

LPIS Quality Assurance Framework

Based on JRC IES/H04/P/PMI/pmi D(2011)(13518)

ANNEX I

Executable Test Suite (ETS) LPIS data quality measures, version 5.3

May 2014

Developed in compliance with the guidelines and templates given in
ISO 19114, 19113 and ISO/TS 19138

1. Release notes (changes/updates from version 5.3 2013)

May 2014 changes

- Table 8.2 (point 3.11) – the example has been updated according to the ETS measurement schema.
- Table 8 (point 4.7) – the conformance level field has been clarified
- Detailed instructions 1 – Note to the “Invalid RP perimeter” has been added
- Table 2 – additional description (3.7) has been added for landscape features with the width less than 2m
- Table 5 - additional description (3.7) has been added for landscape features with the width less than 2m
- Introductory part has been removed from the Annex (now available on Wiki)
- The example for Calculation of χ^2 value for QE7 has been removed from detailed instruction 4 on WikiCAP (under specific examples of calculations)

2. Feasibility for inspection and measurement

The following 2 tables describe the measures related to the feasibility for inspection and feasibility for measurement of the sampled reference parcel. **TABLE 0: RP Feasibility for inspection (10100)**

	Data quality components	Value/Example/Description
1	Data Quality Unit	Completeness/Commission of all Reference Parcels in Scope
2	Data Quality Scope	All Reference Parcels, which are part of the sample pre-selection, sequentially handled, until a full QC sample is created from RP which pass this measure successfully (005 – Dataset)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10100
3.2	Name (Name)	RP feasibility for inspection
3.3	Alias (alias)	RP_FSI
3.4	Element name (elementName)	Completeness/Commission
3.5	Basic Measure (basicMeasure)	Error indicator
3.6	Definition (definition)	Correctness and completeness of the input vector and the reference image data to allow reliable inspection of the given Reference Parcel
3.7	Description (description)	<p>Table reporting the feasibility of the input vector and reference image data in respect to its use for correct and reliable Reference Parcel inspection. See the Actions "II3" from the "Activity Diagram" in Annex II. Individually:</p> <ol style="list-style-type: none"> 1. Analyse visually if the area represented by the parcel (LUI) can be inspected based on the available vector and image information. <ol style="list-style-type: none"> i. Check if the Reference parcel ID is persistent in the LPIS (validityStatus) ii. Check if the geometry of the Reference Parcel is valid iii. Check if the Reference Parcel is fully or partly outside the active area of the image (the active area is the area of the image, which contains meaningful pixel information) iv. Check for presence of cloud cover or haze, which prevent the inspection of the parcel v. Check if local radiometric or geometric properties of the active image area provide sufficient information for the inspection of the RP. Note: This also includes a check for occurrence of isolated artifacts or temporal phenomenon on the surface. vi. Check for presence of any force majeure circumstances that prevent the inspection of the RP. 2. If the population submitted is complete but it contains

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		extra parcels that are out of the scope as a result of an erroneous query, the query condition can be easily applied and verified (screened), then the skipping will be applied to all out of scope parcels (S1).																
3.8	Value Type (valueType)	1 – Boolean variable																
3.9	Value Structure (valueStructure)	004 Table																
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram, Actions “II3”)																
3.11	Example (example)	<table border="1"> <thead> <tr> <th>Feasibility code</th> <th>Occurrence</th> </tr> </thead> <tbody> <tr> <td>Reference parcel ID found not persistent in the LPIS (A3)</td> <td>false</td> </tr> <tr> <td>Parcel geometry is not available (T5)</td> <td>false</td> </tr> <tr> <td>Parcel is partially or fully not covered by image (T2)</td> <td>false</td> </tr> <tr> <td>Parcel partially or fully covered by clouds or haze (T4)</td> <td>false</td> </tr> <tr> <td>LUI interpretation impossible with the given orthoimage (C4)</td> <td>false</td> </tr> <tr> <td>Failure to inspect the reference parcel due to force majeure circumstances, observed on the LUI (floods, fires,) – F1</td> <td>false</td> </tr> <tr> <td>Extra parcel due to error in the scope (S1)</td> <td>false</td> </tr> </tbody> </table>	Feasibility code	Occurrence	Reference parcel ID found not persistent in the LPIS (A3)	false	Parcel geometry is not available (T5)	false	Parcel is partially or fully not covered by image (T2)	false	Parcel partially or fully covered by clouds or haze (T4)	false	LUI interpretation impossible with the given orthoimage (C4)	false	Failure to inspect the reference parcel due to force majeure circumstances, observed on the LUI (floods, fires,) – F1	false	Extra parcel due to error in the scope (S1)	false
Feasibility code	Occurrence																	
Reference parcel ID found not persistent in the LPIS (A3)	false																	
Parcel geometry is not available (T5)	false																	
Parcel is partially or fully not covered by image (T2)	false																	
Parcel partially or fully covered by clouds or haze (T4)	false																	
LUI interpretation impossible with the given orthoimage (C4)	false																	
Failure to inspect the reference parcel due to force majeure circumstances, observed on the LUI (floods, fires,) – F1	false																	
Extra parcel due to error in the scope (S1)	false																	
4	Data quality evaluation																	
4.1	Date (DateTime)	yyyy-mm-dd																
4.2	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal																
4.3	Evaluation method type code (DQ_EvalMethodTypeCode)	002																
4.4	Evaluation method description (evaluationMethodDescription)	<p>Annex I Continue from 3.7</p> <ol style="list-style-type: none"> Assign a code to the Reference Parcel as a result of the analysis, based on a pre-defined code list. Report additional evidence when field "F1" is true in a separate "Comment" field. If the area represented by the parcel (LUI) is not affected by the above technical issues (all occurrences are set as FALSE), <ol style="list-style-type: none"> add the parcel to the sample and, proceed with the ETS inspection for that Reference Parcel. <p>Else, flag the Reference Parcel as skipped</p>																
4.5	Evaluation procedure	Refer to Annex II																
4.6	Conformance level (DQ_ConformanceLevel)	Not specified (All feasibility codes should be "false")																
5	Data quality result (DQ_ConformanceResult)																	

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5.1	Specification	LPIS specification					
5.2	Explanation	<table border="1"> <thead> <tr> <th data-bbox="635 219 1198 259">Feasibility code</th> <th data-bbox="1198 219 1390 259">Occurrence</th> </tr> </thead> <tbody> <tr> <td data-bbox="635 259 1198 327">Reference Parcel is skipped (as input data is insufficient)</td> <td data-bbox="1198 259 1390 327">false</td> </tr> </tbody> </table>	Feasibility code	Occurrence	Reference Parcel is skipped (as input data is insufficient)	false	<p>Reference Parcel geometry is correct. Data quality and spatial extent of the reference image were found to be sufficient for inspection. Reference Parcel is processed for further inspection and NOT flagged as skipped.</p>
Feasibility code	Occurrence						
Reference Parcel is skipped (as input data is insufficient)	false						
5.3	Pass	Boolean (1=yes, 0=no)					

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TABLE 1: RP Feasibility for measurement (10101)

	Data quality components	Value/Example/Description				
1	Data Quality Unit	Completeness/Commission of all Reference Parcels in Scope				
2	Data Quality Scope	All Reference Parcels, which are part of the QC sample (005 – Dataset)				
3	Data quality measure					
3.1	Measure identifier (measureIdentifier)	10101				
3.2	Name (Name)	RP feasibility for measurement				
3.3	Alias (alias)	RP_FSM				
3.4	Element name (elementName)	Completeness/Commission				
3.5	Basic Measure (basicMeasure)	Error indicator				
3.6	Definition (definition)	Availability and completeness of the local ground conditions, as seen on the reference image data, that allow quantification of the agriculture area on the land under inspection (LUI) through CAPI				
3.7	Description (description)	Table reporting the feasibility of the LUI of Reference Parcel in respect to quantification of the agriculture area through CAPI. See the Actions "A1 and A2" from the "Activity Diagram" in Annex II: Individually <ol style="list-style-type: none"> 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. 				
3.8	Value Type (valueType)	1 - Boolean variable				
3.9	Value Structure (valueStructure)	004 Table				
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram, Actions "A1 and A2")				
3.11	Example (example)	<table border="1"> <thead> <tr> <th>Feasibility code</th> <th>Occurrence</th> </tr> </thead> <tbody> <tr> <td>Reference Parcel is feasible for measurement</td> <td>true</td> </tr> </tbody> </table>	Feasibility code	Occurrence	Reference Parcel is feasible for measurement	true
		Feasibility code	Occurrence			
Reference Parcel is feasible for measurement	true					
4	Data quality evaluation					
4.1	Date (DateTime)	yyyy-mm-dd				
4.2	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal				

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4.3	Evaluation method type code(DQ_EvalMethodType Code)	002
4.4	Evaluation method description (evaluationMethodDescription)	<p>Annex I Continue from 3.7</p> <ol style="list-style-type: none"> 2. If affirmative, flag the Reference Parcel as suitable for measurement 3. Else, check whether there is a presence of any non-agricultural (ineligible) feature within a buffer of 5 meters from each side of the displayed boundary of the Reference Parcel <ol style="list-style-type: none"> a. If affirmative, put the observed eligible area, area declared and the reference area to value zero <p>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).</p>
4.5	Evaluation procedure	Refer to Annex II
4.6	Conformance level (DQ_ConformanceLevel)	Not specified (The Feasibility codes should be "true")
5	Data quality result (DQ_ConformanceResult)	
5.1	Specification	LPIS specification
5.2	Explanation	The LUI of the Reference Parcel match distinctive land features visible on the orthoimagery. Thus, the extent of the area represented by the Reference Parcel is well known. Reference Parcel is flagged for ETS measurement.
5.3	Pass	Boolean (1=yes, 0=no)

3. Inspection and analysis at RP level

The following 10 tables describe the measures related to the inspection and analysis performed at the level of the reference parcel.

