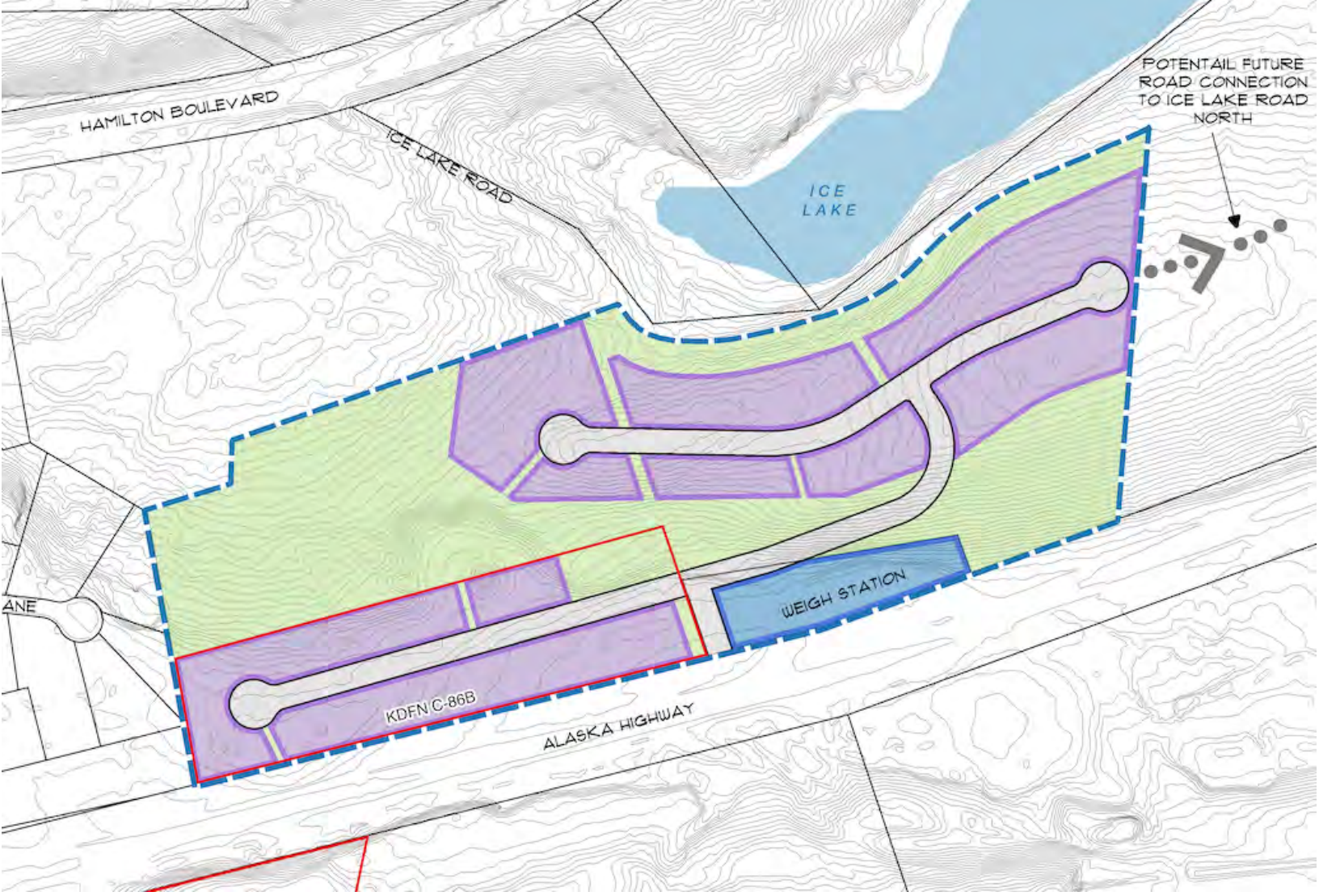

ICE LAKE ROAD SOUTH MASTER PLAN

CITY OF WHITEHORSE

July 9, 2024

Whitehorse
THE WILDERNESS CITY

Prepared by 3Pikas with:

Greenwood Engineering Solutions; ISL Engineering

3Pikas

GREENWOOD ENGINEERING SOLUTIONS

ISL

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I. VERSION HISTORY

VERSION	DATE	DESCRIPTION
1	2024/04/29	ISSUED FOR REVIEW
2	2024/05/31	DRAFT 2 – ISSUED FOR PUBLIC ENGAGEMENT
3	2024/06/27	FINAL DRAFT – ISSUED FOR FINAL REVIEW
4	2024/07/08	**FINAL – ISSUED FOR COUNCIL APPROVAL**

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

Ice Lake Road South is an undeveloped swath of land located on the Traditional Territory of Kwanlin Dün First Nation and Ta'an Kwäch'än Council. The 32.42-hectare site is located a few kilometres southwest of the downtown core and is bounded by undeveloped land to the north, Ice Lake Road to the West, Metropolit Lane to the south, and the Alaska Highway to the east. Ice Lake Road South is comprised of unsurveyed Yukon Land and Kwanlin Dün First Nation Settlement Land.

The City of Whitehorse created the Ice Lake Road South Master Plan as part of their strategic vision to meet current and future needs for commercial and industrial lands. It is envisioned that the Ice Lake Road South area will connect to the Ice Lake Road North area (master planning anticipated to begin in 2024) as well, creating one of the primary future employment and commercial goods and services nodes in Whitehorse.

Following the process outlined in section 2.1, the plan progressed through strategic visioning, the development of preliminary planning concepts, stakeholder and public engagement and input, land use scenario assessment, and finally, arriving at a final Ice Lake Road South Master Plan.

Key objectives of the Ice Lake Road South Master Plan include:

- Creating employment lands;
- Taking advantage of the site's proximity to the Alaska Highway, which is a major transportation and shipping supply corridor, and opportunity for highway oriented commercial uses;
- Providing flexibility to meet evolving commercial and industrial needs;
- Achieving high standards in planning and sustainable development;
- Guiding long-term investment in infrastructure development; and
- Implementing an effective and efficient use of the site.

Using these and other considerations, the Ice Lake Road South Master Plan will guide the transformation of Ice Lake Road South from undeveloped lands to Industrial/Commercial employment lands. The design is founded upon best practices to progressively integrate with the evolving surrounding land-use fabric and provide high quality employment land for the broader community.

In meeting the above objectives, key features of the Ice Lake Road South Master Plan include:

- Approximately 10 highway-oriented Industrial/Commercial lots with direct visual and transportation connections to the Alaska Highway;
- Approximately 11 mixed Industrial/Commercial lots with direct transportation connection to the Alaska Highway corridor (21 lots in total)

- Employment opportunities for approximately 68 individuals;
- Land use offering opportunities to work within the City's Urban Containment Boundary (i.e., closer to primary residential areas);
- A large green space for active community uses, amenity and park space buffers, and habitat functions;
- A development strategy that addresses adjacent land uses and trails in sensitive and responsive manner;
- Built-in flexibility through recommended phasing to support development feasibility, industry needs, and address variations in market demands.

1 INTRODUCTION

1.1 PROJECT OVERVIEW

3Pikas was retained by the City of Whitehorse to prepare an Industrial / Commercial Master Plan for the Ice Lake Road South. The Plan was completed under the direction of the project team that included, the City of Whitehorse–Planning and Sustainability ('City of Whitehorse'), Kwanlin Dün First Nation–Heritage, Lands and Resource Department ('Kwanlin Dün First Nation'), and the Government of Yukon–Community Services Land Development Branch ('YG–Land Development Branch').

The Master Plan represents a major milestone towards a multi-phase Industrial/Commercial development to meet the city's demand for industrial land and population growth. The proposed land use concept reflects the shared vision articulated by the project team and the public.

This Master Plan also incorporates input from an interdisciplinary team of Yukon-based technical experts. Greenwood Engineering Solutions provided input on the civil engineering servicing during the plan preparation and has prepared a preliminary design report based on the Master Plan development concept (see Appendix A). ISL Engineering provided transportation planning support and a Traffic Impact Assessment (TIA) (Appendix B).

1.2 MASTER PLAN STUDY AREA

Ice Lake Road South is in the City of Whitehorse on the Traditional Territory of Kwanlin Dün First Nation and Ta'an Kwäch'än Council (see Figure 1).

The 32.42-hectare site is mostly forested and includes a distinct hill feature, several single-track trails and electrical utility easement and overhead powerline. It is bounded by undeveloped land to the north, Ice Lake Road to the West, Metropolit Lane and Garden Road to the south, and the Alaska Highway to the east.

Ice Lake Road South is comprised of unsurveyed Yukon Land and Kwanlin Dün First Nation Settlement Land C-86B. The planning area also encompasses the highway Weigh Scales facility (lot 1143), which is managed by Government of Yukon Highways and Public Works (YG–HPW).

For simplicity, the KDFN development area is referred to as 'C-86B parcel' or 'Alaska Highway frontage', while the YG development area is similarly referred to as the 'YG area' or 'Upper Industrial/Commercial area'.

1.3 PLAN PURPOSE & SCOPE

The Ice Lake Road South Master Plan represents a comprehensive and long-range strategy designed to articulate and guide the vision, growth, and future development of the site. The Master Plan is crafted through research and analysis, offering recommendations that delineate, define, and structure growth and change.

This Plan strives to balance diverse and sometimes competing considerations into a consistent and structured way forward. These considerations include:

- natural environment and valued or sensitive features;
- development cost, market conditions, and economic viability;
- adjacent land use and zoning;
- heritage values and community amenities;
- existing and required transportation and servicing infrastructure;
- employment and population growth; and
- existing and desired land uses and compatibility.

At all stages, the Master Plan advanced to balance these and other considerations. They inform the overarching vision, key design elements / considerations, and concept options and policies for industrial and commercial use, greenspace, trails, and transportation and servicing aspects of the plan.

This plan was developed through input from the public, professional and technical experts, and government department guidance.

The plan identifies and attempts to address fundamental needs and factors that drive development. These include connecting the site with anticipated future local commercial and industrial nodes, and, at the same time incorporating and reflecting municipal objectives and broader aspirations.

The Plan is the product of an iterative conceptual design process. KDFN and City of Whitehorse reviewed successive conceptual options, accompanied by detailed background and technical analysis (Figure 2). The final Master Plan builds on this work and communicates the strategic vision and its implementation to developers, regulators, governments, business owners, and the public at large.

The purpose of this Master Plan is to articulate at a conceptual level how to proceed to:

- Create new industrial/commercial lands;
- Address physical and servicing constraints;
- Taking advantage of the site's proximity to the Alaska Highway, which is a major transportation and shipping supply corridor, and opportunity for highway oriented commercial uses;

- Provide flexibility to meet evolving commercial and industrial needs;
- Guide long-term investment in infrastructure development;
- Implement an effective and efficient use of the site; and
- Coordinate more cost-effective construction for the landowners (KDFN and YG) either in tandem, or separately.

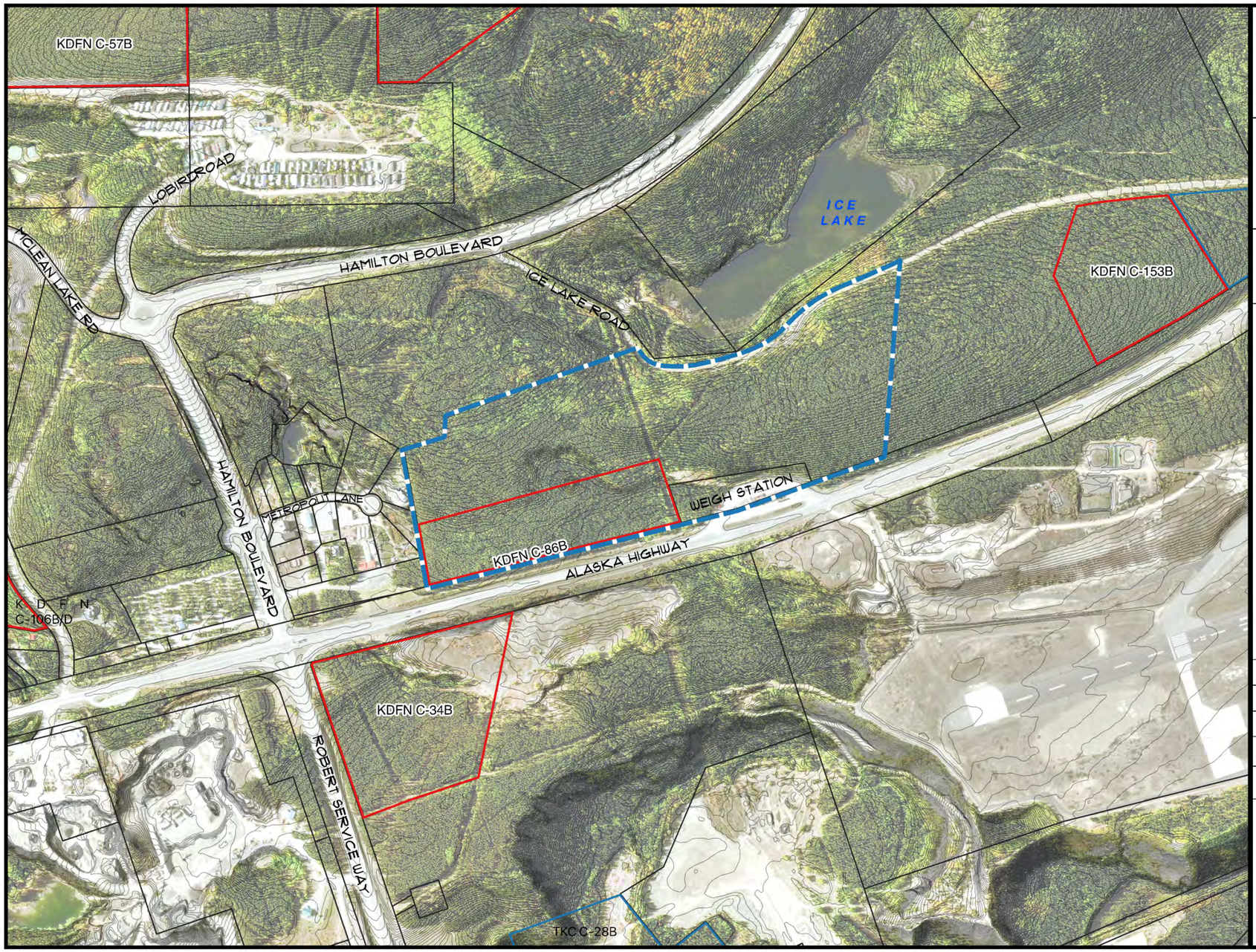
Ultimately, it will fall to the landowners to take the approved Master Plan forward to implementation. This may take time, and as with all conceptual level plans, new information and subsequent approvals will make minor adjustments. Major deviations from the approved Master Plan (i.e., significant change in Land Use) would trigger the need for a Master Plan review or update.

Either or both landowners (KDFN and YG) may re-initiate the Master Planning process with the City of Whitehorse in the future if they desire, based on evolving needs, objectives, financial considerations, or other changes.

1.4 INTERPRETATION OF THE PLAN

The numerical and quantitative provisions, such as road right of ways, road alignment, lotting, and cut/fill presented in this Master Plan are subject to further detailed study and review. The proposed block sizes and configuration are subject to change following development approval process and detailed design. It is assumed that municipal piped water and sewer servicing will not be available in the near future (i.e., 5+ years) and that onsite servicing will be required.

FIGURE 1: PLANNING AREA



CLIENT:

Whitehorse
THE WILDERNESS CITY

PROJECT TITLE:

ICE LAKE ROAD
MASTER PLAN

MAP TITLE:

PLANNING AREA

LEGEND:

- Planning Area
- Surveyed Land Parcels

Surveyed Settlement Lands

- Kwanlin Dün First Nation
- Ta'an Kwäch'än Council
- 1 m Contours

1:15,000

0 100 200 300 m

REVISIONS:

1	2023/05/31	Planning Area
2	2024/05/31	

PREPARED BY: MP	REVIEWED BY: SL
DATE: 2024 / 05 / 31	

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2 PLANNING PROCESS

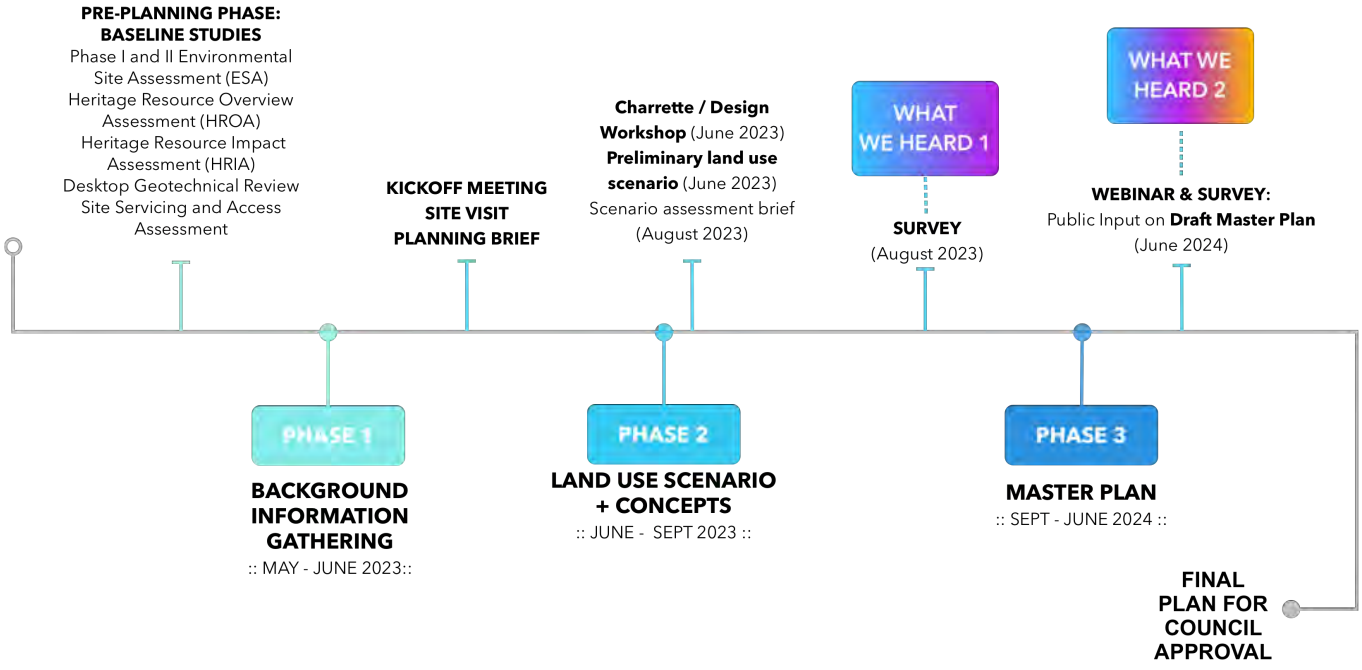
2.1 PLANNING PHASES

The Ice Lake Road South Master Plan is the culmination of a process that began in May 2023, with pre-planning studies being completed in 2022 prior to the process starting.

The Master Plan was developed over three phases:

- Phase 1: Background Information Gathering and Analysis
- Phase 2: Options Development (design workshop and public survey)
- Phase 3: Draft and Final Master Plan (online public webinar and public survey)

FIGURE 2: PLANNING PROCESS



2.1.1 CONCEPT DEVELOPMENT

A key component of the plan is the development concept, which was prepared in iterations throughout the planning process. To kickstart the design process, two design workshops were held in close succession with the City Planners and Engineers, Government of Yukon and KDFN representatives. At the first meeting site conditions were reviewed and participants collaborated to create options. For the second workshop 3Pikas presented a refined concept and gathered input and feedback on the different aspects of the design.

Figure 3 illustrates the evolution of the concept from early sketches created at the first design workshop in June 2023 to the recommended land use concept.

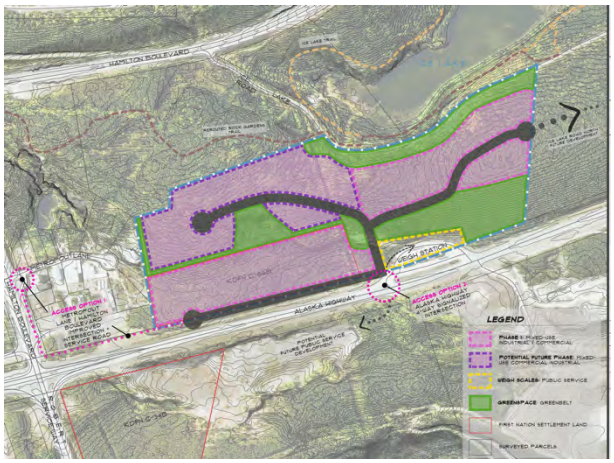
Key insights during the iterations included:

- Significant grades and shallow bedrock were constraints that would need to be addressed through the design.
- Economic opportunities related to removing and crushing bedrock for sale as fill were limited at this time.
- Due to cost concerns, none of the concepts entertained a comprehensive pre-grading of the entire site down to the elevation of Alaska Highway.
- Instead, options focused on working with the topography and utilizing the best lands for development and retaining steep / shallow bedrock areas as greenspace.
- Future road network connection to the Ice Lake Road North area was also emphasized.

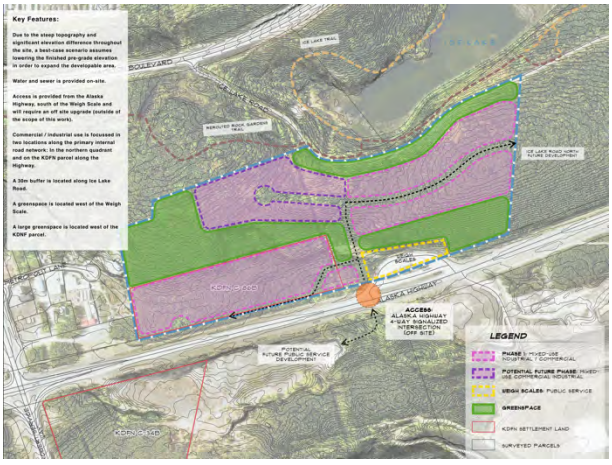
FIGURE 3: DEVELOPMENT OF THE CONCEPT

1) SUBDIVISION SKETCH CO-DEVELOPED AT THE DESIGN WORKSHOP

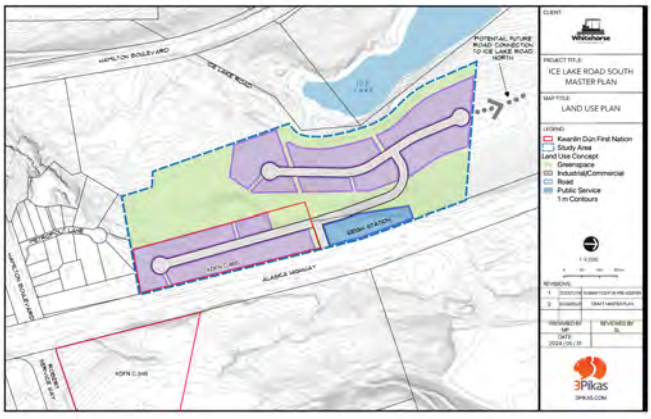
2) PRELIMINARY LAND USE SCENARIO – SHARED IN PUBLIC SURVEY



3) LAND USE SCENARIO ASSESSMENT CONCEPT



4) RECOMMENDED LAND USE CONCEPT



2.1.2 PUBLIC ENGAGEMENT

The public had the opportunity to give feedback on the preliminary land use concept through an online survey in August 2023 (engagement phase 1), and again with a survey and webinar on the draft final concept in June 2024 (engagement phase 2). The purpose of this engagement was to inform the public about the project and give opportunities to voice ideas, preferences, and concerns regarding the preliminary land use scenario and draft Master Plan. The key engagement components and metrics are provided below, followed by a summary of 'What We Heard' at each phase.

ENGAGEMENT FORMAT:	• Project website: www.engagewhitehorse.ca/ice-lake-road-south-master-plan • Online survey • Webinar hosted on Microsoft Teams
KEY DATES:	• Engagement Launch: August 14, 2023 • Online survey 1: August 14 to 28, 2023 • Online survey 2: May 31 to June 16, 2024 • Webinar: June 11, 2024
NUMBER OF WEBSITE VISITORS:	• 709 site visits
NUMBER OF SURVEY RESPONSES	• Survey 1: 93 Responses (Results What We Heard Report in Appendix C) • Survey 2: 86 Responses (Results Report in Appendix D)
NUMBER OF WEBINAR ATTENDEES	• 13 unique log ins • Recording posted to project website.

2.1.3 ENGAGEMENT PHASE 1: PRELIMINARY LAND USE SCENARIO

The first public online survey was hosted on Engage Whitehorse from August 14 to 28, 2023 and generated 93 responses. The What We Heard report for the survey that was published to *EngageWhitehorse.ca* is included in Appendix C. This survey sought feedback on the preliminary concept and access options.

Key input the project team received from survey responses included:

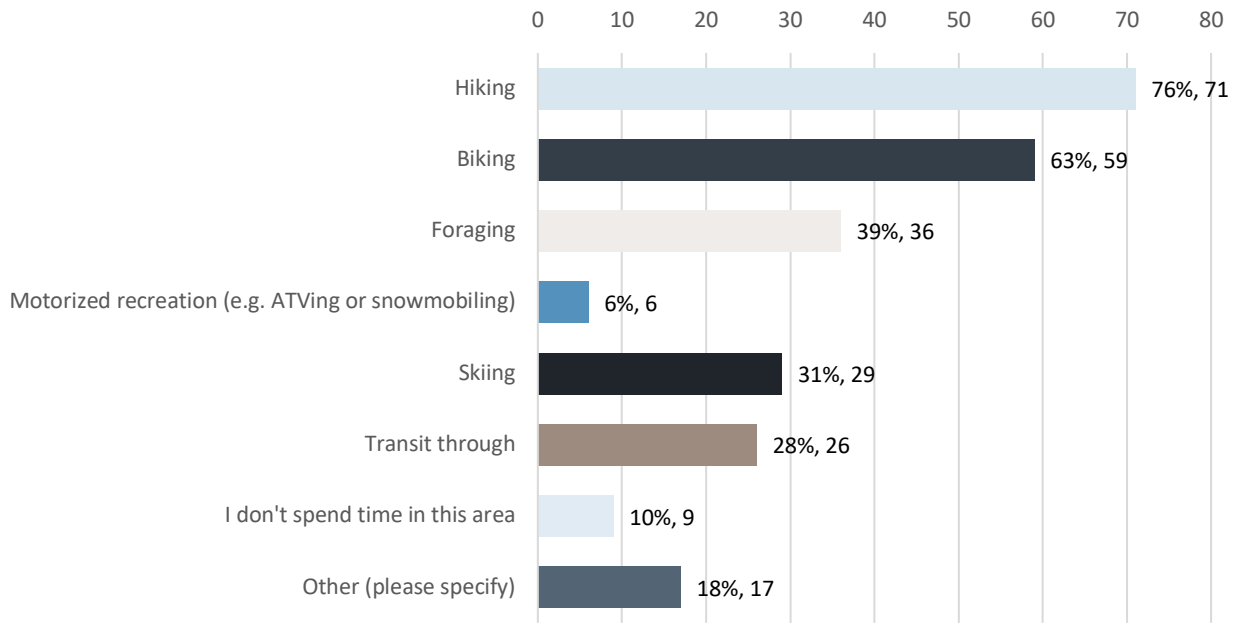
- Of those interested in a commercial industrial lot:
    - many were looking for a lot between 0.5 to 1.0 hectares.

- most liked the Ice Lake Road South location.

- Many respondents had concerns about potential impacts of the development on existing recreational and ecological values.

- Some wanted the development to be focused only along the highway corridor, and not extend toward Ice Lake.
- Current use of the area by respondents was primarily for hiking, biking, and foraging (see Figure 4).

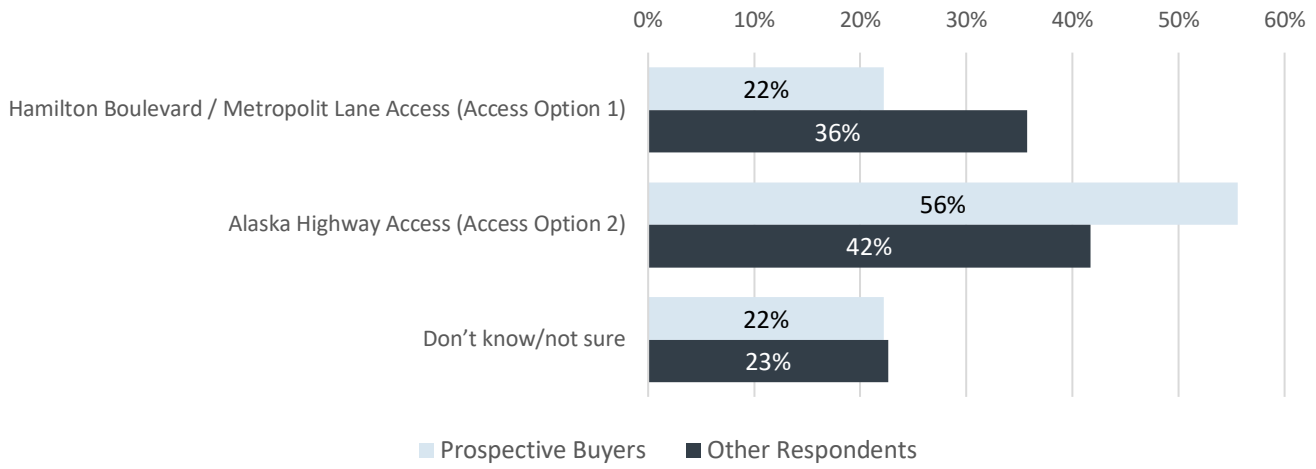
FIGURE 4: HOW DO YOU CURRENTLY USE THE PLANNING AREA?



- Some suggested that a mixed-use development with more residential would be preferrable.
- The importance of well-designed road access, pedestrian connections, and active transportation options was highlighted to ensure safety, convenience, and minimize negative impacts on existing infrastructure.

- A key question in the survey asked participants if they preferred the access be located from Hamilton Boulevard, or the Alaska highway. Most respondents who identified as prospective buyers preferred the Alaska Highway entrance (56%).

FIGURE 5: WHAT ACCESS OPTION DO YOU PREFER?



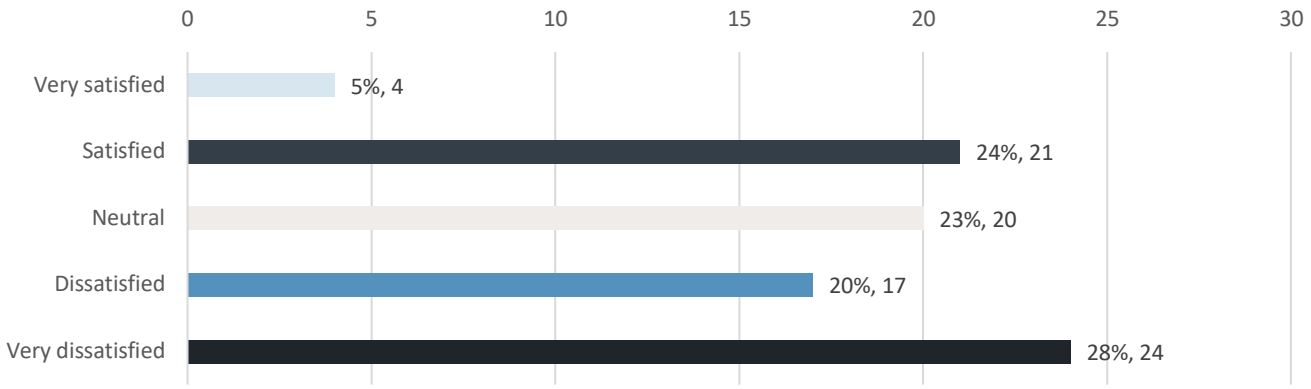
2.1.4 ENGAGEMENT PHASE 2: DRAFT PLAN

The draft Master Plan was posted to the project website May 31, 2024. An online survey and webinar event were conducted to elicit feedback on the draft. The survey was live from May 31 to June 16, 2024, and the webinar was hosted the evening of June 11, 2024. The webinar was hosted by the City of Whitehorse planning team and 3Pikas. It included a presentation of the highlights of the draft plan, and Question and Answer session.

Key input the project team received from survey responses included:

- Respondents indicated that what they liked most about the land use concept was greenspace (36%), access from the Alaska Highway (19%), and location of the mixed-use Industrial / Commercial space features of the draft Land Use Concept (see **Error! Reference source not found.**).
- Respondents expressed that their top concerns about the land use concept were changes to trails (22%) and environmental impacts (22%), and noise and pollution (12%).
- 29% were either satisfied or very satisfied with the Land Use Concept, 24% were neutral, and 48% were either unsatisfied or very unsatisfied with the Land Use Concept.

FIGURE 6: PLEASE RATE YOUR OVERALL SATISFACTION WITH THE CURRENT LAND USE CONCEPT



- Other concerns and suggestions from the survey included:
    - a desire for residential land use instead of Industrial/Commercial.
    - Concerns about setbacks from Ice Lake and Metropolit Lane area.
    - Desire to know more about the future for the weigh scales property.
    - Suggestions to keep development limited to directly along the highway corridor (C-86B)
    - Responses indicating that more greenspaces / buffers / parks be added, and others indicating that too much land was set aside for greenspace and that more Industrial Commercial areas should be added.
    - Wish to see more trails maintained, and buffers between trails and developed areas.
    - Incorporation of FireSmart principles in the design.
    - Avoid stripping and pre-grading lots and let lot owners do their own site prep.
    - Concerns about groundwater quality and viability of well and septic servicing.
    - Desire to see confirmation of feasibility of onsite servicing before development goes forward.
    - General concerns about the speed at which the City is growing and associated impacts on wilderness, water resources, and trails.
    - Concerns about traffic safety at the Alaska Highway intersection.
    - Uncertainty about the compatibility of the road and land use layout with heavier industrial uses that require semi-truck movements.

The **webinar** garnered some good questions from attendees and responses from the project team. The complete summaries of the question-and-answer session are summarized in Appendix E. Key highlights are included below.

- **Timeline for lot sales:** Expected to be at least 2-3 years, with no firm timeline due to various factors.
- **Lot sizes:** Lot sizes will vary; the minimum is 0.5 hectares. Detailed design and subdivision processes will determine exact sizes. Additional geotechnical investigations are needed for onsite well and septic system viability.
- **Lot preparation and servicing:** The Master Plan allows design adjustments for onsite servicing. Developers will decide on clearing or grading based on market conditions, with potential pre-grading using extra fill from road construction.
- **Land use compatibility:** Industrial/Commercial designation includes uses like light manufacturing and storage, compatible with Highway Commercial designation to the South (Metropolit). KDFN parcel land use aligns with First Nation revenue generation goals.
- **Permitted Uses:** Industrial/Commercial designation allows salvage areas, as well as other light industrial and commercial use.
- **Required assessments:** Project requires assessment by Yukon Environmental and Socio-Economic Assessment Board, potentially necessitating additional environmental work. No mapped ecologically sensitive habitat exists in planning area.
- **Visual mitigation:** Required along the Alaska Highway for aesthetic purposes, not typically between similar uses though.
- **Future public input opportunities:** Public input session during Council meeting likely in late August or early September, with updates for subscribed individuals.

3 ICE LAKE ROAD SOUTH AREA

3.1 POLICY CONTEXT

This section explores the key policy documents and planning initiatives that set the foundation for the Ice Lake Road South Master Plan.

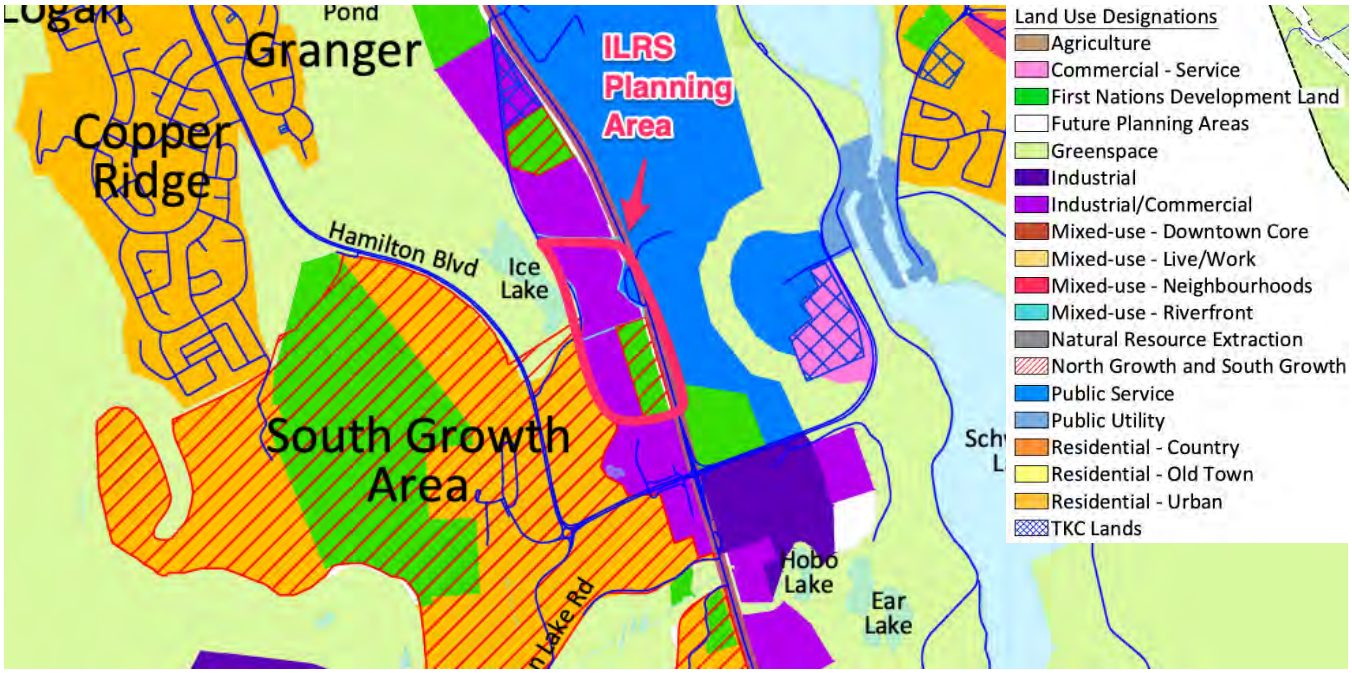
3.1.1 OFFICIAL COMMUNITY PLAN

The City of Whitehorse Official Community Plan 2040 (OCP) is the primary over-arching tool for managing growth and development in the City of Whitehorse. The plan provides a vision of future growth for the City of Whitehorse and sets the policy framework to guide its physical development over the plan horizon to 2040.

The Ice Lake Road South area is part of the South Growth Area and currently designated Industrial/Commercial and First Nation Development Lands (Figure 7). The Industrial/Commercial designation applies to areas that have been identified as strategic locations for commercial and industrial activities such as Marwell and in several nodes along the Alaska Highway. Industrial/Commercial areas accommodate light industrial activities, and complementary commercial uses, that are primarily within enclosed buildings. Typical uses that may be suitable for inclusion in this designation include but are not limited to light manufacturing, processing, indoor agriculture, and warehousing. Ancillary commercial uses such as retail may also be considered.

As outlined in the OCP, First Nation Development Lands are areas where the First Nations may develop lands consistent with the Self Government Agreements and land planning policies and documents completed by the First Nation to guide development.

FIGURE 7: OCP DESIGNATIONS (OCP, 2023)



3.1.1.1 RELEVANT OCP POLICIES

SLOPES

7.14 A professional geotechnical assessment will be required for all development on, or within 15 metres of slopes greater than 2 metres in height and in excess of 20% (5 horizontal to 1 vertical).

7.15 All development, including building, grading, and tree harvesting, will be prohibited on slopes that exceed 30% (3.3 horizontal to 1 vertical). The only exceptions will be for critical infrastructure, trails, and viewpoints, provided that a professional geotechnical assessment, accepted by the City Engineer, can demonstrate reasonably safe conditions.

7.16 All new development will be setback a minimum of 15 metres or 1.25 metres multiplied by the height of slope, whichever is greater, from the top or bottom bank of any slope over 30%, as illustrated on Figure 7 - Illustration of Escarpment Setbacks. The only exceptions will be for critical infrastructure, trails, and viewpoints.

Note that 7.15 and 7.16 are under consideration by Council for amendments in August 2024.

WETLANDS AND RIPARIAN AREAS

7.7 A 30 metre riparian setback ("Riparian Setback") is established to protect riparian areas. Areas along both sides of all rivers, streams, lakes, and wetlands must be protected from development and remain in a natural condition along both sides of all rivers, streams, lakes, and wetlands, year-round or seasonal. The Riparian Setback

will be measured from the ordinary high-water mark of the river, stream, lake, or wetland to the property line as illustrated on Figure 6 Illustration of Riparian Setback. Government of Canada and Government of Yukon environmental guidelines, and applicable City bylaws, must be followed in all cases.

Note that the planning area boundary setbacks were determined to be more than 30m from riparian areas.

TRANSPORTATION AND MOBILITY

11.30 The City will coordinate with other Governments to ensure land uses adjacent to the Erik Nielsen Whitehorse International Airport are compatible with the airport's ongoing operations.

PROTECTIVE SERVICES AND EMERGENCY MANAGEMENT PLANNING

12.5 Wildfire risk reduction initiatives will be pursued throughout the community.

POLICIES ON LAND MANAGEMENT

13.10 To acknowledge the impression conveyed by the overall appearance of the Alaska Highway corridor:

i. The City will encourage clean-up along the highway on both private and public lands.

ii. New development visible from the Alaska Highway may be required to incorporate aesthetic enhancements such as:

- *Site design, landscaping, or fencing requirements that visually screen parking and storage from the Alaska Highway; and*
- *Signage requirements subject to approvals from either the City or the Government of Yukon.*

13.11 Visual mitigation measures (e.g., fencing, landscaping, berms) will be required to be incorporated into the design for outdoor manufacturing activities that are visible from the Alaska Highway or from nearby non-industrial uses.

