The Corridor Concept
Theory and Application

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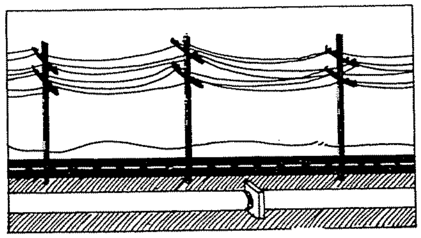

A discussion of the advantages and disadvantages of the corridor concept; primary, secondary and interim uses; design parameters for each corridor component; how to minimize incompatibilities in multiple facility corridors. The corridor concept is illustrated by a discussion of the Alberta Corridor Program.

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Introduction

Realizing that few regions are self-sufficient and, therefore, rely on a variety of goods and services to be transferred to and from each region, it is recognized that an efficient transportation system to deliver these goods and services is required. In accordance with the requirement that this be an **efficient** transportation system, the corridor concept has received positive attention in recent years. The corridor concept may be defined as the placing of transportation facilities within a planned continuous strip of land of varying width and length in such a manner that the use of land for right of way within the corridor is maximized, while at the same time, minimizing, or at least, mitigating against any adverse environmental or social effects on adjacent land uses. This concept implies a comprehensive, multidisciplinary planning approach.

The primary occupants of such a corridor appropriately include highways, transmission lines, pipelines and railways. Secondary uses which do not interfere with these primary tenants could include hiking trails, picnic areas, recreational facilities, and agricultural pursuits. In order that a workable interface between these primary and secondary uses is accomplished, vigorous accomplished, vigorous inter-disciplinary analysis of pertinent design and location parameters must be included in the planning process.

Corridor Concept

Traditionally, rights-of-way for linear facilities have been planned, approved and constructed on a project or case by case basis. Each company generated routing alternatives based upon facility needs, corporate selection criteria and in light of numerous regulatory requirements.

In situations of concentrated multiple facility egress, ingress or paralleling alignments, attention is focusing on the use of corridors as a means to reduce land use conflicts.

By way of definition, a corridor is a continuous strip of land connecting two points that contains two or more facilities for the conveyance of people, energy, information or material including facilities such as railways, highways, pipelines, communication circuits and transmission lines.

While examples of corridors exist, they have largely developed without the benefit of firm guidelines, regulations or legislation. For instance, in urban areas, many streets are occupied by water lines, powerlines, and telephone lines, in addition to the paved roadway.

In many cases a highway, transmission line or another linear facility already occupy adjacent rights-of-way and, in essence, these multiple rights-of-way form a corridor. However, each utility is generally planned and operated independently, adjoining chiefly for convenience. Although these incidental corridors demonstrate that various linear facilities can be placed together, they do not demonstrate the intent of the corridor concept.

A planned corridor is a strip of land intentionally set aside for linear rights-of-way and secondary and interim land uses. The corridor is designed and located to meet the needs of industry but also to reduce the impacts of linear facilities on adjacent land uses and the natural environment.

Recently, concern over the potential problems of future linear facilities acquiring access into major urbanized areas has led to the examination of window or penetrator corridors.

These corridors do not preserve the entire right-of-way from source to termination point, but rather are short corridors that start outside the growth area of major urban centres and provide a path through a constraint area to the critical terminal or linkage points.

Penetrator corridors help to ensure that urban development will not inhibit future linear facilities required for economic or urban growth and, conversely, help to reduce the constraints imposed by a multiplicity of linear facilities on the development and planning options in urban growth areas.

Corridor Aspects

The practical application of the corridor concept, while helping to resolve some concerns, may give rise to others. That is, there are both advantages and disadvantages to applying the corridor concept.

Advantages

The major advantages to the use of

corridors appear to be:

Conservation of Land. Given that the facilities in question are located above or below the same strip of land, there exists a more concentrated and efficient use of this finite resource. Right-of-way widths can be reduced yet the integrity of the facility is maintained.

Facility Integrity. The designation of a corridor allows for the control of surface uses and linear facility location and construction. The incidence of third party damage would be reduced as contractors, landowners, etc., are aware that a special control area exists and the corridor occupants can require the use of special construction techniques. Furthermore, special conditions can be imposed on the primary and secondary users that afford greater facility security.

Limited Environmental Disturbance. While recognizing that the environmental disturbance within the corridor is high, the corridor concept restricts the disturbance to one area rather than proliferating the landscape with numerous single-use rights-of-way and their cumulative impacts.

