THE POSSIBILITIES ARE INFINITE FUJITSU

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TO:
Ministry of Sustainable Resource Management

Attention: Dave Chater

Version 1.2 – FINAL DRAFT

Integrated Registry – Data Assessment

Ministry of Transportation Supplement

FUJITSU CONSULTING

DOCUMENT HISTORY

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0.9	Initial draft	Brendan Feary	July 16, 2003
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1.1	Recommendations added	Brendan Feary	August 18, 2003
1.2	Revisions based on ICF comments received	Vern Danes Dave Chater	September 15, 2003

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1. INTRODUCTION

This document is a supplement to the earlier data assessment work performed by Fujitsu Consulting and documented in the report, Integrated Registry – Data Assessment, Version 1.4 (April 25, 2003). It presents the results of a high-level data assessment of land records information managed by the Ministry of Transportation (MOT) that are potentially within the scope of the Integrated Land and Resource Register (ILRR).

The high-level data assessment for land records information used and managed by MOT followed from a workshop held with a cross section of Ministry staff on February 24. 2003. The purpose of that workshop was to present and discuss the model for the Integrated Land and Resource Register and the role of MOT in the project and as users of the eventual system. An outcome of that workshop was that MOT is not only a key user of land and resource registry information, but also a potential provider of information as well. The purpose of this engagement was to explore that notion further by identifying and assessing any information collected and managed by MOT that needs to be incorporated in the Integrated Land and Resource Register and to document any data accuracy and completeness issues accordingly.

1.1 Ministry Background

One of the goals defined in the Ministry of Transportation's Service Plan is to *'...maintain a highway system that is safe, reliable and supports the economy'*. In response to this goal the Ministry's key priorities are to maintain provincial highway assets and to invest in improvements to those assets.

Maintaining and improving provincial road and highway assets requires the Ministry to manage the legal land records that define the land corridors through which the public road and highways transportation system is developed. To support new road or highway development, or the improvement of existing ones, the Ministry must acquire or expropriate land affected by a planned route. Following construction of the road or highway, the Ministry may then dispose of portions of land that are no longer included as part of the highway corridor, whilst retaining ownership, on behalf of the provincial Crown, for those land portions remaining with the corridor.

The Properties and Business Management Branch is responsible for providing expertise to the ministry in the areas of property acquisition, expropriation, leasing and inventory management, and land survey and tenure. It ensures that these assets are acquired, maintained and disposed of effectively and efficiently within a set of established standards. The branch, on behalf of the ministry, is responsible for dealing with all outside agencies and all inter-ministry agreements concerning the acquisition and management of land.

Of the many legislative acts governing the Ministry's activities, the following acts are key in relation to the Ministry's role as a provincial landowner. These include the *Highways Act*, the *Land Title Act*, the *Land Act*, and the *Expropriation Act*.

Ownership of provincial highways assets, including land designated for public roads and highways, is vested with the BC Transportation Financing Authority (BCTFA), a provincial Crown corporation established in 1993 under the *Build BC Act*. In the provincial Land Titles system, the BCTFA is identified as the registered owner for all designated parcels of land held by the Ministry that form part of the overall public road/highway system.

1.2 Participants

This report is the result of meetings held with key staff involved in land management at the Ministry of Transportation. The following table identifies the Ministry staff that participated in the meetings. A summary of the notes of those meetings is provided in Appendix A.

MOT Participant	Position	Department
Phil Christie	Director, Land Management	Partnerships Department, Deputy Minister's Office
Deborah Miller	Manager, Land Survey & Tenure	Properties & Business Management Branch, Highways Department, Deputy Minister's Office
Greg Mertton	Manager, Property Acquisition	Properties & Business Management Branch, Highways Department, Deputy Minister's Office

2. FINDINGS

2.1 Land Records Management at MOT

The following are the major land management and administration functions performed by MOT that are of most interest to the Integrated Registry:

- Road Dedication by Gazette;
- Road Dedication by LTO Registration;
- Section 4 Roads;
- Land Acquisitions and Dispositions; and
- Tenures on Public Roads.

Each of these functions is further described in the following sub-sections.

