Integrated Land Management Bureau

Integrated Cadastral Fabric

Specification and Standard

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Integrated Cadastral Fabric - Specification and Standard

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1 Introduction

1.1 Overview

This document describes the ***Integrated Cadastral Fabric (ICF)*** map product. It is anticipated the information in this document will be of use to contractors and staff involved in compiling land parcel data and to managers, planners and analysts seeking to apply the land parcel data to resource management and land-use issues.

The ICF is a single, geo-referenced and seamless dataset representing and describing the location, shape, extent and nature of land parcels in the Province of British Columbia. The ICF is a composite product, compiled from spatial and attribute data supplied by local governments, the Land Title and Survey Authority, BC Assessment, and the Integrated Registry Branch and the Base Mapping and Geomatic Services Branch of the Integrated Land Management Bureau. It is presented as a continuous, topologically structured, two-dimensional map.

The ICF has been developed to support the business needs of the Integrated Cadastral Information Society (ICIS) partners (local governments, the province and a number of utility companies) who have a common interest in the creation, management and distribution of parcel related information. The ICF is intended to:

- serve as an common spatial index to parcel related data (spatial and attribute) managed by a variety of business systems in a number of different organizations;
- present a clear picture of the current surface ownership status for land in BC (i.e. whether the land is privately owned or administered by the Crown); and,
- provide an accurately positioned and minimally distorted spatial layer that may be used as a backdrop and reference for registering and mapping other spatial features such as facilities infrastructure, forest stands, resource interests, etc.

The ICF is compiled from a variety of sources in a manner so as to ensure that the resultant fabric:

- is topologically correct;
- is positioned as accurately as possible in relation to the underlying Geospatial Reference Framework and companion spatial data products (e.g. TRIM mapping and the Digital Road Atlas);
- is minimally distorted during integration and assembly into a continuous and seamless composite; and,
- is accurately and consistently identified and described in accordance with the defining documents for each parcel.

The hallmarks of this first edition of the ICF are structure, integrity and consistency.

The ICF is managed within the CBM Operational Geodatabase - a geodatabase structure implemented within ESRI ArcSDE (currently version 9.1) and Oracle RDBMS (currently version 10gR2) that supports the creation, manipulation, and storage of attribute and spatial data related to the cadastral fabric of the province. There are four principal categories of data within the CBM Operational Geodatabase:

- Integrated Cadastral Fabric (ICF) information;
- Survey Parcel Linkage information;
- Administrative and interim processing information; and
- Maintenance and workflow management information.

The Integrated Cadastral Fabric (ICF) model is expansive, holding a wealth of parcel related information and has been designed to enable the preparation and presentation of a number of different views of the data including both a full and restricted (public) view of the ICF (Appendices A and B).

The ICF products are discoverable and accessible through BC Land and Resource Data Warehouse (LRDW) services. The ICF products are available in the following output file formats:

- ArcView Shape
- ESRI Export (E00)
- CSV

The ICF is a representational information product; the legal aspects of a land parcel and its location are as described in the appropriate Crown Land Registry, the Land Title Registry and Official Survey Plan documents and as evidenced by physical marks on the ground.

1.2 Purpose of the Specification and Standard

The purpose of this document is to describe the form and structure of the ***Integrated Cadastral Fabric*** map product so that compilers and users of the product are fully informed as to the nature and quality of the information represented in the mapping product.

1.3 Scope of the Standards

The standards and specifications introduced in this document define and describe the ***Integrated Cadastral Fabric***. The document focuses on providing the standards and guidelines required by those involved in production of the ***Integrated Cadastral Fabric*** mapping product to ensure consistent content and quality in the specified form or structure. The document does not attempt to prescribe a single process for compiling the data, but will allude in some cases to “best practices” for achieving the desired product.

1.4 Intended Users of the Standards

This document is intended for persons compiling, managing and using the ***Integrated Cadastral Fabric*** product.