DEVELOPMENT REQUIREMENTS: MASTER PLANS

13.22 A Master Plan will be required for all development of sites over 1.5 hectares in size, prior to zoning amendment and/or subdivision. These sites may include one or more properties and have one or more owners.

i. The requirement for the preparation of a Master Plan may be waived through a development review process for developments that have minimal implications to municipal infrastructure, drainage concerns, surrounding properties, or other considerations.

13.23 Master Plans will be required to conform with the OCP and consider community feedback. Where a proposed Master Plan does not conform with the OCP, the owner of the subject development site will be required to apply to amend the OCP.

13.24 Master Plans may be required to include, but not limited to:

i. The history and background of the development site with a map showing property ownership and easements;

ii. The planning context of the site (i.e., what has been planned for the area in the OCP and any other relevant plans or studies);

iii. Existing planning area conditions (e.g., environmentally sensitive areas, topography, existing structures);

iv. An overview of surrounding uses;

v. A summary of the opportunities and constraints for the site;

vi. An overall vision for what is being proposed for the area, with a focus on how the proposed development is in alignment with the OCP;

vii. A description of proposed land uses including parks, playgrounds, natural spaces, and community amenities, with associated maps;

viii. Proposed land use calculations with anticipated dwelling units, densities, and population projections;

ix. A transportation plan showing major internal roadways and connectivity to the City's surrounding transportation and mobility network; and

x. An engineering feasibility report addressing servicing capacity, costs, and connections.

COSTS OF DEVELOPMENT

13.26 The City may consider the use of cost-sharing agreements among landowners to cover the costs associated with major infrastructure, studies, assessments, or plans that may be required because of, or to prepare for, land development. These agreements may include environmental assessments, restoration plans, and the provision of community facilities including parks and shared infrastructure. Such agreements will be initiated by landowners or the City and provide for the fair sharing of costs among benefiting parties.

13.27 The City may consider alternative tools to cover the costs associated with land development.

13.28 Developers may be required to cover the costs of associated off-site infrastructure improvements for redevelopment and intensification development in existing neighbourhoods. This could be done through the Development Permit process or using a different mechanism.

FIRST NATION DEVELOPMENT LANDS

15.3.1 The City will work with Ta'an Kwäch'än Council and Kwanlin Dün First Nation to ensure the compatibility of adjacent uses and sensible and efficient planning of lands and infrastructure in the community.

15.3.2 Master plans will be required for development on lots greater than 1.5 ha, as stated in Section 13 Land Management, and subject to a review by the City. The master planning process will be used to confirm the land use, prior to zoning.

15.3.3 Once a land use is selected through the master planning process, the applicable land use policies for a similar City land use designation shall apply as well as any other applicable OCP policy.

Note the OCP designates most KDFN parcels in the City of Whitehorse as First Nation Development Lands.

INDUSTRIAL/COMMERCIAL

15.7.1 Uses that may be suitable for inclusion in this designation include but are not limited to light manufacturing, processing, indoor agriculture, and warehousing.

15.7.2 Ancillary commercial uses such as retail may be considered.

15.7.4 Where the Industrial/Commercial designation is in proximity to a residential neighbourhood, the proposed development may be required to include a vegetated buffer of approximately 200 metres. This does not include where this designation is adjacent to a Live/Work area.

15.7.5 Appropriate infrastructure will be provided for safe access for drivers, cyclists, and pedestrians to and from arterial or collector roads.

3.1.2 ZONING BYLAW

Most of the northern half of the planning area is zoned Greenbelt (PG), encompassing the undeveloped unsurveyed YG land. Public Service (PS) zoning applies to the active Weigh Station (also referred to as 'Weigh Scales') along the Alaska Highway Right-Of-Way. To the south, zoning is split between Future Planning (FP) (undeveloped YG lands), and First Nation Future Planning (FN-FP) (KDFN C-86B).

The purpose of the Future Planning (FP) Zone is to provide a zone to protect land with no determined use in a generally undeveloped and natural state until such time as planning has occurred to determine appropriate zoning. The purpose of the First Nation Future Planning (FN-FP) Zone is to identify those lands owned or selected by the Kwanlin Dün First Nation, which will be planned and designated in accordance with the Kwanlin Dün Self-Government and Final Agreements.

The purpose of the Public Service (PS) Zone is to provide for public and privately owned facilities of an institutional or community service nature, such as the weigh scale facility.

Finally, the purpose of the Greenbelt Zone (PG) is to provide areas of public land that are typically left in a natural state and may be used primarily for buffers, walkways, trails and for unorganized or passive recreation.

Note:

- The Zoning Bylaw currently being updated, and when completed it will more closely reflect land use designations in the recently updated OCP. Therefore, the portions of the planning area zoned PG are, for the time being, inconsistent with the land use designation in the OCP.
- The zoning bylaw can be supplanted by KDFN if the First Nation Government exercises its rights to enact planning and zoning regulations under the KDFN Lands Act on Type 1 and 2 Settlement Land.

FIGURE 8: ZONING BYLAW MAP (2012-20, CONSOLIDATED TO BYLAW 2023-10)

3.1.2.1 LANDSCAPING AND SCREENING REQUIREMENTS

Section 5.5 of the Zoning Bylaw includes general and Commercial zoning (i.e., CIM, CH) specific site design policies for all developments, including for pathways, screening, and landscaping treatments. Relevant commercial-specific policies include:

HIGHLIGHTED GENERAL LANDSCAPING REQUIREMENTS

Gateway Landscaping

5.5.2.5 The required vegetation calculated for landscape plantings or vegetative buffers in any zone shall be doubled for any property accessed from Two Mile Hill, Robert Service Way, Alaska Highway, North Klondike Highway, or any connecting frontage roads.

5.5.2.6 For development adjacent to the Alaska Highway or a highway access/frontage road, the following development controls shall apply:

a) buildings should be oriented towards the front property line with parking to the rear or side of the building;

b) outdoor storage of equipment, vehicles, and materials should be screened from view by fencing, landscaping, buildings, or other means where feasible; and commercial developments shall provide barrier-free connections to adjacent active transportation routes; and

c) commercial developments shall provide barrier-free connections to adjacent active transportation routes.

SPECIFIC LANDSCAPING REQUIREMENTS: COMMERCIAL ZONES

Landscaping Adjacent to Highways

a) In the CH zone, the landscaping requirements specified in this section must be planted in the front yard. Additional landscaping elsewhere on the site is encouraged.

Landscape Plantings

b) On-site landscape plantings are required for new developments in all commercial zones. The required landscape planting area in square metres is calculated based on 3.0 m x total public road frontage of the property in metres. Requirements in all commercial zones except CC and CPG are a minimum 2.0 m wide landscape planting area with one tree planted per 25 m^2 landscape planting area or one shrub planted per 15 m^2 landscape planting area, or any combination thereof to meet the standard.

Screening of Storage Areas

d) Screening of storage areas is required in all commercial zones and shall be located to the rear or side of the principal building and shall be screened from view from any street and from adjacent sites in a residential zone.

Vegetative Buffers

e) Vegetative buffers are required in CIM, CN, CNC, CNC2, CS and CH zones where the development is adjacent to a residential zone. The required minimum width of vegetative buffers in a commercial zone adjacent to a residential zone is 3.0 m. Minimum density of existing or planted vegetation in a vegetative buffer is one tree or two shrubs per 20 m_2 of required buffer area, or any combination thereof to meet the standard.

Walkways

f) Walkways are required in all commercial zones and shall provide for onsite pedestrian circulation with adequate connections with parking areas, public sidewalks, active transportation routes, etc. Primary walkways in all commercial zones shall be hard-surfaced and a minimum 1.5 m in width.

Note that CIM Zoning does not require Vegetative Buffers or Walkways, while all the above requirements apply to CH zoning.

3.1.3 KDFN SELF-GOVERNMENT AGREEMENT (2005) LANDS ACT (2020) & COMMUNITY LANDS PLAN (2020)

The KDFN Self-Government Agreement (SGA) specifies that the land use and development designation for C-86B is Commercial. This designation is inclusive of all the uses listed in the SGA Residential designation as well. If this designation is to be varied, KDFN, Government of Yukon, and the City of Whitehorse must follow a process outlined in the SGA. The KDFN Lands Act, enacted in 2020, governs land management and administration within the KDFN Traditional Territory. It outlines rules and procedures for land use, leasing, and development of Settlement and other KDFN-owned lands.

The KDFN Community Lands Plan (2020) ('KDFN Lands Plan') guides the planning and development of KDFN Settlement Land within Whitehorse.

The KDFN Lands Plan identifies goals for each KDFN land parcel in the city. These goals reflect the original designations for the parcels within the KDFN SGA and the input from beneficiaries and citizens. KDFN Lands Plan identified specific lands within the City of Whitehorse that hold promise for commercial or industrial development (i.e., revenue generation). Revenue generation can include residential, commercial, or industrial development. By contrast, the community development designation identifies parcels intended primarily for the use of KDFN Government, Citizens, and Beneficiaries.

The KDFN-C-86B parcel within the ILRS planning area is identified for revenue generation.

KDFN's planning department participated in all stages of the ILRS planning process. The draft ILRS Master Plan was submitted to KDFN for review.

3.2 PLANNING AREA CONTEXT

Ice Lake Road South is an undeveloped forested greenfield located in the City of Whitehorse. The ILRS planning area is owned by YG (Unsurveyed Commissioner Land) and KDFN Settlement Land (Settlement land C-86B). The Weigh Station occupies a narrow strip of YG surveyed highway frontage (LOT 1143).

The planning area is approximately 3.5km from Downtown Whitehorse and 1.2 km southwest of the Erik Nielsen International Airport.

3.2.1 THE SURROUNDINGS

The Planning Area is bounded by the Alaska Highway (re-developed and twinned in 2023) to the east which is a key corridor for goods and services travelling north and south. The southern border of the planning area is located approximately 315 metres north of the South Access – the main entrance to the city for locals, visitors and businesses travelling from the south.

SOUTH: Properties located on Metropolit Lane define the southern edge of the study area. This subdivision includes light industrial, commercial, as well as highway commercial uses.

PHOTO 1: METROPOLIT LANE CUL-DE-SAC (SOUTH OF PLANNING AREA, VIEW TO THE SOUTH)

EAST: The eastern edge of the site is defined by the Alaska Highway and accompanying paved active transportation trail (east side of highway).

PHOTO 2: HIGHWAY FRONTAGE AND NEWLY TWINNED SECTION OF THE ALASKA HIGHWAY (ADJACENT TO PLANNING AREA TO THE EAST, VIEW TO SOUTH)

NORTH: The northern edge of the study area is undeveloped land known as Ice Lake Road North.

PHOTO 3: ICE LAKE ROAD NORTH AREA (VIEW TO THE SOUTH FROM ALASKA HIGHWAY / LODESTAR LANE / ICE LAKE ROAD INTERSECTION)

WEST: The western edge of the study area is defined by Ice Lake Road and forested greenspace comprising part of the Paddy's Pond / Ice Lake Regional Park.

PHOTO 4: HAMILTON BOULEVARD AND ICE LAKE ROAD (WEST OF PLANNING AREA, NORTH, AND NORTHEAST VIEW)

3.2.2 THE PLANNING AREA TODAY

The planning area is mostly undeveloped and forested, with a mix of spruce and trembling aspen and small pockets of lodgepole pine. Terrain and vegetation are similar to other upland boreal areas around Whitehorse that were clearcut for fuel wood in the early-20th century and have since naturally afforested. There are no watercourses, ponds, or wetlands in the planning area. An overhead powerline transects the centre of the planning area from east to west (see Photo 5). The two other main developed features include the Weigh Station (Photo 6) and the 'weigh scale connector trail' which is a closed gravel road that is now used as a recreational trail (Photo 7).

PHOTO 5: CLEARED POWERLINE AND HILLSLOPE (VIEW TO THE WEST FROM THE ALASKA HIGHWAY)

PHOTO 6: WEIGH STATION AND THE ALASKA HIGHWAY RIGHT OF WAY LOOKING NORTH

PHOTO 7: WEIGH STATION CONNECTOR TRAIL

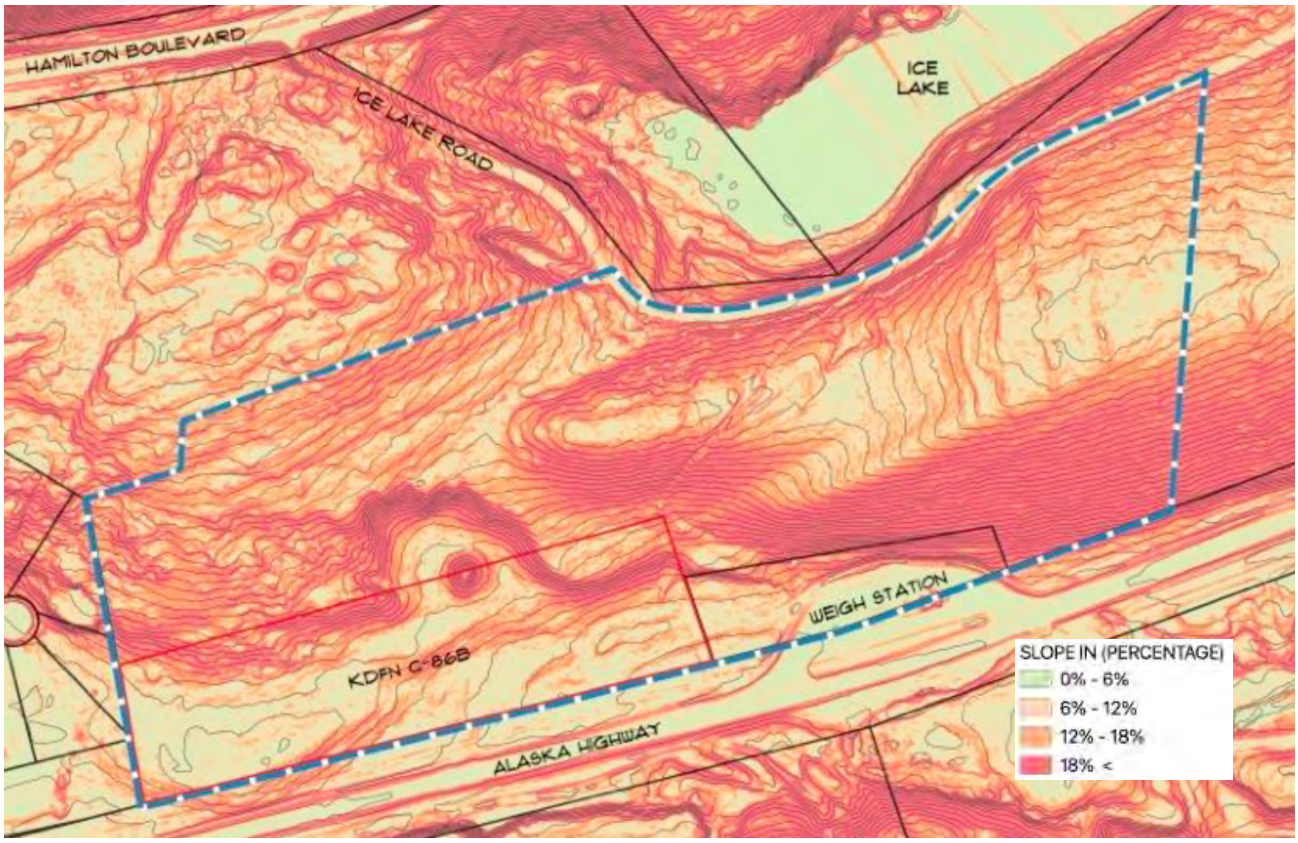
PHOTO 8: FLAT FORESTED AREA IN KDFN C-86B

3.2.3 TOPOGRAPHY

The site's topography consists of moderately steep (12%-18%) to steep (>18%) slopes, with elevation differences on the order of 25 meters from the bottom of the slope to the highest points in the Planning Area. Gentle slope areas are concentrated on the KDFN parcel (Photo 8) and at the top of the small glaciofluvial ridge in the northwest portion of the planning area.

The steeper portions (20% or more) of the planning area will need to be reviewed by a geotechnical engineer and could be subject to geotechnical assessment and slope setback provisions outlined in the OCP 2040 (Section 7 – Environmental Stewardship).

FIGURE 9: PLANNING AREA SLOPE MAP



The desktop Geotechnical Assessment completed by Ausenco (2022) suggested that shallow bedrock may be present in the planning area and recommended further intrusive work be completed prior to development. Site walks confirmed that shallow and exposed bedrock are prevalent, with visible surface bedrock outcrops concentrated in the south (see Photo 9).

A Ground Penetrating Radar investigation completed by Aurora Geoscience (2023) indicated that shallow bedrock areas exist throughout much of the planning area. No intrusive geotechnical work was completed to confirm and expand on these findings in the development of the Master Plan.

The Rock Gardens Trail is a city-built and maintained single-track trail that traverses the southwest quadrant of the planning area. It connects the Rock Gardens parking area (off Hamilton Boulevard) to the Ice Lake Perimeter Trail (Photo 10).

PHOTO 9: SURFACE BEDROCK OUTCROP AND HILLY TERRAIN IN THE SOUTH END OF THE PLANNING AREA (WEST OF C-86B)

PHOTO 10: SOUTH ENTRANCE TO THE ROCK GARDENS TRAIL

3.2.4 HERITAGE RESOURCES

Ecofor (2022; 2023) completed a heritage resource overview (final report) and impact assessments (interim report). During the assessments, no heritage values (e.g., archaeological sites, historic sites, or Culturally Modified Trees related to traditional use) were identified, and no further heritage investigations are recommended at this time. The HRIA includes standard mitigations for construction and applicable legislation/regulations governing heritage resources for land development type projects.

3.2.5 TRAILS

As shown in Figure 10, the Planning Area has numerous official trails and trails that are mapped by users on Trailforks. The Ice Lake Road forms the northwest boundary of the study area. The road is gated to car traffic and used as a multi-use recreational trail. The recently built Ice Lake Trail encircles Ice Lake to the west of the planning area. This is a popular non-motorized recreation trail.

Approximately 1,787 metres of trails are within the planning area (Table 1Table 1: Trails). The single-track non-motorized Rock Gardens Trail transects the planning area roughly from north to south. The City of Whitehorse built this trail, and it is part of the City's maintained network. The Weigh Station Access trail runs east-west and connects to Ice Lake Road. This trail is mapped on Trailforks and is not an official city-maintained trail.

A powerline clearing maintenance trail follows the KDFN C-86B surveyed cutline and powerline ('Powerline trail'). This trail is not maintained by the City but is visible and well established by the clearing of the powerline easement.

TABLE 1: TRAILS

TRAILS	OVERLAP WITH STUDY AREA (M)
Rock Gardens Trail (single track type 3/4)	975
Weigh Station Access Trail (unofficial)	453
Powerline Trail (unofficial)	359
Total	**1,787**

3.2.6 ENVIRONMENTAL CONTAMINATION STUDIES

Phase I and follow-up Phase II Environmental Site Assessments were completed, and no contamination was found. No follow-up work is recommended currently (Aperture Consulting, 2022; 2023).

3.2.7 SERVICING & INFRASTRUCTURE

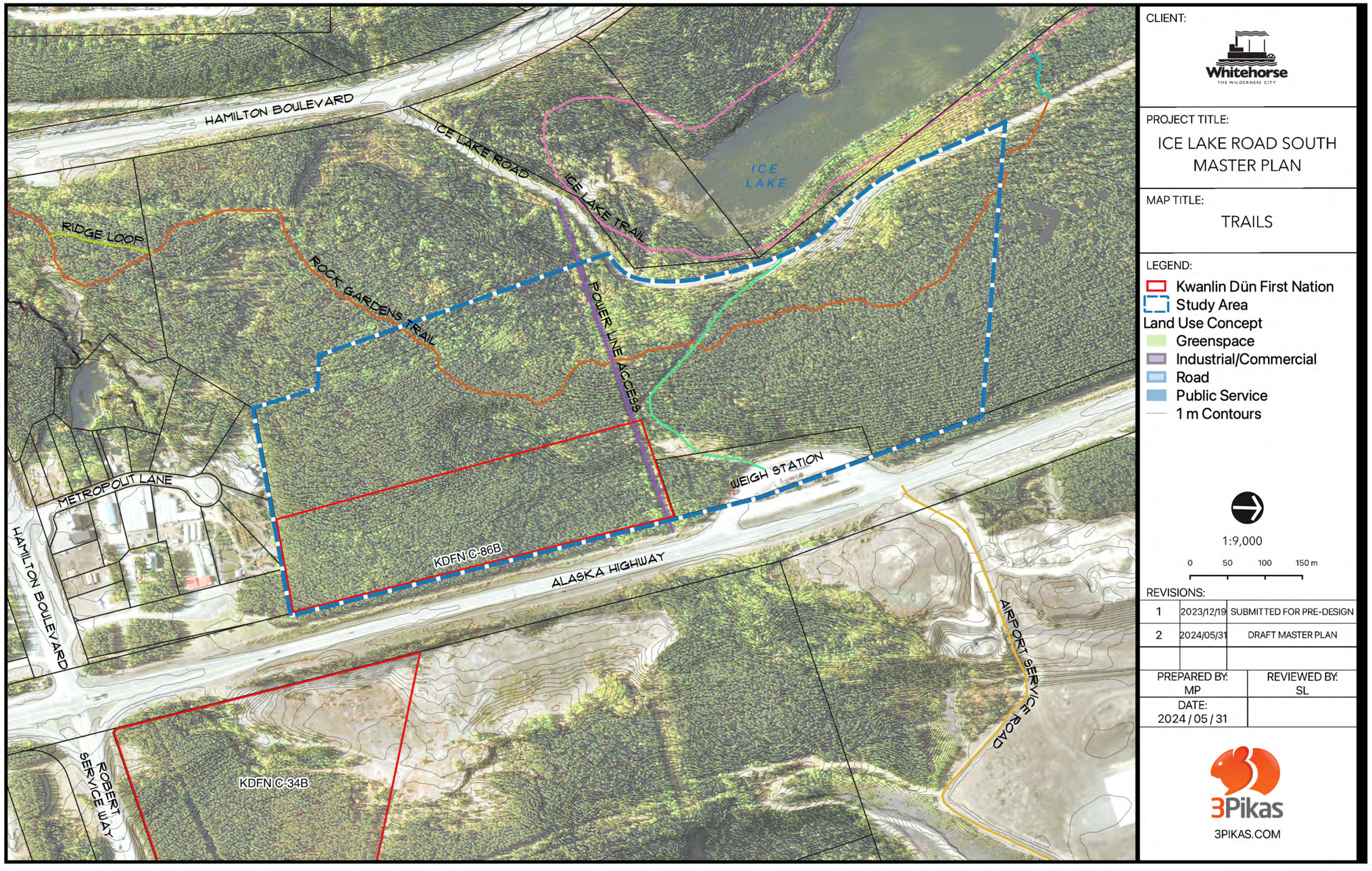
Power & Telecommunications: There is currently an overhead power line that crosses the Study Area and provides power, data, and communications to the Whitehorse Weigh Station and to the Lobird residential subdivision. 3-phase power is not provided on this overhead line. 3-phase power is available on the overhead lines on the Alaska Highway adjacent to the study area. Overhead power service runs on the west side of the Alaska Highway. Industrial land use typically requires 3-phase power.

Municipal Water and Sewer: The planning area is outside the municipal piped servicing catchment. Piped servicing is extended to the Alaska Highway / Condor Road intersection about 1,300 meters north of the planning area boundary. Currently the City of Whitehorse has no detailed plans to bring piped infrastructure to the planning area.

Roads: There are no roads within the planning area. The Alaska Highway is adjacent to the east of the planning area. The Ice Lake Road is immediately to the west. The Ice Lake Road is unmaintained and closed to vehicle traffic.

Drainage: No drainage infrastructure exists on the planning area. Stormwater and runoff are managed along the Alaska Highway using overland ditches, culverts, and swales.

FIGURE 10: TRAILS



3.3 OPPORTUNITIES AND CONSTRAINTS

Based on key aspects of the site, the following key opportunities and constraints were identified. These were carried forward to the conceptual design, which attempts to maximize the opportunities, and where possible mitigate and minimize constraints, or turn them into strengths.

3.3.1 OPPORTUNITIES

- **Central location, close to downtown, major neighbourhoods, and major corridors:** Ice Lake Road South's central location would provide commercial and industrial lands close to employees, customers, and service areas in the City and beyond.
- **Proximity to Transportation Corridors:** Ice Lake Road South is well serviced by the surrounding road and active transportation network. It abuts the Alaska Highway, which is Whitehorse's main north south corridor, and is close to the Hamilton Boulevard / Robert Service Way / Alaska Highway intersection that is a key commuter and transport traffic node. A paved separated bike path conveys active transportation users along the Highway.
- **Highway Frontage for Commercial Development:** Owing to the proximity to the Alaska Highway, Ice Lake Road South is well disposed for highway commercial development requiring convenient vehicle access and high visibility to traffic.
- **Compatibility with existing development:** the neighbouring development on Metropolit Lane is compatible with industrial and commercial development. The existing airport and Weigh Station uses are also generally compatible land uses.
- **Conducive relatively flat terrain conditions on C-86 portion of the planning area:** the majority of C-86B is flat to gentle hillslope in character. As such, it will likely require minimal pre-grading / fill to achieve desired grades for commercial and industrial use (i.e., %0 - %5), and install road access.
- **Potential for future connection to Ice Lake Road North area (in pre-planning stage).**

3.3.2 CONSTRAINTS

- **Topography and hillslopes:** The presence of a steep hillslope on much of the planning area poses a challenge to access, lot development, and drainage. Some of the area is too steep for consideration for Industrial/Commercial land use (i.e., greater than 3 to 1 slopes). These areas are concentrated in the YG portions of the planning area, with some overlap in the northwest corner of C-86B.
- **Shallow and exposed bedrock:** The road and lot layout must consider the higher elevation areas in the southern portion of the planning area that have extensive exposed / shallow bedrock, as well as steep hillslopes. Further, there is an elevated potential for shallow bedrock

throughout the planning area. Bedrock can be removed during road and utility construction. Individual lot owners can remove or infill bedrock during lot pre-grading and installation of buildings and services. However, it is generally more challenging and expensive.

- **Adjacent recreation and environmentally sensitive spaces:** The design must consider adjacent recreation and environmentally sensitive areas from the Paddy's Pond Environmentally Sensitive area / The Paddy's Pond / Ice Lake Park conceptual boundary (to be confirmed through future park planning). This area is a popular for recreation and contains areas of elevated ecological value.
- **Weigh Station:** The existing Weigh Station location presents road safety and transportation servicing and design challenges that will impact the final location, configuration, cost, design, and timing of the highway access intersection.

4 THE MASTER PLAN

4.1 VISION

"Ice Lake Road South is an employment hub connected to the Alaska Highway Corridor and integrated into the evolving long-term commercial and industrial development and greenspace fabric of the area. The City of Whitehorse's vision is a forward-thinking industrial and commercial subdivision in the Ice Lake Area, strategically positioned along the Alaska Highway corridor. Following the direction set in the City of Whitehorse's Official Community Plan (2023), the plan embraces the unique opportunities that this location offers, to create a greenfield development that capitalizes on highway-oriented commercial potential and is a conducive environment for diverse industrial enterprises.

The Ice Lake Road South seeks to harmonize economic growth with environmental responsibility, ensuring an ongoing supply of employment lands for a thriving and growing Whitehorse. Through YG, KDFN, and City of Whitehorse collaboration, the Ice Lake Road South is designed to connect to anticipated future growth areas to the north and overcomes site constraints to maximize industrial and commercial opportunities while retaining greenspaces and trail connections."

4.2 INDUSTRIAL/COMMERCIAL AND PUBLIC SERVICE LAND USE PLAN

The Ice Lake Road South concept supports a diversity of industrial and commercial land uses in line with current and future anticipated employment land needs. The existing Public Service land use (Weigh Station) will continue to serve this function until it is relocated.

The land use concept (Figure 13) illustrates the overall land uses, road, and proposed industrial/commercial development fabric. The land use concept is intended to create capacity for approximately 21 lots (13.6 Hectares) for industrial and commercial use. It articulates a structured transformation of the Ice Lake Road South area into a mix of employment, greenspace, and public service land uses.

The recommended land uses are summarized in Table 3. Access is provided from the Alaska Highway (abutting the Weigh Station to the south). A mix of industrial/commercial uses are focussed in two locations along the primary internal road network: in **the Alaska Highway frontage (KDFN C-86B)** and **upper industrial/commercial area (YG land)**.

At full build out it is envisioned that approximately 42% of the area will be designated Industrial/Commercial use, 41% will be allocated to greenspace, 5% for Public Service, and 12% for roads (see Table 2).

TABLE 2: SUMMARY OF PROPOSED LAND USE MIX

LAND USE	YG AREA (HA)	YG AREA (%)	KDFN AREA (HA)	KDFN AREA (%)	TOTAL AREA (HA)	TOTAL AREA (%)
COMMERCIAL / INDUSTRIAL	8.7	33.9%	5.0	72%	13.6	42%
GREENSPACE	12.7	49.4%	0.67	10%	13.3	41%
PUBLIC SERVICE (WEIGH STATION)	1.5	5.7%	0	0%	1.5	5%
ROAD	2.8	10.9%	1.3	18%	4.0	12%
TOTAL	**25.6**	**100.0%**	**6.9**	**100%**	**32.5**	**100%**

Note that the road alignment, road right-of-way, and land use configurations that are presented are conceptual and subject to further studies and detailed engineering design.

4.2.1 ALASKA HIGHWAY FRONTAGE AREA

The **Alaska Highway Frontage Area** connects commercial and light industrial uses within the KDFN Parcel to the Alaska Highway corridor. Land uses include high quality car-oriented commercial development opportunities adjacent, and visible from, the main north south arterial roadway in Whitehorse.

To determine an OCP land use designation, anticipated primary land uses in this area are those outlined in the KDFN Community Lands Plan and the Self-Government Agreement. These uses include all the uses listed in the Commercial and Residential categories in Appendix B of the SGA.

Zoning for the area will be driven primarily by market demand and the results of further investigation into servicing options. Within the existing Zoning Bylaw, the Highway Commercial (CH) Zone would be appropriate, and a mixed-use commercial/residential zone could be appropriate depending on the outcome of a servicing feasibility investigation (discussed further in the Servicing section). Uses will be subject to the ability for lots to provide adequate and approved water and sewer servicing onsite, which could be constrained due to lot size, topography, hydrogeological conditions, or other factors.

The SGA designations, which form the primary guidance for KDFN parcels, do not align precisely with the Zoning Bylaw uses, although the CH zone is generally comparable to the SGA Commercial designation. As an example, a primary residential use pursuant to the SGA would not be consistent with CH, so a different zone would be required. Outdoor equipment sales are acceptable in CH but is considered Light Industrial in the SGA (and would require agreement of the parties to the SGA).

Ultimately, KDFN will consider the designations in the SGA when contemplating uses on C-86B and will seek the appropriate OCP designation and zoning to accommodate a development proposal.

The flat topography in this area is conducive to developments in line with other Highway Commercial areas in the city, such as semi-truck movements, up to 50% site coverage, parking areas, and larger structures. The alignment of the access through the centre line of the parcel maximizes the utility of the available space by double-loading lots along the roadway.

Greenspaces are included for greenway connections and in an area on at the northwest corner of the KDFN Parcel with unsuitable topography for development. These areas would accommodate trails and are intended to be left undeveloped and accessible for public use. This area would constitute the Public Use Land Dedication requirement in the Subdivision Control Bylaw for Parcel C-86B, and use of the area would be the subject of further clarification by KDFN and City of Whitehorse at the time of Subdivision Approval.

Suitable zoning:

- Highway Commercial (CH).
    - **Minimum lot size:** 0.5 Hectares (no piped municipal water and sewer connections)

4.2.2 UPPER DEVELOPMENT AREA

The **Upper Development Area** is set back from the highway and provides opportunities for light industrial and commercial uses.

The hillslope character and probability of shallow bedrock pose a risk that it will not be economically feasible to pre-grade large areas during subdivision construction or later by lot owners. As a result, land use within the northern portion will likely remain incongruous with more intensive commercial and industrial uses. The northern portion provides opportunities for light commercial and industrial uses that do not need frequent large truck access / movement, large laydown areas, or extensive lot coverage. The area is set back from the highway and will be less disposed to highway commercial (i.e., retail, restaurant, convenience store etc.) orientation. Ultimately all lot owners will need to consider uses that can feasibly be serviced with the approved onsite water and septic systems. More water intensive uses (e.g., secondary caretaker suites) may not be feasible.

Suitable uses in the upper industrial/commercial area include light manufacturing, small workshops / equipment yards, landscaping businesses, equipment sales / service, and secondary residential use.

Suitable zoning:

- Mixed-Use Commercial Industrial (CIM).
    - **Minimum lot size:** 0.5 Hectares (no piped municipal water and sewer connections)

4.2.3 PUBLIC SERVICE AREA (WEIGH STATION)

The plan articulates no changes to the existing land use on the Weigh Station property. If the Weigh Station were moved to another location, land use changes to align with the Highway Commercial concept articulated in this plan is recommended (see policies below)

Suitable zoning:

- Public Service (PS)

FIGURE 11: EXAMPLE OF RURAL INDUSTRIAL ROAD AT THE ENTRANCE TO MOUNT SIMA SUBDIVISION (YUKON NEWS, 2020)

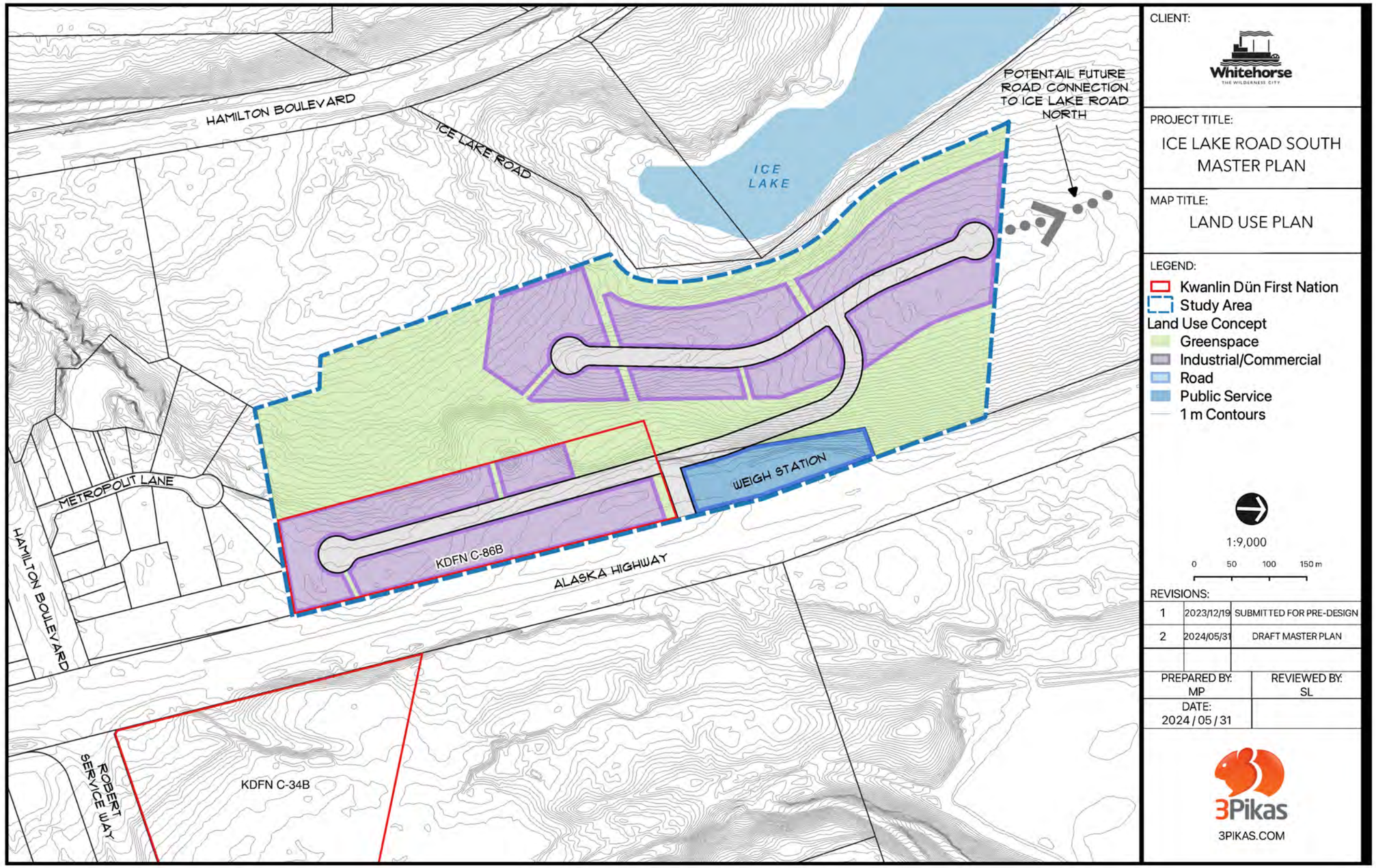
FIGURE 12: EXAMPLE OF HIGHWAY COMMERCIAL DEVELOPMENT (METROPOLIT LANE) (GOOGLE, 2022)

4.2.4 INDUSTRIAL/COMMERCIAL AND PUBLIC SERVICE LAND USE POLICIES

Industrial/Commercial policies provide the necessary direction to actualize the Master Plan vision.

1. Visual screening and landscaping of commercial and industrial activities will be required per Section 5.5. (Site Design) of the City of Whitehorse Zoning Bylaw (2023).
2. Due to the onsite servicing requirement, and shallow bedrock conditions, a hydrogeological study should be completed prior to allowing land uses that require large quantities of water and wastewater storage / pump out or ground discharge (e.g., car washes, laundromats, larger hotels, etc.)
3. Should the Weigh Station be moved to another location, highway-oriented commercial and light industrial land uses should be considered a priority to maintain complementary land uses along the Alaska Highway frontage. This will trigger an OCP amendment and potentially a new Master Plan process as well.
4. Alaska Highway Frontage Area: Highway Commercial Design guidelines should be developed and implemented to provide continuity in the building, signage, and landscaping features of the Alaska Highway Frontage Area.
    - Specifically, these guidelines should address aesthetic and landscaping objectives and design options for the Alaska Highway Right of Way / C-86B Parcel development boundary area. Guidelines will ensure more harmonious aesthetic and continuity with the Zoning Bylaw.

FIGURE 13: LAND USE PLAN



4.3 GREENSPACE & TRAILS PLAN

Greenspaces are configured to encompass the more challenging terrain and bedrock areas that bookend commercial and industrial uses, providing buffering from Ice Lake, as well as recreational, passive drainage, and ecological functions. Greenspaces and trails support a variety of uses like walking, mountain biking, and foraging, as well as support ecological functions and connectivity through the development.

Greenspaces are included for ecological and habitat functions, slope stability, drainage, trail connections. These areas will remain accessible to the public.

Suitable zoning: Greenbelt (PG)

The Greenspace and Trails Plan feature the following key components:

- Approximately 13.3 Ha of greenspace.
- A 30 m linear greenspace spans the entire western edge of the site providing a natural treed buffer between Ice Lake Road / Ice Lake Regional Park.
- Greenspaces protect the integrity of slope areas and avoid the areas identified in previous studies as having extensive shallow bedrock.
- Greenspace in the Alaska Highway Frontage Area is included on the northwest corner of C-86B where there is a significant grade change and steeper (20%) slopes, and for the existing powerline easement / powerline trail.
- Trails are strategically located between blocks to manage stormwater runoff and to connect to existing recreation trails and the proposed Ice Lake Park area. An example of expected trail treatment is shown in Figure 14.
- Greenspace is allocated for the existing powerline easement, accommodating the existing powerline trail through the east-west axis of the development.
- The Rock Gardens Trail is rerouted (Figure 15) and traverses the southwest quadrant Greenspace, connecting to the existing Ice Lake Perimeter trail. In total, the trail diversion impacts approximately 1 kilometre of the existing trail. The diversion concept replaces approximately 400 meters, covering similar rolling forested terrain and route direction and, where possible, following a historical logging trail visible in the satellite imagery.
- Appropriate **Fire Smart** mitigations (determined in detailed design) to lower wildfire risk to development areas.

4.3.1 GREENSPACE & TRAILS POLICIES

5. All onsite and offsite trail improvement will achieve a Type 3 level of service (i.e., single track trail between 1.1 and 1.3 m in width, with 30-70cm tread width) per the City of Whitehorse Trail Plan (2020) and any other City requirements / standards.
6. Assessment, designation of trails (i.e., non-motorized and motorized use) will be completed, per the City's requirements and objectives.
7. Trails improvements / changes are incorporated into updated City trails maps, as needed.
8. The developers will coordinate with the City of Whitehorse Fire Smart Coordinator to assess and develop mitigations (e.g., fire breaks, fuel reduction, and replanting with aspen) to reduce wildfire risk in critical greenspace / development interface areas. Implementation of mitigations will be coordinated with the development construction.

