31 December 2018

Grand Trunk Pathway – Skeena River Walk Feasibility Review

McElhanney

McElhanney Consulting Services Ltd.
1-5008 Pohle Avenue
Terrace, BC
V8G 4S8

Contact: Tyler Wilkes, EIT
Phone [250.631.4068]
Email: twilkes@mcelhanney.com

2321-01794-00

OQM | Organizational Quality Management Program

Certified ISO 9001:2008

Contents

Tables

Figures

Appendices

Executive Summary

McElhanney Consulting Services Ltd. (McElhanney) was retained by the City of Terrace to conduct a feasibility review of the alignment for the final segment of the Grand Trunk Pathway (GTP) from between Frank Street and the Kitsumkalum River Bridge. In 2008, the City of Terrace undertook the Grand Trunk Pathway Master Plan (Boulevard Transportation Group Ltd., 2008) that provided high-level concept design for the pathway. Since 2008, the pathway has been constructed in various segments and currently terminates on the south side of Highway 16 near the intersection of Frank Street and Highway 16. The purpose of this feasibility review was to conduct a high-level technical review of constraints and challenges of aligning the pathway on either the north or south side of Highway 16 between Frank Street and the Kitsumkalum River Bridge and to consider feedback from community stakeholders in the development of the preferred alignment of the pathway in this area.

The South Option alignment that was considered was taken from the 2008 GTP Master Plan document. This option would continue west from the existing terminus of the GTP primarily within CN Rail property. It would cross Frank Street using the existing signalized crossing and then would then be constructed over Howe Creek for approximately 600 m using an elevated causeway constructed of wood or steel. The alignment would then continue to Fisherman's park, running between the CN Rail line and Highway 16 within the CN Right-of-Way (RoW), where it would then route under the Kalum River Bridge using a cantilevered or suspended structure to connect to the existing sidewalk on the north side of the Kalum River Bridge.

The North Option would utilize the existing signalized crossing to cross both Frank Street and Highway 16 to continue parallel to Highway 16 on the north side. This alignment requires several road and driveway crossings, a crossing of Howe Creek, and use of MoTI RoW, CN Rail property, and private property; however, it does not require extensive infrastructure like the South Option.

An options analysis was conducted to compare the North and South options that considered land availability/permitting requirements, user safety, constructability/cost, and user experience. Input was gathered from select community and regulatory stakeholders and was considered in the options analysis. Based on the evaluation criteria and stakeholder input, the North option was considered the most feasible option in terms of land availability/permitting requirements and cost/constructability. Though the South Option was considered more favourable in terms of user safety and experience due to the reduced road/driveway crossings and interesting features (causeway and suspended crossing), this option was not considered technically or economically feasible due to the high cost of the required infrastructure and the low probability of project approval from CN Rail given the close parallel proximity to the rail line.

In conclusion, the North Option was recommended as the most feasible alignment option for the final segment of the GTP with an estimated capital cost of $552,312 (excluding property acquisition, landowner consultation, and existing signage/landscaping/infrastructure relocation costs). It was recommended that the City of Terrace move forward with preliminary design and consultation for the North Option as the preferred route for the Skeena River Walk section of the GTP. Additionally, further work with stakeholders was recommended to identify and plan for a recreational, social, and/or historic destination at or near the terminus of the GTP that includes river access.

1. Introduction

1.1. Background

The Grand Trunk Pathway (GTP) is an existing Multi-Use Pathway (MUP) located in the City of Terrace and is the main non-motorized pathway through the city. The first phase of the pathway was constructed in 2000, and various segments have been added since to complete the pathway to its current state running from Kalum Street to the intersection of Frank Street and Highway 16. Today, the GTP provides Terrace with a significant linear pathway providing both a mostly-separated transportation corridor, a parkway corridor, and a connection between several existing and proposed recreation opportunities.

1.2. Grand Trunk Pathway Master Plan (2008)

In 2008, the City of Terrace undertook the GTP Master Plan (Boulevard Transportation Group Ltd., 2008) to guide the extension and completion of the pathway that provides high-level concept design for completing the pathway to the Kalum River Bridge. The master plan breaks the pathway into three segments, with the only remaining segment to be constructed today from Frank Street to the Kalum River Bridge named the Skeena River Walk (Section 3 shown in Figure 1). The concept design in the master plan provides conceptual alignment, defines the character of the pathway, and includes discussion on appropriate construction standards and specifications for pathway features and amenities. Readers of this report are encouraged to review to the GTP Master Plan document in conjunction with this report, as overlapping aspects of the overall pathway design are not covered in this report.

Figure 1. Grand Trunk Pathway Overview (Boulevard Transportation Group Ltd., 2008)

The 2008 Master Plan identified the Skeena River Walk section of the GTP to be the most challenging segment of the proposed pathway to plan, design, and construct due to an array of physical, land-use, and property constraints along the segment. Some of the critical constraints along the south side of Highway 16 in 2008 included:

- Howe Creek runs in the ditch line between Highway 16 and the CN Railway, leaving minimal space for pathway construction;
- The existing sidewalk on the Kalum River Bridge is located on the north side and no existing pedestrian crossings to the south side of Highway 16 were available; and,

- The north side of Highway 16 would require several driveway and road crossings, which would detract from the user experience of the pathway.

Given consideration of the constraints listed above, the GTP Master Plan recommended the alignment along the south side of Highway 16 from Frank Street to Fisherman's Park and included infrastructure options for addressing the main physical constraints. For the portion along Howe Creek, the options included building an elevated causeway along Howe Creek or diverting the creek to a new discharge location to avoid conflict with the pathway alignment. To connect to the existing sidewalk on the north side of the Kalum River Bridge, the report recommends a suspended or cantilevered walkway under the bridge, above the river. Minimal consideration was given to place the alignment along the north side of Highway 16 in this area.

1.3. Scope of Study

Since the Master Plan in 2008, some key changes to the area have occurred, including the addition of a signalized intersection with pedestrian crossing at the intersection of Frank Street and Highway 16 allowing safe access to the north side of Highway 16. In light of the changed constraints and 10-year period since the master plan, the City of Terrace procured this study to review the alignment options, re-connect with community stakeholders, and update cost estimates for the preferred alignment option. The details outlined in this study will provide the documentation required to apply for additional funding for detailed design and construction.

The purpose of this feasibility review was to conduct a high-level technical review of constraints and challenges along the proposed Skeena River Walk segment of the GTP and to consider feedback from community stakeholders in the development of the preferred alignment of the pathway in this area. The main components of this study included:

- Desktop and field review of the constraints along the proposed Skeena River Walk segment of the GTP;
- Preliminary stakeholder consultation; and,
- Alignment option comparison and recommendation of the preferred alignment for detailed design and construction.

The intention for the Skeena River Walk section of the GTP is to continue the current character described in the 2008 Master Plan; therefore, certain aspects of the design including surfacing, grades, curves, signage, lighting, landscaping, furnishings, and amenities are not described except where specific changes or additions are recommended to meet the unique challenges to the Skeena River Walk section.

2. Methodology

The following sections outline the methodology employed for the high-level technical review of pathway alignment options.

2.1. Background Review

McElhanney reviewed the following documents available from the City of Terrace:

- Official Community Plan (Bylaw No. 2142-2018);
- Grand Trunk Pathway Master Plan (2008);
- Parks and Recreation Master Plan (2015); and,
- Active Transportation Plan (2009).

The following GIS data was provided by the City of Terrace for the study area and was reviewed by McElhanney:

- CN Railway alignment;
- Highway 16 centerline alignment;
- Property, easement, and Right-of-Way boundaries;
- Municipal boundary;
- 1 m contours;
- Watercourses; and,
- Park boundaries.

The GIS data was compiled into McElhanney's Vertisee mapping system for visual analysis and mapping purposes. The data was also utilized to develop the Vertisee stakeholder input site used during stakeholder engagements (see Section 4.1).