TABLE 2: RP true eligible area (10102)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Thematic accuracy/classification correctness of all single land cover features in scope
2	Data Quality Scope	All single land cover features, which are on the land represented by the Reference Parcel (relevant only for those that can be measured) (009 – Feature)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10102
3.2	Name (Name)	RP true eligible area
3.3	Alias (alias)	RP_MEA
3.4	Element name (elementName)	Thematic accuracy/classification correctness
3.5	Basic Measure (basicMeasure)	Correct eligible area value
3.6	Definition (definition)	Observed eligible area inside the Reference Parcel
3.7	Description (description)	<p>Table reporting the sum of the eligible area of all single agriculture land cover features found inside the Reference Parcel, which might represent eligible land. See Actions B1-B4 from the Annex "Activity Diagram" Individually:</p> <ol style="list-style-type: none"> 1. Delineate all individual agriculture land cover features larger than 0.10 ha on the land represented by the Reference Parcel. Use the LCCS description of the agriculture land cover classes in the eligible profile, to define the interpretation keys for the land cover mapping (if considered appropriate, translate the LCCS code into a national legend). 2. NOTE: in absence of coupled payment classes, the resulting delineation key should correspond to "aggregated classes" reflecting the land covers defined in 2009R1120 art 2, documented as minimum mapping legend in Annex III. 3.a. Exclude by delineation any individual or adjoining non-agriculture features larger than or equal to 0.10 ha and all non-agriculture linear features wider than 2 meters, from the inner area of the mapped agriculture land cover features. 3.b. If considered appropriate, optionally exclude by delineation any individual or adjoining non-agriculture features smaller than 0.10 ha and/or non-agriculture linear features narrower than 2 meters, from the inner area of

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		the mapped agriculture land cover features. 4. Exclude by mapping the area of any landscape features from the inner area of the mapped agriculture land cover features. 5. NOTE: The area of Landscape elements with less than 2 meters of width (below the minimum mappable unit for the ETS) can be incorporated in the agriculture land cover feature adjacent to them.
3.8	Value Type (valueType)	2 - number
3.9	Value Structure (valueStructure)	004 Table
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram, Actions “B1 – B4”)
3.11	Example (example)	Agriculture individual land cover features
		Arable Land
		Permanent Crop
		Permanent Grassland
		Deducted area of small (less than 0.1 ha) non-agriculture features
		Total Area
4	Data quality evaluation	
4.1	Date (DateTime)	yyyy-mm-dd
4.2	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.3	Evaluation method type code(DQ_EvalMethodType Code)	002
4.4	Evaluation method description (evaluationMethodDescription)	Annex I, Continue from 3.7 5. Estimate and sum up the area of all remaining non-agriculture features inside the agriculture land cover polygon, that are smaller than 0.10 ha individually and not excluded by delineation in point 3.b. 6. Calculate the eligible area for each of the agriculture land cover feature, using the information from the eligibility profile. Sum up first by land cover type and then in total, the eligible area of the digitized agriculture land cover polygons. 7. If the sum of area estimates from point 5 amounts to 3% of the recorded parcel reference area, deduct it from the sum of eligible areas calculated in point 6.
4.5	Evaluation procedure	Refer to Annex II
4.6	Conformance level (DQ_ConformanceLevel)	Not specified
5	Data quality result DQ_QuantitativeResult	
5.1	Value	Record

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5.2	Value unit	Square meters
5.3	Expalnation	20500 square meters of eligible land found on the area represented by the Reference Parcel. Since conformance quality level is not specified, only the area is reported.

TABLE 3: RP diversity (10103)

	Data quality components	Value/Example/Description	
1	Data Quality Unit	Thematic accuracy/classification correctness of all land cover features in scope	
2	Data Quality Scope	All land cover features, which are on the land represented by the Reference Parcel (relevant only for those that can be measured). (009 - Feature)	
3	Data quality measure		
3.1	Measure identifier (measureIdentifier)	10103	
3.2	Name (Name)	RP diversity	
3.3	Alias (alias)	RP_ELC	
3.4	Element name (elementName)	Thematic accuracy/classification correctness	
3.5	Basic Measure (basicMeasure)	Agriculture land cover classes count (from 10102)	
3.6	Definition (definition)	Occurrence of the different agriculture land cover classes, which represents eligible land	
3.7	Description (description)	Binary (Pass/Fail) table of the occurrence of the agriculture land cover classes, representing eligible land.	
3.8	Value Type (valueType)	6 - table	
3.9	Value Structure (valueStructure)	006 Table	
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure - Annex II, explanation of the Activity Diagram, Actions "B5")	
3.11	Example (example)	Agriculture Land Cover Classes (Types)	Occurrence
		Arable Land (A)	Yes
		Permanent Grassland (N)	Yes
4	Data quality evaluation		
4.1	DQ_AggregationDerivation	Derivation (10102)	
4.2	Date (DateTime)	yyyy-mm-dd	
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal	
4.4	Evaluation method type code(DQ_EvalMethodType Code)	002	

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4.5	Evaluation method description (evaluationMethodDescription)	Annex I Actions B5 from the Annex "Activity Diagram" Detect the observed presence of different agriculture land cover classes representing eligible land (from 10102), which are on the land represented by the Reference Parcel. Use the correspondent class definitions from the eligibility profile (User-defined Legend Code).
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	Not specified
5	Data quality result DQ_QuantitativeResult	
5.1	Value	Table
5.2	Value unit	Number
5.3	Explanation	Since conformance quality level is not specified, only the matrix is reported (Example 3.11, Example: Arable land and permanent grassland occurred on the land represented by Reference Parcel)

TABLE 4: RP landscape features (10104)

	Data quality components	Value/Example/Description											
1	Data Quality Unit	Thematic accuracy/classification correctness of all land cover features in scope											
2	Data Quality Scope	All land cover features, which are on the land represented by the Reference Parcel (relevant only for those that can be measured) (009 – Feature)											
3	Data quality measure												
3.1	Measure identifier (measureIdentifier)	10104											
3.2	Name (Name)	RP landscape features											
3.3	Alias (alias)	RP_ALF											
3.4	Element name (elementName)	Thematic accuracy/classification correctness											
3.5	Basic Measure (basicMeasure)	Landscape feature count											
3.6	Definition (definition)	Abundance of the landscape features (subject to Article 34(3) of CommReg1122/2009), which are on the land represented by Reference Parcel											
3.7	Description (description)	<p>Table of the abundance of the landscape features, subject to Article 34(3) of CommReg1122/2009.</p> <p>See Actions C1 - C5 from the Annex "Activity Diagram" Map (or identify, if already mapped) the individual landscape features observed, which are on the land represented by Reference Parcel. Use the list of features provided in the eligibility profile. Assign an area value to each identified landscape feature, according to the ruling eligibility conditions (see Annex III for more information).</p>											
3.8	Value Type (valueType)	6 - table											
3.9	Value Structure (valueStructure)	006 Table											
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram, Actions "C1-C5")											
3.11	Example (example)	<table border="1"> <thead> <tr> <th>Type of Landscape features</th> <th>Abundance</th> </tr> </thead> <tbody> <tr> <td>hedges</td> <td>3</td> </tr> <tr> <td>ponds</td> <td>1</td> </tr> <tr> <td>trees in line</td> <td>1</td> </tr> <tr> <td>trees in group</td> <td>2</td> </tr> </tbody> </table>	Type of Landscape features	Abundance	hedges	3	ponds	1	trees in line	1	trees in group	2	
Type of Landscape features	Abundance												
hedges	3												
ponds	1												
trees in line	1												
trees in group	2												
4	Data quality evaluation												
4.1	DQ_AggregationDerivation	Derivation (10102)											

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4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	002
4.5	Evaluation method description (evaluationMethodDescription)	Annex I Continue from 3.7 Count the number of observed landscape features by type. NOTE: store the features and assigned area for use in 10104_2
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	Not specified
5	Data quality result DQ_QuantitativeResult	
5.1	Value	Table
5.2	Value unit	Number
5.3	Explanation	Since conformance quality level is not specified, only the matrix is reported (see 3.11). Example: There are 3 hedges, 1 pond, 1 line of trees and 2 groups of trees on the land represented by Reference Parcel.

