

# OKANAGAN RAIL TRAIL

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## Trail Development Plan Progress Report

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# OKANAGAN RAIL TRAIL - Trail Development Plan

## Progress Report

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# Table of Contents

Executive Summary .....	1
1.0 Introduction.....	4
2.0 Project Background.....	5
2.1 Project Background.....	5
2.2 Scope of Trail Development Plan.....	5
2.3 Project Team.....	6
3.0 Trail Concept.....	7
3.1 Vision.....	7
3.2 Assumptions.....	8
3.3 Overall Map.....	8
3.4 Trail Use.....	9
3.5 Maintenance.....	9
4.0 Trail Development.....	10
4.1 Trail Development Maps.....	10
4.2 Typical Sections.....	10
4.3 Land Use Sections.....	11
4.4 Access Control and Safety.....	12
4.4.1 Barricade Plan.....	13
4.4.2 Road Crossings.....	13
4.5 Environmental Considerations.....	14
4.5.1 Sensitivity Assessment Mapping.....	14
4.5.2 Considerations in Aquatic Habitat.....	18
4.6 Archaeology Considerations.....	18
4.7 Construction Methods and Considerations.....	19
4.7.1 Alignment.....	19
4.7.2 Trail Sections.....	19
4.7.3 Geotechnical Considerations.....	19
4.7.4 Ballast.....	20
4.8 Amenities.....	21
4.8.1 Signage.....	21
5.0 Consultation and Community Engagement.....	22
5.1 Community Engagement.....	22
5.1.1 Process.....	22
5.1.2 Notification.....	22
5.1.3 Open Houses.....	23
5.1.4 Interactive Online Map.....	24
5.1.5 Survey.....	24
5.1.6 What We Heard.....	25



6.0	Budgetary Capital Cost .....	30
7.0	Schedule .....	32
8.0	Long Term Corridor Development .....	33
9.0	Next Steps.....	34

## Table of Figures

Figure 1: Project Team.....	6
Figure 2: Typical Section.....	10
Figure 3: Agricultural Land Uses.....	11
Figure 4: Residential Land Uses .....	11
Figure 5: Road and Residential Land Uses .....	11
Figure 6: Industrial Land Uses .....	12
Figure 7: Lakefront.....	12
Figure 8: Indicative Regional Signage (Source: Regional Wayfinding Strategy).....	21
Figure 9: Community Consultation Summary .....	23
Figure 10: Trail User Types.....	26
Figure 11: Amenity Prioritization .....	27
Figure 12: Community Benefit.....	28
Figure 13: Respondent Communities .....	29
Figure 14: Estimated Cost Breakdown .....	30

## Appendices

- Appendix A - Trail Concept Maps
- Appendix B – Typical Section
- Appendix C – Road Crossings (Typical)
- Appendix D – Environmental Sensitivity Analysis Maps
- Appendix E – Typical Construction Sections
- Appendix F – Katim Okanagan Rail Trail Barricade Plan s
- Appendix G – LRT Sections



# Executive Summary

## Project Scope

In early 2016 regional partners within the Okanagan Valley embarked on the process to develop the initial phase of the Okanagan Rail Trail. The discontinuance of the CN Rail provided a regional opportunity to acquire approximately 50km of rail corridor for multi-modal transportation purposes. Now that the acquisition is complete, the first objective of the owner jurisdictions is to undertake the work necessary to convert the rail bed into a safe and functional basic trail, principally for recreational use by pedestrians and cyclists. Since the beginning of February, 2016, while CN rail completes their obligations on the rail line, a team of consulting engineers, planners, and environmental scientists have reviewed all aspects of the conversion of the rail bed into a functioning trail.

The preparation of this Trail Development Plan has outlined the process from acquisition to concept conclusion and construction, including the development of a trail concept, hosting community meetings for gathering input, preparation of conceptual budgetary cost estimates with associated qualifications/risks, and providing regular reports to the Inter-jurisdictional Team (IDT) at appropriate times during the process.

## Trail Development

The long term vision of the corridor is a multi-modal transportation corridor, however, the initial use of the corridor is intended to be a regional trail approximately 50km in length. The multi-use trail will be developed to a basic standard, as a continuous route between Coldstream and Kelowna. The finished surface will consist of crushed and compacted aggregate, suitable for pedestrian and off-road cyclist use. For the majority of its length the trail will be approximately 4.6m wide; and narrower in areas of topographic constraint. Included in the development of this basic standard of trail will be road crossings, signage, access barriers, safety barriers, and support infrastructure to provide a basic level of safe and accessible use by pedestrians and cyclists. Fences, except to control access at road crossings, will not be provided. This IDT project does not include plans to surface the trail with asphalt.

The primary users of the trail will be pedestrians and recreational cyclists. Other potential uses (e.g. horse, dog) were identified during the public consultation sessions undertaken during the planning process; however, owing to unresolved issues between these uses and the primary users, wildlife, local trail access, and bylaw considerations, the inclusion of these uses has yet to have been determined. As a condition of the joint purchase of the corridor motorized vehicles, except for maintenance/emergency vehicles and legitimate accessibility aides, are not permitted on the corridor.

Ongoing monitoring and maintenance of the trail condition is important to ensure safety, quality of user experience, and protection of the corridor. The IDT will work with each owner jurisdiction to develop a basic maintenance plan for the corridor. Issues to be considered and addressed include such things as who is responsible for maintenance of the trail, types and frequency of maintenance activities, condition assessments of structures, drainage, and signage. The frequency of the maintenance activities are based on volume and type of users, management objectives, environmental impact, and availability of funds.



There are approximately 50 road and driveway crossings along the trail corridor. As part of the development plan all crossing locations have been identified and the required upgrades have been suggested. The crossings have been grouped into five categories: Class A through Class D, as well as a Class E which are site specific crossings. The upgrades range from 'do nothing' to pedestrian flashers and overhead pedestrian controlled signals.

An Environmental Assessment was completed in parallel with the trail development plan. The assessment considered regulatory requirements, identified aquatic permitting and suitable work windows for any upgrades that may be necessary, and provided recommendations for future assessment, permitting, and environmental management plans prior to upgrades. The purpose of this assessment was to support future environmental planning and identify mitigation necessary prior to construction to prevent impacts.

### Consultation Summary

The public input opportunities occurred as a series of open houses, online idea generation and an online survey between March 14 to March 27. Open houses were held in each owner jurisdiction (District of Lake Country, City of Kelowna, Okanagan Indian Band, and Regional District of North Okanagan) receiving more than 940 attendees. The engagement was designed to gather input for the initial phase of trail development. All additional feedback collected will be retained for future reference, for use in any future planning and development of the trial corridor.

Attendees were encouraged to review display boards, speak to staff and visit online to complete the survey which offered an interactive map feature. Respondents were asked if they supported development of a trail and given the opportunity to provide comments about why or why not. 96% of respondents support development of a trail in the Okanagan Rail Corridor. The home page received more than 10,000 views and 160 ideas were submitted. Respondents interacted with one another by commenting, liking and scoring submitted ideas, more than 2,300 of these interactions were recorded

### Cost Estimate

Of high importance during this phase was to complete a reasonable amount of investigation to develop a conceptual plan and budgetary capital cost estimate for public input, to provide the Councils and Board with adequate information to approve the concept, and for fundraising to commence. A Class 'C' cost estimate was chosen as the appropriate level to use at this stage for budgeting purposes and setting fundraising targets. The estimate is prepared with limited site information, is based on probable conditions affecting the project, and represents the summation of all identifiable project component costs. The estimated capital cost to complete the concept development and to create contract documents, procure, and construct the trail is \$7,690,000. A contingency allowance of 40% including engineering and other contingencies during construction was included in the estimate.

Upon receiving support from each Council and Board on the trail concept, the IDT can move forward with certainty with the concept finalization and preparation of the required construction contract(s). In parallel, the Okanagan Rail Trail Initiative (ORTI) can commence the community fund raising campaign.



## Schedule

The timing for construction and opening of the initial phase of the trail is contingent on funding availability. Moving forward with any design and construction work is dependent on a successful community fundraising campaign and will ultimately be at the discretion of the Councils and Board of the partnering jurisdictions.

With the community fund raising commencing in the spring of 2016, it is possible that construction could start in 2016. Early construction would include barrier, gates, and signage to deter unauthorized access until trail is completed and open for use.

The IDT will work closely with ORTI during the fundraising campaign to explore opportunities to potentially advance certain components of the project.

## Next Steps

The preparation of this Trail Development Plan is the first step in the process to convert the existing rail bed into a functioning regional trail. Following the completion of this plan, several additional steps have been identified to progress the project towards design and construction.

1. Review input from Councils/Board and Public Open Houses
2. IDT to work with ORTI to commence the community fundraising campaign
3. Further Land Review (Issues and Opportunities)
  - a. Parking
  - b. Transportation and Connectivity – Connection to existing or future trails
  - c. Land acquisitions or disposal
4. Complete the conceptual design – including Survey, Traffic, Drainage, Geotechnical (crush tests and rock scaling analysis), Environmental, Structural and Archeology overview and protocol development
5. Develop phased construction options (e.g. test sections)
6. Preliminary design and permitting
7. Contract documents
8. Barricade/access control installation
9. Contract procurement method – evaluation





## 1.0 Introduction

In early 2016 regional partners within the Okanagan Valley embarked on the process to develop the initial phase of the Okanagan Rail Trail. The discontinuance of the CN Rail provided a regional opportunity to acquire approximately 50km of rail corridor for multi-modal transportation purposes. Now that the acquisition is complete, the first objective of the owner jurisdictions is to undertake the work necessary to convert the rail bed into a safe and functional basic trail, principally for recreational use by pedestrians and cyclists.