2.2. Field Reconnaissance

Tyler Wilkes of McElhanney conducted field reconnaissance the area between Frank Street and the Kalum River Bridge with David Block, Rob Schibli, and Jayme Lamoureux of the City of Terrace on July 18, 2018. During the field reconnaissance, both the north and south sides of the highway were reviewed for physical constraints and aspects affecting user experience and safety. The constructability of the options proposed in the 2008 GTP Master Plan were reviewed along the south side of the highway. Conflict/constraint points and photographs were collected using McElhanney's Collector App on an iPad, and a proposed alignment track was collected for the north side of Highway 16.

2.3. Evaluation Criteria

During the project kickoff meeting held on June 19, 2018, City of Terrace staff in attendance were asked to provide a prioritized set of evaluation criteria for comparison of alignment options in this study. The prioritized evaluation criteria list was developed as follows:

1. Land availability / permitting requirements
2. User safety
3. Constructability / Cost
4. User experience

2.4. Design Criteria, Standards, and Guidelines

Geometric Design

The geometric design criteria for the GTP pathway system are outlined in the 2008 GTP Master Plan (Boulevard Transportation Group Ltd., 2008). For the purposes of this study, it was assumed that the design criteria such as surfacing, grades, and curves remained the same in order to maintain the character of the existing portions of the pathway. The general geometric design criteria outlined in the 2008 GTP Master Plan are as follows:

- Traffic-separated multi-use pathway;
- 3 m wide paved surface typical cross-section with 2% cross-slope or crowning;
- Linear parkway surrounding the pathway, varying from 0.5 m to over 10 m wide;
- Average 5% sustained grade, 10% maximum over short distances;
- Wide, gentle curves not located in high-traffic areas or near the base of downhill slopes; and,
- Minimum 25 m forward sight distance for all curves, otherwise warning signage provided.

Highway Clear Zone

Further to the design criteria above, the pathway was specified to be aligned outside of the existing Highway 16 Clear Zone wherever possible. The Clear Zone concept is described in Section 7.3 of the Geometric Design Guide for Canadian Roads (Transportation Assocation of Canada, 2017), and is generally intended to serve as recovery zone free of obstacles to allow a motor vehicle to recover if it runs off the road. The Clear Zone distance varies with traffic volume, curve radius, design speed, and fill/cut slope angle at a specific location; however, detailed engineering design must be completed to fully determine the suitable Clear Zone for a given section of roadway.

Based on the field and desktop review of the pathway alignment and the posted speed limit of 60 km/hr, a preliminary Clear Zone 4.5-5.0 m was considered wherever possible based on Table 7.3.1 of the Geometric Guide for Canadian Roads (Transportation Assocation of Canada, 2017).

2.5. Other Considerations

Some other physical constraints and parameters considered in the development of the options analysis were as follows:

- Terminus points at the Kalum River Bridge existing sidewalk (north side of the bridge) and the existing terminus of the GTP near the southeast corner of the intersection of Frank Street and Highway 16;
- Generally parallel Highway 16, minimize alignment on private land;

- Pathway alignment outside highway clear zone wherever possible;
- Minimize conflicts with existing infrastructure and utilities; and,
- No new uncontrolled level crossings of Highway 16.

The physical constraints considered arose from discussions with the City of Terrace during scope development for the project, as well as logistical factors based on experience to reduce permitting requirements and construction costs.

3. Conceptual Alignment Summary

A short summary of the alignment options considered in this study are presented in this section. Readers should refer to the figures and maps provided in Appendix A to supplement the summary descriptions given below.

3.1. Typical Pathway Section

The conceptual alignments and cost estimates were developed based on the 3-meter paved trail width recommended in the Grand Trunk Pathway Mater Plan. The trail structure consists of a 50-millimeter layer of asphalt with 150-millimeter layer of crushed granular base. For the North Option, it was assumed that approximately one-third of the length will require an additional 300 millimeters of crushed granular sub-base to raise grades and/or improve existing subgrade conditions. The existing topsoil and organics will be stripped off and stockpiled along the side of the construction and may be used as topsoil to cover the disturbed areas, if acceptable. Existing highway access points and road crossing which are already paved would not be re-paved for the trail. As some street lighting exists at the road crossings, this cost has not been included in this estimate, but may be required following detailed design of road and driveway crossings if existing lighting is not deemed adequate.

3.2. South Option

The alignment option on the south side of Highway 16 was considered as presented in the 2008 GTP Master Plan as described in Section 1.2 and Map 1 in Appendix A. This option would continue west from the existing terminus of the GTP and cross Frank Street using the existing signalized crossing. The pathway would then be constructed over Howe Creek for approximately 600 m using an elevated causeway constructed of wood or steel. The alignment would then continue to Fisherman's park, running between the CN Rail line and Highway 16 within the CN Right-of-Way (RoW). The pathway would then align through Fisherman's Park and link to the existing sidewalk on the north side of Kalum River Bridge using a cantilevered or suspended structure underneath the bridge.

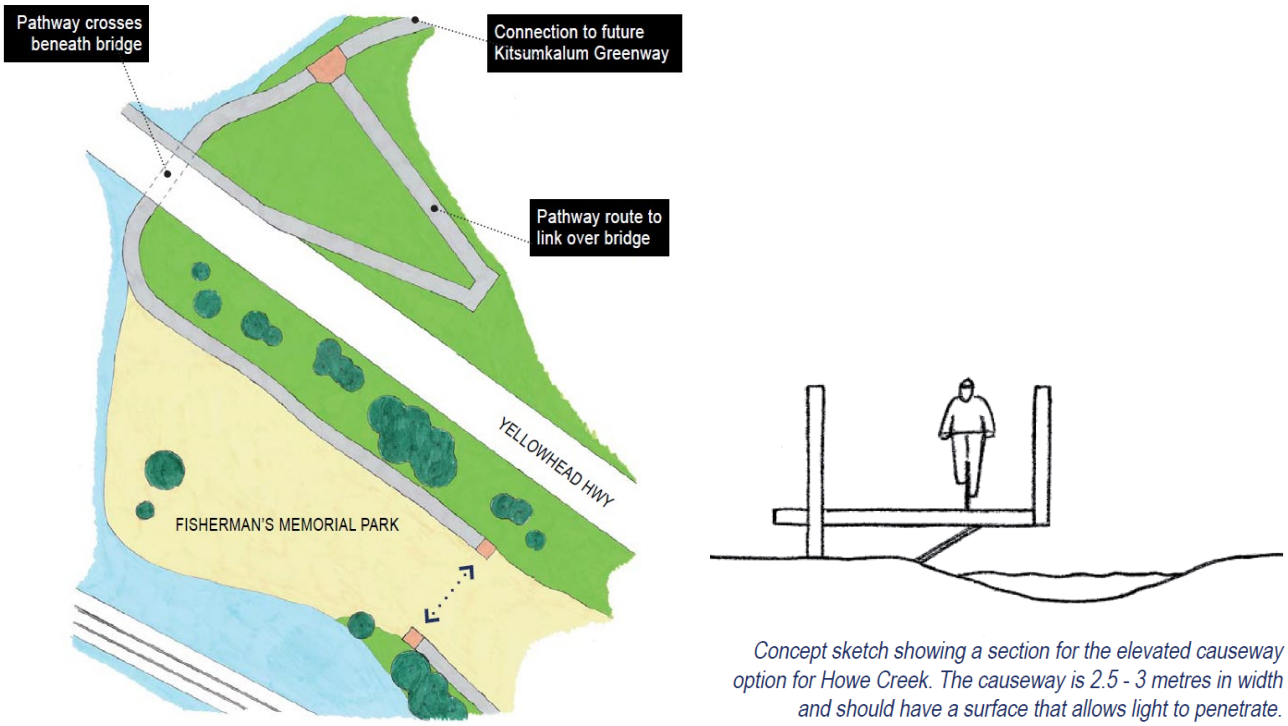


Figure 2. Conceptual sketches of Kalum River Bridge area and elevated causeway (Boulevard Transportation Group Ltd., 2008)

The key challenges for the South Alignment Option include:

- Approximately 600 m elevated causeway structure required along Howe Creek (high cost and technically challenging);
- Alignment through the existing parking area at Fisherman's Park;
- Primarily located on CN RoW;
- Suspended or cantilevered structure required under Kalum River Bridge (high cost and technically challenging); and,
- Maintenance and operational challenges with proposed causeway and suspended structures (eg. emergency access, snow clearing, sweeping, inspections, etc.).