TABLE 5: RP landscape features area (10104_2)

	Data quality components	Value/Example/Description	
1	Data Quality Unit	Thematic accuracy/classification correctness of all land cover features in scope	
2	Data Quality Scope	All land cover features, which are on the land represented by the Reference Parcel (relevant only for those that can be measured) (009 - Feature)	
3	Data quality measure/calculation		
3.1	Measure identifier (measureIdentifier)	10104_2	
3.2	Name (Name)	RP landscape features area	
3.3	Alias (alias)	RP_ELF	
3.4	Element name (elementName)	Thematic accuracy/classification correctness	
3.5	Basic Measure (basicMeasure)	Area of eligible landscape features	
3.6	Definition (definition)	Area of the landscape features (subject to Article 34(3) of CommReg1122/2009), which are inside OR are adjacent to agriculture areas, found on the land represented by the Reference Parcel	
3.7	Description (description)	Table reporting the sum of the eligible square meters originating from landscape features found inside OR that are on the immediate border of the agriculture land cover features on the land represented by the Reference Parcel. The area of Landscape elements with less than 2 meters of width (below the minimum mappable unit for the ETS) can be incorporated in the agriculture land cover feature adjacent to them.	
3.8	Value Type (valueType)	2 - number	
3.9	Value Structure (valueStructure)	006 Table	
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram, Actions “C6”)	
3.11	Example (example)	Eligible landscape features found on the LUI	Area (m²)
		ponds	750
		patches of trees	200
		trees in line	300
		Total	1250
4	Data quality evaluation		
4.1	DQ_AggregationDerivation	Derivation (10102)	

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4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	002
4.5	Evaluation method description (evaluationMethodDescription)	Annex I NOTE: this requires stored information from measure 10104 <u>See Actions C6 from the Annex "Activity Diagram"</u> Recover the individual delineated eligible landscape features, which are inside OR are on the immediate border of the agriculture areas already determined in Action B. Retrieve their eligible area using the information from the eligibility profile. Sum up the assigned area by type of the eligible landscape feature. For landscape features that are common for two reference parcels, count only half of the area.
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	Not specified
5	Data quality result DQ_QuantitativeResult	
5.1	Value	Record
5.2	Value unit	Square meters
5.3	Explanation	1250 m ² of eligible landscape features found within OR that are adjacent to the agriculture areas on the land represented by the Reference Parcel. Since conformance quality level is not specified, only the area is reported.

TABLE 6: RP Non-agriculture land cover features (10105)

	Data quality components	Value/Example/Description														
1	Data Quality Unit	Thematic accuracy/classification correctness of all land cover features identified in scope														
2	Data Quality Scope	All land cover features identified, which are on the land represented by the Reference Parcel (relevant only for those that can be measured) (009 - Feature)														
3	Data quality measure															
3.1	Measure identifier (measureIdentifier)	10105														
3.2	Name (Name)	RP non-agriculture land cover features														
3.3	Alias (alias)	RP_ANF														
3.4	Element name (elementName)	Thematic accuracy/classification correctness														
3.5	Basic Measure (basicMeasure)	Error count														
3.6	Definition (definition)	Abundance of the non-agriculture land cover features, which are on the land represented by the Reference Parcel														
3.7	Description (description)	Table showing the total number of the non-agriculture land cover features, which are on the land represented by Reference Parcel														
3.8	Value Type (valueType)	2 - number														
3.9	Value Structure (valueStructure)	006 Table														
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure - Annex II, explanation of the Activity Diagram, Actions "D1 - D2")														
3.11	Example (example)	<table border="1"> <thead> <tr> <th>Non-agriculture land cover</th> <th>Abundance</th> </tr> </thead> <tbody> <tr> <td>Artificial sealed surface and associated areas</td> <td>3</td> </tr> <tr> <td>Forest and Woodland</td> <td>8</td> </tr> <tr> <td>Scrubland</td> <td>2</td> </tr> <tr> <td>Water Bodies</td> <td>0</td> </tr> <tr> <td>Natural Bare areas</td> <td>1</td> </tr> <tr> <td>Waterlogged Vegetation</td> <td>0</td> </tr> </tbody> </table>	Non-agriculture land cover	Abundance	Artificial sealed surface and associated areas	3	Forest and Woodland	8	Scrubland	2	Water Bodies	0	Natural Bare areas	1	Waterlogged Vegetation	0
Non-agriculture land cover		Abundance														
Artificial sealed surface and associated areas		3														
Forest and Woodland		8														
Scrubland		2														
Water Bodies		0														
Natural Bare areas	1															
Waterlogged Vegetation	0															
4	Data quality evaluation															
4.1	DQ_AggregationDerivation	Derivation (10102)														
4.2	Date (DateTime)	yyyy-mm-dd														
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal														

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4.4	Evaluation method type code(DQ_EvalMethodType Code)	002
4.5	Evaluation method description (evaluationMethodDescription)	<p>Annex I See Actions D1 - D2 from the Annex "Activity Diagram" Count the number of individual distinct non-agriculture land cover features by class type, which has been already identified/detected in Actions B and C, by type of major land cover class.</p> <p>NOTES:</p> <p>1. Only individual and distinct non-agriculture land cover features should be considered. Small intrusions of non-agriculture land cover at the border of the reference parcel, due to imprecise matching with the reference orthoimage, are not counted.</p> <p>2. The non-agriculture land cover features reported in that Table are:</p> <ul style="list-style-type: none"> • the non-agriculture land cover features excluded by delineation under table 2, point 3.7, 3.a. Each occurrence of land cover class in such exclusion is individually counted. • all single non-agriculture land cover features, with area smaller than 0.10 ha, which if summed up exceeds 3% of the reference area (one occurrence per type should be reported) • all single non-agriculture land cover features of type "Artificial sealed surface" and "Water bodies" smaller than 0.10 ha, but larger than or equal to 0.01 ha
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	Not specified
5	Data quality result DQ_QuantitativeResult	
5.1	Value	Record (table)
5.2	Value unit	Number
5.3	Explanation	14 non-agriculture land cover features found on the land represented by the Reference Parcel. Since conformance quality level is not specified, only the number is reported.

TABLE 7: RP Critical defects (10106)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Usability of all land cover features in scope
2	Data Quality Scope	All land cover features, which are on the land represented by the Reference Parcel (relevant for all RPs that are part of the QC sample) (009 – Feature)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10106
3.2	Name (Name)	RP Conformance Critical Defects
3.3	Alias (alias)	RP_CRA
3.4	Element name (elementName)	Usability
3.5	Basic Measure (basicMeasure)	Error indicator
3.6	Definition (definition)	Occurrence of local ground conditions, which evidenced for non-compliances (critical defects) that violate the conceptual schema of the dataset (LOT) under inspection and/or obstruct the use of the reference parcel (in the IACS processes where the LPIS play core part).
3.7	Description (description)	<p>See Actions E1 from the Annex "Activity Diagram". Use the detailed instructions (No 1) for this inspection.</p> <ol style="list-style-type: none"> 1. Check for the occurrence of a critical defect, starting from the first defect listed at the top of the table (given below) and cascade down to the bottom. 2. For each of the pre-defined critical defects from the list: <ol style="list-style-type: none"> a) Verify the general conditions of the LPIS conceptual schema (check the type of Reference Parcel applied) b) Identify and detect the occurrence of ALL local ground conditions listed, that evidenced for non-compliances that violate the conceptual schema of the dataset under inspection and obstruct the use of the reference parcel. Use the information provided from the ATS and the predefined list of local ground conditions. <p>Table indicating the presence or absence of local ground conditions (expressed through the observed land cover and land use), which evidenced for non-compliances (critical defects) that violate the conceptual schema of the dataset (LOT) under inspection and/or obstruct the use of the reference parcel. The parcel is flagged as non-conforming, if it contains at least one critical defect.</p>
3.8	Value Type (valueType)	1 – Boolean variable

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3.9	Value Structure (valueStructure)	006 Table														
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram, Actions “E1”)														
3.11	Example (example)	<table border="1"> <thead> <tr> <th>Critical Defect</th> <th>Occurrence</th> </tr> </thead> <tbody> <tr> <td>Total absence of eligible feature</td> <td>Yes</td> </tr> <tr> <td>Invalid RP perimeter</td> <td>No</td> </tr> <tr> <td>Invalid Common RP boundary</td> <td>No</td> </tr> <tr> <td>Incomplete block</td> <td>No</td> </tr> <tr> <td>Multi-polygon</td> <td>No</td> </tr> <tr> <td>Multi-parcel</td> <td>No</td> </tr> </tbody> </table>	Critical Defect	Occurrence	Total absence of eligible feature	Yes	Invalid RP perimeter	No	Invalid Common RP boundary	No	Incomplete block	No	Multi-polygon	No	Multi-parcel	No
		Critical Defect	Occurrence													
		Total absence of eligible feature	Yes													
		Invalid RP perimeter	No													
		Invalid Common RP boundary	No													
		Incomplete block	No													
Multi-polygon	No															
Multi-parcel	No															
4 Data quality evaluation																
4.1	Date (DateTime)	yyyy-mm-dd														
4.2	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal														
4.3	Evaluation method type code(DQ_EvalMethodType Code)	002														
4.4	Evaluation method description (evaluationMethodDescription)	Annex I Continue from 3.7 3. Flag the parcel as non-conforming, if at least one critical defect is detected. NOTE: Detailed instruction (No 1) on how to detect the presence of such non-compliances at the level of the reference parcel, is provided at the end of this document														
4.5	Evaluation procedure	Refer to Annex II														
4.6	Conformance level (DQ_ConformanceLevel)	Zero presence of Critical Defects														
5 Data quality result DQ_ConformanceResult																
5.1	Specification	LPIS specification														
5.2	Explanation	One critical defect found. Reference Parcel is not conforming.														
5.3	Pass	Boolean (1=yes, 0=no)														