The intent is for this document to be used by three major groups:

- government staff managing contracts for the production of the ***Integrated Cadastral Fabric*** map product;
- private-sector contractors and government staff actively involved in the compilation and maintenance of the ***Integrated Cadastral Fabric*** map product; and,
- end-users seeking to understand the meaning and structure of the ***Integrated Cadastral Fabric*** information for use in analysis and publication.

2 ICF Product Description

The purpose of this section is to provide a comprehensive description of the ICF mapping product. The intent is to establish a common understanding of the nature and characteristics of the product and its component data so as to inform "fitness for purpose" decisions and to provide a basis for systems database design and definition of the Physical Data Description (Section 3).

The ICF is a single, geo-referenced and seamless dataset representing and describing the current location, shape, extent and nature of Crown and private land parcels in the Province of BC. The ICF is a composite product, compiled from spatial and attribute data supplied by local governments, the Land Title and Survey Authority, the Integrated Registry Branch and the Base Mapping and Geomatic Services Branch of the Integrated Land Management Bureau and BC Assessment. It is not a database but a spatial layer within a database, and is presented as a continuous, topologically structured, two-dimensional map.

2.1 What is captured as an ICF parcel?

1. Crown Primary Parcels (as surveyed and registered in accordance with the Land Act)
2. Private Subdivision Parcels (as surveyed and registered in accordance with Land Titles Act)
3. Crown and Private Subdivision remainder Parcels ("left over" as a result of other surveys)
4. Parcels (particularly minerals and petroleum interests) that have had their Surface Granted under statutes other than the Crown Land Act (e.g. Mineral Act, Coal Act, etc.)
5. Indian Reserve perimeter boundary
6. Rights of way that convey title in fee simple.
7. Roads as defined by the following:
    i. Contain a PID and legal description;
    ii. Are of a private nature (e.g. strata developments or owned by logging companies etc.);
    iii. Are totally 'enclosed' by subdivision parcels; and
8. Parks, where surveyed and dedicated by Land Title subdivision plan.
9. Bare Land Strata parcels (including Common Property) are captured as independent parcels, whereas, only the perimeter of Non-Bare Land Strata properties are captured as a single ICF parcel.

    Note:

    Bare Land Strata parcels are titled strata parcels defined on a horizontal plane by reference to survey markers in the ground.

Non-Bare Land Strata parcels are titled strata parcels defined by reference to the floors, walls or ceilings of a building (e.g. condominium apartments).
Common Property is property within a strata development that is available for use by all members of the strata (e.g. access roads, common recreational areas, etc.).

10. Unsurveyed Crown Land will be shown as an independent polygon only if it is surrounded by valid ICF parcels or explicitly identified as Unsurveyed Crown Land in a recognized defining document (e.g. registered title or plan of survey).
11. Identity, descriptive and quality information as defined in Table 2.

2.2 What is not captured as an ICF Parcel?

1. Survey for undersurface alienations.
2. "Interest parcel" information (leases, reserves, rights of way, easements, etc.)
3. Historic parcels (e.g. Primary parcels that have been fully subdivided or alienated)
4. Road polygons structures except as described in 2.1.7 above.
5. Federal, Provincial, nor Regional Parks.

2.3 Spatial Representation Type

The ICF is a continuous, seamless, province-wide polygonal representation of the subdivision of the land surface into unique land parcels. Each unique land parcel is represented as a closed and non-overlapping polygonal feature. All polygons are closed and all overlaps, gaps and slivers have been removed. Each polygon has an associated attribute record carrying identity, descriptive and fitness for purpose data quality information.

2.4 Spatial Resolution

The ICF is a composite product, compiled from a number of sources that in turn have been produced from a variety of sources by a variety of methods. As a result it is difficult to assign a specific representative scale that accurately reflects the quality of the product and its component parts. The compiled fabric is typically positioned and referenced using the best information available to the Geospatial Reference System referenced in Table 1 below. The ICF is generally considered to be consistent with TRIM (1:20,000 scale) topographic mapping.

