



Delivery Report Iceland

EEA-FTSP-Sealing_CountryDeliveryReport-NO

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Prepared by:

Erik Willén, Metria

Dr. Hanjo Kahabka, Infoterra GmbH



gisat






an EADS Astrium company



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Author:	Erik Willén, Metria	 <small>Sign</small> <small>Date: 2008/04/28</small>
Production Manager:	Hanjo Kahabka, Infoterra GmbH	 <small>Sign</small> <small>Date 2008/05/30</small>
Project Manager:	Marek Tinz, Infoterra GmbH	 <small>Sign</small> <small>Date 2008/05/30</small>
Approval:	Ana Sousa, EEA	<small>Sign</small> <small>Date</small>
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1 INTRODUCTION

1.1 PURPOSE AND SCOPE

This document presents the country delivery report of EEA's Fast Track Service Precursor Sealing Product of Iceland.

According to the Tender Specifications, this report corresponds to deliverable 5 (38 Country delivery reports).

1.2 APPLICABLE DOCUMENTS

ITD-0490-PRO-0006	Proposal responding to EEA's Invitation for Tender, Technical Offer including Management Part –Issue 1

1.3 REFERENCE DOCUMENTS

EEA/IDS/07/001	Tender Specifications "GMES Fast Track Service on Land Monitoring", EEA, 2006
ISO9001	ISO 9001: 2000 Standard
ITD-QMS-POL-0001_Infoterra_Quality_Policy	Quality Policy Statement
QMS-ITD-MA-0011_QMSManual_I3.1	Quality Management System (QMS) Manual
ITD-UMS-POL-0001_Infoterra_Environmental_Policy	Declaration of Enterprise Environmental Policy
ITD-QMS-STD-0001-ControlOfDocumentation	Control of Documentation and Data
QMS-ITD-ST-0001_CSM	Customer Satisfaction Measurement
QMS-ITD-PR-0003_PM_ProductDevelopment_I4	Project Management, Product (Prototype) Development and Production

2 DATA SPECIFICATIONS

2.1 TECHNICAL PRODUCT SPECIFICATION

Content
<i>Raster dataset of built-up and non built-up areas including continuous degree of soil sealing ranging from 0 - 100% in full spatial resolution (20 x 20 m) with the associated metadata.</i>
Geographic coverage
<i>Iceland (IS)</i>
<i>Coverage [km²]: 103.000 (plus additional buffer of 10 000 meters outside of country border)</i>
Input data sources
<p><u>Input data provided by ESA:</u></p> <ul style="list-style-type: none"> ▪ <i>Orthorectified satellite data coverage for Europe (Image2006), acquired primarily in the reference year 2006 (+/- 1 year), covering two dates, used sensors SPOT 4 and 5 (HRVIR) and IRS-P6 LISS-III:</i> <ul style="list-style-type: none"> • <i>20 m resampled (with cubic convolution interpolation)</i> • <i>4 spectral bands</i> • <i>Max. 5% cloud coverage</i> • <i>Covering 2 dates, at least 6 weeks apart from the respect. scene selected for the first coverage</i> • <i>Orthorectified towards national projection systems (used DTM unknown)</i> • <i>Delivery on a country by country basis foreseen</i> • <i>Metadata to each scene</i> <p><u>Input data provided by EEA</u></p> <ul style="list-style-type: none"> ▪ <i>Dataset with national country borders (to be used for clipping the data at a national level) as defined and provided by the EEA</i> <p><u>Ancillary input data</u></p> <ul style="list-style-type: none"> ▪ <i>none</i>
Methodology
<i>Supervised classification of built-up areas with following visual improvement of classification result and derivation of degree of soil sealing based on calibrated NDVI</i>
Geometric resolution
<i>Pixel resolution 20 x 20 m</i>