Since the beginning of February, 2016, while CN rail completes their obligations on the rail line, a team of consulting engineers, planners and environmental scientists have reviewed all aspects of the conversion of the rail bed into a functioning trail. The project team has studied the corridor's physical characteristics to determine a basic trail concept, identify construction risks and develop a planning level cost estimate.

This Trail Development Plan report provides a summary of work done to date, and the key assumptions that have been made for the conceptual design of the trail.





## 2.0 Project Background

### 2.1 Project Background

The CN Rail line, which was used to bring Okanagan Valley produce and lumber to markets across Canada, was discontinued in June 2013. The local governments saw the need to protect the corridor as a public asset and preserve its integrity and connectivity for multi-modal transportation purposes. In June 2015 the corridor was purchased by the City of Kelowna, the District of Lake Country, and the Regional District of the North Okanagan. At the time of writing, that portion of the corridor running through the Duck Lake (IR7) Reserve is in the federal process of being transferred to the Okanagan Indian Band (OKIB). By acquiring the corridor the communities have made a long-term commitment for ultimate development of the rail corridor as a public multi-modal regional transportation corridor, including the initial use of the corridor as a public trail.

The local governments and First Nation involved in corridor acquisition have created an Inter-jurisdictional Development Team (IDT). The IDT is a joint committee that acts as a common voice for them to work collaboratively to achieve their short and long term goals of for the corridor.

The corridor is approximately 50 km from Gordon Drive to Coldstream:

- ▶ 18 km in Kelowna;
- ▶ 2.5 km in Okanagan Indian Band IR#7 Duck Lake;
- ▶ 16 km in District of Lake Country; and
- ▶ 13 km in the Regional District of North Okanagan.

### 2.2 Scope of Trail Development Plan

The process from acquisition to concept conclusion and construction involves several important steps, including the development of a trail concept, holding community meetings for gathering input, preparation of conceptual budgetary cost estimates with associated qualifications/risks, and providing reports to the IDT at appropriate times during the process. Upon receiving support from each Council and Board on the trail concept, the IDT can move forward with certainty with the concept finalization and preparation of the required construction contract(s). In parallel, the Okanagan Rail Trail Initiative (ORTI) can commence the community fundraising campaign.

Some aspects of the trail development are straightforward, while others pose significant uncertainties and potential risks. This Trail Development Plan has highlighted and identified aspects that require further consideration to manage those risks as the concept advances. All known project uncertainties, assumptions, and risks are identified in this report.



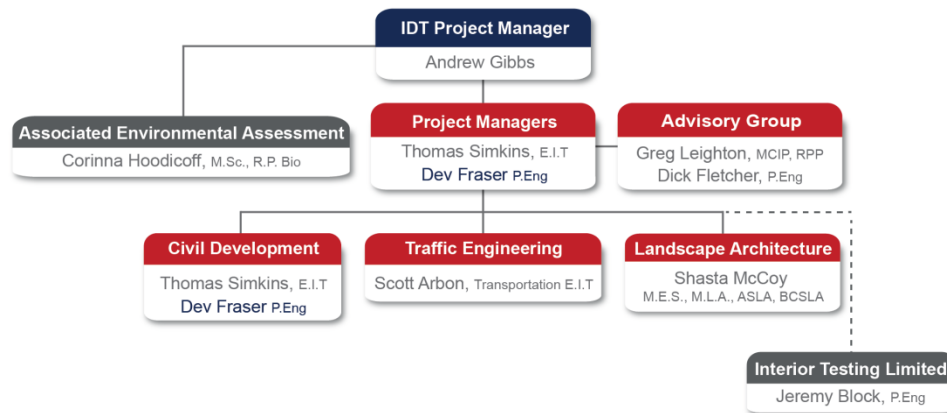
## 2.3 Project Team

In response to the request of the IDT, a team of consultants were engaged to assist with the development of the Trail Development Plan. The core consulting team providing services for the concept development consists of:

- ▶ Civil Engineering, Planning, Landscape Architecture and Traffic Engineering – Urban Systems and Dev Fraser, ORTI;
- ▶ Environmental – Associated Environmental; and
- ▶ Geotechnical – Interior Testing Services Limited.

To supplement the core project staff, contractors, and other professionals were engaged to provide input during preparation of the Trail Development Plan. Local government staff provided communications support for the community meetings. See **Figure 1** below for a detailed graphic of the project team.

*Figure 1: Project Team*



## 3.0 Trail Concept

### 3.1 Vision

Although the long term vision of the corridor is a multi-modal transportation corridor, the initial use of the corridor is intended to be a regional trail approximately 50km in length. The multi-use trail will be developed to a basic standard, as a continuous route between Coldstream and Kelowna (approximately CN markers 88.0 to 118.0). The finished surface will consist of crushed and compacted aggregate, suitable for pedestrian and off-road cyclist use. For the majority of its length, the trail will be approximately 4.6m wide; and narrower in areas of topographic constraint. This IDT project does not include plans to surface the trail with asphalt. It is noted that, outside of this trail development project, a local jurisdiction may choose to asphalt portions of the trail within its ownership to meet specific local needs (e.g. the City of Kelowna is considering asphaltting the route between downtown and the University of British Columbia Okanagan (UBCO) in order to serve cycle commuters to and from the school).

Included in the development of this basic standard of trail will be road crossings, signage, access barriers, safety barriers, and support infrastructure to provide a basic level of safe and accessible use by pedestrians and cyclists. Fences, except to control access at road crossings, will not be provided.

Development of the trail beyond the basic amenities and gravel trail may be considered as a subsequent phase after the basic standard of development is fully funded.





## 3.2 Assumptions

During the scoping of this trail development project, a number of assumptions had to be made. It is expected that as the project moves forward towards final concept development and construction that these assumptions will be confirmed.

The following key assumptions were made for the purpose of preparing this report:

- ▶ The corridor will be publically accessible and continuous;
- ▶ In order to limit potential impacts to the environment, archaeological sites, and adjacent land owners, the trail will follow the route of the discontinued rail line where practical;
- ▶ The existing rail alignment was constructed within the legal property lines of the purchased corridor;
- ▶ The trail will be developed to a basic standard;
- ▶ The trail will not be paved as part of this initial phase of development;
- ▶ Removal of railway infrastructure and environmental remediation of contaminated sites is the responsibility of CN Rail as a condition of its sale of the corridor;
- ▶ Given the preliminary nature of the planning and design process to date, the plans and sections used to communicate the scope and intent of trail development are conceptual in nature. More detailed surveys, plans and sections will need to be undertaken prior to construction of the trail;
- ▶ Existing materials will be utilized where possible and practical;
- ▶ Road crossings will be developed based on existing information from IDT local governments;
- ▶ It is the responsibility of the IDT to liaise with adjacent landowners;
- ▶ It is the responsibility of the IDT to address archaeological matters; and
- ▶ Significant drainage improvements were not assumed in the concept design given the existing grades. On site re-grading will occur during construction to ensure effective drainage.

## 3.3 Overall Map

The regional trail is planned to start at Mile 88 in the District of Coldstream and continue to approximately Cerise Drive (Mile 118) in the City of Kelowna. The gravel trail is to be continuous; from Dilworth Drive to Spall the existing asphalt Rails-with-Trails pathway will be relied upon. An overall map showing the extents of the regional trail can be seen in **Appendix A**.



### 3.4 Trail Use

The flat grade, limited road crossings, and connections to major destinations throughout the valley provide opportunities for many different types of use. The primary users of the trail will be pedestrians and recreational cyclists. Other potential uses (e.g. horse, dog) were identified during the public consultation sessions undertaken during the planning process; however, owing to unresolved issues between these uses and the primary users, wildlife, local trail access, and bylaw considerations, the inclusion of these uses has yet to have been determined. As a condition of the joint purchase of the corridor, motorized vehicles, except for maintenance/emergency vehicles and legitimate accessibility aides, are not permitted on the corridor.

### 3.5 Maintenance

Determining who will undertake the maintenance is a matter for consideration by each local government and OKIB. There are numerous possibilities including each local government and OKIB being responsible for its own section or a single jurisdiction maintaining the entire corridor. The possibility of contracting out the maintenance also merits consideration. The IDT will work with each owner jurisdiction to develop an operating model for the corridor.

Ongoing monitoring and maintenance of the trail condition is important to ensure safety, quality of user experience, and protection of the corridor. The IDT will work with each owner jurisdiction to develop a basic maintenance plan for the corridor. Issues to be considered and addressed for such things as who is responsible for maintenance of the trail, types and frequency of maintenance activities, and condition assessments of structures, drainage and signage. The frequency of the maintenance activities are based volume and type of users, management objectives, environmental impact, and availability of funds.

The following types of maintenance should be considered:

- ▶ **Gravel surface** – restoration of the trail surface by grading. Imported or local materials may be required to fill ruts, low spots, or to address drainage problems;
- ▶ **Ditching and drainage** – inspection and maintenance of drainage includes the repair of erosion damage, the cleaning of ditches and culverts, and assessment for potential for drainage problems;
- ▶ **Weed control/deadfall** – maintenance of trail side vegetation, brush clearing, and removal of wind/deadfall;
- ▶ **Trash/waste collection** – regular removal of litter and garbage from trailhead and along the trail;
- ▶ **Structure** – regular inventory and inspection of structures such as bridges, trestles, and erosions control by a professional in the field related to the structure;
- ▶ **Signs** – inspection of signs to ensure placement, visibility, and currency;
- ▶ **Facility maintenance** – inspection of initial and future trail facilities (e.g. kiosk, washrooms, bench, tables) to ensure they are in good condition; and
- ▶ **Rock fall and scaling** – inspection of the rock cuts and adjacent areas for rock fall which may affect the travel surface. A professional geotechnical engineer should be engaged to inspect all rock faces adjacent to the trail determine whether scaling is required and the scope.