2.1.1 Road Dedication by Gazette

Prior to 1979, public roads and highways were legally created by publishing a notification in the BC government Gazette. Such publication gave formal notice of the establishment of a public road or highway, with ownership of the lands within the highway corridor vesting with the Province under the administration and control of the Ministry of Transportation. The gazette notice specified the location (i.e. centerline) and the width of the road right-of-way corridor. In addition to creating public roads (i.e. notification of road dedication in the gazette) the gazette was and continues to be the vehicle to publishing notification on road closures and closure of access to portions of roads. The gazette is published every two weeks.

Road dedication by 'gazetting' had some associated problems and is presumably one of the reasons the practice was discontinued after 1979 (see below), in favour of registration in the LTO based on a plan of survey. Gazetted road parcels may be defined by metes and bounds, or a legal survey or design drawing may have been prepared, however, there was no statutory requirement to do so. As a consequence some of the road definitions were quite vague, comprising defined start and end points with offsets, but poor definition of the route between the start and finish points. This became quite problematic if a road centerline (i.e. route) changed over time or the width of the road changed as result of widening. As a result the definition of the road is time dependent and determining the legal definition at a particular point in time is very difficult.

There was also no statutory requirement to register the road in the Land Title Office and Registrars used their discretion as to whether the roads were noted on title. These problems resulted in poor legal definition of road corridors with inconsistent supporting documentation. Approximately 70% of gazetted roads are noted on title. The remaining 30% create problems for the reasons cited above.

The gazette is primarily a paper-based record, however, MOT has textual database that contains references to where original paper documents are filed. There is no spatial database of parcels depicting gazetted public roads and highways.

2.1.2 Road Dedication by LTO Registration

Since 1979, public road dedications over private land have been registered with Land Titles under section 107 of the Land Title Act (LTA), based on a plan of survey. While no title is created for the actual road parcel(s), a notation is made on affected titles identifying the portion excluded from title to be used for public road. The legal description thus identifies both the included title portion and the excluded road portion (e.g. Lot A Plan 500 except that portion shown as public road on Plan 150). Because all the boundaries forming the road dedication are defined by survey, this method of registration provides for more certainty in legal definition and consistency of documentation than existed under the 'gazetting' practice.

Gazetted road designations are converted to post-1979 road designations using a Form 12 process. This requires the completion of a survey with submission and registration of a Statutory Right-of-Way plan (or a reference plan) pursuant to Section 115 of the Land Title Act. Approximately 15-20% of provincial roads are yet to be converted using this process. These roads exist mainly in the northern regions of the province and more accurate estimates should be confirmed with regional MOT offices.

Good documentation exists at the LTO for the surveyed definition of public roads, this information is used[1] in the compilation of the Integrated Cadastral Fabric (ICF) within the ICIS initiative. This is consistent with the role of the LTO as the registration authority for plans submitted under the Land Title Act as a pre-requisite to issuing title, but not as the agency responsible of building and maintaining parcel mapping. Other than scanning the plans and making the images available through BC Online, the LTO's role has never been to engage in compiling the information shown on survey plans into a continuous fabric of all land parcels.

Road designations over Crown land are registered with the Surveyor General Branch based on a plan of survey, such as in processing of an application for Crown Grant. Any area to be used for public road is deducted from the total area of the parcel. All roads designated on Crown land under the Land Act are compiled from the plan of survey and included within the Crown parcel fabric maintained by the Surveyor General. This represents a major difference from roads dedicated under Section 107 of the Land Title Act as described above where no compilation into the parcel fabric occurs.

[1] The ICF group within the Ministry of Sustainable Resource Management obtains the information from the LTO and uses this information to update affected parcels. To this point, a business requirement for road parcels within the ICF has not been identified and as such the ICF does not contain discrete parcels for public roads.

2.1.3 Section 4 Roads

Section 4 roads are roads where public funding has been expended to create or maintain them, but for which there is no legal dedication or designation to support them, nor are they shown on title. Once identified as a Section 4 road, a survey is performed and submission made to the LTO under Section 107 of the Land Act. Generally Section 4 roads will be identified during the course of performing a field inspection or survey for some other purpose. Examples include: identification by a LWBC land inspector as part of an application for Crown land, during the transfer of ownership of private land or during road constructions activities.

