
<p>C2/Landscape features mapping</p> <p><i>The highlighted blue polygon is representing a landscape feature border. After the screening process, more accurate mapping is suggested.</i></p>	
C3/Landscape features land cover assignment	
<p>C4/Landscape features counting/_a. no features counted</p> <p><i>The highlighted blue landscape feature polygon clearly belongs to the inspected parcel (yellow boundary with diagonal hatch). The occurrence of this element is missing in the observations XML.</i></p>	

```

<cap:RP_MEA>7290</cap:RP_MEA>
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  <cap:landscapeFeature name="PO" codeSpace="urn:ec:lpisqa EligibilityProfile" abundance="0" />
  <cap:landscapeFeature name="RT" codeSpace="urn:ec:lpisqa EligibilityProfile" abundance="0" />
  <cap:landscapeFeature name="WB" codeSpace="urn:ec:lpisqa EligibilityProfile" abundance="0" />
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</cap:RP_ANF>

```

C4/Landscape features counting/_b. incomplete counting

C5/Landscape feature area derivation/_a. landscape feature area not assigned

The polygon landscape element (purple line) has no area assigned (RP_ELF = 0). Moreover the polygon overlaps with the agriculture land polygon.

```

<cap:RP_MEA>2127</cap:RP_MEA>
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```

C5/Landscape feature area derivation/_b. landscape features area incorrectly added to RP_MEA

The parcel under inspection (blue line) is delineated as agriculture land ?A? (polygon area = 133) and the landscape feature (polygon area = 17). In total, the measured eligible area of the parcel under inspection is 150. With a recorded Reference Area is 129, the RP_CNF results should be = 116% (=150/129) and 21 (=150-129).

<pre> <cap:RP_MEA>133</cap:RP_MEA> <cap:RP_ELC> <cap:agricultureLandCoverClass name="A" codeSpace="urn:ec:lpisqa: <cap:agricultureLandCoverClass name="M" codeSpace="urn:ec:lpisqa: <cap:agricultureLandCoverClass name="N" codeSpace="urn:ec:lpisqa: <cap:agricultureLandCoverClass name="S" codeSpace="urn:ec:lpisqa: <cap:agricultureLandCoverClass name="T" codeSpace="urn:ec:lpisqa: </cap:RP_ELC> <cap:RP_ALF> <cap:landscapeFeature abundance="0" codeSpace="urn:ec:lpisqa:2010 <cap:landscapeFeature abundance="0" codeSpace="urn:ec:lpisqa:2010 <cap:landscapeFeature abundance="0" codeSpace="urn:ec:lpisqa:2010 <cap:landscapeFeature abundance="0" codeSpace="urn:ec:lpisqa:2010 <cap:landscapeFeature abundance="0" codeSpace="urn:ec:lpisqa:2010 <cap:landscapeFeature abundance="0" codeSpace="urn:ec:lpisqa:2010 <cap:landscapeFeature abundance="0" codeSpace="urn:ec:lpisqa:2010 <cap:landscapeFeature abundance="0" codeSpace="urn:ec:lpisqa:2010 </cap:RP_ALF> <cap:RP_ELF>17</cap:RP_ELF> <cap:RP_ANF> <cap:artificialSealedSurface abundance="0"/> <cap:forestAndWoodland abundance="0"/> <cap:naturalVegetation abundance="0"/> <cap:waterBodies abundance="0"/> <cap:naturalBareAreas abundance="0"/> <cap:wetland abundance="0"/> </cap:RP_ANF> <cap:RP_CRA> <cap:inabilityToIdentifyLuiBoundaries occurrence="false"/> <cap:discontinuity occurrence="false"/> <cap:totalAbsenceOfEligibleFeatures occurrence="false"/> <cap:multiParcel occurrence="false"/> <cap:multiPolygonReferenceParcel occurrence="false"/> </cap:RP_CRA> <cap:RP_CRF> <cap:inabilityToIdentifyLuiBoundaries waived="true"/> <cap:discontinuity waived="true"/> <cap:totalAbsenceOfEligibleFeatures waived="true"/> <cap:multiParcel waived="true"/> <cap:multiPolygonReferenceParcel waived="true"/> </cap:RP_CRF> <cap:RP_CNF> <cap:observedToRecordedAreaPercentage>103</cap:observedToRecorded <cap:observedRecordedAreaDifference>4</cap:observedRecordedAreaDI </cap:RP_CNF> </pre>	
<p>C5/Landscape feature area derivation/_c. landscape feature area calculated incorrectly</p>	

Issues in non-agriculture land cover features and "potential" critical defects on the land represented by the RP identification (D)

D1/Non-agriculture land cover types determination/_a. no determination

Example

D1/Non-agriculture land cover types determination/_b. incorrect determination

The yellow line shows reference parcel boundary. Artificial sealed surfaces (buildings) are not part of the LUI, therefore are not expected to be reported in Observations XML, as they are not part of the LUI.

	<pre> 1343 <cap:RP_MEA>2600</cap:RP_MEA> 1344 <cap:RP_ELC> 1345 <cap:agricultureLandCoverClass name="B" codeSpace="urn:ec:lpisqa:2010 1:EligibilityProfile" occurrence="true" /> 1346 </cap:RP_ELC> 1347 <cap:RP_ALF /> 1348 <cap:RP_ANF /> 1349 <cap:artificialSealedSurface abundance="0"/> 1350 <cap:naturalVegetation abundance="0" /> 1351 <cap:waterBodies abundance="0" /> 1352 <cap:naturalBareAreas abundance="0" /> 1353 <cap:wetland abundance="0" /> 1354 </cap:RP_ANF> 1355 <cap:RP_CRA> 1356 <cap:inabilityToIdentifyLuiBoundaries occurrence="false" /> 1357 <cap:discontinuity occurrence="false" /> 1358 <cap:totalAbsenceOfEligibleFeatures occurrence="false" /> 1359 <cap:multiParcel occurrence="false" /> 1360 <cap:multiPolygonReferenceParcel occurrence="false" /> 1361 </cap:RP_CRA> 1362 <cap:RP_CRF /> 1363 <cap:RP_CNF /> 1364 <cap:observedToRecordedAreaPercentage>96.29429</cap:observedToRecordedAreaPercentage> 1365 <cap:observedRecordedAreaDifference>-100</cap:observedRecordedAreaDifference> 1366 </cap:RP_CNF> 1367 <cap:artificialSealedSurface contamination="true" rpWaived="false" /> 1368 <cap:forestAndWoodland contamination="true" rpWaived="false" /> 1369 <cap:naturalVegetation contamination="true" rpWaived="false" /> 1370 <cap:waterBodies contamination="true" rpWaived="false" /> 1371 <cap:naturalBareAreas contamination="true" rpWaived="false" /> 1372 <cap:wetland contamination="true" rpWaived="false" /> 1373 </cap:RP_CNF> 1374 <cap:RP_CNT> 1375 <cap:inabilityOfTheUnderlyingLandUseNotApplied occurrence="false" /> 1376 <cap:revisionsOfTheRegulationsWereNotApplied occurrence="false" /> 1377 <cap:incompleteProcessing occurrence="false" /> 1378 <cap:resourceProcessing occurrence="false" /> 1379 <cap:incompatibleLpisDesign occurrence="false" /> 1380 <cap:observedEligibleAreaIsNotTheSameAsObserved occurrence="false" /> 1381 </cap:RP_CNT> 1382 </cap:RP_CNF> </pre>
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D2/Non-agriculture land cover types counting (by type)

D3/Non-agriculture land cover types counting (by type)/_a. incorrect lack of detection of PCD

The reference parcel (blue line) is suggested to have a value of ?true? for total absence of eligible features.

<pre> </cap:RP_ALF> <cap:RP_ELF>0</cap:RP_ELF> <cap:RP_ANF> <cap:artificialSealedSurface abundance="0"/> <cap:forestAndWoodland abundance="0"/> <cap:naturalVegetation abundance="1"/> <cap:waterBodies abundance="2"/> <cap:naturalBareAreas abundance="0"/> <cap:wetland abundance="0"/> </cap:RP_ANF> <cap:RP_CRA> <cap:inabilityToIdentifyLuiBoundaries occurrence="false"/> <cap:discontinuity occurrence="false"/> <cap:totalAbsenceOfEligibleFeatures occurrence="false"/> <cap:multiParcel occurrence="false"/> <cap:multiPolygonReferenceParcel occurrence="false"/> </cap:RP_CRA> <cap:RP_CRF> <cap:inabilityToIdentifyLuiBoundaries waived="false" /> <cap:discontinuity waived="false" /> <cap:totalAbsenceOfEligibleFeatures waived="false" /> <cap:multiParcel waived="false" /> <cap:multiPolygonReferenceParcel waived="false" /> </cap:RP_CRF> <cap:RP_CNF> <cap:observedToRecordedAreaPercentage>61.75</cap:observedToReco <cap:observedRecordedAreaDifference>153</cap:observedRecordedAr </cap:RP_CNF> <cap:RP_CNT> <cap:artificialSealedSurface contamination="false" rpWaived=" <cap:forestAndWoodland contamination="false" rpWaived="false" <cap:naturalVegetation contamination="true" rpWaived="true" <cap:waterBodies contamination="true" rpWaived="true" waiver <cap:naturalBareAreas contamination="false" rpWaived="false" <cap:wetland contamination="false" rpWaived="false" /> </cap:RP_CNT> </pre>	
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D3/Non-agriculture land cover types counting (by type)/_b. incorrect PCD coding

D3/Non-agriculture land cover types counting

(by type)/_c. incorrect type of PCD recorded

Issues in the conformance of the Reference Parcel check (E)	Example																																																																																	
E1/"Waivered" critical defects check/_a. lack of the waiver indication																																																																																		
E1/"Waivered" critical defects check/_b. waiver condition not respected/documented																																																																																		
E1/"Waivered" critical defects check/_c. inappropriate application of waiver																																																																																		
<p>E2/Area-based conformance check/_a. incorrect values rounding</p> <p><i>Observed area recorded is expected to have arithmetic precision of 1m2.</i></p>	<table border="1"> <thead> <tr> <th>ns1:observedToRecordedAreaPercentage</th> <th>ns1:observedRecordedAreaDifference</th> <th>contan</th> </tr> </thead> <tbody> <tr><td>100.00</td><td>0</td><td></td></tr> <tr><td>156.52</td><td>3900</td><td></td></tr> <tr><td>92.38</td><td>-1600</td><td></td></tr> <tr><td>100.00</td><td>0</td><td></td></tr> <tr><td>71.43</td><td>-800</td><td></td></tr> <tr><td>101.42</td><td>300</td><td></td></tr> <tr><td>97.75</td><td>-2400</td><td></td></tr> <tr><td>100.00</td><td>0</td><td></td></tr> <tr><td>102.44</td><td>200</td><td></td></tr> <tr><td>100.00</td><td>0</td><td></td></tr> <tr><td>100.33</td><td>500</td><td></td></tr> <tr><td>100.00</td><td>0</td><td></td></tr> <tr><td>99.65</td><td>-300</td><td></td></tr> <tr><td>100.41</td><td>200</td><td></td></tr> <tr><td>415.38</td><td>24600</td><td></td></tr> <tr><td>100.00</td><td>0</td><td></td></tr> <tr><td>86.03</td><td>-2500</td><td></td></tr> <tr><td>100.00</td><td>0</td><td></td></tr> <tr><td>100.88</td><td>100</td><td></td></tr> <tr><td>102.17</td><td>100</td><td></td></tr> <tr><td>100.00</td><td>0</td><td></td></tr> <tr><td>99.60</td><td>-400</td><td></td></tr> <tr><td>0.00</td><td>-4000</td><td></td></tr> <tr><td>100.00</td><td>0</td><td></td></tr> <tr><td>102.86</td><td>200</td><td></td></tr> <tr><td>100.00</td><td>0</td><td></td></tr> </tbody> </table>	ns1:observedToRecordedAreaPercentage	ns1:observedRecordedAreaDifference	contan	100.00	0		156.52	3900		92.38	-1600		100.00	0		71.43	-800		101.42	300		97.75	-2400		100.00	0		102.44	200		100.00	0		100.33	500		100.00	0		99.65	-300		100.41	200		415.38	24600		100.00	0		86.03	-2500		100.00	0		100.88	100		102.17	100		100.00	0		99.60	-400		0.00	-4000		100.00	0		102.86	200		100.00	0	
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102.86	200																																																																																	
100.00	0																																																																																	
<p>E2/Area-based conformance check/_b. incorrect values calculation</p> <p><i>For the inspected parcel with reference area = 5300 and measured eligible area = 5446, expected values in RP_CNF would be 103% (=5446/5300) and 146 (=5446-5300).</i></p>	<pre> <cap:RP_MEA>5446</cap:RP_MEA> <cap:RP_ELC> <cap:agricultureLandCoverClass name="A" codeSpace="urn:ec:lpisq: <cap:agricultureLandCoverClass name="G" codeSpace="urn:ec:lpisq: <cap:agricultureLandCoverClass name="N" codeSpace="urn:ec:lpisq: <cap:agricultureLandCoverClass name="H" codeSpace="urn:ec:lpisq: <cap:agricultureLandCoverClass name="T" codeSpace="urn:ec:lpisq: <cap:agricultureLandCoverClass name="S" codeSpace="urn:ec:lpisq: <cap:agricultureLandCoverClass name="P" codeSpace="urn:ec:lpisq: <cap:agricultureLandCoverClass name="R" codeSpace="urn:ec:lpisq: </cap:RP_ELC> <cap:RP_ALF> <cap:landscapeFeature name: <cap:landscapeFeature name: <cap:landscapeFeature name: <cap:landscapeFeature name: <cap:landscapeFeature name: <cap:landscapeFeature name: </cap:RP_ALF> <cap:RP_ELF>0</cap:RP_ELF> <cap:RP_ANF> <cap:artificialSealedSurface abundance="0" /> <cap:forestAndWoodland abundance="0" /> <cap:naturalVegetation abundance="0" /> <cap:waterBodies abundance="0" /> <cap:naturalBareAreas abundance="0" /> <cap:wetland abundance="0" /> </cap:RP_ANF> <cap:RP_CRA> <cap:inabilityToIdentifyLuiBoundaries occurence="false" /> <cap:discontinuity occurence="false" /> <cap:totalAbsenceOfEligibleFeatures occurence="false" /> <cap:multiParcel occurence="false" /> <cap:multiPolygonReferenceParcel occurence="false" /> </cap:RP_CRA> <cap:RP_CRF /> <cap:RP_CNF> <cap:observedToRecordedAreaPercentage>103</cap:observedToRecordedAreaPercentage> <cap:observedRecordedAreaDifference>167</cap:observedRecordedAreaDifference> </cap:RP_CNF> </pre> <p style="text-align: right;">Reference Area = 5300</p>																																																																																	

E2/Area-based conformance check/_c. values not expected

For the inspected parcel with ?inability to identify LUI boundaries = true?, the RP_MEA is correctly set to zero. The measured eligible area = 0. Therefore the observed to recorded area ratio is expected to be = 0%.

```
<cap:RP_MEA>0</cap:RP_MEA>
<cap:RP_ELC/>
<cap:RP_ALF />
<cap:RP_ELF>0</cap:RP_ELF>
<cap:RP_ANF>
  <cap:artificialSealedSurface abundance="0" />
  <cap:forestAndWoodland abundance="0" />
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  <cap:waterBodies abundance="0" />
  <cap:naturalBareAreas abundance="0" />
  <cap:wetland abundance="0" />
</cap:RP_ANF>
<cap:RP_CRA>
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  <cap:discontinuity occurrence="false" />
  <cap:totalAbsenceOfEligibleFeatures occurrence="false" />
  <cap:multiParcel occurrence="true" />
  <cap:multiPolygonReferenceParcel occurrence="false" />
</cap:RP_CRA>
<cap:RP_CRF>
  <cap:inabilityToIdentifyLuiBoundaries waived="false" />
  <cap:multiParcel waived="true" />
</cap:RP_CRF>
<cap:RP_CNF>
  <cap:observedToRecordedAreaPercentage>126.19</cap:observedToRecordedAreaPercentage>
  <cap:observedRecordedAreaDifference>681</cap:observedRecordedAreaDifference>
</cap:RP_CNF>
```

E3/Contamination based conformance/_a. not recorded

The blue line represents the inspected parcel, yellow line - eligible land. Parcel contamination with artificial sealed surface is expected to be reported.

```
<cap:RP_MEA>12655</cap:RP_MEA>
<cap:RP_ELC>
  <cap:agricultureLandCoverClass name="A" codeSpace="urn:ec:lpisqa:2010" />
</cap:RP_ELC>
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<cap:RP_ELF>0</cap:RP_ELF>
<cap:RP_ANF>
  <cap:artificialSealedSurface abundance="0"/>
  <cap:forestAndWoodland abundance="0"/>
  <cap:naturalVegetation abundance="0"/>
  <cap:waterBodies abundance="0"/>
  <cap:naturalBareAreas abundance="0"/>
  <cap:wetland abundance="0"/>
</cap:RP_ANF>
<cap:RP_CRA>
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  <cap:discontinuity occurrence="false"/>
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<cap:RP_CRF/>
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  <cap:observedRecordedAreaDifference>287</cap:observedRecordedAreaDifference>
</cap:RP_CNF>
<cap:RP_CNT/>
<cap:RP_CEA>
  <cap:changesOfTheUnderlyingLandWereNotApplied occurrence="false"/>
  <cap:revisionsOfTheRegulationsWereNotApplied occurrence="false"/>
  <cap:incompleteProcessing occurrence="false"/>
  <cap:erroneousProcessing occurrence="false"/>
  <cap:incompatibleLpisDesign occurrence="false"/>
  <cap:observedEligibleAreaIsNotInGacOn20030630 occurrence="false"/>
</cap:RP_CEA>
```



E3/Contamination based conformance/_b. incorrect values recorded

The parcel under inspection is highlighted with a blue line. No contamination is observed and therefore no contamination is expected to be found as ?true? in RP_CNT.