The details of the proposed causeway and suspended or cantilevered crossing structure under the Kalum River Bridge are provided in the 2008 GTP Master Plan and are not repeated here – readers should refer to the 2008 GTP Master Plan (Boulevard Transportation Group Ltd., 2008) for details.

3.2.1. Construction Cost Estimate

The construction cost estimate completed in the 2008 GTP Master Plan is attached in Appendix B, but is provided in 2008 dollars. The cost estimates were approximately converted to 2018 dollars assuming an average inflation rate of 1.9% (Bank of Canada, 2018).

- Construction Cost Estimate (Class D) - $538,326
- Causeway and Kalum River Bridge Crossing Structure - $1.2 to 1.8 million

- Total cost - $1.7 to $2.3 million.

3.3. North Option

Based on the methodology described in Section 2, a conceptual alignment was developed for the north side of Highway 16. This North Option alignment is presented on Map 2 in Appendix A. This option would cross Highway 16 on the east side of Frank Street/Highway 16 intersection and then cross Frank Street on the north side of the intersection using the existing signalized crossings. Alignment would then continue parallel to Highway 16 on the north side to connect to the existing sidewalk crossing on the Kalum River Bridge. Alignment on the north side of Highway 16 requires several road and driveway crossings and a small crossing of Howe Creek; however, does not require intensive infrastructure like the South Option.

The key challenges with the North Option are primarily related to:

- Crossing of Howe Creek near the Frank Street/Highway 16 intersection
- Multiple driveway and road intersection crossings;
- Conflicts with existing infrastructure within the MoTI/CN RoW along Highway 16;
- Land-use constraints, including a short section aligned on private property and alignment along the existing Billabong gravel pit.

High-level concepts to address each of these challenge areas are provided in the sections below.

Howe Creek Crossing

The pathway must cross Howe Creek just west of Frank Street. A culvert crossing appeared to be the most suitable and cost-effective crossing method and is consistent with existing infrastructure crossings of the creek in this area (eg. the creek already crossing under Highway 16 through a culvert near this location). For the cost estimate, a 7 m long culvert was assumed with the pathway section constructed above to provide a level crossing of the creek.

Road and Driveway Crossings

The crossings of Frank Street and Highway 16 at the east end of the Skeena River Walk segment would utilize the existing signalized crossings. For the cost estimate, no changes were assumed to these crossings except additional paint markings; however, detailed design may require changes in this area.

Two municipal road crossing are required at Griffith Street and Earle Street. Detailed intersection design was not considered at this stage of the project; however, consideration was given to overall alignment of the pathway at roadways and driveways. The Transportation Association of Canada (2017) recommends “bend-in” or “bend-out” intersections for multi-use pathways that parallel a roadway that approach an intersection. The cost estimate assumes line painting and signage for a “bend-in” pathway intersection type with no adjustment or change to the existing roadway traffic pattern.

Figure 3. Existing conditions at the proposed Earle Street crossing location.

The alignment also includes crossing of 12 uncontrolled commercial property access driveways. It was assumed that level crossing of these driveways would be suitable, and each driveway crossing would be marked with signage to warn motorists and pathway users of the crossing and removable bollards to prevent vehicle access consistent with the existing access points to the GTP.

Existing Infrastructure Conflicts

Along the initial portion of the pathway from the Frank Street/Highway 16 intersection to Griffith Street, there are several cases where existing infrastructure (signage, landscaping, etc.) from the adjacent private properties infringes on the Highway 16 MoTI/CN RoW and would conflict with the pathway alignment. In these areas, it was assumed that further consultation with the commercial property owners would be conducted at a later time to relocate the conflicting objects or incorporate them into the design. The cost of consultations and relocation of signage was not included in the cost estimate.

Figure 4. Example of existing signage and landscaping in MoTI RoW between Frank Street and Griffith Street.

Private Property

Approximately 190 m of the pathway alignment would occur on private property at 5522 Highway 16. Due to property boundaries, there is not a feasible option to avoid this conflict as shown on Map 3. Based on preliminary engagement of the property owners, alignment through this section was maintained as close to Highway 16 as possible to reduce impact to existing commercial vehicle access. To address the property owner concerns identified during the engagement process (see Appendix C), further consideration during detailed design in this area must be given to safety and privacy concerns for the property, which could likely be achieved through implementation of landscaping and pathway lighting (if required).

Existing Gravel Pit Property

The portion located along the existing Billabong gravel pit requires alignment near existing haul road and a heavy truck access. Furthermore, property boundaries require alignment on both CN Rail property and MoTI RoW to reach the Kalum River Bridge as shown on Map 3.

Alignment in this area was proposed in a manner to minimize use of CN Rail property, stay outside (south) of any existing fencing delineating the gravel pit, and avoid conflict with existing infrastructure (hydro poles, barricades, etc.). The conceptual design does not include a provision for additional fencing or adjustments to the existing gravel pit access; however, the property owner indicated that some of these items may be required to meet the pit's operational permit requirements depending on the outcomes of detailed design of the pathway.

3.3.1. Construction Cost Estimate

The Class D construction cost estimate provided in Appendix B for the North Option was developed considering the alignment provided in Appendix A and the conceptual details provided in the previous sections. Note that the estimate does not include the following items:

- Relocation of existing signage and landscaping in the MoTI RoW and CN Property;

- Land acquisition costs; and,
- Costs for potentially unusually challenging permitting processes required to achieve project approval from various land owners and stakeholders.

Additional contingency was recommended to address these unknown items and a 10% allowance for further stakeholder engagement and permitting was included. The estimated construction cost for the North Option was $552,312.

4. Stakeholder Engagement

Select community stakeholders identified by the City of Terrace were engaged through an in-person workshop, an online crowdsourcing tool called Vertisee, and/or in-person meetings. The purpose of the engagements was to provide stakeholders an overview of the North Option and South Option for the Skeena River Walk section of the GTP and to gather feedback, concerns, constraints, and opportunities regarding the feasibility of the project. The list of stakeholders contacted by the City of Terrace and the engagement activities each participated in is shown below in Table 1.

Table 1. Stakeholder List

Stakeholder	Method of Engagement
City of Terrace (Public Works, Planning, Parks & Recreation)	In-Person Workshop Vertisee Crowdsourcing Site In-Person Meetings
BC Ministry of Transportation and Infrastructure (MoTI)	In-Person Workshop Vertisee Crowdsourcing Site
Terrace Beautification Society	In-Person Workshop Vertisee Crowdsourcing Site
Kitsumkalum First Nation	In-Person Workshop Vertisee Crowdsourcing Site
CN Rail	No Response
Billabong Road & Bridge Maintenance	In-Person Meeting
5522 Highway 16 Private Property Owners	In-Person Meeting

4.1. Stakeholder Engagement Methods

Vertisee Online Crowdsourcing Tool

Relevant GIS data from the City of Terrace was compiled in McElhanney's Vertisee online mapping tool along with preliminary alignment options. Stakeholders were provided categorized point features to drop on the map along the alignment to provide feedback. The categories were user experience, safety, land use, permitting, and other comments. Stakeholders were provided access to the Vertisee site for a three (3) week period.

Figure 5. Screenshot of stakeholder-provided feedback points collected using the Vertisee crowdsourcing tool.