TABLE 7.2: RP GAC area (10102_1)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Thematic accuracy/Classification correctness of all single land cover features in scope
2	Data Quality Scope	All single land cover features, which are on the land represented by the Reference Parcel (relevant for all RPs that that can be measured and also have historical GAC limitations presented on their LUIs) (010 - Feature)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10102_1
3.2	Name (Name)	RP Historical GAC area
3.3	Alias (alias)	RP_MEA_GAC
3.4	Element name (elementName)	Thematic accuracy/Classification correctness
3.5	Basic Measure (basicMeasure)	Correct GAC area value
3.6	Definition (definition)	Observed eligible area on the land represented by the Reference Parcel, which is in good agriculture condition (GAC) on 30 of June 2003.
3.7	Description (description)	Observed eligible area for the Reference Parcels, clipped with the historical GAC mask. See Actions E1a from the Annex "Activity Diagram". Spatially intersect all single agriculture land cover features and eligible landscape features on the land represented by the Reference Parcel, which were individually mapped in measure 10102, with the vector data representing the land in GAC on 30 of June 2003 (Historical GAC mask).
3.8	Value Type (valueType)	2 - number
3.9	Value Structure (valueStructure)	square meters (m ²)
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram, Actions "E1a")
3.11	Example (example)	18000 m ²
4	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation (10102)
4.2	Date (DateTime)	yyyy-mm-dd

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4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	002
4.5	Evaluation method description (evaluationMethodDescription)	Annex I Observed eligible area for the Reference Parcels, clipped with the historical GAC mask Consult the results from the ATS (Module A_122), in order to retrieve the information and data on GAC. Calculate the eligible area from the clipped polygon area, using the information from the eligibility profile. Report the total observed eligible area for the Reference Parcel.
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	Not specified
5	Data quality result DQ_QuantitativeResult	
5.1	Value	Record
5.2	Value unit	Square meters
5.3	Explanation	18000 square meters of eligible land found on the area represented by the Reference Parcel, were actually in good agriculture conditions on 30 of June 2003..

TABLE 8: RP Area purity (10102_2)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Thematic accuracy/Quantitative attributes accuracy of all eligible land in the scope
2	Data Quality Scope	All eligible land found on the land represented by the Reference Parcel. NOTE: The measure is relevant only for those RPs that can be measured, Those RPs having areas Aobs and Arc not directly comparable (see Annex II), are not included. (009 – Feature)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10102_2
3.2	Name (Name)	RP conformance (area purity)
3.3	Alias (alias)	RP_CNF
3.4	Element name (elementName)	Thematic accuracy/Quantitative attributes accuracy
3.5	Basic Measure (basicMeasure)	Correct items rate
3.6	Definition (definition)	Correctness of the eligible area recorded for the Reference Parcel, in respect to the eligible area observed.
3.7	Description (description)	Percentage of the eligible area observed with respect to the area recorded in the attribute table of the Reference Parcel
3.8	Value Type (valueType)	4 – percentage and 2 - number
3.9	Value Structure (valueStructure)	V1=Percent (%), V2=square meters (m ²)
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram, Actions “E2”)
3.11	Example (example)	V1: 95.00% and V2: 675m ² 13 500 square meters recorded eligible in the attribute table of the Reference Parcel. 12 825 square meters found to be eligible.
4	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation, aggregation and conforming (10102, 10102_1, 10104_2)
4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directInternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	001
4.5	Evaluation method description	Annex I Percentage of the eligible area observed with respect to the

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	(evaluationMethodDescription)	<p>eligible area recorded in the attribute table of the Reference Parcel.</p> <p>NOTE: In order to calculate the eligible area found, sum up the values derived in 10102 (or 10102_1 if appropriate) and 10104_2. See Actions E2 from the Annex "Activity Diagram". Compare the sum of square meters found eligible with respect to those recorded as eligible in the attribute table of the Reference Parcel. Sum up the area found to be eligible - Aobs. Then: 1. Divide the result (Aobs) by the area recorded as eligible in the attribute table of the Reference Parcel (Arec). Multiply by 100. Report the value. (v1) Subtract (Aobs) from the area recorded as eligible in the attribute table of the Reference Parcel (Arec). Report the value (v2)</p>
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	<p>a) For Reference parcels with area recorded greater than 5000m².</p> <ul style="list-style-type: none"> • (v1) more than 97.00 % and less than (or equal to) 103.00 % AND • (v2) Not greater than 10 000 m². <p>b) For Reference parcels with area recorded between (or equal to) 2000m² and 5000 m².</p> <ul style="list-style-type: none"> • (v1) more than 95.00 % and less than (or equal to) 105.00 % <p>c) For Reference parcels with area recorded less than 2000 m².</p> <ul style="list-style-type: none"> • (v1) more than 93.00 % and less than (or equal to) 107.00 %
5	Data quality result DQ_ConformanceResult	
5.1	Specification	LPIS specification
5.2	Explanation	Less than 97.00% of the square meters recorded as eligible in the attribute table of the Reference Parcel, are found as eligible. Reference Parcel fails.
5.3	Pass	Boolean (1=yes, 0=no)

TABLE 8.2: RP "contaminated" Reference Parcels(10102_3)

	Data quality components	Value/Example/Description																												
1	Data Quality Unit	Completeness/Commission of all land cover features in scope																												
2	Data Quality Scope	All land cover features, which are on the land represented by the Reference Parcel. NOTE: The measure is applicable only for those RPs found to be conformant in respect to quality measure 10102_2 (009 - Feature)																												
3	Data quality measure																													
3.1	Measure identifier (measureIdentifier)	10102_3																												
3.2	Name (Name)	RP Conformance ("Contaminated" reference parcel)																												
3.3	Alias (alias)	RP_CNT																												
3.4	Element name (elementName)	Completeness/Commission																												
3.5	Basic Measure (basicMeasure)	Error indicator																												
3.6	Definition (definition)	Occurrence of non-agriculture land cover features on the land represented by the Reference Parcel (if the parcel is found to be conformant in respect to 10102_2), which violate the relevant general and local ETS conditions for each of the pre-defined waivers.																												
3.7	Description (description)	Table indicating the presence (occurrence) of non-agriculture land cover features by type (as is defined by measure 10105), on the LUI and the conformance status of the Reference Parcel in respect to that "contamination". The parcel is flagged as non-conforming, if at least one occurrence of ineligible feature remains "unwaivered". (see Detailed Instruction 2).																												
3.8	Value Type (valueType)	1 - Boolean variable																												
3.9	Value Structure (valueStructure)	6 - Table																												
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure - Annex II, explanation of the Activity Diagram, Actions "E3")																												
3.11	Example (example)	<table border="1"> <thead> <tr> <th>Non-agriculture land cover</th> <th>Contamination</th> <th>Waivered</th> <th>Waiver</th> </tr> </thead> <tbody> <tr> <td>Artificial sealed surface and associated areas</td> <td>Yes</td> <td>Yes</td> <td>C</td> </tr> <tr> <td>Forest and Woodland</td> <td>Yes</td> <td>Yes</td> <td>C</td> </tr> <tr> <td>Scrubland</td> <td>Yes</td> <td>Yes</td> <td>C</td> </tr> <tr> <td>Water Bodies</td> <td>No</td> <td></td> <td></td> </tr> <tr> <td>Natural Bare areas</td> <td>Yes</td> <td>Yes</td> <td>C</td> </tr> <tr> <td>Waterlogged Vegetation</td> <td>No</td> <td></td> <td></td> </tr> </tbody> </table>	Non-agriculture land cover	Contamination	Waivered	Waiver	Artificial sealed surface and associated areas	Yes	Yes	C	Forest and Woodland	Yes	Yes	C	Scrubland	Yes	Yes	C	Water Bodies	No			Natural Bare areas	Yes	Yes	C	Waterlogged Vegetation	No		
Non-agriculture land cover	Contamination	Waivered	Waiver																											
Artificial sealed surface and associated areas	Yes	Yes	C																											
Forest and Woodland	Yes	Yes	C																											
Scrubland	Yes	Yes	C																											
Water Bodies	No																													
Natural Bare areas	Yes	Yes	C																											
Waterlogged Vegetation	No																													

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4	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation and conforming (10102_2, 10105)
4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directInternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	001
4.5	Evaluation method description (evaluationMethodDescription)	<p>Annex I</p> <ol style="list-style-type: none"> 1. See Actions E3 from the Annex "Activity Diagram" If the Reference Parcel is found to be conformant in respect to 10102_2, take the value for the abundance of non-agriculture land cover features per land cover type, from the reporting table of quality measure 10105. Flag the "Reference parcel as "contaminated" if for any of the given types, the value is other than 0. Use the information provided from the ATS and the predefined list of acceptable waivers, (given in Detailed instruction 2) to vindicate the presence of such observed anomalies for that reference parcel. 2. Report the presence of an applicable waiver (if any). 3. Flag the parcel as non-conforming, if at least one occurrence of ineligible feature remains "unwaivered".
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	Absence of "unwaivered" occurrence of ineligible feature.
5	Data quality result	
	DQ_ConformanceResult	
5.1	Specification	LPIS specification
5.2	Explanation	Example: Reference parcel is "contaminated" Reference parcel is "contaminated", but there is no presence of "unwaivered" occurrence of ineligible features. Reference Parcel is conforming.
5.3	Pass	Boolean (1=yes, 0=no)

TABLE 9: RP cause of non-conformity (10107)