```
<cap:RP_MEA>13300</cap:RP_MEA>
<cap:RP_ELC>
  <cap:agricultureLandCoverClass name="A" codeSpace="urn:ec:lpisqa:2010" />
</cap:RP_ELC>
<cap:RP_ALF />
<cap:RP_ELF>0</cap:RP_ELF>
<cap:RP_ANF>
  <cap:artificialSealedSurface abundance="0" />
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  <cap:waterBodies abundance="0" />
  <cap:naturalBareAreas abundance="0" />
  <cap:wetland abundance="0" />
</cap:RP_ANF>
<cap:RP_CRA>
  <cap:inabilityToIdentifyLuiBoundaries occurrence="false" />
  <cap:discontinuity occurrence="false" />
  <cap:totalAbsenceOfEligibleFeatures occurrence="false" />
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  <cap:multiPolygonReferenceParcel occurrence="false" />
</cap:RP_CRA>
<cap:RP_CRF />
<cap:RP_CNF>
  <cap:observedToRecordedAreaPercentage>99.25373</cap:observedToRecordedAreaPercentage>
  <cap:observedRecordedAreaDifference>100</cap:observedRecordedAreaDifference>
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<cap:RP_CNT>
  <cap:artificialSealedSurface contamination="true" rpWaived="false" />
  <cap:forestAndWoodland contamination="true" rpWaived="false" />
  <cap:naturalVegetation contamination="true" rpWaived="false" />
  <cap:waterBodies contamination="true" rpWaived="false" />
  <cap:naturalBareAreas contamination="true" rpWaived="false" />
  <cap:wetland contamination="true" rpWaived="false" />
</cap:RP_CNT>
<cap:RP_CEA>
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  <cap:revisionsOfTheRegulationsWereNotApplied occurrence="false" />
  <cap:incompleteProcessing occurrence="false" />
  <cap:erroneousProcessing occurrence="false" />
  <cap:incompatibleLpisDesign occurrence="false" />
  <cap:observedEligibleAreaIsNotInGacOn20030630 occurrence="false" />
</cap:RP_CEA>
```



E4/Presence of non-conformity parcel check/_a. incorrect categorization of the non-conforming reference parcel

The parcel under inspection is not contaminated, area based conformance is well below the thresholds ? the parcel is fully conforming. Therefore the categorization of the non-conforming parcels is not expected to be set to ?true?.

```
<cap:RP_MEA>13300</cap:RP_MEA>
<cap:RP_ELC>
  <cap:agricultureLandCoverClass name="A" codeSpace="urn:ec:lpisqa:2010" />
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<cap:RP_ALF />
<cap:RP_ELF>0</cap:RP_ELF>
<cap:RP_ANF>
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  <cap:forestAndWoodland abundance="0" />
  <cap:naturalVegetation abundance="0" />
  <cap:waterBodies abundance="0" />
  <cap:naturalBareAreas abundance="0" />
  <cap:wetland abundance="0" />
</cap:RP_ANF>
<cap:RP_CRA>
  <cap:inabilityToIdentifyLuiBoundaries occurrence="false" />
  <cap:discontinuity occurrence="false" />
  <cap:totalAbsenceOfEligibleFeatures occurrence="false" />
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  <cap:multiPolygonReferenceParcel occurrence="false" />
</cap:RP_CRA>
<cap:RP_CRF />
<cap:RP_CNF>
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  <cap:observedRecordedAreaDifference>100</cap:observedRecordedAreaDifference>
</cap:RP_CNF>
<cap:RP_CNT>
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  <cap:forestAndWoodland contamination="true" rpWaived="false" />
  <cap:naturalVegetation contamination="true" rpWaived="false" />
  <cap:waterBodies contamination="true" rpWaived="false" />
  <cap:naturalBareAreas contamination="true" rpWaived="false" />
  <cap:wetland contamination="true" rpWaived="false" />
</cap:RP_CNT>
<cap:RP_CEA>
  <cap:changesOfTheUnderlyingLandWereNotApplied occurrence="false" />
  <cap:revisionsOfTheRegulationsWereNotApplied occurrence="false" />
  <cap:incompleteProcessing occurrence="false" />
  <cap:erroneousProcessing occurrence="false" />
  <cap:incompatibleLpisDesign occurrence="false" />
  <cap:observedEligibleAreaIsNotInGacOn20030630 occurrence="false" />
</cap:RP_CEA>
```

```

<RP_MEA>14713</RP_MEA>
<RP_ELC>
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</RP_ELC>
<RP_ALF/>
<RP_ELF>0</RP_ELF>
<RP_ANF>
  <artificialSealedSurface abundance="0"/>
  <forestAndWoodland abundance="0"/>
  <naturalVegetation abundance="0"/>
  <waterBodies abundance="0"/>
  <naturalBareAreas abundance="0"/>
  <wetland abundance="0"/>
</RP_ANF>
<RP_CRA>
  <inabilityToIdentifyLuiBoundaries occurrence="false"/>
  <discontinuity occurrence="false"/>
  <totalAbsenceOfEligibleFeatures occurrence="false"/>
  <multiParcel occurrence="false"/>
  <multiPolygonReferenceParcel occurrence="false"/>
</RP_CRA>
<RP_CRF/>
<RP_CNF>
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  <observedRecordedAreaDifference>4</observedRecordedAreaDifference>
</RP_CNF>
<RP_CNT/>
<RP_CEA>
  <changesOfTheUnderlyingLandWereNotApplied occurrence="true"/>
  <revisionsOfTheRegulationsWereNotApplied occurrence="false"/>
  <incompleteProcessing occurrence="false"/>
  <erroneousProcessing occurrence="false"/>
  <incompatibleLpisDesign occurrence="false"/>
  <observedEligibleAreaIsNotInGacOn20030630 occurrence="false"/>
</RP_CEA>
referenceParcel>

```

E4/Presence of non-conformity parcel check/_b. incorrect lack of categorization of the non-conforming reference parcel

The reference parcel area purity is exceeding the threshold (97% - 103% for this parcel size). The RP_CEA is expected to be categorized.

```

<cap:RP_MEA>57000</cap:RP_MEA>
<cap:RP_ELC>
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</cap:RP_ELC>
<cap:RP_ALF />
<cap:RP_ELF>0</cap:RP_ELF>
<cap:RP_ANF>
  <cap:artificialSealedSurface abundance="0" />
  <cap:forestAndWoodland abundance="0" />
  <cap:naturalVegetation abundance="0" />
  <cap:waterBodies abundance="1" />
  <cap:naturalBareAreas abundance="2" />
  <cap:wetland abundance="0" />
</cap:RP_ANF>
<cap:RP_CRA>
  <cap:inabilityToIdentifyLuiBoundaries occurrence="false" />
  <cap:discontinuity occurrence="false" />
  <cap:totalAbsenceOfEligibleFeatures occurrence="false" />
  <cap:multiParcel occurrence="false" />
  <cap:multiPolygonReferenceParcel occurrence="false" />
</cap:RP_CRA>
<cap:RP_CRF />
<cap:RP_CNF>
  <cap:observedToRecordedAreaPercentage>94.0594</cap:observedToRecordedAreaPercentage>
  <cap:observedRecordedAreaDifference>-3600</cap:observedRecordedAreaDifference>
</cap:RP_CNF>
<cap:RP_CNT>
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  <cap:forestAndWoodland contamination="true" rpWaivered="false" />
  <cap:naturalVegetation contamination="true" rpWaivered="false" />
  <cap:waterBodies contamination="true" rpWaivered="false" />
  <cap:naturalBareAreas contamination="true" rpWaivered="false" />
  <cap:wetland contamination="true" rpWaivered="false" />
</cap:RP_CNT>
<cap:RP_CEA>
  <cap:changesOfTheUnderlyingLandWereNotApplied occurrence="false" />
  <cap:revisionsOfTheRegulationsWereNotApplied occurrence="false" />
  <cap:incompleteProcessing occurrence="false" />
  <cap:erroneousProcessing occurrence="false" />
  <cap:incompatibleLpisDesign occurrence="false" />
  <cap:observedEligibleAreaIsNotInGacOn20030630 occurrence="false" />
</cap:RP_CEA>

```

Other issues	Example
G/Number of inspected Reference parcels/_a. determined sample size not reached	-
G/Number of inspected Reference parcels/_b. determined sample size exceeded	-
H/Exchange data preparation/_a. number of invalid GML files	-
H/Exchange data preparation/_b. number of invalid XML files	-
H/Exchange data preparation/_x. other error	-

X/Proper procedure/number of parcels inspected correctly (in screened set)	
--	--

Go forward to [Frequently asked questions](#) to see the details.

Go backwards to [Table of contents](#).

29 The concept of the 5 meter buffer

version 5.1

29.1 Introduction

The current article explains the rationale and theoretical assumptions behind the introduction of the "5 meter buffer" approach in case when the LUI of the reference Parcel is not measurable. In addition, several fictitious examples of particular ETS inspection cases are provided.

29.2 Rationale and theory behind the " 5 meter buffer rule"

5 meter buffer rule

Feasibility for measurement
The rationale behind the 5-meter buffer

paved roads : non-agriculture
Land cover features (image)

RP Boundary (LPIS)

common boundaries of production units (image)

Ambiguity in positional accuracy

- A perfect "visual" match between the RP visualization and the terrain cannot be expected as some misalignment between the RP boundary and the LPIS QA orthoimage will be caused by an inherent planar deviation from the true absolute position between both data sets.

Feasibility for measurement
The rationale behind the 5-meter buffer - 1

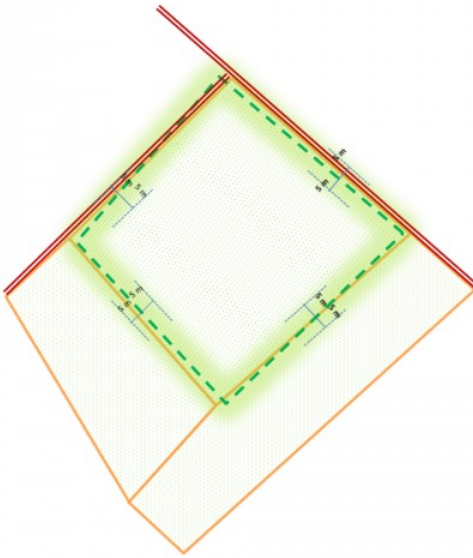
Ambiguity in positional accuracy

- Both LPIS and imagery should comply to the 1:10 000 cartographic standards (2.5 m RMSE), so the deviation in true absolute position from each of the RP vertex to the corresponding photo-identifiable image point can be up of 5 meters (expressed as Circular Error with 90% confidence - CE90).

Feasibility for measurement

The rationale behind the 5-meter buffer - 2

Applying the 5 meter buffer



- As there is no specific quality measure in the LPIS QA for assessing and quantifying the absolute positional accuracy, for pragmatic reasons and simplicity, the ambiguity in the positional misalignment is expressed as a 5 meter buffer both sides of the RP perimeter.
- Thus, only for a land feature that is located outside this perimeter buffer can a determination be made whether this feature should be accounted for the LUI or not.
- By contrast, for a land feature located inside the perimeter buffer (irrespective whether inside or outside the actual RP boundary visualization) no definite decision, whether this feature should be accounted for the LUI or not, can be made unless there is enough evidence to draw a LUI boundary following visual land features in the particular context.
- In case no LUI boundary is drawn, one can only trust the RP perimeter as a substitute for that LUI boundary when absolutely no ineligible feature occur inside the buffer!

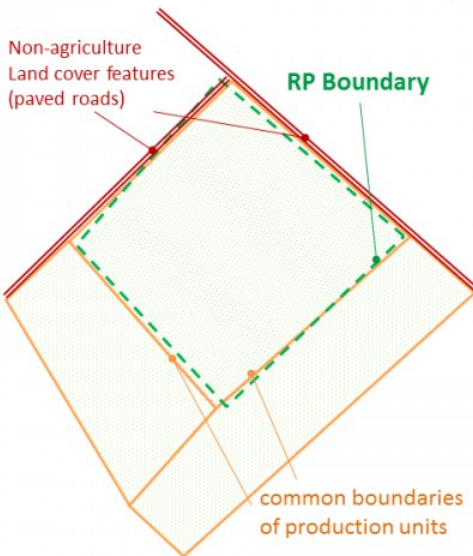
29.3 Examples of implementation of the "5 meter buffer" rule in particular ETS conditions

Case 1: Mappable (measurable) LUI

Feasibility for measurement

Case 1: Mappable (measurable) LUI

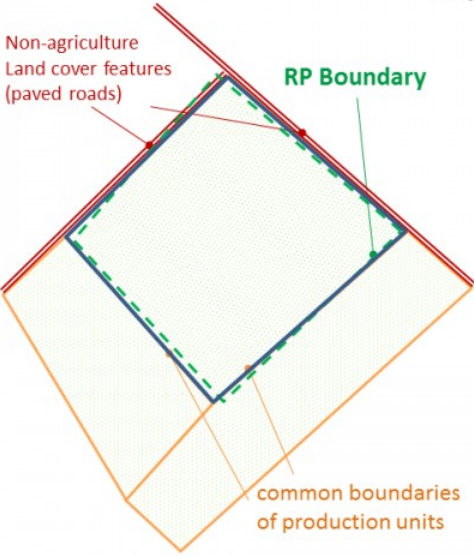
Step 1: Visual analysis of the ground truth



- The Reference Parcel (green dashed line) is "visualized" on the terrain. It is situated next to secondary road network (red double lines) and reflects one of the several production units visible on the land (yellow lines).

Feasibility for measurement
Case 1: Mappable (measurable) LUI

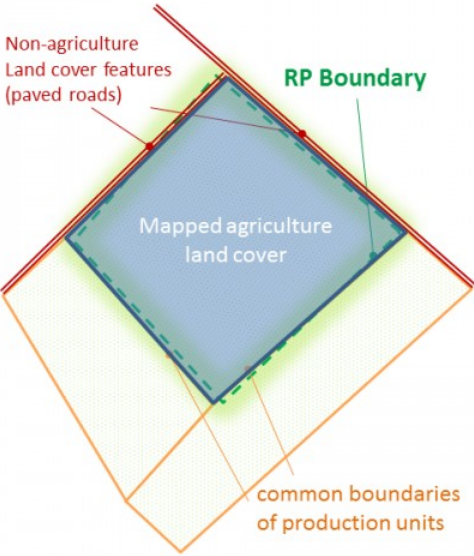
Step 2: Assessment of the LUI mappability



- The visual check of the area in vicinity of the visualised RP boundary on the orthoimage reveals a sufficient availability of distinct land cover and land use features which should be considered to represent all of the LUI perimeter.
- The observed land cover and land use features completely describe and outline the LUI perimeter. These distinct features are:
 - Paved roads (NW and NE boundary);
 - Land use boundaries (SW and SE boundary).

Feasibility for measurement
Case 1: Mappable (measurable) LUI

Step 3: Decision on the LUI mappability



- The ETS measurement can be completed, as each segment of the LUI perimeter can be delineated.

Step 4: check for critical defect

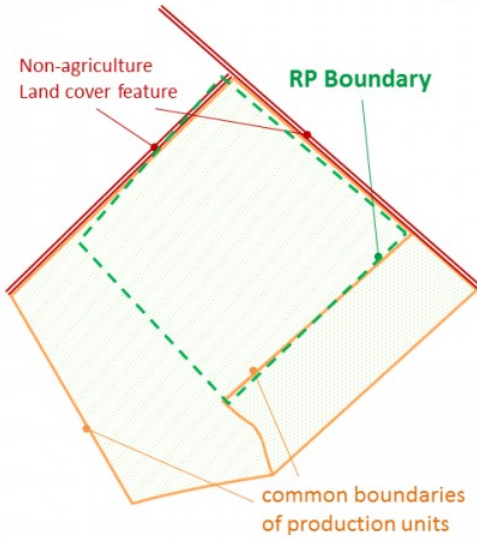
- None of the critical defects is present.

Case 2: Non-Mappable (un-measurable) LUI

Feasibility for measurement

Case 2: Non-Mappable (un-measurable) LUI

Step 1: Visual analysis of the ground truth

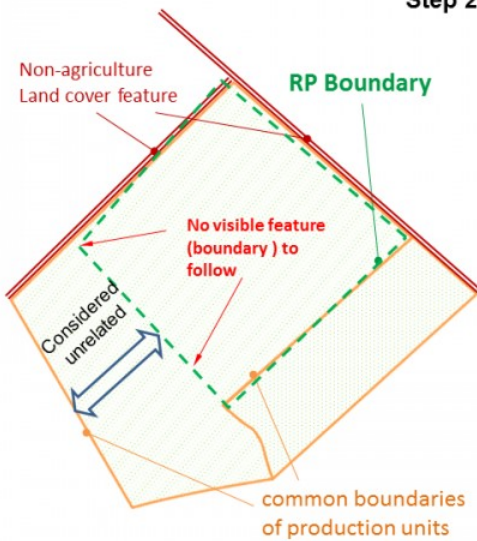


- The Reference Parcel (green dashed line) is “visualized” on the terrain. It is situated next to secondary road network (red double lines) and reflects partly one of the several production units visible on the land (yellow lines).

Feasibility for measurement

Case 2: Non-Mappable (un-measurable) LUI

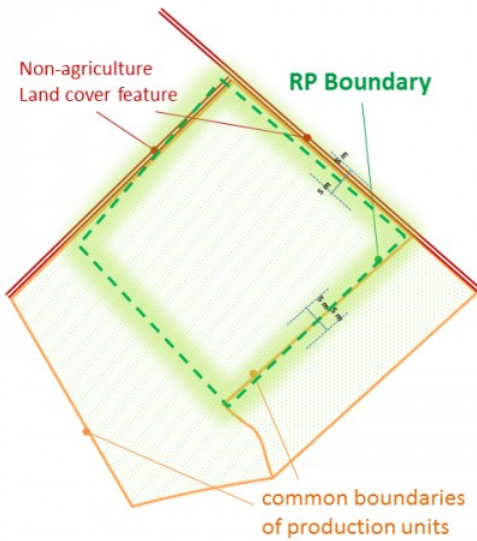
Step 2: Assessment of the LUI mappability



- The visual check of the area in close vicinity to the visualised RP boundary on the orthoimage reveals lack of distinct land cover and land use features that could be considered to represent the SW part of the LUI boundary.