FIGURE 14: TYPICAL SINGLE TRACK TRAIL TREATMENT

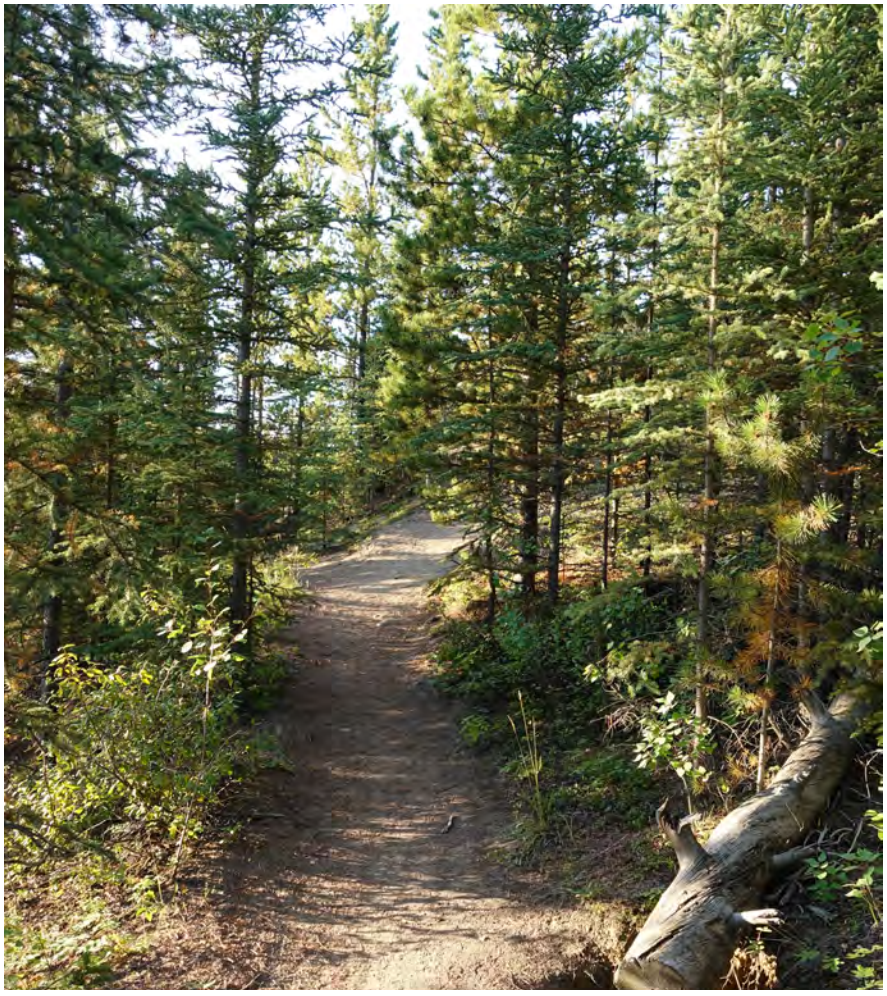
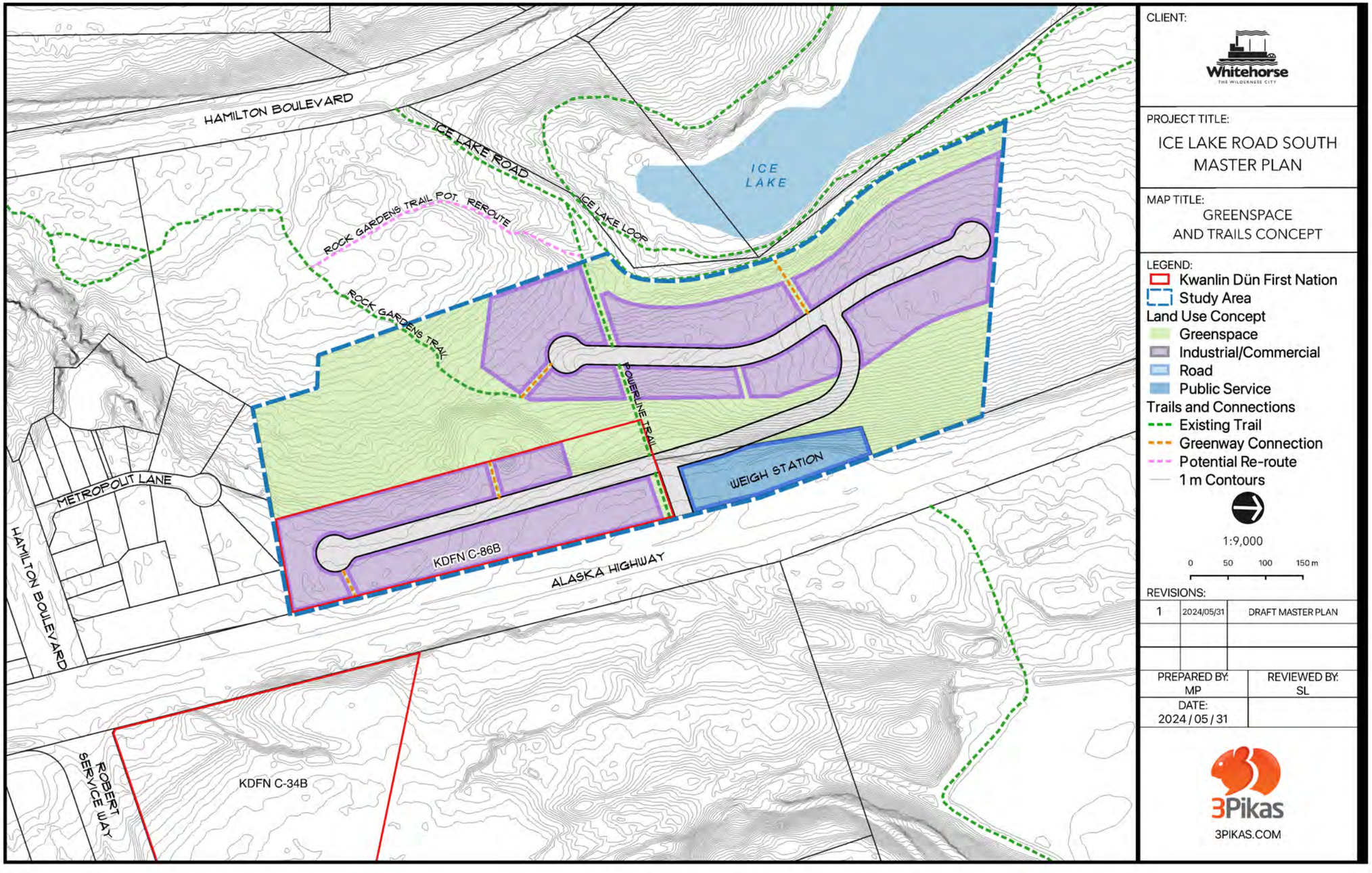


FIGURE 15: GREENSPACE AND TRAILS PLAN



5 SERVICING PLAN

The servicing concept envisions a typical rural level of service, including onsite or trucked water and wastewater servicing, and overhead power. Stormwater will be collected and conveyed through overland drainage. The preliminary design report prepared by Greenwood Engineering Solutions is attached in Appendix A.

The servicing concept considers potential tie-ins to piped water and sewer when municipal services are extended to the South Growth Area. Power and telecommunications will be provided by ATCO Electric and local telecommunications companies.

Note that the conceptual lot configuration presented in Figure 17, Figure 18, and Figure 19 are for illustrative purposes only.

5.1 TRANSPORTATION CONCEPT

The transportation concept articulates an internal road network stemming from a 4-way signalized intersection or roundabout on the Alaska Highway south of the existing Weigh Station.

The Alaska Highway signalized intersection / roundabout location is based on the following input regarding potential benefits discussed during the design workshop and from the public survey:

- Increases potential for highway-oriented commercial development as vehicles travelling along the highway will be able to see businesses / signage, and then conveniently access them from the Alaska Highway.
- Potential for synergies with planned grader station development and access across the highway (YG – _Highway and Public Works is considering the project, but no direction could be given at this time regarding timelines / approvals).
- Respondents to the public survey indicated that the Alaska Highway intersection was preferred (versus access off Hamilton Boulevard that was also contemplated).

The internal road network provides access to the **Alaska Highway Frontage Area** and **Upper Development Area**.

Both areas are serviced by a common 123 m roadway ('Common Access') that connects the entire development to the Alaska Highway corridor (see Table 3, and Figure 18 and Figure 19).[1]

[1] An alternative access from a Highway Frontage Road along Hamilton Boulevard was contemplated in the planning process and, although technically feasible, this was not the preferred option that was advanced.

The **Alaska Highway Frontage Area** (C-86B parcel) is serviced by an estimated 450 m long road and cul-de-sac. For traffic safety, the roadway's T-intersection is set back from the main entrance/intersection.

The **Upper Development Area** (YG Land) is serviced from the main access, which extends uphill to the north to a T-intersection with the upper roadway. The total road length to service the Upper Development Area is 526 m.

A cul-de-sac at the north end of the road network (Upper Development Area) allows for a future connection to the anticipated development of the Ice Lake Road North area. This connection would provide connectivity between the developments and potential for an alternative Alaska Highway access point, should the access articulated in this plan prove to not be technically or economically feasible.

TABLE 3: ESTIMATED ROAD LENGTH

Development Area	Common Access YG / KDFN (m)	YG (m)	KDFN (m)	Total (m)
Alaska Highway Frontage Area	123	-	450	573
Upper Development Area	-	526	-	526
Total	**123**	**526**	**450**	**1,099**

5.1.1 ROAD DESIGN

Access to the proposed subdivision will be provided through a 9m wide, 2-lane rural industrial road with a 25m right of way connecting to the Alaska Highway. A conceptual cross section of the roadway is shown in Figure 16.[2]

The road structure is anticipated to be Bitumen Surface Treatment (BST) along the drive lanes and asphalt at the intersections. All intersections provide a 0-2% vertical alignment to improve driving conditions for vehicles approaching a stop. A 20-meter clearance has been provided between the intersection and the start of the vertical curve, as required in TAC.

Asphalt surface treatment will be provided for the cul-de-sacs. Each one has an 18-meter radius to accommodate larger vehicles and future bus traffic.

A minimum 3.5m wide gravel access road will provide driveways to all lots using excess fill from the road construction. All roadways and driveways will have a 3% crossfall. Culverts will be required at all

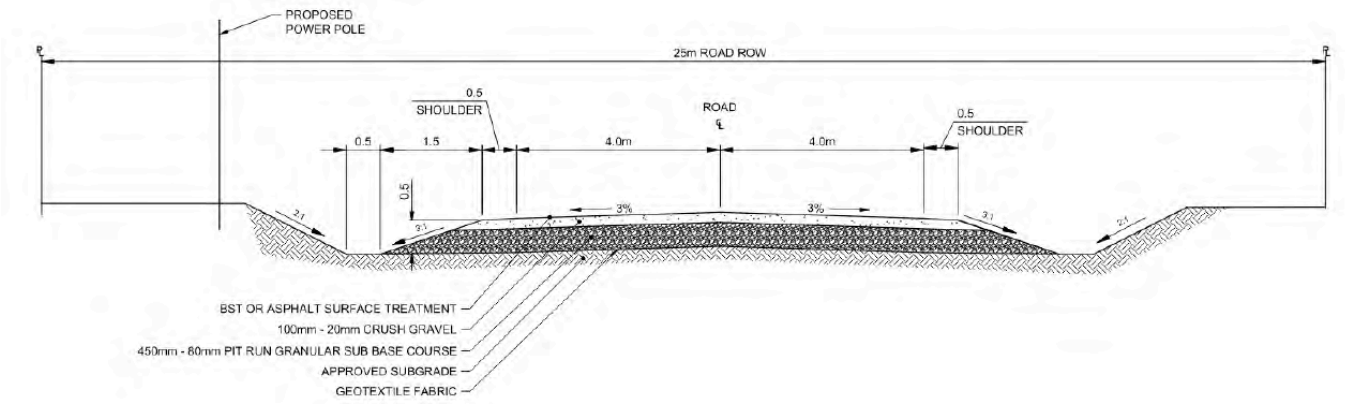
[2] Road width will be confirmed in detailed design based on requirements and results of planning / additional requirement for the Ice Lake Road North area.

driveway accesses to ensure proper drainage of the roadways. The landowner will develop and construct these driveways and culverts.

The preliminary design articulates how the roadway could overcome the steep grades and shallow bedrock conditions that must be traversed to access the upper industrial / commercial areas (Greenwood Engineering Solutions, 2024). Figure 17 shows the preliminary cut / fill balance for construction of the road network in colour banding from red (more cut) to blue (more fill).

Based on available bedrock depth information, Greenwood Engineering Solutions, suggests that the more significant cut (indicated in red to access the upper industrial / commercial area) will require removal of bedrock (see also 6.2 Development Phasing).

FIGURE 16: 9-METER RURAL INDUSTRIAL LOCAL STREET CROSS SECTION (25 M RIGHT OF WAY)



5.1.2 TRANSPORTATION IMPACT ASSESSMENT

ISL Engineering completed a transportation impact assessment (TIA) based on the preferred land use scenario (see Appendix B). The TIA analyzes the traffic impacts of a proposed industrial/ commercial development on the surrounding transportation network. The analysis includes evaluating traffic conditions at two intersections: Alaska Highway / Robert Service Way (RSW) and Alaska Highway / the recommended development access at the south end of the Weigh Scale ('Development Access').

The RSW and Alaska Highway intersection is signalized. YG–HPW is contemplating an upgrade for this intersection (Signalized or Roundabout); however, no decision on the approach or advancement of the design and construction timeline has been made to date. The Development Access is currently an unsignalized (stop sign) entrance/exit from the south end of the YG–HPW-operated Weigh Station. Per

direction from YG-Highways and Public works, we assume that a signalized intersection or roundabout is required at the Alaska Highway access to meet safety requirements and service objectives.[3]

The TIA considers two background and two development scenarios. The results of the analysis concluded the following:

- For the 2026 Background scenario (no development), the operations at both intersections are deemed acceptable with the existing lane and intersection configurations.
- For the 2026 Background + Development scenario, a new signalized intersection will be required at the Alaska Highway / Weigh Scale Access intersection, and two eastbound egress lanes are recommended at the Development Access. It is noted that the intersection design of the development access along with the integration of Weigh Scale access is outside the scope of work of the TIA and Master Plan.
- For the 2046 Background scenario (no development), an upgrade to the Alaska Highway / RSW intersection is required to maintain acceptable levels of service. As noted, improvements to this intersection are already in the planning phase (YG–HPW, *email correspondence,* September 2023).
- For the 2046 Background + Development scenario, no additional upgrades are required.

The TIA also includes an analysis of active modes of transportation, such as pedestrians, bicyclists, and transit. Future work will involve developing an internal sidewalk / pathway plan and connections to the existing pathway network (i.e., a paved path on the east side of the Alaska Highway). Also, the extension of transit into the development should be explored.

ISL emphasizes that the design / feasibility of the signalized Development Access at the Alaska Highway is outside the scope of this project. It is assumed that determining an intersection configuration that can accommodate the existing activities at the Weigh Station will be explored in future planning and design work.

[3] Citation: Adam Luciano, Manager, Planning and Programming, YG Highways and Public Works – Transportation Engineering Branch, *email correspondence,* June 2023

5.1.3 TRANSPORTATION POLICIES

9. Pedestrian and cycling travel in the roadway should be considered during detailed design.
10. The posted speed limit and traffic calming measures should consider more vulnerable road users such as pedestrian and cyclists and crossing locations.
11. Configuration and selection of streetlights will consider measures to limit light pollution.
12. If the signalized intersection access off the Alaska Highway is deemed to be not feasible during detailed design stages, access from Hamilton Boulevard / Highway Frontage Road, or from the Ice Lake North development area should be contemplated as alternatives.

5.2 WATER SERVICING

Water servicing will be provided using either water delivery by trucks or through well systems, with the final responsibility falling on the property owner in accordance with zoning and development regulations, well construction guidelines and requirements, and Design Specifications for Sewage Disposal Systems (i.e., for setbacks etc.) (YG, Environmental Health Services).

However, due to the steep slopes and shallow bedrock, it could be cost-prohibitive to develop wells. Additional analysis, including a hydrogeological investigation, should be undertaken to determine the feasibility of developing wells within the proposed development area.

5.2.1 GROUNDWATER

The Lobird development as well as the existing developments within the Metropolit Lane subdivision rely on groundwater wells for their drinking water systems. Given the shallow bedrock, there is an elevated risk of the groundwater wells being contaminated from onsite wastewater systems and other sources of contamination. According to the Ausenco geotechnical report (2022), shallow ground water is anticipated less than 1.6 m below the existing ground elevation for the Highway Frontage area. If shallow groundwater is found in this area, roads should be raised to a suitable elevation. This may impact the feasibility of certain building foundation types (i.e., basements, Permanent Wood Foundations), however detailed recommendations will be developed based on site specific information gained from the hydrogeological study.

Ausenco did not anticipate shallow groundwater for the Upper Development Area. As discussed, detailed hydrogeological analysis should be undertaken to confirm the depth of groundwater and if onsite septic systems can be used for this subdivision. The hydrogeological analysis should review the existing risks to the groundwater, including the risks posed by the Lobird lagoon systems as well as the existing septic systems within the Metropolit Lane development (Greenwood Engineering Solutions, 2024).

5.2.2 FIRE SUPPRESSION

As described in this plan, the City of Whitehorse does not intend to extend water servicing to this development as part of the initial development. As such, like other unserviced commercial / industrial subdivisions in Whitehorse, piped fire flows will not be available.

Lot owners will need to consider appropriate fire suppression systems as part of their developments. Fire suppression systems will be subject to approval by a fire protection engineer and applicable City of Whitehorse development permit requirements. There may be additional requirements and costs for obtaining insurance based on the fire response level of service.

5.3 SANITARY SERVICING

On-site holding septic tank will be required for trucked sewage servicing. The tank sizing and setbacks will need to align with Design Specifications for Sewage Disposal Systems (YG, Environmental Health Services). The tank sizing and setbacks will be dependent on the use of each lot and need to align with the Yukon government regulations and design standards.

The feasibility of onsite septic disposal systems will be determined in subsequent design stages (i.e., hydrogeological and geotechnical investigations) and / or permitting processes with Environmental Health (by the landowner / lease holder).

If more detailed analysis determines that onsite servicing is not feasible, the development will need to be paused until piped servicing made available.

5.4 STORMWATER MANAGEMENT

As shown in Figure 18 and Figure 19, ditches and culverts will be utilized to collect and direct water to greenspace areas. A subdivision drainage plan should be developed during detailed design to ensure run-off from developments flows to designated greenspace and ditch / culvert conveyances.

5.5 POWER & COMMUNICATION

This proposed development is within the main power grid connecting the southern portion of the Yukon. All electricity in the Whitehorse area and southern region is provided by Yukon Energy Corporation (YEC) and distributed by ATCO Yukon. There is currently an overhead power line that crosses the Study Area and provides power, data, and communications to the Whitehorse Weigh Station and the Lobird residential subdivision. 3-phase power is not provided on this overhead line. However, 3-phase power is available on the overhead lines on the Alaska Highway in adjacent to the study area.

5.6 LOT GRADING

Lot grading will be the responsibility of the lot owner. Existing grades in development areas vary and grading requirements will be contingent on lot conditions and the desired uses of landowners.

5.6.1 SERVICING POLICIES

13. Undertake a hydrogeological investigation to determine the feasibility of developing wells within the proposed development area.
14. An overall subdivision drainage plan should be developed during detailed design to ensure run-off from developments will flow to designated greenspaces, ditch / culvert network.
15. In steep areas, alterations to the natural topography should be minimized.

FIGURE 17: CUT FILL BALANCE

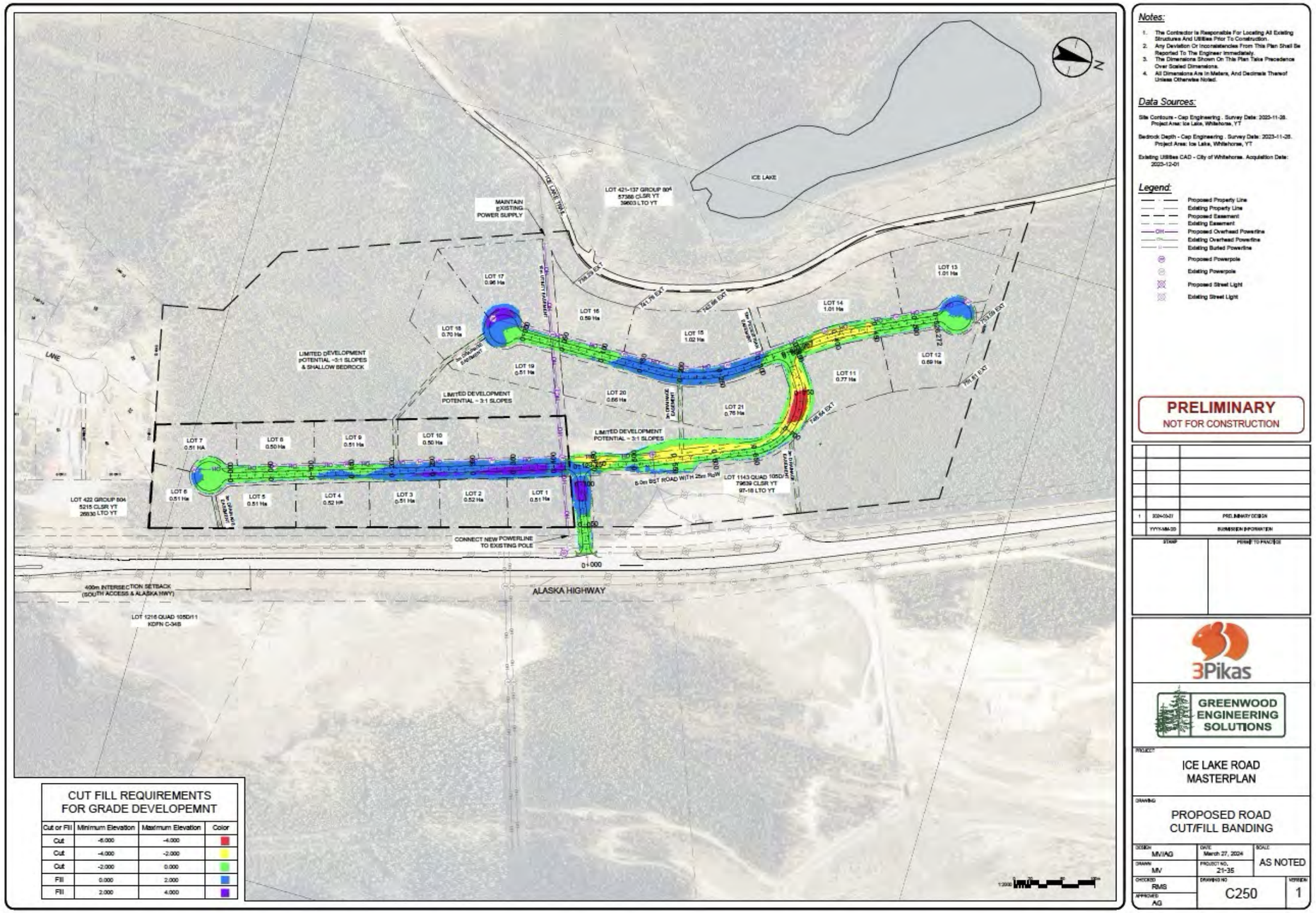
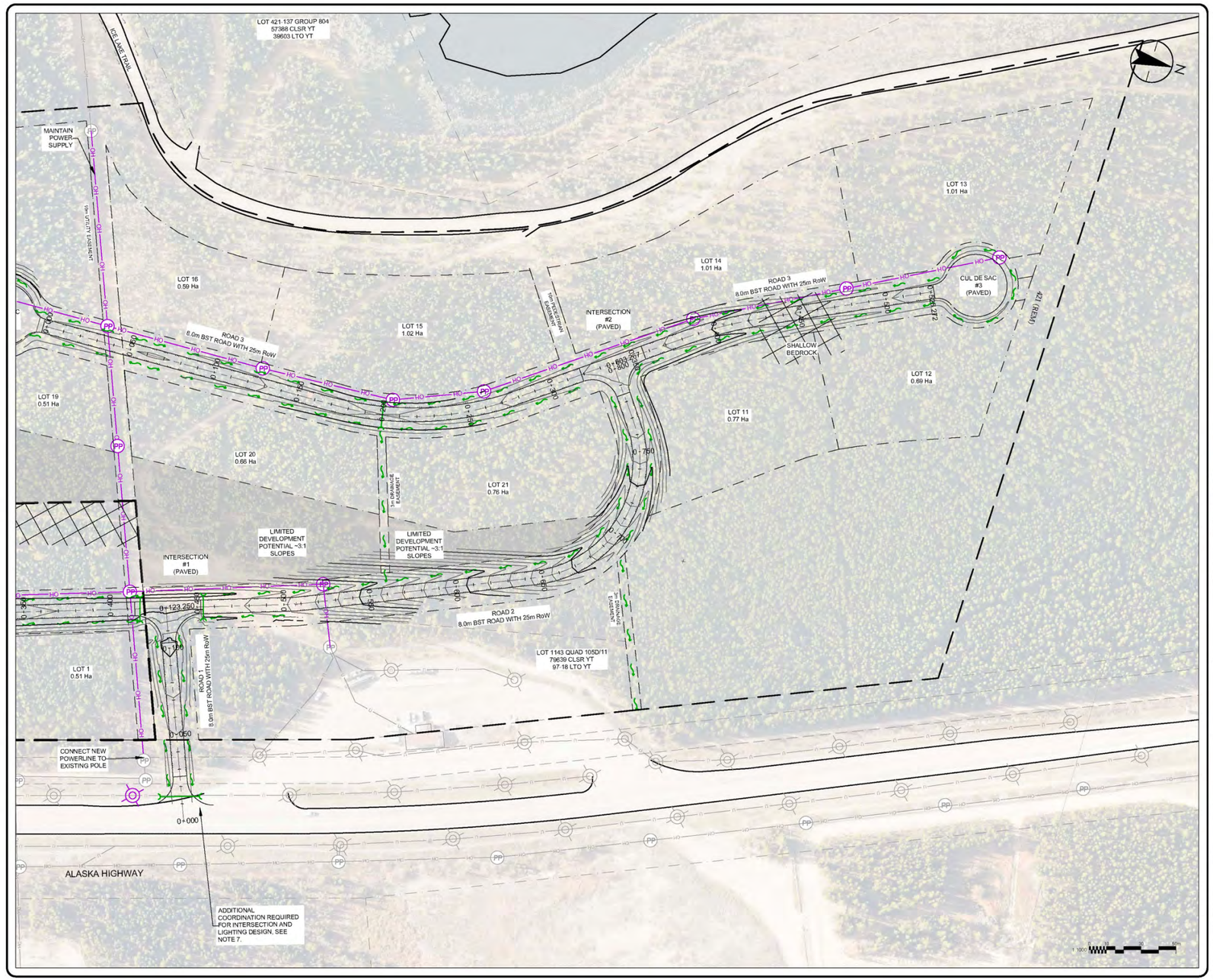


FIGURE 18: PRELIMINARY SITE LAYOUT AND DRAINAGE PLAN (NORTH)



Notes:

1. The Contractor Is Responsible For Locating All Existing Structures And Utilities Prior To Construction.
2. Any Deviation Or Inconsistencies From This Plan Shall Be Reported To The Engineer Immediately.
3. The Dimensions Shown On This Plan Take Precedence Over Scaled Dimensions.
4. All Dimensions Are In Meters, And Decimals Thereof Unless Otherwise Noted.
5. All Contours are Displayed in 1.0m Minor and 5.0m Major Intervals.
6. Power Pole Locations and Alignments are Preliminary. Input from ATCO Electric Yukon is Forthcoming and Will be Reflected on the Next Iteration of the Drawings.
7. Intersection Design and Conflicts with Weigh Scale Require Additional Analysis. YG Highways and Public Works Should be Involved in Subsequent Design Related to Intersection for Access to their Development on the East Side of the Highway as well as Future Plans Related to the Weigh Scale.

Data Sources:

Site Contours - Cap Engineering . Survey Date: 2023-11-28. Project Area: Ice Lake, Whitehorse, YT

Bedrock Depth - Cap Engineering . Survey Date: 2023-11-28. Project Area: Ice Lake, Whitehorse, YT

Existing Utilities CAD - City of Whitehorse. Acquisition Date: 2023-12-01

Legend:

- Proposed Property Line
- Existing Property Line
- Proposed Easement
- Existing Easement
- Proposed Overhead Powerline
- Existing Overhead Powerline
- Existing Buried Powerline
- Proposed Powerpole
- Existing Powerpole
- Proposed Street Light
- Existing Street Light

DRAFT

1	2024-03-27	PRELIMINARY DESIGN
	YYYY-MM-DD	SUBMISSION INFORMATION

STAMP | PERMIT TO PRACTICE

3Pikas

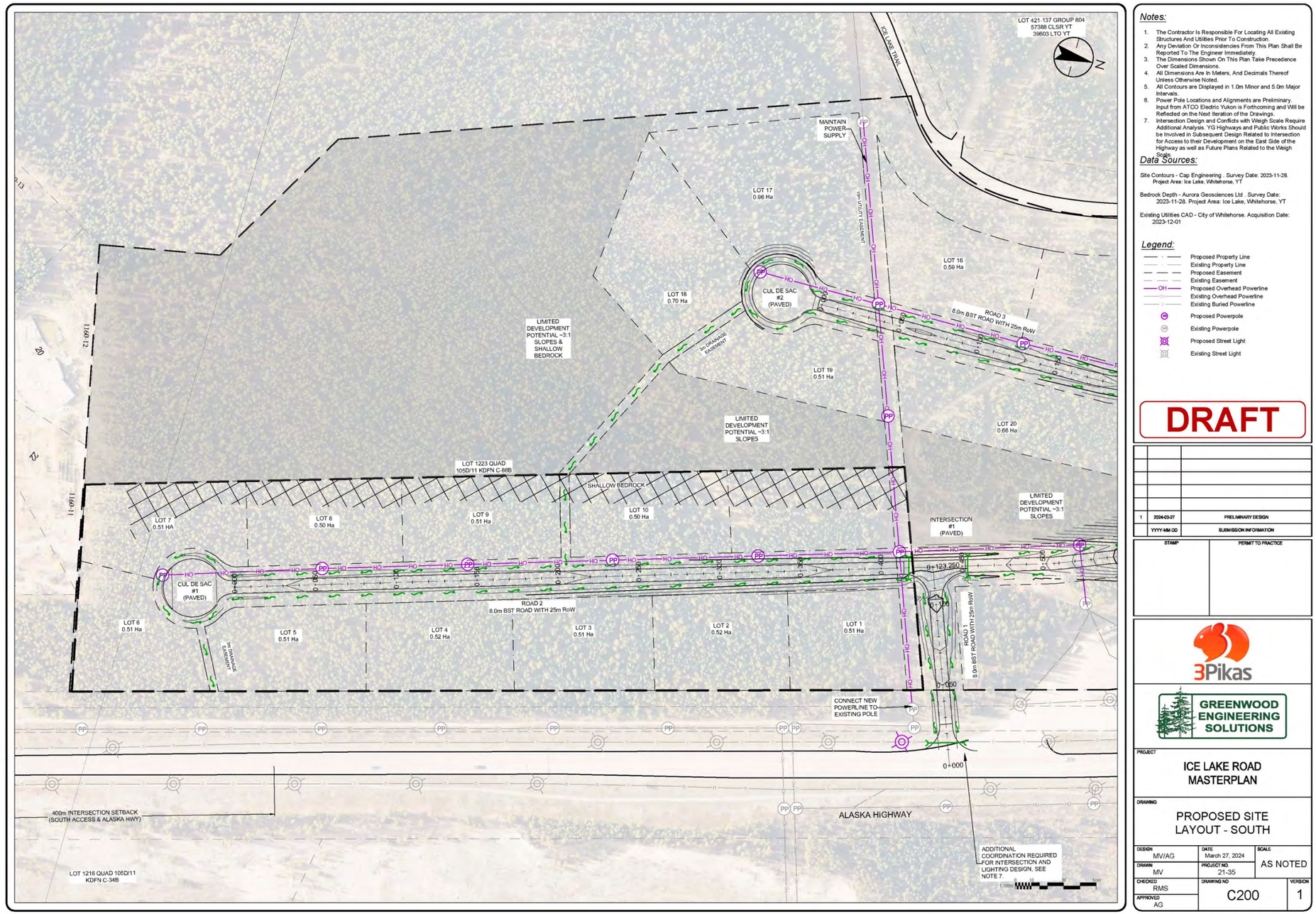
GREENWOOD ENGINEERING SOLUTIONS

PROJECT: ICE LAKE ROAD MASTERPLAN

DRAWING: PROPOSED SITE LAYOUT- NORTH

DESIGN: MV/AG	DATE: March 27, 2024	SCALE: AS NOTED
DRAWN: MV	PROJECT NO.: 21-35	
CHECKED: RMS	DRAWING NO.: C210	VERSION: 1
APPROVED: AG		

FIGURE 19: PRELIMINARY SITE LAYOUT DRAINAGE PLAN (SOUTH)



Notes:

1. The Contractor Is Responsible For Locating All Existing Structures And Utilities Prior To Construction.
2. Any Deviation Or Inconsistencies From This Plan Shall Be Reported To The Engineer Immediately.
3. The Dimensions Shown On This Plan Take Precedence Over Scaled Dimensions.
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5. All Contours are Displayed in 1.0m Minor and 5.0m Major Intervals.
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7. Intersection Design and Conflicts with Weigh Scale Require Additional Analysis. YG Highways and Public Works Should be Involved in Subsequent Design Related to Intersection for Access to their Development on the East Side of the Highway as well as Future Plans Related to the Weigh Scale.

Data Sources:

Site Contours - Cap Engineering . Survey Date: 2023-11-28. Project Area: Ice Lake, Whitehorse, YT

Bedrock Depth - Aurora Geosciences Ltd . Survey Date: 2023-11-28. Project Area: Ice Lake, Whitehorse, YT

Existing Utilities CAD - City of Whitehorse. Acquisition Date: 2023-12-01

Legend:

- Proposed Property Line
- Existing Property Line
- Proposed Easement
- Existing Easement
- Proposed Overhead Powerline
- Existing Overhead Powerline
- Existing Buried Powerline
- Proposed Powerpole
- Existing Powerpole
- Proposed Street Light
- Existing Street Light

DRAFT

1	2024-03-27	PRELIMINARY DESIGN
	YYYY-MM-DD	SUBMISSION INFORMATION

STAMP | PERMIT TO PRACTICE

3Pikas

GREENWOOD ENGINEERING SOLUTIONS

PROJECT: ICE LAKE ROAD MASTERPLAN

DRAWING: PROPOSED SITE LAYOUT - SOUTH

DESIGN: MV/AG	DATE: March 27, 2024	SCALE: AS NOTED
DRAWN: MV	PROJECT NO.: 21-35	
CHECKED: RMS	DRAWING NO.: C200	VERSION: 1
APPROVED: AG		

6 IMPLEMENTATION & PHASING

When considering how to implement the vision articulated in the Master Plan, the implementation and phasing will need to reflect the contextual issues such as working within the Alaska Highway access environment.

6.1 SIGNALIZED INTERSECTION OR ROUNDABOUT AT THE ALASKA HIGHWAY

The Alaska Highway intersection access was selected to meet the vision of creating highway access-oriented commercial and industrial opportunities. However, achieving this will require an upgrade to the intersection on the Alaska Highway, which will involve coordination and funding.

To meet YG Highways requirements, the intersection will require to be upgraded to a modern signalized intersection standard or roundabout (see recent example in **Error! Reference source not found.**). The Weigh Station pose a design challenge for this intersection that will need to be considered in detailed design and will likely increase complexity and cost. Without project partners (e.g., YG–HPW), the cost of the intersection would likely be prohibitive to development on a cost recovery basis, based on the development opportunity presented.

PHOTO 11: ALASKA HIGHWAY HILLCREST DRIVE BARKLEY-GROW CRES. SIGNALIZED INTERSECTION COMPLETED IN 2022

6.2 DEVELOPMENT PHASING

Construction of the Ice Lake Subdivision will be challenging due to large cut and fill volumes, bedrock, steep grades and additional items as noted in Section 2 of the attached pre-design report (Greenwood Engineering Solutions, 2024).

Development of the entire site will require the cooperation and financial coordination from both YG and KDFN landowners to develop the new road network and shared infrastructure. Construction can be completed all at once or separately between landowners.

It is important to note that phasing is not required so long as both landowners can coordinate their construction timelines. Construction of the entire development all at once will conserve the most amount of common excavation on site and will ultimately lower the overall costs for the construction of the roadways compared to building separately.

6.2.1 FULL SUBDIVISION DEVELOPMENT

Developing all roads in the KDFN and YG parcels (Upper Development Area and Alaska Highway Frontage) simultaneously is the best option to reduce the overall road costs for the subdivision. This is because all suitable common excavation material can be reused in both the KDFN and YG areas, which will reduce the total amount of import material needed for road development resulting in reduced project costs.

6.2.2 UPPER DEVELOPMENT AREA FIRST (YG)

Developing the Upper Development Area first would include the development of all roadways within the YG parcel, and all roadways between the Alaska Highway intersection up to Intersection #2. The development of the Upper Development Area requires substantially more cut compared to the Alaska Highway Frontage Area. This is primarily due to the large hill and shallow bedrock present between Lot 21, Lot 11 and Lot 14, as well as the large cut requirement for the other areas of Phase 1.

Given the general suitability of the cut material for road construction, it can be stockpiled and re-used for the fills that are required for the KDFN area (roadway and lots). Alternatively, if the construction of the KDFN area is estimated to be delayed for a long period of time, all cut material could be used to pre-grade portions of the YG lots which could reduce the costs / complexity to potential landowners to develop their lots. If the YG lots are pre-graded the KDFN area will not receive any reuse material which will increase the road construction costs for the KDFN area (i.e., more imported fill needed).

6.2.3 ALASKA HIGHWAY FRONTAGE AREA FIRST (KDFN)

The Alaska Highway Frontage development area would include the roadway within the KDFN C-86B parcel located between Intersection #1 to Cul De Sac #1. This road is estimated to be a net fill area due to the existing low areas within the along the proposed road alignment.

Developing this area alone would require that large amounts of reuse material be brought in from offsite locations to fill these low areas. To reduce the amount of import material, all suitable common excavation from the YG area should be used for the KDFN road construction (if available). Developing the KDFN area first could result in increased overall development road construction costs if fill material from the YG area can not be collected and shared between areas.

6.3 ADDITIONAL STUDIES

Based on the pre-design report, the following studies are recommended to be completed prior to or in tandem with YESAB, Re-Zoning, and detailed design to better characterize the site and development opportunity / feasibility. This is a high-level overview for charting the way forward and is not intended to be comprehensive.

- Hydrogeological Study
- Ice Lake North Development Feasibility Study.
- Detailed (intrusive) geotechnical study (including septic field and well feasibility).

7 WORKS CITED

Aperture Consulting Inc. (2022). Phase 1 Environment Site Assessment, Study Areas 4 and 5. Digital. Government of Yukon.

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ISL Engineering (June 2024). Transportation Impact Assessment Report. City of Whitehorse.

Welder Engineering. (2022). Industrial/Commercial Infill Site Servicing and Access Assessment, Areas 4 and 5. Government of Yukon.

8 APPENDICES

8.1 APPENDIX A: PRELIMINARY DESIGN REPORT – ICE LAKE ROAD SOUTH MASTER PLAN (GREENWOOD ENGINEERING SOLUTIONS, 2024).

June 27, 2024
REVISION 0

Ice Lake Road Subdivision Preliminary Design - FINAL REPORT

City of Whitehorse

PREPARED FOR

3 Pikas
Suite 17 – 1114 Front Street
Whitehorse, YT Y1A 1A3

PREPARED BY

Greenwood Engineering Solutions
Suite 203, 100 Main Street
Whitehorse, YT Y1A 2A8

GREENWOOD ENGINEERING SOLUTIONS

Table of Contents

Appendices

1 Introduction

The City of Whitehorse is working with 3Pikas on the development of a masterplan for the proposed Ice Lake Road industrial subdivision. The Ice Lake Road study area is located within in the City of Whitehorse municipal boundary on the Alaska Highway north of the Robert Service Way and Hamilton Boulevard intersection. An overview of the study area and the preliminary land use scenario prepared by 3Pikas in included in Appendix A. Greenwood Engineering Solutions was retained by 3 Pikas to assess the conditions of the study area and prepare a preliminary design for the access road and grading of the study area. The intent of this report is ultimately to assist the City of Whitehorse better understand the constraints of the existing site and the costs of this development in order to determine the feasibility of developing the proposed Ice Lake Road industrial subdivision. An overview of the site considerations that should be advanced during subsequent design are outlined in this report.

1.1 Background

The population of Whitehorse has been steadily increasing in the past decade and so has the need for more residential, commercial, and industrial developments. In response to this demand, the City of Whitehorse has expanded by developing new areas such as Whistle Bend and Titanium Way as well as expanding and densifying existing areas. The remaining undeveloped areas around Whitehorse are primarily steep boreal forest, waterbodies, and First Nations Settlement Land making it difficult to find suitable land for development.

The Ice Lake Road study area is zoned for commercial/industrial and includes First Nations Development Land (Kwanlin Dün First Nation (KDFN) Lot 1223). The study area is undeveloped except for the weigh scales on the adjacent property to the east and overhead powerline that crosses through the study area and services the Lobird trailer park development to the west. There is an existing commercial subdivision to the south of study area on Metropolit Lane and Ice Lake road on the west boundary of the study area is used primarily for access to the recreational trails. There is no existing municipal water or sewer infrastructure within the Study Area and the closest water and sewer utilities are located on Condor Road approximately 600m north of the study area. Electricity, internet and communication lines are available from the overhead lines located on the Alaska Highway and from the overhead lines crossing through the Study Area.

In 2022, the Government of Yukon, who assists the City of Whitehorse with future development planning, engaged Wedler Engineering to assess the site servicing and access for the Ice Lake Road study area. Additional geotechnical and site development analysis of the site has since been completed by Ausenco and CAP Engineering. An overview of the work completed to date is summarized below.

1. Industrial/Commercial Infill Site Servicing and Access Assessment – Area 5 Robert Service Way Study Area, Wedler Engineering LLP, Dec. 22, 2022

   Conducted a servicing and site access study of the area bounded by Ice Lake Road and Lots 1143 and 1223. This report is one of five assessments that looks into developing the entire western area of the Alaska Highway between Hillcrest and the Alaska Highway South Access Road Intersection. The assessment recommended that water and sewer services be provided to the area by connecting to the water and sewer main located in Condor Road. Offsite Upgrades were required for site servicing which included the construction of a sanitary lift station and domestic water pumphouse. Proposed Site Access for the Area 5 was to be provided by the development of a new rural industrial road on the existing Ice Lake Road with two accesses to the development. This road would not provide access to any other study areas. Wedler recommended that 37 Industrial Service (IS) or Highway Commercial (CH) lots be developed in Area 5. Stormwater management was intended to be accomplished by onsite storage via an infiltration swale or rain garden.