	Data quality components	Value/Example/Description	
1	Data Quality Unit	Completeness/Commission of non-conforming Reference Parcels in scope	
2	Data Quality Scope	Each non-conforming Reference Parcels, which take part of the QC sample, as identified in measures 10106, 10102_2 and 10102_3 (009 – Feature)	
3	Data quality measure		
3.1	Measure identifier (measureIdentifier)	10107	
3.2	Name (Name)	Categorization of the non-conforming reference parcels (derived from 10106, 10102_2 and 10102_3), in the LPIS	
3.3	Alias (alias)	RP_CEA	
3.4	Element name (elementName)	Completeness/Commission	
3.5	Basic Measure (basicMeasure)		
3.6	Definition (definition)	Categorization of the non-conforming Reference Parcel, based on the potential cause for the non-conformity	
3.7	Description (description)	Table, which verifies the occurrence of the initially pre-defined causes for the presence of the detected problem in the observed non-conforming Reference Parcel. At least one cause should be selected.	
3.8	Value Type (valueType)	6 – Table	
3.9	Value Structure (valueStructure)	6 - Table	
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram, Actions “E4”)	
3.11	Example (example)	Causes for occurrence of non-conformity in the Reference Parcels	Occurrence
		Changes of the underlying land where not applied	Yes
		Revisions of the Regulations were not applied	No
		Incomplete processing	No
		Erroneous processing	No
		Incomplete LPIS design	No
		Observed eligible area is not in GAC on 30 of June 2003	No

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4	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation and aggregation (10106, 10102_2, 10102_3)
4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	002
4.5	Evaluation method description (evaluationMethodDescription)	<p>Annex I See Actions E4 from the Annex "Activity Diagram". Assign to each non-conforming Reference Parcel, one or more given pre-defined causes, starting from the first cause listed at the top and going sequentially to the last one at the bottom. Consult the LPIS data Model and the results from the ATS, wherever is needed</p> <p>A Detailed Instruction 3 on the categorization of the non-conformant parcels is given at the end of this document.</p>
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	Not specified
5	Data quality result DQ_QuantitativeResult	
5.1	Value	Record
5.2	Value unit	Number
5.3	Explanation	The Reference Parcel has 1 cause for the presence of the non-conformity – land changes are not applied. Since conformance quality level is not specified, only the values are reported.

4. Data consolidation and analysis at LPIS sample level

The following 9 tables describe the measures related to the data consolidation and analysis at LPIS sample level.

TABLE 10: LPIS eligible area (10201)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Thematic accuracy/Quantitative attribute accuracy of all Reference parcels in scope
2	Data Quality Scope	All Reference Parcels, which are part of the QC sample, minus RPs that were not measured (005 – Dataset)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10201
3.2	Name (Name)	LPIS maximum eligible area
3.3	Alias (alias)	LPIS_RP_MEA
3.4	Element name (elementName)	Thematic accuracy/Quantitative attribute accuracy
3.5	Basic Measure (basicMeasure)	Correct items rate
3.6	Definition (definition)	Rate of correct eligible hectares found with respect to the total number of eligible hectares currently recorded in the LPIS.
3.7	Description (description)	No measures. For further analysis use values derived in 10102 (or 10102_1, if appropriate) and 10104_2. Percentage of the eligible hectares as observed, with respect to all eligible hectares recorded.
3.8	Value Type (valueType)	4 – Percentage
3.9	Value Structure (valueStructure)	Number (%)
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram)
3.11	Example (example)	96.60%
4	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation, aggregation and conformity (10102, 10102_1, 10104_2)
4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal

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4.4	Evaluation method type code(DQ_EvalMethodType Code)	002
4.5	Evaluation method description (evaluationMethodDescription)	<p>Annex I Percentage of the eligible hectares as observed, with respect to all eligible hectares recorded.</p> <p>For all parcels in DQ_scope,</p> <ol style="list-style-type: none"> i. Calculate the eligible hectares found by sum up the values derived in 10102 (or 10102_1, if appropriate) and 10104_2. ii. Calculate the ratio between the sum of hectares found during the ETS and the sum of area recorded in the LPIS <ol style="list-style-type: none"> a. Sum up all eligible hectares found. b. Divide the result by the hectares recorded for the Reference Parcels, which are part of the QC sample. c. Multiply by 100.
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	The differences between eligible land and recorded land in the LPIS cumulated over the sample should be less or equal to 2.00% ($\geq 98.00\%$ and $\leq 102.00\%$).
5	Data quality result DQ_ConformanceResult	
5.1	Specification	Discussion document
5.2	Explanation	<p>3 500 000 ha recorded eligible for all Reference Parcels, which are part of the QC sample. 3.380 000 ha found to be eligible. This results in 96.60% of the eligible hectares recorded in LPIS that are truly eligible.</p> <p>Less than 98 % of the eligible hectares recorded in LPIS are actually found to be eligible. LPIS fails to be compliant with this particular quality element.</p>
5.3	Pass	Boolean (1=yes, 0=no)

TABLE 10.2: LPIS lower and upper interval boundaries (10201_2)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Thematic accuracy/Quantitative attribute accuracy of all Reference parcels in scope
2	Data Quality Scope	All Reference Parcels, which are part of the QC sample, minus RPs that were not measured (005 – Dataset)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10201_2
3.2	Name (Name)	LPIS maximum eligible area – overestimates and underestimates
3.3	Alias (alias)	LPIS_RP_MEA_B
3.4	Element name (elementName)	Thematic accuracy/Quantitative attribute accuracy
3.5	Basic Measure (basicMeasure)	Area of incorrect items rate
3.6	Definition (definition)	One-sided probability boundary of the rates of the eligible hectares that indicate overestimations and underestimations found with respect to the total number of eligible hectares currently recorded in the LPIS.
3.7	Description (description)	For further analysis use values derived in 10102 (or 10102_1, if appropriate) and 10104_2. Percentage of the overestimate eligible hectares as observed, with respect to all eligible hectares recorded.
3.8	Value Type (valueType)	4 – Percentage
3.9	Value Structure (valueStructure)	LIB: Percent (%), UIB: Percent (%)
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram)
3.11	Example (example)	LIB=7.26% , UIB=0.56%
	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation, aggregation and conformity (10102, 10102_1, 10104_2)
4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	002
4.5	Evaluation method description	Annex I Boundary of the confidence interval of the percentage of

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	(evaluationMethodDescription)	<p>the overestimate eligible hectares as observed, with respect to all eligible hectares recorded.</p> <p>For all parcels in DQ_scope,</p> <ol style="list-style-type: none"> d. Sum up all eligible hectares found. e. Divide the result by the hectares recorded for the Reference Parcels, which are part of the QC sample, multiply by 100. f. Compute the relative discrepancy g. Select <ul style="list-style-type: none"> • Overestimate parcels with discrepancy <-3% • Underestimate parcels with discrepancy >3% h. Separately sum up area discrepancies for overestimates and underestimate parcels i. Divide the two sums by the sum of recorded area to compute the overestimate error rate (OER) and underestimate error rate (UER) j. Compute the differences between observed overestimation / underestimation and the parcel's estimated overestimation, / underestimation (note: both sums of these differences have to be zero) k. Evaluate the OER's and UER's variability by calculating the standard deviation of the previously calculated differences between observations and estimations. l. Compute boundaries <ul style="list-style-type: none"> • LIB (lower interval boundary as [LIB = OER - z*stdev(OER)] (z=1.6449, i.e. 95% quantile of the normal distribution • UIB (upper interval boundary as [UIB = UER + z*stdev(UER)] (z=1.6449, i.e. 95% quantile of the normal distribution m. Compare LIB with -2% and UIB with 2%
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	<p>The LIB of the overestimation should be higher or equal to -2.00%.</p> <p>The UIB of the underestimation should be lower or equal to 2.00%</p>
5	<p>Data quality result DQ_ConformanceResult</p>	
5.1	Specification	Discussion document
5.2	Explanation	<p>The lower interval boundary of the overestimate error rate represents the worst (lowest), but possible, value for the system under inspection based on independent measurements of the sample. Its value must remain well above the material error of -2%.</p> <p>The upper interval boundary of the underestimate error rate represents the worst (highest), but possible, value for the system under inspection based on independent measurements of the sample. Its value must remain well below the material error of 2%.</p> <p>A conforming system must pass both conditions.</p>
5.3	Pass	Boolean (1=yes, 0=no)

TABLE 11: LPIS area based non-conforming RP (10202)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Thematic accuracy/Non-quantitative attribute correctness of all Reference Parcels in scope
2	Data Quality Scope	All Reference Parcels, which are part of the QC sample, minus RPs that were not measured, minus RPs having referenceArea that is not directly comparable (see Annex II). (005 - Dataset)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10202
3.2	Name (Name)	Number of non-conforming reference parcels in LPIS
3.3	Alias (alias)	LPIS_RP_NEA
3.4	Element name (elementName)	Thematic accuracy/Non-quantitative attribute correctness
3.5	Basic Measure (basicMeasure)	Error count
3.6	Definition (definition)	Number of area-based non-conforming Reference Parcels (as identified in measures 10102_2 and 10102_3) in respect to all Reference Parcel from the DQ_Scope.
3.7	Description (description)	No measures. Use the values from 10102_2 and 10102_3 Total number of non-conforming Reference Parcels derived from measures 10102_2 and 10102_3 compared to the total number of Reference Parcel from the DQ_Scope.
3.8	Value Type (valueType)	2 - Number
3.9	Value Structure (valueStructure)	"Number" out of "number"
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure - Annex II, explanation of the Activity Diagram)
3.11	Example (example)	178 out of 1250
4	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation, aggregation and conformity (10102_2, 10102_3)
4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code(DQ_EvalMethodType)	002