- An essential part of the LUI boundary (SW border) cannot be depicted from the ground data as no boundary feature can be identified.
- The LUI is not fully identifiable.

Feasibility for measurement

Case 2: Non-Mappable (un-measurable) LUI

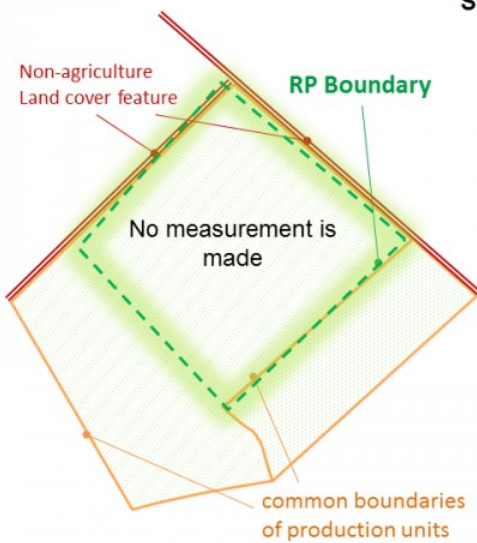


Step 3: Applying the 5 meter buffer

- The visual check of the 5 meter buffer both sides of the RP perimeter, reveals the presence of non-agriculture (ineligible) feature situated less than 5 meters from the RP boundary – the road network.
- There is also a lack of enough evidence to draw a LUI boundary following visual land features in the particular context.
- A definite answer, whether the ineligible features should be accounted for the LUI or not, cannot be given.

Feasibility for measurement

Case 2: Non-Mappable (un-measurable) LUI



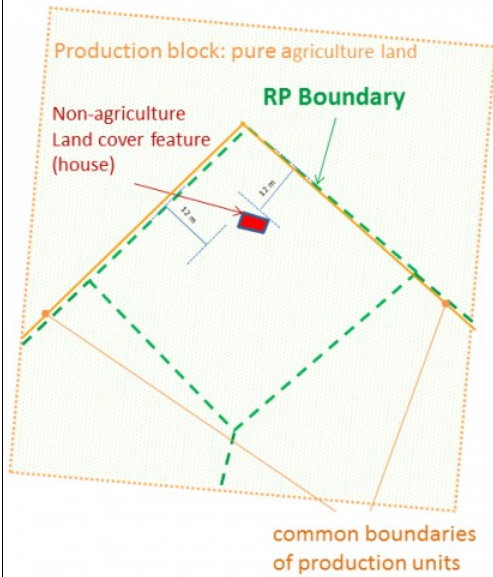
Step 4: Decision on the LUI mappability

- The ETS measurement cannot be performed.
- RP_MEA, Area Declared and Recorded Reference Area are set to zero.

Case 3: Non-Mappable (un-measurable) LUI

Feasibility for measurement

Case 3: Non-Mappable (un-measurable) LUI

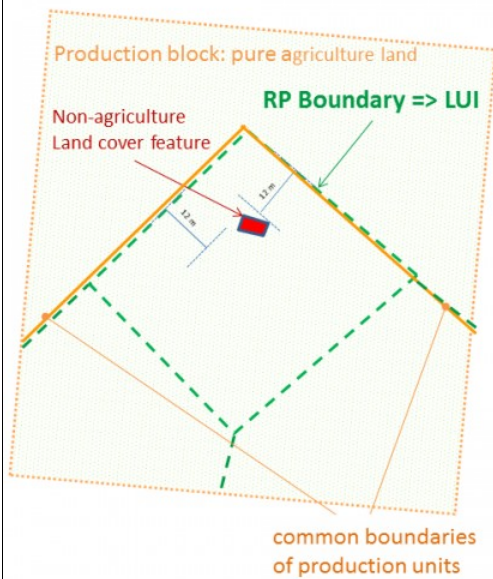


Step 1: Visual analysis of the ground truth

- The Reference Parcel (green dashed line) is “visualized” on the terrain. It reflects partly one of the production units visible on the land (yellow lines).
- A house is located inside the reference parcel at 12 meters from its boundaries.

Feasibility for measurement

Case 3: Non-Mappable (un-measurable) LUI

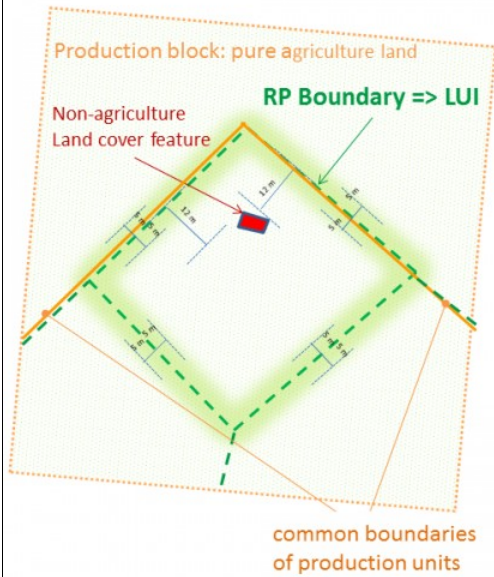


Step 2: Assessment of the LUI mappability

- The visual check of the area in close vicinity to the visualised RP boundary on the orthoimage reveals lack of distinct land cover and land use features that could be considered to represent the Southern part of the LUI boundary.
- An essential part of the LUI boundary (South border) cannot be depicted from the ground data as no boundary feature can be identified.
- The LUI is not fully identifiable.

Feasibility for measurement

Case 3: Non-Mappable (un-measurable) LUI

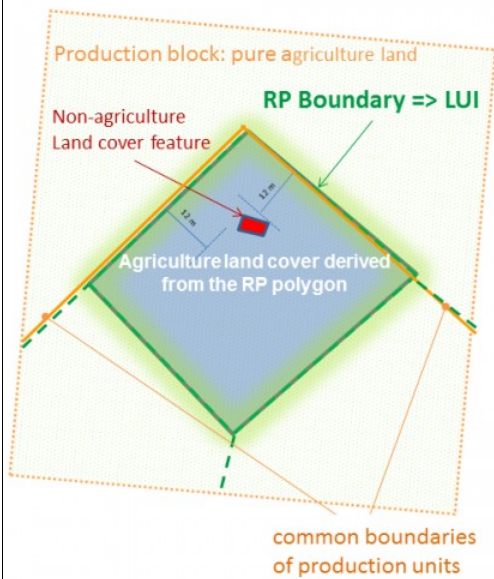


Step 3: Applying the 5 meter buffer

- The visual check of the 5 meter buffer both sides of the RP perimeter, reveals no presence of non-agriculture (ineligible) feature situated less than 5 meters from the RP boundary.
- A definite answer, whether the ineligible features should be accounted for the LUI or not, can be given:
 - The non-agriculture feature is found well inside the LUI and will be excluded from the agriculture area.
- The RP polygon boundary can be taken as a shape of the agriculture land cover available on the LUI.

Feasibility for measurement

Case 3: Non-Mappable (un-measurable) LUI



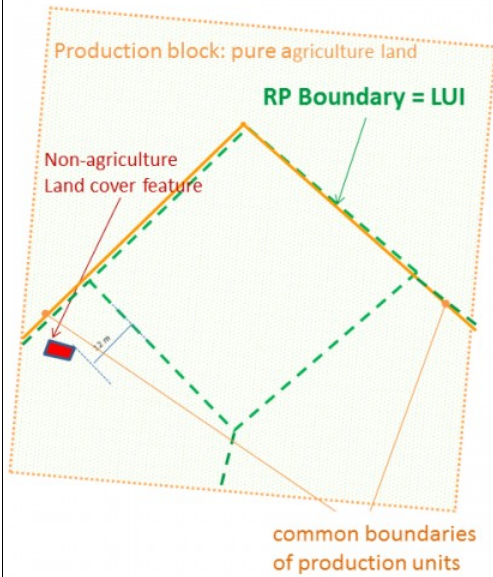
Step 4: Decision on the LUI mappability

- The ETS measurement can be completed, as the available agriculture land can be estimated on the base of the LUI area, directly derived from the visualized RP perimeter, minus the non-agriculture feature which will be deducted.

Case 3b: Non-Mappable (un-measurable) LUI

Feasibility for measurement

Case 3b: Non-Mappable (un-measurable) LUI

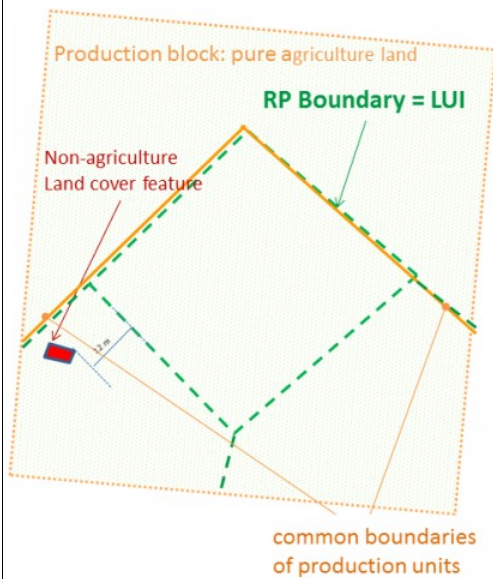


Step 1: Visual analysis of the ground truth

- The Reference Parcel (green dashed line) is “visualized” on the terrain. It reflects partly one of the production units visible on the land (yellow lines).
- A house is located outside the reference parcel at 12 meters from its boundaries.

Feasibility for measurement

Case 3b: Non-Mappable (un-measurable) LUI

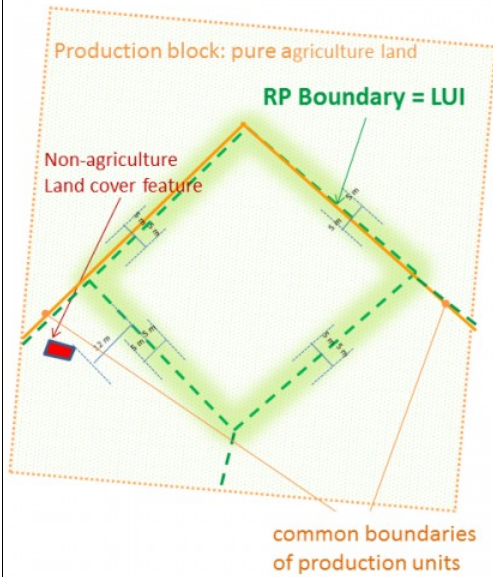


Step 2: Assessment of the LUI mappability

- The visual check of the area in close vicinity to the visualised RP boundary on the orthoimage reveals lack of distinct land cover and land use features that could be considered to represent the Southern part of the LUI boundary.
- An essential part of the LUI boundary (South border) cannot be depicted from the ground data as no boundary feature can be identified.
- The LUI is not fully identifiable.

Feasibility for measurement

Case 3b: Non-Mappable (un-measurable) LUI

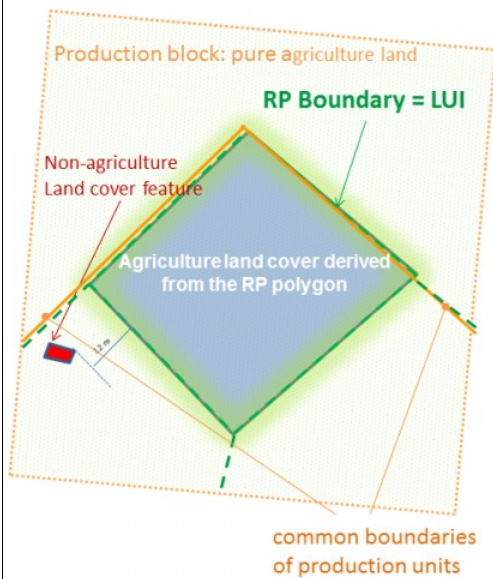


Step 3: Applying the 5 meter buffer

- The visual check of the 5 meter buffer both sides of the RP perimeter, reveals no presence of non-agriculture (ineligible) feature situated less than 5 meters from the RP boundary.
- A definite answer, whether the ineligible features should be accounted for the LUI or not, can be given.
 - The non-agriculture feature is found well outside the LUI and will not be accounted as affecting the agriculture land on the LUI.

Feasibility for measurement

Case 3b: Non-Mappable (un-measurable) LUI



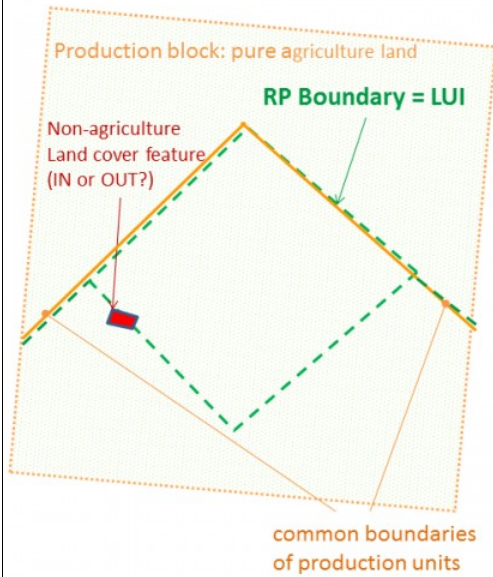
Step 4: Decision on the LUI mappability

- The ETS measurement can be completed, as the available agriculture land can be considered equal to the base to the RP area.

Case 3c: Non-Mappable (un-measurable) LUI

Feasibility for measurement

Case 3c: Non-Mappable (un-measurable) LUI

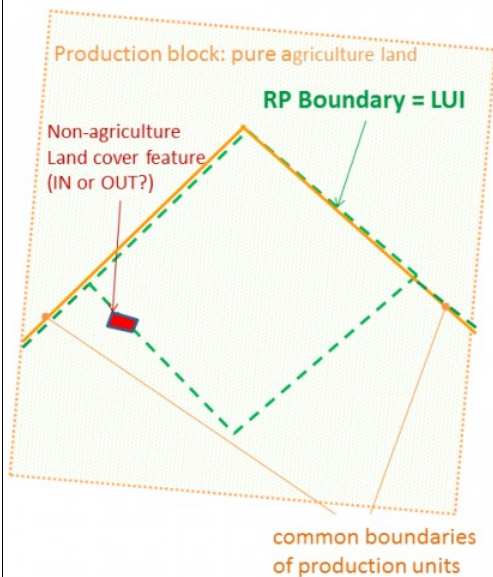


Step 1: Visual analysis of the ground truth

- The Reference Parcel (green dashed line) is “visualized” on the terrain. It reflects partly one of the production units visible on the land (yellow lines).
- A house is located in close vicinity to its boundary (less than 5 meters).

Feasibility for measurement

Case 3c: Non-Mappable (un-measurable) LUI

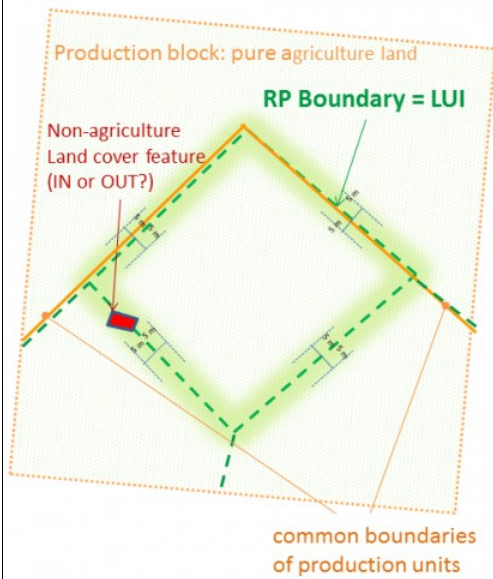


Step 2: Assessment of the LUI mappability

- The visual check of the area in close vicinity to the visualised RP boundary on the orthoimage reveals lack of distinct land cover and land use features that could be considered to represent the Southern part of the LUI boundary.
- An essential part of the LUI boundary (South border) cannot be depicted from the ground data as no boundary feature can be identified.
- The LUI is not fully identifiable.

Feasibility for measurement

Case 3c: Non-Mappable (un-measurable) LUI

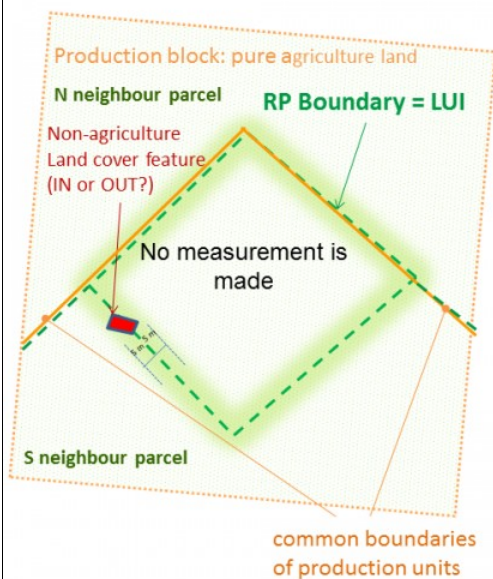


Step 3: Applying the 5 meter buffer

- The visual check of the 5 meter buffer both sides of the RP perimeter, reveals presence of non-agriculture (ineligible) feature situated less than 5 meters from the RP boundary.
- There is also a lack of enough evidence to draw a LUI boundary following visual land features in the particular context.
- A definite answer, whether the ineligible features should be accounted for the LUI or not, cannot be given.
- The area cannot be directly derived from the RP perimeter.

Feasibility for measurement

Case 3c: Non-Mappable (un-measurable) LUI



Step 4: Decision on the LUI mappability

- The ETS measurement cannot be performed.
- RP_MEA, Area Declared and Area Recorded are set to zero.