Land Use Planning Coordination. The certainty of the future location of linear facilities allows for the integration of these uses into the existing and proposed land use pattern. Secondary and interim use of the surface allows the corridor to complement adjacent land uses.

Further, planning authorities can reduce the external impacts of the future linear facilities by designating appropriate land use districts on the adjacent lands and then using innovative subdivision design.

Disadvantages

While the advantages to the corridor concept are significant, it should not be implied that the concept represents a panacea for all land use problems relating to transportation facilities. In addition to the major requirement that the individual corridor occupants relinquish some of their independence and individuality, the presence of numerous transportation modes within a concentrated strip of land has inherent difficulties. The disadvantages include:

Increased Disaster Potential. Should a natural catastrophe, a subversive action, or major facility failure occur, the potential for multiple facility failure is increased due to proximity.

Environmental Impact Concentrated. Due to the surface disturbances during construction, sensitive environmental systems within a corridor are more likely to be significantly and negatively impacted.

Increased Facility Construction Cost. A corridor route may increase the individual facility length, require special engineering design and mitigative devices, and often requires special construction techniques, the costs to a utility may increase. In addition, the construction and material standards may be higher due to the facility concentration.

Land Acquisition. Although the immediate purchase of the entire corridor would, given increasing land values, probably reduce the overall right-of-way acquisition costs, the amount of front end money is substantial. A major problem with corridors is the question of who should bear these costs.

Land Underutilization. Should linear facilities not require right-of-way in the corridor in the foreseeable future, it may be difficult to justify preserving the land. If, in the future, the corridor were to be abandoned, it could be difficult to convert the narrow strip of land to the same land uses of the neighbouring parcels.

The balance between advantages and disadvantages depends upon site specific factors, however, the corridor concept should be considered in situations involving multiple linear rights-of-way and in areas with severe constraints to linear facilities. Where the corridor concept is considered, a determination of possible alternatives or options for access should be identified, and a comparison of the potential costs, effectiveness and land use impacts of the alternatives undertaken.

Corridor Components

As stated earlier, corridors are established primarily for the use by the various linear facilities that transport people, energy, information or material. However, the concept has evolved to include secondary and interim uses.

Primary uses

These are the facilities for which the corridor was created and generally include some combination of highway, railway, gas and oil pipelines, low and high voltage transmission lines and distribution services.

Transmission Lines. A transmission line represents the facility which creates the least physical disturbance during construction, has the fewest engineering constraints and allows for the most successful reclamation practices. The open space provided by the transmission line can be utilized as a recreational asset, and, during the operation phase, the facility is clean, odorless and generally silent. The major impacts of power transmission lines are visual intrusion and electrical interference to communication facilities.

Pipelines. Environmental disturbance during the construction phase is high; however, with proper reclamation, long term impacts can be mitigated.

Engineering constraints are few and facility planning is governed by safety considerations, reliability of service concerns, economics, construction priorities, aesthetic values and environmental factors.

Highways. Given that highway construction causes total environmental disturbance in the local sense, a highway represents the facility which has the greatest physical disturbance during the construction stage. The final environmental impact is lessened by improved reclamation and landscaping techniques.

Railways. Of the four primary uses itemized, the railway represents the facility which is subject to the least flexible location parameters. If included in a corridor, the alignment of the railway, as the least flexible facility, would dictate the alignment of the corridor itself. With respect to the environmental impact of railway construction, the impact is similar in nature to that caused by highway construction but is of a lower magnitude due to a reduced right-of-way width.

Interim and secondary land uses

Corridors are designated to preserve the long term right-of-way needs of the primary users. However, from the time of designation, the surface of the land is available to both interim and secondary users. These uses ensure that the corridors do not lie vacant and sterilized, but rather support a variety of valuable community and private pursuits.

Secondary Uses. These are uses that are ancillary or complementary to adjacent land uses and are compatible with the primary uses. Secondary use of the corridors gives double value to the lands, as the surface over or under the primary uses (except highways) is utilized. Also, well planned and controlled surface users eliminate costly land management programs such as weed control. Another benefit of secondary use is that it allows the corridors to be integrated into the urban pattern. Generally, these land uses would not require permanent structures, rather they are uses requiring extensive tracks of land. Recreational, agricultural and horticultural pursuits, drainage, storage and parking facilities would be examples. However, site specific acceptable uses would have to be determined based upon an examination of the compatibility with the specific primary users, the existing and proposed adjacent land use, environmental, technical and legal constraints.