## 4.0 Trail Development

### 4.1 Trail Development Maps

A series of trail development maps have been created with input from the IDT and senior staff at each of the owner jurisdictions. The maps illustrate the trail extents, identified road crossings, administrative and legal boundaries, and initial access control barricades. The trail development maps are included in **Appendix A**.

### 4.2 Typical Sections

The ideal trail design width depends on a range of criteria, including the type and volume of users. For the safety and enjoyment of all users, a wider trail is desirable. The typical section chosen for the initial phase of the trail is a 4.6 metre width of compacted gravel surface as shown in **Figure 2**.

The 4.6 metre width meets the recommended Transportation Association of Canada (TAC) Geometric Design Guidelines for a multi-use recreational trail, which states lane width for two-way bike path, shared with pedestrians should be 3.0 - 4.0 metres. The additional 0.6 metres allows for a 4.0 metre paved top with 0.3 metre shoulders in the future if desired. The travel portions of the trail should be kept clear of any lateral obstruction such as sign, benches, or garbage receptacles.

There are however, locations where a 4.6 metre surface is unachievable where the corridor narrows through 'cut' sections between the lakefront and steep rock cliffs. Widening these sections to achieve a consistent 4.6 metre is not economically feasible. In these locations the trail width may be reduced to a minimum of 3.0 metres with signage notifying users of the narrowed path in advance.

**Appendix B** illustrates the typical section described above.

*Figure 2: Typical Section*

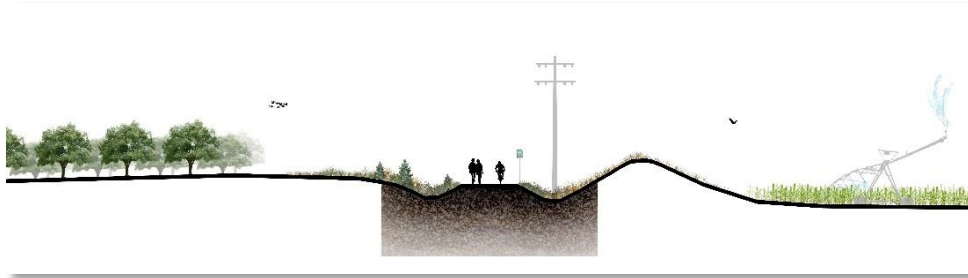




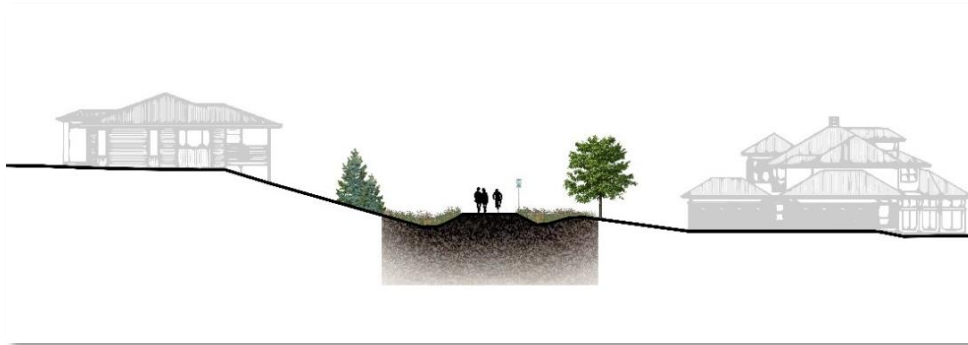
### 4.3 Land Use Sections

Given the length of the proposed trail, a variety of different land use sections will interface with the adjacent trail corridor. From urbanized sections in the City of Kelowna to natural lakefront in the northern sections, trail users will experience a variety of environments. The most common land use sections along the trail include the land use sections show in **Figures 3** through **Figure 7**.

*Figure 3: Agricultural Land Uses*

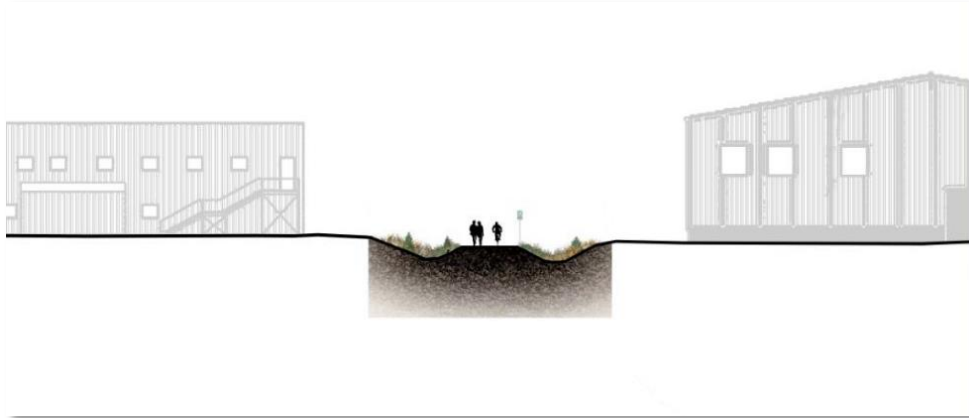
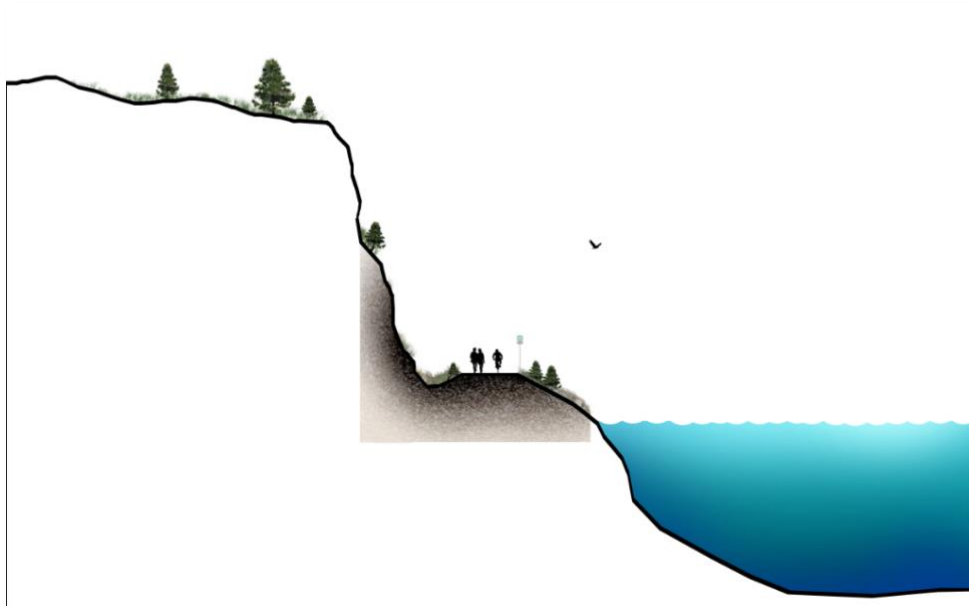


*Figure 4: Residential Land Uses*



*Figure 5: Road and Residential Land Uses*



*Figure 6: Industrial Land Uses**Figure 7: Lakefront*

#### 4.4 Access Control and Safety

Access control of the corridor and the safety of the public are both important short and long term considerations. Access control will be implemented at key access points and road crossings through the use of barricades (e.g. gates, fencing, and bollards). The objective of the access control is to prevent unintended use of the trail such as unauthorized motorized vehicles. Considerations for access by maintenance and emergency vehicles at all times will be made.

For the most part there is existing fencing along the corridor that delineates the old rail property from adjacent private property. The provision of new or replacement fencing along property lines, to delineate private property, deter trespass or enhance fencing that already exists, is not included in the scope of work or budget for the project. As with fencing in other applications in the community, the provision of fencing for these purposes is at the initiative of the party wanting the fence.

Safety fencing along some areas with potential risks to public safety has been considered (e.g. at the top of steep cut slopes along Kalamalka Lake) and an allowance has been provided in the budget for such fencing subject to future review and determination.

#### 4.4.1 BARRICADE PLAN

There is an immediate need to implement a barricade plan. A barricade plan created by Katim (**Appendix F**) on behalf of ORTI has been reviewed and incorporated into the development plan with input from the IDT. The plan investigates and identifies the risk of uncontrolled access to the trail, current practices, suggested locations and type of barricades.

It is recommended that gates and fencing be installed as soon as feasible at the identified access points on the Trail Development Maps (**Appendix A**) to reduce risk and liability due to improper use of the trail. The approximate budgetary cost to provide the initial access control is \$200,000. The majority of the gates installed will be permanent, however, there may be instances where a gate may be relocated to accommodate future amenities or trail heads.

#### 4.4.2 ROAD CROSSINGS

There are approximately 50 road and driveway crossings along the trail corridor. As part of the development plan all crossing locations have been identified and required upgrades have been suggested. The crossings have been grouped into five categories: Class A through Class D, as well as a Class E which are site specific crossings. The upgrades range from 'do nothing' to pedestrian flashers and overhead pedestrian controlled signals. These typical crossings are illustrated in **Appendix C** and the assigned classifications for each crossing is identified, with the exception of Class D which is illustrated on the Development Maps in **Appendix A**.