2.5 Data Classification Category

The ICF relates to

- Legal Information and Administrative Boundaries

- Land Ownership and Status

as described in the ILMB Data Classification Hierarchy
http://ilmbgww.bcgov/dm/cataloging.html

2.6 Geographic Extents

The bounding coordinates delineating the coverage of the ICF are:

West:	139° 30' West
East:	113° 30' West
North:	60° North
South:	48° North

2.7 Geospatial Reference System

Table 1
Geospatial Reference System Definition
British Columbia Integrated Cadastral Fabric

Name	GCS_North_American_1983_CSRS98
Angular Unit	Degree (0.017453292519943299)
Prime Meridian	Greenwich (0.000000000000000000)
Datum	D_North_American_1983_CSRS98
Spheroid	GRS_1980
Semi major Axis	6378137.00000000000000000
Semi minor Axis	6356752.31414035610000000
Inverse Flattening	298.257222101000020000

2.8 Temporal Extents

The ICF is produced as a snapshot in time and once published is maintained and updated to within a thirty day latency period. There is no pre-compilation historical record associated with the ICF.

2.9 Format

Arc SDE 9.1 / Oracle 10g

2.10 Language

All ICF products and associated descriptions and documents will be available in English.

3 Physical Data Description

3.1 Content Overview

The CBMS Geographic Database is an operational environment, supporting the creation, manipulation and storage of information. In this environment, individual objects will be in various states of compilation and quality. Quality assurance measures include attribute constraints inherent in the data model, system-generated attributes used to track the nature and volume of edits, and a geodatabase-provided versioning structure to facilitate centralized control over a distributed set of compilers and compiler types.

The CBMS Geodatabase model includes the following categories of information:

- Integrated Cadastral Fabric product tables: This set of information constitutes the target products (spatial and non-spatial) that the CBMS is building, including the *Cadastral_Base_Map* feature class itself, as well as the related *Strata_Parcel*, *Compilation_Review* and *Survey_Assessment_XREF* tables.

- Administration: A number of tables used to normalize, process and log source data inputs are grouped as "administrative", in that they will be populated and managed largely by automated processes with little operator involvement. These tables include Altos (BC Land Title Office) data processing tables and the *ALTOS_Parcels* compilation base table.

- Survey Parcel Linkages: A set of tables that reconcile and link land parcels surveyed and registered under the Land Act and the Land Titles Act. These tables are populated and updated by automated processes. Unresolved discrepancies and inconsistencies are researched and amended by CBMS business experts.

- Maintenance and Workflow Management: Tables used to establish the set of information under active maintenance, as well as to assign record sets for compilation, and establish and track workflows for different compilation jobs. This information will be managed and populated by CBMS Data Managers, with inputs from CBMS and contracted compilers. These tables include the *Maintenance_Area_Assignment, Maintenance_Queue,* and *Maintenance_Job* tables.

3.2 Design Principles

Physical characteristics of this design and its delivery are guided by the policies, procedures and best practices established by IMB.

http://srmgww.bcgov/landinfobc/imb/bas/ads/appstds.htm

3.3 Attributes

The ***Integrated_Cadastral_Fabric*** feature class is a continuous, non-overlapping fabric of polygons representing private and crown-administered parcels of land in British Columbia defined or described in accordance with various legislation (e.g. Land Act and Land Title Act surveys). These survey parcels are represented in the Enterprise ArcSDE Geodatabase (in Oracle) as polygons. Attributes maintained on this layer include links to source systems (PID for ALTOS – Land Title Office database, PIN for Tantalis – Integrated Land Management Bureau database, basic legal description information, and current ownership/administration status.

The ***Integrated_Cadastral_Fabric*** feature class is physically implemented within the *ICF* feature dataset. Analogous to the ESRI coverage data format, the feature dataset provides both a logical container for related spatial information, and a structure for ensuring common and consistent spatial reference for its contents and exercising topological constraints among its members. Although the current model includes a single feature class within this feature dataset, additional topologically-related layers are anticipated for inclusion in future releases.