In the past MOT regional offices have spent up to $500,000 per year to conduct surveys and register Section 4 and Section 6 roads in an effort to clean up the system. This resulted in the proper legal designation of roads that have existed and been used as public roads for sometimes many years. The activity to legally recognize and designate these roads via survey, however, has not been performed for the last 4 years. Like the remaining gazetted road designations, the majority of Section 4 roads exist in the northern regions of the province. Estimates to complete this work ranges from $1M - $3M with approximately 70% cost attributable to survey costs.

2.1.4 Land Acquisitions and Dispositions

To support the development, maintenance and expansion of the public road and highway system in the province, MOT may acquire land in one of three ways:

- by consensual agreement;
- by expropriation of private land; or
- by Crown acquisition.

Acquisition by consensual agreement occurs when Ministry of Transportation officials negotiate directly with landowners that will be impacted by a change in the highway system. If consensual agreement cannot be obtained then the land may be acquired by expropriation under the provisions of the Expropriation Act. Unlike road dedications, where no title (e.g. fee simple interest) is raised for the portion to be used as public road, all land acquired through expropriation is registered in the name of the province (as represented by the Ministry of Transportation and the BC Transportation Financing Authority). The change in ownership of the expropriated land is reflected in the Land Title system. Acquired land is tracked and managed by the PAIMS system, which is described below.

For Crown acquired land, in most cases the details are recorded in the Tantalis system as a transfer of administration and control to the Ministry of Transportation (or the BC Transportation Financing Authority).

Acquired land may be further subdivided based on the requirements of the proposed highway development. All survey work is completed prior to construction, and ownership

of affected lands is transferred to the Ministry, thereby avoiding potential trespass situations by road construction crews. Once construction is completed, the portions lying within the road or highway corridor are designated as public road, while the portions lying outside the corridor are flagged for subsequent disposition. The Land Titles system and Tantalis are used respectively to record the details of any parcels created through subdivision as a result of the highway development process over private or Crown land. Parcels identified for disposition are recorded and managed in the LIS, which is described below.

One issue emerged during the high-level data assessment that is relevant to the acquisition and disposition of MOT held land, and results in inconsistent definition of the status of ownership of land between the Land Title system and the Crown land Tantalis system. Land registered in the land title system that is acquired by MOT though expropriation effectively becomes Crown held land, however, the Surveyor General Branch is never notified of this transaction. As result, the Land Title system will show the land held by the province (as represented by the BC Transportation Financing Authority), while the Tantalis system will show the land (or the parent parcel of the subdivided land) as privately held by the party to whom the land was granted when alienation from the Crown first occurred. There is no notification from Land Titles or MOT to indicate that acquisition of a parcel of land has taken place and that ownership (in the Land Titles system) has been transferred from a private party to a representative agency of the Crown.

2.1.5 Tenures on Public Roads

Since MOT is the manager of provincially held land along public road and highway corridors, it also manages certain activities over those lands in the form of short and long-term tenures. Such tenures may be leases, licenses or permits that are issued for specific purposes and recorded against these lands.

The Ministry manages approximately 50-100 long-term leases or licenses registered against lands held by MOT/BCTFA. Examples include: leases along the Galloping Goose trail to the Capital Regional District and Terasen Gas, railway corridors, and fibre-optic corridors along the Trans-Canada Highway.

The Ministry also manages thousands of short-term tenures for a range of activities occurring within and adjacent to road or highway corridors. An example would be an area set aside for gravel storage during highway construction activities.

In addition to the short-term tenures discussed above, there are thousands of permits that are issued over and across public roads and highways for power lines and pipelines. These permits are issued primarily to utility companies such as BC Hydro, Telus, and Terasen Gas to support their transmission and distribution activities. It is unknown how many of these permits have been surveyed.