The Transportation Association of Canada (TAC) Pedestrian Crossing Control Guide and Bikeway Traffic Control Guidelines were referenced to determine the treatment for each crossing. However, it should be noted that no traffic data such as Annual Average Daily Traffic (AADT) has been reviewed at this stage of conceptual development. It is recommended that these crossings be technically reviewed and updated using field survey, available traffic data, and comply with the jurisdiction standards during future trail concept development, finalization, and construction.

There are four site specific crossings which do not match the typical TAC road crossings:





- ▶ **McCurdy Road** – the trail crossing is in close proximity (30m) to the signalized intersection with Highway 97. A crossing this close to a major intersection is undesirable as it may cause traffic to back up into the intersection or be dangerous to pedestrians. It is recommended that trail users be directed towards the intersection crossing which is already established with crosswalks, islands, and signals. It should be noted that Highway 97 is in the process of being widened from four to six lanes which will reduce the separation distance between the trail and the McCurdy/Hwy 97 intersection;
- ▶ **Sexsmith Road** – high traffic volumes and industrial uses along Sexsmith Road may warrant a higher level of crossing treatment. At this stage it has been assumed that overhead pedestrian controlled signals similar to the ones on Glenmore Road south of Cross Road or at the intersections of Cawston Ave and Ellis Street will be installed; and
- ▶ **Airport Tugway** – KF Aerospace will periodically require the trail to be closed for a five-minute process for aircrafts to access the maintenance hangers. This crossing will require two gates which can be closed, locked, and restrict access during the aircraft crossing. Further development of this crossing needs to be reviewed with KF Aerospace and an appropriate protocol developed.
- ▶ **UBCO Connection** – The City of Kelowna is currently in the process of connecting a pathway from Bulman Road to the University. The design of the Bulman Road pathway connection has been reviewed and a future connection with UBCO, Bulman Road, and the Okanagan Rail Trail are able to be coordinated as an integrated trail network.

## 4.5 Environmental Considerations

Associated Environmental was engaged by the IDT team to complete the Environmental Assessment for the concept development plan. This work considered regulatory requirements, identified aquatic permitting and suitable work windows for any upgrades that may be necessary, and provided recommendations for future assessment, permitting and environmental management plans prior to upgrades.

### 4.5.1 SENSITIVITY ASSESSMENT MAPPING

A desktop assessment of the corridor was conducted to identify environmentally sensitive sections along the alignment, and to prioritize sections for action into the future. Environmental sensitivities along the corridor, within 50 m of the centreline, were classified based on need for regulatory permitting, alignments close to sensitive aquatic and terrestrial habitats, and proximity to Agricultural Land Reserve. The purpose of this assessment was to support future environmental planning and identify mitigation necessary prior to construction to prevent impacts. The maps attached (**Figures 1 to 11, Appendix D**) have been prepared with the following environmental considerations:



- ▶ **Red** – Red areas depicted on the attached figures indicate the **most sensitive** sections where environmental assessment and management plans are recommended during planning and construction of any upgrades to the corridor. Specifically, high sensitive areas are considered:
  - Within 30 m of a mapped watercourse, including stream, creek, wetland, river and lakeshore;
  - Where masked\* occurrences of a species at risk have been reported by the BC Conservation Data Centre (\* n.b. this sensitive data is provided by the BC Conservation Data Centre in confidence, and the location and details of these occurrences is not publicly shared so is not labelled on the maps).
- ▶ **Yellow** – Yellow areas depicted on the attached figures indicate sections considered **moderately sensitive**, where environmental considerations may be necessary during planning and construction of upgrades to the corridor to avoid environmental effects. Specifically, yellow sensitive areas are considered:
  - Where occurrences of a species at risk have been reported by the BC Conservation Data Centre that is not masked from the public (species labelled where appropriate);
  - Agricultural Land Reserve (ALR) adjacent to the corridor.
- ▶ **Green** – Green areas depicted on the attached figures indicate sections considered **least sensitive**; however, since many habitats in the Okanagan support rare or endangered species and ecosystems, general environmental sensitivities may be considered during planning and prior to construction in these sections, although no permits or approvals are likely required. For example, the rail corridor traverses areas with steep slopes that may be a hazard, and areas that provide sensitive habitat to species at risk, including wildlife (e.g. badgers), plants (e.g. peach-leaved willow) and ecological communities (e.g. cattail wetlands). Mitigation planning prior to construction will help to identify sensitive features and make site-specific recommendations to prevent impacts.

## Regulatory Considerations

The following regulatory framework applies for development of the corridor.

### ▶ Development Permits

In each of the municipal jurisdictions, the Official Community Plans include conditions and requirements for **Development Permits** (DPs) to protect the natural environment (both aquatic and terrestrial ecosystems) and farming. Within the District of Lake Country, a DP is not required for the construction, repair or maintenance of municipal works by the District or its authorized agents or contractors. Otherwise, DP requirements in each jurisdiction should be evaluated prior to proceeding with construction planning.

For example, DP requirements and guidelines for the **City of Kelowna** apply in the following conditions:



- Farm Protection DP application and approval is required before subdivision of ALR land; also when a Building Permit, Soil Permit, or alteration of ALR land associated with specific uses is proposed, including agri-tourism and utility services.
- Natural Environment DP application and approval is required before subdivision of land, and before alteration of land, including but not limited to clearing, grading, blasting, preparation for or construction of services, roads and trails.

Hazardous conditions are also considered DP areas in each jurisdiction. Hazards can include areas susceptible to flooding, mud flows, debris torrents, bank instability, erosion, groundwater seepage, land slip, rock falls, subsidence, avalanche or wildfire. Identification of hazards in these areas is *outside the scope of this report*; however, where construction adjacent to steep slopes may be necessary, we recommend discussing this activity with the appropriate jurisdiction, and if necessary, have it assessed by a qualified professional (e.g., geotechnical engineer).

### ► Provincial Legislation

**Riparian Areas Regulation** process under Section 12 of the *Fish Protection Act* is triggered when development requiring a DP, building permit, or rezoning, is proposed within 30 m of the high water mark of a waterbody that supports fish or is connected to fish-bearing habitat. RAR defines riparian setbacks for development based on channel width, channel orientation, and potential riparian vegetation height. Development under RAR is broadly defined; for example, “development” includes any disturbance of vegetation or soil, and construction of trails or structures. In some municipal jurisdictions, a RAR assessment is required for any development within 30 m of a stream or lake to determine the Streamside Protection and Enhancement Area (SPEA) setback. If SPEA setbacks cannot be met with proposed designs, then Fisheries and Oceans Canada (DFO) must be consulted and authorization under the *Fisheries Act* may be required.

Government bodies are exempt from RAR; however, not all local governments observe this in the same way. In the City of Kelowna, RAR is replaced by the Natural Environment DP process. In the District of Lake Country, municipal works are exempt from DPs so RAR is not triggered. North Okanagan Regional District and District of Coldstream may require DPs for municipal works such as upgrades to the trail, and would therefore trigger the need for RAR assessment. RAR is not required on lands under federal jurisdiction, including the Okanagan Indian Band reserve.

The **Water Sustainability Act** is provincial legislation that protects and manages the use and diversion of both surface and ground water resources. Under Section 11 of the Act, any activities that result in changes in or about a stream require notification or approval, which is usually accompanied by an environmental assessment detailing expected impacts to the aquatic and riparian habitat, mitigation strategies and environmental monitoring during construction.

The **Okanagan Large Lakes Foreshore Protocol** provides guidelines to ensure that works within large lakes do not impose direct or long term cumulative impacts of kokanee shore-spawning habitat. Under this protocol, the foreshore of Okanagan lakes is classified into four zones:





- Black is critical habitat;
- Red is high to very high value habitat;
- Yellow is generally moderate, with some high value habitat; and
- No Colour is unclassified or low value habitat.

Along the corridor are sections of black, red and yellow classified habitat for shore spawning kokanee (see attached maps) identified by the Okanagan large Lakes Foreshore Protocol. There is no specific permitting required by the protocol, but upgrades to the corridor in these sections will need to incorporate these zones and appropriate mitigation as part of **Water Sustainability Act** Section 11 applications, and authorization under *Section 35(2)* of the **Fisheries Act** may also be required if works are expected below the high water mark.

Applications to the Agricultural Land Commission under *Section 34 (6)* of the **Agricultural Land Act** are required when there is dedication of a right of way, construction, or new use of an existing right of way for a recreational trail through Agricultural Land Reserve (ALR). Guidelines provided by the Commission and local government bylaws work to minimize the potential for conflict between farm and non-farm uses (including recreation) adjacent to ALR. Best practices include maintaining a minimum separation distance between non-farm uses and ALR (e.g. 15 m), and incorporating trespass-inhibiting vegetation, earth berms, and fencing. Also no-build/no-disturb covenants are occasionally requested to maintain this buffer. Approximately 19.4 km (about 40 %) of the corridor traverses through designated ALR, and requires liaison with the Commission.

A portion of the corridor traverses Kekuli Bay Park on the west side of Kalamalka Lake (at 7 km, Figure 2 map), and will be subject to the **Protected Areas of British Columbia Act**, and the Park, Conservancy and Recreation Area Regulation under the **Park Act**. Direct liaison with B.C. Parks is recommended to determine the status of land and requirements moving forward.