Table 2
Integrated Cadastral Fabric Feature Table

Feature Class: *INTEGRATED_CADASTRAL_FABRIC*

Geometry: *Polygon*

Subtypes: *Land Act Survey, Land Act Remainder, Land Title Act Survey, Land Title Registered, Unsurveyed, Unconfirmed*

Description: Contiguous, non-overlapping polygons representing current state of legal land definition in British Columbia. Each feature is attributed with a unique identifier, as well as foreign keys to various source spatial and attribute systems, including PIN for Tantalis-sourced Land Act survey information, PID for Land Title and Survey Authority information, and JUROL for BC Assessment information. Additional attributes provide legal descriptive information, site address, and feature level metadata.

Column Name	Description	Opt.	Data Type (Size) {GDB Domain}
ICF _ID	Unique Parcel Identifier	N	VARCHAR2(32)
DATA_SOURCE_LINK_ID	Data owner's unique parcel identifier	Y	VARCHAR2(50)
PIN	Crown Land Registry Parcel Identifier	Y	VARCHAR2(30)
PID	Land Title Office parcel Identifier	Y	VARCHAR2(30)
JUROL	BC Assessment Authority identifier	Y	VARCHAR2(30)
PARCEL_TYPE	Distinguishes between base parcels, strata/elevated parcels, and local government parks.	N	VARCHAR2(20) **{dParcelTypes}**
LOCAL_GOVERNMENT	Project area designation. Often, but not always,	N	VARCHAR2(30)

Column Name	Description	Opt.	Data Type (Size) {GDB Domain}
_AREA	equivalent to one or more BC Assessment jurisdictions.		
LAND_DISTRICT	Land District name	N	VARCHAR2(50) **{dLandDistricts}**
ICF_LEGAL_DESCRIPTION	Abbreviated legal description	N	VARCHAR2(255)
LTSA_LOT	Lot designation; component of Land Title Act legal definition.	N	VARCHAR2(16)
LTSA _BLOCK	Block designation; component of Land Title Act legal definition.	N	VARCHAR2(16)
LTSA _PARCEL	Parcel designation; component of Land Title Act legal definition.	N	VARCHAR2(16)
LTSA _PLAN	Plan designation; component of Land Title Act legal definition	N	VARCHAR2(32)
LEGAL_FREEFORM	Principal components of Land Title Act legal definition not parsed into LTSA_LOT, LTSA_BLOCK, LTSA_PARCEL or LTSA_PLAN.	N	VARCHAR2(32)
LAND_ACT_PRIMARY _DESCRIPTION	Land Act "Primary" entity description, which is the historical root surveyed entity of this feature.	N	VARCHAR2(255)
ADMINISTERED_BY	Crown Administrator Code	Y	VARCHAR2(32)
ADDRESS_CUSTODIAN	Address custodian, as one of BC Assessment, Local Government Municipality, or "Other"	N	VARCHAR2(50) **{dAddressCustodians}**
ADDRESS_REFERENCE	Address reference	N	VARCHAR2(30)
ADDRESS_TYPE	Type of address	N	VARCHAR2(12)
UNIT_NUMBER	Unit Number	N	VARCHAR2(10)
CIVIC_NUMBER	Street Number	N	VARCHAR2(15)
CIVIC_NUMBER_SUFFIX	Street Number Suffix	N	VARCHAR2(10)
STREET_NAME	Street Name	N	VARCHAR2(40)
STREET_TYPE	Street Type	N	VARCHAR2(7) **{dStreetType}**
STREET_DIRECTION	Street Direction	N	VARCHAR2(2) **{dCardinalDirections}**
ALTERNATE_PLACE_NAME	Commonly known local area name	N	VARCHAR2(32)
MUNICIPALITY	Municipality Name	N	VARCHAR2(50)
CAPTURE_METHOD	Method in which dataset was compiled; whether by Coordinate Geometry data entry ("COGO"), digitized, or scanned.	Y	VARCHAR2(12) **{dCaptureMethods}**
POSITIONAL_ACCURACY	Position Accuracy code in meters	Y	VARCHAR2(12) **{dPositionalAccuracy Ranges}**
DISTRIBUTION_PROFILE	Access / sharing constraint value, delimited by attribute domain to differentiate among features that may be shared or distributed to ICIS and government clients, to government clients only, or whose	Y	VARCHAR2(2) **{dDatadistributionPro files}**