Step 5: check for critical defects

- None of the conditions for a critical defect seem present

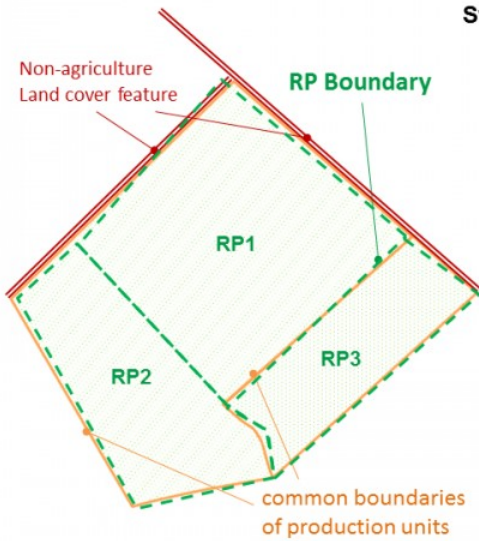
29.4 Additional illustrations of the check for presence of boundary - related critical defects

Cases: Non-Mappable (un-measurable) LUI

Feasibility for measurement

Case 2: Non-Mappable (un-measurable) LUI

Step 5: check for critical defect

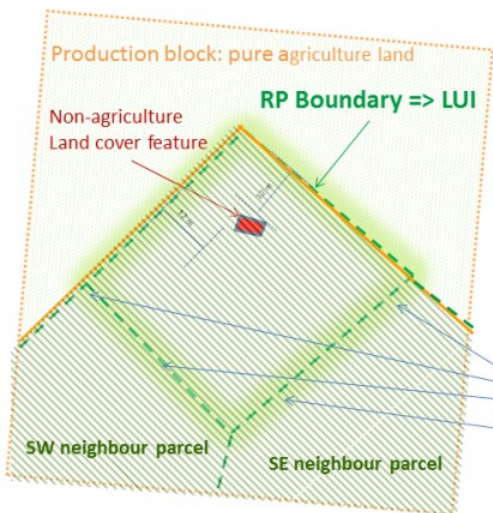


- Although the RP is not measurable, none of the boundary related critical defects is present, as:
 - At least one of the RP perimeter vertices corresponds to observed ground truth;
 - The RP perimeter segment that counter-indicates stable physical boundaries is shared with only one neighbouring RP;
 - The LPIS does contain a neighbouring block where the farmer can declare land upon.

Check for Presence of Critical Defect

Case 3: Non-Mappable (un-measurable) LUI

Step 5: check for critical defect



- In this situation and in the case of a physical or topographical block, clear (green) ploughing lines evidence that the boundaries with both the SW and SE neighbours are no longer valid. If so, “Invalid common boundary” applies, regardless whether the RP is measurable or not.

No single evidence for a presence of a boundary

Go forward to [Observations and inspections in the field.](#)

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30 Observations and inspections in the field 2011

version 5.1

31 Introduction

The purpose of this article is to provide methodological guidance on the supplementary GNSS field measurements that the ETS operator could optionally conduct and report as rapid field visits in cases where the land features on the ground cannot be (fully) depicted using CAPI.

These GNSS measurements should provide either:

- an observation for a reference parcel that was considered not measurable with CAPI but where the inspector proceeded with a field measurement/verification of the LUI (i.e. return all field measured vertices + pictures + metadata),
- or an evidence against the "invalid perimeter" defect (i.e. return at least one GNSS point: coordinates + pictures + metadata).

CONDITIONS:

1. The MS decision whether to verify/inspect in the field or not is completely discretionary.
2. In case the ETS operator proceeds with a field inspection of the parcel, field evidence that the FULL LUI perimeter is identifiable, should be given.
3. In case the LUI limit coordinates are determined using GNSS survey, the entire land cover inventory should be made exclusively by field survey. No mixture of GNSS and CAPI measurements is allowed.

32 How to set up the GNSS device --> link to OTSC stop&go

- The measurement of the parcel should be performed by using validated device for stop&go method.
- During the measurement, the user should be aware of the possible difficulties that may jeopardize correct measurement, such as loss of satellite signal, multi-path effect etc. Some of these difficulties can be reduced by an appropriate set up of parameters like:

- ◊ signal to noise ratio (S/N),
- ◊ maximum PDOP and horizontal mask

These parameters should be the same as for any OTSC stop&go measurement.

33 How to identify the RP vertex to be measured

The inspector should make sure he correctly identified the vertex of parcel he is going to survey based on the presence of a borderstone or some other boundary mark. This mark must physically exist in the field.

- For each coordinate surveyed by GNSS, two photographs (with a recommended angle between the two camera directions of 60°-120°) of the LUI primary vertex ground condition should be taken. It is necessary to survey the coordinates of the two camera points from where the inspector took a photographic picture of the LUI vertex.

For each primary vertex, three GNSS coordinates are needed (1 for the vertex, 2 for the camera positions). As a result, if an LUI that is not measurable with CAPI has 4 vertices, a total of 12 coordinates is surveyed.

As the vertex that ETS inspector intends to survey already has a known coordinate (from the LPIS), that known coordinate shall be used as auxiliary data only, e.g. to navigate to the true point position in the field; the inspector must perform a new and independent coordinate survey of each vertex.

In such independent survey, there can be **no application of a buffer or other tolerance** regarding the known coordinates.

34 How to collect the pictures and metadata?

For each surveyed vertex, 4 photographic pictures are delivered

- ◊ 2 captured from the vertex. (wide blue arrows in Figure 1, these have the coordinates of the vertex itself)
- ◊ 2 captured towards/showing the vertex. (thin red arrows in Figure 2, these are the ones with individual coordinates as indicated above).

In the diagrams below, each primary vertex is identified with a code PV<1..n>.

- ◊ for evidencing a valid perimeter, <n> equals "1",
- ◊ for full field inspection, <n> equals the number of primary vertices of the LUI.

34.1 Capturing the pictures from the parcel vertex

On each vertex surveyed, two photographic pictures should be captured, one in clockwise direction toward neighboring vertex and one to the interior of the parcel. For the captured pictures, the direction of capturing (azimuth) is needed for georeferencing. Pictures should be in jpeg format (with date/time stamp) and a name composed by the primary vertex ID (as prefix) and the sequential number of the picture (eg. PV1_n.jpg, 24bit RGB, 720x480).

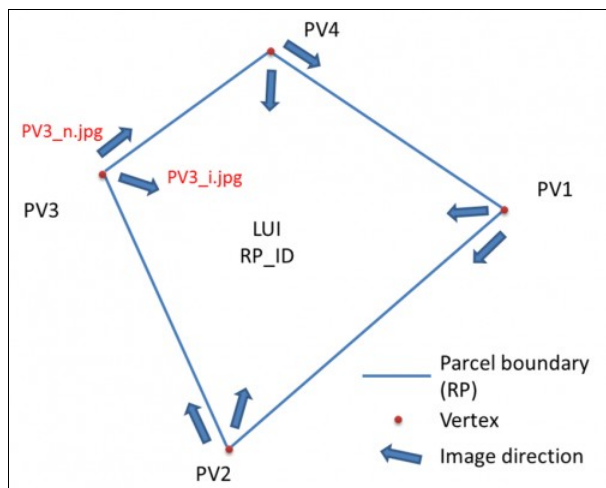


Figure 1. Capturing pictures from a parcel vertex.

fid	geometryProperty	rpID	...	rapidFieldVisitDate	responsibleOperator	photoStorageLocation	photoDirectionAzimuth
PV1	12.97,44.29	P011-K7		2011-10-01	Mr Adam Smith			PV1_n.jpg	angle
PV1	12.97,44.29	P011-K7		2011-10-01	Mr Adam Smith			PV1_i.jpg	angle

Table 1. Field visit measurements (extract from the GML of the Rapid Field Visits).

Explanation for naming image files:

- PV1_n.jpg - picture in direction of neighboring vertex
- PV1_i.jpg ? picture in direction to the interior of the parcel

34.2 Capturing the pictures to/showing the parcel vertex

For each vertex two additional images should be captured. It is very important that the mark (stone or other) of parcel boundary corner is visible on image. The angle between two image directions should be in range 60°-120° (recommendation).

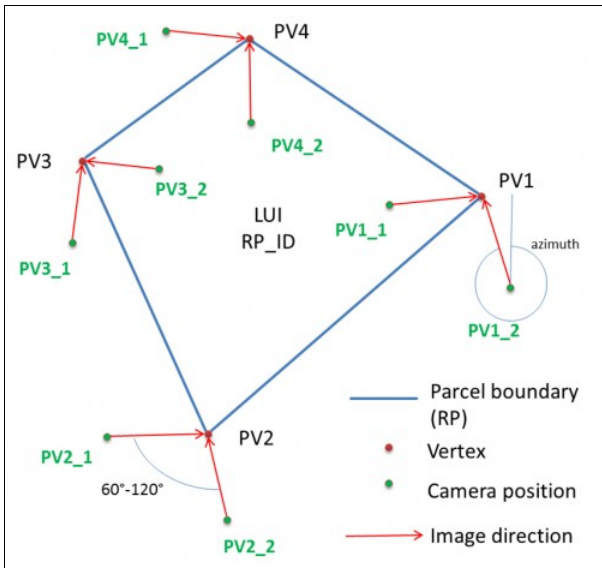


Figure 2. Capturing pictures from a parcel vertex.

fid	geometryProperty	rpID	...	rapidFieldVisitDate	responsibleOperator	photoStorageLocation	photoDirectionAzimuth
PV1	12.97,44.29	P011-K7		2011-10-01	Mr Adam Smith			PV1.jpg	angle
PV1_1	13.01,44.27	P011-K7		2011-10-01	Mr Adam Smith			PV1_1.jpg	80 degrees N
PV1_2	15.97,47.29	P011-K7		2011-10-01	Mr Adam Smith			PV1_2.jpg	350 degrees N

Table 2. Field visit measurements (extract from the GML of the Rapid Field Visits).

35 Reporting your field activities in the ICS

The ICS informative textual part (as a supportive document) should indicate your choice to complement the CAPI with field surveys. **Please add the following entries in the ICS** (replace the *"italics"* with the appropriate information) :

- Motivation for the field measurement: *"RP boundary based on cadastre is not always visible on the control imagery, but physical border markers are traditionally present."*
- Type of GNSS device(s): *"TOPCON GRS-1 with Trimble VRS DGPS real time correction"*
- Positional accuracy (RMSE_x; RMSE_y): *"0.37; 0.46"*

36 Data exchange format

Apart of its traditional purpose, the Rapid Field Visit schema shall allow for storing the complex GNSS measurements made in the field, following a simple convention: please look at Figure 1 and Figure 2 and a downloadable example No such file!.

Element name	Description
<cap:RapidFieldVisit fid="">	a unique identifier of the LUI Primary Vertex (PV1) or a unique identifier of point documenting the Primary Vertex (PV1_1) from which a photo was acquired
<cap:geometryProperty>	point-type geometry with an SRS and coordinates
<cap:rpID>	a unique identifier of a reference parcel represented by LUI
<cap:reasonForRapidFieldVisit>	a reason for that particular Field Visit, i.e. to prove the location of the primary vertex, or to prove the existence of a primary vertex with a photo
<cap:rapidFieldVisitDate>	a date of the field visit
<cap:responsibleOperator>	an operator who conducted the measurements
<cap:agricultureLandCoverClass>	an optional element storing agriculture land cover class
<cap:comments>	comments (could be used to explain the type of landmark representing the LUI vertex)
<cap:photoStorageLocation>	an URL of the photo location
<cap:photoDirectionAzimuth>	a direction azimuth in which the photo was acquired

Table 3. Elements present in the Rapid Field Visit schema.

37 Further ETS inspection through field survey

In case the LUI limits are detected and confirmed using GNSS surveying, the ETS operator should perform the land cover mapping exclusively by field, following the compatible surveying specification applicable in the EU Member States.

For the reference parcels subject to ETS through field inspection, the initial land cover polygon derived from the surveyed primary vertices (with possible land cover internal subdivisions) must be reported in the file *ETSInspectionMeasurement.gml*, together with any CAPI derived observation. Any other observations should be reported similar as the ones made with the CAPI inspection procedure.

For the evidence against an invalid perimeter, submission of a correct *RapidFieldVisit.gml* is sufficient.

Any other information relevant to the execution of the field activities should be reported in the -optional- *SupportiveDocuments.pdf* (part of the ETS archiving package).

Go forward to [Frequently asked questions](#).

Go backwards to [Table of contents](#).

38 Frequently Asked Questions 2011

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Frequently Asked Questions (QAF-FAQ)

38.1 Why do we need to provide the full population in the sample-preselection process?

- The main reason is one of integrity and reliability of the results.
 1. It allows analysis and checking of the representativeness for a given year and over the years,
 2. it can validate that no "risky" parcel categories identified during year N disappeared from the set presented during year N+1. With our small sample sizes, it would be impossible to detect the disappearance of say 2% of problematic parcels from a standalone zone.Both checks are essential for the extrapolation of the QE1 results from the small LPIS QA sample
- The secondary reason is one of flexibility: The whole population allows the MS to swap pre-selection zones anytime, when it experiences problems with the image acquisition. I.e. all territory is "in tempore non suspectu".
- Finally, the whole population, may well create a larger file size, but it is always simpler to create than any (clipped) subset (= one more step). JRC doing the clipping thus ensures an easier and similar treatment of all MS.

The request for a total population is not new: see point 4 of the [2010 sampling](#) and slides 5+7 of the [LPIS-day presentation](#).

During the LPIS-day on April 15th, 2010, Ireland asked for a general derogation during the trial year considering file volumes. File sizes have not proven to be an issue, so we did not derogate for 2011.

38.2 How to include landscape features that are individually identified in the population?

This paragraph only applies to MS that modelled separate spatial objects for Landscape Features (henceforth LF) subject to cross-compliance inspection for retention as indicated under art 34.3 have. These complement original "agricultural land" reference parcels (henceforth RP).

These often small LF, if considered as an ordinary RP, can dramatically increase the number of spatial parcels in the lot and become a significant proportion of items in the LPIS QA sample, stressing the representativeness.

However, as individual features are only considered part of the eligible area "in an agricultural parcel" when the concerned feature is on the immediate border of the agricultural parcel, not all landscape features "parcels" should be presented as individual items. In fact many LF are merely land cover sub-parcels of a larger RP (e.g. a tree in middle of the crop).

As a result, the following processing should be applied to ensure that no subparcel are individually inspected.

1. any isolated LF, not bordering arable land, grassland or permanent crop, is ineligible and should be out of scope as their MEA should be zero.
2. any LF that borders or resides inside one and only one RP should be considered a full part of that RP. The single RP to be presented for sampling represent the merged LUI and MEA of the RP and of all its connected LF
3. only a LF on the immediate border of two or more RP can be considered as a separate item for inspection (=LUI).

38.3 How to process agricultural areas with trees?

When do we need to map single trees in the ETS?

How to proceed if we have 50 trees per hectare on agriculture land?

What LCCS code do we use?

Single trees should be mapped in the ETS, only when they correspond to landscape elements that are subject to retention according to Article 34(3) of CommReg1122/2009. See the next [FAQ Question](#).

The presence of trees on the LUI other than those defined as landscape elements, should be processed only if their abundance prevents the agricultural activities to be carried out in a similar way as on the LUI without trees in the same area (according to Art. 33 (4) of Reg 1122/2009). Such presence can be reported alphanumerically in the relevant land cover class definition, using the LCCS semantics. No individual graphical representation of the trees is needed. Two options are possible, depending on the tree types:

1. **Cultivated trees (orchard, plantation):** mixed class of agriculture land with cultivated trees should be designed to reflect the intercropping character of the agriculture land
2. **Natural trees (non-agricultural):** mixed class of agriculture land with natural trees should be designed to reflect the specific ?restricted? potential of the agriculture land (expressed quantitatively through the PRO RATA concept)

The EU Member States may decide ?but are not obliged- to report in the ETS the presence of trees on agriculture land in cases when their abundance does not affect the normal agriculture activities on that land. The latter condition is by default expressed by the **50 tree/ha** rule or its corresponding derogation. The voluntary reporting approach can be useful, when the specific character of the agriculture landscape has to be emphasized. In such case a user-defined mix class ?agriculture land with scattered natural trees? could be designed, with eligibility hectare factor equal to 100% (pure eligible land)

Table II of Annex III provides templates for the above mentioned cases:

- Single tree (LF): **LCCS code 20274-T1(1)[Z11]**. Z11 ? Single isolated tree.

- Agriculture with Cultivated Trees (intercropping): **LCCS code 10222/11492**
- Arable Land with Patches of Trees: **LCCS code 10660 / 20505**
- Arable Land with Patches of Scattered Trees (up to 4% of the surface): **LCCS code: 10660 / 20505-9032**

Note: Defining individual trees on agricultural land as isolated trees under article 34(3) requires that these trees fulfil the scope of 'a minimum level of maintenance' or/and of 'avoiding the deterioration of habitats' (e.g. they are elements of the natural connectivity between biotopes and habitats that enhances biodiversity, they represent typical elements of a traditional landscape and of its visual quality etc.). In that context, trees present within the "50 trees per hectare", if evenly distributed on the parcel, can be hardly considered individual landscape elements under the national GAEC standard and need no individual mapping.

38.4 How to report the eligible landscape features areas for measure 10104_2?

What is the area of a row of trees or single trees, if we are not mapping it as polygons?

The ETS inspection is based on inventory of the land cover as seen on the orthoimage through **mapping**. The land cover mapping itself generates an abstract representation of the real world phenomenon by three object types of the geometry (point, line and polygon). While for most of the cases, land cover features can be abstracted as polygons, features as row of trees or single trees can be better depicted (represented as) lines and points respectively.

The landscape elements subject to retention have by default in the national GAEC rules, explicit and detailed descriptions regarding their size, shape, width and texture. Most of these parameters are thus defined in advance. Therefore, the area to be allocated to landscape features represented as lines or points could be calculated ?on-the-fly?, using the regulatory width or the radius attributed to the landscape features.