Interim Uses. These are temporary, existing or proposed land uses that are either incompatible with proposed primary or adjacent uses. Interim uses cover the transition period from corridor designation through land acquisition and adjacent land development, to full use by the primary uses. In particular, these uses reflect the continuation of existing uses until incompatibilities arise by either the construction of a primary use or the development of adjacent lands.

Buffers within a corridor proper are provided on either side of the roadway as a visual and noise attenuation device for both the adjacent land uses and the corridor secondary uses. Further, they can be used as a mitigative technique to reduce technical incompatibilities between primary users or as a safe-fail device.

General Corridor Location and Design Parameters

The planning, design and locating of corridors involves many factors, such as: the facility terminal locations, the need for rights-of-way, the types of transportation modes, environmental and social factors, engineering and design considerations, safety and security concerns, topography, land use plans, economics, and regulations and standards.

The technical design of the corridor must integrate and meet the requirements of all potential users. Each mode of transportation has its own design requirements, technology and new developments to minimize environmental impact. Therefore, when applying the corridor concept all potential users of the corridor and those impacted by the development must have input into the design. This input should come from the engineers, environmentalists, legal representatives, economists, etc., associated with each mode of transport along with input from potential specialized users, adjoining property owners and the general public.

Component Parameters

A prerequisite for corridor design is an understanding of the specific design and location parameters of each of the potential corridor components.

Although this is not a comprehensive analysis of these parameters, the following summarized points highlight the salient parameters for each primary use.

Transmission facilities

Power Transmission Lines. From a strictly technical perspective there are few absolute constraints to transmission line routing. The key location parameter of these facilities is the location of the load centers and the generation sites.

Given a homogeneous surface with respect to construction costs, the best route is the shortest, i.e., a straight line. However, given the variations in land and construction costs, and environmental and social concerns, the ideal state is rarely achieved. When designing a route between any two given points the following general parameters assist the selection.

- Where possible, straight line routing should be a priority.
- In order to minimize both environmental impact and potential conflicts between the corridor authority and adjacent landowners, existing rights-of-way should be utilized when possible.
- Rolling or undulating topography should be utilized to screen a powerline from adjacent vistas whenever possible.
- Preliminary route planning should have an appreciation for, and avoid resource areas, such as merchantible or scenic timber areas, mineral deposits, critical wildlife habitat, unique environmental or cultural areas and recreation areas, where possible.
- Sensitive areas such as streams and steep slopes which may be detrimentally effected by construction should be avoided. Should such areas be crossed, proper design and construction techniques should be implemented so as to minimize or at least mitigate the detrimental activities.

Substations. From discussions with industry representatives, it appears that the location of substations is very sensitive to the location of load centers. For substations that step down electric transmission lines to distribution capacities, this is a critical parameter. In terms of efficiency and economy, it is preferable to increase the length of the transmission lines and reduce distribution line length thereby reducing the loss level and line costs. These types of substations require land within or adjacent to the load center. Substations that transform EHV lines, eg., 500 kV to normal bulk distribution capacities (240 kV), are also sensitive to major load centers but from a broader regional perspective, i.e., the substation would tend to locate near the largest load center but also attempt to achieve a centrality to all load centers in the area.

Pipelines. While it is generally recognized that pipelines provide the safest mode of transportation, environmental damage during the construction stage is high and must therefore be accomplished utilizing the highest technical standards to maximize the opportunity for proper restorative measures to be instituted.

These facilities are slightly more sensitive to soil and topographic features and have a greater initial construction impact than powerlines. Again, the ideal routing would be the shortest distance between the source and terminal point but in reality deviations are common.

Factors such as pipeline product, pipeline pressure, topographical and soil conditions, and surveillance and control procedures must be addressed in the initial planning and design stages in order that a full appreciation for the potential pipeline hazards be realized.

The following represents a summary of the design and location parameters to be addressed when locating a pipeline as a separate and individual entity;

- Given that the cost of material in pipeline construction represents a large majority of the overall costs, straight line alignments where possible should represent a primary objective.
- While oil pipelines are more sensitive to grades than gaslines, the general situation is that grades do not represent a major obstacle in pipeline construction.
- Given the environmental impact of constructing a pipeline, the design stage should recognize areas having suitable access roads, camp and storage areas, and those areas which are workable during the winter and wet seasons.
- Environmentally sensitive areas including those locations with a high slide potential due to extreme slopes, saturated sands or silty soils should be avoided. In addition to this, construction difficulties may arise in muskeg areas and areas having a high water table level. These areas should, if possible, be avoided.
- Additionally, areas having a high resource potential or which are environmentally sensitive should, if possible, be avoided. If such avoidance is not possible, proper techniques to ensure adequate mitigation of the detrimental construction effects should be employed.