Coordinate Reference System
<i>Projection: Lambert Conformal Conic</i> <i>False Easting: 500000,000000</i> <i>False Northing: 500000,000000</i> <i>Central Meridian: -19°00'00,00"</i> <i>Latitude of Origin: 65°00'00,00"</i> <i>Standard Parallel 1: 64°15'00,00"</i> <i>Standard Parallel 2: 65°45'00,00"</i> <i>Latitude of Origin: 65°00'00,00"</i> <i>Datum: GRS80</i>
Geometric accuracy (positioning scale)
<i>According to orthorectified satellite image base delivered by ESA</i>
Thematic accuracy (in %)
<i>Classification accuracy per hectare (based on 100 x 100 m grid) of built-up non built-up areas is > 85% (assessed according approach as described in chapter 4.1)</i>
Accuracy assessment approach
<i>Accuracy assessment based on random sample plots</i>
Delivery format
<i>IMAGINE Image (IMG)</i>
Data type
<i>Raster</i>
Raster coding
<i>Thematic pixel values</i> <i>0 – Non-built up areas, water bodies inland</i> <i>1-100 - sealing values for built-up areas</i> <i>254 – Unclassifiable areas (clouds, shadows, etc.)</i> <i>255 – No Data (No thematic information)</i>
Metadata
<i>According to EEA metadata standards (EEA MSGI specification)</i>
Ancillary Data – Mitigation shape file
<i>Metadata set per delivered country in vector format defining all areas which deviate from the ITT's EO data specifications (i.e. clouds, acquisition date). The vector layer is derived from image footprints and cloud cover information of Image2006 within the country border.</i> <i>The attribute table contains information about WU identification and possible deviations from the standard</i>

specifications of Image2006:

- *[Cntr]* Country Code;
- *[SCU]* Number of Sub-Country unit containing the Working Unit;
- *[WU_ID]* Full name of the Working Unit;
- *[No_acqu]* Number of acquisitions within the WU; 0 = gap / no image available;
- *[Out_Veg]* No of acquisition dates outside of country-specific vegetation period;
- *[Below_6w]* Acquisition dates less than 6 weeks apart;
- *[Cloud_cov]* Thematic value indicating the cloud coverage: No clouds = 1; Clouds present in coverage 1 = 2; Clouds present in Coverage 2 = 3; Clouds present in both coverages = 4

2.2 ALGORITHMS USED

The aim of the image processing is to derive in a robust, reliable and reproducible way based on satellite images (Spot 4/5, IRS LISS) a raster dataset of built-up and non built-up areas including continuous degree of soil sealing ranging from 0 - 100% in full spatial resolution (20 x 20 m).

As the main challenge, the derivation of a continuous degree of soil sealing has to be solved. The proposed image processing approach is based on the fact that a reliable derivation of soil sealing degrees is not possible directly from the vegetation index. Low vegetation index values, which are characteristic for densely built-up areas are e.g. also found in bare soil areas of agricultural fields. Even when using multi-temporal satellite images with different acquisition dates in combination with bi-temporal, multi-spectral classification techniques the result may be improved, but the vegetation indices of two acquisitions are still too ambiguous.

Therefore, the proposed image processing approach will start with deriving a binary map of built-up areas and then further subdivide this area into 100 degrees of soil sealing, ranging from totally sealed surfaces (100% degree of soil sealing) up to built-up areas with extensive vegetation cover (1% degree of soil sealing). This allows the final user to aggregate the continuous values as required.

To be viable for this objective the classification methodology has to fulfil the following general criteria:

- Allow for local calibration of parameters used per working sub-area (as defined by satellite images) to overcome diversity of different regions in Europe and image immanent characteristics (such compensating for different settlement structures, ecozones, phonological and weather conditions).
- Deliver the required accuracy
- Maximise consistency and objectivity of the results all over Europe
- Maximise cost-efficiency under given constraints
- Maximise standardisation of production and working motivation of the analysts

- Secure realisation in due time.

Based on these criteria, the proposed methodological approach consists of the following main steps:

- a) Data preparation & management: Provision of spatial database of bi-temporal satellite images and derived working sub-areas ("Working Units" = WU) to be processed in the following steps
- b) Core processing, containing the 3 main processing steps:
 - (1) Hybrid automated classification with supervised and unsupervised elements, leading to binary maps of built-up area
 - (2) Manual correction of the binary built-up map to obtain the required quantitative thematic accuracy (85%) as well as good qualitative results
 - (3) Derivation of degree of soil sealing based on the NDVI (Normalised Difference Vegetation Index)
- c) Generation of sub-country / country data sets
- d) Accuracy assessment
- e) Re-projection & mosaicing, generation of seamless European dataset.

2.3 FORMAT DESCRIPTION

Delivery format
<i>ERDAS IMAGINE Image (IMG)</i>
<i>Data Type: unsigned 8-bit</i>
<i>Compression: Run-length encoding (ESRI)</i>
<i>Number of bands: 1</i>
<i>Pixel size: 20 m</i>
Data type
<i>Thematic Raster</i>
Metadata
<i>According to EEA metadata standards (EEA MSGI specification)</i>

2.4 METADATA

See European Environment Agency – Metadata Standard for Geographic Information (EEA-MSGI), Version 1.1a (18 August 2004).