Column Name	Description	Opt.	Data Type (Size) {GDB Domain}
	distribution profile is "unknown"		
FREE_COMMENT	Various Comments	N	VARCHAR2(255)
UPDATED_BY	Most recent feature update editor	Y	VARCHAR2(50)
LAST_UPDATE_DATE	Most recent feature update date	Y	DATE
SOURCE_PROVISION_DATE	Currency of information used to derive the feature.	Y	DATE
SYSTEM_EFFECTIVE_DATE	Feature Load or Update date	N	DATE
GDB_SUBTYPE	{**Subtype Field**} Long integer, with valid values 1 – 6, used to distinguish among geodatabase subtypes.	Y	LONGINTEGER

4 Data Quality

The ICF is intended to be a current, comprehensive, seamless, fully attributed, accurately positioned, minimally distorted, topologically correct province-wide, polygonal representation of the land parcel fabric of the province.

4.1 Lineage

The ICF is compiled from a number of independent sources. The goal of compilation will be to integrate and synthesize these independent contributions into a consistent (content, structure, format and currency) representation of the parcel fabric. Once compilation is complete, the fabric will be updated and maintained through notification from source systems (Altos, Tantalis and value BC).

4.2 Completeness

The ICF will contain representation of all of the unique land parcels as described in Section 2.1 and identified through the processing of LTSA, Tantalis and BCA records (i.e. as identified in the Master Parcel Table).

The ICF will not contain any polygons that are not associated with a corresponding attribute record from the MPT or as identified and inserted during assessment (e.g. missing Crown parcels) or as created and identified during compilation (e.g. Common Property, remainder, etc.). No participating attribute record will exist absent a corresponding polygon. Each ICF feature record will contain legitimate values in the following attribute fields

- LOCAL_GOVERNMENT_AREA
- LAND_DISTRICT
- ADMINISTERED_BY
- ICF_LEGAL_DESCRIPTION
- CAPTURE_METHOD
- POSITIONAL_ACCURACY
- SOURCE_PROVISION DATE

4.3 Consistency

Data comprising the ICF arrives from a number of sources. Compilation of the ICF is largely an exercise in integrating the various components into a consistent fabric. Adherence to these standards and observance of the best practices described in the User Guide will ensure that the fabric is consistent, seamless and structured to be well behaved in a GIS environment.

4.4 Spatial Data Quality

There are two aspects of spatial data quality – positional accuracy and relative accuracy. Positional accuracy is a measure of the difference between the position of the geometric representation of the parcel and the position of the parcel measured in relation to the underlying geodetic reference system. Positional accuracy of the land parcel is established by the tools and techniques employed when the parcel was delineated on the ground.

Relative accuracy is a measure of how accurately the parcel polygon represents the true size, shape and orientation of the actual parcel. It is affected by the tools and techniques associated with creating the parcel polygon geometry from the original survey measurements.

The ICF does not attempt to meet any particular standard for spatial data quality. The objective of compilation is to construct a seamless fabric from the best available data. The objective from a spatial quality perspective is to accurately report the spatial data quality so the users are informed from a "fitness for purpose" perspective. The following table reflects the spatial data quality classifications used. The accuracies cited in the table have been derived as for a 95% confidence level but should only be used as guidelines for spatial data quality.