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	Code)	
4.5	Evaluation method description (evaluationMethodDescription)	<p>Anex I For all parcels in DQ_scope,</p> <ol style="list-style-type: none"> 1. Count and report (nominator) the number of non-conforming Reference Parcels (as identified in measures 10102_2 and 10102_3) 2. Count and report the total number of Reference Parcels as denominator <p>NOTE: Area based non-conforming reference parcels are those parcels, allowing undue payment on ineligible land or excluding agricultural land, above the given threshold, as well as those "contaminated" with ineligible features.</p>
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	The proportion parcels with an incorrect recorded area should not exceed 5 %, expressed as Limiting Quality (LQ) of 12.5.
5	Data quality result DQ_ConformanceResult	
5.1	Specification	Discussion document
5.2	Explanation	More than 18 Reference Parcels out of 200 (or 112/1250) are non-conforming. The LPIS fails to be conforming. A LPIS has 1,550,645 reference parcels: a sample of 200 with acceptance number of 18 is prescribed. As 1250 were actually inspected and measured, the equivalent acceptance number becomes 112 ($=1250 \cdot 18 / 200$, truncated). 178 non-conforming parcels were identified.
5.3	Pass	Boolean (1=yes, 0=no)

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TABLE 11.2: LPIS area based non-conforming RP larger than 0.1 ha (10202_2)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Thematic accuracy/Non-quantitative attribute correctness of all Reference Parcels in scope
2	Data Quality Scope	All Reference Parcels, which are part of the QC sample, minus RPs that were not measured, minus RPs having referenceArea that is not directly comparable (see Annex II). (005 – Dataset)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10202_2
3.2	Name (Name)	Number of non-conforming reference parcels in LPIS with Reference Area larger than 0.10 ha.
3.3	Alias (alias)	LPIS_RP_NEA_B
3.4	Element name (elementName)	Thematic accuracy/Non-quantitative attribute correctness
3.5	Basic Measure (basicMeasure)	Error count
3.6	Definition (definition)	Number of area-based non-conforming Reference Parcels (as identified in measures 10102_2 and 10102_3), with area recorded bigger than or equal to 0.1 ha in respect to all Reference Parcel from the DQ_Scope.
3.7	Description (description)	No measures. Use the values from 10102_2 and 10102_3. Total number of non-conforming Reference Parcels derived from measures 10102_2 and 10102_3, with reference area (area recorded) bigger than or equal to 0.1 ha, compared to the total number of Reference Parcels from the DQ_Scope. NOTE: Area based non-conforming reference parcels are those parcels, allowing undue payment on ineligible land or excluding agricultural land, above the given threshold, as well as those “contaminated” with ineligible features.
3.8	Value Type (valueType)	2 – Number
3.9	Value Structure (valueStructure)	“Number” out of “number”
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram).
3.11	Example (example)	108 out 1250
4	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation, aggregation and conformity (10102_2, 10102_3)

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4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	002
4.5	Evaluation method description (evaluationMethodDescription)	Annex I For the parcels in DQ_scope: <ol style="list-style-type: none"> 1. Count and report the number of non-conforming Reference Parcels (as identified in measures 10102_2 and 10102_3) with recorded reference area larger than or equal to 0.1 ha (nominator) 2. Count and report the total number of Reference Parcels, as denominator
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	The proportion parcels with an incorrect recorded area should not exceed 5 %, expressed as Limiting Quality (LQ) of 12.5.
5	Data quality result DQ_ConformanceResult	
5.1	Specification	Discussion document
5.2	Explanation	Less than 18 Reference Parcels out of 200 (or 112/1250) are non-conforming. The LPIS is conforming. A LPIS has 1,550,645 reference parcels: a sample of 200 with acceptance number of 18 is prescribed. 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 were identified.
5.3	Pass	Boolean (1=yes, 0=no)

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TABLE 12: LPIS eligibility rates (10203) – E

	Data quality components	Value/Example/Description																																
1	Data Quality Unit	Thematic accuracy/Quantitative attribute correctness of all Reference Parcels in scope																																
2	Data Quality Scope	All Reference Parcels, which are part of the QC sample, minus RPs that were not measured, minus RPs having referenceArea that is not directly comparable (see Annex II). (005 – Dataset)																																
3	Data quality measure																																	
3.1	Measure identifier (measureIdentifier)	10203																																
3.2	Name (Name)	Distribution of the reference parcels in LPIS, according to the correctness of the eligible area recorded.																																
3.3	Alias (alias)	LPIS_RP_SEA																																
3.4	Element name (elementName)	Thematic accuracy/Quantitative attribute correctness																																
3.5	Basic Measure (basicMeasure)	Error rate																																
3.6	Definition (definition)	Distribution of the Reference Parcels, according to the correctness of the eligible area recorded.																																
3.7	Description (description)	Distribution of the Reference Parcels, according to the correctness of the eligible area recorded (in respect to the eligible area observed).																																
3.8	Value Type (valueType)	6 – Table																																
3.9	Value Structure (valueStructure)	Table																																
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram)																																
3.11	Example (example)		<table border="1"> <thead> <tr> <th>Difference between eligible area observed and eligible area recorded in the RPs [%]</th> <th>% of RP</th> </tr> </thead> <tbody> <tr><td><= -50</td><td>1</td></tr> <tr><td>(-50; -20]</td><td>2.5</td></tr> <tr><td>(-20; -12]</td><td>1.2</td></tr> <tr><td>(-12; -8]</td><td>1</td></tr> <tr><td>(-8; -4]</td><td>3.1</td></tr> <tr><td>(-4; -2]</td><td>15</td></tr> <tr><td>(-2; 0]</td><td>34</td></tr> <tr><td>(0; 2]</td><td>44</td></tr> <tr><td>(2; 4]</td><td>14.6</td></tr> <tr><td>(4; 8]</td><td>15.1</td></tr> <tr><td>(8; 12]</td><td>7.21</td></tr> <tr><td>(12; 20]</td><td>2.09</td></tr> <tr><td>(20; 50]</td><td>5</td></tr> <tr><td>>50</td><td>1.3</td></tr> </tbody> </table>	Difference between eligible area observed and eligible area recorded in the RPs [%]	% of RP	<= -50	1	(-50; -20]	2.5	(-20; -12]	1.2	(-12; -8]	1	(-8; -4]	3.1	(-4; -2]	15	(-2; 0]	34	(0; 2]	44	(2; 4]	14.6	(4; 8]	15.1	(8; 12]	7.21	(12; 20]	2.09	(20; 50]	5	>50	1.3	
Difference between eligible area observed and eligible area recorded in the RPs [%]	% of RP																																	
<= -50	1																																	
(-50; -20]	2.5																																	
(-20; -12]	1.2																																	
(-12; -8]	1																																	
(-8; -4]	3.1																																	
(-4; -2]	15																																	
(-2; 0]	34																																	
(0; 2]	44																																	
(2; 4]	14.6																																	
(4; 8]	15.1																																	
(8; 12]	7.21																																	
(12; 20]	2.09																																	
(20; 50]	5																																	
>50	1.3																																	
4	Data quality evaluation																																	
4.1	DQ_AggregationDerivation	Derivation and aggregation (10102, 10102_2)																																

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4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	002
4.5	Evaluation method description (evaluationMethodDescription)	<p>Annex I</p> <p>For the parcels in DQ_scope, classify the Reference Parcels according to the degree of deviation of the area recorded from its observed value.</p> <ol style="list-style-type: none"> 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 the area recorded, and the total number of Reference Parcels. <ol style="list-style-type: none"> a. For each Reference Parcel in the DQ_Scope, take the value (v2) from 10102_2 and divide it by the area recorded: (Aobs-Arec)/Arec b. Then, <ol style="list-style-type: none"> i. i. Sum up the Reference Parcels that belong to a first signed range ii. ii. Divide the result by the total number of Reference Parcels in the DQ_Scope iii. iii. Multiply by 100. iv. iv. Continue with the next pre-defined range and do steps i-iii, until the histogram is completed. <p>Note: For Reference parcel having Recorded Area set to zero the deviation is reported as follows:</p> <ul style="list-style-type: none"> • ">50%" for RPs having RP_MEA > 0 • "0-2%" for RPs having RP_MEA = 0
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	There is no specified conformance threshold for the distribution; the distribution primarily serves as a source of information.
5	Data quality result DQ_QuantitativeResult	
5.1	Value	Record (table)
5.2	Value unit	Percent
5.3	Explanation	Since conformance quality level is not specified, only the values are reported

TABLE 13: LPIS number of causes for non-conformity (10204)

	Data quality components	Value/Example/Description	
1	Data Quality Unit	Thematic accuracy/Non quantitative attribute correctness of all identified non-conforming Reference Parcels in scope	
2	Data Quality Scope	All identified non-conforming Reference Parcels found, which take part of the QC sample. (005 – Dataset)	
3	Data quality measure		
3.1	Measure identifier (measureIdentifier)	10204	
3.2	Name (Name)	Abundance of the causes for occurrence of non-conforming reference parcels (derived from 10107).	
3.3	Alias (alias)	LPIS_RP_CEA	
3.4	Element name (elementName)	Thematic accuracy/Non quantitative attribute correctness	
3.5	Basic Measure (basicMeasure)		
3.6	Definition (definition)	Abundance of the causes for occurrence of non-conforming reference parcels (derived from 10107).	
3.7	Description (description)	Table showing the number of non-conforming reference parcels affected by a given causes, as derived from 10107.	
3.8	Value Type (valueType)	2 – Number	
3.9	Value Structure (valueStructure)	Table	
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram).	
3.11	Example (example)	Causes for occurrence of non-conformity in the Reference Parcels	Number of non-conforming Reference Parcels, affected by a given cause
		Changes of the underlying land were not applied	25 out of 315
		Revisions of the Regulation were not applied	0 out of 315
		Incomplete processing	15 out of 315
		Erroneous processing	3 out of 315
		Incompatible LPIS design	0 out of 315
		Observed eligible area is not in GAC on 30 of June 2003	0 out of 315
4	Data quality evaluation		
4.1	DQ_AggregationDerivation	Derivation and conformity (10107)	
4.2	Date (DateTime)	yyyy-mm-dd	