#### ► Federal Legislation

The **Fisheries Act** is the federal legislation affecting all fish, fish habitat and water quality. The Act prevents anyone from causing serious harm to fish. The **Fisheries Act** requires a request for review to Department of Fisheries and Oceans Canada (DFO) prior to work. If the project is deemed to have the potential to have serious harm to fish, DFO will request an application for project authorization, at which time measures to avoid or mitigate serious harm will be required. Please note that authorizations may take over 120 days for processing.

The portion of the corridor traversing the Okanagan Indian Band Reserve will be subject to federal legislation, including the **Species at Risk Act** for any species or their habitats that occur on Schedule 1 of the Act. Liaison with Indigenous and Northern Affairs Canada (INAC) may also be necessary.



#### 4.5.2 CONSIDERATIONS IN AQUATIC HABITAT

The following considerations have been made for aquatic habitats at bridge crossings and shoreline interfaces.

##### ► Bridge Crossings

Up to seven bridge crossings are being considered for upgrade prior to opening the Okanagan Rail Trail, including resurfacing and installation of railings. The location of these crossing locations on the attached maps for reference, and the area within 30 m of a crossing is considered most sensitive (red zones). Short environmental assessments, including a site visit, will be necessary to prepare environmental management plans and permit applications (Section 11 *Water Sustainability Act*) for upgrades to these crossings. Upgrades of these crossings will be exempt from DPs and RAR, but this is ultimately at the discretion of local governments.

##### ► Lakeshore Upgrades

Based on the mapping of the corridor, approximately 22 km of the corridor occurs along the shores of Kalamalka, Wood and Ellison (Wood) lakes. Sections of the corridor that are within 30m of a lake are considered most sensitive (red) for the purposes of this assessment; however, further consideration of shore-spawning habitat sensitivity are necessary for sections where foreshore protocol habitat ratings apply (i.e. black, red and yellow zones on the attached maps). Repairs to subgrade and erosion protection at or below the high water mark in lakeshore areas will require applications (for notification or approval) under Section 11 of the *Water Sustainability Act*, depending on the extent of construction. Applications will require environmental assessment and environmental management plans for construction. We also assume that upgrades at lakeshore will be exempt from DPs and RAR, but this is ultimately at the discretion of local governments.

Least-risk work windows apply for all construction below the high water mark of lakes and tributaries, especially in areas where foreshore protocols indicate shore-spawning habitat. In some cases, work outside of the least-risk window can be completed if construction is isolated.

### 4.6 Archaeology Considerations

The Okanagan Valley is the traditional territory of First Nations people, and the rail line route is through an area of significant importance. The land and lakes between Kelowna and Coldstream provided aboriginal people opportunities for settlement, hunting, fishing and travel. The IDT recognizes the importance of preserving archeological sites within the study area and will be engaging an archaeologist to work with Okanagan Indian Band's Territorial Stewardship Team to identify known or suspected sites to avoid impacting them during construction.

During the next phase of the Trail Development Planning, the IDT will work directly with OKIB to firstly undertake a preliminary review of the route to identify areas of significance and then to develop an appropriate protocol for possible findings during construction.



## 4.7 Construction Methods and Considerations

We are advised that by the end of 2016 CN Rail will have removed the entire rail, ties, and completed its environmental remediation. The corridor will be left in its current state minus the railway rails, ties, spikes, crossings, and railway equipment. The existing rail bed, while it varies throughout, is approximately 3.0 metres wide at the top shoulder of the track, with 2:1 side slopes.

A construction project with this length and scope requires many considerations and assumptions as the corridor varies significantly over its length. Below is a summary of construction considerations made for the initial budgeting of the trail:

### 4.7.1 ALIGNMENT

It has been assumed the current alignment is within the corridor's property lines and that the trail will be built following the same horizontal alignment. There may be a few areas where the alignment should be moved or built to one side, especially along Kalamalka Lake and adjacent to properties that are in close proximity. These will be regular cut and fill operations where excess cut materials will be placed.

### 4.7.2 TRAIL SECTIONS

To achieve the desired 4.6 metre width, the existing 3.0 metre wide sections will need to be widened. This process is best described with the typical construction sections in **Appendix E**. The railway was generally built with fill material which provides the opportunity to cut approximately 500mm to achieve the desired width. However, sections where cutting would create a negative effect on ditching and drainage, the width could be achieved by building an extended shoulder using material from the local cut sections. Once the width of the subbase is adequate, it will need to be regraded and compacted to ensure the structure is adequate and sufficient drainage is achieved. Finally, 100mm thickness of high fines 19mm crush aggregate can be placed, prepared, and compacted.

A topographic survey has not been completed at this stage of development but field investigations suggest that a balance of cut and fill sections should be achievable. It is important to note that importing and disposing of cut material offsite is limited as hauling material is not economical due to limited access and distances.

### 4.7.3 GEOTECHNICAL CONSIDERATIONS

On March 21<sup>st</sup>, 2016, Interior Testing Services Ltd. (ITSL) observed a total of eight (8) test pits to a depth of approximately 800mm below the existing grade. The test pits were located at McCurdy Road, Old Vernon Road, the north east corner of Wood Lake, and Kekuli Bay; two test pits were completed at each location.

75mm of ballast was encountered near McCurdy Road and at the north east corner of Wood Lake. Minimal to no ballast was observed near the Old Vernon Road and Kekuli Bay test pit areas. In general, the soils beneath the underside of the rail ties or beneath the ballast consisted of clean, coarse to gravelly sands, which appear to be suitable for re-use for trail development. Several samples of both the granular soils and the ballast were recovered and gradation analyses will be completed.



The finished trail surface is important to the user experience and longevity of the trail. While the existing subgrade material is suitable as a subbase, an additional 100mm thick surface of high fines 19mm crushed aggregate is recommended. 19mm crushed aggregate with high fines was selected as the finished surface because it is compatible with the natural environment, available in adequate quantities, economical, durable, and, if compacted properly, is acceptable to a large number of user groups such as walkers, joggers, bicyclists, strollers, and wheel chair/electric personal assistive mobility devices. The high fines added to the 19mm aggregate allow for a more compact and firm surface. This is important for heavily used trail as it reduces the amount of rutting and maintenance required.

This recommended structure is also adequate for future paving. Should paving be considered it is recommended that the surface be regraded and that 50mm of additional clean 19mm crushed aggregate be added to ensure effective drainage.

#### 4.7.4 BALLAST



The original rail base was surfaced with approximately 200mm of ballast, and currently, only some portions of the rail ballast have been maintained. Ballast is a uniform large rock material approximately 50-75mm and is difficult to reuse as is. Associated Environmental completed test analyses on the ballast using a modified EPA, ABA classification scheme (EPA 1994, Price 2009). The results from the analysis of five samples along the corridor indicate that the ballast material had no acid generating potential and very low sulphide mineral content. Further sampling and analysis may be warranted in

the future in response to site specific observations that may suggest a potential for acid generating potential.

Several options have been considered for the ballast:

- ▶ **Remove and Dispose** – this method is expensive and disposal locations are not readily available.
- ▶ **Crush and Reuse** – it may be viable to crush and reuse the ballast as an acceptable surface material if it is blended with the subbase. The viability of crushing the ballast needs to be explored further but discussions with several local aggregate firms have been positive and it appears it is economically viable. Further testing to determine the quality of material (e.g. hardness, gradation) produced by crushing has already been scheduled and should be completed by the end of April, 2016.
- ▶ **Blending with Subgrade** – the ballast can be blended with the subgrade to a depth of 500mm using a machine referred to as a road reclaimer. The viability of blending the ballast with the subgrade has been discussed with a contractor who has experience with the same application in the past and process appears to be economical.





In preparation of this report construction, pricing has been discussed with experienced contractors for the above three methods. The crushing/reuse option and the blending with subgrade option have similar costs and benefits, and both options appear constructible and feasible. Removing and disposing of the ballast would be very costly and is not being considered further.

## 4.8 Amenities

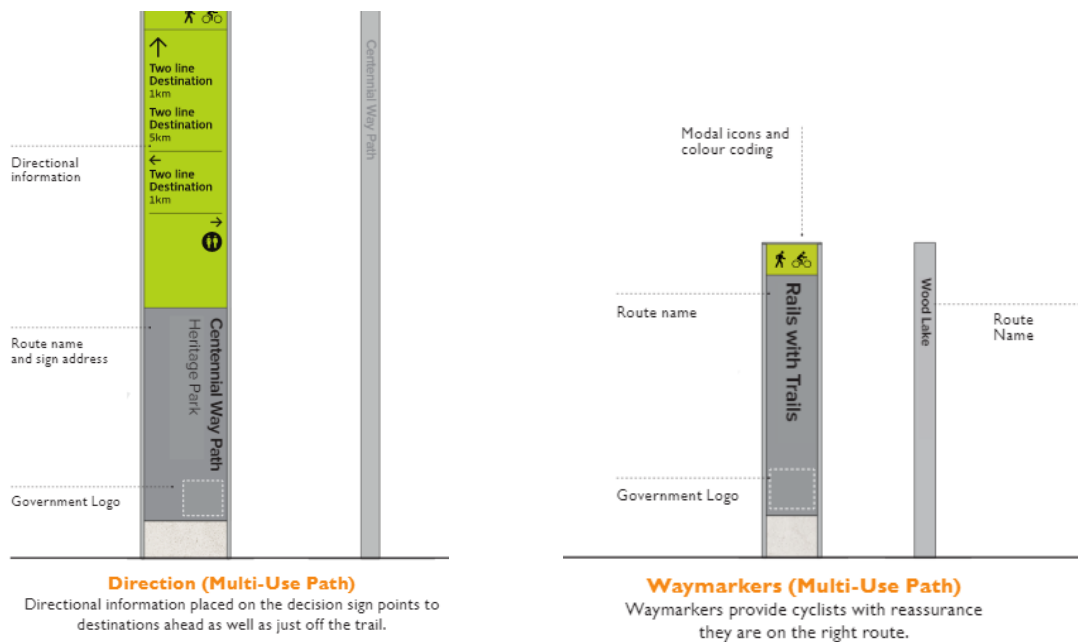
For this initial phase of trail development a basic provision of amenities will be provided, including garbage receptacles and where appropriate, dog bag dispensers in high traffic areas. Although not originally within the scope of this project, the IDT understands that as the trail is developed, amenities such as parking and washrooms at established trail heads will be high priority. It is anticipated that over time and as budgets allow, additional amenities will be built to meet the needs of users.