2. Industrial/Commercial Infill Site Servicing and Access Assessment – Area 4 Robert Service Way Study Area, Wedler Engineering LLP, Dec. 22, 2022

   Conducted servicing and site access study of Lot 1223 KDFN C-86B for the development of a fully serviced industrial/commercial subdivision. This report is one of five assessments that investigates developing the entire western area of the Alaska Highway between Hillcrest and the Alaska Highway South Access Road Intersection. The assessment recommended that water and sewer services be provided to the area by connecting to the water and sewer main located in Condor Road. Offsite Upgrades were required for site servicing which included the construction of a sanitary lift station and domestic water pumphouse. For the KDFN lots in C-86B Wedler recommended that a frontage road be developed. This frontage road would connect either to the frontage road at the Alaska Highway South Access intersection, Ice Lake Road and Alaska Highway intersection or the Ice Lake Road and Hamilton Boulevard intersection. Lots are arranged in a single strip of 10 Industrial Service (IS) or Highway Commercial (CH) lots be developed on the flat eastern portion of C-86B. Stormwater management was intended to be accomplished by onsite storage via an infiltration swale or rain garden.

3. Desktop Geotechnical Assessment, Parcel 4 (KDFN C-86B), Ausenco, Dec. 23, 2022

   Ausenco provided a desktop assessment of Parcel 4 (C-86B) and indicated that geotechnical conditions appear to be good for the central and eastern portions of C-86B. Conditions for the northwestern and southwestern corners of the C-86B were noted to be “Poor” due to challenging geography and anticipated subsurface conditions. From the available data Ausenco indicated that the development of septic fields is acceptable for this area however a further testing would be required. Additionally, shallow ground water (less than 1.6m below ground) is anticipated for parcel 4.

4. Desktop Geotechnical Assessment, Parcel 5 - Ausenco, Dec. 23, 2022

   Ausenco provided a desktop assessment of Parcel 5 (C-86B) and indicated that geotechnical conditions appear to be moderate for the central and western regions and poor on the eastern slope adjacent to Lot 1143. Areas identified as "Moderate" due to existing slope ranging from 10- 15% and suspected shallow bedrock. Areas identified as "Poor" are due to steep existing slopes. It is suspected that the development of septic fields on lots with shallow bedrock would be difficult. From the available data Ausenco indicated that the development of septic fields is acceptable for this area however a further testing would be required.

5. Geotechnical Evaluation Ice Lake Road South Project – CAP Engineering, Jan. 15, 2023

   CAP Engineering (CAP) performed an evaluation of the concept level road alignment produced by 3Pikas. CAP developed a preliminary road alignment and profile as well as an estimated volume of cut required for the three roads alignments proposed by 3Pikas. A maximum grade of 8% for roads was established for 9m wide BST road with a 20m Right of Way (RoW). A total cut volume of 64,000 m^3 was estimated for the construction of the proposed roadway. CAP recommends that a site intersection at Hamilton Boulevard and Ice Lake road be considered to reduce the amount of cut material and that additional geotechnical investigation be completed to confirm bedrock depths.

6. Technical Report 2023 Ice Lake GPR Survey – CAP Engineering, Sept. 22, 2023

   CAP retained Aurora Geosciences (AGL) to conduct a ground penetrating radar (GPR) survey to determine the bedrock depth for the Ice Lake Road Study Area. CAP noted that the results from the GPR are not "particularly amenable" and should be validated through additional testing via boreholes or open pit tests.

2 Site Challenges

As discussed in the previous work that reviewed potential development within the study area, there are a number of challenges that will need to be addressed as part of subsequent design. A brief overview of these challenges are discussed below.

2.1 Site Access

The three potential accesses there were reviewed as part of the master plan was to develop 1) a new intersection access from the highway, 2) a new access using a highway frontage road that connects to Metropolit Lane, and/or 3) a new access from Hamilton Boulevard using the Ice Lake Road. Ultimately, through the planning process, the preferred access is to utilise a new highway intersection access from the Highway. This decision was influenced by the Government of Yukon Highways and Public Works yard that is being constructed on the east site of the highway from the study area that will include a highway intersection slightly south of the existing weigh scale. The design for this intersection is very challenging as it will be located adjacent to the existing weigh scale and the turning movements and storage area required to create a safe intersection will be very difficult to achieve while maintaining reasonable grades to connect to the weigh scale and the upper bench within the study area. Given the complexity of the design for a new intersection that

incorporates the weigh scale, this preliminary design does not include an intersection design as further coordination and final design to be subject to review with YG HPW before an intersection design can proceed.

2.2 Steep Grades

As outlined the CAP and Ausenco reports, the terrain in the planning area is very steep with grades up to 50%. Grades steeper than 15% result in a challenging design to maintain reasonable grades of less than 8% for the access road and lot grading without significant amount of grading (cut and fill). Drawing C100 in Appendix B provides the contours of the existing site and Drawing C110 colour banding of the elevation to help visualize the changes in grades.

2.3 Shallow Bedrock

As outlined in the CAP report, the bedrock in the area is shown be very shallow with multiple rock outcroppings are present. Rock removal is very costly and will require blasting, the design for this development should seek to minimize rock removal. Using the bedrock depth data collected by CAP and Aurora Geoscience Ltd GPR field work, we created a surface of the estimated bedrock depths to inform the design. This information is presented in Drawing C120; the accuracy of this information is questionable as outlined in the previous reporting. Further analysis is recommended to confirm the actual bedrock depths and conditions as well as rock removal methods that can be utilized during construction.

2.4 Paddy's Pond and Ice Lake Environmentally Sensitive Area

A large greenspace area is located immediately west of the planning area. This area is a popular non-motorized recreational area and a number of trails have been developed. A portion of the study area grades towards Ice Lake and the design of the subdivision should incorporate proper stormwater management to ensure this area is protected. An erosion and sediment control plan should also be developed for the duration of construction activities to avoid impacts to this region.

2.5 Groundwater and Potential Sources of Contamination

The Lobird development as well as the existing developments within the Metropolit Lane subdivision rely on groundwater wells for their drinking water systems. Given the shallow bedrock, there is an elevated risk of the groundwater wells being contaminated from onsite wastewater systems and other sources of contamination. According to the Ausenco geotechnical report for parcel 4, shallow ground water is anticipated less than 1.6m below the existing ground elevation for the KDFN area. Ausenco did not anticipate shallow groundwater for parcel 5 (YG area).A detailed hydrogeological analysis should be undertaken to confirm the depth of groundwater and if onsite septic systems can be used for this subdivision. If shallow groundwater found for the KDFN area, roads should be raised to a suitable elevation. This hydrogeological analysis should review the existing risks to the groundwater, including the risks posed by the Lobird lagoon systems as well as the existing septic systems within the Metropolit Lane development such as the septic system that is used to manage the waste from the carwash.

3 Site Design

The preliminary design for the subdivision was developed based on the preferred subdivision plan included in Appendix A. The preliminary design drawings are included in Appendix B and an overview of the site design is discussed below.

3.1 Road Design

Access to the proposed subdivision connecting to the Alaska Highway adjacent to the existing weigh scales shall meet the requirements of the City of Whitehorse's 9.0m Rural Industrial Local Street Section 25.0m Right of Way, Std DWG C8.0 included in Appendix C. As outlined in the Ice Lake Road South Master Plan Transportation Impact Assessment draft report, April 2024 prepared by ISL, a signalized intersection is required at the Alaska Highway / weigh scale access and two eastbound egress lanes are recommended at the access. As discussed in Section 2.1, further analysis and design is required for the proposed highway intersection which is outside the scope of this preliminary design.

In addition to the requirements of Std DWG C8.0, we recommend that a 0.5m wide flat bottom ditch be used instead of a v-notch ditch to increase capacity of the ditch. Figure 1 below provides an overview of the proposed cross section. The horizontal and vertical alignments of the road were determined using both the City of Whitehorse Servicing Standards Manual and the Transportation Association of Canada Geometric Design Guide for Canadian Roads 2017 (TAC). A summary of design criteria for the proposed access road is outlined in Table 1.

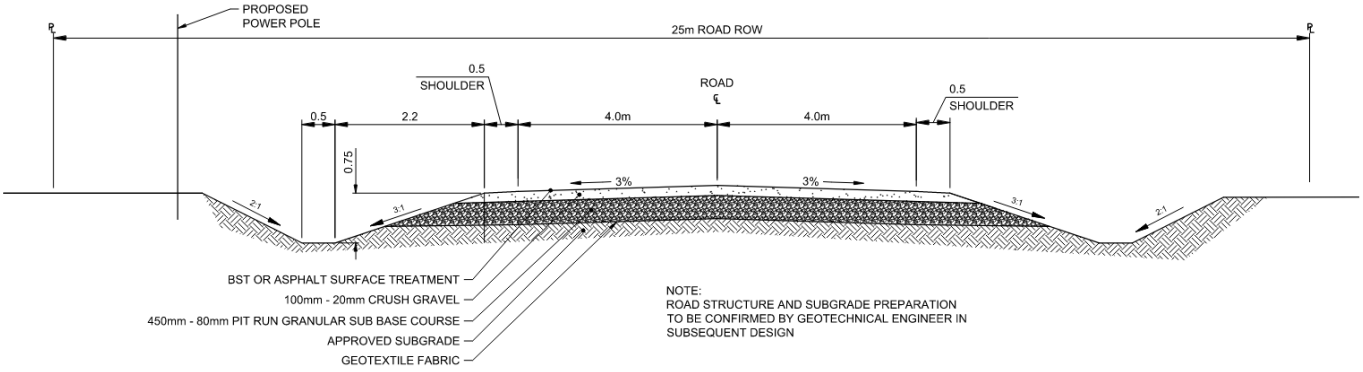


Figure 1 – Proposed 9.0m Rural Industrial Local Street Section with Flat Bottom Ditch

Table 1 – Access Road Design Criteria

Design Speed (km/h)	Horizontal Alignment	Vertical Alignment	
	Minimum Radius of Curve (m)	Crest K Value	Sag K Value
50	100	7	6

A total of three intersections will be required for the development of the Ice Lake Road subdivision. Each of these intersections will be surfaced with 75mm asphalt and include stop signs as outlined in the Section 3.21 in the City of Whitehorse Servicing Standards Manual. All intersections are to be T-intersections with 15-meter curb return radii and all intersections have a maximum 2.0% vertical alignment to provide safe conditions for vehicles when approaching the intersection. A 20-meter straight tangent has been provided between the intersection and start of the vertical curve as required in TAC.

A 18m radius cul-de-sacs with asphalt surface treatment shall be located at the end of all roads to allow for bus traffic. Cul de Sacs will be sloped to provide adequate drainage and be designed to ensure the minimum requirements from NBCC 3.2.5.6 for fire department access are met.

Driveways to lots will vary in size and shall be a minimum 3.5m wide gravel access road in order to accommodate industrial traffic. All roadways and driveways will have grade between 2% to 6% and a 3% crossfall. Culverts will be required at all driveway accesses to ensure proper drainage of the roadways. The development and construction of these driveways and culverts will be the responsibility of the landowner.

3.2 Stormwater Management

Given the grades of the existing site, as outlined in drawing C130, a portion of the study area (approximately 7.7 ha) drains west to Ice Lake while the remainder of the site (~22.4 ha) drains to the Alaska Highway right-of-way. Given the existing grades of the site, it is not feasible to regrade the portion of the study area that drains to Ice Lake and therefore a portion of the study area will drain to Ice Lake after the subdivision is developed. To protect Ice Lake from negative impacts to the development, each lot should include proper stormwater management practices such as incorporate bioswales to reduce the risk of contaminants draining offsite.

Stormwater within the development will be managed using open ditches and culverts. Culverts are included at drainage road crossings and drainage easements should be included as part of the subdivision design to ensure that drainage from the lots do not drain into neighbouring lots. Riprap and other erosion protection should be included in steeper ditch and culvert design. Furthermore, stormwater retention infrastructure should be included in the drainage design to ensure that the post-development stormwater flows do not result in negative impacts to the receiving infrastructure and environment. Typical stormwater infrastructure is designed to manage storm events based on a 5 year return period, however, in recent years as a result of climate change, storm events are becoming more intense and frequent and as a result stormwater infrastructure is starting to consider return periods up to the 100 year and even 200 year return periods. Given there is limited development within the study area, a 5 year return period is likely appropriate for sizing stormwater infrastructure, however, additional analysis should be undertaken to consider the cumulative effect of neighbouring developments on the receiving environment and climate change. For this site, this would include the YG HPW development occurring on the east side of the highway across from the study area. A

summary of the 15 minute and 2 hour duration storm events for the 5 year and 100 year return periods are presented in Appendix D. Based on the flows and stormwater runoff that would be generated from the storm events, ditches and/or bioswales will be sufficient to manage stormwater runoff during storm events. For example, the highway frontage along the study area is nearly 1km and the ditch along the highway can be utilised to buffer peak storm event flow from a 2 hour 5 year return period storm event of 606 m^3 (ie. 1km ditch will be an average depth of 0.6m for a 2m wide ditch). A similar approach can be taken for the Ice Lake catchment area using the Ice Lake Road ditch.

3.3 Subdivision Layout

Suitable zoning is understood to be that all lots in the KDFN C-86B are to be zoned as Highway Commercial (CH) and all other lots are to be zoned as Mixed Use Commercial/Industrial (CIM). An overview of the minimum lot sizes as outlined in the City of Whitehorse Zoning Bylaw is summarized in Table 2. Given the steeper grades of the development, the lot sizes vary in size from 0.5 ha to 1.45 ha to ensure that a minimum of 0.5 ha is developable. A minimum setback of 15 m has been applied to any slope over 30% which is included in the "Limited Development Potential" areas shown in drawings C200 and C210. The preliminary grading of each lot, including the portions of the subdivision that will have steep slopes and will be undevelopable, are included in the preliminary design drawings.

Table 2 - Minimum Parcel Requirements

	Highway Commercial (CH)	Mixed Use Commercial/Industrial (CIM)
Min Parcel Size where not connected to municipal water and sewer service	0.5 ha	0.5 ha
Minimum Lot Width	25.0 m	15.0 m
Maximum Site Coverage	50%	75%

3.4 Water and Sanitary Servicing

There is currently no water or sewer infrastructure adjacent to the study area. The closest water and sewer infrastructure available is located in Condor Road near the Erik Neilsen International Airport, approximately two kilometers north from the proposed subdivision. Given the distance to the existing water and sewer services, the costs to connect to municipal services is currently cost prohibitive and the development would be serviced by onsite systems. This is consistent with how the neighbouring Metropolit Lane and Lobird developments are being serviced with a combination of trucked water delivery or onsite well and trucked septic (holding tanks) or by an onsite treatment system (septic or lagoon). The City of Whitehorse is currently reviewing the feasibility of developing and expanding servicing south of Copper Ridge, which includes the proposed Ice Lake Road subdivision, as part of the Southern Urban Containment Boundary study. The feasibility of provided water and sewer servicing to this proposed development will be refined as part of this ongoing study.

As outlined in the geotechnical reports produced by Ausenco, it was noted that the shallow bedrock of the site may hinder the development of septic fields. In addition, it is difficult to establish septic fields on steep slopes. Given the topography of the site and the presence of bedrock, the eastern portion of the study area (mainly lot C-86B) may be able to support a septic field, however, the YG portion of the study area may encounter issues with being able to develop septic system. As discussed in Section 2.5, a hydrogeological investigation should be undertaken to determine the feasibility of developing wells and septic systems within the proposed development area.

In the absence of a hydrogeological analysis, we recommend that all lots be serviced with trucked water and sewer servicing. For truck sewage servicing, an onsite holding septic tank will be required for each lot. The tank sizing and setbacks for all onsite septic system shall be developed to meet the Yukon Government design standards. Sizing of the septic tank will be dependant on the use of each lot as some commercial developments will require much larger tanks. Table 3 provides an overview of the minimum setbacks for a septic system, including septic field in the event they are proven to be suitable for the proposed development area.

Table 3 - Septic Tank and Field Sizing and Setback

Minimum Setback	Septic Tank	Septic Field (Absorption System)
Lot boundary	1.5m	5m
Any building	1.5m	6m
Road or driveway	5m	5m
Well (source of potable water) or natural boundary or high water level of any water body	15m	30m
Buried water storage tank for potable water	9m	9m
Community well	60m	60m

3.5 Power and Telecommunications

This proposed development is within the main power grid connecting the southern portion of the Yukon. All electricity in the Whitehorse area and southern region is provided by Yukon Energy Corporation (YEC) and distributed by ATCO Electric Yukon (ATCO). There is currently an overhead power line that crosses the study area and provides power, data and communications to the weigh scale and to the Lobird development. 3-phase power is not provided on this overhead line, however, 3-phase power is available on the overhead lines on the Alaksa Highway adjacent to the study area.

The intent of the proposed subdivision is to provide more lots for commercial and industrial development which would require 3-phase power to be available throughout the development. All electrical services for the subdivision would be provided via overhead power with power poles installed in the road RoW, as shown in Figure 1. It is assumed that telecommunication lines will be installed on the powerlines. To provide 3-Phase power to the study area, ATCO indicated that upgrades to the existing McCrae Substation would be required. The cost estimates for the onsite and offsite power was provided by ATCO and included in the cost estimate in Section 4.

4 Construction and Phasing Recommendations

Construction of the Ice Lake Subdivision will be challenging due to large cut and fill volumes, bedrock, steep grades and additional items as noted in Section 2 of this report. Development of the entire site will require the cooperation and financial coordination from both YG and KDFN landowners to develop the new road network and shared infrastructure. Construction can be completed all at once or separately between landowners. If constructing together the following approach can be used.

It is important to note that phasing is not required so long as both landowners can coordinate their construction timelines. Construction of the entire development all at once will conserve the most amount of common excavation and will ultimately lower the costs for the construction of the roadways.

4.1 Full Subdivision Development

Developing all roads in the KDFN and YG parcels simultaneously is the best option to reduce the overall road costs for the subdivision. This is because all suitable common excavation material can be reused in both the KDFN and YG areas, which will reduce the total amount of import material needed for road development resulting in reduced project costs. The cost estimate determined in this report assumes that both areas will be developed all at once.

4.2 YG Development Only

The YG development area would include the development of all roadways within the YG parcel, and all roadways between the Alaska Highway intersection up to Intersection #2. The development of the YG area requires substantially more cut compared to KDFN area. This is primarily due to the large hill and shallow bedrock present between Lot 21, Lot 11 and Lot 14, as well as the large cut requirement for the other areas of Phase 1. Given the general suitability of this material for road construction, it can be stockpiled and re-used for the fills that are required for the KDFN area (roadway and lots). Alternatively, if the construction of the KDFN area is estimated to be delayed for a long period of time, all cut material could be used to pre-grade portions of the YG lots which could reduce the costs / complexity to potential landowners looking to develop their lots. If the YG lots are pre-graded the KDFN area will not receive any reuse material which will increase the road construction costs for the KDFN area.

4.3 KDFN Development Only

The KDFN development area would include the roadway within the KDFN C-86B parcel located between Intersection #1 to Cul De Sac #1. This road is estimated to be a net fill area due to the existing low areas within the along the proposed road alignment and to avoid impacting the road structure with the anticipated shallow groundwater. Developing this area alone would require that large amounts of reuse material be brought in from offsite locations to fill these low areas. To reduce the amount of import material, all suitable common excavation from the YG area should be used for the KDFN road construction. Developing the KDFN area first will result in increased road construction costs because fill material from the YG area could not be collected and shared between areas.

5 Cost Estimate

The cost estimate to construct the road, stormwater and power infrastructure for the proposed development as outlined in this report is summarized in Table 4. Note that this cost does not include the costs for the highway intersection or any work to the individual lots which would be borne by the lot owners. These costs would be in addition to the cost estimate presented in Table 4. Furthermore, the bedrock conditions were assumed to reflect what is shown in the design drawings. Additional analysis is required to confirm the bedrock conditions and the costs associated with rock removal.

Table 4 – Class C Cost Estimate

Item	Description	Unit	Estimated Quantity	Unit Price	Cost Estimate
1	**General**				
1.1	Mobilization/Demobilization	LS	1	$ 500,000	$ 500,000
1.2	Tree Clearance, Stripping and Grubbing - 300mm depth	m^2	36,714	$ 15	$ 550,710
				Subtotal	**$ 1,050,710**
2	**Earthworks**				
2.1	Common Excavation	m^3	30,070	$ 24	$ 706,645
2.2	Waste Material and Disposal Offsite	m^3	11,014	$ 24	$ 258,841
2.3	Common Fill (Reuse)	m^3	8,041	$ 27	$ 217,107
2.4	Common Fill (Import)	m^3	6,288	$ 56	$ 349,973
2.5	Rock Removal	m^3	1,749	$ 100	$ 174,900
2.6	Subgrade Preparation	m^2	19,865	$ 3	$ 49,663
2.7	80mm Pit Run	m^3	9,933	$ 56	$ 556,220
2.8	20mm Base Course Gravel	m^3	2,505	$ 82	$ 205,422
2.9	BST	m^2	12,059	$ 13	$ 150,738
2.10	75mm Hot Mix Asphalt	m^2	4,642	$ 105	$ 487,410
				Subtotal	**$ 3,156,918**
3	**Storm Drainage**				
3.1	Ditching	l.m	3,266	$ 100	$ 326,642
3.2	300mm CSP Culverts - 12m long	ea	5	$ 15,000	$ 75,000
3.3	300mm CSP Culverts - 18m long	ea	1	$ 19,000	$ 19,000
3.4	Storm Retention and Erosion Protection Allowance	Lump Sum	1	$ 150,000	$ 150,000
				Subtotal	**$ 570,642**
4	**Power Servicing**				
4.1	Power Poles and Overhead Powerlines	Lump Sum	1	$ 200,000	$ 200,000
4.2	Offsite Upgrades	Lump Sum	1	$ 250,000	$ 250,000
				Subtotal	**$ 450,000**
				Subtotal (Items 1-4)	$ 5,228,270
				Contingency (25%)	$ 1,400,000
				Engineering (12%)	$ 800,000
				Total (Rounded)	**$ 7,500,000**

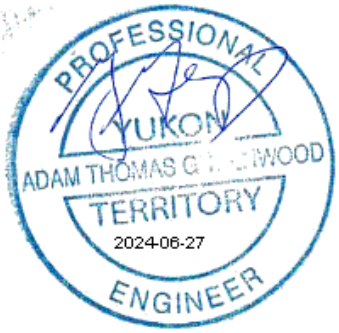
6 Closing

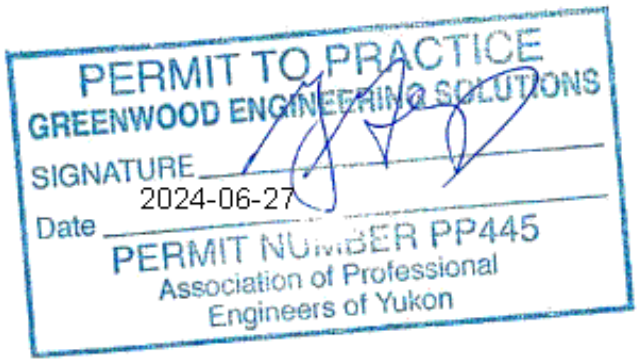
The intent of this report was to complete a preliminary design for the proposed Ice Lake Road Study Area to better understand how this developed can be serviced and the estimated costs for the servicing. As outlined in the report, there are significant grade and bedrock challenges that need to be overcome to develop a subdivision within the study area. Furthermore, there are challenges associated with developing a new highway access and integrating the existing weigh scale and the new YG HPW development on the east side of the highway that will share an intersection. Further coordination with YG HPW are required to refine the intersection design before an new highway access can be developed.

Please contact the undersigned if you have any questions or would like to discuss the content of this report in more detail.

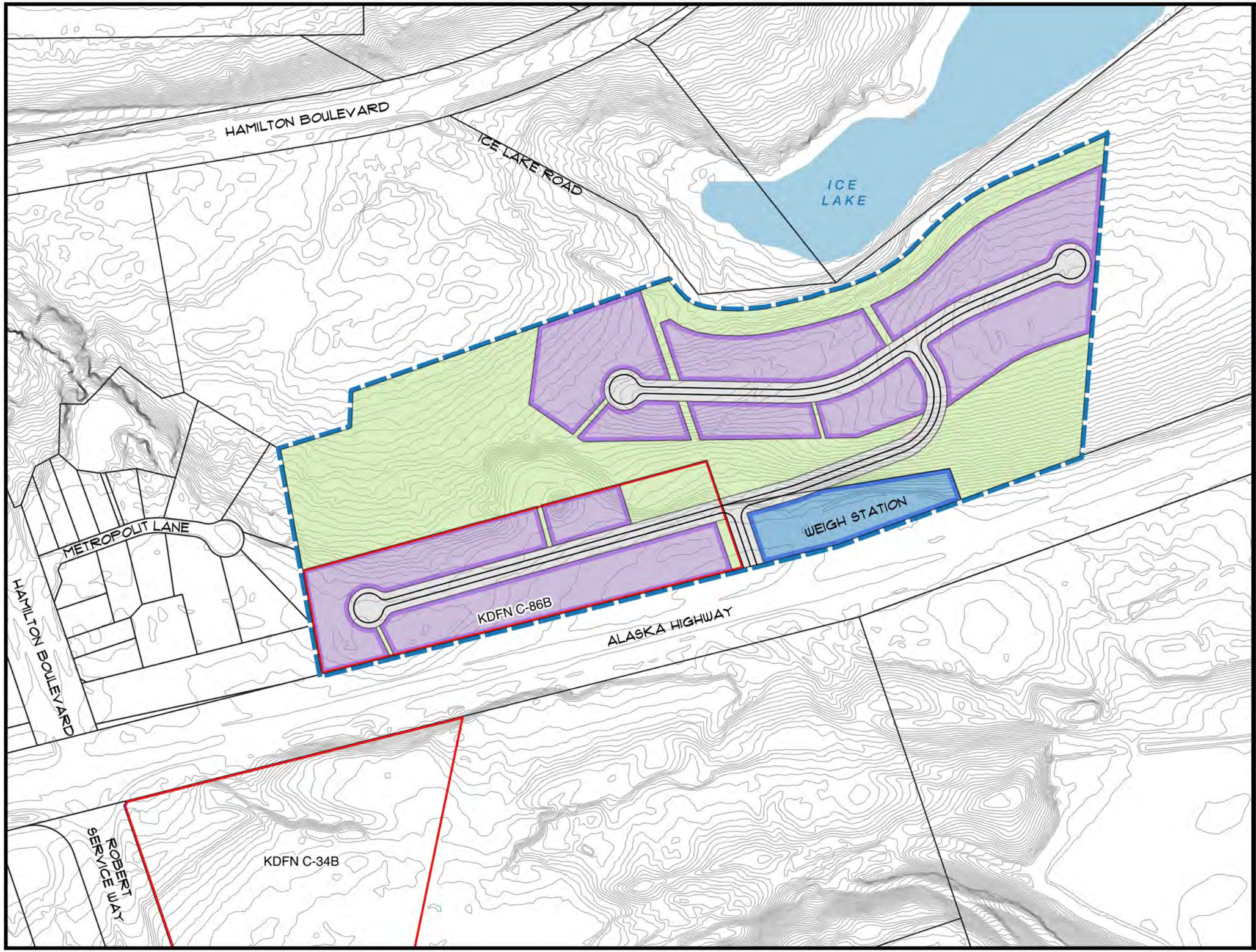
Mark Verhalle, EIT
Project Engineer

Adam Greenwood P.Eng
Project Manager





APPENDIX A Ice Lake Road South Master Plan Land Use Concept



CLIENT:

Whitehorse
THE WILDERNESS CITY

PROJECT TITLE:

ICE LAKE ROAD SOUTH MASTER PLAN

MAP TITLE:

LAND USE CONCEPT

LEGEND:

- Kwanlin Dün First Nation
- Study Area

Land Use Concept

- Greenspace
- Industrial/Commercial
- Public Utility
- Road

1:9,000

0 50 100 150 m

REVISIONS:

1	2023/12/19	SUBMITTED FOR PRE-DESIGN
2	2024/04/26	DRAFT MASTER PLAN

PREPARED BY:	REVIEWED BY:
MP	SL
DATE: 2024 / 04 / 26	

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3PIKAS.COM

APPENDIX B Ice Lake Road Subdivision Preliminary Design Drawings

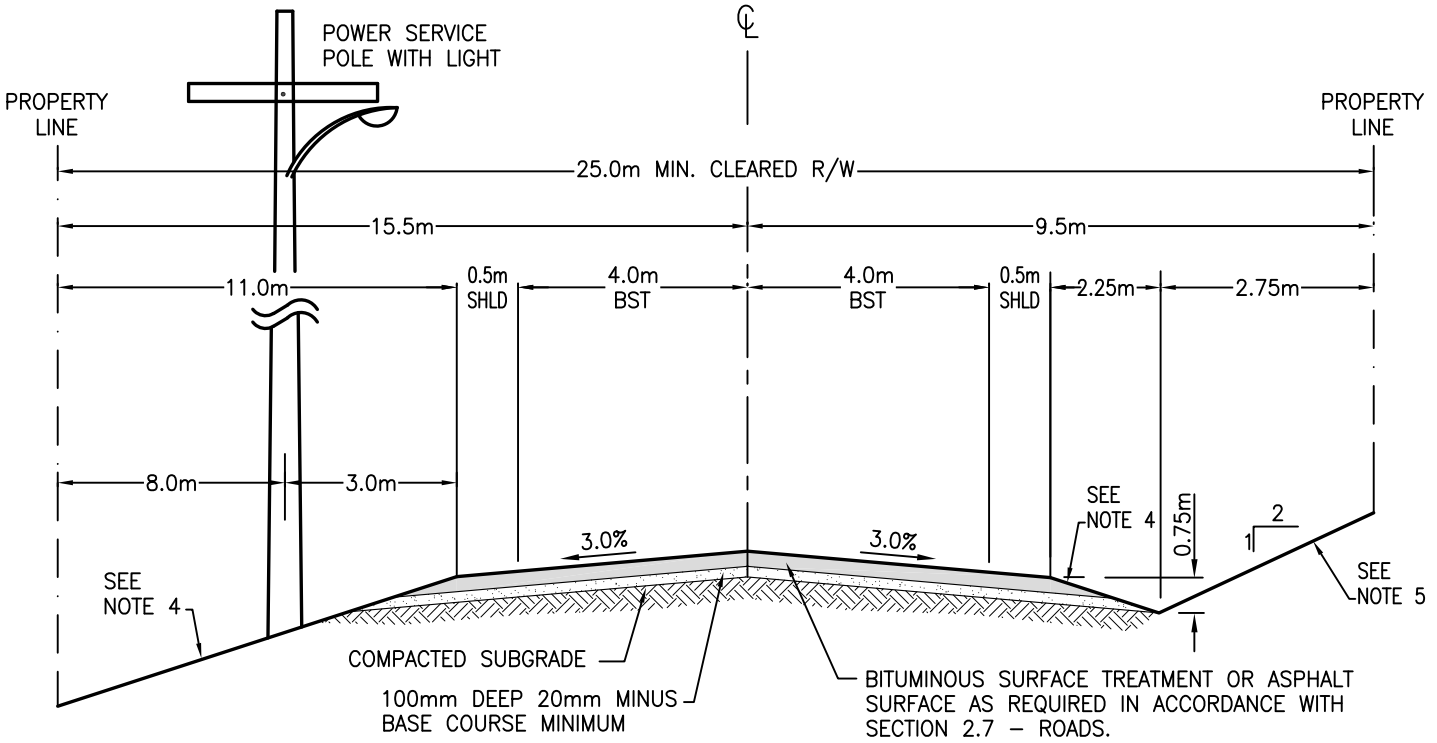
(included as a separate attachment)

APPENDIX C City of Whitehorse Design Standard 9m Industrial Street Section

Engineering Department

DATE: JANUARY 2020

9.0m RURAL INDUSTRIAL LOCAL STREET SECTION 25.0m RIGHT OF WAY



NOTES

1. MINIMUM ROAD STRUCTURE INDICATED – ROADWAY TO BE DESIGNED BASED ON SITE SPECIFIC SOIL CONDITIONS AND TRAFFIC LOADING. GRAVEL TO BE COMPACTED TO 98% STANDARD PROCTOR DENSITY.
2. SUBGRADE COMPACTED TO 98% STANDARD PROCTOR DENSITY.
3. DITCH DEPTH = 0.75m MIN.
   WATER FROM THE ROADWAY SHALL NOT DRAIN ONTO PRIVATE PROPERTY.
4. ROAD SIDE SLOPES FOR DEPTHS OF EMBANKMENT, TO BE DESIGNED BY A GEOTECHNICAL ENGINEER. RECOMMENDED SIDE SLOPES:

DEPTH OF FILL	SIDE SLOPE (MIN)
0–2	3:1
2.0–3.0	2:1
>3.0	1.5:1 (GUIDE RAIL AS REQUIRED)

   WHERE GUIDE RAIL IS REQUIRED, ROAD IS TO BE WIDENED AS PER DWG E1.2

5. BACK SLOPES TO BE DESIGNED BY A GEOTECHNICAL ENGINEER. RECOMMENDED BACK SLOPE 2:1
6. MINIMUM CUL DE SAC RADIUS 14.0m
7. RTAC CLASSIFICATION RLU–50.
8. EASEMENTS REQUIRED FOR POWER POLE ANCHORS.
9. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE NOTED.
10. POWER POLE LOCATION APPROXIMATE ONLY – EXACT LOCATION DEPENDENT ON SIDE SLOPES AND TOPOGRAPHY.
11. DISTANCE FROM PROPERTY LINE TO POWER POLE IS TO BE 8m MIN FOR TRIPLE PHASE AND 6m MIN FOR SINGLE PHASE. ROAD ALIGNMENT IS TO BE SET BY MIN. CLEARANCES AND CONSTRAINTS DUE TO TOPOGRAPHY.

STD DWG

C8.0

APPENDIX D Stormwater Calculations

Table D1 – Ice Lake Catchment Stormwater Flows: 15 min Duration

Ice Lake Catchment Runoff	Area (ha)	Land Use	Runoff Coefficient	5 Year Return - 15 min Duration			100 Year Return - 15 min Duration		
				Flow (m3/s)	Total Flow (m3/s)	Total Vol (m3)	Flow (m3/s)	Total Flow (m3/s)	Total Vol (m3)
Pre-Development	7.7	Woodland	0.15	0.06	0.06	55	0.09	0.09	81
Post-Development	2.9	Woodland	0.15	0.02	0.20	179	0.03	0.29	264
	0.0	Pavement	0.9	0.00			0.00		
	4.8	Mixed Commercial	0.7	0.18			0.26		
					Difference (m3)	124		Difference (m3)	183

Table D2 – Ice Lake Catchment Stormwater Flows: 2 Hour Duration

Ice Lake Catchment Runoff	Area (ha)	Land Use	Runoff Coefficient	5 Year Return - 2 hr Duration			100 Year Return - 2 hr Duration		
				Flow (m3/s)	Total Flow (m3/s)	Total Vol (m3)	Flow (m3/s)	Total Flow (m3/s)	Total Vol (m3)
Pre-Development	7.7	Woodland	0.15	0.012	0.01	90	0.03	0.03	231
Post-Development	2.9	Woodland	0.15	0.005	0.04	294	0.01	0.10	754
	0.0	Pavement	0.9	0			0.00		
	4.8	Mixed Commercial	0.7	0.036			0.09		
					Difference (m3)	204		Difference (m3)	524

Table D3 – Alaska Highway Catchment Stormwater Flows: 15 min Duration

Alaska HWY Catchment Runoff	Area (ha)	Land Use	Runoff Coefficient	5 Year - 15 min inlet time			100 Year - 15 min inlet time		
				Flow (m3/s)	Total Flow (m3/s)	Total Vol (m3)	Flow (m3/s)	Total Flow (m3/s)	Total Vol (m3)
Pre-Development	21.7	Woodland	0.15	0.17	0.20	178	0.25	0.29	262
	0.7	Mixed Commercial	0.70	0.03			0.04		
Post-Development	11.9	Woodland	0.15	0.09	0.61	546	0.14	0.89	805
	3.2	Pavement	0.9	0.15			0.22		
	9.8	Mixed Commercial	0.7	0.36			0.53		
					Difference (m3)	369		Difference (m3)	543

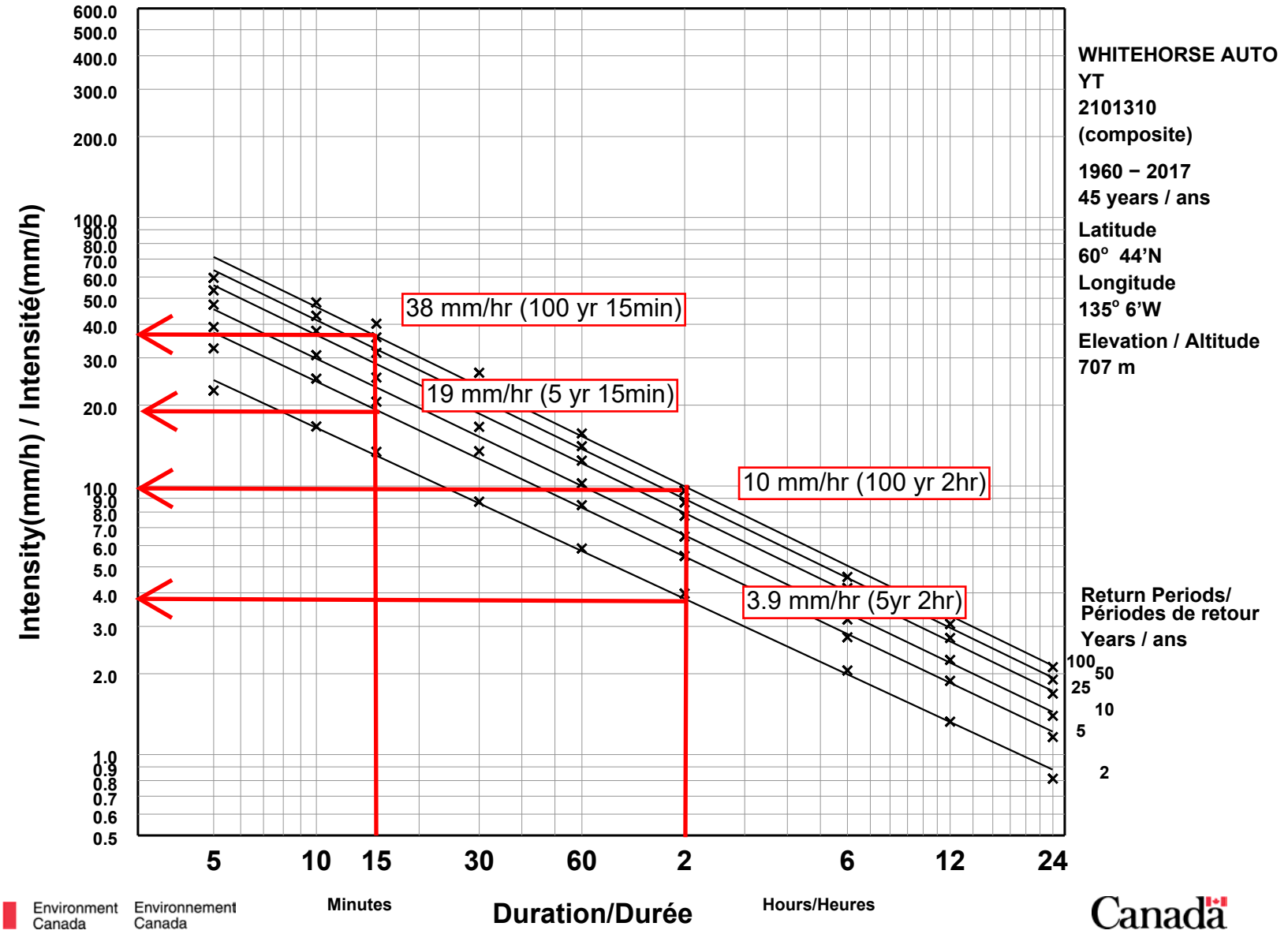
Table D4 – Alaska Highway Catchment Stormwater Flows: 2 Hour Duration

Alaska HWY Catchment Runoff	Area (ha)	Land Use	Runoff Coefficient	5 Year Return - 2 hr Duration			100 Year Return - 2 hr Duration		
				Flow (m3/s)	Total Flow (m3/s)	Total Vol (m3)	Flow (m3/s)	Total Flow (m3/s)	Total Vol (m3)
Pre-Development	24.9	Woodland	0.15	0.04	0.05	329	0.10	0.12	844
	0.7	Mixed Commercial	0.70	0.01			0.01		
Post-Development	11.9	Woodland	0.15	0.02	0.13	936	0.05	0.33	2,399
	3.2	Pavement	0.9	0.03			0.08		
	10.5	Mixed Commercial	0.7	0.08			0.20		
					Difference (m3)	606		Difference (m3)	1,555

Short Duration Rainfall Intensity−Duration−Frequency Data

2020/03/27

Données sur l'intensité, la durée et la fréquence des chutes de pluie de courte durée



Environment Canada Environnement Canada

Canada

NOT FOR CONSTRUCTION
ISSUED FOR PRELIMINARY ENGINEERING REVIEW ONLY

PRELIMINARY DESIGN

3Pikas

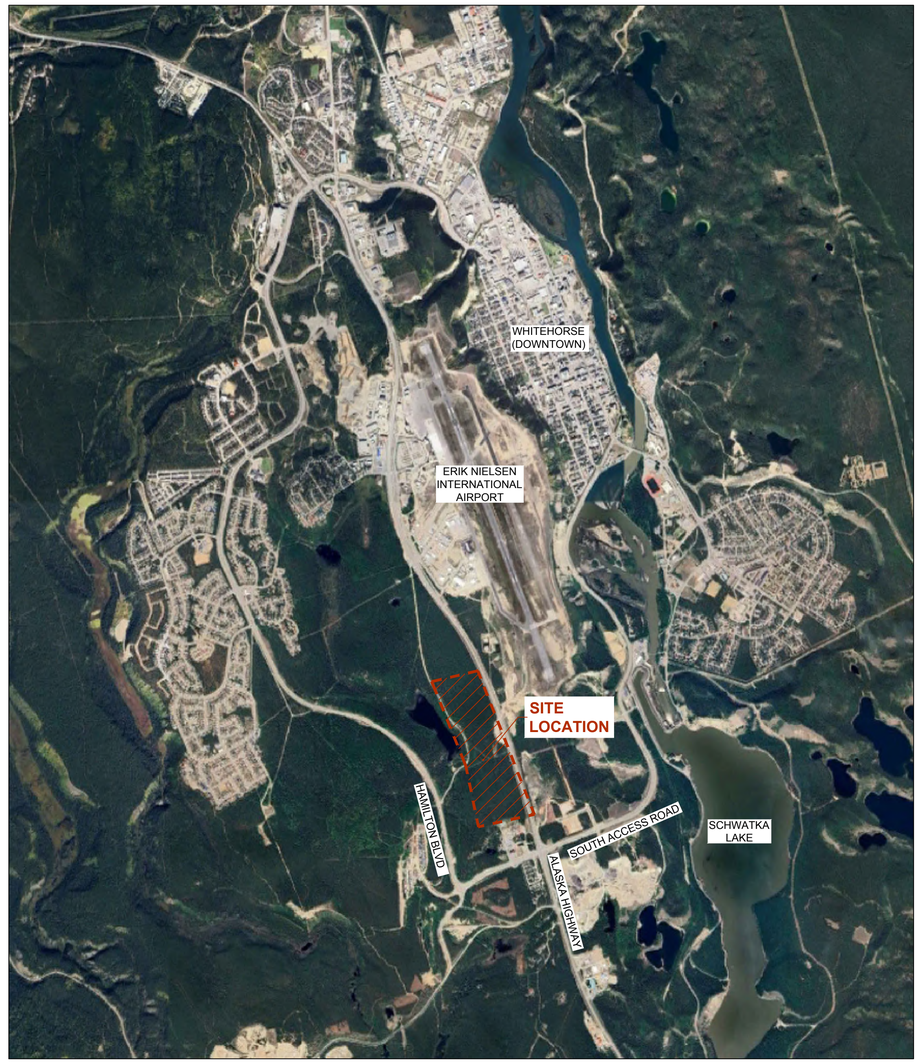
GREENWOOD ENGINEERING SOLUTIONS

3PIKAS
ICE LAKE ROAD MASTERPLAN
June 27, 2024

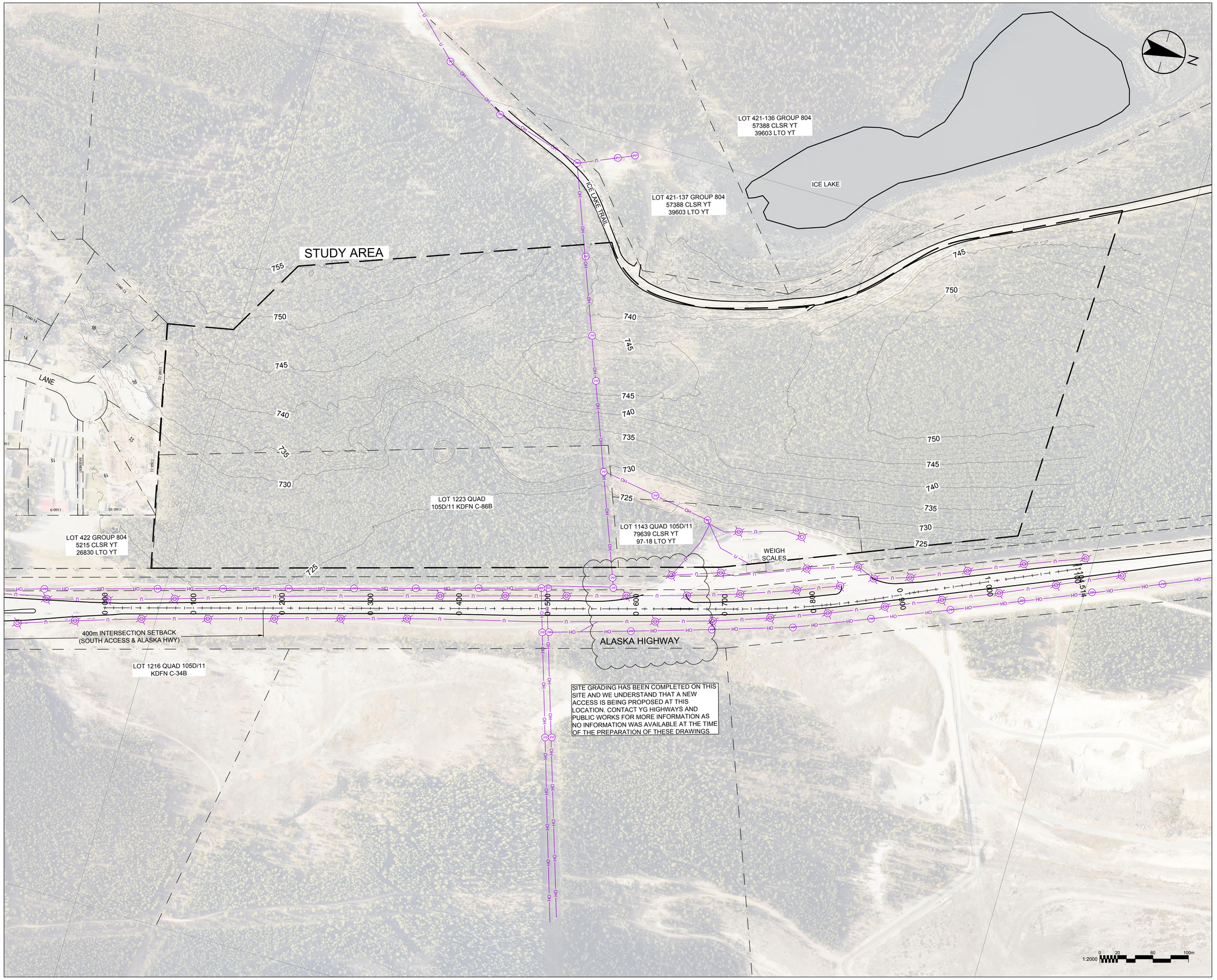
PROJECT NUMBER: 12-13

DRAWING LIST

LOCATION PLAN
NTS



Suite 203, 100 Main Street, Whitehorse,YT, Y1A 2A8



Notes:

1. The Contractor Is Responsible For Locating All Existing Structures And Utilities Prior To Construction.
2. Any Deviation Or Inconsistencies From This Plan Shall Be Reported To The Engineer Immediately.
3. The Dimensions Shown On This Plan Take Precedence Over Scaled Dimensions.
4. All Dimensions Are In Meters, And Decimals Thereof Unless Otherwise Noted.
5. All Contours are Displayed in 1.0m Minor and 5.0m Major Intervals.