In-Person Workshop

The in-person workshop was facilitated by McElhanney and included a brief presentation of the Skeena River Walk section of the 2008 GTP Master Plan (South Option) and the proposed North Option via the Vertisee online crowdsourcing tool. The group was then guided through each category of input on the Vertisee site and input was recorded through the online tool.

In-Person Meetings

The City of Terrace conducted one in-person meeting with Billabong Road & Bridge Maintenance and another meeting with the owners of 5522 Highway 16 to discuss specific implications of the North Option alignment on the respective properties.

4.2. What We Heard

The input collected on the Vertisee crowdsourcing site at the in-person workshop, during the three-week input period, and the meeting summaries provided by the City of Terrace are included in Appendix C. A Google Earth compatible file of the spatial feedback points and comments was provided to the City of Terrace for record purposes.

5. Options Analysis

5.1. Alignment Comparison

Preliminary options analysis comparing the North and South Options was completed that considered the design and selection criteria described in Section 2 and the stakeholder feedback collected. A qualitative comparison table was developed to give an overview of the technical characteristics of each option relative to one another. The alignment comparison focused on features of the conceptual alignments that were comparable and easily quantifiable with the high-level conceptual design. The conceptual alignment comparison table is provided below on Table 2.

Table 2. Conceptual Alignment Options Comparison Table

Item	South Option	North Option
Land availability / permitting requirements	• Occurs primarily within CN Rail property (historically a challenging stakeholder with many technical requirements and low probability of project approval at close proximity to rail line). • Limited area available in Fisherman's Park to add pathway without reducing parking area size. • Significant engineering involvement from MoTI required for suspended underpass of Kalum River Bridge. • Coordination required with MoTI for Kalum River Bridge sidewalk connection and Highway 16/Frank Street intersection. • Higher impacts to Howe Creek resulting in significant coordination and permitting requirements from DFO for construction over Howe Creek.	• Approximately 960 m of the alignment occurs within MoTI RoW. • Approximately 190 m occurs on 5522 Highway 16 private property – owners appear receptive to project subject to safety, traffic, and privacy considerations. • Approximately 270 m occurs on CN Rail property but is separated from the rail line by Highway 16 (more likely project approval than South Option). • Approximately 250 m overlap with an existing haul road near Billabong pit, on MoTI RoW. • Coordination required with MoTI for use of RoW, Kalum River Bridge sidewalk connection, and Highway 16/Frank Street intersection. • Lower stream impacts and thus simpler permitting requirements from DFO to complete single culvert crossing of Howe Creek.
User safety	• Only one driveway crossing required (Fisherman's Park). • 1 signalized road crossing. • Approximately 600 m long Howe Creek elevated causeway would provide additional separation from Highway 16. • Water levels of Kalum River may cause seasonal hazard to pathway users for suspended underpass of Kalum River Bridge.	• 12 commercial driveway crossings. • 2 non-signalized road crossings. • 2 signalized road crossing. • Some existing lighting provided by adjacent businesses and existing street lamps.
Constructability / Cost	• Estimated capital cost: $1.7 to $2.3 million • Construction/engineering costs likely at least 4 times higher than North Option due to causeway and bridge crossing structures required.	• Estimated capital cost: $552,312. • Lower construction and maintenance costs than South Option. • Conventional pathway construction, no specialized design or contractors required.

Item	South Option	North Option
	• Cost estimate of structures order of magnitude only without preliminary design, cost may increase significantly. • Specialized designers and contractors required for causeway and bridge crossing structures. • Suspended bridge underpass structure may not be feasible at the Kalum River Bridge.	• Some conflicts with existing infrastructure (signage, landscaping areas, mailboxes, etc.) that infringe upon MoTI RoW for Highway 16.
User experience	• Provides access to Skeena River at Fisherman's Park. • Located immediately adjacent CN rail line – may result in negative experience due to noise. • Causeway and bridge crossing structure would provide unique user experience. • Generally uninterrupted alignment would allow for through travel more consistent with other segments of the GTP.	• Alignment is frequently interrupted by driveway/road crossings and may not have same "character" and "feel" as the existing segments of the GTP. • Less opportunity and space for landscaping and pathway amenities along the alignment due to physical constraints. • Opportunity to provide access to local businesses along the route. • Limited opportunity to provide natural curves and undulations in pathway alignment to improve user experience.

5.1.1. Land Availability/Permitting Requirements

The South Option has less regulatory bodies/stakeholders to work with; however, past experience has demonstrated that working near and along the CN Railway is extremely challenging and there is a low probability of project approval by CN Railway, resulting in a potential project show-stopper. The North Option impacts more private landowners and stakeholders; however, preliminary engagements have shown that the critical stakeholders are generally in support of this option with adequate consideration given to specific concerns during detailed design. Note that both the North and South Options involve construction in and around Howe Creek and would require coordination and permitting through DFO; however, it is expected that the permitting process for the North Option (culvert crossing) would be simplified compared to the more complex construction over a longer length of the creek for the elevated causeway proposed for the South Option due to the lessened impact area to the creek. Based on this analysis, the North Option is considered the favourable option when considering land availability permitting requirements.

5.1.2. User Safety

Pathway safety is generally considered to decreased with increased interaction with motorized traffic at areas, such as at intersections and driveway crossings. From this perspective, the South Option would be preferred over the North Option given the quantity of crossings required. However, the preliminary review of the North Option showed that in general, the driveway and intersection areas provided good sightlines for both vehicle and pathway traffic and the road intersections appeared suitable for typical Bend-in intersections as recommended in the Geometric Guide for Canadian Roads (Transportation Assocation of Canada, 2017). For these reasons, the South Option is considered marginally more favourable than the North Option for user safety given that

pathway user safety at driveways and intersections is expected to be adequately mitigated by implementing best-practice engineering design at these locations.

5.1.3. Constructability/Cost

Table 2 shows that much more complex and expensive design and construction will be required for the infrastructure included in the South Option. Furthermore, the permitting and construction monitoring requirements of constructing the elevated causeway over Howe Creek for an extended length are expected to be onerous and costly. The North Option required only typical engineering design around intersections and crossings and would employ conventional and readily-available construction methods and contractors. Lastly, the cost of the South Option is expected to be greater than or equal to 4 times higher than the North Option. The North Option is highly preferred over the South Option from a constructability and cost perspective.

5.1.4. User Experience

User experience is a characteristic that is strongly impacted by a user's objectives and motivations for using the pathway. During the stakeholder engagements it was identified that the function of the Skeena River Walk section and the user objectives may vary widely. For most, the Skeena River Walk will be primarily used and interpreted as an active transportation corridor between Kitsumkalum and the City of Terrace, but for others the pathway connection may be used as a recreation corridor, particularly if access to the river is provided. For both ranges of pathway user objectives, the South Option is considered more favourable because of the continuous alignment without driveway/road interruptions and the access to Fisherman's Park. It should be noted that although the North Option does not provide river or park access as presented here, future planning and design work could include a terminus destination park and/or river access around the Kitsumkalum River (see Section 6.3).

5.2. Preferred Alignment Option

Based on the qualitative options analysis presented above, the selection criteria provided by the City of Terrace, and preliminary stakeholder feedback received during this study, the North Option is considered the most feasible alignment for the Skeena River Walk section of the GTP. The primary factors contributing to this outcome are:

- Expected difficulty in acquiring permission to use CN Rail property adjacent to rail line for South Option and low probability of success;
- High cost for limited benefit of elevated causeway for South Option;
- Lesser stream impacts likely resulting in simpler DFO permitting requirements for the proposed culvert crossing of Howe for the North Option as opposed to the proposed elevated causeway over the creek for 600 m length for the South Option;
- Highly technical and likely non-feasible suspended structure below the Highway 16 bridge over the Kitsumkalum River; and
- The less desirable aspects of pathway safety and user experience for the North Option are mitigatable through engineering design and incorporation of a recreation destination near the pathway terminus.