Highways. Unlike the previous two transportation modes, highway location is subject to fairly rigid parameters. The detailed design of a highway must address the issues of road hierarchy, population density along a proposed route, projected volumes and speed requirements, safety and appropriate sight distances. The general parameters which dictate suitable highway alignments as a separate entity include:

- location of traffic generating centers;
- suitable grade requirements;
- stable, well-drained substructure
- proximity and availability of construction materials such as borrow and gravel;
- aesthetic resources areas.

While a suitable highway location attempts to address the above items, the alignment planning process must have an appreciation for, and where possible avoid those areas characterized by high water table or muskeg areas, unstable soil conditions due to either steep grades or deep organic soils and major solid rock outcroppings. In addition to such hazard areas, proposed alignments should avoid natural resource areas such as forested areas, aesthetic locations and wildlife habitats.

Railways. During the initial design stages, when planning a railway alignment as a separate mode of transportation, suitable grades usually take precedence over suitable alignments. Given the very nature of a railway, that being that a large amount of goods and services are transported by a relatively small power source, it can be readily appreciated how sensitive a railway is to grades. For example, a load hauled by a single locomotive up a 3% grade will be only one-half that which can be hauled by the same locomotive on a level track. Given this sensitivity, the following represents a summary of the design parameters of railway location:

- straight line alignments along level ground;
- suitable proximity to desired service locations;
- proximity to resource development areas both for goods and service, and construction materials;
- suitable subgrade formations.

As has been the common theme for the preceding three modes, railway planning in turn, must recognize and, where possible, avoid environmentally sensitive areas, unsuitable areas with respect to water table levels and soil conditions or major rock outcroppings. Additionally, natural resource or aesthetic areas should be preserved while, at the same time, being served by the transportation mode.

Multiple Facility Corridor Concerns

In single mode corridors, incompatibility is not a problem, rather concern is expressed over the construction practices and the potential for third party damage. However, when corridors involving differing modes are created, a number of incompatibilities arise. Most of the problems that result from the close placement of different facilities can be minimized or mitigated by a comprehensive design process which recognizes and assimilates the needs, requirements and responsibilities of each occupant into the overall corridor plan.

Transmission Lines and Pipelines. Combining a pipeline alignment with a power transmission alignment will result in less environmental impact than locating these two facilities as separate entities. However, there are a number of inherent difficulties which must be adequately addressed in the design stage. Power transmission lines and pipelines are guided by the same parameters of straight line alignments, proper soil conditions and avoidance of environmentally sensitive areas. Adequate reclamation techniques for both modes will minimize the long term impact on surrounding land uses. While the two modes have many similar parameters, power transmission lines are subject to less restrictions than pipelines at river crossing locations. This results in a route length increase for the powerline if they are to remain parallel. The major conflict between power transmission lines and pipelines in corridors is an unavoidable result of proximity. Spacing between these two facilities should be in the range of 30 metres due to voltage and resultant current flows which may be induced in a pipeline form adjacent powerlines. These current flows are a result of the phenomenon of conductance, capacitance and induction. Mitigative measures employed to avoid such hazards include carefully planned construction schedules, cathodic protection, and safety procedures. Although a 30 metre separation is required, total corridor width will be smaller than if these facilities located separately, if a larger number of pipelines is involved. This reflects the fact that the right of way for a single line can range from 9 to 30 metres while in a corridor spacing is 15 metres between pipelines. Construction coordination reduces the potential accidents of simultaneous construction.

Transmission Lines and Highways. Again, combining these facilities would reduce the amount of right-of-way thereby lessening the amount of land clearing required due primarily to a reduction in the buffer space between the highway and adjacent uses. However, major concerns would be safety, radio interference and visual impacts. From a safety perspective, the towers must be located at a reasonable distance from the highway to reduce the probability of vehicles colliding with the structures. As the highway has more rigid location parameters, the length of the route will be increased for the powerlines.

Special electrical equipment or design can reduce the communication interference. The use of berms, buffers, landscaping and aesthetic towers can significantly reduce the visual impact. In this instance, the control parameters for corridor design would be those for the highway.