The metadata is provided as XML-file and as PDF-document according to EEA Metadata Standard for Geographic Information (EEA-MSGI).

3 SUMMARY OF PRODUCTION

3.1 TIMETABLE, PRODUCTION MILESTONES

Delivery by ESA	Data Reception	Data Preparation		Received by SP	Production	
		Start	End		Start	End
-	20.12.2007	07.01.2008	30.01.2008	30.01.2008	31.01.2008	24.04.2008

3.2 TECHNICAL PROBLEMS ENCOUNTERED, MITIGATION MEASURES

The analysis of the GIS metadata file to the ITT's specifications yielded the following results for Iceland.

- WU (2 coverages): 0 %. The monotemporal approach had to be applied for the complete country dataset.
- Country area outside of vegetation period 15th of July to 15th of September: 4 %
- Cloud coverage WU: 2%

4 ACCURACY ASSESSMENT REPORT

4.1 DESCRIPTION OF APPROACH

The derivation of accuracy measures as agreed with EEA includes the following steps:

1. Definition of 100 x 100 m reference grid in national projection of the respective country assessed
2. Stratification of the area based on Corine Land Cover level I. To emphasize the accuracy assessment in the urban areas, 50 % of the sample plots are placed within CLC class Artificial Surfaces, the other 50 % are placed in the remaining classes. As for Iceland no Corine Land Cover dataset is available, the stratification was done based on the raster product.
3. Cluster based random sampling based on 100 x 100 m reference grid, defined per single nation, number of samples adapted to nation size in km²
4. Re-projection of reference samples to allow overlay with Google Earth
5. Estimation, if reference cell will be labelled as “built-up” according to EEA definition or not (80% threshold degree of soil sealing) taking into account the visibility of objects in the satellite images used for the production of the raster product (technically possible also when using Google Earth¹)
6. Estimation of overall accuracy to generate accuracy measure (overall accuracy, user accuracy, (commission error), producer accuracy (omission error), per single nation (for internal use & validation only) and for European dataset for publication by EEA.
7. Adaptation of statistics with regard to the mitigation shape file. All sample plots falling within areas of the raster product, where the underlying IMAGE2006 data has been identified to fail the ITT’s specifications, are not included in the final statistics. This includes areas where
 - Less than two coverages of EO data are available
 - One or more acquisition dates are outside the defined acquisition window
 - The acquisition dates of the two coverages used are less than six weeks apart
 - Cloud cover is present in one or more coverage

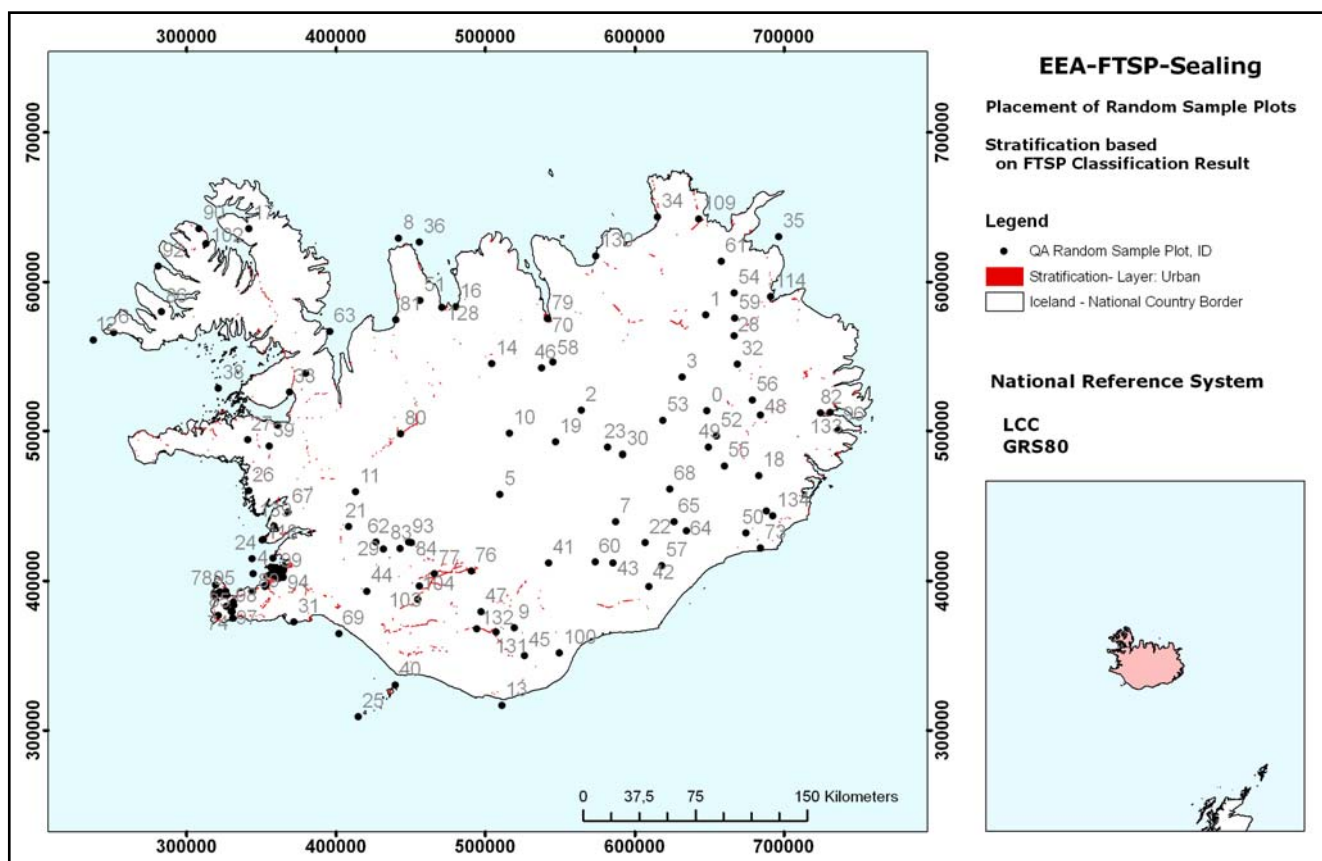
The built-up raster product which is subject to the accuracy assessment is accepted as according to the specifications if the final statistics indicate an overall accuracy of more than 85 %.