Point 5.1.2 of ETS Annex III (see [Downloads](#)) gives some recommendations regarding the geometry types that can be used for the representation of the landscape features, as listed in Annex III of Council Regulation 2009R73.

38.5 Can you provide some examples of numbers on the DQ_scope, nominators and denominators?

The following table introduces the main numbers that could result from applying the ETSv5.1 flow.

subset	parameter	example
pre-selection sample	N	3750
number that is skipped (for technical reasons):	Nskip	27
number that is inspected:	Ninsp	1250
number that is measured: (digitized or/or derived):	Nmeas	1186
number that has comparable information:	Ncomp:	1093
number that are non-conforming for QE2:	Nncqe2:	16
number that is non-conforming for QE4:	Nncqe4:	4
number that is non-conforming either for QE2 or QE4	Nncqe2/4:	18
number that is conforming for QE2 : (= Ncomp - Nncqe2)	Ncqe2	1077
number of non-conforming or defective parcels due to failed update (i.e. cause A):	NncQE3(A)	7

The numbers defined above are relevant for the seven quality measures as indicated by this second table:

QEx	number in DQ_scope	nominator	denominator	comment
QE1	Nmeas	n/a	n/a	
QE2	Ncomp	NncQE2	Ncomp	
QE3	NncQE2/4	NncQE3	Ninsp	
QE4	Ninsp	NncQE4	Ninsp	
QE5	NcQE2	n/a	n/a	
QE6	Ninsp	n/a	n/a	uses NncQE3(A)
QE7	Ninsp	n/a	n/a	uses NncQE2/4 and Ninsp

Please note from both tables that the number **Ninsp** equals the determined sample size and represents both the DQ_scope and the denominator for QE4.

38.6 Do we need to map the land cover when the LUI boundary was derived from the RP perimeter?

Yes,

1. using the reference parcel perimeter as a substitute of the LUI external boundary has to be considered as a single mapping step, conditioned by the fact that no ineligible land cover feature is present inside the 5 meter buffer around the unidentifiable RP perimeter.
2. after this step, the further detailing of agricultural land cover classes and exclusion of non-agricultural elements should be continued as if a normal "measurable" parcel was involved.

For detailed instructions, please look at [this article](#)

38.7 If a parcel contains more than one Critical Defect, do we report them all or only the first one encountered?

Although LQ was defined as "number of non-conforming items", so the parcel is counted only once, there is a clear need to look into that parcel in depth.

As a result, in case of more than one critical defect is occurring for a given reference parcels, all critical defects should be reported, starting from the top and going down to the bottom of the pre-defined list. See the field "DQ_EvalMethodDesc" of TABLE 7: RP Critical defects (10106) of Annex II. We stress again, multiple reporting does not alter the score!

38.8 We need more clear instruction how to estimate whether the LUI is measurable on not?

(For example, what is the difference between boundary that cannot be delineated as it is not identifiable on the image, and boundary that is drawn inaccurately)

There is no "golden rule". ETS operator should use "common sense" based on the ground information available, local conditions, his knowledge and expertise, as well as relevant ancillary data.

In most of the cases, the position and shape reference parcel boundary with respect to the land cover/land use features available on the ground will easily reveal whether the parcel boundary is inappropriately positioned or the boundary can be assumed to be correctly located although it's not visible.

Please note that this issue of ?un-measurable LUI boundary? arises only when a doubtful segment of the LUI is located over agriculture land. In case invisible segments are located only over non-agriculture land, it is obvious that the reference parcel boundaries are not correctly located and the agricultural land cover delineation should follow the border of the closest agriculture feature part of the LUI. I.e. such parcels are obviously mappable!

38.9 How to report potentially agricultural land cover features, which primary function is not agricultural?

This concerns house yards, petting zoo, grassland next to landing strips, road side verges etc.

The land cover type ?Artificial sealed surface? by general definition comprises also any **associated areas**. This category therefor includes e.g. parklands, road sides, urban vegetated areas, house yards, etc.

Even areas with grassland that primarily have a different function from agriculture or urbanisation (e.g. yard, petting zoo, grassland next to landing strips, etc.) are reported in table 6 of ANNEX I as ?Artificial sealed surface?.

38.10 We need more instruction on how to count and report the occurrence of the non-agriculture land cover features.

The following can be considered a clarification of **the measure 10105**.

The procedure for reporting non-agriculture land cover features is as follows:

- Step 1: report all single non-agriculture land cover features, with area bigger than or equal to 0.1 ha. Each feature is reported separately.
- Step 2: report all non-agriculture land cover features OF A GIVEN TYPE, with area smaller than 0.1 ha, which if summed up, exceeds 3% of the reference area. One occurrence per type should be reported.
- Step 3: report all single non-agriculture land cover features of type ?Artificial sealed surface? and ?Water bodies?, larger than or equal to 0.01 ha.

Example: For a given Reference parcel, 3 patches of forest and 1 water body, each with an area bigger than 0.1 ha are encountered on the LUI -> 3 patches of forest and 1 water body are reported. For the same RP, 10 artificial surfaces each smaller than 0.01 ha, but with total area bigger than 3% of the RP area are also encountered on the LUI -> 1 occurrence of artificial sealed surface is reported. Finally, 3 artificial surfaces and 5 bare areas each smaller than 0.1 ha, but with area bigger than 0.01 ha are also encountered on the LUI -> 3 artificial sealed surfaces are reported. Bare areas are omitted if their total area is less than 3% of RP area.

At the end, the following non-agriculture features are reported for the RP:

Artificial sealed surface: 4; Forest and woodland: 3; Water Bodies: 1

NOTES:

- Step 3 is newly introduced in errata 2011.
- Vegetated area associated with the artificial surface, are NOT counted separately, but are embedded in the artificial area.

- Non-agriculture land cover features situated at the border of the LUI are counted only if they "cross" the LUI core. See the example given in the WikiCAP page [The concept of the "5 meter buffer"](#).

38.11 How to correctly count and report the occurrence of the non-agriculture land cover features if we don't map them?

Within your GIS environment you might decide (or be forced) to keep the non-agriculture features as graphical objects in order to perform the relevant spatial analysis easier. These delineation are an intermediate step, which does not need to be reported; it is only at the reporting stage, when you have to be aware that only agriculture land cover features are reported in the GML of the ETS package.

If your environment and procedures do not apply delineation of non-agricultural features, please follow the instruction of the previous FAQ.

38.12 What are the actual units for the *Aobs* and *Arec* reported in the XMLs and for the calculation of the *observedToRecordedAreaPercentage* and *observedRecordedAreaDifference*?

- The area of the agriculture land cover polygons should be rounded to **square meter** (no decimals). (e.g. 25761 m²)
- The area reported in the ETS observations XML + ETS inspection measurements GML should be rounded to **square meter** (no decimals). (e.g. 25761 m²)
- The value for the *Arec* given in the LPIS Polygon zero state should be expressed in **hectares with exactly 4 digits** after the decimal. This will ensure that observations during the screening will be truly compatible with the ETS observations. (e.g. 2.6159 ha)
- The values for "observedToRecordedAreaPercentage" are expressed in **percentage with 2 decimals** after the decimal point (e.g. 98.48%).

38.13 What is the meaning of the term "area declared" in the context of ETS?

Area declared is defined in the scope of Article 56 of 112/2009. It involves declaration for aid schemes and for other uses.

38.14 We need clarification for "any relevant source" and "in tempore non suspecto".

- Any updates of the Reference parcels (that are part of the sample), made by the farmer one day before the inspection can be taken into account for the ETS, provided that the rules of Article 14 from Regulation 1122/2009 are fully respected.
- Any updates of the Reference parcels (that are part of the sample), triggered by the annual LPIS update procedures (orthophoto refresh, OTSC, urban development and planning) and are not initiated deliberately to target the parcels part of the LPIS QA sample, can be taken into account for the ETS.

A convincing indication of complying with this "in tempore non suspecto" is that the update rates should not be different nor advanced between the LPIS QA zones and the LPIS in its totality.

Go forward to [Discussion pages \(shared experiences\)](#) to see the details.

Go backwards to [Table of contents](#).

39 Discussion pages 2011

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Discussion pages (shared experiences)

This space is for You. We have not set up a formal forum, with moderator and specific software but trust that this Mediawiki environment allows you to place your comments on these pages.

Go forward to [Member State feedback and Q&A](#)

Go backwards to [Table of contents](#).

40 Member State feedback and Q&A 2011

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The following table list the feedback, suggestions and comments from the Member States since the publication of the draft ETSv5.0 in September 2011.

The far-right column holds the response.

40.1 Data exchange

Q	MS	Issue / reference	MS question / remark	JRC Reply
1	SI	OrthoimageryUrl schema	In ETS OrthoimageryUrl.xml, there is a possibility to report only for one layer of ortho imagery, but we have four. Some of satellite images are overlaying each other, so we have it in separate layers and use whichever is appropriate.	The OrthoimageryUrl.xsd has been adapted to accomodate several layers. It is fully backward compatible and this change does NOT require any action from any MS or stakeholder.
2	Many MS	Tools for v5.1	Can you modify the tools (LPIS Polygon Zero State and ETS Inspection Measurements) to produce GML files compatible with the v5.1 schemas?	In order to produce a 5.1. gml compatible file, the tool requires some changes in its engine, depending on the software environment and spatial database that you use. Since the tools are written in Visual Basic (using some ArcObject libraries), it is possible to manipulate it and adapt to your needs. To support the MS, the JRC updated a generic version of the tools and put them on-line: JRC custom built tools . Please, be aware that they may still require some customization.
3	IT	Coordinate Reference System CRS	Could I include different CRS in one GML file?	The GML files from the ETS reporting package (ETS measurements, LPIS polygon zero state,?) should contain a reference to one and only one CRS. If you have several CRS defined for your territory, you need to separate GML files ? one GML file per CRS.
4	IT	OrthoimagerySet.xml	Since I have satellite and aerial imagery, should I provide two different OrthoimagerySet files?	Satellite and aerial imagery should be accomodated in the same file.
5	Many MS	ATS update/change/...	We have a slight change of the Eligibility Profile..., we have updated Waivers..., Should we update our last-year ATS Reporting Package?	<p>If one of the ATS items has changed or has been updated, the concept of the ?implementation version? of your LPIS database has undergone some changes. In that case, you need to:</p> <ul style="list-style-type: none"> • create a new implementation version ?Register versions?, • ?Link versions and lots?, • Upload the ATS package? items for your new implementation version: you can re-upload the old items if they are still valid (without repeating the ATS procedure) along with the new Eligibility Profile/Waivers declaration(for contamination).... • Approve this new ATS package. <p>The reason for a new implementation version and its ATS is multi-annual management of the collected data. So even if there is some fine-tuning of your eligibility profile, we need to be sure that in one or two years we will be able to match the correct eligibility profile with the correct lot.</p> <p>Note: if you don't have the archive of the previously uploaded ATS items, please contact Piotr Wojda.</p>
6	IT	ETS Reporting Package 2011	Could you provide more detailed explanation on their scope and content of the LpisPolygonZeroState file?	<p>The LpisPolygonZeroState.gml should contain those parcels that were inspected plus those that were skipped as well as the adjacent parcel thereof. Explained otherwise it shall contain:</p> <ul style="list-style-type: none"> • Inspected reference parcels, including: <ul style="list-style-type: none"> ◊ Measured parcels ◊ Not measured, but still subject to certain quality measures (as for example, critical defects) • Reference parcels skipped for technical reasons • All the reference parcels, which were situated in a buffer of 100 meters (not restricted to parcels within the scope of the current assessment year)from the boundary of the inspected and skipped reference parcels. <p>For each of these reference parcels, the following data should be provided:</p> <ul style="list-style-type: none"> • vector data - original reference parcel boundaries, as defined in the particular LPIS model. Any additional vector data containing exclusions or historical eligibility is reported

				<p>in a separate GML file (the "GAC" mask GML should be used for these additional eligibility vectors)</p> <ul style="list-style-type: none"> alphanumeric data: <ul style="list-style-type: none"> ◇ rpID - ID of the reference parcel ◇ referenceArea - eligible area as recorded in the LPIS (not the one calculated during the ETS!). The same attribute as provided for the sample pre-selection upload, but updated if appropriate ("in tempore non suspecto"). NOTE: If such update required also a change of the RP boundaries, this change should be reflected in the LpisPolygonZeroState.gml as well (valid also for the neighbouring RPs!!). ◇ referenceAreaEtsIncomparable - boolean flag confirming whether the Reference area and observed area derived from the ETS are ?directly comparable? (see the glossary) ◇ declaredArea - declared area in the year of assessment derived from the farmer's application <p>The information in LpisPolygonZeroState file should therefore represent the information the reference parcels in question prior to the conduction of the ETS.</p>
7	IT	ETS Reporting Package 2011	Could you provide an example of a record of an inspected but not measured reference parcel?	Please find an example of a reference parcel with non-measurable LUI and an invalid perimeter: NotMeasuredRP.xml
8	DE	OrthoimageryUrl schema	The aerial images have been sent by CD/HDD to the JRC services. What should we provide in the OrthoimageryUrl.xml file?	Once the CD/HDD with appropriate imagery has been sent to our services, please indicate: <cap:imageryUploadedToCid>true</cap:imageryUploadedToCid> , stating that we hold already this information. The second tag <wmsAccessInformation> is optional, so you can leave it intact.
9	DE	OrthoimagerySet schema	In some cases, only aerial photos have been used for inspection. What should we provide in the OrthoimagerySet.xml file?	The orthoimagerySet file should be filled in completely. It is applicable to both satellite and aerial images and it holds relevant information about the image itself: zoneID, imageAcquisitionDate, platform (aerial in that case), pixelSizeM, imageType.

40.1.1 Other topics

Q	MS	Issue / reference	MS question / remark	JRC Reply
1	DE	Annex II, Flow of events, V.5"?"..with the most recent information of the farmer?."	Is "most recent" 1 day before the inspection of the concerned RP or before the inspection at all? Is it o.k., when farmers information arrives 1 day before the inspection or must the update happen before the inspection or even before the pre-sampling? So "most recent" could be better specified.	Any update of Reference Parcels made before the inspection can be taken into account for the that the rules of Regulation 1122/2009 Article 14 are fully respected.
2	DE	Annex II, Flow of events, V.5"?"..and the correspondent LUI are updated?."	Does this mean, that alphanumeric and geometric (polygons) data is exchanged and for inspection the new polygons are used? Is then the updated geometry to be send to JRC in the gml-files of the reporting package?	Both the graphical and alphanumeric information could be updated. The updated geometry sh the gml-files of the ETS reporting package. If the reference parcel is changed in a way (deletion aggregation) that the original identification of the land is no longer retained, it should be skipped inspection.
3	DE	General: Nominators and denominators	In order to clearly understand how to fix nominators and denominators it would be useful to have a comprehensive example comparable to the ETS 2010 example in the findings of the Amsterdam workshop	See FAQ article
4	IT	Annex I, Table 1, DQ_EvalMethodDesc: "...Individually 1. 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. ."	We consider rules described in table 1 not applicable to the Cadastral Parcel external boundaries but only applicable for the internal vectors representing agriculture and non agriculture land covers (remember that in Italy land cover layer is not the same of the external cadastral layer which is fix and not under paying agency?s control).	If the cadastral information is either incomplete, obsolete or does not reflect the actual land tenu not a good option to act as a reference parcel for IACS processes (as its spatial qualities are in challenge is therefore to design an appropriate reference parcel from the available layers that d management of the land in farmer's terms The procedure already accounts for many particular can occur in cadastral systems, but it cannot accept all cadastral boundaries "by default" as IT
5	IT	Annex I, Table 1, DQ_EvalMethodDesc:	Parcel complying with this conditions given above proceed	No reliable assessment can be made under these conditions, so setting the zero completely rer from the analysis. Not setting to zero would validate a parcel that in fact cannot be assessed.

		".. 3.b.. , put the observed eligible area, area declared and the reference area to value zero.. ."	with the control without set to zero the areas	
6	IT	Annex I, Table 1, DQ_EvalMethodDesc: Point 3.b (table 1) say: ?Else, flag the Reference Parcel as suitable for measurement, and consider the RP polygon area equal as the area that should have been delineated during point 1 of measure 10102 (NOTE: Use RP polygon as the initial vector representing the agriculture land cover)?.	1. Which is the meaning of this sentence? 2. Can we intend that the RP polygon boundaries has to be considered as reference for the individuation of the LUI? 3. JRC ever says that is not possible to use (during the ETS measurement) the previous existing geometries but they have to be cancelled and re-delineated in order to obtain a result not conditioned by the past. Is that still true?	Parcels should be still re-digitized "from scratch". The derived use of the RP polygon boundary phase of the delineation of the agriculture land cover is allowed under the specific condition that feature can be misallocated. See the article on 5 meters buffer.
7	IT	Annex I, TABLE 7: RP Critical defects (10106)	We understand that only those parcels for which measure 10101 fail, became the scope of the ?invalid perimeter? CD listed in measure 10106, is it correct?	YES, but not every parcel which fails 10101 is problematic. Indeed, only those with not a single vertex are labelled defective
8	ES	Annex I, Table 1, DQ_EvalMethodDesc: "..Individually 1. 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. ."	In many cases, the Cadastral parcels defined on the basis of the ownership of the land do not concur with the parcels seen, so that the information deriving from or conditioned by Cadastre, is not comparable with that defined based on what is seen using images of the territory. Therefore, verifying if the Cadastre information matches distinctive land features is not an appropriate method to determine the quality of the information supported by SIGPAC reference parcels, as a useful tool for the Integrated Administration and Control System.	Land ownership is not indicated as a parameter in any of the CAP regulations. What is relevant land use and land tenure. The latter can accurately be detected on the images. If the cadastral reflect land use and/or land tenure, they are a poor choice to act as reference parcel.