### 4.8.1 SIGNAGE

Initial signage for the trail will be limited to regulatory, advisory, and information purposes and should follow the Manual on Uniform Traffic Control Devices (MUTCD) standards. The Central Okanagan regional wayfinding strategy will likely be used to provide a basic level of consistent signage for directional and destination information. The IDT team will confirm the signage requirements for the North Okanagan region communities.

It is expected that over time Okanagan Sylix language and history will be incorporated into the design of interpretive and points of interest signage.

Figure 8: Indicative Regional Signage (Source: Regional Wayfinding Strategy)



## 5.0 Consultation and Community Engagement

### 5.1 Community Engagement

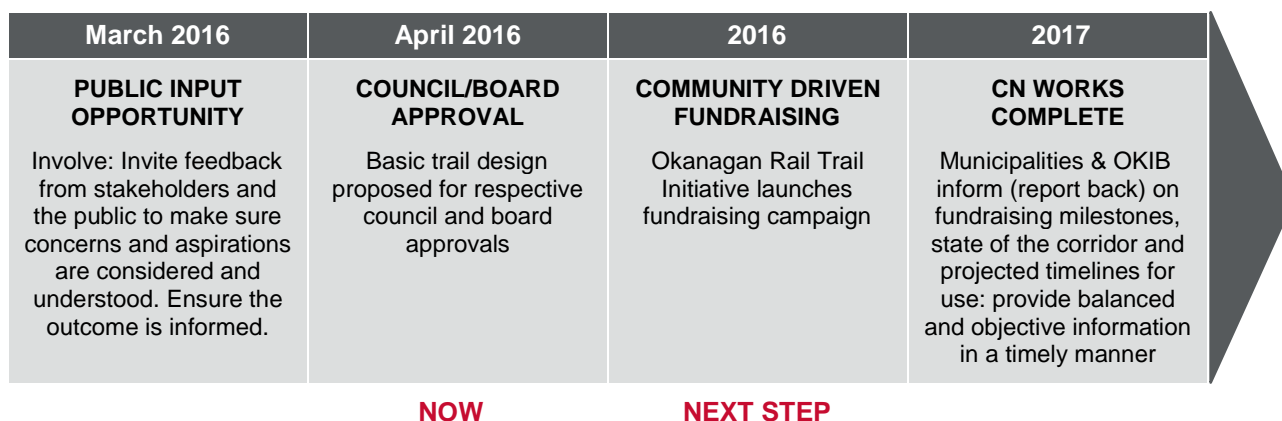
The public input opportunities occurred as a series of open houses, online idea generation and an online survey between March 14 to March 27. Open houses were held in each owner jurisdiction (District of Lake Country, City of Kelowna, Okanagan Indian Band, and Regional District of North Okanagan). The engagement was designed to gather input for the initial phase of trail development and additional feedback collected from the engagement process will be retained for future reference, for use in any future planning and development of the trial corridor.

Attendees were encouraged to review display boards, speak to staff and visit online to complete the survey which offered an interactive map feature.

This report provides a summary of input received through the survey and map.

#### 5.1.1 PROCESS

Figure 9: Consultation Process



#### 5.1.2 NOTIFICATION

Communications for the Okanagan Rail Trail input started on March 3 with a media release, placing a highlight on the City of Kelowna's homepage, and a concentrated push through social media, particularly on Facebook, Twitter and Instagram on both the City of Kelowna and the District of Lake Country pages.

The material emphasized three points:

1. The opportunity to give feedback at four open houses, one in each owner jurisdiction, and online with an interactive map feature at [getinvolved.kelowna.ca](http://getinvolved.kelowna.ca).
2. Input will inform the initial phase of trail development and additional feedback collected from the engagement process will be retained for future reference.
3. The initial phase of trail development would be limited to construction of a basic gravel trail with road crossings, signage, and barriers for safe and accessible use by pedestrians and cyclists.



Partners also utilized other channels, including: direct mail invitations to all adjacent property owners along the 50 km rail corridor, an email invitation to MLA's and MP's, print ads in the Kelowna Capital news, Lake Country Calendar and Vernon Morning Star newspaper.

The New View newsletter in Lake Country printed the complete media release about the survey and open houses and was distributed to every mail box in the District of Lake Country.

A Public Service Announcement on March 11 reminded residents in all communities of the open house and survey dates.

### 5.1.3 OPEN HOUSES

Figure 10: Community Consultation Summary



Four open houses were held, one in each owner jurisdiction (District of Lake Country, City of Kelowna, Okanagan Indian Band, Regional District of North Okanagan), receiving more than 940 attendees.

Display boards giving background information, the trail development vision and benefits, cross-section concepts, aerial map images of the trail route and next steps offered attendees the chance to review information and ask questions of the consultants and Inter-jurisdictional Development Team staff who were present.

Two sets of the aerial maps were made available to allow greater interaction for attendees and staff to answer specific questions.

The Okanagan Indian Band Open House was paired with an existing community planning exercise so the display was pared back for this session due to space. Attendees had the opportunity to view the trail development as part of other initiatives planned for their community.

#### 5.1.4 INTERACTIVE ONLINE MAP

For broader outreach to neighbouring communities, efficiencies and cost-savings, the “Have your Say – Okanagan Rail Trail” Inter-jurisdictional community survey was administered through the City of Kelowna’s Get Involved website, as the only jurisdiction with a community engagement platform already in place.

The platform allowed respondents to identify a specific location-based opportunity for the trail and make a comment or submit an idea with the geographic location marked. Respondents were required to sign-up with a valid email address to use the platform and map feature.

The home page received more than 10,000 views and 160 ideas were submitted. Respondents interacted with one another by commenting, liking and scoring submitted ideas, more than 2,300 of these interactions were recorded.

#### 5.1.5 SURVEY

An online survey was available on the home page at the City of Kelowna’s Get Involved website driving visitors to one website, but the survey was developed and administered through Fluid Surveys, which did not require the user to create an account. Question types ranged from open-ended responses to rank ordering to simple yes/no answers.

The online survey was available from March 14 to March 27. There were 687 responses with 613 completed responses. While not a statistically valid survey, the primary objectives of the engagement were to:

- ▶ Obtain input from residents and stakeholders in all jurisdictions
- ▶ Identify and record current and future issues identified
- ▶ Incorporate public input into the trail development plan as much as possible
- ▶ Obtain comment on the trail concepts





More than 550 fact sheets promoting the website address were distributed and attendees were encouraged to fill out the online survey. Hard copies of the surveys were available upon request at the open houses.

The feedback form had several limitations:

- ▶ Individuals could fill out the online feedback form multiple times provided they used a different computer or mobile device
- ▶ Individuals who do not reside in the study area could fill out the form
- ▶ The map feature was only available online and the platform required respondents to create a user profile which may have limited the number of responses
- ▶ The survey was primarily available online which may have limited responses

### 5.1.6 WHAT WE HEARD

The premise of a trail development plan is that residents and visitors will utilize such a facility. Respondents were asked if they supported development of a trail in the recently acquired Okanagan Rail Corridor and given the opportunity to provide comments about why or why not.

96% of respondents support development of a trail in the Okanagan Rail Corridor. Of those that did not support development of a trail, the reasons given related most frequently to wanting to see the rail service as it had existed continue, preferring to see a passenger rail service or trolley service operate on the tracks and opposition to the cost for acquisition, development and maintenance.

We want to use it as soon as possible, so developing it initially for use and adding services as we go would be great!