Transmission Lines and Railways. This particular situation is highlighted because there are severe compatibility constraints between these two facilities. Transmission lines create a significant interference problem to the railway communication and signal control system as the rails themselves may be used as the signal conductor. This can be mitigated by the creation of a service road or buffer separation or special equipment on both facilities. As a railroad meanders and and the powerline does not have to account for topography to the same extent, this usually leads transmission lines to locate elsewhere due to increased deflections and route length. To remain parallel, the powerline must accept a greatly increased route length.

Pipelines and Highways. Transportation authorities are usually not supportive of locating paralleling pipelines within the highway right-of-way, although it has occurred. The major concern over the close placement of these facilities is that the pipeline may limit the expansion or upgrading potential of the highway and costly relocation or lowering of the pipeline will have to occur. However, from a visual, environmental or technical perspective, there is little impact of the paralleling of these facilities (barring pipe failure). Care must be taken to protect any surface valve structures from damage through accidents.

Pipeline and Railways. No technical aesthetic or environmental impacts are generated by this particular combination. On rough terrain the pipeline is not as constrainted by grades, and paralleling results in an increase in the number of deflections and route length.

Transmission Lines, Pipelines and Highways. As in the previous circumstance, this combination would result in a reduced environmental impact due to a reduced clearing space and concentrated physical disturbance. Again, the visual impact of the transmission line and possible interference with communication and radio reception may occur but, as noted earlier, both impacts can be reduced by use of buffers and proper engineering design. In this instance, the highway provides an excellent use of the separation distance between the transmission line and the pipelines, thus reducing the potential electrical impact on the pipelines. In this case, the highway alignment would determine the corridor route and the other facilities would have to accept an increase in route length.

Transmission Lines, Pipelines, Highways and Railways. The concerns over this combination are the potential interference of the railroad communication system, and the induction of the pipelines by the transmission lines. However, the placement of the pipeline adjacent to the railroad, next to the highway and then the transmission line right-of-way can mitigate these concerns. Again, the pipelines, powerlines and the highway would usually deviate from the railroad in rough terrain due to numerous deviations and increased length.

Summary

Although minor problems arise when combining several linear modes, there are advantages to a corridor system particularly in constraint areas such as metropolitan areas. The benefits of reduced construction costs, reduced right-of-way widths, lower maintenance costs, increase in reliability of service, reduced environmental impact, and assured future right-of-way space, accrue to both the industry and the general public.

Alberta Corridor Program

Background

Over the last forty years, the number of roadways, power transmission lines, and oil and gas pipelines, has grown tremendously in Alberta. The proliferation of these linear facilities i the Edmonton metropolitan area has been of increasing concern to land developers, planning authorities and the provincial government. In the 1970's, with rapidly rising land prices and intense pressure on developable land, the need to use land economically and to carefully plan the location of linear facilities became especially evident.

One response to this need has been the establishment of a transportation utility corridor (TUC). A TUC is a strip of land which is set aside for the location of two or more linear facilities. Locating linear facilities in parallel and adjacent alignments within a corridor reduces the amount of land required and minimizes the fragmentation of developable land. Through careful design, access through constrained areas can be assured, safety improved and the negative impact of linear facilities on adjacent land uses minimized.

In Edmonton and Calgary, the need for a TUC has been recognized for many years. The TUCs had their origin in the ring road concept which was first proposed in the 1950's. Alignments were set out for a roadway which would encircle the Cities but no mechanism was enacted to preserve the alignments and, over the years, development encroached on the alignments. As a result, the alignments had to be shifted outward.

In the mid-1970's, the Edmonton and Sherwood Park West and the Calgary Restricted Development Areas (RDAs) were designated in order to prevent further encroachments on the ring road alignment and to provide space for future linear facilities (i.e., pipelines, powerlines and municipal services) requiring access into, out of, or around the metropolitan areas.

The Edmonton and Sherwood Park West RDAs provide a band of land approximately 800 metres (1/2 mile) wide around the City of Edmonton (see Figure 1).

Initially, the province declared an 8 km (5 mile) wide RDA around the City of Calgary. One of the expressed purposes of the RDA was the protection of an 800 metre (1/2 mile) strip of land, following the proposed ring road alignment for a TUC. In 1984, the Minister of the Environment announced that the 8 km wide RDA was to be substantially reduced. The reduction would leave only the refined Transportation/Utility Corridor Planning Area, as shown on Figure 2, and environmentally sensitive river valley land within the Calgary Restricted Development Area.