Table 8
ICF Spatial Data Quality Classification

<table>
<tr><th rowspan="5">Compilation Method</th><th rowspan="3"></th><th colspan="4">Positional Accuracy</th></tr>
<tr><th colspan="2">Surveyed Ties</th><th colspan="2">Non-survey Ties</th></tr>
<tr><th>High Density (ISA, BC ACS)</th><th>Low Density (isolated and secondary ties)</th><th>Well-defined feature (TRIM, DRA, Orthophoto)</th><th>Unknown, small scale</th></tr>
<tr><th></th><th>Δ < 1m</th><th>1m < Δ < 10m</th><th>10m < Δ < 20m</th><th>Δ > 20m</th></tr>
<tr><td rowspan="2">COGO</td><td>A1 (< 0.25m)</td><td rowspan="2">B (0.25m - 6.5m)</td><td rowspan="2">C (5 - 20m)</td><td rowspan="2">D (15 - 40m)</td></tr>
<tr><td>Other (scanning, digitizing)</td><td>A2 (< 1.5m)</td></tr>
</table>

Class A parcels are well-positioned in relation to the geodetic reference system. They are typically tied directly to the geodetic reference system through conventional survey ties or through survey quality GPS observations. The differentiator between "A" quality data and "B" quality data is the traverse length between the geodetic monuments (e.g. traverses less than 5,000 metres should result in "A" quality data, while traverses longer than 5,000 metres will usually result in "B" class data.). For survey quality GPS receivers, baseline lengths less than 100 km should produce "A" class data and baselines up to 1000 km will produce B" class data. "C" class data will have been controlled through reference and relation to well defined features mapped in

TRIM or the DRA or visible on orthophotos. “D” class data will typically be remote, isolated parcels positioned in relation to less well defined topographical features (e.g. shorelines, stream banks, etc.).

For portions of the fabric that have been compiled by COGO, users could expect the relative accuracy between different parts of the fabric to be better than 0.25 m. For scanned or digitized portions the potential distortions would overshadow the more accurate positioning and relative accuracy between portions may approach 1.5 m.

The spatial data quality of class B, C and D parcels is dominated by the positional accuracy of the parcel definition and the relative accuracies are largely a result of the propagation of the positioning uncertainties.

It should be noted that the preceding analysis and classification scheme is at best a generalization. These classifications are essentially expectations of accuracy resulting from different combinations of ground positioning and parcel construction techniques. Nor does this analysis and classification scheme attempt to predict or interpret the impact on either positional or relative accuracy of the various adjustments and “fitting” algorithms that may have been applied during compilation. Applications requiring explicit positional accuracy estimates should use these data with caution.

4.5 Thematic Accuracy

Thematic accuracy is a measure of the correctness of the identification and description of the parcel polygons in the fabric.

4.5.1 Parcel Identification

The ICF parcel polygons must be correctly identified to enable the linking of each polygon with its corresponding attribute record from the Master Parcel Table. The primary link should be made through the PID or PIN numbers assigned to each parcel. In many cases the data contributed by local governments will carry either the Folio and Roll number, or PID number or a unique ID that will enable that subsequent link. In many cases the polygon will have to be visually identified and manually linked. The compiler must demonstrate on delivery that the identification process is rigorous enough to assure an overall 97% accuracy. All newly created parcels must be accurately identified. Processes and checks should be documented and sampling theory may be employed to confirm that this standard has been met. For example, on completion of the attribution it may be sufficient to re-join the completed fabric with the original MPT to ensure that there are no unsubstantiated discrepancies.

4.5.2 Parcel Description

The principal source of ICF thematic information is the Master Parcel Table. The Master Parcel Table is created by processing information from the Land Title and Survey Authority records, Crown Land Registry records and BC Assessment records. Inconsistencies in identification and description are rationalized. Un-resolved ambiguities (< 3%) are identified and flagged as known deficiencies and dealt with during maintenance and update. The Master parcel table is created under contract and is certified on delivery to be correct at a 97% confidence level. New parcels and new thematic information may be introduced into the fabric during compilation. That information would be sourced from the primary records mentioned above. Appropriate comments should be inserted in the CONTRACTOR_COMMENTS field of each of these records and for any other parcel records that may have been modified or updated during compilation. The attribute records associated with the ICF will be compared to the original Master Parcel Table on delivery of the completed ICF. Any unsubstantiated differences will be sufficient reason to reject the submission.