Accuracy assessment is performed per country product for internal quality control. For final acceptance by EEA, the overall accuracy of the European product is arbitrated.

¹ using web-based information input to a local server

4.2 SAMPLE PLACEMENT (STRATIFICATION, NUMBER & LOCATIONS OF SAMPLE SITES)

Overall number of sample plots: 140 (70 within the sealing mask of the FTSP layer). The figure below shows the placement of sample plots (black dots) within sealed areas (red areas) and outside. The stratification between sealed areas and non-sealed areas was done based on the raster product.



4.3 FINAL RESULT

The final accuracy assessment for the country product surpassed the threshold of an overall accuracy of 85 %.

Classification				Producers Accuracy	Omission Error
Validation		>80%	<80%	Σ	
	>80%	26	5	31	83,9%
	<80%	7	100	107	93,5%
	Σ	33	105	138	
	User's Accuracy	78,8%	95,2%		
	Commission Error	21,2%	4,8%		
	Overall Accuracy	91,3%			

5 DETAILED LIST OF PROVIDED DATA

- Raster dataset of built-up and non built-up areas including degree of soil sealing, 2006, in full spatial resolution (20 m x 20 m).
- ArcMap Legend File for raster data set for plotting a degree of soil sealing, aggregated to thematic classes
- ArcMap Legend File for raster data set for plotting a degree of soil sealing in a range from 1-100 %
- Mitigation shape file ; metadata set per delivered country defining all areas which deviate from the ITT's EO data specifications.
- XML-Metadata of raster and vector data after EEA specifications
- EEA Metadata Stylesheet
- Report per Country with description of raster and vector data, country specific production & mitigation issues (the document at hand)
- Product inspection sheet for outgoing deliveries, ensuring product conformity of raster dataset
- National country borders in national projection

ANNEX 1: INTERPRETATION GUIDELINE FOR VISUAL CORRECTION

Objective

To produce a pixel-based high-resolution layer of built-up areas including degree of soil sealing for the EEA member states of homogeneous look & feel with an overall thematic accuracy of 85%.

Definition of Built-up Areas

Built-up areas according to the consortium definition are represented by a degree of soil sealing between 1 and 100%.

Built-up area therefore comprises pixels that are fully or partly covered by houses, roads, mines and quarries and any other facilities, including their auxiliary spaces, deliberately installed for the pursuit of human activities. Built-up area does not include any fully vegetated pixels, even if they are closely related to these activities (such as city parks and gardens), or any other unvegetated non-built-up open spaces covered with bare soil, sand, glacier, bare rocks or water.