Within these RDAs, the Province of Alberta exerts direct control over land use through regulation and ownership. No development which might obstruct future placement of the primary linear facilities is permitted. As well, development is controlled by provincial ownership of RDA lands. At this time, approximately half of the lands in the Edmonton and Sherwood Park West and the Calgary RDAs are owned by the provincial government.

In 1979, a series of preliminary conceptual plans for the corridor was developed by the Province of Alberta with the assistance of representative of industry, utilities and agencies involved in the planning and development of linear facilities. These plans allocate right-of-way space for the proposed ring road (a freeway grade highway), major oil and gas pipelines, high and low voltage power transmission lines, roadway buffers, operation and service vehicle access, and for municipal services (waterlines, sewer lines, local gas lines, telecommunication circuits and low voltage (25 kV or less) powerlines. These plans were subsequently updated in 1985 to reflect current right-of-way demands.

The corridors are partitioned into specific component areas which provide space for one specific type of linear facility (for example, the pipeline component is for individual pipeline rights-of-way). Figure 1 shows a cross-section of the reassessed Edmonton TUC where the highway separates the pipeline and powerline components. Through the TUC, there are variations in the component widths and arrangement.

Corridor Management Functions

As mentioned earlier, the RDAs were designated to allow for the establishment of the TUCs. The Department of the Environment Act and the Regulations grant the Minister of Environment the authority to control land use by:

(a) requiring land use approval processes to be subject to Ministerial consent;
(b) land acquisition;
(c) preparing corridor plans and guidelines.

Even though Alberta Environment has the program responsibility, PWSS provides an interdepartmental support service for the RDA management functions. In other words, for all crown owned RDA lands, Alberta Environment provides program approvals, through ministerial consents, for all land uses. PWSS proposes land uses and manages the land use function within the program approvals. Management of the RDA lands requires that the following functions be performed:

(a) plan, operate and maintain the TUC lands for the primary uses;
(b) interim management of residual, unassigned and surplus lands;
(c) acquire TUC lands;
(d) release/dispose of residual, unassigned and surplus lands;
(e) manage secondary land use of TUC lands.

Administration

The RDA regulations grant the Minister of the Environment the authority to control the use of the land within RDAs. Within the Department, the Land Use Branch has the responsibility to administer the RDA program. This Branch has directed the preparation of the reassessed TUC plans and other studies; and is involved in the approval process of the primary uses and secondary uses.

In Alberta, the Energy Resources Conservation Board (ERCB) is the agency responsible for the permitting of oil and gas pipelines and powerlines. The ERCB reviews the application with respect to project justification (need), technical, safety and routing concerns. The Land Use Branch of Alberta Environment reviews the ERCB permit applications to determine if a suitable TUC alignment, which conforms to the plans, has been provided. Ministerial consent is granted to the ERCB to issue a permit to construct. In a similar manner, the Branch is involved in the development of portions of the ring road with the affected municipality and Alberta Transportation and in the development of various municipal services with the municipality and Alberta Utilities and Telecommunications.

Section 16(2)f of the Department of Environment Act is administered in common with the Minister of Environment and the Minister of Alberta Public Works, Supply and Services (PWSS). Acquisitions of RDA lands are often accomplished with the aid of a plan of survey, and these plans are exempt from the provisions of the Planning Act, Chapter D-9 — R.S.A., 1980. Therefore, the plans are not reviewed by the subdivision approving authorities but can be submitted directly to Land Titles for registration.

All crown lands within the RDA (except for some Alberta Transportation and Energy and Natural Resources properties) are to be transferred to PWSS for administrative control. RWSS maintains the lands, grants easements for primary uses and leases for interim or secondary land use of the properties, with the approval of Environment. Environment reviews the requests with reference to the impacts and long term integrity of the TUC and the primary uses, while PWSS reviews the requests for administrative concerns, land management considerations, market factors and contractual implications.

Alberta Transportation is primarily responsible for the preliminary functional design and funding of both ring roads. The ring road rights-of-way depicted on the reassessed plans, however, reflect the requirements of Alberta Transportation and the municipalities. In the Edmonton case, where a large portion of the ring road lies within the City, the City is to be responsible for the detailed design and construction of the ring road, while the Department will ensure the design is satisfactory and provides a large portion of the funding. In Calgary, where the majority of the ring road lies outside the City, Alberta Transportation is responsible for the detailed design and for construction, at this time.

Although there are a number of major agencies involved in the administration of the RDA lands, all of the various decision processes operate only if Ministerial consent has been granted. (IRWA)