- Online feedback comment

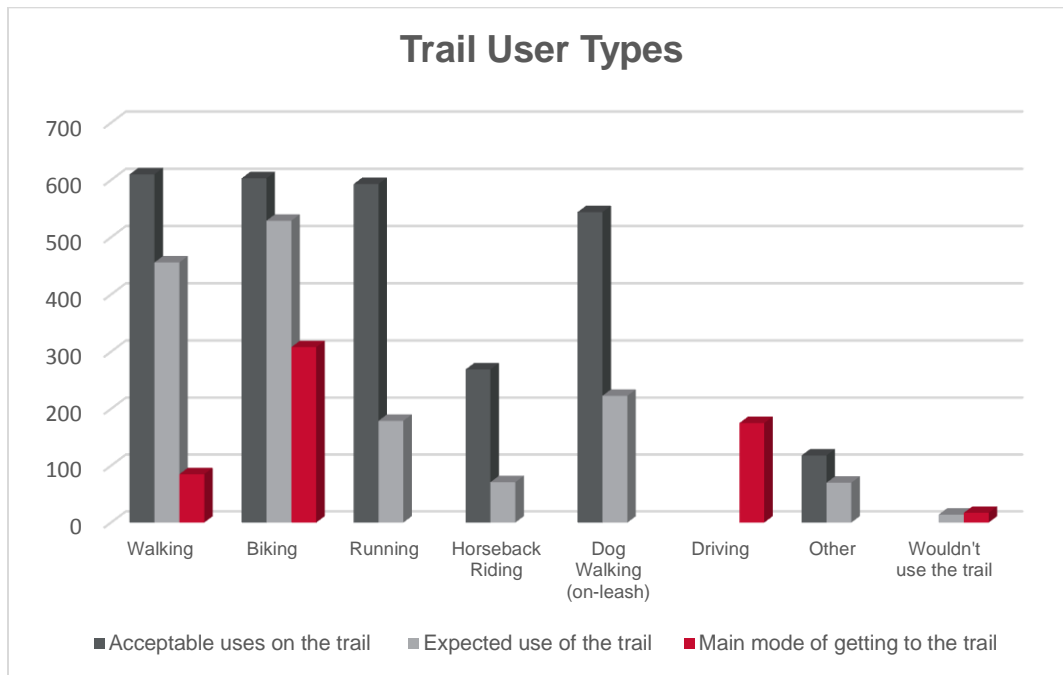
### Trail Users and Behavior

Respondents were asked to identify their main mode of getting to the trail, how they expected they would use the trail themselves and what they would consider acceptable uses on the trail, keeping in mind that Inter-jurisdictional partners had agreed during the corridor acquisition that trail use would be non-motorized.

As the chart below shows, the main mode of getting to the trail as well as the main use expected on the trail was identified as biking.



Figure 11: Trail User Types



Understanding how residents will use the trail will also help in determining design requirements and future amenity needs. While a number of comments from the open-ended feedback focused on suggestions or complaints about the merits of dogs and/or horses sharing the trail, less than half of the respondents expected to use the trail for those purposes.

Most respondents said they would use the trail once or twice a month (37%) and sixty-four per cent of respondents expected to spend between 1 and 3 hours on the trail per single use.

The majority of respondents said they would expect to travel between 6km to 10 km (30%) and between 11km to 20 km (23%) per single use, together those distances represent more than half the respondents.

### Trail Amenities

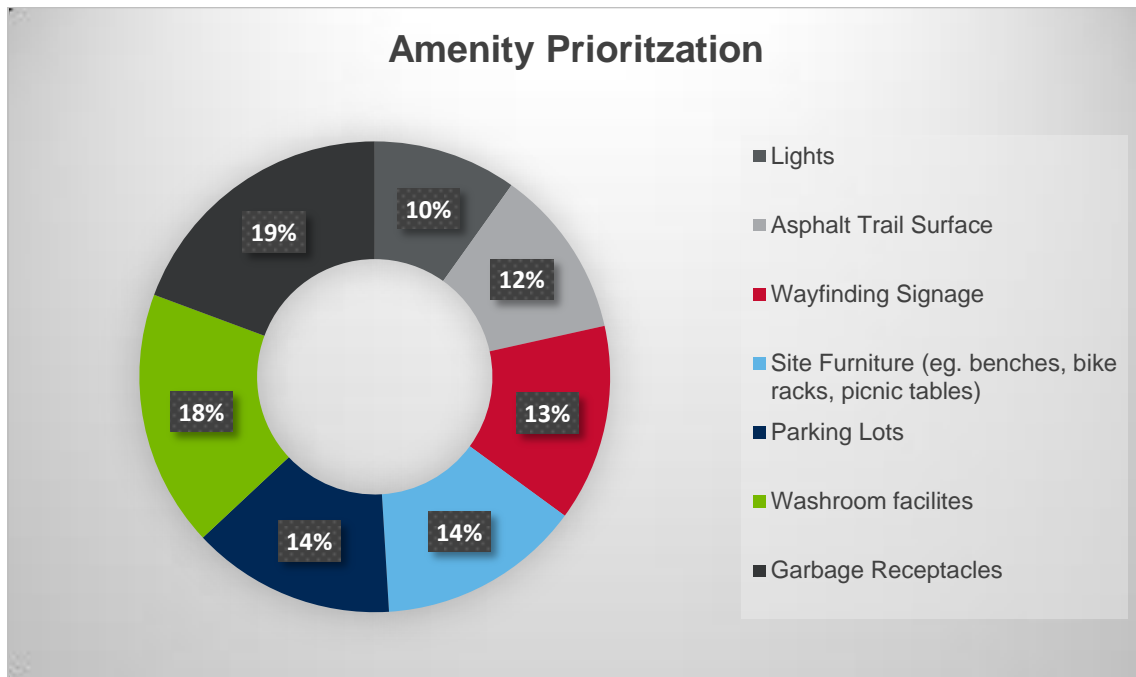
Potential improvements to the trail corridor are being deferred until a basic trail can be delivered. Amenities will be reviewed for future, long-term consideration.

*My hope is that most people would walk or bike to the trail, so that parking lots could be minimized. For running, an asphalt surface is actually not the best - I would prefer the trail to remain a crush trail. It would be nice if the trail could include playgrounds, interpretive signage, and spur trails to other existing facilities.*

*- Online feedback comment*

Survey respondents prioritized future amenities in order of importance. By attaching a score to each rank (1 being the most and 7 being the least important), amenities were prioritized as follows:

Figure 12: Amenity Prioritization



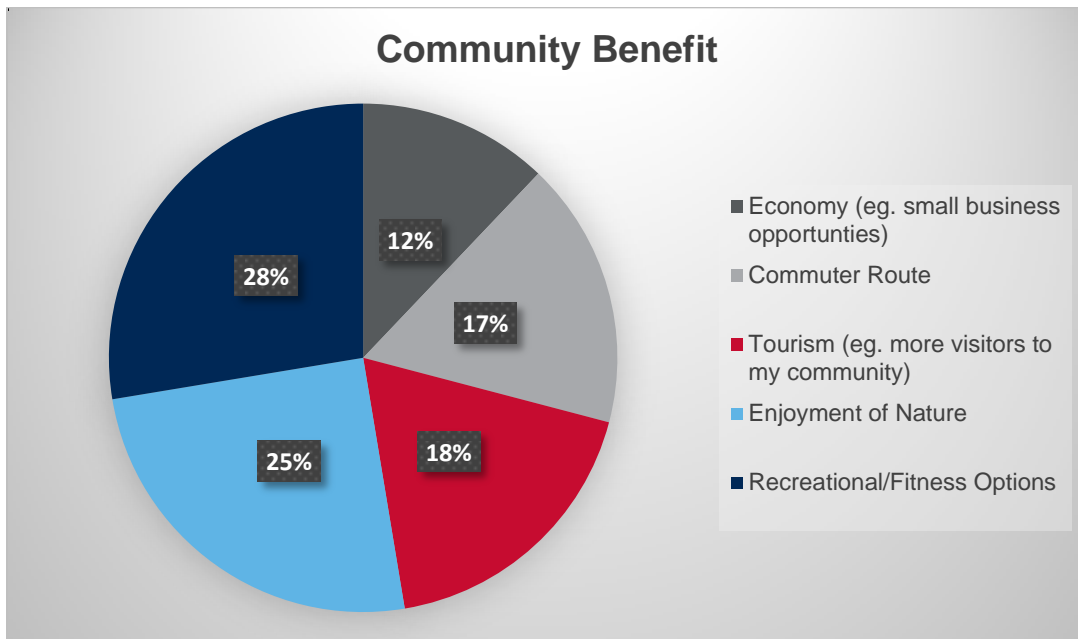
It is interesting to note that while asphalt surfacing had the most first place rankings (24%), it also had the most (and a greater number) of last place rankings (37%). Therefore, the other amenities that were also ranked first and more frequently second and third, had overall higher scores and ultimately an asphalt trail surface falls with lights as the last priorities for respondents.

In considering protection and development of the Okanagan Rail Corridor for use as a public right of way to benefit residents and provide opportunities to meet the transportation and economic needs of the region in the future, survey respondents ranked the primary opportunity for the trail as recreational/fitness opportunities, followed by enjoyment of nature.

I think the trail will be best if kept simple and natural. There is of course a need for safe street crossing, garbage cans and a few benches, but not interpretive signs, art work, even paving. People love to walk along the tracks as it is, its natural beauty is the appeal.