(modified according to http://glossary.eea.europa.eu/EEAGlossary/B/built_up_land)

The FTSP in Relation to Corine Land Cover

The FTSP high resolution core land cover data is a complementary element of the GMES Fast Track Services. The data set will be a land cover product, reflecting actual ground cover on a pixel by pixel level rather than functional properties.

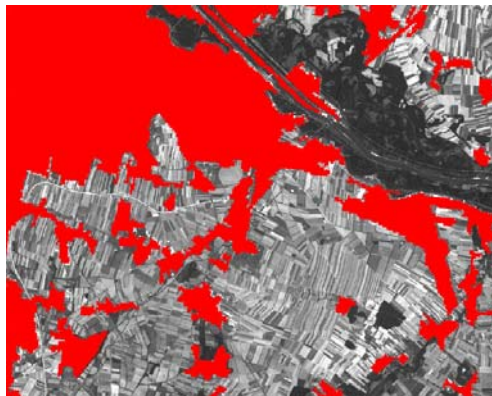
CLC level 1 class 'artificial surfaces' contains artificial surfaces and functionally related vegetated areas, reflecting the land use aspect. Therefore a significant part of this CLC level 1 class contains vegetated areas composed of fully vegetated pixels. However, in the FTSP product only pixels that contain some built-up/sealed area will be included.

In addition, built-up pixels within all other CLC level 1 classes (which are not mapped in CLC according to the 25ha MMU) will be included according to the above definition. Fully vegetated or unvegetated non-built-up pixels will be excluded.

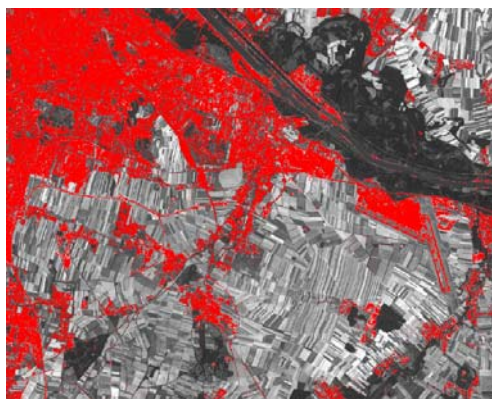
SPOT-4 satellite image over Vienna / Austria
(green band; 20m resolution)



CLC 2000 - level 1 class "artificial surfaces"



FTSP high-resolution layer of built-up areas
(20m resolution)



Special Considerations

- The same definition of built-up areas shall apply for production and quality control.
- To ensure homogeneity across the whole of Europe, partially captured linear features outside of urban agglomerations (e.g. fragments of roads or railway lines) will not be completed by the manual post editing.
- Mines and quarries will be considered built-up areas according to the above definition.
- It is proposed to include a no-data class for unclassifiable areas (e.g., clouds) which is to be marked and identified during the process of manual interpretation.

ANNEX 2: LIST OF WORKING UNITS AND EO DATA USED

The following list provides information about the two coverages of EO data which were used to create the working units. The file name is identical to the WU identification within the mitigation shapefile's attribute table and contains the specifications of sensors, paths/rows and capture dates.

The full file name is explained in the following:

[Sensor Coverage 1]_[TrackFrame Coverage 1]_[Capture Date YY/MM/DD Coverage 1]_[Instrument Coverage 1]_[Sensor Coverage 2]_[TrackFrame Coverage 2]_[Capture Date YY/MM/DD Coverage 2]_[Instrument Coverage 2]

Table 1: List of Working Units used for the production of Iceland

SCU	Working Unit
1	spot4_702212_070711_2i0
1	spot4_702213_070715_2i0
1	spot4_705212_060909_2i9
1	spot4_717216_060819_1i0
1	spot4_718215_060819_2i0
1	spot4_725215_060816_2i4
1	spot5_706216_070902_1j5
1	spot4_702214_060921_1i7
1	spot4_702214_070715_1i0
1	spot4_705214_060906_1i8
1	spot4_705214_070717_2i0
1	spot4_706214_060922_2i0
1	spot4_706215_060922_2i0
1	spot4_706216_060906_2i1
1	spot4_709213_060816_1i9
1	spot4_709213_060820_2i0
1	spot4_709215_060922_1i4
1	spot4_709216_070802_2i0
1	spot4_709217_060830_2i3
1	spot4_709217_070802_2i0
1	spot4_709218_070802_2i0
1	spot4_709219_070802_2i0
1	spot4_710213_060820_1i0
1	spot4_710214_060922_1i5
1	spot4_710214_060925_1i4
1	spot4_710215_060925_1i0
1	spot4_710216_070716_2i9
1	spot4_713212_070806_1i1
1	spot4_713217_070712_1i0
1	spot4_713218_070802_1i0
1	spot4_713219_070802_1i0