9	ES	Activity VI of Annex II: VI. Inspect the Reference Parcel (A)	Change the text in point 1 with ". 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 or are part of the administrative limit of a cadastral parcel. If affirmative, flag it as suitable for measurement and proceed to the next Step VI.3."	The cadastral boundary is only "valid" in the IACS domain insofar as the cadastral documentation represents the actual land use and land tenure situation in the field. The procedure accounts for conditions that can occur in cadastral systems, but it cannot accept all cadastral boundaries "by suggests."
10	SE	Thresholds 3-7% are too low causing false non-conforming reference parcels, and difficulty to reach acceptance levels for QE2 and QE3		The JRC parcel measurement trials demonstrated that the thresholds are realistic and relevant. on http://marswiki.jrc.ec.europa.eu/wikicap/index.php/SDIC:QE2
11	SE	WikiCAP documentation	Improve Wikicap structure and delete obsolete documents OR make it very clear that the are no longer valid!! It was just now we discovered that we should NOT use the link ?LPIS QA? from the ?tag cloud? at the main page, and that we instead should use the new ?LPISQA2011? tag?	noted
12	SE		any suggestions?	

		Provide us with tools to produce the GML:s and XML:s		DG JRC is not a tool producer. We trust our extensive use of standards allows for the development of tools that can be shared by various Member States.
13	DK	Examples in WikiCAP	We would encourage you to make many examples with well explained text to illustrate the guidelines. We appreciate the examples of the screening, But the descriptive text is very brief and is in many cases very hard to understand. To make the examples useful more explanatory text is desirable.	Done.
14	DK	The "Flow of Events" in Annex II point V.5 is dealing with reference area updated with most recent information from the farmer. The text reads: "Verify that the reference area and the corresponding LUI are updated with the most recent information?".	What action should be taken in this context? Are we allowed to replace the updated reference area value (hectares) with the original recorded reference area?	See answers to questions 1 and 2.
15	DK	The "Flow of Events" in Annex II point V.5 is dealing with reference area updated with most recent information from the farmer. The text reads: "Verify that the reference area and the corresponding LUI are updated with the most recent information?".	We believe that by "most recent" you mean the period from the date of the printed application to the deadline for Amendments to the single application.	See answers to questions 1 and 2.
16	DK	In Annex I Table B the waiver B allows us to waiver contamination in cases where "the RP has been updated after either a previous OTSC or an farmer?s declaration indicating the removal of the contamination?".	As far as we understand, cases where RP's have been updated as a consequence of farmer?s declaration has already been taken into account in "point V.5 of Flow of Events" in Annex II.	Correct. Waiver B removed
17	DK	In Annex I Table B the waiver B allows us to waiver contamination in cases where "the RP has been updated after either a previous OTSC or an farmer?s declaration indicating the removal of the contamination?".	What is meant by "previous OTSC"? Previous years (how many?) or just earlier this year?	OTSC from another application season than the one of the assessment rather than "earlier in the assessment" rather than "earlier in the year", and the reference to OTSC have been removed as the OTSC should in fact have triggered an update in due time.
18	DK	Annex I, the 5-meter buffer needs more clarification, impact of relative positional accuracy has to be considered	Only change that have been made in the ETS-documentation- point VI.2 - is that the presence of ineligible features within a 5 meter buffer is no longer being considered a critical defect. It would be good with some clear examples of how this 5 meter buffer should be used in practice. We would also like to have some examples of the criteria the proceed from point VI.1 to either point VI.2 or point VI.3. JRC is asked to clarify the 5 meter rule, which is found in the work flow point VI.2.	See the article on the 5 meter buffer.
19	DK	Annex II, Point VI.2	Deleting the critical defect from point VI.2 is contradicted by the confirmed critical defect example "invalid RP perimeter".	The ETSv4.3 "unclear boundary" related to any situation where uncertainty regarding the assessment of the boundary has persisted. The ETSv5.1 "invalid perimeter" is a situation where no part of the perimeter corresponds to the actual world phenomenon; indicating a clear and complete mismatch between parcel and land. The original "unclear boundary" is now an element to guide the inspection process. Removing the condition "invalid RP perimeter" is therefore not contradictory to the introduction of a clearly observable failure of the reference area.

20	DK	Annex II, Point VI.2	In Point VI.2 there is an incorrect reference to point VI.5.iii, which does not exist in the current version.	Corrected
21	DK	Critical defect: Multi-parcel	According to the documentation a multi-parcel block is "an amalgamate of 10 (ten) or more clearly distinct parcels (i.e. units of agriculture land which according to the internal rules should have been processed separately)." Internal rules might not specify a maximum of 10 parcels per reference parcel. We would like the JTC to clarify the rule of maximum 10 parcels per reference parcel.	To be understood as "an amalgamate of 10 (ten) or more clearly distinct parcels (i.e. units of agriculture land which according to the LPIS specification under test should have been registered separately.)" number (less or more than 10), correctly apply your LPIS specification on the LUI and count the number of newly created reference parcels
22	DK	Critical defect: Invalid common RP boundaries	How should the highlighted RP in the confirmed example be digitized during the ETS?	"Not"; since one can't digitize such parcels as a consequence of this defect
23	DK	Proposed new waiver	Concerning the waiver proposed by the Danish administration, you have informed us that you have introduced a flag for the separate processing of parcels with a MEA obtained from documented field sources. But we have not been able to find description of this in the WikiCap documentation. Please inform us how to find this in the documentation.	Added to inspection article. All necessary flags will be introduced in the *.xsd schemas
24	DK	Annex I point 1, under "important introductory notes"	the scope of the LPIS is those parcels that are declared on the farmer's application OR hold a non-zero "maximum eligible area" in respect to the direct aid scheme only (CAP pillar 1). This means that RPs that are not declared AND hold a zero reference area are outside the scope. We therefore believe that these RPs can be skipped during the feasibility check point V of the flow of events. How should these RPs be flagged?	Parcels that are not in scope should not have been in the lot to start! Having the scope right at the start and skipping during the inspection without technical grounds is not supported. All skipping requires a technical/circumstantial condition. There are 2 possible outcomes By far the easiest way to deal with this situation is to request a new sample-preselection with a corrected lot. An alternative way -more complex- is to "discard" these defective parcels in your assessment report at the end, producing an alternative assessment report.
25	MT	ETS Critical Defects 2011: Incomplete Block	Specific case of RP that looks as incomplete block on the orthoimage, but the RPV reveals that boundary is present (marker stones). It is a common practice in Malta that farmers plough their RPs at once.	RFV is fully part of the inspection methodology when applied correctly. So that evidence would be acceptable. Other evidence should demonstrate that the other side of this boundary is not used for the farmer register receiving aid for the assessment year. This latter condition is added to the detailed instruction.
26	SI	in Detailed instruction 4 (Annex I): calculating the x2 value for QE 7, we understand everything except the number 3,84 at the end of the page.	Where does that number come from? If it is just an example, how do we come up with it in our calculation or in other words what does it represent?	web-literature] where 3,84 is found as value for df = 1 and P = 0.05
27	EE	Annex I, Table 0, page 6.	If RP boundary is not visible due to some tall features like trees, buildings or shadows, can this RP be skipped? If so, which feasibility code should be used?	No. A RFV should be conducted. The occlusion of a particular RP boundary due to the presence of buildings, doesn't mean that the image content is insufficient for the ETS inspection.
28	EE	Annex I, Table 8 and Table 10	Which area value should we use as Aobs for measures ?RP conformance (area purity)? and ?LPIS maximum eligible area?, should it be ?RP true eligible area? or ?RP Historical GAC area?? If we would use ?RP Historical GAC area? for ?RP conformance (area purity)?, the cause of non-conformity ?Observed eligible area is not in GAC on 30 of June 2003? would not have meaning any more,	In the case of SAPS countries, the ?RP Historical GAC area? should be taken. See the DQ_Evaluation of both quality measure, where it is written ".derived in 10102 (or 10102_1 if appropriate).. " The non-conformity should be reported for all types of non-conformities (area purity, contamination, etc. defects). Therefore, the cause "Observed area not in GAC..." will be still applicable for SAPS countries. However, as the GAC mask is a regulatory restriction the cause "Observed eligible area is not in GAC on 30 of June 2003" will not have a conformity level.

			because no eligible area could be found outside 2003 GAC mask.	
29	EE	Reporting	Is it necessary to provide supplemental scoreboard/xml files for historical GAC data?	Not under ETSv5.1
30	EE	Denominators	Is the denominator total number of Reference Parcels which is inspected (in our case 500) and does it apply for all quality measures?	See FAQ article
31	EE	Annex I, TABLE 11.2	The minimum size of RP in our LPIS is 0.30 ha. Should we also report ?LPIS area based non-conforming RP larger than 0.1 ha? ?	Yes if and when it occurs. With no occurrences, "zero" is the correct result.
32	EE	Annex I, Table 15, LPIS total declared area. ?NOTE: the DQ_scope identifies only parcels where Arec=Aobs?.	Does it actually mean that area observed and area recorded should be exactly equal or does it mean that RP must be conformant , 97%-x-103%? And what is Aobs in this case, is it ?RP true eligible area? or ?RP Historical GAC area?.	RPs must be area-based conformant - 97%-x-103%. Clarified in Annex I. Aobs will be derived from "Historical GAC area".
33	EE	Annex I, Pg 31, Table B, waiver A	What is Aobs in this case, is it ?RP true eligible area? or ?RP Historical GAC area? ?	RP Historical GAC area. Clarified in Annex I.
34	EE	Annex I, Page 33, DETAILED INSTRUCTION 4	Calculating the x2 value for QE7. I tried to insert this calculation in MS Excel and found that some rows in tables may be switched	Corrected.
35	EE	Annex I, Page 33, DETAILED INSTRUCTION 4	What is the ?deg_freedom? value ?	Degree of Freedom is 1
36	EE	Annex I table 16 it is said that only non-conforming reference parcels assigned with the cause ?Changes of the underlying land were not applied? are taken into account for QE 6.	If cause for critical defect is something else than ?Changes of the underlying land were not applied?, are these parcels added to the scope for QE 6 or not?	No, they would not. However note that the said cause is the first in the cascade of measure 101 therefore has to be assessed with priority on the other causes
37	EE	Annex II, Pg 1 ?Explanations on how RPs, with reference area value that was calculated on the base of specific methods/tools, should be treated in the ETS, is provided.?	Is this statement related to the pro-rata calculation?	No, it refers to methods different than the CAPI delineation (use of scorecards or reduction coefficient at the whole individual reference parcel)
38	EE	Annex II, Pg 1 ?Point V.2.: Additional flagging of the reference parcels, having maximum eligible area, as recorded in the LPIS, calculated based on means and methods different that GPS/CAPI area delineation and mapping, is introduced. If considered appropriate, the estimation of the area of these small features by delineation is allowed.?	Could not find point V.2 in this version of Annex II ?	Corrected to V.6
39	EE	Annex III , pro rata eligibility	In 2011 we use pro-rata system for reference parcels which are situated in 4 counties of West ?Estonia. These are parcels	They are processed as any other RP whose observed eligible area can be derived through CAPI. In this case, a separate pro-rata mixed land cover class for each county (with the county specific coefficients) should be defined in the eligibility profile.

			where crown cover density of trees are smaller than 50 %, but there is more than 50 trees per 1 hectare. For each county we have calculated medium level of crown cover density. How to deal with these reference parcels in ETS? Is it necessary to add new land cover type in eligibility profile or should this situation reported in some other way?	
40	LU	Annex I, Feasibility for measurement (10101)	In the 2011 methodology agriculture parcels with unclear boundaries and no non-agriculture land use in a 5 meter buffer can be copied one to one from our LPIS layer??	LPIS QA deals with reference parcels and land cover, NOT with agricultural parcels!. Else, yes, conditions only. Note that copy/paste is not strictly correct as it concerns the derivation of the L boundary from the RP perimeter. Internal RP vertexes are not considered. See the article on 5 and FAQ
41	LU	Annex I, Feasibility for measurement (10101)	How should we attribute these parcels(LCC Code)?? Should the parcel outline boundaries be copied but in the case of two different land uses (e.g new 2011 division of the parcel in arable land and grassland) mapped with two different polygons and different LCC codes??	See answer 40: Once the LUI outer boundary has been established, further land cover mapping
42	LU	Annex I, RP landscape features area (10104_2)	How could we report eligible landscape features areas e.g. row of trees if we are not mapping them as polygons? Please give us more details how we should proceed.	See the 2011 [LPISQA2011_3.d FAQ pages]
43	LU	Annex I, RP landscape features area (10104_2)	Do we have to map single trees in the 2011 methodology as this LF are part of the parcel having up to 50 trees/hectare. Could we discard them same as the hedgerows smaller than 2 meters (Annexe I page 3, point 3)	See the 2011 [LPISQA2011_3.d FAQ pages]
44	HU	ETS: general remark	Annex I includes complex information, while containing limited explanations. Indeed, most of the tables of this Annex are clear and shows how to calculate the values. However, we propose to create in addition a chapter which contains descriptions and explanations of the main indicators and definitions. There are important points related to the QEs in the tables, so they need to be precisely linked to each QE.	The reporting structure and description of the quality measures (at RP and LPIS level) is in accordance with the specification and methodological instructions given in ISO 19114 "Quality evaluation procedure". The content of the Annexes is presented in the formal "language" and format applied in ISO, in order to ensure the desirable degree of standardization. The proposed supplement table that could present the quality measures given in Annex I, in more "user-friendly" way might ease the comprehension of the quality measures, but it also creates also undesirable redundancy. In any case, MS are invited to propose and develop such tables, which could be used as supporting documentation.
45	HU	ETS: general remark	The current ETS version gives difficulty to match the description in Annex II with tables of Annex I.	Not true. There is a clear cross-reference between both Annexes. Each Table in Annex I is referred to an action in the Activity Diagram of Annex II. In other hand, each action in annex II is referred to a measure in Annex I.
46	HU	ETS: general remark	We would be eager to see examples for each RP system (with images) to the description of the workflow, it would help to understand the cases.	JRC already produced particular examples for the quality measure involved (example of inspection of critical defects, land cover types, findings from screening...). A substantial explanatory information is provided in the 2011 [LPISQA2011_3.d FAQ pages].
47	HU	Annex II, Inspection of RP considering 5 meters buffer	In case of PB system the implementation of 5 meters rule is not clear. It should be clarified how to implement the 5 meters concept with more examples provided.	A specific chapter with theoretical explanation of the 5 meter buffer concept and several fictitious examples created in WikiCAP.
48	HU	Annex II, 2. Limit of 10 parcels in case of the multi-parcel CD	Taking into consideration the diversification of landscape and land use practices, the definition of an exact limit ? like 10 ? cannot be applicable in PB system.	See Answer to Question 21. The definition of "Multi-parcel" given in Annex I, clearly refers to agricultural units of agriculture land, that would result in distinct reference parcels if the MS-specific LPIS system is applied. The definition clearly do not consider as "multi-parcel" each production block having a specific cultivation pattern (for example: containing 10 or more crop parcels, as given in the SAPS declaration). Considering all above, the threshold of minimum 10 units, that are potential reference parcels in the specific LPIS context, is completely feasible.
49	HU			

		Annex I, Application of the waivers listed in Table B not only for the contamination	It is recommended to use waivers C and D for the Critical Defects as well, not only for contamination. For example, GAS mask can cause multi-polygons.	Waivers in Table 2 of Annex I are designed to vindicate only the cases of "contamination" of the... cannot see any justifiable reason to extend their domain of application, moreover the concept of... has been substantially changed, rendering the use of waivers in that respect, obsolete. Also, in... the GAC mask by default should not virtually split in two of more polygons, a reference parcel th... represents a homogeneous unit of agriculture land.
50	HU	Annex I, Application of the waivers listed in Table B not only for the contamination	The waiver B is also recommended to be used for CD issues, not only for the contamination problem.	Since the farmer update in the year of assessment has been introduced in the ETS inspection p... since the OTSC from previous year should have triggered the LPIS update in due time, waived... from the ETS. See also answers to questions 1 and 17.
51	HU	Annex I, Application of the waivers listed in Table B not only for the contamination	How to handle the farm notification for change in RP, when it is built in the LPIS during the year till the administrative control? Could we use the information received from farmers in the given year?	Yes, information received from farmers in the given year, can be used. See also answers to qu...
52	HU	Annex I, Using GAC-mask similar layers with scheme specific eligibility content	When a Rural Development layer has to be taken out from SAPS eligible area, it could be handled in a similar way as the GAC mask. It is seen as SAPS eligible on the image (for example the First afforestation of agricultural land (EAFRD) in the 1st or 2nd year), however it is not eligible in the RP.	ETS allows the use of any ancillary data in support of the inspection (see Action I3 in the Activit... Annex II). However, there seems to be little reason to implement the GAC mask concept for har... ancillary information, as it can be diverse in terms of source, nature, concept and format. EU M... to keep such ancillary information in their ETS archiving package "as is".
53	HU	Annex II: General remark	Clear definition is needed for ?not measured? and ?not directly comparable? areas, since it is not neutral what blocks do we calculate with in the different tables.	Definitions are added in the glossary page.
54	HU	Annex I, page 22 Table 11. and 11.2.: ??RPs having reference Area that is not directly comparable (see Annex II)?.	Annex I does not contain any explanation regarding ?not directly comparable?, or is it the critical defect of invalid reference parcel perimeter in ANN I. Page 30?	See answer to the question 53
55	HU	Annex I, page 26 Table 14	The total number of inspected Reference Parcels would be recommended as a denominator, not the total number of Reference Parcels. Parcels coded as skipped or ?not measured? should not be used as denominator.	The denominator for that particular measure(Critical Defects: 10205) is the QA sample, which r... total number of inspected Reference Parcels. Parcels that are "not measured" are inspected for... and thus are part of the QC sample! A definition of DQ_Scope is added in the glossary page.