Data Sources:

Site Contours - Cap Engineering . Survey Date: 2023-11-28. Project Area: Ice Lake, Whitehorse, YT

Bedrock Depth - Aurora Geosciences Ltd . Survey Date: 2023-11-28. Project Area: Ice Lake, Whitehorse, YT

Existing Utilities CAD - City of Whitehorse. Acquisition Date: 2023-12-01

Legend:

- Existing Property Line
- Existing Easement
- Existing Overhead Powerline
- Existing Buried Powerline
- Existing Powerpole
- Existing Street Light

1	2024-06-27	PRELIMINARY DESIGN
	YYYY-MM-DD	SUBMISSION INFORMATION

STAMP

PROFESSIONAL ENGINEER YUKON TERRITORY ADAM THOMAS GREENWOOD 2024-06-27

PERMIT TO PRACTICE

PERMIT TO PRACTICE GREENWOOD ENGINEERING SOLUTIONS SIGNATURE 2024-06-27 Date PERMIT NUMBER PP445 Association of Professional Engineers of Yukon

3Pikas

GREENWOOD ENGINEERING SOLUTIONS

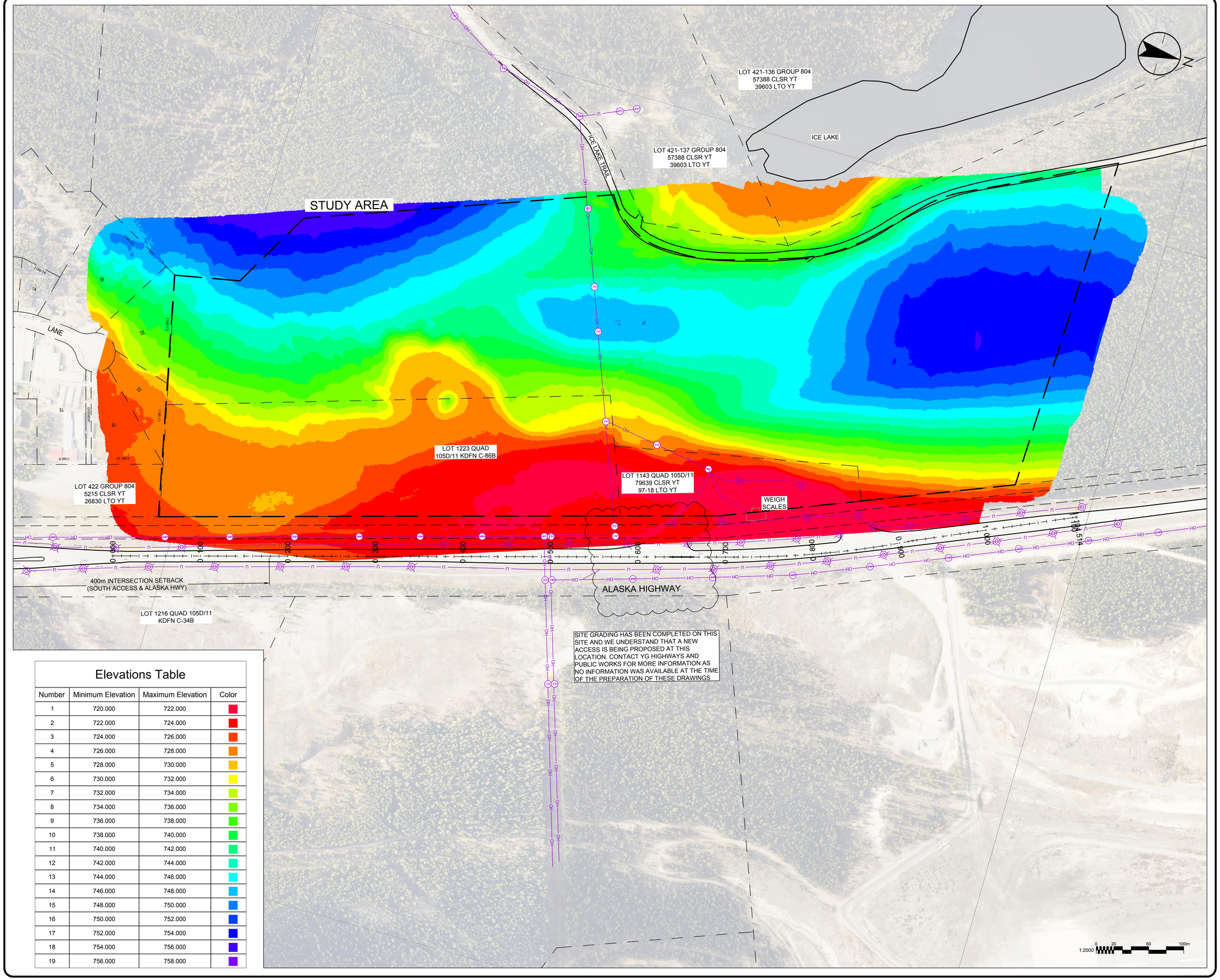
PROJECT

ICE LAKE ROAD MASTERPLAN

DRAWING

EXISTING SITE PLAN

DESIGN MV/AG	DATE June 27, 2024	SCALE AS NOTED
DRAWN MV	PROJECT NO. 21-35	
CHECKED RMS	DRAWING NO C100	VERSION 1
APPROVED AG		



Elevations Table

Number	Minimum Elevation	Maximum Elevation	Color
1	720.000	722.000	
2	722.000	724.000	
3	724.000	726.000	
4	726.000	728.000	
5	728.000	730.000	
6	730.000	732.000	
7	732.000	734.000	
8	734.000	736.000	
9	736.000	738.000	
10	738.000	740.000	
11	740.000	742.000	
12	742.000	744.000	
13	744.000	746.000	
14	746.000	748.000	
15	748.000	750.000	
16	750.000	752.000	
17	752.000	754.000	
18	754.000	756.000	
19	756.000	758.000	

Notes:

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Data Sources:

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Existing Utilities CAD - City of Whitehorse. Acquisition Date: 2023-12-01

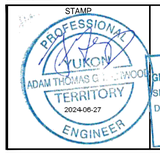
Legend:

- Existing Property Line
- Existing Easement
- OH — Existing Overhead Powerline
- U — Existing Buried Powerline
- PP — Existing Powerpole
- Existing Street Light

PRELIMINARY
NOT FOR CONSTRUCTION

1	2024-06-27	PRELIMINARY DESIGN
	YYYY-MM-DD	SUBMISSION INFORMATION

STAMP



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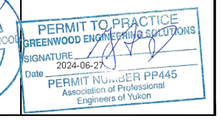

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GREENWOOD ENGINEERING SOLUTIONS

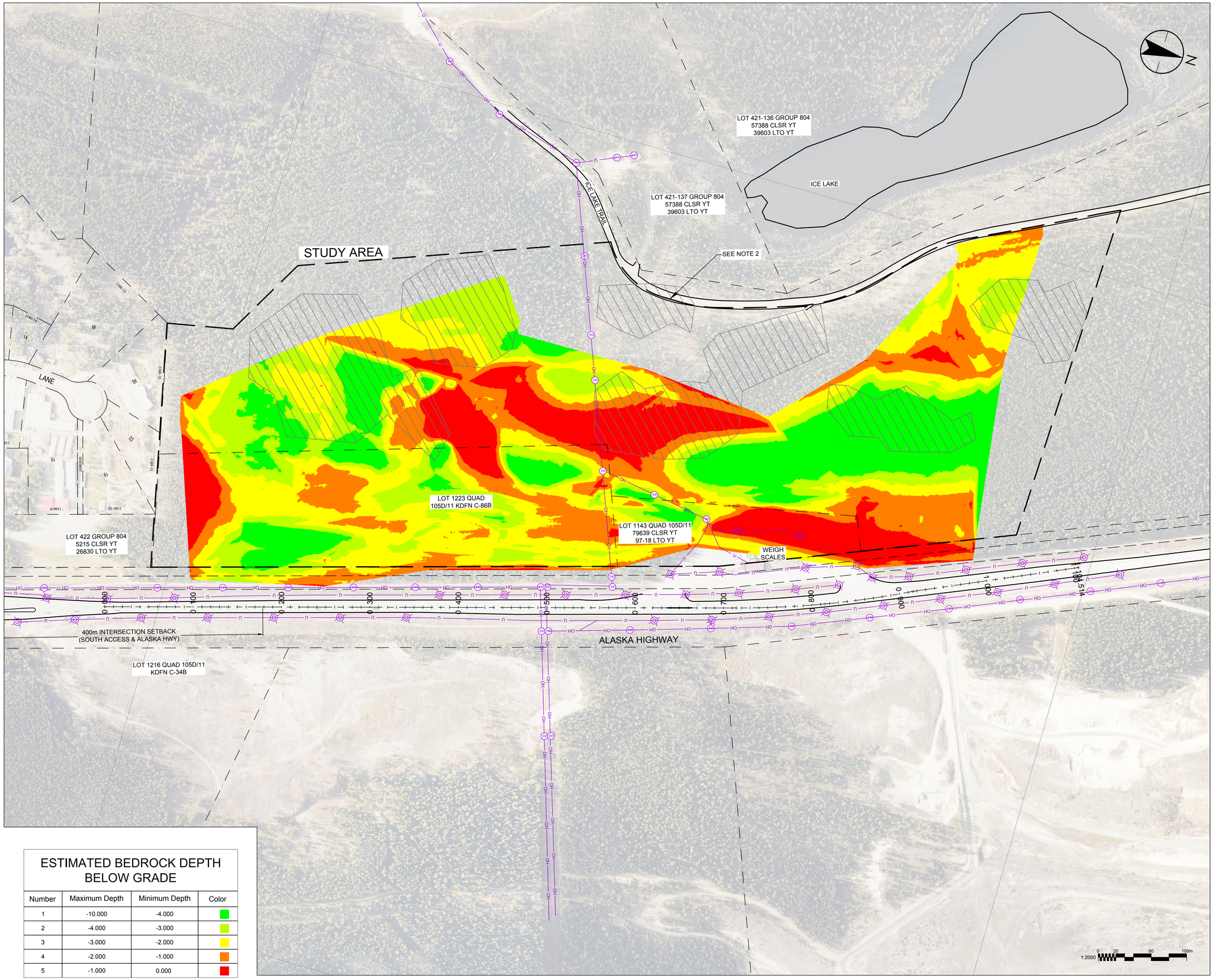
PROJECT

ICE LAKE ROAD MASTERPLAN

DRAWING

SITE ELEVATION BANDING

DESIGN: MV/AG	DATE: June 27, 2024	SCALE: AS NOTED
DRAWN: MV	PROJECT NO.: 21-35	
CHECKED: RMS	DRAWING NO: C110	VERSION: 1
APPROVED: AG		



ESTIMATED BEDROCK DEPTH BELOW GRADE

Number	Maximum Depth	Minimum Depth	Color
1	-10.000	-4.000	
2	-4.000	-3.000	
3	-3.000	-2.000	
4	-2.000	-1.000	
5	-1.000	0.000	

Notes:

1. Estimated bedrock depths are based on Ground Penetrating Radar (GPR), shovel test digs and field observations as outlined in the 2023 Ice Lake GPR Survey, Aurora Geosciences Ltd, September 22, 2023.
2. Gaps in interpretation of bedrock depths in the GPR survey are covered by gray hatched polygons which are due to the GPR data being too noisy to interpret or there is an absence of district continuous reflections. Refer to 2023 Ice Lake GPR Survey Report for more details.
3. A bedrock surface was created using the results produced from the raw data provided by Aurora Geosciences Ltd. Given there are gaps in the data as outlined in Note 2, the surface was created by connecting data points.
4. The actual bedrock depth may vary on what is shown in this drawing and additional field investigation is required to confirm the conditions.

Data Sources:

Site Contours - Cap Engineering . Survey Date: 2023-11-28. Project Area: Ice Lake, Whitehorse, YT

Bedrock Depth - Aurora Geosciences Ltd . Survey Date: 2023-11-28. Project Area: Ice Lake, Whitehorse, YT

Existing Utilities CAD - City of Whitehorse. Acquisition Date: 2023-12-01

Legend:

- Existing Property Line
- Existing Easement
- OH — Existing Overhead Powerline
- U — Existing Buried Powerline
- Existing Powerpole
- Existing Street Light

PRELIMINARY
NOT FOR CONSTRUCTION

1	2024-06-27	PRELIMINARY DESIGN
	YYYY-MM-DD	SUBMISSION INFORMATION

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PROFESSIONAL ENGINEER — YUKON TERRITORY — ADAM THOMAS GREENWOOD — SIGNATURE — Date 2024-06-27 — 2024-06-27

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SIGNATURE
Date 2024-06-27
PERMIT NUMBER PP445
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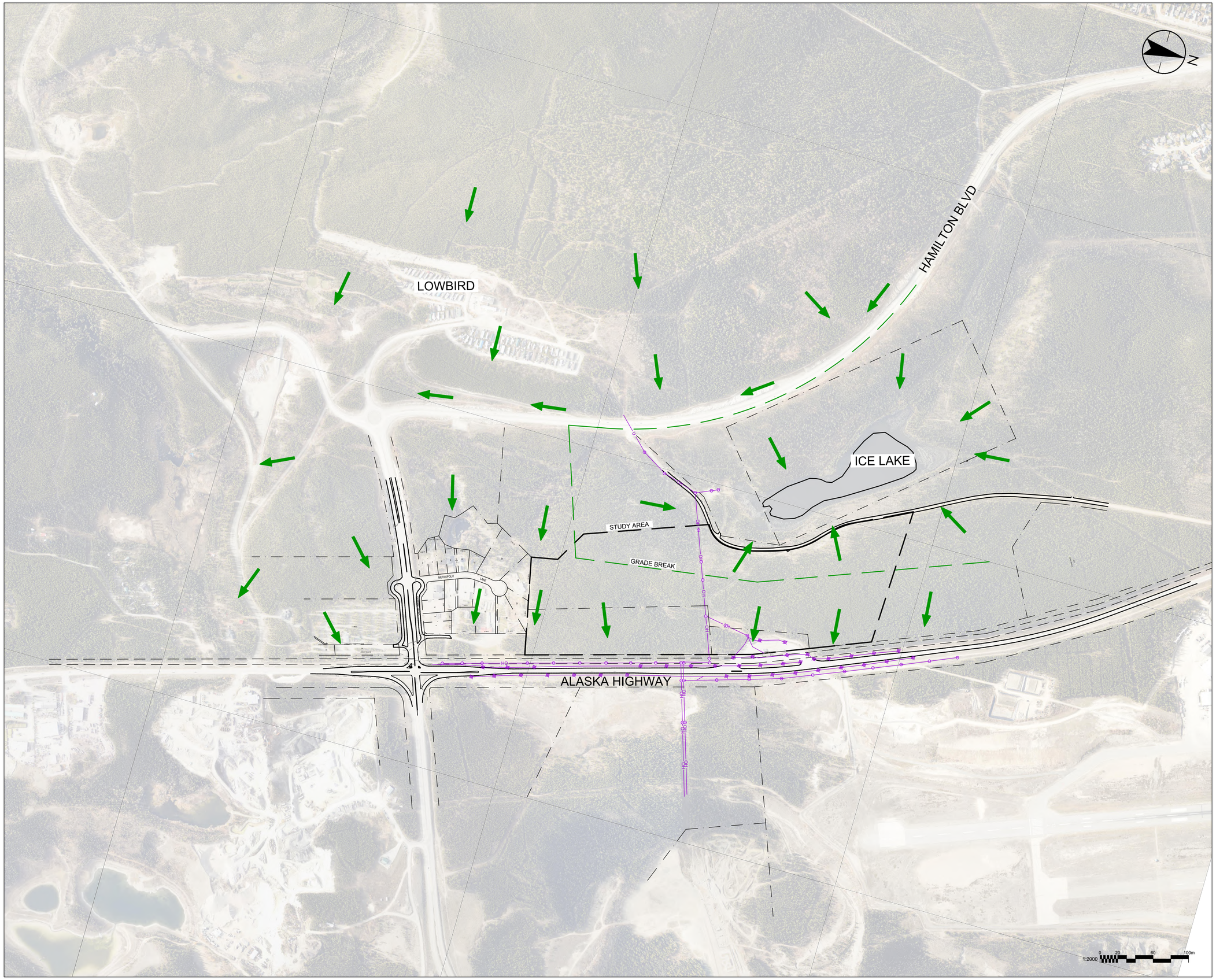
GREENWOOD ENGINEERING SOLUTIONS

PROJECT
ICE LAKE ROAD MASTERPLAN

DRAWING
ESTIMATED BEDROCK CONDITIONS

DESIGN MV/AG	DATE June 27, 2024	SCALE AS NOTED
DRAWN MV	PROJECT NO. 21-35	
CHECKED RMS	DRAWING NO C120	VERSION 1
APPROVED AG		



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4. All Dimensions Are In Meters, And Decimals Thereof Unless Otherwise Noted.
5. All Contours are Displayed in 1.0m Minor and 5.0m Major Intervals.

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Project Area: Ice Lake, Whitehorse, YT

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Project Area: Ice Lake, Whitehorse, YT

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- Existing Street Light

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GREENWOOD ENGINEERING SOLUTIONS

PROJECT

ICE LAKE ROAD MASTERPLAN

DRAWING

EXISTING DRAINAGE CONDITIONS

DESIGN: MV/AG	DATE: June 27, 2024	SCALE: AS NOTED
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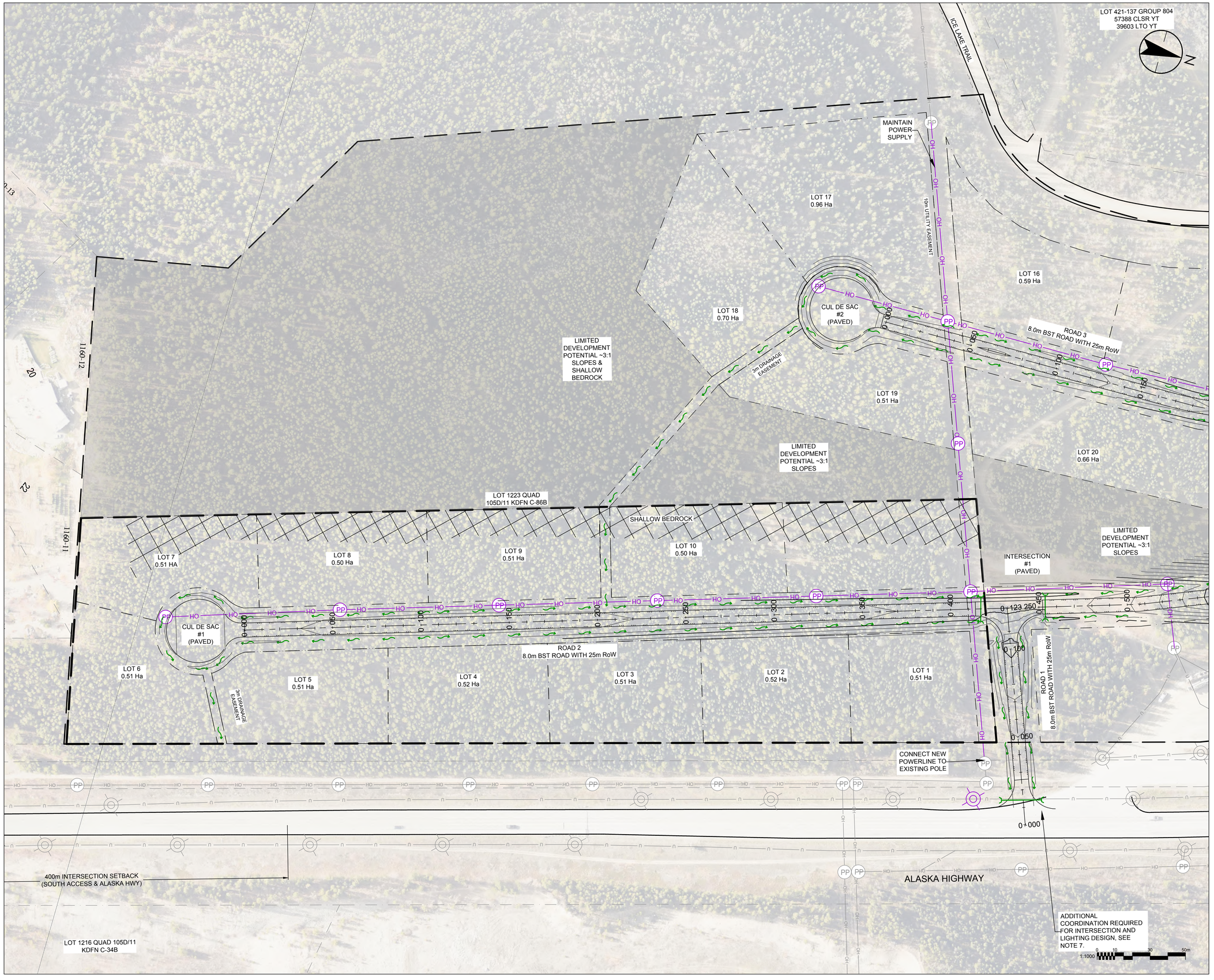
CHECKED: RMS	DRAWING NO: C130	VERSION: 1
APPROVED: AG		



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7. Intersection Design and Conflicts with Weigh Scale Require Additional Analysis. YG Highways and Public Works Should be Involved in Subsequent Design Related to Intersection for Access to their Development on the East Side of the Highway as well as Future Plans Related to the Weigh Scale.

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- PP — Existing Powerpole
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- Existing Street Light

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Date 2024-06-27
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Association of Professional Engineers of Yukon

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GREENWOOD ENGINEERING SOLUTIONS

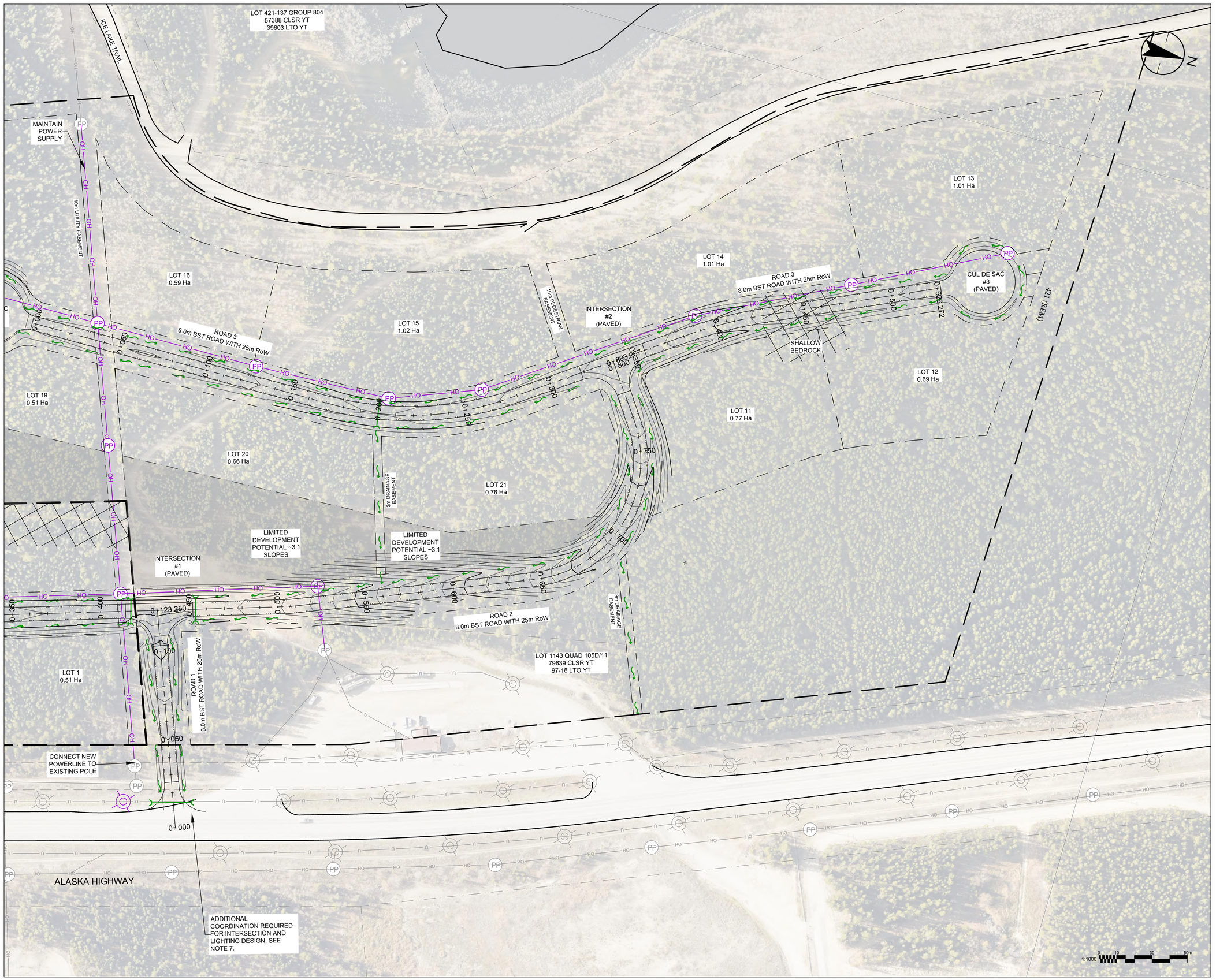
PROJECT

ICE LAKE ROAD MASTERPLAN

DRAWING

PROPOSED SITE LAYOUT - SOUTH

DESIGN: MV/AG	DATE: June 27, 2024	SCALE: AS NOTED
DRAWN: MV	PROJECT NO.: 21-35	
CHECKED: RMS	DRAWING NO: C200	VERSION: 1
APPROVED: AG		



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Project Area: Ice Lake, Whitehorse, YT

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- Proposed Powerpole
- Existing Powerpole
- Proposed Street Light
- Existing Street Light

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	YYYY-MM-DD	SUBMISSION INFORMATION

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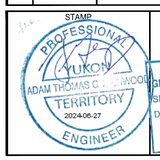

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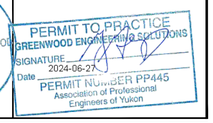

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GREENWOOD ENGINEERING SOLUTIONS

PROJECT
ICE LAKE ROAD MASTERPLAN

DRAWING
PROPOSED SITE LAYOUT- NORTH

DESIGN: MV/AG	DATE: June 27, 2024	SCALE: AS NOTED
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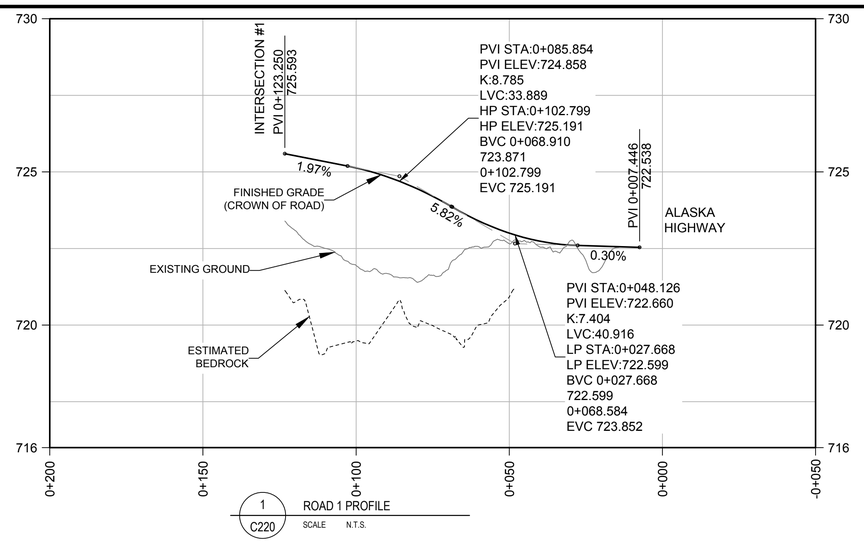
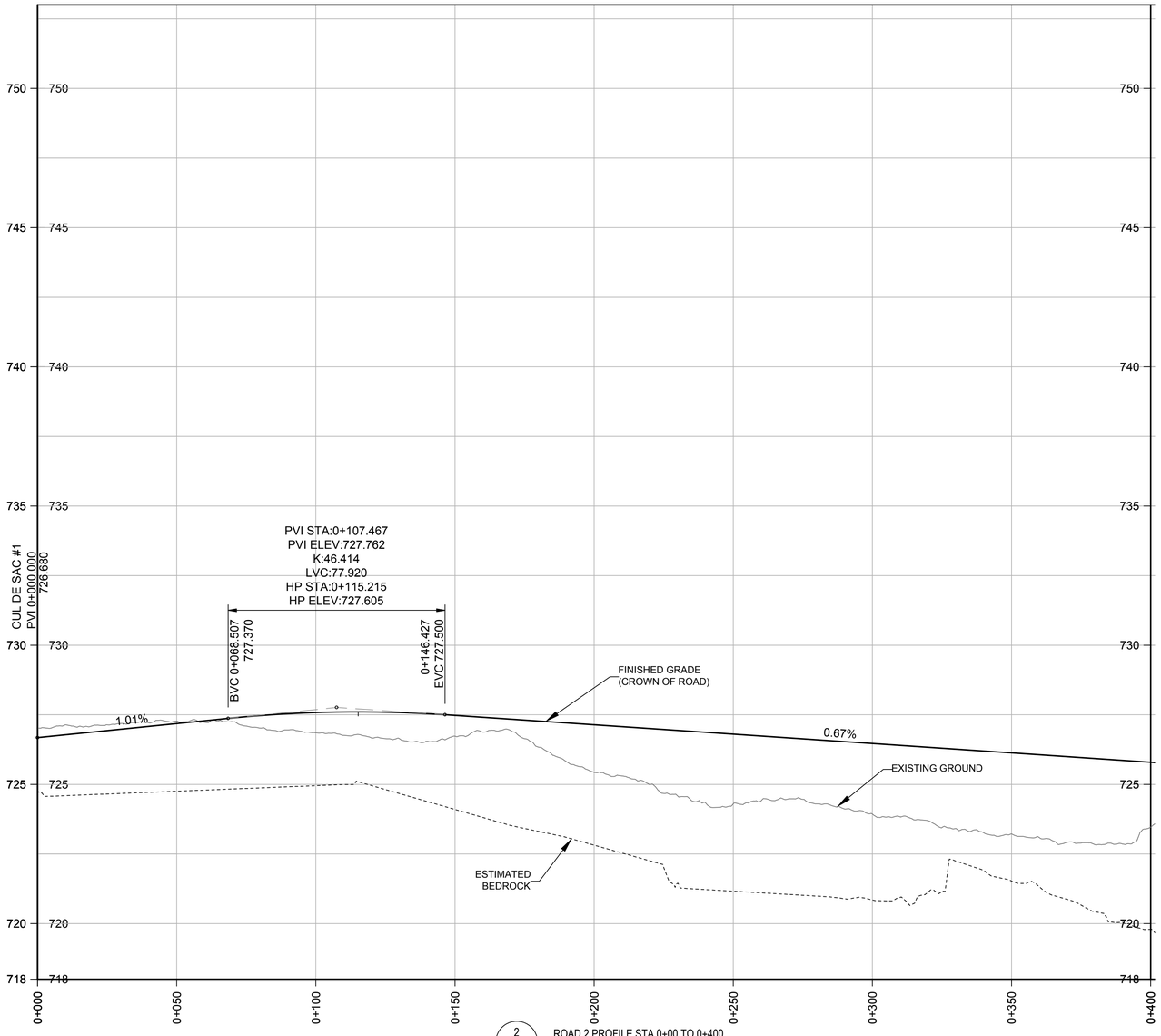
CHECKED: RMS	DRAWING NO: C210	VERSION: 1
APPROVED: AG		



1 C220 ROAD 1 PROFILE

SCALE N.T.S.



2 C220 ROAD 2 PROFILE STA 0+00 TO 0+400

SCALE N.T.S.

PRELIMINARY
NOT FOR CONSTRUCTION

1	2024-06-27	PRELIMINARY DESIGN
	YYYY-MM-DD	SUBMISSION INFORMATION

STAMP
PROFESSIONAL ENGINEER
YUKON TERRITORY
ADAM THOMAS G. GREENWOOD
2024-06-27

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PERMIT TO PRACTICE
GREENWOOD ENGINEERING SOLUTIONS
SIGNATURE
Date 2024-06-27
PERMIT NUMBER PP445
Association of Professional Engineers of Yukon

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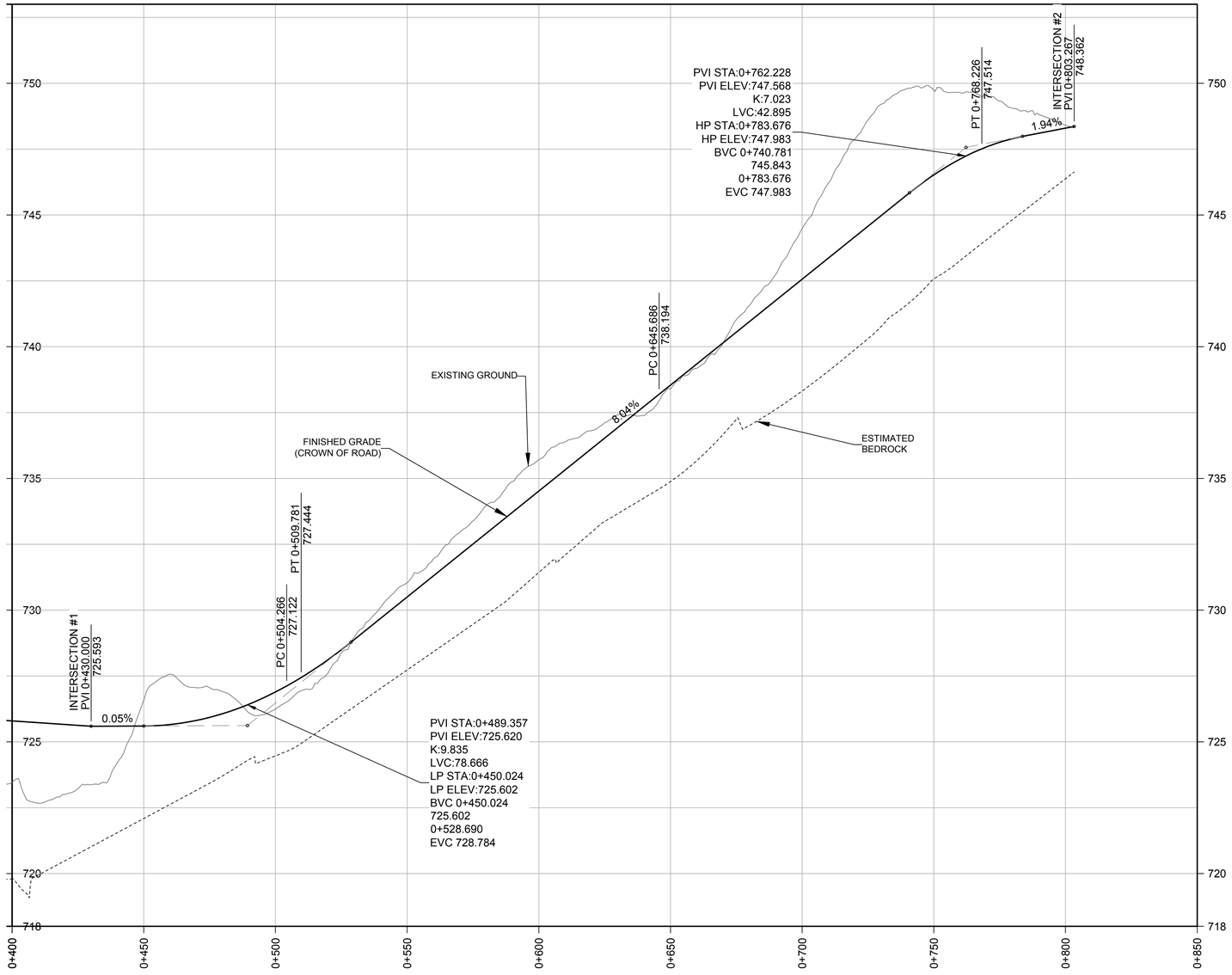
GREENWOOD ENGINEERING SOLUTIONS

PROJECT
ICE LAKE ROAD MASTERPLAN

DRAWING
PROFILES

DESIGN MV/AG	DATE June 27, 2024	SCALE AS NOTED
DRAWN MV	PROJECT NO. 21-35	
CHECKED RMS	DRAWING NO C220	VERSION 1
APPROVED AG		



1 / C230 ROAD 2 PROFILE STA 0+400 TO 0+850

SCALE N.T.S.