SCU	Working Unit
1	spot4_713220_070802_1i0
1	spot4_714213_060924_1i0
1	spot4_714215_060820_2i3
1	spot4_714216_060820_2i0
1	spot4_714217_060820_2i0
1	spot4_714218_070712_2i6
1	spot4_714218_070712_2i8
1	spot4_717212_060819_1i0
1	spot4_717213_060819_1i0
1	spot4_717214_060819_1i0
1	spot4_717215_060819_1i0
1	spot4_717217_060819_1i0
1	spot4_717218_060819_1i0
1	spot4_717219_060815_1i0
1	spot4_718213_060819_2i0
1	spot4_718214_060819_2i0
1	spot4_718216_060819_2i0
1	spot4_718217_060819_2i0
1	spot4_718218_060819_2i0
1	spot4_718219_060809_2i0
1	spot4_721214_060816_1i2
1	spot4_721215_060816_1i0
1	spot4_721216_060910_1i0
1	spot4_722217_060816_1i0
1	spot4_722218_060816_1i0
1	spot4_725216_060821_1i3
1	spot5_705215_050726_2j5
1	spot5_705216_050726_2j0
1	spot5_706215_070612_1j3
1	spot5_710213_050713_1j5
1	spot5_710216_060720_1j0

SCU	Working Unit
1	spot5_710216_060816_2j0
1	spot5_710218_070802_1j0
1	spot5_713214_060817_2j0
1	spot5_713215_060817_2j0
1	spot5_714218_050827_2j0
1	spot5_717215_060822_1j0
1	spot4_702212_070711_2i0
1	spot4_702213_070715_2i0
1	spot4_705212_060909_2i9
1	spot4_725215_060816_2i4
1	spot5_706216_070902_1j5
1	spot4_705214_060906_1i8
1	spot4_705214_070717_2i0
1	spot4_706214_060922_2i0
1	spot4_706215_060922_2i0
1	spot4_706216_060906_2i1
1	spot4_709213_060816_1i9
1	spot4_709215_060922_1i4
1	spot4_709216_070802_2i0

SCU	Working Unit
1	spot4_709217_070802_2i0
1	spot4_709218_070802_2i0
1	spot4_710214_060922_1i5
1	spot4_713219_070802_1i0
1	spot4_714218_070712_2i6
1	spot4_714218_070712_2i8
1	spot4_717213_060819_1i0
1	spot4_717219_060815_1i0
1	spot4_718218_060819_2i0
1	spot4_721214_060816_1i2
1	spot4_721215_060816_1i0
1	spot4_722217_060816_1i0
1	spot4_722218_060816_1i0
1	spot4_725216_060821_1i3
1	spot5_705215_050726_2j5
1	spot5_705216_050726_2j0
1	spot5_706215_070612_1j3
1	spot5_710218_070802_1j0
1	spot5_713214_060817_2j0