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4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	002
4.5	Evaluation method description (evaluationMethodDescription)	Annex I For all parcels in DQ_Scope and for each predefined cause: 1. Count and report the number of non-conforming (nominator) reference parcels affected by the given causes, as derived from 10107. 2. Report the total number of <u>inspected</u> Reference Parcels as denominator.
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	Apart from the regulatory ban (last cause), none of the above categories should affect more than 5 percent of the parcels, expressed as Limiting Quality (LQ) of 12.5.
5	Data quality result DQ_ConformanceResult	
5.1	Specification	Discussion document
5.2	Explanation	The count for the first cause '25" is equal to 25. The LPIS is conforming. A LPIS has 34.257 reference parcels: a sample of 125 parcels with acceptance number of 10 is prescribed. However 315 were actually inspected, corresponding to an acceptance number of 25 (=315*10/125, truncated). During inspection 25, 15and 3 non-conforming parcels were found for separate causes.
5.3	Pass	Boolean (1=yes, 0=no)

TABLE 14: LPIS critical defects (10205)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Completeness/Commission of all Reference parcels in scope
2	Data Quality Scope	All Reference Parcels, which are part of the QC sample (005 – Dataset)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10205
3.2	Name (Name)	LPIS critical defects
3.3	Alias (alias)	LPIS_RP_CRA
3.4	Element name (elementName)	Completeness/Commission
3.5	Basic Measure (basicMeasure)	Number of commissions
3.6	Definition (definition)	Total number of Reference Parcels that have critical defects.
3.7	Description (description)	Abundance of Reference Parcels with critical defects (number of commissions).
3.8	Value Type (valueType)	2 – Number
3.9	Value Structure (valueStructure)	“Number” out of “number”
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram).
3.11	Example (example)	1 out of 800
4	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation and conformity (10106)
4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code DQ_EvalMethodTypeCode	002
4.5	Evaluation method description evaluationMethodDescription	Annex I For the parcels in DQ_scope, 1. Count and report the number of Reference Parcels having critical defects (nominator), as derived from measure 10106. 2. Report the total number of reference Parcels as

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		<u>denominator</u>
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	Critical defects should not affect more than 1 percent of the parcels, expressed as Limiting Quality (LQ) of 2.
5	Data quality result DQ_ConformanceResult	
5.1	Specification	Discussion document
5.2	Explanation	An LPIS has 469,421 reference parcels: a sample of 800 parcels with acceptance number of 10 is prescribed. During inspection 1 non-conforming parcel is found. Less than 10 reference parcels out of 800 have critical defects. The LPIS is conforming.
5.3	Pass	Boolean (1=yes, 0=no)

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TABLE 15: LPIS declared area (10206)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Thematic accuracy/Quantitative attribute accuracy of all parcels in scope
2	Data Quality Scope	All parcels with areas [ha] declared in year N, Any inspected RP minus RPs that cannot be measured, minus RPs who fail RP_CNF/RP_CNT Note: <i>in 2011, also minus RP with incomparable area.</i> (005 – Dataset)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10206
3.2	Name (Name)	LPIS total declared area
3.3	Alias (alias)	LPIS_RP_DCA
3.4	Element name (elementName)	Thematic accuracy/Quantitative attribute accuracy
3.5	Basic Measure (basicMeasure)	Correct items rate
3.6	Definition (definition)	Rate of the declared hectares in year N with respect to the total number of eligible hectares recorded in LPIS for the RPs in the DQ_Scope: <i>NOTE: the DQ_scope identifies only parcels that are area-based conformant, so this is not "an IACS-only" but a true ETS measure</i>
3.7	Description (description)	Percentage of the eligible hectares declared in year N, with respect to all eligible hectares recorded in the LPIS.
3.8	Value Type (valueType)	4 - percentage
3.9	Value Structure (valueStructure)	V1: Percent (%), V2: Percent (%)
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram).
3.11	Example (example)	V1: 84% AND V2: 91%
4	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation and aggregation (10202 and 10202_2)
4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directInternal
4.4	Evaluation method type code(DQ_EvalMethodType)	001

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	Code)	
4.5	Evaluation method description (evaluationMethodDescription)	Annex I 1. For the parcels in DQ_scope, calculate and report the ratio between the sum of hectares declared in year N and the sum of area recorded in LPIS.(v1) 2. Report the same rate for the whole IACS (as defined in Article 84.1.b of Reg. 1122/2009. NB, the "maximum eligible area" should be used).(v2)
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	There is no specified conformance threshold.
5	Data quality result DQ_QuantitativeResult	
5.1	Value	Record (number)
5.2	Value unit	Percent
5.3	Explanation	Since conformance quality level is not specified, only the values are reported. The ETS has assessed that 1152 area conforming reference parcels correctly record 155.257 ha of eligible area between them. These very parcels supported a declaration total of 130.416 ha. This means that 84% of the eligible hectares are effectively declared. The same rate for the whole IACS is reported to be 91%

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TABLE 16: LPIS cumulative land changes (10207)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Completeness/Commission of all identified non-conforming Reference Parcels found in scope
2	Data Quality Scope	All identified non-conforming Reference Parcels found, which take part of the QC sample. (005 – Dataset)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10207
3.2	Name (Name)	LPIS cumulative land changes
3.3	Alias (alias)	LPIS_RP_CMC
3.4	Element name (elementName)	Completeness/Commission
3.5	Basic Measure (basicMeasure)	Error rate
3.6	Definition (definition)	Cumulative rate of undetected parcel change due to permanent physical changes of the land cover that has an impact on the eligibility.
3.7	Description (description)	Cumulated rate of non-conforming reference parcel due to undetected or unaccounted land cover changes, as observed in ETS, counting from the year the LPIS was last systematically verified. It is calculated by adding up, year after year, the non-conforming reference parcel due to undetected or unaccounted land cover changes as found during the annual ETS inspection.
3.8	Value Type (valueType)	4 - percentage
3.9	Value Structure (valueStructure)	Percent (%)
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure – Annex II, explanation of the Activity Diagram).
3.11	Example (example)	35%
4	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation and conformity (10204)
4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	002

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4.5	Evaluation method description (evaluationMethodDescription)	<p>Annex I</p> <ol style="list-style-type: none"> 1. Report the number of non-conforming reference parcels assigned with the cause "Changes of the underlying land were not applied", as defined in 10204 per LPIS control zone. 2. Determine the annual rate (in percentage) of these non-conforming reference parcels per zone by dividing by the total number of <u>inspected</u> reference parcels, which are part of the LPIS QA sample of any given zone and by the number of years since the last systematic update of that zone. 3. Average the overall annual change rate over all LPIS control zones 4. Add to the cumulated rate from all previous years, starting from the year of the last systematic update of the LPIS. 5. Report the cumulative rate <p>NOTE: If parts (subzones) of a given LPIS control zone were systematically updated in different years, then step 2 is changed in the following way:</p> <ol style="list-style-type: none"> a. Determine the annual rate (in percentage) of the non-conforming reference parcels per subzone by dividing by the total number of inspected reference parcels, which are part of the LPIS QA sample of any given subzone and by the number of years since the last systematic update of that subzone. b. Average the overall annual change rate over all subzones, belonging to the LPIS control zone
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	The cumulative rate of parcel change rate shall not exceed 25 percent, counting from the year the parcels were last systematically verified.
5	Data quality result DQ_ConformanceResult	
5.1	Specification	Discussion document
5.2	Explanation	<p>The cumulative rate of parcel change due to land change is more than 25% as from 2012. LPIS fails to be conforming.</p> <p>2010: 12% - cumulated: 12% 2011: 12% - cumulated: 24% 2012 : 11% - cumulated: 35%</p> <p>The cumulative rate of parcels affected by land change is 35 %.</p>
5.3	Pass	Boolean (1=yes, 0=no)

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TABLE 17: OTSC rate of irregularities (10208)

	Data quality components	Value/Example/Description
1	Data Quality Unit	Completeness/Commission of all aid applications in scope
2	Data Quality Scope	All aid applications of the current year, inspected under the OTSC 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. (005 - Dataset)
3	Data quality measure	
3.1	Measure identifier (measureIdentifier)	10208
3.2	Name (Name)	OTSC rate of irregularities
3.3	Alias (alias)	OTSC_RIG
3.4	Element name (elementName)	Completeness/Commission
3.5	Basic Measure (basicMeasure)	Error rate
3.6	Definition (definition)	Effect of the LPIS quality on the rate of irregular applications from the DQ_Scope.
3.7	Description (description)	See Detailed Description 4 for the exact procedure.
3.8	Value Type (valueType)	2 - number
3.9	Value Structure (valueStructure)	Number
3.10	Source Reference (sourceReference)	Citation (the citation of the documentation of the measure - Annex II, explanation of the Activity Diagram).
3.11	Example (example)	0.0155
4	Data quality evaluation	
4.1	DQ_AggregationDerivation	Derivation, aggregation and conformity (10106, 10102_1, 10102_3)
4.2	Date (DateTime)	yyyy-mm-dd
4.3	Evaluation method type (DQ_EvaluationMethod)	(001 directInternal, 002 directExternal, 003 indirect) - directExternal
4.4	Evaluation method type code(DQ_EvalMethodType Code)	002
4.5	Evaluation method description (evaluationMethodDescripti	Annex I Follow the Instruction given in Detailed Instruction 4.