4.6 Temporal Accuracy

The parcel polygon geometry and the attribute records must accurately reflect the state of the fabric as of the reported currency date. During compilation, the currency date will be frozen at some point prior to data assembly. The currency date of the Master Parcel table should be entered into the SOURCE_PROVISION_DATE field of the ICF record. On delivery, the representation will be considered to be current to that date. During maintenance, updates will be completed in a “first in, first out” sequence. The currency of the maintained fabric will equal the date of the oldest update notification record in the maintenance queue or the effective date of the queue if the queue is empty.

4.7 Topological Structure

The ICF is presented as a continuous, polygonally structured, two-dimensional map. The geometrical representation of the parcel polygons must be topologically correct.

4.7.1 Closed Polygons

All land parcels must be represented as polygons in the ICF.

4.7.2 Overlaps

No land parcel polygon will overlap any other land parcel polygon in the ICF. On receipt of compilation deliverables, the absence of overlaps will be checked and verified. The presence of overlapping polygons will be cause for rejection and return of the deliverable.

4.7.3 Slivers

The compiled fabric must not contain any illegitimate slivers. Illegitimate slivers are polygons that are created erroneously or inadvertently between parcel boundaries that are meant to be co-incident. On receipt of compilation deliverables, the legitimacy of included slivers will be verified. The presence of illegitimate slivers in the delivered fabric will be cause for rejection and return of the deliverable.

4.7.4 Gaps

The compiled fabric must not contain any illegitimate gaps. Illegitimate gaps are open spaces created erroneously or inadvertently between parcel boundaries that are intended to be co-incident. On receipt of compilation deliverables, the legitimacy of included gaps will be verified. The presence of illegitimate gaps in the delivered fabric will be cause for rejection and return of the deliverable.

5 - Compilation Rules and Best Practices

http://www.cartosmart.com/icf/

6 - Metadata

The overview record for the Integrated Cadastral Fabric set of information products can be found at:

http://aardvark.gov.bc.ca/apps/metastar/

7 - Quality Assurance Procedures

The ICF is an information product compiled from a number of sources. As such it is difficult to establish a rigorous quality standard. For such a compiled product it is more useful to simply describe the quality of the product so that analysts and decision makers can establish an appropriate level of confidence in the available information.

7.1 Lineage

The ICF is compiled in accordance with published standards and accepted processes and best practices.

Lineage information is comprised of the Project Data Assessment Report, the Compilation Project Statement of Work and the Compilation Summary Report. Each will be completed and signed off by the Compilation Project Coordinator, the Program Manager and the Compilation Contractor as required and archived as project metadata for each project. These reports will be considered mandatory elements.

7.2 Completeness

Every record in the Master Parcel Table is associated with a spatial object in the ICF Feature table or explicitly disassociated from the ICF Feature table.

The Master Parcel table will be the measure of completeness for the ICF. The ICF will contain representation of all of the unique land parcels identified through the processing of LTSA, Tantalis and BCA records. It is accepted that the Land Titles and Survey Authority records and the Crown Land Registry records are authoritative. The Master

Parcel Table is specified to accurately identify 97% of the parcels to be included at a 97% confidence level. The contractor delivering the Master Parcel Table will sample, test and certify compliance with this standard. Random testing will be done to monitor compliance to this standard.

Every parcel polygon in the ICF will be associated with a minimally attributed ICF Feature record.

Each ICF feature record will be tested on delivery to ensure that each mandatory field is populated and that each populated field contains legitimate values.

- LOCAL_GOVERNMENT_AREA
- LAND_DISTRICT
- ADMINISTERED_BY
- ICF_LEGAL_DESCRIPTION
- CAPTURE_METHOD
- POSITIONAL_ACCURACY
- SOURCE_PROVISION DATE

The following fields in the COMPILATION_REVIEW table shall be populated for every parcel record that has been altered during compilation

- CONTRACTOR_COMMENTS
- CONTRACTOR_CODE

7.3 Consistency

The ICF will be not vary in form, structure nor content.