PRELIMINARY
NOT FOR CONSTRUCTION

1	2024-06-27	PRELIMINARY DESIGN
	YYYY-MM-DD	SUBMISSION INFORMATION

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PROFESSIONAL ENGINEER YUKON TERRITORY ADAM THOMAS GREENWOOD 2024-06-27

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SIGNATURE
Date 2024-06-27
PERMIT NUMBER PP445
Association of Professional Engineers of Yukon

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GREENWOOD ENGINEERING SOLUTIONS

PROJECT

ICE LAKE ROAD MASTERPLAN

DRAWING

PROFILES

DESIGN: MV/AG	DATE: June 27, 2024	SCALE: AS NOTED	
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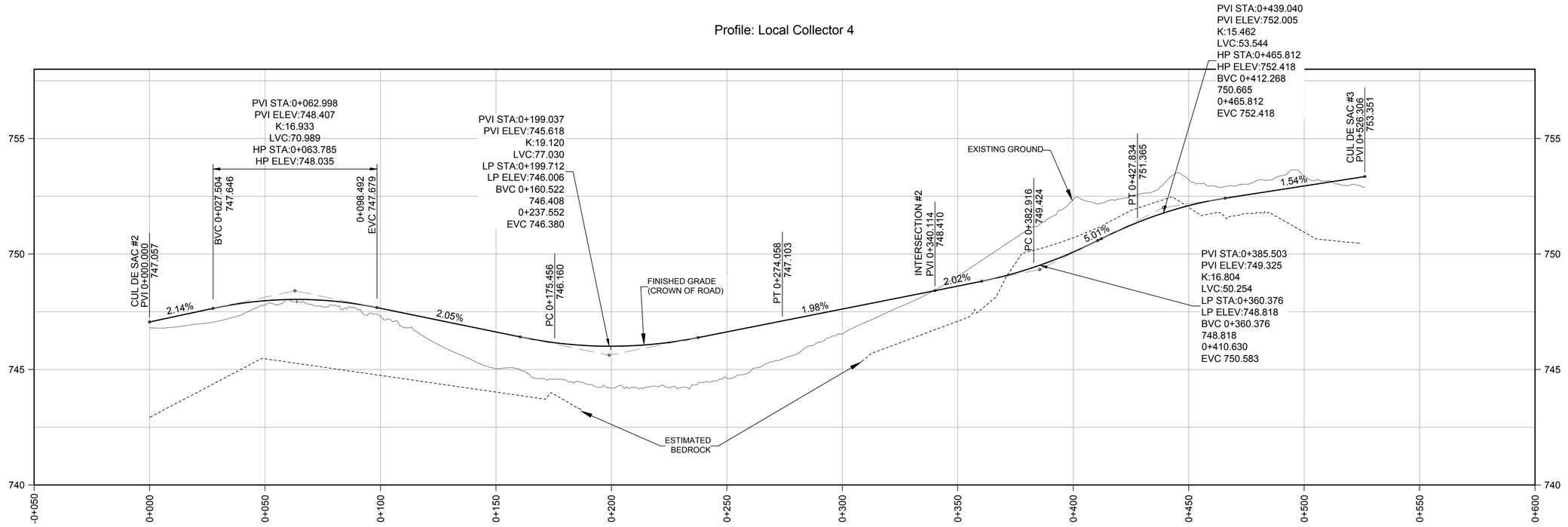
CHECKED: RMS	DRAWING NO: C230	VERSION: 1	
APPROVED: AG			

Profile: Local Collector 4



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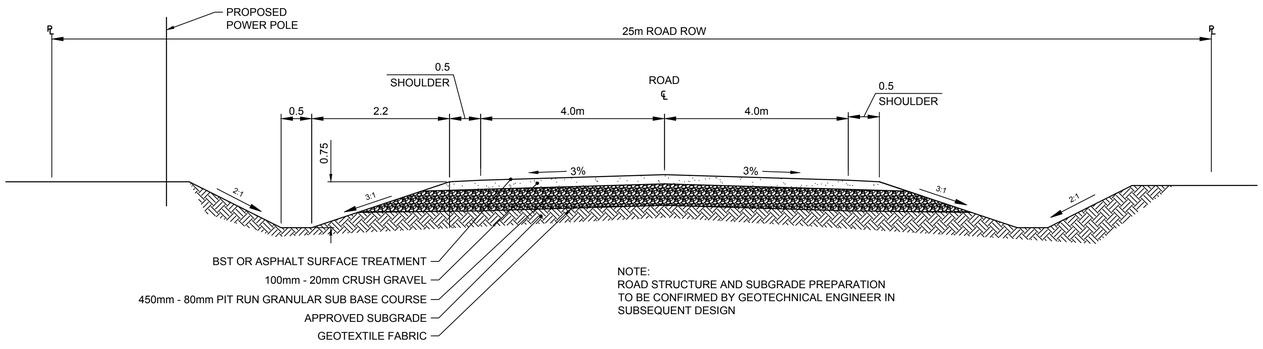
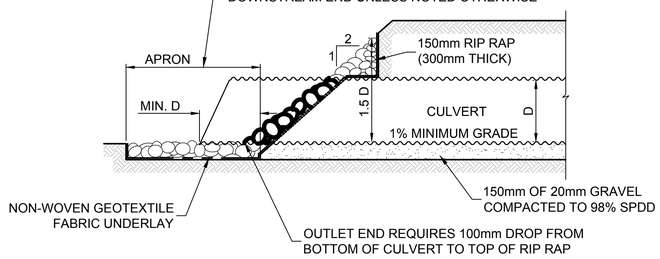


2 / C240 TYPICAL ROAD DETAIL
SCALE N.T.S.

APRONS TO BE CONSTRUCTED AT INLET AND OUTLET ENDS OF CULVERT, APRON LENGTH TO BE 2D AT THE UPSTREAM END AND 3D AT THE DOWNSTREAM END UNLESS NOTED OTHERWISE



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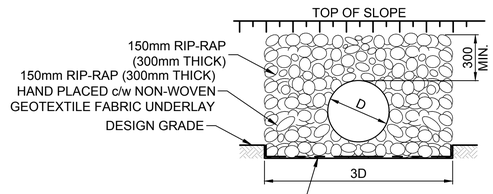

ELEVATION

3 / C240 CULVERT DETAIL
SCALE N.T.S.

PRELIMINARY
NOT FOR CONSTRUCTION

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	YYYY-MM-DD	SUBMISSION INFORMATION

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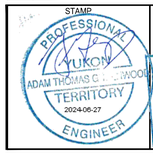

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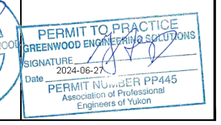

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GREENWOOD ENGINEERING SOLUTIONS

PROJECT
ICE LAKE ROAD MASTERPLAN

DRAWING
PROFILES & DETAILS

DESIGN MV/AG	DATE June 27, 2024	SCALE AS NOTED
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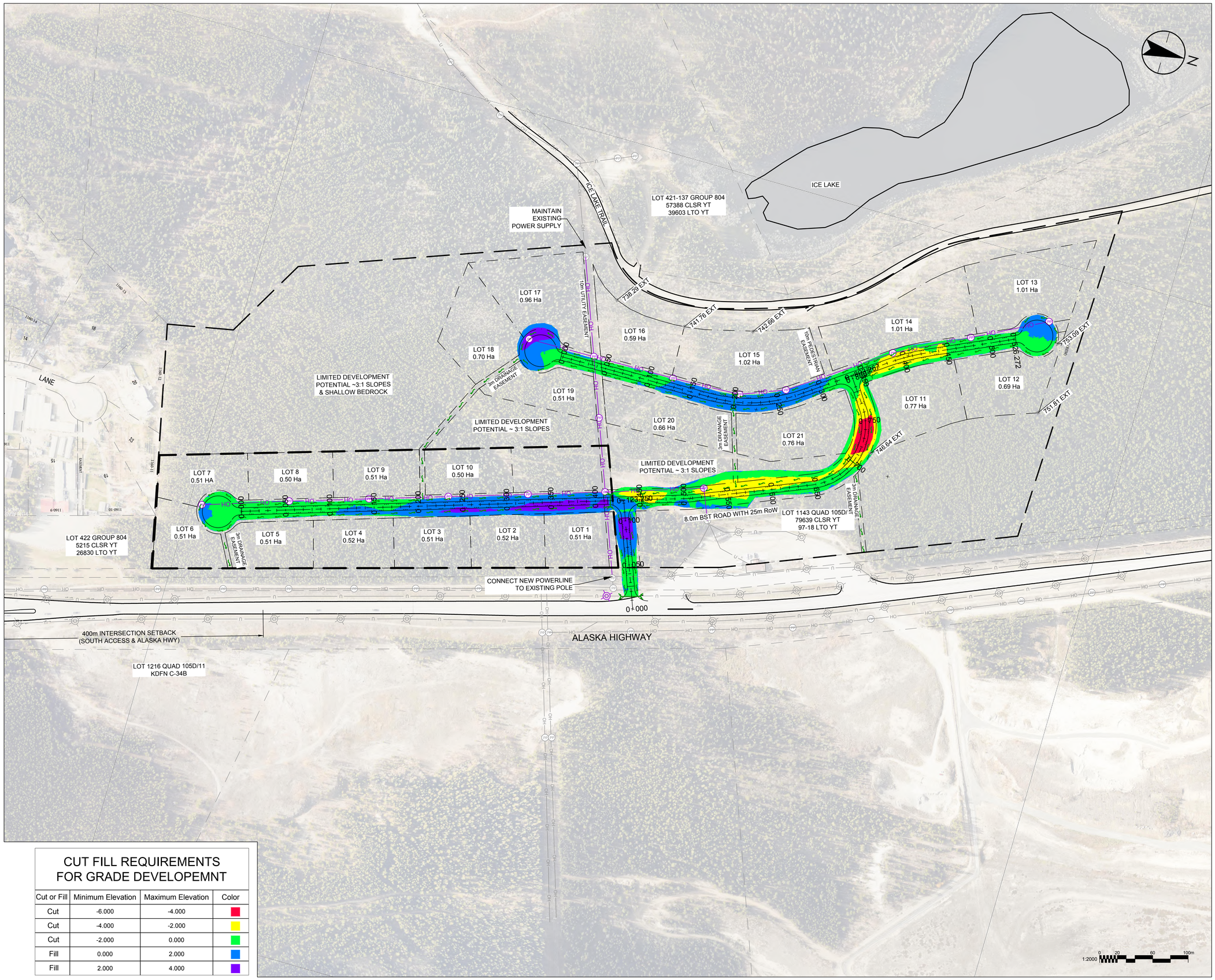
CHECKED RMS	DRAWING NO C240	VERSION 1
APPROVED AG		



CUT FILL REQUIREMENTS FOR GRADE DEVELOPEMNT

Cut or Fill	Minimum Elevation	Maximum Elevation	Color
Cut	-6.000	-4.000	
Cut	-4.000	-2.000	
Cut	-2.000	0.000	
Fill	0.000	2.000	
Fill	2.000	4.000	

Notes:

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Legend:

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- Existing Powerpole
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- Existing Street Light

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	YYYY-MM-DD	SUBMISSION INFORMATION

STAMP
PROFESSIONAL ENGINEER — YUKON TERRITORY — ADAM THOMAS G. WOOD — 2024-06-27

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PERMIT TO PRACTICE
GREENWOOD ENGINEERING SOLUTIONS
SIGNATURE
Date 2024-06-27
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Association of Professional Engineers of Yukon

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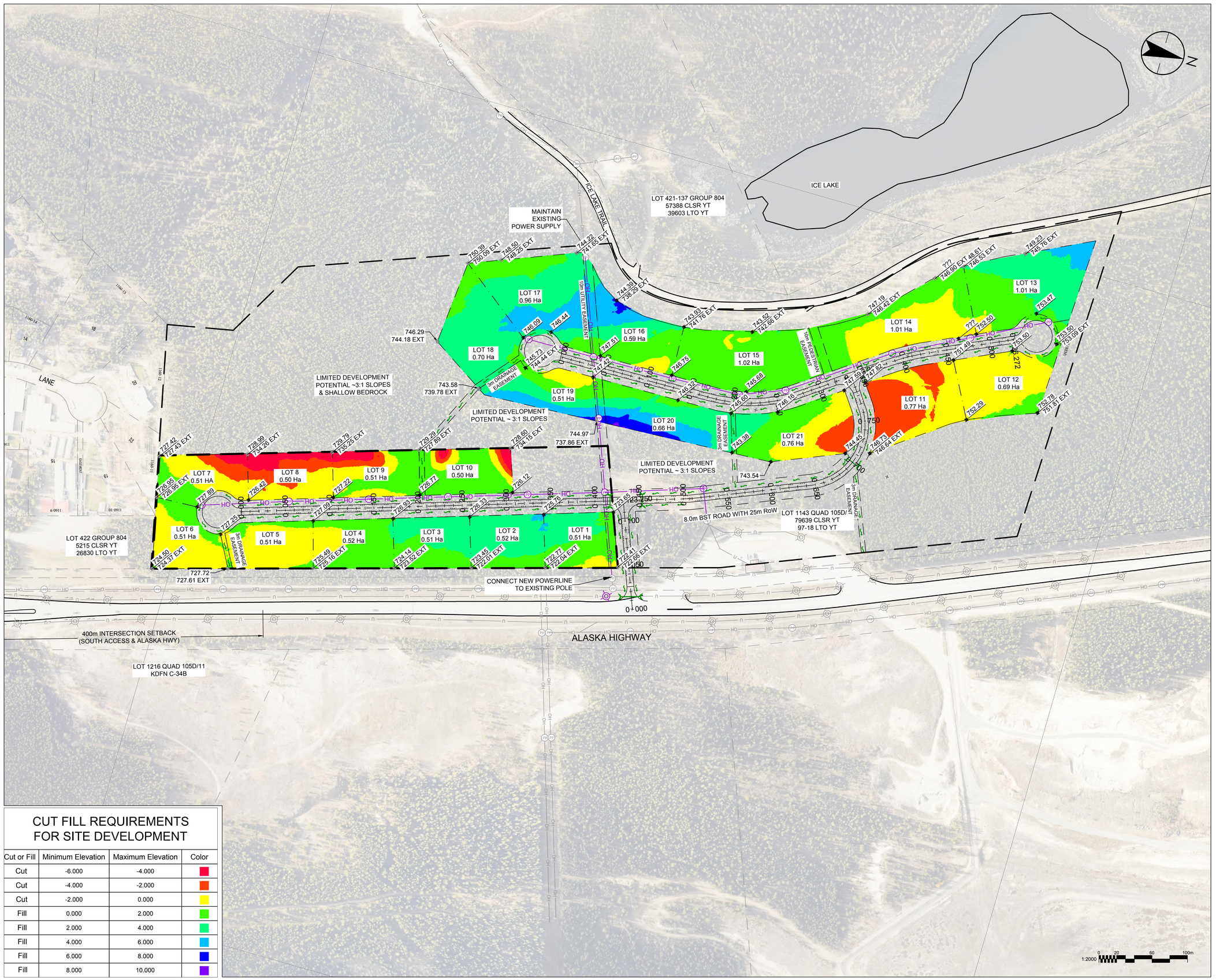
GREENWOOD ENGINEERING SOLUTIONS

PROJECT
ICE LAKE ROAD MASTERPLAN

DRAWING
PROPOSED ROAD CUT/FILL BANDING

DESIGN: MV/AG	DATE: June 27, 2024	SCALE: AS NOTED
DRAWN: MV	PROJECT NO.: 21-35	
CHECKED: RMS	DRAWING NO: C250	VERSION: 1
APPROVED: AG		



CUT FILL REQUIREMENTS FOR SITE DEVELOPMENT

Cut or Fill	Minimum Elevation	Maximum Elevation	Color
Cut	-6.000	-4.000	
Cut	-4.000	-2.000	
Cut	-2.000	0.000	
Fill	0.000	2.000	
Fill	2.000	4.000	
Fill	4.000	6.000	
Fill	6.000	8.000	
Fill	8.000	10.000	

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- Existing Street Light

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	YYYY-MM-DD	SUBMISSION INFORMATION

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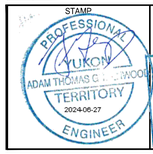
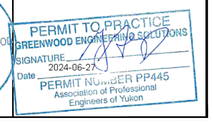


PERMIT TO PRACTICE



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GREENWOOD ENGINEERING SOLUTIONS

PROJECT

ICE LAKE ROAD MASTERPLAN

DRAWING

PROPOSED LOT CUT/FILL BANDING

DESIGN: MV/AG	DATE: June 27, 2024	SCALE: AS NOTED
DRAWN: MV	PROJECT NO.: 21-35	
CHECKED: RMS	DRAWING NO: C260	VERSION: 1
APPROVED: AG		

8.2 APPENDIX B: TRANSPORTATION IMPACT ASSESSMENT (ISL, 2024)

3Pikas

Ice Lake Road South Master Plan TIA

Final Report

June 2024

ISL Engineering and Land Services Ltd. Is an award-winning full-service consulting firm dedicated to working with all levels of government and the private sector to deliver planning and design solutions for transportation, water, and land projects.

At ISL your identity is part of our identity. Diversity, Equity, and Inclusion (DEI) speaks to our core values and provides space for our teams to bring their authentic selves to work. ISL believes DEI creates the best outcomes for our clients while sustaining a happy and thriving work environment that allows for career development opportunities for all staff. ISL is committed to a focused effort on continuous improvement and development of respectful and safe workplace.

Corporate Authorization

This document entitled "Ice Lake Road South Transportation Impact Assessment" has been prepared by ISL Engineering and Land Services Ltd. (ISL) for the use of 3Pikas. The information and data provided herein represent ISL's professional judgment at the time of preparation. ISL denies any liability whatsoever to any other parties who may obtain this report and use it, or any of its contents, without prior written consent from ISL.

Alexander Ho, P.Eng., PTOE
Transportation Engineer

Table of Contents

APPENDICES

TABLES

FIGURES

EXHIBITS

following page

1.0 Introduction and Scope

1.1 Introduction

ISL Engineering and Land Services Ltd. (ISL) was retained by 3Pikas to undertake a Transportation Impact Assessment (TIA) for the Ice Lake Road South Master Plan located at the south end of the City of Whitehorse, Yukon. The site area is located at the northwest corner of the intersection of Alaska Highway / Robert Service Way (RSW). Access to the site is off the existing access for the weigh scale. The site location is shown below in Figure 1.1.

Figure 1.1: Site Location

In this TIA, the following development and horizons are analyzed:

- 2026 Opening Day: Full Build-Out
- 2046: Full Build-Out

Land uses for the proposed development are shown in Figure 1.2 and summarized below:

- Parcel 1: 258,350 sq ft retail
- Parcel 2: 120,000 sq ft light industrial, 180,000 sq ft warehouse
- Parcel 3: 120,000 sq ft light industrial, 180,000 sq ft warehouse

1.2 Scope

The following scope of work was confirmed with the City (**Appendix A**):

- Obtain the 2023 AM and PM peak hour traffic counts at Alaska Highway / RSW from the City.
- Generate trips of the proposed highway commercial and light industrial / warehouse mixed use using the following rates from the ITE Trip Generation Manual, 11th Edition:
  - Highway Commercial: ITE Code 820 - general retail rate – AM 0.98 trips / 1000 sq ft (62% in 38% out), PM 3.40 trips / 1000 sq ft (48% in 52% out)
  - Light Industrial: ITE Code 110 - light industrial rate – AM 0.74 trips / 1000 sq ft (88% in 12% out), PM 0.65 trips / 1000 sq ft (14% in 86% out)
  - Warehousing – warehousing rate – AM 0.17 trips / 1000 sq ft (77% in 23% out), PM 0.17 trips / 1000 sq ft (28% in 72% out)
- Distribute trips onto the adjacent road network based on existing traffic patterns (2026).
- Complete background and post development traffic analysis (AM/PM) at Alaska Highway / RSW and Alaska Highway / Access.
- Complete traffic analysis for unsignalized / signalized intersections in Synchro for the following scenarios:
  - Opening Day Background (2026)
  - 2026 Background + Development
  - Future 20 Year Background (2046)
  - 2046 Background + Development
- A linear annual traffic growth rate of 2.5% per year is applied to Alaska Highway and RSW to calculate the 2046 traffic.
- Signal, illumination, left turn, and right turn warrants at the Alaska Highway Access.
- High-level active modes review, and integration to existing transportation infrastructure.
- From the analysis, recommend any improvements to the roadway network, if required.
- Record findings and recommendations in a report.

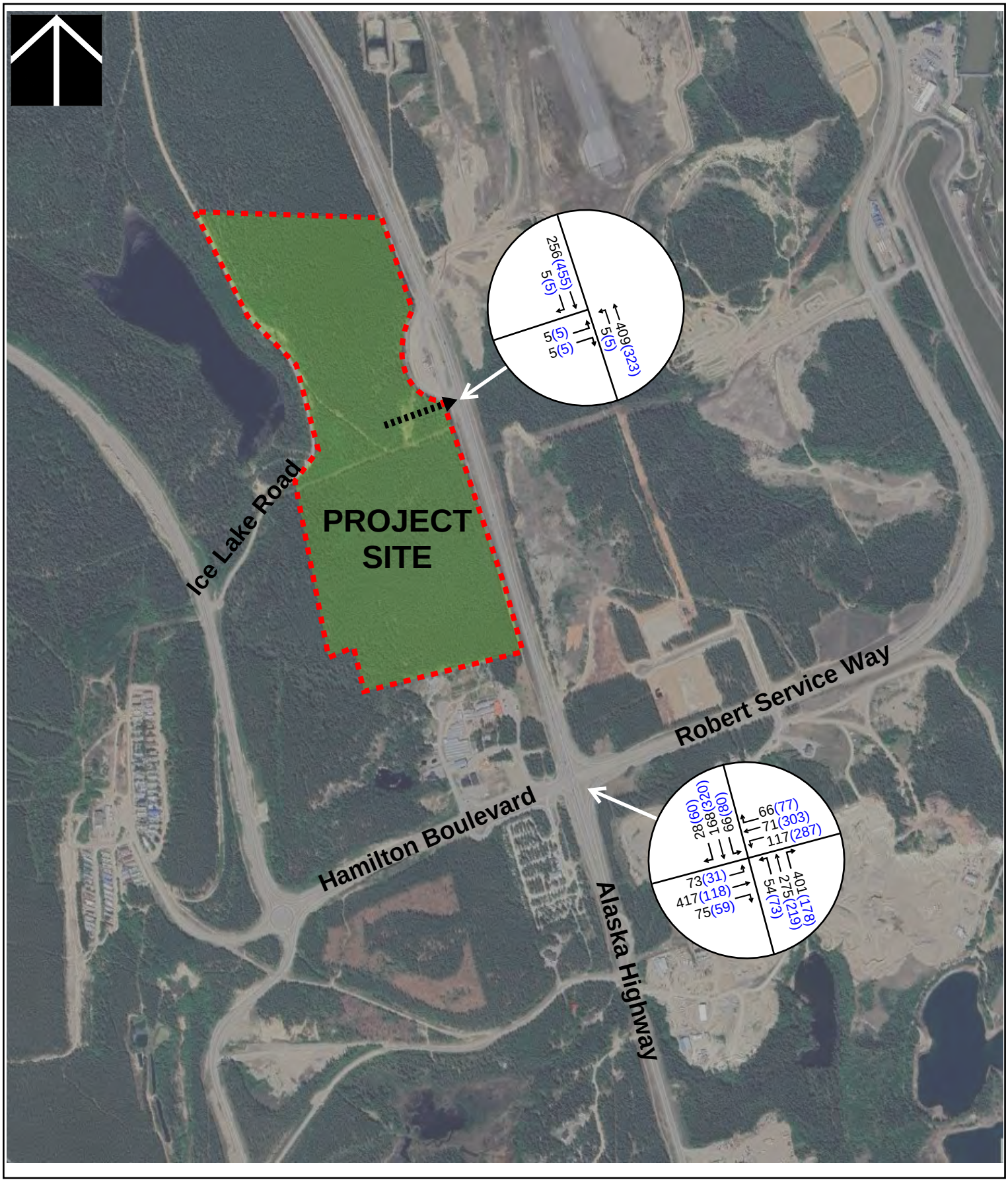
2.0 Background Traffic

ISL received weekday traffic counts for the AM peak (7AM – 9AM) and PM peak (4PM – 6PM) hours completed at the Alaska Highway / RSW intersection on Tuesday, September 5, 2023, from the City. To project traffic volumes for the years 2026 and 2046, a yearly growth rate of 2.5% was applied to the 2023 counts. This growth rate is consistent with the ongoing Alaska Highway / Robert Service Way study that the Yukon Government is currently undertaking. In the study, the same rate is applied to estimate the future traffic that will be used in the analysis of different options.

No traffic volumes were provided for the Alaska Highway / Weigh Scale Access intersection. The following methods were employed to estimate traffic at the Weigh Scale:

- NBT / SBT: The northbound through (NBT) and southbound through (SBT) traffic is estimated based on the traffic on the north leg of Alaska Highway / RSW.
- NBL / SBR / EBL / EBR: Each turning movement into / out of the Weigh Scale is assumed to be 5 vehicles per hour.
- As trucks can use either access point to access the Weigh Scale, to be conservative, the traffic at the Weigh Scale was grouped into one intersection for the traffic analysis.

The 2026 and 2046 Background Traffic volumes are shown in Exhibit 2.1 and Exhibit 2.2, respectively.

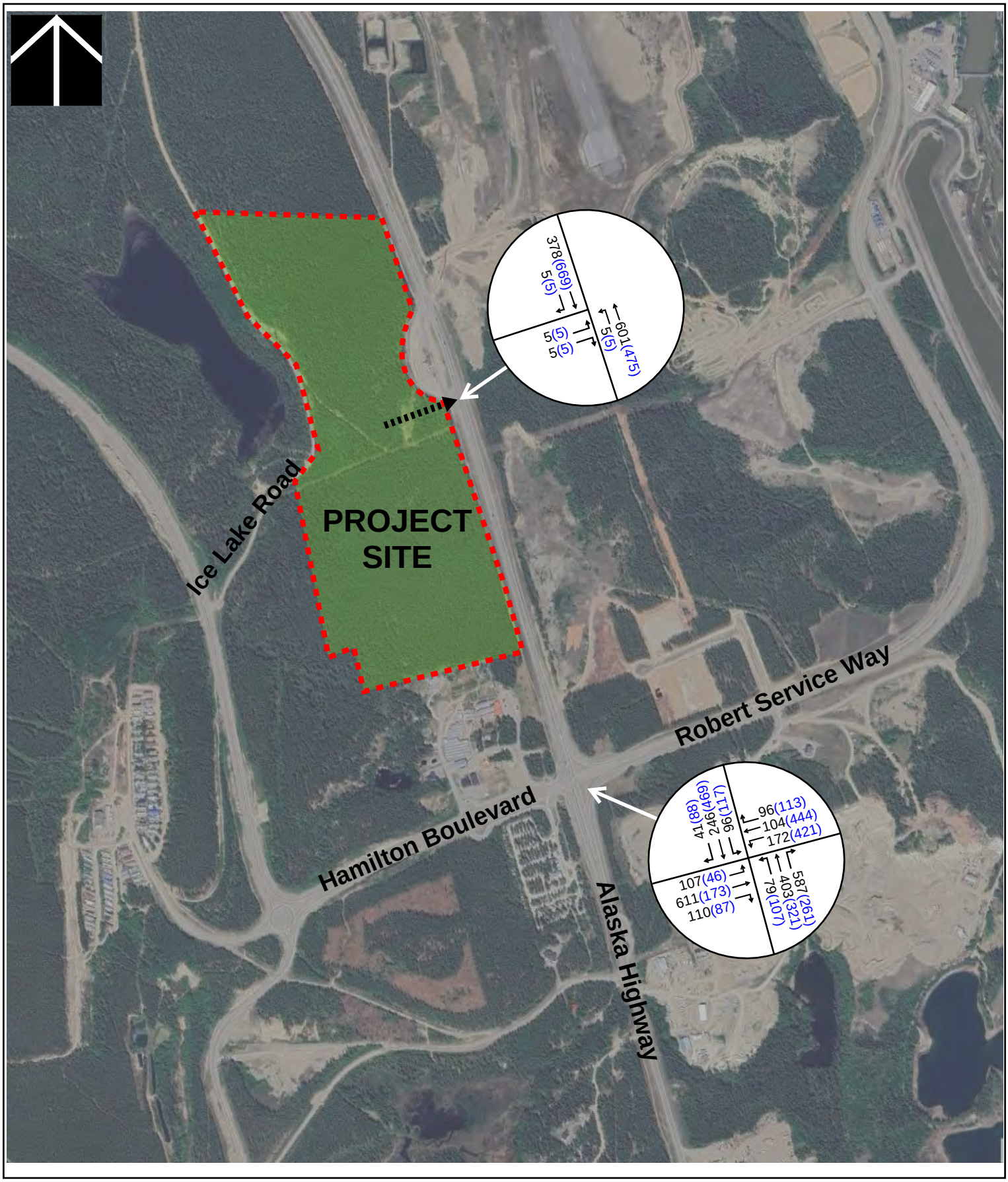


Development Boundary
Access
AM Volumes (PM Volumes)

ICE LAKE ROAD MASTER PLAN TIA

2026 BACKGROUND

EXHIBIT 2.1
APRIL 2024



Development Boundary
Access
AM Volumes (PM Volumes)

ICE LAKE ROAD MASTER PLAN TIA

2046 BACKGROUND

EXHIBIT 2.2
APRIL 2024

3.0 Trip Generation and Distribution

3.1 Trip Generation

The generated trips of the Ice Lake Master Plan were based on the trip generation rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual, 11th Edition*, published by the ITE. Tables 3.1 and 3.2 summarize the trip generation rates and trips for each parcel.

As the development is mixed-use retail and industrial, a 10% internal trip reduction was applied to the generated trips. This adjustment accounts for overlapping trips between complementary uses, such as employees in the industrial area accessing the commercial services as part of their commute. Table 3.2 presents the generated trips following the application of this 10% internal trip reduction.

There are two main types of trips generated from retail land use: primary (non-pass-by) trips and pass-by trips. Primary trips are new trips generated because of the existence of the development. Pass-by trips are existing trips on the background network that access the development enroute to other locations (such as a retail stop while traveling along the Alaska Highway). The pass-by trip rate for retail is 34% in the PM peak, according to the ITE *Trip Generation Handbook, 3rd Edition*. The generated trips with the retail pass-by trip rate applied are shown in Table 3.2.

Table 3.1: Trip Generation Rates for Ice Lake Master Plan

Trip Generation Rates				AM Peak			PM Peak		
Parcel	Land Use	ITE Code	Size (Sq Ft)	Rate	In%	Out%	Rate	In%	Out%
1	Retail	ITE 820	258,350	0.84	62%	38%	3.4	48%	52%
2	Light Industrial	ITE 110	120,000	0.74	88%	12%	0.65	14%	86%
	Warehouse	ITE 150	180,000	0.17	77%	23%	0.18	28%	72%
3	Light Industrial	ITE 110	120,000	0.74	88%	12%	0.65	14%	86%
	Warehouse	ITE 150	180,000	0.17	77%	23%	0.18	28%	72%

Table 3.2: Trip Generation Volumes for Ice Lake Master Plan

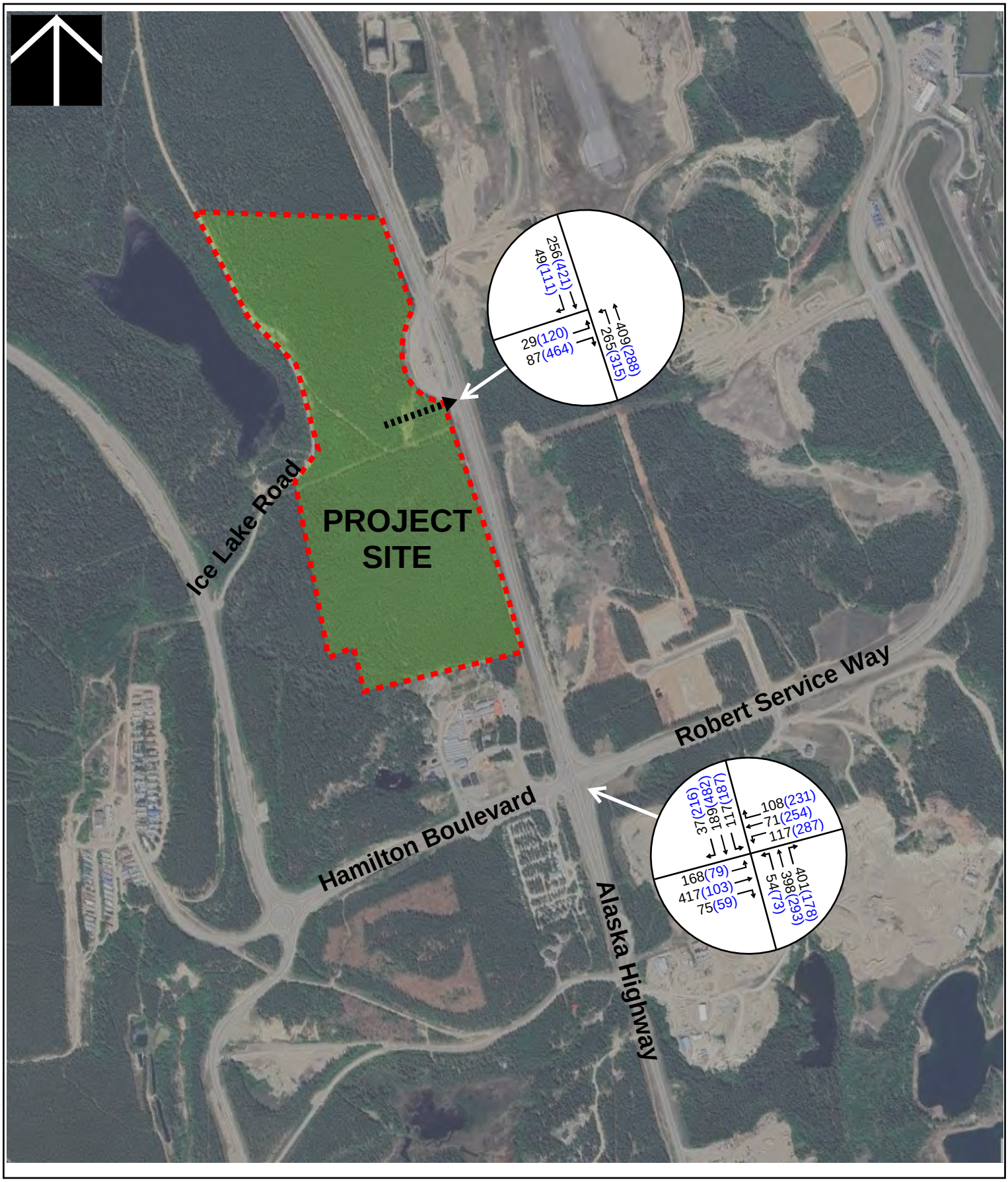
Development Trips				AM			PM		
Parcel	Land Use	ITE Code	Size (Sq Ft)	Total Trips	In	Out	Total Trips	In	Out
1	Retail	ITE 820	258,350	217	135	82	878	422	457
2	Light Industrial	ITE 110	120,000	89	78	11	78	11	67
	Warehouse	ITE 150	180,000	31	24	7	32	9	23
3	Light Industrial	ITE 110	120,000	89	78	11	78	11	67
	Warehouse	ITE 150	180,000	31	24	7	32	9	23
Sub-Total				**456**	**338**	**118**	**1,099**	**462**	**638**
Internal (10%)				410	304	106	989	415	574
Retail Pass-By (AM - 0% | PM - 34%)				0	0	0	269	134	134
Primary				410	304	106	720	281	439

3.2 Trip Distribution / Final Traffic

The trips generated by the development were combined with the existing background traffic volumes for each future scenario, resulting in the final volumes used for traffic analysis. The combined traffic volumes, representing both background and development-generated trips, for the 2026 and 2046 scenarios, are displayed in Exhibits 3.1 and 3.2, respectively. To distribute the development-generated trips onto the surrounding road network, existing traffic patterns were followed. Trip distribution details are summarized in Table 3.3 below.

Table 3.3: 2026 Traffic Distribution

Gate	Ice Lake Master Plan			
	AM Peak		PM Peak	
	Inbound %	Outbound %	Inbound %	Outbound %
RSW W	31%	8%	12%	24%
RSW E	14%	49%	37%	21%
Alaska Highway N	40%	20%	26%	37%
Alaska Highway S	14%	23%	25%	18%
Total	**100%**	**100%**	**100%**	**100%**

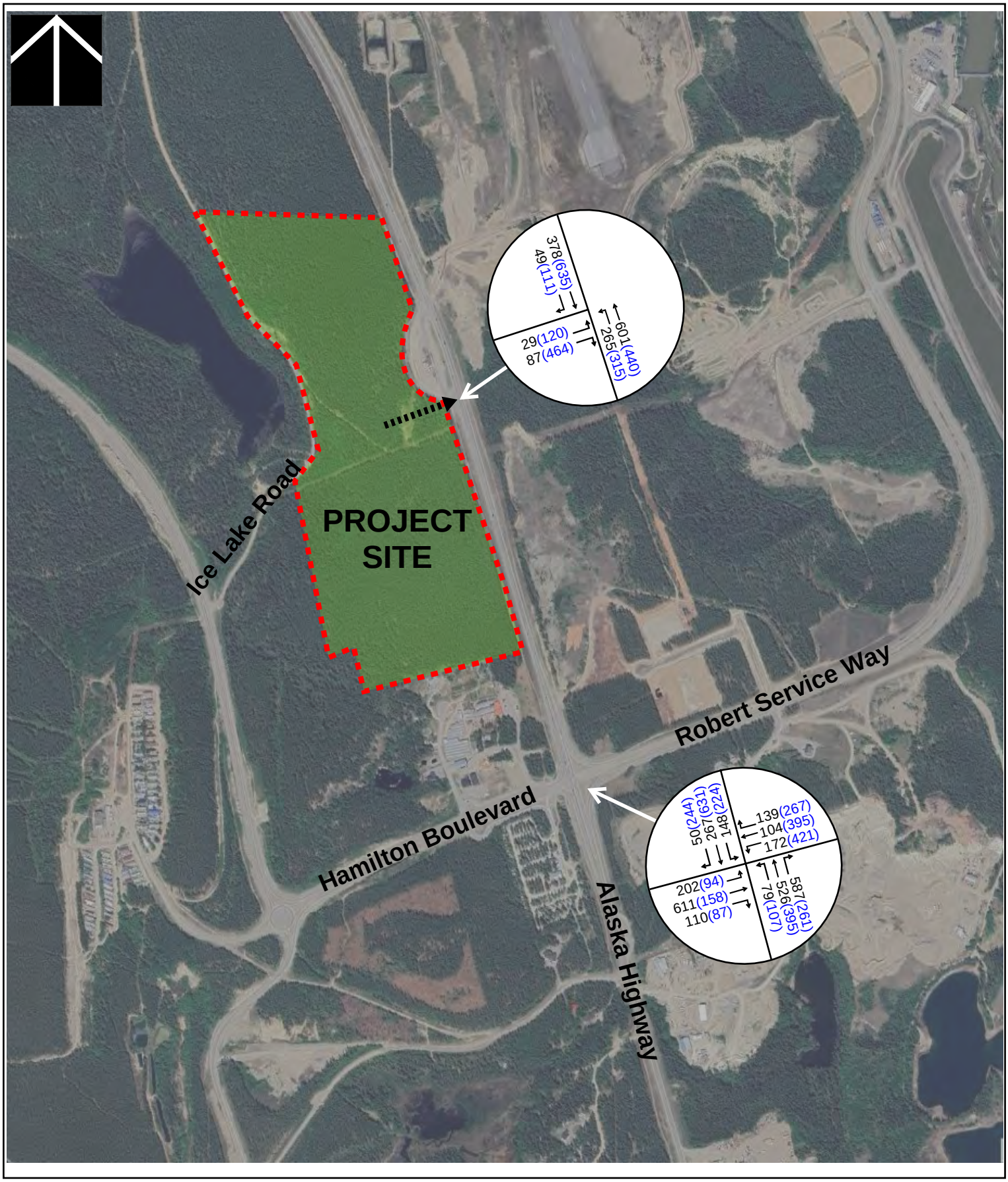


Development Boundary
Access
AM Volumes (PM Volumes)

ICE LAKE ROAD MASTER PLAN TIA

2026 BACKGROUND + DEVELOPMENT

EXHIBIT 3.1
APRIL 2024



Development Boundary
Access
AM Volumes (PM Volumes)

ICE LAKE ROAD MASTER PLAN TIA

2046 BACKGROUND + DEVELOPMENT

EXHIBIT 3.2
APRIL 2024

4.0 Traffic Analysis

Traffic analyses were undertaken in Synchro (signalized and unsignalized intersections) for the following scenarios:

- 2026 Background
- 2026 Background + Development
- 2046 Background
- 2046 Background + Development

4.1 Synchro

The Synchro 11 software traffic analysis package was used to analyze the operational characteristics of the unsignalized intersections. A Level of Operating Service (LOS) A represents the highest level of service or generally “free flowing conditions” while a LOS F generally represents the lowest level of service with “breakdown” or “gridlock” condition in vehicular flow. There are varying degrees of delay and congestion introduced at the intersection LOS B, C, D, and E. LOS D is representative of “normal” peak hour congestion, while LOS E is representative of an intersection nearing its capacity. Typically, LOS D or better is considered the accepted standard for peak hour operations. LOS criteria for intersections are based on average delay per vehicle and are summarized in Table 4.1 below.