2.2 Information Systems

The Ministry has a number of information systems that it uses to support the management of the land. The systems used to support the acquisition and disposition of land, and that are of potential interest to the Integrated Registry, are described below. Of particular note is the fact that the Ministry systems supporting land management functions are all text-based. The Ministry has not implemented any spatial geographic systems to support any of its land management functions, nor does it have any staff capability to do so. The Ministry also relies extensively on the external systems, such as ALTOS, Tantalis and BCAA as sources of key land-related data.

2.2.1 Property Acquisition Inventory Management System

The Property Acquisition Inventory Management System (PAIMS) is an operational system used by MOT to manage and track property acquisitions through expropriation or Crown acquisition. The primary sources of data for PAIMS are the Land Title system for private land acquisitions and Tantalis for Crown acquisitions. Once excess land is identified after finalization of the highway design, it is moved across to the Land Information System (LIS) for managing its disposition.

PAIMS is a text-based system only and contains no spatial information. Affected parcels are defined on a survey plan held at either the Land Title Office or the Surveyor General Branch. Furthermore, specific information held in PAIMS about private property owners is protected by confidentiality and cannot be made more generally accessible.

2.2.2 Land Information System

The Land Information System (LIS) is an operational system recently implemented by MOT to manage and track properties held by the Ministry for disposition. The system brings together key details about property held by MOT/BCTFA from the Land Titles, Tantalis, BC Assessment and PAIMS. Like PAIMS, LIS is text-based system and contains no spatial information. All the key property information used in LIS is sourced from external systems.

2.3 Implications for the Integrated Land and Resource Registry Project

The following is a summary of the main implications for the Integrated Land and Resource Registry Project as a result of the findings of this very high-level assessment of MOT data.

- From the interviews and discussions it appears that the majority of legal road information exists as survey plans lodged at the Land Title Branch or the Surveyor General Branch and registered as exceptions to the legal description of the affected lands. From the Land Titles perspective, a highway plan is

treated no differently than the other plans submitted under the Land Title Act, and are registered and scanned in similar fashion. However, while good supporting legal documentation exists, particularly since 1979, there is no spatial database showing the location of all public road and highway corridors relative to the surrounding parcels. This is an important consideration for Integrated Registry since the lack of road information will create discontinuities (or holes) in the provincial parcel fabric.

- From the previous point it follows that significant effort would be required to convert paper or image records of highway plans into electronic form and to integrate them into a continuous spatial database or parcel fabric. It must be noted that neither Land Titles nor MOT has the mandate or capability to capture the dimensions shown on the plans and assimilate them into the database containing the spatial parcel fabric. Only highway plans over Crown land that are submitted to the Surveyor General Branch (under the Land Act) are integrated in the Crown parcel fabric, but the number is small in comparison to those held by Land Titles.
- Based on the interviews, Form 12 conversions (i.e. converting gazetted roads to registered road dedications based on survey) and Section 4 roads appear to be the areas where the most the investment is required in order to provide the level of completeness and certainty regarding the location and definition of all public roads from a legal perspective. This certainty of definition will undoubtedly be important for the Integrated Registry. Since most of the areas to be converted lie in the least developed and populated areas of the province, further analysis on the costs, benefits and risks associated with completing or not completing this work is required.
- Because the duration and purpose of the tenures, long-term tenures over MOT held lands would most likely to be required for inclusion in the Integrated Registry. Conversion of the existing 50-100 tenures from paper records into electronic form suitable for inclusion in the registry is therefore recommended.
- It is unlikely that short-term secondary tenures need to be included in the Registry because of the duration and nature of activities implied by the tenure, however, there may be some exceptions. Confirmation of short-term tenures required for inclusion or exclusion should be confirmed during the requirements phase of the main Integrated Land and Resource Registry Project. The same also applies to permits for crossings since significant research and conversion effort would likely be required.
- Based on discussions with MOT and MSRM staff, known data inconsistencies exist between Tantalis and the Land Title system resulting from land acquisition and disposition activities performed by MOT. These issues will require resolution in the Integrated Registry.
- Because PAIMS and LIS contain data sourced from other registry systems (e.g. ALTOS, Tantalis, BCAAA) neither would be considered a source of data for the Integrated Registry.