Compilation of the ICF is largely an exercise in integrating the various components into a consistent fabric. Adherence to these standards and observance of the best practices described in the User Guide will ensure that the fabric is consistent, seamless and structured to be well behaved in a GIS environment. The Compilation Summary Report and the Quality Assurance Report will be the measure of consistency. These reports will be reviewed, accepted and signed off by the Compilation Contractor as required, the Compilation Project Coordinator and the Program Manager.

7.4 Spatial Data Quality

Each ICF Feature record will contain a statement of Positional Accuracy and a description of the Data Capture Methodology. These two elements are used to infer a Spatial Data Quality indicator for each ICF parcel.

Two elements (Positional Accuracy and Data Capture Method) combine to define spatial data quality. Compilation deliverables will be checked to assure that both of these parameters have been correctly reported.

Positional Accuracy should be reported in accordance with the guidelines identified in Table 8 (Section 4.4). On delivery, a representative and statistically valid sample of polygons will be tested to ensure that the positional accuracy has been correctly reported 95% of the time at 95% confidence.

All LG parcels reported as being COGO compiled should remain attributed as such unless there is compelling, over-riding evidence that they should be attributed as "OTHER". In this case that action should be noted in the CONTRACTOR_COMMENTS field of the COMPILATION REVIEW TABLE. All newly COGO compiled polygons should be accompanied with COGO traverse files. Compilation deliverables will be scanned to ensure that these criteria are met.

7.5 Thematic Accuracy

Every parcel polygon in the ICF is correctly identified and correctly described.

Thematic accuracy of ICF parcel polygons is understood to relate the correctness of the identification and description of the parcel polygons that comprise the fabric. For compilation purposes, the Master Parcel Table (including Tantalis) is considered to accurately define the content or completeness of the fabric. The Master Parcel Table is certified to accurately reflect the identity (PIN or PID) and description (ICF_LEGAL_DESCRIPTION and the parsed legal description components) of the parcel polygons.

Compilation deliverables will be tested in the following fashion

- Spatial data will be sampled to ensure that it has been accurately identified. If the supplied data has included PIN and PID links then the sample will test that no unsubstantiated identity changes have been introduced into the fabric. If the compilation task included the identification of the parcel polygons then the sample will test that the parcels have been accurately identified.

- The ICF Feature Table will be compared to the original Master Parcel Table to ensure that no unsubstantiated changes have been introduced during the linking exercise.

7.6 Temporal Accuracy

The ICF will be considered to be current to the oldest Source_Provision_Date in the ICF Feature table for non-maintained fabric and to within thirty days for maintained fabric.

The parcel polygon geometry and the attribute records must accurately reflect the state of the fabric as of the reported currency date. The currency date of the Master Parcel table should be entered into the SOURCE_PROVISION_DATE field of the ICF FEATURE table. Compilation deliverables will be checked to ensure that they accurately reflect the extent and content of the Master Parcel Table as of that date. Any differences must be substantiated in the CONTRACTOR_COMMENTS field.

Temporal accuracy is more of an issue in maintenance mode. In maintenance, the fabric must be as current as the most recent update date. In maintenance, the maintenance queue will be tested daily to ensure that there are no pending updates that predate the most recent update date in the ICF feature table for any given project unit.

7.7 Topological Structure

Every parcel polygon comprising the ICF will be represented as an independent polygon. Each parcel polygon will faithfully represent the size shape and orientation of its corresponding land parcel. No parcels will overlap. There will be no illegitimate gaps or slivers in the ICF.

The ICF is presented as a continuous, polygonally structured, two-dimensional map. The geometrical representation of the parcel polygons must not contain any illegitimate overlaps, gaps or slivers. Compilation deliverables will be tested with ESRI ArcGIS tools to ensure that no illegitimate overlaps, gaps or slivers exist in the fabric.