Table 4.1: Level of Service Criteria

LOS		A	B	C	D	E	F
Delay, sec/vehicle	Signalized	< 10	10 – 20	20 – 35	35 – 55	55 – 80	> 80
	Unsignalized	< 10	10 – 15	15 – 25	25 – 35	35 – 50	> 50

Synchro also calculates each movement’s volume to capacity (v/c) ratio. A v/c ratio of 1.0 represents an intersection or movement at full capacity with no ability to facilitate extra vehicles. Typically, a v/c ratio of 0.90 or lower is considered acceptable for peak hour operations at all intersection movements, while a v/c ratio of 1.0 may be acceptable for specific movements with limited capacity.

Synchro analysis also calculates the 95th percentile vehicle queue length for each intersection movement, which provides the criteria for left and right turn storage requirements. This queue length is exceeded 5% of the time, which is accepted practice for normal peak hour operation.

4.2 Existing Intersection Lane Configurations

Analyses at the existing signalized intersection of Alaska Highway / RSW were undertaken using the current lane configurations. Per Section 2.0, the existing two unsignalized intersections at Alaska Highway / Weigh Scale Access were analyzed as one intersection.

The lane configurations of the traffic analysis are shown in Exhibit 4.1. It is noted that the new left turn phases planned at Alaska Highway / RSW (northbound / southbound protected-only lead-lag left turn) were included in the analysis.

4.3 2026 Background

The 2026 Background scenario was analyzed in Synchro using the lane configurations. The detailed results are attached in **Appendix B** and summarized in Table 4.2.

Table 4.2: 2026 Background Results

Intersection / Approach / Movement			2026 Background					
			AM Peak			PM Peak		
			v/c	LOS	Queue Length 95th (m)	v/c	LOS	Queue Length 95th (m)
Alaska Highway / Robert Service Way (Signalized)	EB	L	0.14	B	14.3	0.09	B	8.4
		TH	0.81	D	114.9	0.42	D	33.5
		R	0.05	A	0.0	0.04	A	0.0
	WB	L	0.39	B	21.4	0.56	C	51.5
		TH	0.08	C	9.7	0.33	C	34.9
		R	0.05	A	0.0	0.05	A	0.0
	NB	L	0.26	D	20.6	0.31	D	24.4
		TH	0.63	D	81.9	0.44	C	53.2
		R	0.29	A	0.0	0.13	A	0.0
	SB	L	0.33	D	24.0	0.34	D	26.1
		TH	0.18	C	22.0	0.34	C	35.2
		R	0.05	A	0.0	0.11	A	0.0
Alaska Highway / Weigh Scale Access (Unsignalized)	EB	L/R	0.02	B	0.4	0.02	B	0.5
	NB	L	0.00	A	0.1	0.00	A	0.1
		TH	0.13	A	0.0	0.10	A	0.0
	NB	TH	0.08	A	0.0	0.14	A	0.0
		R	0.00	A	0.0	0.00	A	0.0

The analysis indicates that all movements at both intersections meet the acceptable performance standards.

4.4 2026 Background + Development

The 2026 Background + Development scenario was analyzed in Synchro using the existing lane configurations. Initial analysis concluded that the intersection of Alaska Highway / Weigh Scale Access was failing as an unsignalized intersection, thus the intersection was analyzed as a signalized intersection. A signal warrant performed as per Section 5.1, of Transportation Association of Canada's (TAC) "Traffic Signal and Pedestrian Signal Head Warrant Analysis" also indicated that a signal was warranted. From the analysis, two egress lanes (one left turn bay plus one right turn lane) are required. The lane configuration of the 2026 + Development scenario is shown in Exhibit 4.1. It is noted that the geometric design of the development access along with the integration of Weigh Scale access is outside the scope of work of this TIA and will be completed at a later stage of the project.

The results with the added signal and two egress lanes are attached in **Appendix B** and summarized in Table 4.3. The analysis indicates that all movements at both intersections meet the acceptable performance standards.

Table 4.3: 2026 Background + Development Results

Intersection / Approach / Movement			2026 Background + Development					
			AM Peak			PM Peak		
			v/c	LOS	Queue Length 95th (m)	v/c	LOS	Queue Length 95th (m)
Alaska Highway / Robert Service Way (Signalized)	EB	L	0.34	C	38.2	0.25	C	18.5
		TH	0.87	D	136.8	0.41	D	30.2
		R	0.05	A	0.0	0.04	A	0.0
	WB	L	0.48	C	27.6	0.70	C	57.3
		TH	0.09	C	11.6	0.49	C	32.0
		R	0.08	A	0.0	0.16	A	0.0
	NB	L	0.35	D	24.6	0.35	D	24.7
		TH	0.87	D	132.8	0.64	C	71.9
		R	0.29	A	0.0	0.13	A	0.0
	SB	L	0.68	E	51.7	0.67	D	56.7
		TH	0.19	C	25.2	0.41	C	48.4
		R	0.07	A	0.0	0.33	A	14.4
Alaska Highway / Weigh Scale Access (Signalized)	EB	L	0.07	B	7.1	0.27	B	20.5
		R	0.20	A	8.3	0.75	B	41.6
	NB	L	0.40	A	27.8	0.82	C	71.7
		TH	0.19	A	13.7	0.20	A	15.3
	NB	TH	0.12	A	8.8	0.29	A	22.2
		R	0.05	A	3.0	0.16	A	6.5

4.5 2046 Background

The 2046 Background scenario was analyzed in Synchro using the existing lane configurations. The detailed results are attached in **Appendix B** and summarized in Table 4.4.

Table 4.4: 2046 Background Results

Intersection / Approach / Movement			2046 Background					
			AM Peak			PM Peak		
			v/c	LOS	Queue Length 95th (m)	v/c	LOS	Queue Length 95th (m)
Alaska Highway / Robert Service Way (Signalized)	EB	L	0.19	B	25.0	0.14	B	10.8
		TH	**0.98**	**E**	228.1	0.62	D	47.4
		R	0.08	A	0.0	0.06	A	0.0
	WB	L	**0.92**	**E**	364.9	0.81	C	88.2
		TH	0.11	C	15.4	0.45	C	50.3
		R	0.07	A	0.0	0.08	A	0.0
	NB	L	0.52	E	34.9	0.57	D	40.2
		TH	**0.91**	**E**	145.7	0.75	D	92.9
		R	0.43	A	0.0	0.19	A	0.0
	SB	L	0.76	F	52.9	0.62	D	44.5
		TH	0.29	C	37.4	0.50	C	55.3
		R	0.09	A	0.0	0.16	A	0.0
Alaska Highway / Weigh Scale Access (Unsignalized)	EB	L/R	0.02	B	0.5	0.03	C	0.7
	NB	L	0.00	A	0.1	0.03	A	0.1
		TH	0.19	A	0.0	0.01	A	0.0
	SB	TH	0.12	A	0.0	0.15	A	0.0
		R	0.00	A	0.0	0.21	A	0.0

The analysis indicates that the following movements at Alaska Highway / RSW do not meet the acceptable performance standards:

- Eastbound Through (EBT), with a v/c ratio of 0.98 during the AM Peak.
- Westbound Left (WBL), with a v/c ratio of 0.92 during the AM Peak.
- Northbound Through (NBT), with a v/c ratio of 0.91 during the AM Peak.

ISL recommends upgrading the Alaska Highway / RSW intersection to the recommended plan from Yukon Government's *Intersection and Frontage Road Upgrades (November 2021)*. The intersection plan is shown in Exhibit 4.2 and **Appendix C**. It is noted that the Yukon Government is currently undertaking a study to evaluate other options, including roundabouts, at the intersection.

The 2046 Background scenario was reanalyzed in Synchro using the suggested lane configurations as shown in Exhibit 4.2. The detailed results are attached in **Appendix B** and summarized in Table 4.5.

Table 4.5: 2046 Background (Improved) Results

Intersection / Approach / Movement			2046 Background (Improved)					
			AM Peak			PM Peak		
			v/c	LOS	Queue Length 95th (m)	v/c	LOS	Queue Length 95th (m)
Alaska Highway / Robert Service Way (Signalized + Lane Improvements)	EB	L	0.22	B	21.7	0.15	B	10.8
		TH	0.76	D	77.7	0.39	C	22.9
		R	0.08	A	0.0	0.06	A	0.0
	WB	L	0.56	C	33.6	0.77	C	81.9
		TH	0.11	C	14.0	0.48	C	50.0
		R	0.07	A	0.0	0.08	A	0.0
	NB	L	0.40	D	30.2	0.53	D	34.4
		TH	0.52	C	54.6	0.41	C	37.3
		R	0.43	A	0.0	0.19	A	0.0
	SB	L	0.46	D	34.4	0.57	D	35.5
		TH	0.32	C	33.0	0.51	C	52.9
		R	0.09	A	0.0	0.16	A	0.0
Alaska Highway / Weigh Scale Access (Unsignalized)	EB	L/R	0.02	B	0.5	0.03	C	0.7
	NB	L	0.00	A	0.1	0.01	A	0.1
		TH	0.19	A	0.0	0.15	A	0.0
	NB	TH	0.12	A	0.0	0.21	A	0.0
		R	0.00	A	0.0	0.00	A	0.0

The analysis indicates that all movements at both intersections meet the acceptable performance standards with the recommended lane configurations.

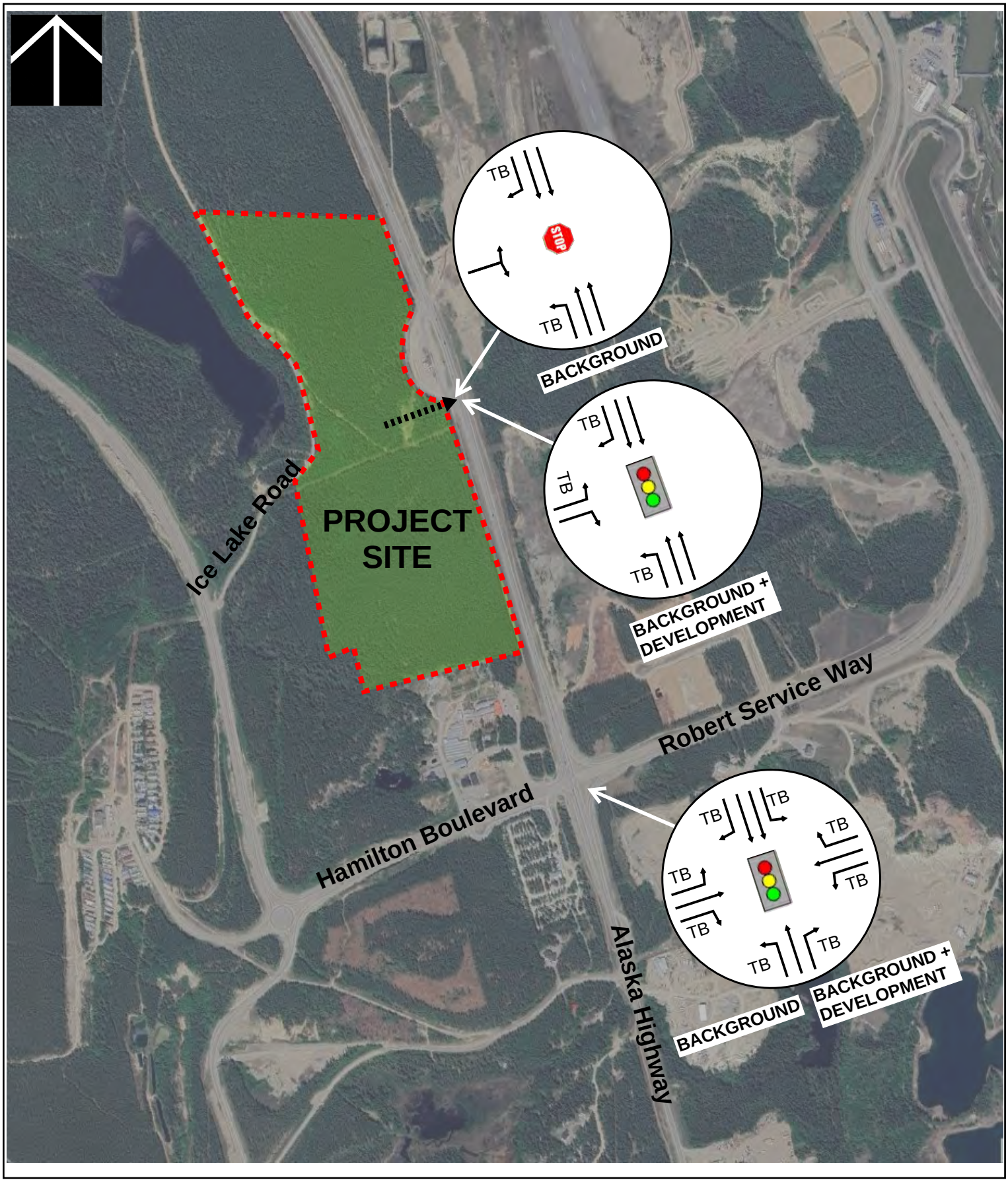
4.6 2046 Background + Development

The 2046 Background + Development scenario was analyzed in Synchro using the upgraded lane configurations as shown in Exhibit 4.2. The intersection of Alaska Highway / Weigh Scale Access is analyzed as a signalized intersection. The results are attached in **Appendix B** and summarized in Table 4.6.

Table 4.6: 2046 Background + Development (Improved) Results

Intersection / Approach / Movement			2046 Background + Development (Improved)					
			AM Peak			PM Peak		
			v/c	LOS	Queue Length 95th (m)	v/c	LOS	Queue Length 95th (m)
Alaska Highway / Robert Service Way (Signalized + Lane Improvements)	EB	L	0.44	C	43.8	0.33	C	22.3
		TH	0.81	D	81.2	0.40	D	23.9
		R	0.08	A	0.0	0.06	A	0.0
	WB	L	0.63	C	38.1	0.82	D	108.0
		TH	0.16	C	15.6	0.52	C	50.3
		R	0.10	A	0.0	0.02	A	0.0
	NB	L	0.44	D	30.2	0.58	D	41.3
		TH	0.69	D	67.8	0.54	C	50.6
		R	0.43	A	0.0	0.19	A	0.0
	SB	L	0.67	D	52.8	0.75	D	66.0
		TH	0.28	C	32.3	0.66	C	71.6
		R	0.10	A	0.0	0.41	A	16.0
Alaska Highway / Weigh Scale Access (Signalized)	EB	L	0.07	B	7.5	0.39	C	28.4
		R	0.21	A	8.7	0.73	B	26.0
	NB	L	0.44	A	30.8	0.62	B	50.6
		TH	0.27	A	20.4	0.23	A	23.8
	NB	TH	0.18	A	12.6	0.73	C	64.3
		R	0.05	A	2.9	0.24	A	10.6

The analysis indicates that all movements at both intersections meet the acceptable performance standards with the recommended lane configurations.



TB Turn Bay

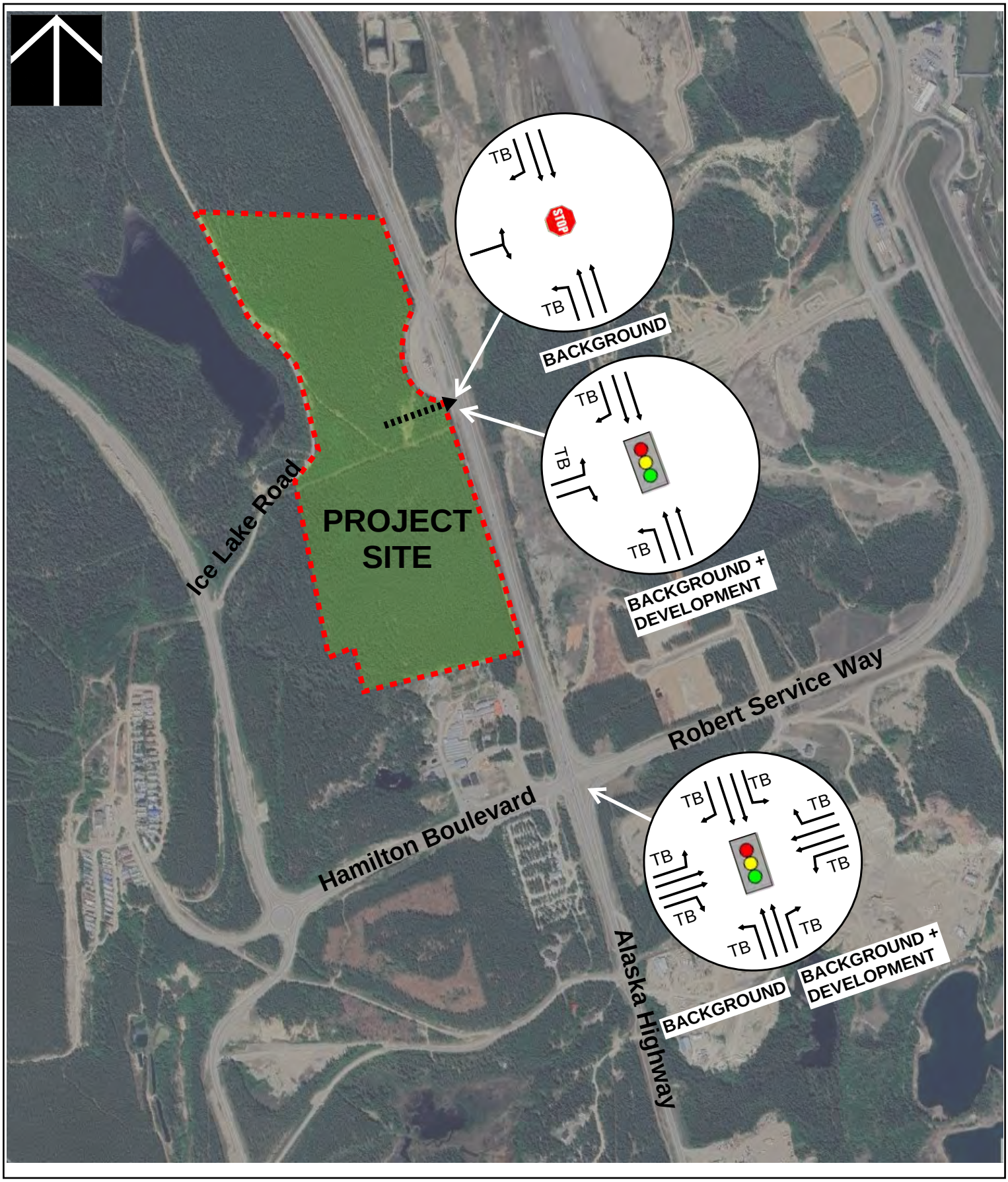
Signalized Intersection

STOP Stop Controlled Intersection

ICE LAKE ROAD MASTER PLAN TIA

2026 LANE CONFIGURATIONS

EXHIBIT 4.1
APRIL 2024



TB Turn Bay

Signalized Intersection

STOP Stop Controlled Intersection

ICE LAKE ROAD MASTER PLAN TIA

2046 LANE CONFIGURATIONS

EXHIBIT 4.2
APRIL 2024

5.0 Warrants

5.1 Signal Warrants

The Transportation Association of Canada's (TAC) *Traffic Signal and Pedestrian Signal Head Warrant Analysis* was completed for Alaska Highway / Weigh Scale Access for all scenarios. In the warrant, the 6-hour peak traffic is required. A conversion factor of 2.61 is used to calculate the 6-hour peak traffic from the sum of AM and PM peak traffic volumes (6-hour peak = (AM Peak + PM Peak) x 2.61). The factor is a commonly used factor in urban areas to convert the AM and PM peak hour traffic to the 6-hour traffic. A score of 100 points is required to warrant a signal.

The signal warrant analysis results are shown in **Appendix D** and summarized in Table 5.1. From the results, signalization is warranted in both the 2026 and 2046 Background + Development scenarios.

Table 5.1: TAC Signal Warrant Results

Intersection	Scenario	Warrant Score	Warranted (Yes/No)
Alaska Highway / Weigh Scale Access	2026 Background	4	No
	2026 Background + Development	146	Yes
	2046 Background	5	No
	2046 Background + Development	207	Yes

5.2 Illumination Warrants

Currently, Alaska Highway / Weigh Scale Access is illuminated, thus, no warrant for illumination is necessary.

5.3 Left and Right Turn Warrants

Left-turn and right-turn lane warrants are only applicable for unsignalized intersections. With both intersections signalized, no left turn and right turn warrant is applicable.

6.0 Active Modes

6.1 Pedestrians and Bicyclists

From the City's *Motorized Multi-Use Trails* and *2023 Trails* maps in **Appendix E**, there are established trials (i.e. Rock Garden Trail, Ice Lake Trail) west of the site and a motorized multi-use trail along Alaska Highway that connects to the City's trail network. The trails are designated for many activities, including: walking / running, cycling, e-bike / e-scooter, cross-country skiing, snowshoeing, all-terrain vehicles, snowmobiling, etc. Furthermore, cycling is also permitted on the shoulder of Alaska Highway, according to the *City of Whitehorse Commuter Cycling Map* (see **Appendix E**). In the City's *Trail Plan 2020*, there are no future trails planned in the area..

No sidewalk / pathway plan has been planned at the current stage of the ASP. In future stages of the project, sidewalks / pathways are recommended to be added to provide sufficient connections to the existing network, so that employees and customers of the area are able to readily access it from the City-wide trail network.

6.2 Transit

Currently, transit stops are located over 900 m away (equivalent to a 10-minute walk) on the west leg of the intersection at Alaska Highway / RSW from the Weigh Scale Access**.** These stops serve the eastbound and westbound internal Bus Route 5 (Takhini-Lobird-Copper Ridge Express), connecting Granger to Yukon College via Lobird, Downtown, and Takhini. According to the City's *Transit Master Plan*, it is recommended to enhance service on Route 5, as part of long-term recommendations (3+ years), to meet the needs of communities situated north of the City. When Route 5 is revisited in the future, it is recommended to explore the option of extending the route into the ASP area and provide adequate local stops to reduce the walking distance to transit.

7.0 Conclusions

The Ice Lake Road South Master Plan Transportation Impact Assessment has been prepared for 3Pikas to understand the traffic impacts of the proposed development in the City of Whitehorse, Yukon. The following is a summary of the TIA completed for the proposed development:

- The proposed commercial / industrial development is estimated to generate 456 trips during the morning peak and 1099 trips during the evening peak.
- These generated trips were added to the existing 2026 and 2046 background traffic at the study intersections and analyzed.
- The results of the Synchro analysis and signal warrants are as follows:
  - 2026 Background: Operations at both the intersections are acceptable with the existing lane configurations.
  - 2026 Background + Development: Signalization is required at Alaska Highway / Weigh Scale Access. Also, two eastbound egress lanes are recommended at the access. Note: The geometric design of the development access along with the integration of Weigh Scale access is outside the scope of work of this TIA and will be completed at a later stage of the project.
  - 2046 Background: At Alaska Highway / RSW, the upgrade to the Yukon Government's proposed intersection plan is required.
  - 2046 Background + Development: No additional upgrades are required beyond the Yukon Government's planned upgrades.
- Active Modes:
  - Sidewalk / pathways: No sidewalk / pathway plan has been planned at the current stage of the ASP. In future stages of the project, sidewalks / pathways are recommended to be added with connections to the existing trail network.
  - Transit: The closest transit stop is located approximately 900 m away from the Weigh Scale Access. When Route 5 is revisited in the future, it is recommended to explore the option of extending the route into the ASP and provide adequate local stops to reduce the walking distance to transit.

APPENDIX A
Scope of Work

Alex Ho

From: Eshpeter, Taylor <Taylor.Eshpeter@whitehorse.ca>
Sent: January 12, 2024 3:13 PM
To: Andrew Ko
Cc: Alex Ho; Matthias Purdon; Simon Lapointe
Subject: RE: Ice Lake Road South TIA Scope of Work

Hi Alex,

I support that approach

Taylor Eshpeter, P.Eng.
Manager • Engineering Services
City of Whitehorse • 867.689.2143 • whitehorse.ca
Working and living within the traditional territories of the Kwanlin Dün First Nation and the Ta'an Kwäch'än Council.

From: Andrew Ko <AKo@islengineering.com>
Sent: Friday, January 5, 2024 10:29 AM
To: Eshpeter, Taylor <Taylor.Eshpeter@whitehorse.ca>
Cc: Alex Ho <aho@islengineering.com>; Matthias Purdon <matthias@3pikas.com>; Simon Lapointe <simon@3Pikas.com>
Subject: RE: Ice Lake Road South TIA Scope of Work

Hi Taylor,

Thank you for the TMP contact and the TIA guidelines, I'll reach out to Stanley (and cc you) to request the traffic modeling information for our study.

As to the TIA, we propose to do a Limited Transportation Impact Assessment, as defined by the guidelines, of Ice Lake Road South Master Plan. Our proposed scope in the original email below will cover development related issues such as opening day / future traffic analysis at the highway access and its impact to the adjacent road network, a high-level transit/active modes review, and integration to existing transportation infrastructures.

At this stage, detailed issues such as on-site/on-street parking, TDM, circulation, and road safety won't be covered at this stage for Ice Lake Road South as the detailed site / building plans is not yet available.

For the horizon years, we proposed opening day + 20 years, but we can adjust the horizon to the TMP horizon years. Therefore, the horizons for this study will be:

- Opening day (2026)
- Future TMP year

Please let me know if there is anything else that the scope needs.

Thank you,
Andrew Ko | *Transportation Engineer-in-Training*
ISL Engineering and Land Services Ltd.
T: 403.254.0544

From: Eshpeter, Taylor <Taylor.Eshpeter@whitehorse.ca>
Sent: Wednesday, January 3, 2024 5:24 PM
To: Andrew Ko <AKo@islengineering.com>
Cc: Alex Ho <aho@islengineering.com>; Matthias Purdon <matthias@3pikas.com>; Simon Lapointe <simon@3Pikas.com>
Subject: RE: Ice Lake Road South TIA Scope of Work

Hi Andrew,

I can confirm that the TMP is not quite ready to reference, but is in the final draft at the moment and we are working towards finalizing the report early February.

I am providing you with a contact from Morrison Hershfield (Stanley Li, SLi@morrisonhershfield.com) who is the project manager for the TMP. Please reach out to Stanley directly to request information to inform your study.

We recently published a guiding document for TIAs. It is available **here**. Please read the guideline and then we can discuss in more detail.

Regards,

Taylor Eshpeter, P.Eng.
Manager • Engineering Services
City of Whitehorse • 867.689.2143 • whitehorse.ca
Working and living within the traditional territories of the Kwanlin Dün First Nation and the Ta'an Kwäch'än Council.

From: Andrew Ko <AKo@islengineering.com>
Sent: Tuesday, January 2, 2024 2:24 PM
To: Eshpeter, Taylor <Taylor.Eshpeter@whitehorse.ca>
Cc: Alex Ho <aho@islengineering.com>; Matthias Purdon <matthias@3pikas.com>; Simon Lapointe <simon@3Pikas.com>
Subject: RE: Ice Lake Road South TIA Scope of Work

Hello Taylor,

Hope you had a great holiday break!

I'm following up to see if you have had a chance to review the scope?

Thank you,
Andrew Ko | *Transportation Engineer-in-Training*
ISL Engineering and Land Services Ltd.
T: 403.254.0544

From: Andrew Ko
Sent: Thursday, December 14, 2023 11:14 AM
To: taylor.eshpeter@whitehorse.ca
Cc: Alex Ho <aho@islengineering.com>; Matthias Purdon <matthias@3pikas.com>; Simon Lapointe

<simon@3pikas.com>
Subject: Ice Lake Road South TIA Scope of Work

Hello Taylor,

In support of the Ice Lake Road South Master Plan (ILRSMP), ISL has been engaged by 3Pikas as a subconsultant to undertake the TIA.

ILRSMP is located west of the Alaska Highway, adjacent to the weigh scale. Access to ILRSMP is off the existing intersection of Alaska Highway / Weigh Scale. The plan for ILRSMP is attached and is composed of highway commercial (parcel adjacent to highway) and light industrial / warehouse (parcels adjacent to Ice Lake).

It is to our understanding that the City is working on the Whitehorse Transportation Master Plan (TMP). Is the TMP ready to be referenced for this study?

Please find below the proposed scope of work for your review and approval:

- Obtain the 2022 AM and PM peak hour traffic counts at Alaska Highway / Robert Service Way from a previous study (already collected)
- Generate trips of the proposed highway commercial and light industrial / warehouse mixed use using the following rates from the ITE Trip Generation Manual, 11th Edition:
    - Highway Commercial: ITE Code 820 - general retail rate – AM 0.98 trips / 1000 sqft (62% in 38% out), PM 3.40 trips / 1000 sqft (48% in 52% out)
    - Light Industrial: ITE Code 110 - light industrial rate – AM 0.74 trips / 1000 sqft (88% in 12% out), PM 0.65 trips / 1000 sqft (14% in 86% out)
    - Warehousing – warehousing rate – AM 0.17 trips / 1000 sqft (77% in 23% out), PM 0.17 trips / 1000 sqft (28% in 72% out)
- Distribute trips onto the adjacent road network based on existing traffic patterns (2026) or based on the City's TMP (2046), if available
- Complete background and post development traffic analysis (AM/PM) at Alaska Highway / Robert Service Way and Alaska Highway / Access
- Complete traffic analysis for unsignalized / signalized intersections in Synchro for the following scenarios:
    - Opening Day Background (2026)
    - 2026 Background + Development
    - Future 20 Year Background (2046)
    - 2046 Background + Development
- A linear annual traffic growth rate will be applied to Alaska Highway and Robert Service Way to calculate the 2046 traffic, if forecast data from the City's TMP is not available
- Signal, illumination, left turn, and right turn warrants at the Alaska Highway Access
- Active modes analysis will be completed to assess the available pedestrian / cyclist infrastructure in the surrounding area
- From the analysis, recommend any improvements to the roadway network, if required.
- Record findings and recommendations in a report

Thank you,
Andrew Ko | *Transportation Engineer-in-Training*
ISL Engineering and Land Services Ltd.
T: 403.254.0544

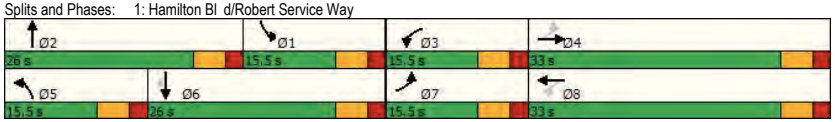
APPENDIX B
Detailed Synchro Results

Lane Group	E$	E$T	E$R	%$	%$T	%$R	&$	&$T	&$R	S$	S$T	S$R
Lane Configurations												
Traffic Volume (vph)	73	417	75	!!-	-!	..	54	275	401	..	!./	28
Future Volume (vph)	73	417	75	!!-	-!	..	54	275	401	..	!./	28
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m,	120.0		0.0	120.0		60.0	120.0		90.0	120.0		120.0
Storage Lanes	!		!	!		!	!		!	!		!
Taper Length (m,	50.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1709	!-33	1529	1615	3231	1445	1615	1701	1445	1559	3118	1395
Flt Permitted	0.706			0.223			0.950			0.950		
Satd. Flow (perm,	1270	!-33	1529	379	3231	1445	1615	1701	1445	1559	3118	1395
Right Turn on Red			5es			5es			5es			5es
Satd. Flow (RTOR,			297			297			422			164
Link Speed (k/h)		70			70			80			80	
Link Distance (m,		350.7			185.8			183.2			203.1	
Travel Ti* e (s,		18.0			32.			8.2			32!	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	4%	4%	4%	10%	10%	10%	10%	10%	10%	14%	14%	14%
¯ < Flow (vph)	--	439	-3	123	75	.3	57	289	422	.3	!--	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	--	439	-3	123	75	.3	57	289	422	.3	!--	29
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o
Lane ¯lignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Kedian Width(m,		6.0			6.0			5.0			5.0	
Link Offset(m,		0.0			0.0			0.0			0.0	
' ross1 alk Width(m,		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30		25	30		25	30		40	30		25
&umber of Detectors	!	2	!	!	2	!	!	2	!	!	2	!
8etector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m,	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel												
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,		9.4			9.4			9.4			9.4	
8etector 2 Si>e(m,		0.6			0.6			0.6			0.6	
8etector 2 Type		' I+E@			' I+E@			' I+E@			' I+E@	
8etector 2 Channel												
8etector 2 E@end (s,		0.0			0.0			0.0			0.0	
Turn Type	#* +pt	&¯	Free	#* +pt	&¯	Free	Prot	&¯	Free	Prot	&¯	Perm
Protected Phases	-	4		3	/		5	2		!	.	

Lane Group	E$	E$T	E$R	%$	%$T	%$R	&$	&$T	&$R	S$	S$T	S$R
Permitted Phases	4		Free	/		Free			Free			.
8etector Phase	-	4		3	/		5	2		!	.	.
S1itch Phase												
Kini* um Initial (s,	10.0	10.0		10.0	10.0		10.0	20.0		10.0	20.0	20.0
Kini* um Split (s,	15.5	25.5		15.5	25.5		15.5	25.5		15.5	25.5	25.5
Total Split (s,	15.5	33.0		15.5	33.0		15.5	26.0		15.5	26.0	26.0
Total Split (%)	17.2%	36.7%		17.2%	36.7%		17.2%	28.9%		17.2%	28.9%	28.9%
Kaxi* um Green (s,	10.0	27.5		10.0	27.5		10.0	20.5		10.0	20.5	20.5
5ellow Ti* e (s,	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
¯ll-Red Ti* e (s,	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Ti* e ¯ ⊲ost (s,	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Opti* i>e?	5es	5es		5es	5es		5es	5es		5es	5es	5es
) ehicle E@ension (s,	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	&one	&one		&one	&one		&one	Kin		&one	Kin	Kin
Walk Ti* e (s,		8.0			8.0			8.0			8.0	8.0
Flash Dont Walk (s,		12.0			12.0			12.0			12.0	12.0
Pedestrian Calls (#/hr)		0			0			0			0	0
¯ct Effct Green (s,	31.5	24.2	80.2	31.5	24.2	80.2	10.7	21.7	80.2	10.7	24.7	24.7
¯ctuated g/C Ratio	0.39	0.30	1.00	0.39	0.30	1.00	0.13	0.27	1.00	0.13	0.31	0.31
/c Ratio	0.14	0.81	0.05	0.39	0.08	0.05	0.26	0.63	0.29	0.33	0.18	0.05
' ontrol Delay	13.9	41.2	0.1	!-2.	22.7	0.1	40.3	38.2	0.5	41.9	26.6	0.2
Aueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.9	41.2	0.1	!-2.	22.7	0.1	40.3	38.2	0.5	41.9	26.6	0.2
6 S	$	8	¯	$	'	¯	8	8	¯	8	'	¯
¯pproach Delay		32.2			14.5			!-2.			27.6	
¯pproach LOS		'			$			$			'	

Intersection Sum* ary			
¯rea Type:	6 ther		
' : cle Length: 90			
¯ctuated C: cle Length: 80.2			
&atural C: cle: 85			
' ontrol Type: Semi ¯ct-Uncoord			
Kaxi* um v/c Ratio: 0.81			
Intersection Signal Delay: 23.2		Intersection LOS: C	
Intersection Capacity Utili>ation 74.2%		IC4 Level of Service D	
¯nal: sis Period (min) 15			

Splits and Phases: 1: Hamilton Bl d/Robert Service Way



Lane Group	E$	E$R	&$	&$T	S$T	S$R
Lane Configurations						
Traffic Volume (vph)	5	5	5	409	256	5
Future Volume (vph)	5	5	5	409	256	5
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850
Storage Length (m,	0.0	0.0	165.0			160.0
Storage Lanes	!	0	!			!
Taper Length (m,	30.0		75.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	0.932					0.850
Flt Protected	0.976		0.950			
Satd. Flow (prot)	1547	0	1615	3231	3118	1395
Flt Permitted	0.976		0.950			
Satd. Flow (perm,	1547	0	1615	3231	3118	1395
Link Speed (k/h)	50			80	80	
Link Distance (m,	229.8			234.1	280.1	
Travel Ti* e (s,	16.5			10.5	12.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	10%	10%	10%	10%	14%	14%
¯ ≤Flow (vph)	5	5	5	431	269	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	5	431	269	5
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o
Lane ¯lignment	Left	Right	Left	Left	Left	Right
Kedian Width(m,	3.7			3.7	3.7	
Link Offset(m,	0.0			0.0	0.0	
' ross1 alk Width(m,	4.8			4.8	4.8	
Two way Left Turn Lane						
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

Intersection Sum* ary			
¯ rea Type:	6 ther		
' ontrol Type: Unsignali>ed			
Intersection Capacity Utili>ation 21.6%		IC4 Level of Service	¯
¯ nal: sis Period (min) 15			

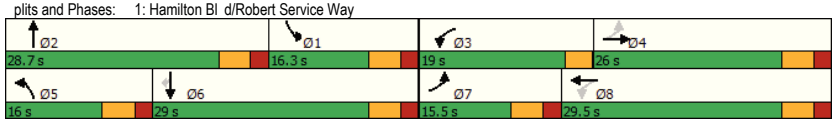
Lane Group	E$L	E$T	E$	%$L	%$T	%$	&$L	&$T	&$	$L	$T	$
Lane Configurations												
Traffic Volume (vph)	31	!!-	59	287	303	//	73	219	!/-	80	320	60
Future Volume (vph)	31	!!-	59	287	303	//	73	219	!/-	80	320	60
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
torage Length (m,	120.0		0.0	120.0		60.0	120.0		90.0	120.0		120.0
torage Lanes	!		!	!		!	!		!	!		!
Taper Length (m,	50.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
atd. Flow (prot)	1601	1685	1432	1709	3417	1529	1630	!/!0	1459	1601	3202	1432
Flt Permitted	0.558			0.530			0.950			0.950		
atd. Flow (perm,	940	1685	1432	953	3417	1529	1630	!/!0	1459	1601	3202	1432
ight Turn on Red			5es			5es			5es			5es
atd. Flow (RTO ,			333			333			333			200
Link Speed (k/h)		70			70			80			80	
Link Distance (m,		350.7			185.8			183.2			203.1	
Travel Ti* e (s,		18.0			.30			8.2			.3!	
¯ eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	!!;	!!;	!!;	4%	4%	4%	.;	.;	.;	!!;	!!;	!!;
Ad< Flow (vph)	33	124	62	302	319	-!	//	231	!-/	84	337	63
hared Lane Traffic (%)												
Lane Group Flow (vph)	33	124	62	302	319	-!	//	231	!-/	84	337	63
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o
Lane Alignment	Left	Left	ight	Left	Left	ight	Left	Left	ight	Left	Left	ight
Kedian Width(m,		6.0			6.0			5.0			5.0	
Link Offset(m,		0.0			0.0			0.0			0.0	
' ross2 alk Width(m,		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
&umber of Detectors	!	2	!	!	2	!	!	2	!	!	2	!
8etector Template	Left	Thru	ight	Left	Thru	ight	Left	Thru	ight	Left	Thru	ight
Leading Detector (m,	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel												
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,		9.4			9.4			9.4			9.4	
8etector 2 Si>e(m,		0.6			0.6			0.6			0.6	
8etector 2 Type		' I+E@			' I+E@			' I+E@			' I+E@	
8etector 2 Channel												
8etector 2 E@end (s,		0.0			0.0			0.0			0.0	
Turn Type	#* +pt	&A	Free	#* +pt	&A	Free	¯rot	&A	Free	¯rot	&A	¯erm
¯rotected Phases	/	4		3	-		5	2		!	0	

Lane Group	E$L	E$T	E$	%$L	%$T	%$	&$L	&$T	&$	$L	$T	$
¯ermitted Phases	4		Free	-		Free			Free			0
8 etector Phase	/	4		3	-		5	2		!	0	0
2 itch Phase												
K ini* um Initial (s,	10.0	10.0		7.0	10.0		10.0	20.0		10.0	20.0	20.0
K ini* um Split (s,	15.5	25.5		15.5	25.5		15.5	25.5		15.5	25.5	25.5
Total Split (s,	15.5	26.0		19.0	29.5		16.0	28.7		16.3	29.0	29.0
Total Split (%)	17.2%	28.9%		21.1%	32.8%		!/3-;	31.9%		!-3!;	32.2%	32.2%
K axi* um Green (s,	10.0	20.5		16.0	24.0		10.5	23.2		10.8	23.5	23.5
5 ellow Ti* e (s,	3.5	3.5		2.9	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Ti* e (s,	2.0	2.0		0.1	2.0		2.0	2.0		2.0	2.0	2.0
Lost Ti* e Ad<ust (s,	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5		3.0	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Opti* i>e?	5es	5es		5es	5es		5es	5es		5es	5es	5es
) ehicle E@tension (s,	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
ecall Mode	&one	&one		&one	&one		&one	K in		&one	K in	K in
Walk Ti* e (s,		8.0			8.0			8.0			8.0	8.0
Flash Dont Walk (s,		12.0			12.0			12.0			12.0	12.0
¯edestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s,	!.30	12.3	70.4	28.0	20.0	70.4	10.9	21.8	70.4	11.0	21.9	21.9
Actuated g/C Ratio	0.28	0.17	1.00	0.40	0.28	1.00	0.15	0.31	1.00	0.16	0.31	0.31
/c Ratio	0.09	0.42	0.04	0.56	0.33	0.05	0.31	0.44	0.13	0.34	0.34	0.11
' ontrol Delay	16.0	35.0	0.1	20.2	23.7	0.1	35.6	27.4	0.2	36.0	23.8	0.4
A ueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	35.0	0.1	20.2	23.7	0.1	35.6	27.4	0.2	36.0	23.8	0.4
LO	$	8	A	'	'	A	8	'	A	8	'	A
Approach Delay		22.2			19.5			18.4			22.9	
Approach LO		'			$			$			'	