56	HU	Annex I. table 8.2	This measure highlights how to calculate the contamination, but it is necessary to give further details and specify the nature of contamination itself	The nature of the contamination is reported in quality measure 10105 as specified in DQ_meas... 8,2
57	HU	Annex II page 9, ?point 3. Check whether...?	The following additional point is suggested "h. in case of mosaicking, tiles are radiometrically heterogeneous, or geometric discrepancies appear at seamlines"	Point h is added in Annex II, page 9
58	DE	ETS Annex I, Detailed Instruction 4	Is there a further definition of "irregularities" to be considered here? Do irregularities here refer only to whole applications and not to single RPs?	Detailed Description 4 refers to ?irregularities caused by less area determined than the area de... The notion of irregularity refers to application. QE7 looks for a statistical significance between a... irregular applications and applications involving problematic reference parcels. This is applicati... not parcel based. If such a relationship exists, additional analysis/assessment into this effect of...
59	DE	WikiCAP documentation: ATS annual reporting	What should be the content of the ATS reporting package in the case, when the LPIS model has not undergone any changes since last year and new ATS in 2011 is not performed?	Even if the LPIS model hasn't undergone conceptual and structural changes, there could be so... the list of land cover types that are considered eligible. Such changes could be completely inde... the LPIS design. This will imply and update of the eligibility profile, which need to be revised an... part of the ICS. Therefore, the ATS reporting package will contain at minimum: (1) the conforma... from the last ATS and (2) the eligibility profile, if updated. NOTE: In the case the optional worka... applied, the ATS reporting should contain also the: (1) formal reason why the MEA was set to z... RPs with zero MEA, declared exclusively for other uses IF it was decided to skip these from ins... information relevant to the execution of any field activities in the frame of the ETS, IF these wer...
60	NI	General remark	Landscape features that are traditionally part of the good agriculture practices and are less than 2m wide do not need to be separately digitized in	A general inspection rule is obviously: If you can't see it, assume it's not there. The LF width sh... considered from the border of the traditional agricultural parcel, so whether canopy or base dep... effect of that hedge on the arable land or grassland below. The way the ETS operator interprets... landscape features depends on its land cover definition and the traditional agriculture practices... results from this assessment should be the same, independently from the observation method u...

			ETS. Most of our landscape features are hedges. Does the 2m apply to the width of the canopy (that we can see on the image) or the width at the base (which we cannot see clearly)?	example, field inspection or CAPI).
61	NI	ETS Annex I, TABLE 15: LPIS declared area (10206)	QE5 relates to the declared area. Does this mean the area on which a payment was activated (which we call the claimed area)?	Area declared is defined in the scope of Article 56 of 1122/2009. It involves declaration for aid s other uses. We do not know what each MS means by claimed.
62	NI	ETS Annex I, TABLE 0: RP Feasibility for inspection (10100), Code: ?Reference Parcel ID not found persistent in the LPIS?.	When we merge two fields together, we give the new/resultant field the Unique Reference number of the lowest ?parent? field. Therefore technically the reference parcel ID is persistent but the field in the live LPIS is now very different to the geometry and MEA that we sent to the JRC. Can we still code these examples as A3 and skip them, even though the parcel ID is still active in the live LPIS?	The practice to keep an existing ID from one of the merger parents is not in line with the recom http://marswiki.jrc.ec.europa.eu/wikicap/index.php/LPIS_dataflow diamond 3. Note that the pers ID might cause problems at multiannual analysis, so ensure you have transactional records for you do keep that ID, this is not the case of non-persistent identifier, as the ID is still valid in the if such changes are done in tempore non suspecto prior to the ETS, the updated geometry and the reference parcel will be taken into account for the ETS inspection.
63	NI	General remark	If a CD is unconfirmed (i.e. some but not all of the conditions have been evidenced), is it reported on as an unconfirmed CD, or as a normal parcel with no Critical Defects?	It is reported parcel with no Critical Defects, so not reported.
64	NI	ETS Annex I, TABLE 1: RP Feasibility for measurement (10101)	If the LUI is un-measurable but the non-agriculture features falls only within 5m of the clearly identifiable part of the perimeter, is the RP still classed as unclear LUI?	When the LUI is partially or fully unidentifiable, the presence of non-agriculture features is done perimeter of the reference parcel. Thus, the case you described will be treated as unclear LUI. http://marswiki.jrc.ec.europa.eu/wikicap/index.php/The_concept_of_the_5_meter_buffer
65	NL	ETS Annex I, TABLE 0: RP Feasibility for inspection (10100)	Could you clarify in which cases geometry of the Reference Parcel is not considered as valid?	Invalid geometry means: (1) Topologically incorrect polygon (slivers, dangle notes, overlapping, does not exists
66	NL	ETS Annex I, Detailed Instruction 2	Could you clarify the meaning of waiver A (Aref ? Aobs <= 100m2)?	The contamination quality measure applies to RPs that are conformant with respect to quality m (or 10102_1 if appropriate), but have have non-agriculture land cover features found on the LUI difference between the eligible area observed for the whole RP and the eligible area recorded is 100m2, then this contamination can be waived with waiver A and the RP is conformant.
67	NL	General remark	How to deal with temporary non-eligible features? How to report them in ETS?	Please note that: (1) The ETS inspection represents a snapshot of the situation in the current a with an estimate of eligibility as it will be used for aid application; (2) Apart of the mere land cov the ETS operator should always apply his knowledge of country-specific agriculture practices; (ambiguity on the orthoimage, RFVs could be always an option for further clarification.
68	ES	ETS Annex I, TABLE 1: RP Feasibility for measurement (10101)	If the reference parcel boundaries form a measurable LUI, is then the parcel suitable for measurement, regardless of what is to be found in the 5 meter buffer?	Yes, this is correct
69	DK	ETS Annex I, TABLE 9: RP cause of non-conformity (10107)	Is it correctly understood that if we have a reference parcel with un-measurable LUI, absence of non-agriculture features in the 5-meter buffer and lack of critical defects, we should NOT record a reason for non-conformance?	Yes, this is correct.
70	DK	ETS Annex I, TABLE 9: RP cause of non-conformity (10107)	How should we handle reference parcels which is non-conformant, because of changes in our national guidelines which have not taken effect on all reference parcels? Can we code those as ?Revisions of the Regulations were not applied??	Yes, If the rules are there, but got not yet applied, you could code the RP in measure 10107 with the Regulations were not applied?. However if the national guidelines are already in effect but v by an operator, then is should be erroneous processing. If you never got to applying the guideli particular area, it should incomplete processing.
71	DK	General remark	If a reference parcel is split in two because of a new road all the way through the reference parcel, do we also need to	If the parcel is area conforming after measurement: YES. After correcting the parcel, It all depend your LUIs are after the splitting. It should result in the creation of two separate reference parcels will be outside the limits of both LUIs.

			register this road as a contamination?	
72	PT	ETS reporting	How to report skipped and inspected reference parcel in the ETS reporting package for 2011? Do we need to report skipped parcels in the SamplePreselectionStatus.XML and in the LPISPolygonZeroState.GML?	The SamplePreselectionStatus.XML should include all RPs that were part of the Sample Pre-section delivered by JRC to the EU MS at the initial phase of the LPIS QA. The EU MS should provide a list of these RPs which of these RPs were inspected, which were skipped, and which were not part of the QC sample. Consult: (1) ftp://mars.jrc.ec.europa.eu/lpis/schemas/5_1_LpisSamplePreselectionStatus_20111001.gml (2) ftp://mars.jrc.ec.europa.eu/lpis/schemas/examples/5_1_LpisSamplePreselectionStatus_20111001.gml LPISPolygonZeroState.GML should include all RPs (together with their neighbouring parcels in a 100m buffer) that were inspected, plus the ones that were skipped. Explained otherwise, LPISPolygonZeroState.GML should include all RPs from the Sample Pre-section minus the RPs that didn't take part of the QC.
73	PT	ETS Annex I, TABLE 8.2: RP ?contaminated? Reference Parcels (10102_3)	RP contamination and use of waivers - MS would like to confirm whether the parcel has to be flagged as contaminated even if ineligible land cover polygons are not to be digitized ?	The values for the contamination reported in the RP ?contaminated? Reference Parcels (10102_3) should be the same as on the values reported in RP Non-agriculture land cover features (10105). So YES, see the FAQ.
74	PT	General remark	In which cases can an older auxiliary image (if better than the current year one) be used to assess parcel boundaries? Should that image has to be delivered to JRC, in the reporting package?	Ancillary image can never be used as the primary source of delineation, only as a source for correction. If an interpretation issue on the inspection image, it acts in a similar way as a RFV. Archive orthoimages can be used with extreme caution and only in those cases where they serve simply to re-confirm an observation on the orthoimage taken in the current year of assessment. There is no need to deliver the archive orthoimages, please store it in the archive ETS package.
75	MT	Annex I, Detailed Instruction 2	Waiver A: As Arec minus Aobs can also give a negative answer when the recorded area is less than the observed area, would it be correct if we assume that waiver A applies when ?The difference between Arec and Aobs is less than 100 m2??	Yes, you could interpret it that way. When the difference between Arec and Aobs (regardless whether Arec is bigger or smaller) is less than 100 m2, then the waiver A applies.
76	MT	Annex I, Detailed Instruction 2	Waiver C: What is meant by ?fully located??	?Fully located? means that the non-agriculture land cover feature in question is already completely accounted/recorded in your LPIS (for example, in separate features class or GIS layer).

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42 Abbreviations 2011

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Abbr.	Meaning of the Abbreviation
AEM	Agro-Environmental Measures
ATS	Abstract Tests Suite
AQL	Acceptance Quality Limit
CAP	Common Agricultural Policy
CAPI	Computer Assisted Photo Interpretation
CwRS	Control with Remote Sensing
EC	European Commission
EPSG	European Petroleum Survey Group
ETS	Executable Tests Suite
EU	European Union
GAC	Good Agricultural Condition
GAEC	Good Agricultural and Environmental Condition
GI	GeoInformation
GML	Geography Markup Language
IACS	Integrated Administration and Control System
INSPIRE	Infrastructure for Spatial Information in Europe
ISO	International Organisation for Standardisation
IUT	Implementation Under Test
JRC	Joint Research Centre
LADM	Land Administration Domain Model
LCM	LPIS Core Model
LCML	Land Cover Meta Language
LCCS	Land Cover Classification System
LPIS	Land Parcel Information System
LQ	Limiting Quality
LUI	Land Under Inspection
LUHG	Land Under Historical GAC
MS	Member State
OTSC	On-the-Spot Check
RP	Reference Parcel
QC	Quality Control
QA	Quality Assurance
QAF	Quality Assurance Framework
QEx	quality element x (x = rank in the discussion document)
SDI	Spatial Data Infrastructure
SMR	Statutory Management Requirements
UML	Unified Modelling Language
VHR	Very High Resolution
XML	eXtensible Markup Language

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Abstract Test Suite (ATS) - set of abstract tests specifying all the requirements to be satisfied for conformance abstract test generalized test for a particular requirement

NOTE An abstract test case is a formal basis for deriving executable test cases. One or more test purposes are encapsulated in the abstract test case. An abstract test case is independent of both the implementation and the values. It should be complete in the sense that it is sufficient to enable a test verdict to be assigned unambiguously to each potentially observable test outcome (i.e. sequence of test events).

anomaly - observed non-conformance

application schema - conceptual schema for data required for one or more applications [ISO19101]

acceptance quality limit (AQL) - quality level that is the worst tolerable process average when a continuing series of lots is submitted for acceptance sampling

area ?directly comparable? (in the context of the ETS) - the eligible area observed during the ETS and the recorded reference area for a given reference parcel, are directly comparable.

NOTE In the ETS, the quantification of the maximum amount of agriculture land is made through GPS/CAPI area delineation (mapping) of the cover found on the land represented by the reference parcel (LUI). The reference area value, in other hand, can be calculated on the base of different methods/tools (for example, use of scorecards or reduction coefficients applied at individual reference parcel).

basic test - initial capability test intended to identify clear cases of non-conformance

capability test - test designed to determine whether an Implementation Under Test (IUT) conforms to a particular characteristic of an International Standard as described in the test purpose

conceptual schema language ? formal language based on a conceptual formalism for the purpose of representing conceptual schema [ISO19101]. Examples: UML, EXPRESS

conformance - fulfilment of specified requirements

conformance testing - testing of a product to determine the extent to which the product is a conforming implementation

conformance test report - summary of the conformance to core elements as well as all the details of the testing that supports the given overall summary

conforming implementation - implementation which satisfies the requirements

defect - non-fulfilment of an intended usage requirement

executable test - specific test of an implementation to meet particular requirements NOTE Instantiation of an abstract test case with values.

Executable Test Suite (ETS) - set of executable tests

generalization ? feature association - describing inheritance relationship between feature types, where more general feature type (supertype) is result of generalization and one specialized feature type (subtype) is result of specification

feature - abstraction of real world phenomena [ISO 19101] EXAMPLE The phenomenon named ?Eiffel Tower? may be classified with other similar phenomena into a feature type ?tower?. NOTE A feature may occur as a type or an instance. Feature type or feature instance should be used when only one is meant.

feature association - relationship that links instances of one feature type with instances of the same or a different feature type

feature attribute - characteristic/properties of a feature

Feature Catalogue (FC) - catalogue containing definitions and descriptions of the feature types, feature attributes, and feature associations occurring in one or more sets of geographic data, together with any feature operations that may be applied

GAC - Good Agricultural Condition. A component of eligibility under SAPS

land cover - physical and biological cover of the earth?s surface including artificial surfaces, agriculture areas, forests, (semi-) natural areas, wetlands, water bodies

land use - territory characterised according to its current and future planned functional or socio-economic purpose (e.g. residential, industrial, commercial, agricultural, forestry, recreational)

LCCS - Land Cover Classification System, developed by FAO/UN

limiting quality (LQ) - when a lot is considered in isolation, a quality level which for the purposes of sampling inspection is limited to a low probability of acceptance

lineage - data quality overview element, which describes the history of a feature from collection and acquisition through compilation and derivation to its current form

lot of reference parcels - homogeneous population of reference parcels defined for each country/region (or LPIS),

LPIS control zone - randomly chosen control zone used for the ETS inspection, where up-to-date national orthophoto or VHR data, acquired in the frame of the CwRS, is available.

LUI - Land Under Inspection. The land represented by the Reference Parcel, according to its definition

LUHG - Land Under Historical GAC. The land which corresponds to the area under GAC at the time of the reference data, irrespective of its production status at that reference date

non-conformance - failure to fulfil one or more specified requirements

nonconformity - non-fulfilment of a specified requirement

parcel measured (in the context of the ETS) - The entire perimeter of the LUI boundary can be depicted from the ground data as all boundary features can be identified. Also, there is no uncertainty in respect to the determination of the maximum eligible area observed, due to the absence of non-agriculture features in less than 5 meters from the RP boundary. Thus, the area can be directly derived from the RP perimeter and the measurement of the agriculture area can be performed.

QC sample - the minimum number of Reference Parcels from sample pre-selection that needs to be inspected for QE 4, according to the prescribed Limiting Quality.

sample pre-selection - ordered list of reference parcels to be sequentially inspected

sample size - prescribed number of reference parcels to be tested based on ISO 2859/2-1985 (Procedure A, Limiting Quality = 2%),

spatial object - feature

specialization - association describing inheritance relationship between feature types, where a more general feature type (supertype) is result of generalization and a specialized feature type (subtype) is result of specification.

"systematic refresh" of the LPIS - verification of the state of all reference parcels followed by an update or correction where necessary.

Unified Modelling Language (UML) - open modelling standard for conceptual schema language defined and maintained by the Object Management Group.

universe of discourse ? view of the real or hypothetical world that includes everything of interest [ISO19101]

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For technical issues regarding the LPIS quality assesment:

- Wim Devos [wim.devos@jrc.ec.europa.eu] - overall coordination
- Piotr Wojda [piotr.wojda@jrc.ec.europa.eu] - data exchange
- Pavel Milenov [pavel.milenov@jrc.ec.europa.eu] - ETS inspection procedure
- Romuald Franielczyk [romuald.franielczyk@jrc.ec.europa.eu] - Mediawiki - LPIS QA portal

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45 Release notes 2011

version 5.1

45.1 version 5.1 @ 2011-10-07

This section offers a rough overview of the changes applied to the LPIS QA technical documentation draft ETSv5.0 towards the ETSv5.1 used for the 2011 LPIS QA implementation.

Note that some templates and schemas are still under development to accommodate the recent changes.

WikiCAP - LPISQA2011

- ◇ A new set of schemas and examples available at the Download page (2011-10-28)
- ◇ A proofread October version of the discussion document is added
- ◇ ETS-package: separate land identification layer for cadastral parcels and topological blocks systems
- ◇ A new article records the feedback of the MS on draft ETSv5.0.
- ◇ A new article illustrates the use of the 5 meter buffer in the inspection procedure
- ◇ Clarifications are added to the article of inspection issues found during the 2010 screening

Annex I

- ◇ TABLE 2: The mapping instruction in point 3 is amended with the requirement to exclude non-agriculture linear features wider than 2 meters.
- ◇ TABLE 7: The two-stage concept of critical defects detection (first the potential defects, and then only those that are "unexcused"), as well as the use of waivers for the critical defects, is abolished. The new approach is report directly the reference parcel having "real" critical defect. A detailed instruction for the detection of these defects is elaborated and incorporated in the Annex. It replaced the existing Detailed Instruction No 1 for waivers.
- ◇ TABLE 7: The list of the predefined potential critical defects (PCD) is revised. The PCD "Inability to identify LUI boundary" was changed to "Invalid Reference Parcel boundary". A detailed description (No. 1) of the critical defects (and the possible conditions for their occurrence) is added at the end of the Annex.
- ◇ TABLE 13: It is clarified that the cause of non-conformity "Observed eligible area is not in GAC on 30 of June 2003" is not subject to conformity level.
- ◇ TABLE 14: LPIS potential critical defects (10205) is revised.
- ◇ TABLE 14.2: LPIS unwaivered critical defects (10205_2) is removed.
- ◇ Detailed Description 1: Appropriate external evidence can be considered while assessing an "incomplete block"
- ◇ Detailed Description 2: Waiver B is removed from Table 2

Annex II

- ◇ A separate check for the quality of orthoimagery is introduced.