6. Discussion

6.1. Summary

McElhanney has reviewed two (2) conceptual alignments for the proposed Skeena River Walk section of the Grand Trunk Pathway to determine the most feasible alignment option based on selection criteria provided by the City of Terrace staff and preliminary stakeholder feedback. The South Option was first developed in the 2008 GTP Master Plan and was generally considered as it was presented in the original document. The North Option was developed as an alternative alignment given the technically and economically challenging infrastructure required for the South Option.

Through a mostly qualitative analysis method, the North Option was selected as the preferred alignment based on the selection criteria defined by the City of Terrace and the input gathered through preliminary stakeholder engagement. The outcome of this feasibility review was selection of the preferred option and the updated high-level cost estimate for the purposes of providing the City of Terrace information to apply for funding for the next steps of the project.

6.2. Limitations of Study

The conceptual alignments presented in this report represent corridors suitable for the proposed pathway based on the constraints considered in this report, but do not wholly consider all public, stakeholder, nor affected private property owner sentiment given that not all parties were consulted during this feasibility review. Furthermore, the selected alignment will require detailed engineering analysis, design for the driveway crossings, intersections, causeway, and/or suspended underpass structure and may require adjustment based on new information acquired during further stages of the project. The preliminary options analysis described in Section 5 was limited to the construction and engineering “hard” costs and technical features associated with the conceptual alignments and does not include what may be significant costs of land acquisition and/or permitting processes required to achieve project approval from various land owners and stakeholders.

6.3. Next Steps

This feasibility review determined the most feasible alignment option for the City of Terrace to pursue to the next stages of project planning and design. Future efforts for planning and design of the North Option for the Skeena River Walk section of the GTP should focus on:

- Preliminary engineering design of the pathway alignment, intersections, driveway crossings, and amenities;
- Preliminary landscape architectural design of pathway amenities, landscaping, lighting, and furnishings;
- Additional stakeholder and landowner consultations based on the preliminary engineering design, including all impacted property owners and stakeholder groups; and,
- Detailed design.

Through the stakeholder engagement process, it was apparent that the majority of stakeholders supported providing river and park access as part of the Skeena River Walk section of the GTP. Although the selected alignment option does not have a feasible opportunity to connect to Fisherman's park without an additional level crossing of Highway 16, opportunities exist on either side of the Kitsumkalum River for a park space with river access. Terrace's Official Community Plan cites potential future pathway expansion along the west side of the Kitsumkalum River and there may be opportunity to partner with Kitsumkalum First Nation to develop park space on the east side of the river. It is recommended that consideration of a destination park space at or near the terminus of the GTP be considered in further design and planning work for the project.

7. Closure

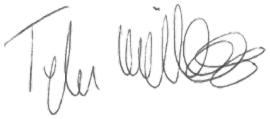
This report has been prepared by McElhanney Consulting Services Ltd. for the benefit of the City of Terrace. The information and data contained herein represent McElhanney's best professional judgment considering the knowledge and information available to McElhanney at the time of preparation. Except as required by law, this report and the information and data contained herein are to be treated as confidential and may be used and relied upon only by the client, its officers, and employees.

McElhanney Consulting Services Ltd. denies any liability whatsoever to other parties who may obtain access to this report for any injury, loss or damage suffered by such parties arising from their use of, or reliance upon, this document or any of its contents without the express written consent of McElhanney and the City of Terrace.

We trust this report submission meets your requirements for the project. Should you have any queries, please do not hesitate to contact the undersigned at 250.631.4068 or twilkes@mcelhanney.com.

Respectfully submitted,

McElhanney Consulting Services Ltd.



Tyler Wilkes, EIT
Project Manager and Trail Designer
twilkes@mcelhanney.com

Appendix A – Concept Alignment Maps

LEGEND

BEN	Bench
LI	Light standard
BIN	Garbage bin
BOL	Removable bollard post
LBOL	Bollard with light
SI-REG	Regulatory signs
SI-W1	Pathway narrowing warning sign
SI-W2	Railway crossing warning sign
SI-W3	Roadway crossing warning sign
SI-ID	Pathway identifier sign

Grand Trunk Pathway Master Plan

DETAIL PLAN - SECTION 3 “SKEENA RIVER WALK”

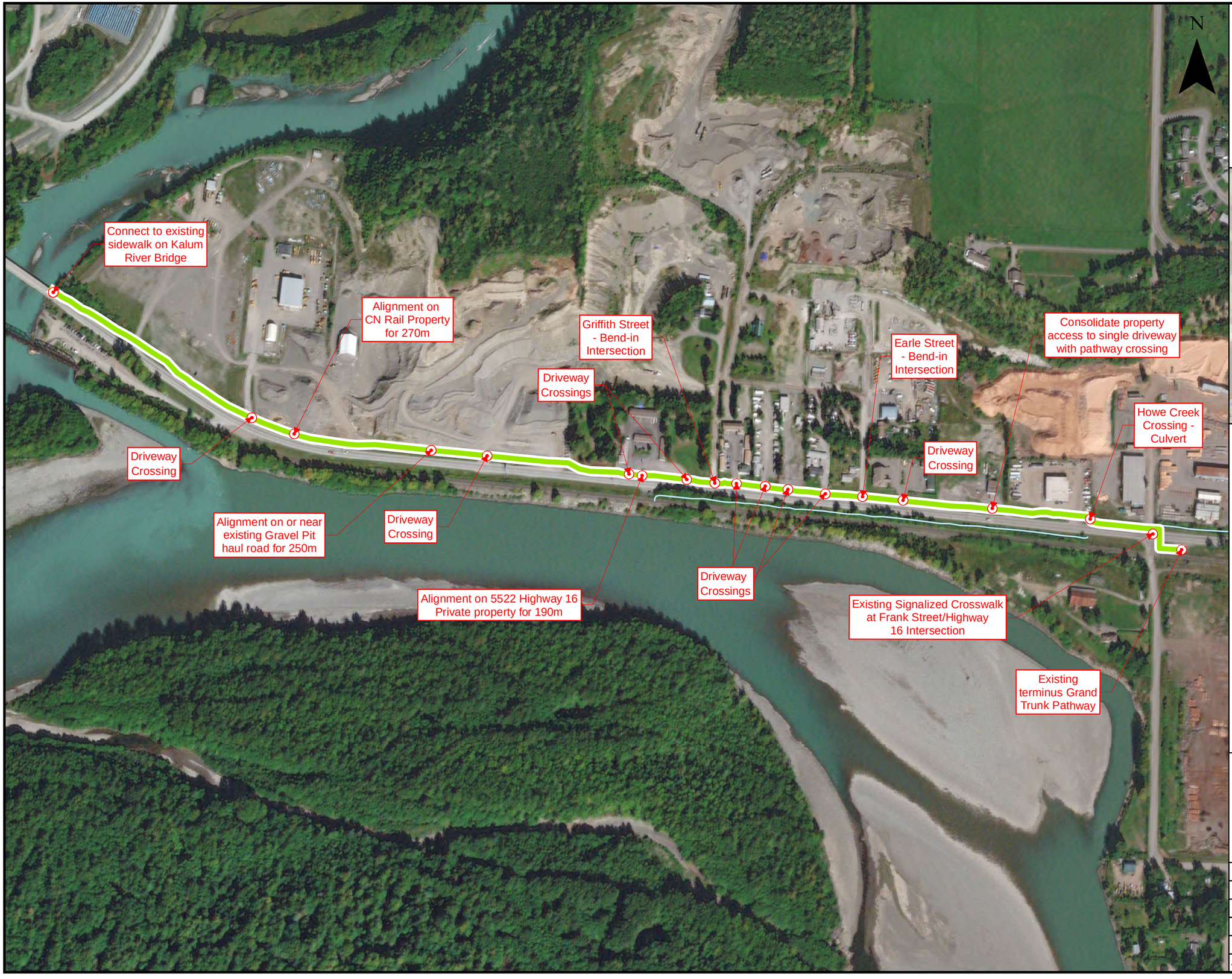
MAP 1 (SOUTH OPTION) - from Boulevard Transportation Group, 2008.