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	on)	
4.6	Evaluation procedure	Refer to Annex II
4.7	Conformance level (DQ_ConformanceLevel)	The probability value should be bigger than 0.05
5	Data quality result DQ_ConformanceResult	
5.1	Specification	Discussion document
5.2	Explanation	The probability value (p) is less than 0.05. The LPIS is non-conforming as the LPIS non conformities do significantly affect the rate of irregular applications
5.3	Pass	Boolean (1=yes, 0=no)

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5. DETAILED INSTRUCTION 1: Definitions and conditions for occurrence of critical defect.

The ETS reports the types of potential critical defect given in Table A1, if the inspection observes the specified local ground conditions. The occurrence of one or more critical defects renders a reference parcel non-conforming.

Table A1

Critical Defect	Local Ground Conditions
Total absence of eligible features (or land)	<p>Applicable only for reference parcels, holding "non zero" maximum eligible area (ReferenceArea).</p> <p>Total lack of agriculture land cover, which might represent eligible land on the area represented by the Reference Parcel.</p> <p><i>The total absence of eligible land indicates an evident problem.</i></p>
Invalid RP perimeter	<p>Applicable only for reference parcels that cannot be measured and have non-agricultural elements within 5m of the LUI boundary</p> <ul style="list-style-type: none"> • 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. <p><i>These parcels are virtual and so irrelevant for land administration.</i></p> <p><i>Note: Invalid RP perimeter is NOT applicable when the RP polygon can be copied due to absence of non-agri element within the RP buffer.</i></p>
Invalid common RP boundaries	<p>Applicable only for physical and topographic block systems (PB, TB),</p> <ul style="list-style-type: none"> • 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. <p><i>These parcels represent sub-parcels of larger units.</i></p>
Incomplete block	<p>Applicable only for (production) block systems (AP/FB/TB//PB)</p> <ul style="list-style-type: none"> • 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. • 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. <p><i>These parcels prevent the neighbouring, potentially eligible land, land from being declared.</i></p> <p>NOTE: The presence of a neighbouring reference parcel is not restricted to parcels</p>

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	within the scope of the current assessment year.
Multi-polygon	<p>Applicable only for (production) block systems (AP/FB/TB//PB)</p> <p>A multi-polygon is a situation where one block (i.e. one RP identifier for is actually composed of two or more disjoint polygons.</p> <p><i>The issue with multi-polygon is that it does not allow unambiguous location of the agricultural activity, even if managed by the same farmer.</i></p> <p>NOTE: Internal or adjacent polygons representing sub-divisions in a single production block are not multi-polygon defects.</p>
Multi-parcel	<p>Applicable only for (production) block systems (AP/FB/TB//PB)</p> <p>The inspected reference parcels 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).</p> <p><i>The issue with multi-parcel is that it spreads or "blurs" the information over several land units, adversely effecting land identification and land use accuracy.</i></p>

6. DETAILED INSTRUCTION 2: Application of waivers, which can vindicate a reference parcel contaminated by ineligible features.

The Commission issues the following waivers and Member States may choose to activate these waivers to vindicate an observed contamination of the LUI by one or more ineligible features.

- The waivers are RType independent; all RTypes can apply the waiver, if all waiver conditions are met.
- General conditions are assessed at LPIS level during the time of ATS and indicated in the ICS (together with the eligibility profile).
- Local conditions are assessed during ETS of the parcel with an observed contamination. The fulfilment of the conditions can be screened.
- As a result, for these instructions one must interpret:
 - “Verify that”: verification of conditions to be done once at the LPIS level (ATS)
 - “Check that”: checking of conditions to be done at the parcel level (during ETS inspection)
- Waiver C essentially requires documentation indicating that the contamination inside the LUI was known and dealt with appropriately.

Table B

Waiver	General condition	Local conditions to be verified during ETS inspection
A	-	Check that (Arec - Aobs) <= 100m2. Aobs is derived in 10102 (or 10102_1 if appropriate).
C	Verify that a separate GIS layer represents (in)eligible land cover	Verify, if the contamination is fully located within the separate GIS layer for non-eligible areas, or if it is fully located outside the separate GIS layer for eligible areas.
D	Verify that a separate GIS layer represents the historical GAC mask (SAPS only)	Check that the contamination is fully located outside the eligible partition of the separate GAC mask

7. Detailed Instruction 3: Categorization of the non-conforming reference parcels

In order to decide, if a particular cause can explain the observed non-conformity, the operator should perform a minimum set of actions, specific for each cause. They are listed below (for each cause separately). This list of actions is considered exhaustive. Continue to cascade down until the correct cause is determined:

1. For system under SAPS with historical GAC only: the observed eligible area was not in GAC on 30 of June 2003.
 - Check the availability of historical GAC mask (by consulting the Sub-Modules A_122 "representation of historical eligibility" of the ATS)
2. Changes of the underlying land were not applied
 - Check the date of validity of the reference parcel (by consulting the value effectiveDate in the LPIS for that parcel - see also Sub-Module A_131 of the ATS)
 - Check any archive reference data (orthoimagery, topomaps, cadastral plans,..)
Typical examples are a newly constructed road or building that is still being considered agricultural land or a recent conversion into agricultural land that has not been taken into account.
3. Revisions of the Regulations were not applied
 - Check the rules on eligibility applied for the given LPIS lot (by consulting the eligibility profile and the reporting on Module A_12 "Eligibility and land cover types" of the ATS)
Typical examples are an underestimate of the maximum eligible area because the abolishment of separate schemes (olives, vineyards, decouplement,..) or a creation of new schemes (retention of landscape features) have not been introduced in LPIS.
4. Incomplete processing
 - Check the availability of separate datasets or layers, which store small exclusions or landscape features (by consulting the Sub-Modules A_123 and A_124 of the ATS)
 - Check archive reference data (orthoimagery, topomaps, cadastral plans,..)
Typical examples are that a separate sub-parcel or eligibility layer, although foreseen in the LPIS design, has not been produced for the full LUI or that a validation procedure, although required by the LPIS creation specifications, has not been performed (a particular example is where a military mask prevented photo interpretation in the past and the parcel was "cut off" at the mask).
5. Erroneous processing
 - Check the validity date of the reference parcel (by consulting the value effectiveDate in the LPIS for that parcel - see also Sub-Module A_131 of the ATS)
 - Check archive reference data (orthoimagery, topomaps, cadastral plans,..)
Typical examples are that the operator has used inappropriate (e.g. outdated) source material or there has been a manifest deviation from the documented instructions.
6. Incompatible LPIS design
 - Check the definition of the Reference Parcel (by consulting Module A_11 of the ATS)
 - Consult historical data

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This is the situation that has not been foreseen in the specifications and cannot be explained by any of the above causes.

Typical example could be a reference parcel of AP type, detected during the ETS as being a multi-polygon.

8. Detailed Instruction 4: Calculating the χ^2 value for QE7

0. QE7 makes no verdict regarding the irregularity of the applications nor does it change the rules; it merely uses the results from the OTSC campaign. To consider an individual application REGULAR or IRREGULAR, apply the rules of art 58. Any application that was considered irregular should be considered irregular in QE7, Any OTSC application that was found regular would also be regular for QE7. As a result, the numbers used in QE7 should be compatible with art 84 "(d) the result of the controls carried out, indicating the reductions and exclusions applied pursuant to Title IV".
1. Identify **all** applications subject to OTSC where at least one reference parcel has been inspected (where measure 10100 results "OK") and split them into the 4 following categories
- count "a" as the number applications with "irregularities caused by *less area determined than the area declared for aid*" having at least one occurrence of non-conforming reference parcel (derived from 10106, 10102_2 and 10102_3)"
 - count "b" as the number of remaining applications with "irregularities caused by *less area determined than the area declared for aid*"
 - count "c" as the number of applications without "irregularities caused by *less area determined than the area declared for aid*" having at least one occurrence of non-conforming reference parcel (derived from 10106, 10102_2 and 10102_3)"
 - count "d" as the number of remaining applications without "irregularities caused by *less area determined than the area declared for aid*"

Construct the following table

	correct applications	irregular applications	Total
Without nc/def parcels	d	b	u=d+b
With nc/def parcels	c	a	w=c+a
Total	i=d+c	r=b+a	n=a+b+c+d

2. From the "Total" values "i, r, u, w and n", compute the following table

	correct applications	irregular applications
Without nc/def parcels	$d' = i * u / n$	$b' = r * u / n$
With nc/def parcels	$c' = i * w / n$	$a' = r * w / n$

3. Compute the statistic "X" as

$$X = (d-d')^2/d' + (b-b')^2/b' + (c-c')^2/c' + (a-a')^2/a'$$

4. Use the chi-square distribution $\chi^2(1)$ ¹ probability to determine the probability "p", representing the chance of observing a value bigger than χ . If the probability value is bigger than 0.05, the LPIS is considered to NOT have an effect.

¹ Chi-squared distribution with 1 degree of freedom:

http://en.wikipedia.org/wiki/Chi-squared_distribution#Table_of_.CF.87.C2.B2_value_vs_P_value