- ◇ Recommendations regarding the visual scale used in ETS are revised.
- ◇ Instructions for the date of the last allowed update from farmer, prior to the ETS, are added.
- ◇ A clarification regarding the end of the inspection cycle is added.
- ◇ Point VI.3.iii.: The mapping instruction is amended with the requirement to exclude non-agriculture linear features wider than 2 meters

Annex III

- ◇ Point 5.1.3: It is clarified that the mapping instructions and specification for the landscape features are reported in the ICS.
- ◇ Point 6.1.1.: It is clarified that landscape features, subject to ETS, should have the value CONDITIONAL in the field "Representation of eligible land (direct aid)" in their Eligibility profile.

version 5.0

45.2 version 5.0

This informative section offers a rough overview of the changes applied to the LPIS QA technical documentation ETSv4.3 used for the 2010 LPIS QA exercise

Compared to ETSv4.3 of 2010, this revision holds the following important modifications

- Several measures from Annex I have been revised

- ◇ QE5, QE6 and QE7 are totally revised, making annex IV obsolete
- ◇ QE4 Potential critical defects are totally revised: existing and newly proposed waiver conditions have been considered to ensure only a sure detection of the undisputed defects happens.
 1. total absence of ineligible land
 2. invalid perimeter
 3. invalid common boundaries concerning at least 3 parcels
 4. incomplete block
 5. multiparcel (revised)
 6. multipolygon

the potential critical defects "unclear boundary" and "discontinuity" have been removed.

- The ETS flow diagram of Annex II has been revised to accommodate the changes and all schema elements are now identified to support screening feedback
 - ◊ A skeleton activity diagram demonstrates how parcels are sorted to fill the particular DG_scopes (denominators) of the seven quality measures.
 - ◊ All LPIS QA activities prior to the ETSv4.3 Annex II ETS flow diagram have also been modeled in flow schema for easier referencing.
 - ◊ Farmer's update MEA "in tempore non suspecto", the historical GAC interference -making Annex V obsolete- and the condition where a measurement cannot be reliably made are embedded in the methodology, and are no longer picked up in the raw scores.
- IKONOS image zones can be discarded for LPIS QA at the MS's discretion
- Examples have been selected from the screening finding to find typical examples of conditions relevant for the ETS measures. Some examples relate to situations that were PCD in ETSv4.3 but are no longer considered so in ETSv5.x

Please look at the release notes of the annexes for more details

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46 Errata 2011

version 5.1

47 IMPORTANT NOTE

THE CONTENT OF WIKICAP CHAPTER "2. INSPECTION METHOD" AND THE ETS ANNEXES I, II AND III, IS NOT CHANGED FROM THEIR VERSIONS PUBLISHED ON 2011-10-07! THE CORRECTIONS BELOW SHOULD BE INTRODUCED MANUALLY IN THE FORMAL ETS INSTRUCTION.

By contrast, the changes and corrections relating to chapter ?3. support? have already been directly introduced in the appropriate WIKICAP articles

This ERRATA article is structured as follows:

- ◇ editing: corrections of typing mistakes, inconsistencies left over from previous versions as well as additions to text
- ◇ changes that can impact your workflow:
 1. LPIS QA scope refinement ? separation of for parcels exclusively declared for ?other uses?
 2. Application of GNSS coordinates in ETS ? in cases where the land features on the ground cannot be depicted using CAPI, and the MS voluntarily decides to verify / inspect in the field
 3. introducing two-sided interval of the distribution of area non-conforming parcels as a replacement for the one-side version
- ◇ list of changes in the support and download pages

ALL IMPORTANT CHANGES THAT MIGHT IMPLY A RE-CHECK (RE-INSPECTION) OF THE REFERENCE PARCELS IN THE ETS, ARE MARKED WITH A SYMBOL **X** . CHANGED OR AMENDED TEXT IS GIVEN IN BOLD.

48 Late Erratum

This erratum was identified on 2011-12-23

Annex I, TABLE 17: OTSC rate of irregularities (10208)

- DQ_SCOPE

◊ Strike "random" as follows: *"All aid applications of the current year, inspected under the OTSC ~~random~~ sample (Reg No 1122/2009 art 31.1, reported under Reg. 1122/2009, article 84.1.d), which refer to inspected reference Parcels that are part of the QC sample"*

Annex I, Detailed Description 4: Calculating the Chi-squared distribution for QE7

- EXAMPLE

◊ Read the text as follows: *"?..2011 produced 100.000 aid applications, 5000 applications were included in the ~~random~~ sample for OTSC?.."*

Note: The "random" was an obsolete leftover for ETS4.3 where independent IACS statistics were observed. For ETSv5.1, also the risk-based OTSC parcels are relevant as the LPIS-related risk is discarded at CwRS zone level. Detailed instruction 4 refers to "**all** parcels applications subject to OTSC"

49 Errata

The release of version 5.1 on 2011-12-07 cleared the errata of version 4.3.

49.1 Edits in the WikiCAP articles

Annual Reporting

- ?Data part - The ETS reporting package?
The following missing text should be read at the end of the paragraph:

Member states operating SAPS with historical GAC restrictions, shall in addition report the GAC vector data for the inspected parcels (historical GAC mask). X

ETS annual reporting 2011

• Textual part

(http://marswiki.jrc.ec.europa.eu/wikicap/index.php/LPISQA2011_2.c#Textual_part)

- ◇ text ??i.e. when either of quality elements **E1, E5 or E7** fails to?., should be read as ??i.e. when either of quality elements **E1 to E7 (except E5)** fails to? X

• Delivery instructions

(http://marswiki.jrc.ec.europa.eu/wikicap/index.php/LPISQA2011_2.c#Delivery_instructions_.28Under_revision.29)

- ◇ text ???The ATS scoreboard, the ETS scoreboard?., changed to ???The ATS scoreboard (**if needed**), the ETS scoreboard?.
- ◇ text ??by 31. January **2011** at the latest?., changed to ??by 31. January **2012** at the latest?.

49.2 Edits in the Annexes

Annex I, TABLE 6: RP Non-agriculture land cover features (10105)

• DQ_EvalMethodDesc

- ◇ Note 2 is amended at the end with the following 3rd bullet:
?* all single non-agriculture land cover features of type ?Artificial sealed surface? and ?Water bodies?, larger than or equal to 0.01 ha?X

• Example dataset parameters

- ◇ The class ?Artificial sealed surface? should be read as ?Artificial sealed surface and associated areas?X

Note: This change aims to accommodate the numerous requests for the correct reporting of land cover features, which are not sealed surface, but are still of anthropogenic origin and are part of the urbanized areas ? parklands, road banks, golf courses, etc.

Annex I, Table 11.2: LPIS area based non-conforming RP larger than 0.1 ha (10202_2)

• Example dataset parameters

- ◇ text: ?.. As 1250 were actually inspected and measured, of which 30 were smaller than 0.1 ha, the equivalent acceptance number becomes ???109 (=1220*18/200, truncated). 108 non-conforming parcels were identified.???? should be read as ?As 1250 were actually inspected and measured, of which **70** were smaller than 0.1 ha, the equivalent acceptance number becomes **112** (=1250*18/200, truncated). **108 non-conforming parcels**, larger than 0.1 ha **were identified**?.

• Example quality result meaning

- ◇ text ?..Less than 18 Reference Parcels out of 200 (or 109/1220) are non-conforming.?? should be read as ?..Less than 18 Reference Parcels out of 200 (or 112/**1250**) are non-conforming?.

• DQ_Value (example)

- ◇ text ?108 out 1220? should be read as ?108 out **1250**?
- Note:** Clarification upon requests regarding denominators used in quality measures 10202 and 10202_2.

Annex I, Tables 11 and 11.2: LPIS area based non-conforming RP?

• DQ_Scope

- ◇ text ?..and are subject of aid application.?? should be stricken.

Note: As written in point 1 of the introductory notes of Annex I, the QC sample is based on the LPIS QA scope, which comprises ?those parcels declared on the farmer?s application OR holding a non-zero ?maximum eligible area? in respect to the direct aid scheme only (CAP pillar 1).? In this respect the statement in the DQ_Scope ?and are subject of aid application? is redundant and obsolete.

Annex I, Detailed Description 1

• Invalid RP perimeter

◇ The Local Ground Conditions should be read as follows:

?Applicable only for reference parcels that cannot be measured and have non-agricultural elements within 5m of the LUI boundary. Local Ground Conditions: ??None of the RP perimeter ?prime? vertices, which outline the shape of the LUI, correspond to the observed ground truth (as visible through the existing land cover, land use features) ?? AND at least one non-agriculture land cover feature is ?crossing? the 5m buffer into the LUI core. These parcels are virtual and so irrelevant for land administration.? X

Annex II, Important Notes

• Note 8: Visual scale

◇ the text ?The visual scale should be smaller than 1: 5 000.? should be read as ?The visual scale should be **larger** than 1: 5 000.?

Annex III, point 6.1.1.

◇ The last paragraph is changed as follows:

?This option mandatory for landscape features that are subject to ETS.?

Annex III, point 8.1.7 of Chapter 8

• Point 4.1.6

◇ The second sentence in the paragraph should be read as follows:

?This is particularly applicable for some nation-specific cases of land cover with non-herbaceous vegetation that supports pastoral activity (e.g. low productivity grassland or grassland with shrubs).?

Note: The reference to the EC services is stricken.

• Point 8.1.3

◇ The sentence ?The calculation principle should be agreed in advance with the Commission? is stricken.

Note: These corrections are introduced in response to the regulatory requirement laid down in R.1120/2009 and R.73/2009.

Annex III, Table 2 The following additional classes are introduced, following the types of areas listed in Article 34 (2b I and 2bii) of COUNCIL REGULATION (EC) No 73/2009:

1. Two land cover classes for the natural vegetation under RDP ? one for terrestrial and one for aquatic ? following the definition for natural habitat given in Art1(b) of Council directive 92/43/EEC of 21.05.1992.
2. One forest class, defined as afforested former agriculture area with open medium high trees, in order to take into account the tree high growth in the last 10-15 years after planting.X

Terrestrial natural or semi-natural vegetation developed on former agriculture land due to the implementation of Art 34 (2i and 2iii) of 73/2009	Closed to Open Woody Vegetation with Herbaceous Layer	Terrestrial natural vegetation under RDP	XA 21548(3)[Z20]	CONDITIONAL 0-100%
Waterlogged natural or semi-natural vegetation developed on former agriculture land due to the implementation of Art 34 (2i and 2iii) of 73/2009	Closed to Open Woody Vegetation With Herbaceous Vegetation On Waterlogged Soil	Waterlogged natural vegetation under RDP	XB 41632(3)[Z20]	CONDITIONAL 0-100%
Afforested former agriculture land - implementation of Art 34 (2ii) of 73/2009	Open Medium High Trees (Woodland)	Afforested areas under RDP	YA 20014-13233(3)[Z21]	CONDITIONAL 0-100%

Annex III, Table 3

◇ ?Table 3: Description of the fields in Table 3 (Eligibility Profile)? should be read as ?Table 3: Description of the fields in Table 2 (Eligibility Profile)?

50 Changes that can impact your workflow

50.1 LPIS QA scope refinement

Annex II. Flow of events, point V.6

◇ A new event is added after point V.6 (II6):

1. Detect and further skip from inspection, RPs with zero MEA but declared exclusively for "other uses".
2. In the LPIS sample pre-selection status, set the field ?belongsToQC_sample? to ?false? and the field ?ancillaryDataAvailable? to ?true?.
3. Provide a formal reason in the ICS informative textual part (as a supportive document) why the MEA was set to zero (for example, RP size is below the acceptable limit) X

NOTE: THIS WORKAROUND IS APPLICABLE FOR 2011 ONLY!!!

50.2 Use of GNSS in ETS

Annex II. Important Notes

- ?New note added?

◇ Reference parcels with non-identifiable limits on the orthoimagery, can be considered suitable for measurements, if additional evidence is provided that these limits are identifiable on the ground. NOTE: In case the LUI limits are detected and confirmed using GNSS measurements, the land cover mapping should be done exclusively by field measurement, following the compatible surveying specification applicable in the EU Member States . No mixture of GNSS and CAPI measurements is allowed.??? X

Annex II. Flow of events, point VI.1

◇ Paragraph should be read as follows:

?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.

In case the visual verification on the orthoimage cannot reveal 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 reported as Rapid field visit, should comprise: RP vertices measured with GNSS, pictures revealing the existence of these vertices on the ground and any relevant metadata).X

If affirmative, flag it as suitable for measurement and proceed to the next Step VI.3. ?

Annex II. Flow of events, point VI.2.i

◇ The sentence should be read as follows:

?if any non-agricultural (ineligible) feature is present within a buffer of **5 meters in case of CAPI and 1 meter in case of GNSS measurements** from each side of the displayed boundary of the Reference Parcel (inside or outside the parcel), put the observed eligible area, area declared and the reference area to value zero (as the uncertainty in respect to the location and extend of the LUI would cause ambiguity in the determination of the maximum eligible area observed, this parcel cannot be taken into account to estimate the LPIS_RP_MEA AND LPIS_RP_DCA). **Put also RP_CNF (observedToRecordedAreaPercentage) and RP_CNF (observedRecordedAreaDifference) to zero.** Go to step VI.6.i and proceed with the instructions.? X

Annex II. Flow of events, point VI.2.ii

◇ The initial part of the sentence should be read as follows:

?if not a single non-agricultural (ineligible) feature is present within a buffer of **5 meters in case of CAPI and 1 meter in case of GNSS measurements** each side of the displayed boundary of the Reference Parcel (inside or outside the parcel)?..? X

Annex II. Flow of events, point VI.3.i

◇ Paragraph should be read as follows:

?Individually identify on the orthoimagery all single agriculture land cover features larger than 0.1 ha on the LUI. Use the reflectance (pixel grey values), colour 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 exclusively by field. No mixture of GNSS and CAPI measurements is allowed. X** Note: These amendments in Annex II aim to respond to the numerous MS requests to allow the ETS inspector to proceed with a field measurement for parcel that was considered not measurable with CAPI.

Annex II. Flow of events, point VI.6.i

◇ Last paragraph should be read as follows:

Use the reflectance (pixel grey values), colour 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).** X Note: This amendment in Annex II aim to respond to the numerous MS requests to allow field measurement that could evidence against the occurrence of a critical defect.

50.3 LPIS eligibility rates (10203)

Annex I, TABLE 8: RP Area purity (10102_2)

- DQ_EvalMethodDesc

◇ The last sentence ? Report the value (in absolute terms) (v2)? is stricken. **X**

Annex I, TABLE 12: LPIS eligibility rates (10203)

- DQ_EvalMethodDesc

◇ The text should be read as follows:

For the parcels in DQ_scope, classify the Reference Parcels according to the degree of deviation of the area recorded from its observed value. 1. Calculate the ratio between the number of the Reference Parcels, belonging to a given pre-defined **signed** range of difference between the eligible area observed and area recorded, and the total number of Reference Parcels.

- a. For each Reference Parcel in the DQ_Scope, take the value (v1) from 10102_2 and divide it by the area recorded: (Aobs-Arec)/Arec
- b. Then,
 - i. Sum up the Reference Parcels that belong to a first **signed** range
 - ii. Divide the result by the total number of Reference Parcels in the DQ_Scope
 - iii. Multiply by 100.
 - iv. Continue with the next pre-defined range and do steps i-iii, until the histogram is completed.

Note: For Reference parcel having Recorded Area set to zero the deviation is reported as follows:

- ?>50%? for RPs having RP_MEA > 0
- ?0-2% for RPs having RP_MEA = 0
- ? DQ_Value (example)? **X**

◇ The tablet should be read as follows:

Difference between eligible area observed and eligible area recorded in the RPs [%]	% of RP	Difference between eligible area observed and eligible area recorded in the RPs [%]	% of RP
<= -50	1	(0; 2]	20
(-50; -20]	2.5	(2; 4]	14.6
(-20; -12]	1.2	(4; 8]	15.1
(-12; -8]	1	(8; 12]	7.21
(-8; -4]	2.1	(12; 20]	2.09
(-4; -2]	15	(20; 50]	3
(-2; 0]	14	>50	1.3

Note: These changes in measures 10102_2 and 10203 would enable two-sided interval for the distribution of area non-conforming parcels, which is more meaningful. **X**

51 changes implemented in the support and download articles

ETS inspection errors 2010-2011

(http://marswiki.jrc.ec.europa.eu/wikicap/index.php/LPISQA2011_3.c.iiiiii)

- **Issue: B2/Land cover mapping/_c. presence of unexpected land cover feature**

◊ text ?Note: ETSv5.1 does require a RP derived polygon in this case? is removed

ETS critical defects 2011

(http://marswiki.jrc.ec.europa.eu/wikicap/index.php/ETS_critical_defects_2011#Multi-parcel)

◊ The explanatory text for ?unconfirmed? critical defects, is amended with instructions how these cases are further handled in the ETS.

◊ The example of ?unconfirmed? critical defect ?Invalid RP boundary? is replaced with more explicit one.

Downloads

- **Schemas, templates and examples**

(http://marswiki.jrc.ec.europa.eu/wikicap/index.php/LPISQA2011_3.a#Schemas.2C_templates_and_examples)

◊ XML of the Eligibility profile ? as the value type of the field ?Eligible Hectare Factor? is INTEGER, it cannot store the string ?0 or 100%? for CONDITIONAL land cover classes. For that reason and for simplicity, the value for such land cover classes will conventionally be set to 100%, in order not to create 2 separate entries in the profile (one with ?0%? and second with ?100%?).

◊ The schema for storing GAC Mask polygons is updated and corresponding example was added.

◊ The schema for storing ETS scoreboard is updated with a two-sided interval for the distribution of area non-conforming parcels. The corresponding example was added.

LpisSchemaSetChangeLog 2011

◊ List is updated

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