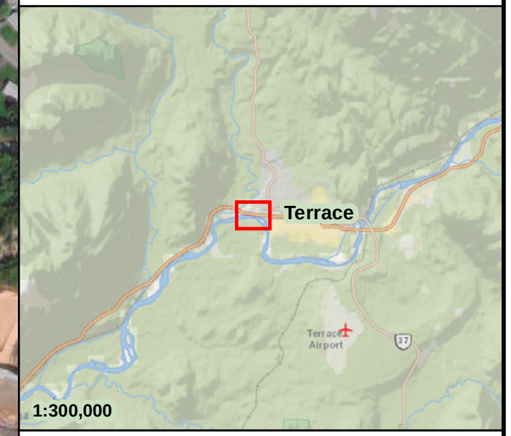
Boulevard Transportation Group

TERRACE GRAND TRUNK PATHWAY

Map 2

NORTH OPTION ALIGNMENT





LEGEND

- Trail Features
- North Option Alignment
- Watercourses

TRAIL RECOMMENDATIONS PROVIDED BY MCELHANNEY
BACKGROUND DATA PROVIDED BY CITY OF TERRACE

COORDINATE SYSTEM: NAD 1983 UTM ZONE 09

METRES

0 50 100 200

1:5,000

SHEET SIZE: 11" x 17"

THE CITY OF TERRACE

REVISION	DESCRIPTION
0	ISSUED FOR REVIEW
1	ISSUED FOR REPORT

DATE: DECEMBER 31, 2018

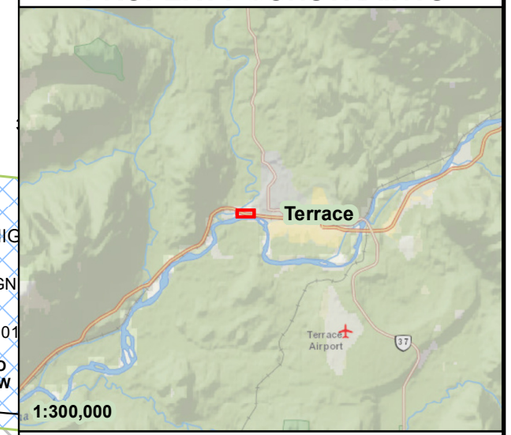
AUTHOR: JB

McElhanney

TERRACE GRAND TRUNK PATHWAY

Map 3

NORTH OPTION ALIGNMENT PROPERTY CONSTRAINTS



Kalum River Bridge

PRP44919

PLAN

1

A

PLAN

PRP44927

PRP13747

FISHERMAN'S MEMORIAL PARK

5522 HIG

ASSIGN

DD 01

CONTINUE TO FRAME BELOW

PLAN

PRP43747

4653

3558

PLAN

A

3

4

5

PLAN

A

4677

REM 6

3558

PRP14593

PLAN

12

5

1016

W1/2 4

PLAN

E1/2 4

6

3

2

1016

PLAN

REM A

PRP14269

5522 HIGHWAY 16

ASSIGNED LOT 1

DD 011892

CONTINUED FROM FRAME ABOVE

1

BCP43227

Connection to existing Grand Trunk Pathway

PART DL 1704

ASSIGNED LOT 1

DD 9760-I

N

LEGEND

- North Option Alignment
- CNR Centreline
- Road C/L
- Easement Boundary
- RoW Boundary
- Municipal Boundary
- Parcels
- CN Rail
- City of Terrace
- MoTI
- Private
- Parks
- Water

BACKGROUND DATA PROVIDED BY CITY OF TERRACE

COORDINATE SYSTEM: NAD 1983 UTM ZONE 09

METRES

0 25 50 100

1:2,500

SHEET SIZE: 11" x 17"

THE CITY OF TERRACE

REVISION	DESCRIPTION
0	ISSUED FOR REVIEW
1	ISSUED FOR REPORT

DATE: DECEMBER 31, 2018

AUTHOR: JB

McElhanney

Appendix B –Cost Estimates

SOUTH OPTION

2008 Grand Trunk Pathway Master Plan

Cost Estimate

Boulevard Transportation Group

Preliminary Cost Estimate - Off Site Works Only

Based: Preliminary Concept Plan — Date: March 12-08
Area: Section 3
Prepared by: G.S. — Project No.:
Drawing Name: G:\Project Files\863 - Grand Trunk Trail Terrace\Drawings\Base_Des_Feb 01-08.dwg
Cost Estimate Class: Class "D"

ITEMS	Quantity	units	Unit Cost	units	Total Cost
Removals:					
Clearing &Grubbing	3736	m^2	$ 5.00	m^2	$ 18,680.00
Stripping & Excavation	1712	m^3	$ 15.00	m^3	$ 25,680.00
Installation - Civil Works:					
Sidewalk (Interlocking Brick Pavers)	16	m^2	$ 180.00	m^2	$ 2,880.00
Asphalt (Trail)	3443	m^2	$ 40.00	m^2	$ 137,720.00
Gravel - 25mm Crush at 150mm	561	m^3	$ 47.00	m^3	$ 26,367.00
OR					
Gravel - 25mm Crush at 150mm (Trail)	561	m^3	$ 47.00	m^3	$ 26,367.00
Paint Markings	1	L.S.	$ 500.00	L.S.	$ 500.00
Chain Link Fence	810	m	$ 70.00	m	$ 56,700.00
Landscape	1	L.S.	$ 15,000.00	L.S.	$ 15,000.00
Soil	15	m^3	$ 70.00	m^3	$ 1,050.00
Tree	2	each	$ 500.00	each	$ 1,000.00
Bench	6	each	$ 2,000.00	each	$ 4,000.00
Signage	4	each	$ 300.00	each	$ 1,200.00
Identifier Signs	3	each	$ 500.00	each	$ 1,500.00
Garbage Can	3	each	$ 1,000.00	each	$ 300.00
General:					
mobilization	1	L.S.	$ 15,000.00	L.S.	$ 15,000.00

Gravel			***Asphalt***		
Subtotal	$	169,857.00	Subtotal	$	307,577.00
Contingency - 30%	$	50,957.10	Contingency - 30%	$	92,273.10
Engineering - 15%	$	25,478.55	Engineering - 15%	$	46,136.55
Total	**$**	**246,292.65**	**Total**	**$**	**445,986.65**

Notes:

Estimate does not include any underground utility relocations or drainage

Total estimate figure does not include elevated boardwalk or elevated structure beneath Kitsukalum Bridge.
Both elevated structures are estimated at a combined $1 to 1.5-million.

Disclaimer:

Whereas any opinions of probable cost prepared by Boulevard Transportation Group ("the Engineer") will be based on incomplete or preliminary information, and will also be based on factors over which the Engineer has no control, the Engineer does not guarantee the accuracy of these opinions of probable cost and shall have no liability where the probable costs are exceeded.

Note: values provided in 2008 dollars. See report for update to 2018 values.