- Since the Integrated Land Registry will use the Integrated Cadastral Fabric as its spatial data, it is likely that the business requirements for the registry will confirm a need to identify road parcels as discrete parcels in the registry. By including road parcels in the Integrated Registry users will have the ability to identify the extent of the interest held by the MOT and be able to key the interest to more detailed operational data.

3. RECOMMENDATIONS

The following is a summary of recommendations arising from this data assessment with respect to the Integrated Land and Resource Registry Project.

Inclusion of Road Parcels in ICF

Although the planned business requirements process for the Integrated Land and Resource Registry will confirm this need it is anticipated that road and road parcel information will be required.

It should be noted however that while the LTO does register road parcels no PID exists for road parcels, which will add to the complexity of adding and maintaining road polygons to the ICF. This issue should be investigated with the LTO and the ICF group.

Inclusion of Long-term MOT Tenures

Long-term tenures over MOT held land should be included within the ILRR. This will require conversion from existing sources (paper and electronic) into the ICF, along with key attribute information. The degree of effort convert the existing 50-100 tenures is comparatively minor.

Inclusion of Short-term MOT Tenures

Inclusion of short-term tenures over MOT held land should be verified as part of the business requirements activity to be undertaken for the ILRR. While it is anticipated that many or all the short-term tenure types will not be needed, this needs to be confirmed in discussions with representatives of the various Registry stakeholder groups.

Reconciling Land Titles and Tantalis for MOT Lands

Discrepancies or inconsistencies between Land Titles and Tantalis regarding ownership and status of MOT controlled lands should be addressed as part of any future cleanup efforts within Tantalis. The use of ICF will help facilitate this process, as ICF provides attributes to accommodate this reconciliation. This may also require review of existing agreements or understandings between the various agencies involved in MOT related acquisitions and dispositions.

Completion of Form 12 Conversions and Section 4 Roads

MSRM should work with MOT to explore ways to restore funding and support to complete the conversion of gazetted roads (Form 12 conversions) and Section 4 roads. Both the LTO and ICF groups are aware of this requirement however given that the areas remaining to be converted are in more remote areas of the province, work has been deferred pending an assessment of costs, benefits and risks.

The business requirements activity to be undertaken in the next phase will help identify the benefits and risks associated with the completion or non-completion of this work, which translates into the presence or absence of registered public road/highway data in

the ILRR. It is assumed that MOT has a good understanding of the costs involved based on the work they have already completed in this area.

APPENDIX A – MEETING SUMMARIES

Meeting Information			
Project Name	Integrated Registry – Data Assessment Project	**Meeting Date**	May 21, 2003
Meeting Location	3A – 940 Blanshard Street	**Meeting Time**	2:00 pm
Meeting Called by	Brendan Feary, Fujitsu Consulting Inc.	**Meeting Duration**	1 hour
In Attendance			
• Phil Christie, Ministry of Transportation. • Brendan Feary, Fujitsu Consulting Inc.			

Meeting Notes:

- Short-term leases/licenses along public road/highway corridors not likely to be registerable interests.
- Approx. 50-100 long-term leases/licenses to against fee-simple lands held by MOT/BCTFA in LTO. These are generally based on survey (as prerequisite for registration in LTO)
  - Examples include: Galloping Goose Regional Trail leased to CRD and Terasen Gas
  - Railway corridors
  - Fibre-optic corridors along the trans-Canada
- There are 1000s of permits for such things as power lines and pipelines crossing public roads and highways. Not sure of is these should be in registry. Don't know many of these are surveyed, or just notations on title.
- PAIMS – Property Acquisition Inventory Management System – is operational system used by MOT to track property acquisitions (through expropriation or Crown acquisition).
  - Specific information about private property holders is confidential and cannot be made more generally accessible.
  - Primary source of data is LTO (for private land expropriations) and to lesser extent Tantalis (Crown acquisitions)
  - Excess land (after highway design process) moved across to LIS for managing disposition.
  - System is textual only – there are no spatial shapes. Survey plans defining affected parcels are held at either LTO or SGB. Highways plans held by SGB are incorporated into the Crown parcel fabric, but these are small in number compared to the plans held by LTO, none of which are captured spatially in the any parcel fabric.