ANNEX 3: SAMPLE PLOT VALIDATION SHEET

Sample Plot 100 x100 m [ID]	FTSP Degrees of Soil Sealing [Mean Value]	FTSP Built up [TRUE / FALSE]	Reference Built up [TRUE / FALSE]	Compliance	Excluded by Mitigation Shape [TRUE / FALSE]
0	0,000	FALSE	FALSE	TRUE	FALSE
1	0,000	FALSE	FALSE	TRUE	FALSE
2	0,000	FALSE	FALSE	TRUE	FALSE
3	0,000	FALSE	FALSE	TRUE	FALSE
4	0,000	FALSE	FALSE	TRUE	FALSE
5	0,000	FALSE	FALSE	TRUE	FALSE
6	0,000	FALSE	FALSE	TRUE	FALSE
7	0,000	FALSE	FALSE	TRUE	FALSE
8	0,000	FALSE	FALSE	TRUE	FALSE
9	0,000	FALSE	FALSE	TRUE	FALSE
10	0,000	FALSE	FALSE	TRUE	FALSE
11	0,000	FALSE	FALSE	TRUE	FALSE
12	0,000	FALSE	FALSE	TRUE	FALSE
13	0,000	FALSE	FALSE	TRUE	FALSE
14	0,000	FALSE	FALSE	TRUE	FALSE
15	0,000	FALSE	FALSE	TRUE	FALSE
16	0,000	FALSE	FALSE	TRUE	FALSE
17	0,000	FALSE	FALSE	TRUE	FALSE
18	0,000	FALSE	FALSE	TRUE	FALSE
19	0,000	FALSE	FALSE	TRUE	FALSE
20	0,000	FALSE	FALSE	TRUE	FALSE
21	0,000	FALSE	FALSE	TRUE	FALSE
22	0,000	FALSE	FALSE	TRUE	FALSE
23	0,000	FALSE	FALSE	TRUE	FALSE
24	0,000	FALSE	FALSE	TRUE	FALSE
25	0,000	FALSE	FALSE	TRUE	FALSE
26	0,000	FALSE	FALSE	TRUE	FALSE
27	0,000	FALSE	FALSE	TRUE	FALSE
28	0,000	FALSE	FALSE	TRUE	FALSE
29	0,000	FALSE	FALSE	TRUE	FALSE
30	0,000	FALSE	FALSE	TRUE	FALSE
31	0,000	FALSE	FALSE	TRUE	FALSE
32	0,000	FALSE	FALSE	TRUE	FALSE
33	0,000	FALSE	FALSE	TRUE	FALSE
34	0,000	FALSE	FALSE	TRUE	FALSE
35	0,000	FALSE	FALSE	TRUE	FALSE
36	0,000	FALSE	FALSE	TRUE	FALSE

Sample Plot 100 x100 m [ID]	FTSP Degrees of Soil Sealing [Mean Value]	FTSP Built up [TRUE / FALSE]	Reference Built up [TRUE / FALSE]	Compliance	Excluded by Mitigation Shape [TRUE / FALSE]
37	254,000	NO DATA	FALSE	FALSE	TRUE
38	0,000	FALSE	FALSE	TRUE	FALSE
39	0,000	FALSE	FALSE	TRUE	FALSE
40	0,000	FALSE	FALSE	TRUE	FALSE
41	0,000	FALSE	FALSE	TRUE	FALSE
42	0,000	FALSE	FALSE	TRUE	FALSE
43	0,000	FALSE	FALSE	TRUE	FALSE
44	0,000	FALSE	FALSE	TRUE	FALSE
45	0,000	FALSE	FALSE	TRUE	FALSE
46	0,000	FALSE	FALSE	TRUE	FALSE
47	0,000	FALSE	FALSE	TRUE	FALSE
48	0,000	FALSE	FALSE	TRUE	FALSE
49	0,000	FALSE	FALSE	TRUE	FALSE
50	0,000	FALSE	FALSE	TRUE	FALSE
51	0,000	FALSE	FALSE	TRUE	FALSE
52	0,000	FALSE	FALSE	TRUE	FALSE
53	0,000	FALSE	FALSE	TRUE	FALSE
54	0,000	FALSE	FALSE	TRUE	FALSE
55	0,000	FALSE	FALSE	TRUE	FALSE
56	0,000	FALSE	FALSE	TRUE	FALSE
57	0,000	FALSE	FALSE	TRUE	FALSE
58	0,000	FALSE	FALSE	TRUE	FALSE
59	0,000	FALSE	FALSE	TRUE	FALSE
60	0,000	FALSE	FALSE	TRUE	FALSE
61	0,000	FALSE	FALSE	TRUE	FALSE
62	0,000	FALSE	FALSE	TRUE	FALSE
63	0,000	FALSE	FALSE	TRUE	FALSE
64	0,000	FALSE	FALSE	TRUE	FALSE
65	0,000	FALSE	FALSE	TRUE	FALSE
66	0,000	FALSE	FALSE	TRUE	FALSE
67	0,000	FALSE	FALSE	TRUE	FALSE
68	0,000	FALSE	FALSE	TRUE	FALSE
69	0,000	FALSE	FALSE	TRUE	FALSE
70	48,587	FALSE	FALSE	TRUE	FALSE
71	92,989	TRUE	TRUE	TRUE	FALSE
72	100,000	TRUE	TRUE	TRUE	FALSE
73	90,435	TRUE	FALSE	FALSE	FALSE
74	84,431	TRUE	TRUE	TRUE	FALSE
75	100,000	TRUE	TRUE	TRUE	FALSE