McElhanney

Schedule of Quantities

Reference: MSCL 2321-01794-00 GTP Feasibility Review

	Task	Units	Quantity	Unit Price	Line Total	Sub-Totals	Comment
Skeena River Walk - North Option							
1.00	**Construction Estimate**						
1.01	General Contractor Mobilization & Demobilization	l.s.	1	$ 15,000.00	$ 15,000.00		
1.02	Traffic Control	l.s.	1	$ 20,000.00	$ 20,000.00		
1.03	Strip Topsoil & Subgrade Preparation	sq.m.	4,200	$ 12.00	$ 50,400.00		
1.04	Crushed Base Course - 150 mm	cu. m.	630	$ 40.00	$ 25,200.00		
1.05	Select Granular Sub-base - 300 mm	cu. m.	420	$ 45.00	$ 18,900.00		Assume 1/3 of path length needs subbase material
1.06	Significant Fill Areas	cu. m.	200	$ 45.00	$ 9,000.00		Howe Creek culvert & ramp to Kalum River Bridge
1.07	Asphalt - 50 mm	tonnes	389	$ 350.00	$ 135,975.00		
1.08	Topsoil/Seed/Mulch	sq. m.	1,400	$ 5.00	$ 7,000.00		0.5m on each side of the trail
1.09	Signage - less than 1 sq.m.	ea.	30	$ 500.00	$ 15,000.00		At road and driveway crossings, west end (2 in each direction)
1.10	Culvert	l.m.	7	$ 700.00	$ 4,900.00		Howe Creek crossing - assume 600 mm culvert
1.11	Bollards	ea.	32	$ 480.00	$ 15,360.00		At all driveway and road intersections
1.12	Line Painting - Road Crossings	ea.	4	$ 4,500.00	$ 18,000.00		Road Intersections
						$ 334,735.00	
2.00	**Other Items**						
2.01	Design/Construction Engineering (15% Construction)	l.s.	1	$ 50,210.25	$ 50,210.25		
2.02	Stakeholder Consultation/Permitting (10% Construction)	l.s.	1	$ 33,473.50	$ 33,473.50		
2.03	Contingency (40%)	l.s.	1	$ 133,894.00	$ 133,894.00		40% contingency recommended for stakeholder requirements
	Total					**$ 552,312.75**	

Appendix C –Stakeholder Engagement

Date: June 19, 2018
Location: City of Terrace Public Works Building

Time: 10:00 am to 11:00 am

Subject: Terrace Grand Trunk Pathway Feasibility Review – Project Kickoff Meeting

Present & Distribution: Tyler Wilkes (MCSL), Justin Ellis – Phone (MCSL), Tara Irwin (Terrace), Rob Schibli (Terrace), Jayme Lamoureux (Terrace)

	Subject	Action by	Status
1. Introduction			
• Tyler Wilkes – Project Manager and Trail Designer (primary contact) • Justin Ellis – Planner • Jaime Lamoureux – City Planner (primary contact) • Tara Irwin – City Planner • Rob Schibili – Director of Public works			
n/a	Information only		
2. Project Communications			
• Project communications to be primarily directed through Tyler and Jayme. • Justin can be cc'd on email communications, Jayme will disseminate information to City of Terrace team as needed.			
n/a	Information only		

Subject		Action by	Status
3. Project Background			
Project overview provided by Rob and Tara staff: • GTP is the main pedestrian Pathway through Terrace • First Phase built in 2000. 2008 master plan completed which has been used to apply for grants to construct two more sections to where the pathway currently ends at Frank St. • The current project was prompted to increase level of detail from existing master plan to apply for additional grants in the future. • This project needs to address the challenging areas and physical constraints • Previous master plan has very high-level engagement, low level of detail and is cost-estimated in 2008 dollars. • The main goal of the project is to position Terrace better for future funding applications. • Updated Class D cost estimate is required. • Major challenge will be highway crossings and permitting. • Significant pathway design details are not required at this stage, but a technically and economically feasible alignment options is required. • Separated pathway desired, do not consider divided bike lane unless absolutely required. Connectivity is the critical user outcome, recreation/user experience less important on this segment. • Deliverable: technical report with options analysis and recommendation for best alignment option based on engagement and options analysis. Intended audience is internal use and grant applications.			
n/a	Information Only		
4. Work Plan & Schedule			
Work plan provided in McElhanney's proposal was reviewed. The four-phased approach was discussed with the following clarifications: • City of Terrace staff to join for site review • City of Terrace to schedule engagement workshop and arrange timing with stakeholders • Phases 2 and 3 will occur simultaneously and are interrelated. • The date for the engagement workshop may require adjustment depending on stakeholder availability during summer months. The duration of vertisee input will be determined during development of the engagement plan.			
Action Item 01	Tara to provide data request sheet to Tyler	Tara Irwin	n/a

Subject		Action by	Status
5. Options Analysis Evaluation Criteria			
What are the preferred selection criteria for options analysis to compare the north/south sides of the highway for alignment? (user experience, safety, cost, aesthetics, environmental, impact to property owners, stakeholder support, etc.) Discussion: • Likely the south side of the road would be a non-starter due to landowner and physical constraints as per Rob Schibili comments (in CN ROW, narrow) • North side is in MoTI ROW, likely easier to permit, but has several driveway crossings. • Framework for evaluation in prioritized order: 1) land availability/permitting 2) safety 3) constructability/cost 4) user experience			
n/a	For information only.		
6. Engagement Strategy			
Discussion of engagement details and strategies: • Private owners have not actively reached out to in recent years regarding pathway development plans, but master plan has been available. • Other stakeholders should be aware of project. Expect most to be available for engagement, but CN may be a challenge. • Engagement to be targeted to stakeholders, not public • Confirmed attendees: City of Terrace, CN Rail, MoTI, DFO, Kitsumkalum, Terrace Beautification Society, Billabong contracting. No informing of local landowners at this point in the project. • Engagement plan will reconfirm all details and provide techniques and details of workshop/vertisee. To be reviewed by City of Terrace prior to engagements • Outcomes of engagement process to include “what we heard” report and evaluation of qualitative feedback to inform route selection recommendation.			
n/a	For information only.		

GRAND TRUNK PATHWAY – SKEENA RIVER WALK FEASIBILITY REVIEW STAKEHOLDER WORKSHOP

Purpose

The purpose of the workshop is for stakeholders to gain familiarity with the existing master plan for the Skeena River Walk section of the Grand Trunk Pathway (GTP) and the updated feasibility review project and to gather feedback, concerns, and ideas from the stakeholders regarding feasibility of the project. Based on the preliminary concept alignment presented via Vertisee, stakeholders will be asked to provide input to help inform route selection for the feasibility review. The input provided by the stakeholders will be assessed with consideration of the evaluation criteria provided by the City of Terrace to adjust the concept alignment and complete options analysis for the feasibility review report.

Goal

The goal of the workshop is for stakeholders to identify technical issues, concerns, requirements, and opportunities with the concept alignment on the north side of Highway 16 using the Vertisee online mapping tool to inform route selection, options analysis, and concept design features for the feasibility study report.

Time, Date & Location

Tuesday September 18, 2018 - 2:00 pm to 4:00 pm

City of Terrace Public Works Conference Room (5003 Graham Avenue, Terrace, BC)

Vertisee site: **https://vertisee.mcelhanney.com/GrandTrunk/** (Note: It is highly recommended that you use Google Chrome or Firefox to open this link)

Facilitators

Tyler Wilkes (McElhanney)

Jayme Lamoureux (City of Terrace)

Materials Required

- Laptop (Provided by McElhanney)
- Projector and screen (Provided by City of Terrace)
- Internet connection (Provided by City of Terrace)
- Speaker Phone (Provided by City of Terrace)

Process

Background

City of Terrace (City) staff will provide a project overview that will include:

- Background of the 2008 Grand Trunk Pathway Master Plan;
- History of construction and current status of the GTP;
- Description of the purpose and features of the Skeena River Walk section of the GTP; and,
- Goals and objectives of the Skeena River Walk feasibility review project.

Alignment Options Review

McElhanney staff will provide a brief overview of the previous concept design for the Skeena River Walk on the south side of Highway 16 using slides, images, and information from the 2008 master plan. This will be followed by a brief discussion of the challenges and constraints of the original alignment option and a presentation of the preliminary concept alignment on the north side of Highway 16.

Stakeholder Input Activities

McElhanney will lead stakeholders through an interactive review of the proposed concept alignment using Vertisee. This will be followed by a series of guided discussions to gather input from the stakeholders using the input tools on Vertisee.

Follow-up

McElhanney will provide attendees with a link to the Vertisee page that will be active for 2 weeks (duration to be confirmed during workshop) following the workshop to provide additional input, if desired.