  - PAIMS not a candidate for inclusion on ILRR because it is sourced from other registry systems and some of the information needs to be protected.
- LIS – Land Information System – is operational system recently built by MOT to manage and track MOT/BCTFA held properties for disposal. Again, information held in this system originates from other registries (LTO & Tantalis) as well from BCAA (assessment data) and from PAIMS.
- RIMS – Road Inventory Management System – holds all road inventory information along road/highway corridor in location referencing system. System has spatial component, but need to confirm if it holds any legal road parcel/right-of-way information. Contact is Ray Frederickson.
- Questions were asked about tracking aboriginal land and resource interests (or potential interests) as a result of the myriad of studies being performed as part of the Treaty process.
  - What's the policy to accommodate such interests?
  - What is aboriginal title and how is it recorded and registered since it may not be possible to define it on survey?

Meeting Information			
Project Name	Integrated Registry – Data Assessment Project	**Meeting Date**	May 27, 2003
Meeting Location	4D – 940 Blanshard Street	**Meeting Time**	10:00 am
Meeting Called by	Brendan Feary, Fujitsu Consulting Inc.	**Meeting Duration**	2 hours
In Attendance			
• Debra Miller, Ministry of Transportation • Greg Mertton, Ministry of Transportation • Brendan Feary, Fujitsu Consulting Inc.			

Meeting Notes:

- Public road dedications after 1979 are all filed in the LTO. These are based on survey and registered as exceptions to the legal description for affected land.
- Prior to 1979, public roads were declared by gazette. Gazette provides notification of declared or dedicated roads, road closures and closure of access to portion of a road.
  - Gazette contains the Ministers declaration of a public road and is updated and published every 2 weeks.
  - Registrars exercised discretion whether such roads were noted on title. Approx 70% are registered – 30 % are not and are problematic.
  - Gazetted road parcels are described by legal description or by metes and bounds. A survey or design drawing may have been prepared. Some descriptions are quite vague describing start/finish positions and left/right offsets either side of centerline, but defining for the C/L route between start/finish locations is poorly defined on non-existent (e.g. Alaska HWY).
  - Gazette also contains reference to where original documents are filed.
- Section 23 of LTA clauses (e) and (f) identify effect on indefeasible title for public roads and expropriating land necessary to build such roads, however, road dedications are sometimes NOT noted on title – particularly prior to 1979.
- Many public roads exist (i.e. public money expended to build such roads) but are not registered and hence are not shown on title (post 1979), nor have they been gazetted (pre 1979). These are known as Section 4 roads (Highways Act). Often the road has been physically constructed and therefore should be shown on title. A LWBC Land Inspector may record or show a sketch of a road as part of an application for Crown land.
- Regional MOT offices used to spend $500K per year surveying and registering Section 4 and Section 6 roads in effort to cleanup system, however, this is no longer done. The major cost in doing this is the cost of the survey (approx 70% of total cost). Efforts (funding and staff) to research and cleanup Section 4/6 roads have not been available for 4 years. Most outstanding roads to be cleaned up exist in the north of the province and are addressed on an as needed basis. Estimates to complete this work are $1M - $3M. The major cost is the cost of the survey (approx 70%).

- Searching information relating to public road or highway can be problematic. Separate plans required for each privately held parcel affected by public road (new, or widening, rerouting), except where adjacent parcels have common owner (represented on same plan). Some plans may never be registered (or show on title) making records difficult to find. Davenport Maps have built parcel maps incorporate plan numbers in a continuous fabric. These have been useful for the Ministry.
- Information may be lost as a result of plan cancellation from sequence of subdivision (i.e. prior plans cancelled and replaced by newer plan over subdivided land. Results in incomplete search chain and records that are difficult to find.
- Controlled access highways may need to be identified in ILRR. Such notifications are not necessarily recorded on title.
- Paper-based system is used for recording private and public permits crossing public roads (gas lines, hydro lines etc.).

SIGNOFF

APPROVAL

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