Sample Plot 100 x100 m [ID]	FTSP Degrees of Soil Sealing [Mean Value]	FTSP Built up [TRUE / FALSE]	Reference Built up [TRUE / FALSE]	Compliance	Excluded by Mitigation Shape [TRUE / FALSE]
76	22,676	FALSE	FALSE	TRUE	FALSE
77	34,014	FALSE	FALSE	TRUE	FALSE
78	92,782	TRUE	FALSE	FALSE	FALSE
79	67,615	FALSE	FALSE	TRUE	FALSE
80	33,560	FALSE	FALSE	TRUE	FALSE
81	95,973	TRUE	TRUE	TRUE	FALSE
82	90,150	TRUE	TRUE	TRUE	FALSE
83	29,569	FALSE	FALSE	TRUE	FALSE
84	30,839	FALSE	FALSE	TRUE	FALSE
85	18,812	FALSE	FALSE	TRUE	FALSE
86	20,862	FALSE	FALSE	TRUE	FALSE
87	94,649	TRUE	TRUE	TRUE	FALSE
88	63,102	FALSE	FALSE	TRUE	FALSE
89	86,168	TRUE	TRUE	TRUE	FALSE
90	87,612	TRUE	TRUE	TRUE	FALSE
91	20,862	FALSE	TRUE	FALSE	FALSE
92	19,048	FALSE	FALSE	TRUE	FALSE
93	32,880	FALSE	FALSE	TRUE	FALSE
94	86,231	TRUE	FALSE	FALSE	FALSE
95	98,483	TRUE	TRUE	TRUE	FALSE
96	74,086	FALSE	FALSE	TRUE	FALSE
97	83,220	TRUE	TRUE	TRUE	FALSE
98	42,345	FALSE	FALSE	TRUE	FALSE
99	91,864	TRUE	TRUE	TRUE	FALSE
100	18,939	FALSE	FALSE	TRUE	FALSE
101	97,805	TRUE	TRUE	TRUE	FALSE
102	32,200	FALSE	FALSE	TRUE	FALSE
103	32,653	FALSE	FALSE	TRUE	FALSE
104	21,950	FALSE	FALSE	TRUE	FALSE
105	99,401	TRUE	TRUE	TRUE	FALSE
106	100,000	TRUE	TRUE	TRUE	FALSE
107	72,329	FALSE	FALSE	TRUE	FALSE
108	99,556	TRUE	TRUE	TRUE	FALSE
109	19,048	FALSE	FALSE	TRUE	FALSE
110	62,154	FALSE	FALSE	TRUE	FALSE
111	84,009	TRUE	TRUE	TRUE	FALSE
112	97,968	TRUE	TRUE	TRUE	FALSE
113	84,823	TRUE	TRUE	TRUE	FALSE
114	62,689	FALSE	FALSE	TRUE	FALSE

Sample Plot 100 x100 m [ID]	FTSP Degrees of Soil Sealing [Mean Value]	FTSP Built up [TRUE / FALSE]	Reference Built up [TRUE / FALSE]	Compliance	Excluded by Mitigation Shape [TRUE / FALSE]
115	48,336	FALSE	TRUE	FALSE	FALSE
116	89,433	TRUE	FALSE	FALSE	FALSE
117	98,524	TRUE	FALSE	FALSE	FALSE
118	74,662	FALSE	TRUE	FALSE	FALSE
119	30,839	FALSE	TRUE	FALSE	FALSE
120	99,093	TRUE	TRUE	TRUE	FALSE
121	75,771	FALSE	TRUE	FALSE	FALSE
122	98,476	TRUE	TRUE	TRUE	FALSE
123	64,181	FALSE	FALSE	TRUE	FALSE
124	63,610	FALSE	FALSE	TRUE	FALSE
125	34,878	FALSE	FALSE	TRUE	FALSE
126	72,478	FALSE	FALSE	TRUE	FALSE
127	27,211	FALSE	FALSE	TRUE	FALSE
128	94,018	TRUE	TRUE	TRUE	FALSE
129	93,751	TRUE	FALSE	FALSE	FALSE
130	41,497	FALSE	FALSE	TRUE	FALSE
131	20,862	FALSE	FALSE	TRUE	FALSE
132	26,304	FALSE	FALSE	TRUE	FALSE
133	100,000	TRUE	TRUE	TRUE	FALSE
134	28,798	FALSE	FALSE	TRUE	FALSE
135	33,079	FALSE	FALSE	FALSE	TRUE
136	97,587	TRUE	TRUE	TRUE	FALSE
137	91,689	TRUE	TRUE	TRUE	FALSE
138	94,912	TRUE	TRUE	TRUE	FALSE
139	83,633	TRUE	FALSE	FALSE	FALSE