Workshop Agenda

- Introductions (5 minutes)
- Background (10 minutes)
- Alignment Options Review (15 Minutes)
- Stakeholder Input Activity (80 minutes)
- Next steps (10 minutes).

Stakeholder Input Activity

Safety

Using the **Safety Concern tool**, identify and describe safety concerns with the proposed pathway alignment.

User Experience

Using the **User Experience tool**, identify and describe any of the following:

- Opportunities to enhance user experience;
- Areas or aspects of the project that may result in a negative user experience;
- Connections to other areas, infrastructure, recreation opportunities, transportation corridors, etc.; and/or
- Amenities that could be incorporated into the project to enhance user experience.

Environmental

Using the **Environmental tool**, identify and describe any environmental concerns or requirements along the proposed pathway alignment.

Land Use

Using the **Land Use tool**, identify and describe any land use constraints, conflicts, or opportunities along the proposed pathway alignment. This could include private property, existing Rights-of-Way, conflicts with existing infrastructure, future development plans, etc.

Permitting

Using the **Permitting tool**, identify and describe any permitting requirements from your organization that may apply to the proposed pathway alignment.

Other Comments

Any other input may be identified and described using the **Other Comments tool**.

Follow-Up

The Vertisee site link will remain active for 2 weeks following the workshop. Attendees and invitees who were unable to attend will be supplied the link and are encouraged to provide any additional input not gathered during the workshop or to comment on existing input features.

Grand Trunk Pathway - Vertisee User Comments

The following comments were collected through the Grand Trunk Pathway Vertisee input site during the September 18, 2018 Stakeholder Workshop and during the stakeholder input period between September 18 and October 10, 2018.

Respondents to the Vertisee site and parcipants in the stakeholder workshop included: BC Ministry of Transportation and Infrastructure, City of Terrace, Terrace Beautification Society, and Kitsumkalum First Nation.

Stakeholder Comments	Feedback Category	Agrees	Disagrees
connection to sidewalk on bridge a concern regarding accessibility (not very wide) for those with wheelchairs, bikes (maybe?), strollers, etc.	User Experience	1	0
There is an old crane buried under the right of way at the outlet of the access culvert that may interfere with drainage depending on design changes	Other Comments	0	0
Linear consistency with gradual curves - suggestion for esthetics, > Mimic tree selection - section two -staggered display of colour- for continuity >> (Excellent for photographers) >> Wider areas bermed - feature plantings- hardscaping (along driveways) >> Benches - Litter cans with grates / secure lids	User Experience	0	1
snow storage and line of sight at this main intersection is of great concern.	Safety	0	0
pinch point between highway & property boundary - discussion regarding options for land use required	Land Use	0	0
name change? (Do we actually get to see the Skeena when walking?)	Other Comments	0	0

Thank you for keeping this phase of the Pathway alive... >> A grand finale 👏 >> An experience >> A destination - Logging /forestry related/historical/fishing etc./1st Nation - suggestions for signage	User Experience	0	0
encroachments on the highway ROW will need to be relocated for pathway construction	Other Comments	0	0
private property ownership - will need a ROW or easement for access and construction of pathway on the lands	Permitting	0	0
potential requirement for screening / fencing adjacent gravel pit use with increased pedestrian traffic along proposed pathway	User Experience	0	0
large trucks entering and existing the property - sightlines and speed of traffic a concern	Safety	0	0
street crossing signage on pathway	Safety	0	0
street crossing signage on pathway	Safety	0	0
The existing sidewalk is narrow and not isolated from the HWY. Especially a concern in winter when plowed snow limits pedestrian use.	Safety	0	0
Kitsumkalum - primary trail user objectives would be connectivity (eg. access to town)	User Experience	1	0
Use existing power poles for lighting at key locations.	Safety	0	0
Design needs to consider existing drainage alongside highway.	Other Comments	0	0
Landscape features should be included wherever RoW with permits to improve aesthetics, so long as outside clear zone requirements.	Other Comments	0	0
DFO would have heavy permitting requirements from DFO.	Permitting	0	0
Beautification society - Pathway alignment should be safe, interesting, aesthetically pleasing.	User Experience	0	0
Food/drinks available at Kitsumkalum Tempo. Opportunity to increase customers/visitors.	Other Comments	0	0
Other potential destination opportunity.	Other Comments	0	0
CoT - OCP has future plans for Kitsumkalum walk, extension of city's pathway system. Is there an opportunity to create a destination on the north side of the highway rather than cross the highway? Include parking at destination if exists as pathway extends	Other Comments	0	0
Is there another way to provide highway crossing to Fisherman's park? Level crossing?	Safety	0	0
Beautification Society - bike lane not favourable, separated pathway preferred.	User Experience	0	0
Could there be a way to connect to Fishermans park? Likely not without expensive structure or development; however, likely motivated users would cross highway when safe to access the park. Design needs to consider river access as a destination trail user objective.	User Experience	0	0
Beautification Society - user experience on south side of highway would be better by providing destination/attraction of river access at Fisherman's Park.	User Experience	0	0
What would be impacts on Billabong Pit for this option by using the haul road area?	Other Comments	0	0
Overhead lighting around intersections most important areas for lighting for user safety.	Safety	0	0

Users likely to use straight line section due to inconvenience. Likely benefit to present to land owner for Option 2 would be the aesthetic value of pathway and added accessibility to the property for business.	User Experience	0	0
2008 master plan concept idea of routing along Howe Creek is a challenging construction/design/permitting idea	Other Comments	0	0
MoTI requires clear zone clearance for pathway. Where pathway is within clear zone, no obstructions to vehicles (eg. use flexible post mounted signs, no mounted structures).	Safety	0	0
Safety at intersections important to MoTI road engineering review. Skeena concrete access, driveways, etc.	Safety	0	0
MoTI - permitting requirements similar to other highway/pathway projects on MoTI lands. Clear zone, drainage, room for snow plowing/maintenance, etc.	Permitting	0	0

Your File #:
eDAS File #: 2018-05772
Date: Oct/11/2018

c/o City of Terrace
Jayme Lamoureux

Attention: Jayme Lamoureux Planner

Re: Proposed General Referral Approval Application for:
Grand Trunk Pathway Feasibility Study, North side of Highway 16 West between Frank Street and Fisherman's Park

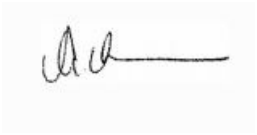
Thank you for the opportunity to participate in the feasibility study regarding relocating the potential extension of the Grand Truck Pathway from the south to the north side of Highway 16 West between Frank Street and Fisherman's Park.

The Ministry of Transportation and Infrastructure (MoTI) has a couple of concerns with the proposed location:

- MoTI have several large ditches on the north side of the Highway in this location to support drainage for the highway. Depending on the location of the pathway within the right of way, the City of Terrace would potentially need to conduct a drainage study to ensure drainage would not be affected.
- The other area of concern is with pedestrian safety as there are several accesses, some industrial, that the pathway would cross. Due to the distance the pathway will likely be set back from the highway vehicular traffic would not be required to stop, and may not expect or see pedestrian traffic.

These comments were entered into the Vertisee website provided by McElhanney. If you have any questions please feel free to call Amber Olson at (250)615-3976.

Yours truly,



Amber Olson
District Development Technician

Local District Address

Skeena District
4825 Keith Avenue
Terrace, BC V8G 1K7
Canada
Phone: (250) 615-3970 Fax: (250) 615-3963

Appendix D – References

Bank of Canada. (2018, 11 28). Retrieved from https://www.bankofcanada.ca/rates/indicators/capacity-and-inflation-pressures/inflation/historical-data/

Boulevard Transportation Group Ltd. (2008). *Grand Trunk Pathway Master Plan.* Terrace: City of Terrace.

Transportation Assocation of Canada. (2017). *Geometric Design Guide for Canadian Roads: Chapter 7 - Roadside Design.* Ottawa: Transportation Association of Canada.