*- Online feedback comment*

Figure 13: Community Benefit



### Common Themes

Common themes that emerged from the open-ended feedback included:

- ▶ Importance of connectivity to existing trails, expanding routes or major destinations (particularly UBC Okanagan)
- ▶ Private property concerns about trespassing, security, aesthetics
- ▶ Requests and suggestions about users (for and against dogs, for and against horses, electric assist bikes, power wheelchairs etc.)
- ▶ Considerations for parking, maintenance and access to the trail
- ▶ Comments about preserving the natural aspects and wildlife
- ▶ Regional opportunities for tourism, business and commuting

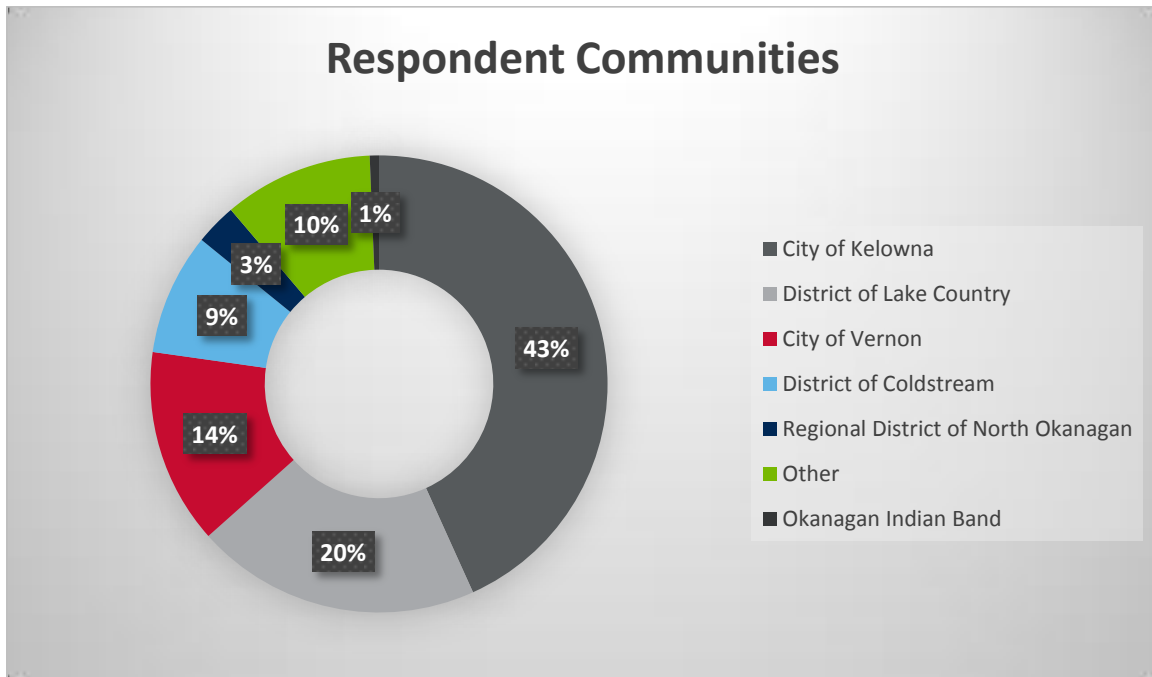
The interactive map allowed users to submit ideas and then to rate other ideas on a scale of 1 to 3, with 1 being 'neutral' and 3 being 'I love it'. The most supported ideas from the map ideas submitted and supported by other users include:

- ▶ Priority link to UBC Okanagan (179 votes)
- ▶ Beach access points along the trail (79 votes)
- ▶ Circle route around Wood Lake (76 votes)
- ▶ Bird sanctuary and viewpoints (69 votes)

## Respondent Demographics

While not statistically valid respondents ranged in age from 51-60 years (28%) and more than 61 years old (26%) to 31 – 40 years old (17%) and 41 – 50 years old (17%) with 12 per cent of respondents less than 30 years old. Respondents represented populations from across the North Okanagan, with 10 per cent identifying from other communities, mainly West Kelowna and the lower mainland.

Figure 14: Respondent Communities





## 6.0 Budgetary Capital Cost

The key objectives of the Phase 1 Trail Development plan was to complete a reasonable amount of investigation to develop a conceptual plan and budgetary capital cost estimate for public input and to provide the Councils and Board, with adequate information to approve the concept and for fundraising to commence.

A Class 'C' cost estimate, as defined by the Associations of Professional Engineers and Geoscientists of British Columbia (APEGBC) Budget Guidelines, has been completed and reflects the anticipated costs to design, procure, and construct the initial phase of the Okanagan Rail Trail as outlined above. A Class 'C' cost estimate is the appropriate level to use at this stage for budgeting purposes and setting fundraising targets. The estimate is prepared with limited site information, is based on probable conditions affecting the project, and represents the summation of all identifiable project component costs. Class 'C' cost estimates are used for program planning, to establish a more specific definition of client needs and to obtain approval in principle. A contingency allowance of 40% including engineering and other contingencies during construction is appropriate for this class of estimate.

The estimated capital cost to complete the concept development and to create contract documents, procure, and construct the trail is \$7,690,000. This estimate does not include an allowance for GST. See **Table 1** below for a breakdown of the estimated cost.

*Figure 15: Estimated Cost Breakdown*

ITEM	TOTAL AMOUNT
Trail Construction	\$2,950,000
Access Control and Road Crossings Upgrades	\$1,129,000
Drainage Upgrades	\$350,000
Environmental/Bridges/Rock Scaling	\$1,063,000
<b>Sub-total</b>	<b>\$5,492,000</b>
<b>40% Contingency and Engineering Allowance</b>	<b>\$2,196,800</b>
<b>Total</b>	<b>\$7,688,800</b>

There are opportunities to stage the construction into more manageable phases of work to provide interim fundraising goals. Interim fundraising goals may build momentum and allow some preconstruction and site preparation to occur. The preconstruction and site preparation work would not be phased based on jurisdictions but rather by type of work. For example, detailed design, contract preparation, rock scaling, cleaning culverts, and ditching could be completed prior to the main construction of the trail.

Below is a list of key construction costs considered and assumptions included in the budget:



- ▶ Archaeological – an overview will be completed and a project protocol will be developed for implementation during construction to best manage risk and costs.
- ▶ Mobilization – an allowance has been included for approximately four laydown sites. These sites have not been identified at this time.
- ▶ Layout Survey – it is assumed at this time that the current rail alignment is within the legal right of way and there is sufficient legal and field evidence for the contractor to complete regular checks to ensure work is maintained within the right of way.
- ▶ Ballast – based on the testing to date it is assumed there are no environmental concerns regarding the ballast.
- ▶ Clear and grub – limited to locations where additional width is created with fill beyond the current rail section envelope.
- ▶ Hydroseeding – areas to be seeded with a drought tolerant mix will be limited to locations where additional width is created with fill material beyond the current rail section envelope.
- ▶ Access control and road crossings – based on the classifications shown in **Appendix C** and assumed traffic volumes. Actual volumes to be confirmed during further concept development.
- ▶ Fencing – included at road crossings, however, no fencing for security of private property or safety fencing for steep slopes has been included.
- ▶ Signage and wayfinding – minimum signage for safety and road crossings and ‘you are here’ signage has been included. Interpretive and point of interest signage is not included in this initial phase.
- ▶ Ditching and Drainage – in general the existing drainage is good. The construction methods proposed have minor impact on the existing drainage. It has been assumed that 20 existing culverts need to be extended and approximately 300-400m of culverts need to be installed.
- ▶ Bridge decking and rails – it has been assumed the structures are in good condition and that it will be required to provide decking of some structures and safety rails on both sides of all structures. Therefore it has been assumed that minimal environmental permitting is required due to the nature of the work.
- ▶ Rock scaling – based on current site investigation, further investigation and a rock scaling program needs to be discussed with geotechnical and professionals in the field of rock scaling to develop the appropriate approach. The cost estimate includes an allowance for this investigation and for some scaling.
- ▶ Erosion control – limited to repair of existing gabion walls along Kalamalka Lake.
- ▶ Environmental permits and protection – assumes that a blanket environmental permit per jurisdiction is adequate and silt fence and an Environmental Management Plan during construction is adequate.

## 7.0 Schedule

The timing for construction and opening of the initial phase of the trail is contingent on funding availability. Moving forward with any design and construction work is dependent on a successful community fundraising campaign and will ultimately be at the discretion of the Councils and Board of the partnering jurisdictions.

With the community fund raising commencing in the spring of 2016, it is possible that construction could start in 2016. Early construction would include barrier, gates, and signage to deter unauthorized access until trail is completed and open for use.

Next, subject to funding availability, safety and environmental protection works (e.g. rock scaling, drainage) would likely be undertaken.

Actual construction of the trail would be reserved until the last phase of construction. This will ensure a continuous, fully functional trail can be opened at one time without concerns for interruption by construction traffic.



## 8.0 Long Term Corridor Development

By acquiring the corridor the communities have made a long-term commitment for ultimate development of the rail corridor as a public multi-modal regional transportation corridor. Part of that long term commitment is ensuring potential future uses of the corridor are accommodated during any proposed surplus land disposal and other short term planning.

Light Rail Transit (LRT) has been considered as a possible long term regional mode of transportation along the corridor. To ensure future use as a LTR corridor it is important that the communities consider encumbrances are limited and right of way requirements are maintained.

As part of the concept development the required right of width to allow an LRT service and an adjacent trail were considered. A minimum 20 metre corridor of flat land is recommended for a regional LRT corridor.

**Appendix G** illustrates the typical sections investigated for future LRT. Neither a field nor desktop investigation of the constructability or design criteria of an LRT system along the corridor has been completed.



## 9.0 Next Steps

The preparation of this Trail Development Plan is the first step in the process to convert the existing rail bed into a functioning regional trail. Following the finalization of this plan, several additional steps are required to progress the project towards design and construction. A broad outline of those steps are described below:

1. Review input from Councils/Board and Public Open Houses
2. IDT to work with ORTI to commence the community fundraising campaign
3. Further Land Review (Issues and Opportunities)
  - a. Parking
  - b. Transportation and Connectivity – Connection to existing or future trails
  - c. Land acquisitions or disposal
4. Complete the conceptual design – including Survey, Traffic, Drainage, Geotechnical (crush tests and rock scaling analysis), Environmental, Structural and Archeology overview and protocol development
5. Develop phased construction options (e.g. test sections)
6. Preliminary design and permitting
7. Contract documents
8. Barricade/access control installation
9. Contract procurement method – evaluation

As more site investigation and analysis is completed, additional steps maybe required to support the design and construction.