Intersection Sum* ary

Area Type: 6 ther
' : cle Length: 90
Actuated C: cle Length: 70.4
&atural C: cle: 85
' ontrol Type: Semi Act-Uncoord
K axi* um v/c Ratio: 0.56
Intersection Signal Delay: 20.4 Intersection LO : C
Intersection Capacity Utili>ation 65.2% IC4 Level of Service C
Anal: sis Period (min) 15

plits and Phases: 1: Hamilton Bl d/Robert Service Way



Lane Group	E$L	E$	&$L	&$T	$T	$
Lane Configurations						
Traffic Volume (vph)	5	5	5	323	455	5
Future Volume (vph)	5	5	5	323	455	5
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850
torage Length (m,	0.0	0.0	165.0			160.0
torage Lanes	!	0	!			!
Taper Length (m,	30.0		75.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	0.932					0.850
Flt Protected	0.976		0.950			
atd. Flow (prot)	1547	0	1630	3261	3202	1432
Flt Permitted	0.976		0.950			
atd. Flow (perm,	1547	0	1630	3261	3202	1432
Link Speed (k/h)	50			80	80	
Link Distance (m,	229.8			234.1	280.1	
Travel Ti* e (s,	16.5			10.5	12.6	
¯eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
9 eav: Vehicles (%)	10%	10%	.;	.;	!!;	!!;
Ad< Flow (vph)	5	5	5	340	479	5
hared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	5	340	479	5
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o
Lane Alignment	Left	ight	Left	Left	Left	ight
K edian Width(m,	3.7			3.7	3.7	
Link Offset(m,	0.0			0.0	0.0	
' ross2 alk Width(m,	4.8			4.8	4.8	
Two way Left Turn Lane						
9 eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
ign Control	top			Free	Free	

Intersection Sum* ary

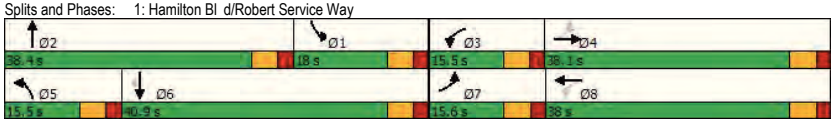
Area Type: 6 ther
' ontrol Type: Unsignali>ed
Intersection Capacity Utili>ation 22.9% IC4 Level of Service A
Anal: sis Period (min) 15

Lane Group	E$	E$T	E$R	%$	%$T	%$R	&$	&$T	&$R	S$	S$T	S$R
Lane Configurations												
Traffic Volume (vph)	!-.	417	75	!!/	/!	108	54	398	401	!!/	!.0	37
Future Volume (vph)	!-.	417	75	!!/	/!	108	54	398	401	!!/	!.0	37
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m,	120.0		0.0	120.0		60.0	120.0		90.0	120.0		120.0
Storage Lanes	!		!	!		!	!		!	!		!
Taper Length (m,	50.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1709	!/00	1529	1615	3231	1445	1615	1701	1445	1559	3118	1395
Flt Permitted	0.572			0.247			0.950			0.950		
Satd. Flow (perm,	1029	!/00	1529	420	3231	1445	1615	1701	1445	1559	3118	1395
Right Turn on Red			5es			5es			5es			5es
Satd. Flow (RTOR,			243			243			422			134
Link Speed (k/h)		70			70			80			80	
Link Distance (m,		350.7			185.8			183.2			203.1	
Travel Ti* e (s,		18.0			03-			8.2			03!	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	4%	4%	4%	10%	10%	10%	10%	10%	10%	14%	14%	14%
¯ < Flow (vph)	!//	439	/0	123	75	114	57	419	422	123	!00	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	!//	439	/0	123	75	114	57	419	422	123	!00	39
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o
Lane ¯lignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Kedian Width(m,		6.0			6.0			5.0			5.0	
Link Offset(m,		0.0			0.0			0.0			0.0	
' ross2 alk Width(m,		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30		25	30		25	30		40	30		25
&umber of Detectors	!	2	!	!	2	!	!	2	!	!	2	!
8etector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m,	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel												
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,		9.4			9.4			9.4			9.4	
8etector 2 Si>e(m,		0.6			0.6			0.6			0.6	
8etector 2 Type		' I+E@			' I+E@			' I+E@			' I+E@	
8etector 2 Channel												
8etector 2 E@end (s,		0.0			0.0			0.0			0.0	
Turn Type	#* +pt	&¯	Free	#* +pt	&¯	Free	Prot	&¯	Free	Prot	&¯	Perm
Protected Phases	/	4		3	.		5	2		!	-	

Lane Group	E$	E$T	E$R	%$	%$T	%$R	&$	&$T	&$R	S$	S$T	S$R
Permitted Phases	4		Free	.		Free			Free			-
8etector Phase	/	4		3	.		5	2		!	-	-
S2itch Phase												
Kini* um Initial (s,	10.0	10.0		10.0	10.0		10.0	20.0		10.0	20.0	20.0
Kini* um Split (s,	15.5	25.5		15.5	25.5		15.5	25.5		15.5	25.5	25.5
Total Split (s,	15.6	38.1		15.5	38.0		15.5	38.4		18.0	40.9	40.9
Total Split (%)	14.2%	34.6%		14.1%	34.5%		14.1%	34.9%		16.4%	37.2%	37.2%
Kaxi* um Green (s,	10.1	32.6		10.0	32.5		10.0	32.9		12.5	35.4	35.4
5ellow Ti* e (s,	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
¯ll-Red Ti* e (s,	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Ti* e ¯ ⊲ost (s,	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Opti* i>e?	5es	5es		5es	5es		5es	5es		5es	5es	5es
) ehicle E@ension (s,	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	&one	&one		&one	&one		&one	Kin		&one	Kin	Kin
Walk Ti* e (s,		8.0			8.0			8.0			8.0	8.0
Flash Dont Walk (s,		12.0			12.0			12.0			12.0	12.0
Pedestrian Calls (#/hr)		0			0			0			0	0
¯ct Effct Green (s,	39.9	28.3	101.4	33.6	26.0	101.4	10.1	28.8	101.4	!!3.	34.4	34.4
¯ctuated g/C Ratio	0.39	0.28	1.00	0.33	0.26	1.00	0.10	0.28	1.00	0.12	0.34	0.34
/c Ratio	0.34	0.87	0.05	0.48	0.09	0.08	0.35	0.87	0.29	0.68	0.19	0.07
' ontrol Delay	21.3	54.8	0.1	25.9	28.2	0.1	53.1	54.7	0.5	64.9	26.4	0.2
Aueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.3	54.8	0.1	25.9	28.2	0.1	53.1	54.7	0.5	64.9	26.4	0.2
6 S	'	8	¯	'	'	¯	8	8	¯	E	'	¯
¯pproach Delay		40.1			17.0			29.1			36.7	
¯pproach LOS		8			$			'			8	

Intersection Sum* ary			
¯rea Type:	6ther		
' : cle Length: 110			
¯ctuated C: cle Length: 101.4			
&atural C: cle: 85			
' ontrol Type: Semi ¯ct-Uncoord			
Kaxi* um v/c Ratio: 0.87			
Intersection Signal Delay: 32.0		Intersection LOS: C	
Intersection Capacity Utili>ation 79.1%		IC4 Level of Service D	
¯nal: sis Period (min) 15			

Splits and Phases: 1: Hamilton Bl d/Robert Service Way

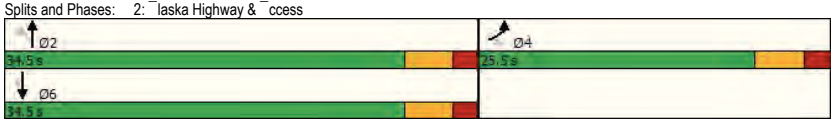


Lane Group	E$	E$R	&$	&$T	S$T	S$R
Lane Configurations						
Traffic Volume (vph)	29	./	265	409	256	49
Future Volume (vph)	29	./	265	409	256	49
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850
Storage Length (m,	60.0	0.0	165.0			160.0
Storage Lanes	!	!	!			!
Taper Length (m,	30.0		75.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1615	1445	1615	3231	3118	1395
Flt Permitted	0.950		0.586			
Satd. Flow (perm,	1615	1445	00-	3231	3118	1395
Right Turn on Red		5es				5es
Satd. Flow (RTOR,		92				52
Link Speed (k/h)	50			80	80	
Link Distance (m,	229.8			234.1	280.1	
Travel Ti* e (s,	16.5			10.5	12.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	10%	10%	10%	10%	14%	14%
¯ < Flow (vph)	31	92	279	431	269	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	92	279	431	269	52
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o
Lane ¯lignment	Left	Right	Left	Left	Left	Right
Kedian Width(m,	3.7			3.7	3.7	
Link Offset(m,	0.0			0.0	0.0	
' ross2 alk Width(m,	4.8			4.8	4.8	
Two way Left Turn Lane						
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
&umber of Detectors	!	!	!	2	2	!
8etector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m,	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	2.0	2.0	0.6	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel						
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,				9.4	9.4	
8etector 2 Si>e(m,				0.6	0.6	
8etector 2 Type				' I+E@	' I+E@	
8etector 2 Channel						
8etector 2 E@end (s,				0.0	0.0	
Turn Type	Prot	Perm	Perm	&¯	&¯	Perm
Protected Phases	4			2	-	

Lane Group	E$	E$R	&$	&$T	S$T	S$R
Permitted Phases		4	2			-
8etector Phase	4	4	2	2	-	-
S2itch Phase						
Kini* um Initial (s,	10.0	10.0	10.0	10.0	10.0	10.0
Kini* um Split (s,	25.5	25.5	25.5	25.5	25.5	25.5
Total Split (s,	25.5	25.5	34.5	34.5	34.5	34.5
Total Split (%)	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Kaxi* um Green (s,	20.0	20.0	29.0	29.0	29.0	29.0
5ellow Ti* e (s,	3.5	3.5	3.5	3.5	3.5	3.5
¯ll-Red Ti* e (s,	2.0	2.0	2.0	2.0	2.0	2.0
Lost Ti* e ¯ ⊲ost (s,	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Opti* i>e?						
) ehicle E@ension (s,	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	&one	&one	Kin	Kin	Kin	Kin
Walk Ti* e (s,	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s,	12.0	12.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
¯ct Effct Green (s,	10.3	10.3	26.7	26.7	26.7	26.7
¯ctuated g/C Ratio	0.27	0.27	0.70	0.70	0.70	0.70
/c Ratio	0.07	0.20	0.40	0.19	0.12	0.05
' ontrol Delay	13.9	5.8	8.4	4.9	4.8	2.2
Aueue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.9	5.8	8.4	4.9	4.8	2.2
6 S	$					
¯pproach Delay	/3.			6.3	4.4	
¯pproach LOS						

Intersection Sum* ary			
¯rea Type:	6 ther		
' : cle Length: 60			
¯ctuated C: cle Length: 37.9			
&atural C: cle: 60			
' ontrol Type: Semi ¯ct-Uncoord			
Kaxi* um v/c Ratio: 0.40			
Intersection Signal Delay: 5.9		Intersection LOS: ¯	
Intersection Capacity Utili>ation 45.5%		IC4 Level of Service ¯	
¯nal: sis Period (min) 15			

Splits and Phases: 2: ¯laska Highway & ¯ccess



Lane Group	E$L	E$T	E$	%$L	%$T	%$	&$L	&$T	&$	$L	$T	$
Lane Configurations												
Traffic Volume (vph)	-.	103	59	287	254	231	73	293	!-/	!/-	482	216
Future Volume (vph)	-.	103	59	287	254	231	73	293	!-/	!/-	482	216
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
torage Length (m,	120.0		0.0	120.0		60.0	120.0		90.0	120.0		120.0
torage Lanes	!		!	!		!	!		!	!		!
Taper Length (m,	50.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
atd. Flow (prot)	1601	1685	1432	1709	3417	1529	1630	!-!0	1459	1601	3202	1432
Flt Permitted	0.587			0.527			0.950			0.950		
atd. Flow (perm,	./.	1685	1432	948	3417	1529	1630	!-!0	1459	1601	3202	1432
ight Turn on Red			5es			5es			5es			5es
atd. Flow (RTO ,			297			297			297			227
Link Speed (k/h)		70			70			80			80	
Link Distance (m,		350.7			185.8			183.2			203.1	
Travel Ti* e (s,		18.0			.30			8.2			.3!	
¯eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	!!;	!!;	!!;	4%	4%	4%	.;	.;	.;	!!;	!!;	!!;
Ad< Flow (vph)	83	108	62	302	267	243	--	308	!/-	!.-	507	227
hared Lane Traffic (%)												
Lane Group Flow (vph)	83	108	62	302	267	243	--	308	!/-	!.-	507	227
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o
Lane Alignment	Left	Left	ight	Left	Left	ight	Left	Left	ight	Left	Left	ight
Kedian Width(m,		6.0			6.0			5.0			5.0	
Link Offset(m,		0.0			0.0			0.0			0.0	
' ross2 alk Width(m,		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
&umber of Detectors	!	2	!	!	2	!	!	2	!	!	2	!
8etector Template	Left	Thru	ight	Left	Thru	ight	Left	Thru	ight	Left	Thru	ight
Leading Detector (m,	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel												
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,		9.4			9.4			9.4			9.4	
8etector 2 Si>e(m,		0.6			0.6			0.6			0.6	
8etector 2 Type		' I+E@			' I+E@			' I+E@			' I+E@	
8etector 2 Channel												
8etector 2 E@end (s,		0.0			0.0			0.0			0.0	
Turn Type	#* +pt	&A	Free	#* +pt	&A	Free	¯rot	&A	Free	¯rot	&A	¯erm
¯rotected Phases	-	4		3	/		5	2		!	0	

Lane Group	E$L	E$T	E$	%$L	%$T	%$	&$L	&$T	&$	$L	$T	$
ermitted Phases	4		Free	/		Free			Free			0
8etector Phase	-	4		3	/		5	2		!	0	0
2itch Phase												
Kini* um Initial (s,	10.0	10.0		7.0	10.0		10.0	20.0		10.0	20.0	20.0
Kini* um Split (s,	15.5	25.5		15.5	25.5		15.5	25.5		15.5	25.5	25.5
Total Split (s,	15.5	25.5		15.6	25.6		15.7	27.9		21.0	33.2	33.2
Total Split (%)	17.2%	28.3%		17.3%	28.4%		17.4%	31.0%		23.3%	36.9%	36.9%
Kaxi* um Green (s,	10.0	20.0		12.6	20.1		10.2	22.4		15.5	27.7	27.7
5ellow Ti* e (s,	3.5	3.5		2.9	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Ti* e (s,	2.0	2.0		0.1	2.0		2.0	2.0		2.0	2.0	2.0
Lost Ti* e Ad<ust (s,	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5		3.0	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Opti* i>e?	5es	5es		5es	5es		5es	5es		5es	5es	5es
) ehicle E@ension (s,	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
ecall Mode	&one	&one		&one	&one		&one	Kin		&one	Kin	Kin
Walk Ti* e (s,		8.0			8.0			8.0			8.0	8.0
Flash Dont Walk (s,		12.0			12.0			12.0			12.0	12.0
¯edestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s,	19.4	!!3.	75.6	24.0	12.0	75.6	10.3	21.3	75.6	13.8	29.0	29.0
Actuated g/C Ratio	0.26	0.16	1.00	0.32	0.16	1.00	0.14	0.28	1.00	0.18	0.38	0.38
/c Ratio	0.25	0.41	0.04	0.70	0.49	0.16	0.35	0.64	0.13	0.67	0.41	0.33
' ontrol Delay	20.7	36.3	0.1	29.7	34.1	0.2	38.1	33.1	0.2	43.6	21.6	4.6
Aueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	20.7	36.3	0.1	29.7	34.1	0.2	38.1	33.1	0.2	43.6	21.6	4.6
LO	'	8	A	'	'	A	8	'	A	8	'	A
Approach Delay		22.3			22.3			23.0			22.1	
Approach LO		'			'			'			'	

Intersection Sum* ary

Area Type: 6 ther
' : cle Length: 90
Actuated C: cle Length: 75.6
&atural C: cle: 85
' ontrol Type: Semi Act-Uncoord
Kaxi* um v/c Ratio: 0.70
Intersection Signal Delay: 22.4 Intersection LO : C
Intersection Capacity Utili>ation 69.1% IC4 Level of Service C
Anal: sis Period (min) 15

plits and Phases: 1: Hamilton Bl d/Robert Service Way

Lane Group	E$L	E$	&$L	&$T	$T	$
Lane Configurations						
Traffic Volume (vph)	120	464	315	288	421	!!!
Future Volume (vph)	120	464	315	288	421	!!!
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850
torage Length (m,	60.0	0.0	165.0			160.0
torage Lanes	!	!	!			!
Taper Length (m,	30.0		75.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
atd. Flow (prot)	1615	1445	1630	3261	3202	1432
Flt Permitted	0.950		0.495			
atd. Flow (perm,	1615	1445	849	3261	3202	1432
ight Turn on Red		5es				5es
atd. Flow (RTO ,		332				!!-
Link Speed (k/h)	50			80	80	
Link Distance (m,	229.8			234.1	280.1	
Travel Ti* e (s,	16.5			10.5	12.6	
¯eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	10%	10%	.;	.;	!!;	!!;
Ad< Flow (vph)	126	488	332	303	443	!!-
hared Lane Traffic (%)						
Lane Group Flow (vph)	126	488	332	303	443	!!-
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o
Lane Alignment	Left	ight	Left	Left	Left	ight
Kedian Width(m,	3.7			3.7	3.7	
Link Offset(m,	0.0			0.0	0.0	
' ross2 alk Width(m,	4.8			4.8	4.8	
Two way Left Turn Lane						
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
&umber of Detectors	!	!	!	2	2	!
8etector Template	Left	ight	Left	Thru	Thru	ight
Leading Detector (m,	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	2.0	2.0	0.6	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel						
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,				9.4	9.4	
8etector 2 Si>e(m,				0.6	0.6	
8etector 2 Type				' I+E@	' I+E@	
8etector 2 Channel						
8etector 2 E@end (s,				0.0	0.0	
Turn Type	¯rot	¯erm	¯erm	&A	&A	¯erm
¯rotected Phases	4			2	0	

Lane Group	E$L	E$	&$L	&$T	$T	$
ermitted Phases		4	2			0
8etector Phase	4	4	2	2	0	0
2itch Phase						
Kini* um Initial (s,	10.0	10.0	10.0	10.0	10.0	10.0
Kini* um Split (s,	25.5	25.5	25.5	25.5	25.5	25.5
Total Split (s,	25.5	25.5	34.5	34.5	34.5	34.5
Total Split (%)	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Kaxi* um Green (s,	20.0	20.0	29.0	29.0	29.0	29.0
5ellow Ti* e (s,	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Ti* e (s,	2.0	2.0	2.0	2.0	2.0	2.0
Lost Ti* e Ad<ust (s,	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Opti* i>e?						
) ehicle E@ension (s,	3.0	3.0	3.0	3.0	3.0	3.0
ecall Mode	&one	&one	Kin	Kin	Kin	Kin
Walk Ti* e (s,	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s,	12.0	12.0	12.0	12.0	12.0	12.0
¯edestrian Calls (#/hr)	0	0	0	0	0	0
Act Effct Green (s,	13.8	13.8	23.0	23.0	23.0	23.0
Actuated g/C Ratio	0.29	0.29	0.48	0.48	0.48	0.48
/c Ratio	0.27	0.75	0.82	0.20	0.29	0.16
' ontrol Delay	16.5	14.2	31.9	-3.	8.5	2.7
Aueue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	14.2	31.9	-3.	8.5	2.7
LO	$	$	'	A	A	A
Approach Delay	14.6			20.5	7.3	
Approach LO	$			'	A	

Intersection Sum* ary

Area Type: 6 ther
' : cle Length: 60
Actuated C: cle Length: 48.3
&atural C: cle: 60
' ontrol Type: Semi Act-Uncoord
Kaxi* um v/c Ratio: 0.82
Intersection Signal Delay: 14.4 Intersection LO : B
Intersection Capacity Utili>ation 52.0% IC4 Level of Service A
Anal: sis Period (min) 15

plits and Phases: 2: Alaska Highway & Access

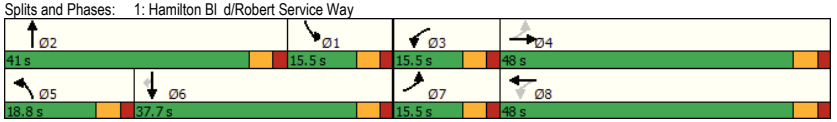
Lane Group	E$	E$T	E$R	%$	%$T	%$R	&$	&$T	&$R	S$	S$T	S$R
Lane Configurations												
Traffic Volume (vph)	107	.!!	110	172	104	/.	-/	403	587	/.	246	41
Future Volume (vph)	107	.!!	110	172	104	/.	-/	403	587	/.	246	41
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m,	120.0		0.0	120.0		60.0	120.0		90.0	120.0		120.0
Storage Lanes	!		!	!		!	!		!	!		!
Taper Length (m,	50.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1709	!-//	1529	1615	3231	1445	1615	1701	1445	1559	3118	1395
Flt Permitted	0.587			0.120			0.950			0.950		
Satd. Flow (perm,	1056	!-//	1529	204	3231	1445	1615	1701	1445	1559	3118	1395
Right Turn on Red			5es			5es			5es			5es
Satd. Flow (RTOR,			223			223			541			123
Link Speed (k/h)		70			70			80			80	
Link Distance (m,		350.7			185.8			183.2			203.1	
Travel Ti* e (s,		18.0			/3.			8.2			/3!	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	4%	4%	4%	10%	10%	10%	10%	10%	10%	14%	14%	14%
¯ < Flow (vph)	113	643	!!.	!0!	109	101	83	424	.!0	101	259	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	643	!!.	!0!	109	101	83	424	.!0	101	259	43
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o
Lane ¯lignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Kedian Width(m,		6.0			6.0			5.0			5.0	
Link Offset(m,		0.0			0.0			0.0			0.0	
' ross2 alk Width(m,		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30		25	30		25	30		40	30		25
&umber of Detectors	!	2	!	!	2	!	!	2	!	!	2	!
8etector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m,	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel												
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,		9.4			9.4			9.4			9.4	
8etector 2 Si>e(m,		0.6			0.6			0.6			0.6	
8etector 2 Type		' I+E@			' I+E@			' I+E@			' I+E@	
8etector 2 Channel												
8etector 2 E@end (s,		0.0			0.0			0.0			0.0	
Turn Type	#* +pt	&¯	Free	#* +pt	&¯	Free	Prot	&¯	Free	Prot	&¯	Perm
Protected Phases	-	4		3	0		5	2		!	.	

Lane Group	E$	E$T	E$R	%$	%$T	%$R	&$	&$T	&$R	S$	S$T	S$R
Permitted Phases	4		Free	0		Free			Free			.
8etector Phase	-	4		3	0		5	2		!	.	.
S2itch Phase												
Kini* um Initial (s,	10.0	10.0		10.0	10.0		10.0	20.0		10.0	20.0	20.0
Kini* um Split (s,	15.5	25.5		15.5	25.5		15.5	25.5		15.5	25.5	25.5
Total Split (s,	15.5	48.0		15.5	48.0		!030	41.0		15.5	37.7	37.7
Total Split (%)	12.9%	40.0%		12.9%	40.0%		15.7%	34.2%		12.9%	31.4%	31.4%
Kaxi* um Green (s,	10.0	42.5		10.0	42.5		13.3	35.5		10.0	32.2	32.2
5ellow Ti* e (s,	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
¯ll-Red Ti* e (s,	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Ti* e ¯ ⊲ust (s,	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Opti* i>e?	5es	5es		5es	5es		5es	5es		5es	5es	5es
) ehicle E@ension (s,	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	&one	&one		&one	&one		&one	Kin		&one	Kin	Kin
Walk Ti* e (s,		8.0			8.0			8.0			8.0	8.0
Flash Dont Walk (s,		12.0			12.0			12.0			12.0	12.0
Pedestrian Calls (#/hr)		0			0			0			0	0
¯ct Effct Green (s,	53.8	42.6	!!.3-	43.4	35.6	!!.3-	!!3.	32.1	!!.3-	10.0	33.8	33.8
¯ctuated g/C Ratio	0.46	0.37	1.00	0.37	0.31	1.00	0.10	0.28	1.00	0.09	0.29	0.29
/c Ratio	0.19	0.98	0.08	0.92	0.11	0.07	0.52	0.91	0.43	0.76	0.29	0.09
' ontrol Delay	!-3-	.03.	0.1	73.9	27.2	0.1	62.7	65.1	0.9	0.30	34.5	0.3
Aueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	!-3-	.03.	0.1	73.9	27.2	0.1	62.7	65.1	0.9	0.30	34.5	0.3
6 S	$	E	¯	E	'	¯	E	E	¯	1	'	¯
¯pproach Delay		52.9			41.8			29.7			43.9	
¯pproach LOS		8			8			'			8	

Intersection Sum* ary

¯rea Type: 6ther
' : cle Length: 120
¯ctuated C: cle Length: 116.7
&atural C: cle: 105 ¯
' ontrol Type: Semi ¯ct-Uncoord
Kaxi* um v/c Ratio: 0.98
Intersection Signal Delay: 40.7 Intersection LOS: D
Intersection Capacity Utili>ation 91.3% IC4 Level of Service F
¯nal: sis Period (min) 15

Splits and Phases: 1: Hamilton Bl d/Robert Service Way



Lane Group	E$	E$R	&$	&$T	S$T	S$R
Lane Configurations						
Traffic Volume (vph)	5	5	5	601	378	5
Future Volume (vph)	5	5	5	601	378	5
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850
Storage Length (m,	0.0	0.0	165.0			160.0
Storage Lanes	!	0	!			!
Taper Length (m,	30.0		75.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	0.932					0.850
Flt Protected	0.976		0.950			
Satd. Flow (prot)	1547	0	1615	3231	3118	1395
Flt Permitted	0.976		0.950			
Satd. Flow (perm,	1547	0	1615	3231	3118	1395
Link Speed (k/h)	50			80	80	
Link Distance (m,	229.8			234.1	280.1	
Travel Ti* e (s,	16.5			10.5	12.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	10%	10%	10%	10%	14%	14%
¯ ≤Flow (vph)	5	5	5	633	398	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	5	633	398	5
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o
Lane ¯lignment	Left	Right	Left	Left	Left	Right
Kedian Width(m,	3.7			3.7	3.7	
Link Offset(m,	0.0			0.0	0.0	
' ross2alk Width(m,	4.8			4.8	4.8	
Two way Left Turn Lane						
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

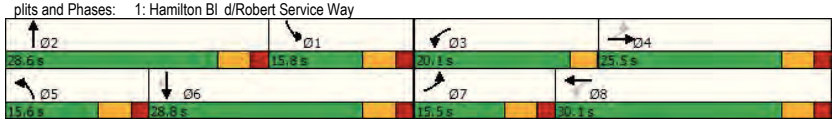
Intersection Sum* ary			
¯ rea Type:	6 ther		
' ontrol Type: Unsignali>ed			
Intersection Capacity Utili>ation 27.1%		IC4 Level of Service	¯
¯ nal: sis Period (min) 15			

Lane Group	E$L	E$T	E$	%$L	%$T	%$	&$L	&$T	&$	$L	$T	$
Lane Configurations												
Traffic Volume (vph)	46	173	/.	421	444	113	107	321	261	!!.	469	//
Future Volume (vph)	46	173	/.	421	444	113	107	321	261	!!.	469	//
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
torage Length (m,	120.0		0.0	120.0		60.0	120.0		90.0	120.0		120.0
torage Lanes	!		!	!		!	!		!	!		!
Taper Length (m,	50.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
atd. Flow (prot)	1601	1685	1432	1709	3417	1529	1630	!.!-	1459	1601	3202	1432
Flt Permitted	0.484			0.470			0.950			0.950		
atd. Flow (perm,	/!-	1685	1432	845	3417	1529	1630	!.!-	1459	1601	3202	1432
ight Turn on Red			5es			5es			5es			5es
atd. Flow (RTO ,			333			333			333			200
Link Speed (k/h)		70			70			80			80	
Link Distance (m,		350.7			185.8			183.2			203.1	
Travel Ti* e (s,		18.0			03-			8.2			03!	
¯eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	!!;	!!;	!!;	4%	4%	4%	0;	0;	0;	!!;	!!;	!!;
Ad< Flow (vph)	48	182	92	443	467	!!0	113	338	275	123	494	93
hared Lane Traffic (%)												
Lane Group Flow (vph)	48	182	92	443	467	!!0	113	338	275	123	494	93
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o
Lane Alignment	Left	Left	ight	Left	Left	ight	Left	Left	ight	Left	Left	ight
Kedian Width(m,		6.0			6.0			5.0			5.0	
Link Offset(m,		0.0			0.0			0.0			0.0	
' ross2alk Width(m,		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
&umber of Detectors	!	2	!	!	2	!	!	2	!	!	2	!
8etector Template	Left	Thru	ight	Left	Thru	ight	Left	Thru	ight	Left	Thru	ight
Leading Detector (m,	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel												
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,		9.4			9.4			9.4			9.4	
8etector 2 Si>e(m,		0.6			0.6			0.6			0.6	
8etector 2 Type		' I+E@			' I+E@			' I+E@			' I+E@	
8etector 2 Channel												
8etector 2 E@end (s,		0.0			0.0			0.0			0.0	
Turn Type	#* +pt	&A	Free	#* +pt	&A	Free	¯rot	&A	Free	¯rot	&A	¯erm
¯rotected Phases	.	4		3	/		5	2		!	-	

Lane Group	E$L	E$T	E$	%$L	%$T	%$	&$L	&$T	&$	$L	$T	$
¯ermitted Phases	4		Free	/		Free			Free			-
8 etector Phase	.	4		3	/		5	2		!	-	-
2 itch Phase												
K ini* um Initial (s,	10.0	10.0		7.0	10.0		10.0	20.0		10.0	20.0	20.0
K ini* um Split (s,	15.5	25.5		15.5	25.5		15.5	25.5		15.5	25.5	25.5
Total Split (s,	15.5	25.5		20.1	30.1		15.6	28.6		15.8	28.8	28.8
Total Split (%)	17.2%	28.3%		22.3%	33.4%		17.3%	31.8%		!.3-;	32.0%	32.0%
K axi* um Green (s,	10.0	20.0		!.3!	24.6		10.1	23.1		10.3	23.3	23.3
5ellow Ti* e (s,	3.5	3.5		2.9	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Ti* e (s,	2.0	2.0		0.1	2.0		2.0	2.0		2.0	2.0	2.0
Lost Ti* e Ad<ust (s,	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5		3.0	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Opti* i>e?	5es	5es		5es	5es		5es	5es		5es	5es	5es
) ehicle E@tension (s,	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
ecall Mode	&one	&one		&one	&one		&one	K in		&one	K in	K in
Walk Ti* e (s,		8.0			8.0			8.0			8.0	8.0
Flash Dont Walk (s,		12.0			12.0			12.0			12.0	12.0
¯edestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s,	24.4	14.3	82.3	36.4	25.1	82.3	10.1	21.6	82.3	10.2	25.2	25.2
Actuated g/C Ratio	0.30	0.17	1.00	0.44	0.30	1.00	0.12	0.26	1.00	0.12	0.31	0.31
/c Ratio	0.14	0.62	0.06	0.81	0.45	0.08	0.57	0.75	0.19	0.62	0.50	0.16
' ontrol Delay	16.3	41.6	0.1	31.0	26.7	0.1	48.3	40.9	0.3	51.2	27.9	0.6
A ueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	41.6	0.1	31.0	26.7	0.1	48.3	40.9	0.3	51.2	27.9	0.6
LO	$	8	A	'	'	A	8	8	A	8	'	A
Approach Delay		26.0			25.5			26.7			28.4	
Approach LO		'			'			'			'	

Intersection Sum* ary			
Area Type:	6 ther		
' : cle Length: 90			
Actuated C: cle Length: 82.3			
&atural C: cle: 85			
' ontrol Type: Semi Act-Uncoord			
K axi* um v/c Ratio: 0.81			
Intersection Signal Delay: 26.6		Intersection LO : C	
Intersection Capacity Utili>ation 76.1%		IC4 Level of Service D	
Anal: sis Period (min) 15			

plits and Phases: 1: Hamilton Bl d/Robert Service Way



Lane Group	E$L	E$	&$L	&$T	$T	$
Lane Configurations						
Traffic Volume (vph)	5	5	5	475	--0	5
Future Volume (vph)	5	5	5	475	--0	5
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850
torage Length (m,	0.0	0.0	165.0			160.0
torage Lanes	!	0	!			!
Taper Length (m,	30.0		75.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	0.932					0.850
Flt Protected	0.976		0.950			
atd. Flow (prot)	1547	0	1630	3261	3202	1432
Flt Permitted	0.976		0.950			
atd. Flow (perm,	1547	0	1630	3261	3202	1432
Link Speed (k/h)	50			80	80	
Link Distance (m,	229.8			234.1	280.1	
Travel Ti* e (s,	16.5			10.5	12.6	
¯eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
9 eav: Vehicles (%)	10%	10%	0;	0;	!!;	!!;
Ad< Flow (vph)	5	5	5	500	704	5
hared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	5	500	704	5
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o
Lane Alignment	Left	ight	Left	Left	Left	ight
K edian Width(m,	3.7			3.7	3.7	
Link Offset(m,	0.0			0.0	0.0	
' ross2 alk Width(m,	4.8			4.8	4.8	
Two way Left Turn Lane						
9 eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
ign Control	top			Free	Free	

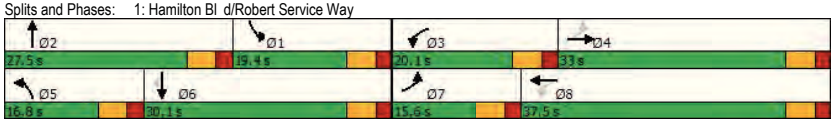
Intersection Sum* ary			
Area Type:	6 ther		
' ontrol Type: Unsignali>ed			
Intersection Capacity Utili>ation 29.0%		IC4 Level of Service A	
Anal: sis Period (min) 15			

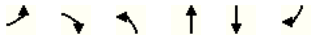
Lane Group	E$	E$T	E$R	%$	%$T	%$R	&$	&$T	&$R	S$	S$T	S$R
Lane Configurations												
Traffic Volume (vph)	107	.!!	110	172	104	/.	-/	403	587	/.	246	41
Future Volume (vph)	107	.!!	110	172	104	/.	-/	403	587	/.	246	41
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m,	120.0		100.0	120.0		60.0	120.0		60.0	120.0		120.0
Storage Lanes	!		!	!		!	!		!	!		!
Taper Length (m,	50.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1709	3417	1529	1615	3231	1445	1615	3231	1445	1559	3118	1395
Flt Permitted	0.683			0.197			0.950			0.950		
Satd. Flow (perm,	1228	3417	1529	335	3231	1445	1615	3231	1445	1559	3118	1395
Right Turn on Red			5es			5es			5es			5es
Satd. Flow (RTOR,			267			267			533			147
Link Speed (k/h)		70			70			80			80	
Link Distance (m,		350.7			185.8			124.3			203.1	
Travel Ti* e (s,		18.0			/3.			5.6			/3!	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	4%	4%	4%	10%	10%	10%	10%	10%	10%	14%	14%	14%
¯ < Flow (vph)	113	643	!!.	!0!	109	101	83	424	.!0	101	259	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	113	643	!!.	!0!	109	101	83	424	.!0	101	259	43
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o
Lane ¯lignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Kedian Width(m,		6.0			6.0			5.0			5.0	
Link Offset(m,		0.0			0.0			0.0			0.0	
' ross2 alk Width(m,		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30		25	30		25	30		40	30		25
&umber of Detectors	!	2	!	!	2	!	!	2	!	!	2	!
8etector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m,	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel												
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,		9.4			9.4			9.4			9.4	
8etector 2 Si>e(m,		0.6			0.6			0.6			0.6	
8etector 2 Type		' I+E@			' I+E@			' I+E@			' I+E@	
8etector 2 Channel												
8etector 2 E@end (s,		0.0			0.0			0.0			0.0	
Turn Type	#* +pt	&¯	Free	#* +pt	&¯	Free	Prot	&¯	Free	Prot	&¯	Perm
Protected Phases	-	4		3	0		5	2		!	.	

Lane Group	E$	E$T	E$R	%$	%$T	%$R	&$	&$T	&$R	S$	S$T	S$R
Permitted Phases	4		Free	0		Free			Free			.
8etector Phase	-	4		3	0		5	2		!	.	.
S2itch Phase												
Kini* um Initial (s,	10.0	10.0		10.0	10.0		10.0	20.0		10.0	20.0	20.0
Kini* um Split (s,	15.5	25.5		15.5	25.5		15.5	25.5		15.5	25.5	25.5
Total Split (s,	15.6	33.0		20.1	37.5		!.30	27.5		19.4	30.1	30.1
Total Split (%)	15.6%	33.0%		20.1%	37.5%		!.30;	27.5%		19.4%	30.1%	30.1%
Kaxi* um Green (s,	10.1	27.5		14.6	32.0		11.3	22.0		13.9	24.6	24.6
5ellow Ti* e (s,	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
¯ll-Red Ti* e (s,	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Ti* e ¯ ⊲ost (s,	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Opti* i>e?	5es	5es		5es	5es		5es	5es		5es	5es	5es
) ehicle E@ension (s,	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	&one	&one		&one	&one		&one	Kin		&one	Kin	Kin
Walk Ti* e (s,		8.0			8.0			8.0			8.0	8.0
Flash Dont Walk (s,		12.0			12.0			12.0			12.0	12.0
Pedestrian Calls (#/hr)		0			0			0			0	0
¯ct Effct Green (s,	31.1	20.8	83.9	35.9	26.8	83.9	10.8	21.0	83.9	!!30	22.0	22.0
¯ctuated g/C Ratio	0.37	0.25	1.00	0.43	0.32	1.00	0.13	0.25	1.00	0.14	0.26	0.26
/c Ratio	0.22	0.76	0.08	0.56	0.11	0.07	0.40	0.52	0.43	0.46	0.32	0.09
' ontrol Delay	16.0	36.6	0.1	22.0	24.2	0.1	44.7	32.8	0.9	44.8	29.0	0.4
Aueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	36.6	0.1	22.0	24.2	0.1	44.7	32.8	0.9	44.8	29.0	0.4
6 S	$	8	¯	'	'	¯	8	'	¯	8	'	¯
¯pproach Delay		29.1			!.3/			16.2			29.9	
¯pproach LOS		'			$			$			'	

Intersection Sum* ary			
¯rea Type:	6 ther		
' : cle Length: 100			
¯ctuated C: cle Length: 83.9			
&atural C: cle: 85			
' ontrol Type: Semi ¯ct-Uncoord			
Kaxi* um v/c Ratio: 0.76			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utili>ation 70.5%		IC4 Level of Service C	
¯nal: sis Period (min) 15			

Splits and Phases: 1: Hamilton Bl d/Robert Service Way





Lane Group	E$	E$R	&$	&$T	S$T	S$R
Lane Configurations						
Traffic Volume (vph)	5	5	5	601	378	5
Future Volume (vph)	5	5	5	601	378	5
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850
Storage Length (m,	0.0	0.0	165.0			160.0
Storage Lanes	!	0	!			!
Taper Length (m,	30.0		75.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	0.932					0.850
Flt Protected	0.976		0.950			
Satd. Flow (prot)	1547	0	1615	3231	3118	1395
Flt Permitted	0.976		0.950			
Satd. Flow (perm,	1547	0	1615	3231	3118	1395
Link Speed (k/h)	50			80	80	
Link Distance (m,	229.8			234.1	280.1	
Travel Ti* e (s,	16.5			10.5	12.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
9 eav: Vehicles (%)	10%	10%	10%	10%	14%	14%
¯ ≤ Flow (vph)	5	5	5	633	398	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	5	633	398	5
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o
Lane ¯ lignment	Left	Right	Left	Left	Left	Right
K edian Width(m,	3.7			3.7	3.7	
Link Offset(m,	0.0			0.0	0.0	
' ross2 alk Width(m,	4.8			4.8	4.8	
Two way Left Turn Lane						
9 eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
Sign Control	Stop			Free	Free	

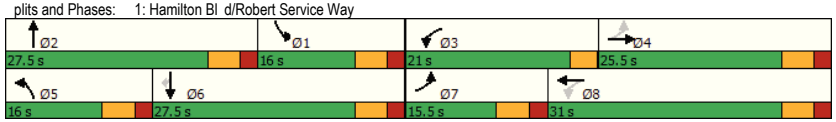
Intersection Sum* ary			
¯ rea Type:	6 ther		
' ontrol Type: Unsignali>ed			
Intersection Capacity Utili>ation 27.1%		IC4 Level of Service	¯
¯ nal: sis Period (min) 15			

Lane Group	E$L	E$T	E$	%$L	%$T	%$	&$L	&$T	&$	$L	$T	$
Lane Configurations												
Traffic Volume (vph)	46	173	/.	421	444	113	107	321	261	!!.	469	//
Future Volume (vph)	46	173	/.	421	444	113	107	321	261	!!.	469	//
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
torage Length (m,	120.0		100.0	120.0		60.0	120.0		60.0	120.0		120.0
torage Lanes	!		!	!		!	!		!	!		!
Taper Length (m,	50.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
atd. Flow (prot)	1601	3202	1432	1709	3417	1529	1630	3261	1459	1601	3202	1432
Flt Permitted	0.484			0.523			0.950			0.950		
atd. Flow (perm,	/!-	3202	1432	941	3417	1529	1630	3261	1459	1601	3202	1432
ight Turn on Red			5es			5es			5es			5es
atd. Flow (RTO ,			333			333			333			200
Link Speed (k/h)		70			70			80			80	
Link Distance (m,		350.7			185.8			124.3			203.1	
Travel Ti* e (s,		18.0			03-			5.6			03!	
¯ eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
9 eav: Vehicles (%)	!!;	!!;	!!;	4%	4%	4%	0;	0;	0;	!!;	!!;	!!;
Ad< Flow (vph)	48	182	92	443	467	!!0	113	338	275	123	494	93
hared Lane Traffic (%)												
Lane Group Flow (vph)	48	182	92	443	467	!!0	113	338	275	123	494	93
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o
Lane Alignment	Left	Left	ight	Left	Left	ight	Left	Left	ight	Left	Left	ight
K edian Width(m,		6.0			6.0			5.0			5.0	
Link Offset(m,		0.0			0.0			0.0			0.0	
' ross2 alk Width(m,		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
9 eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
&umber of Detectors	!	2	!	!	2	!	!	2	!	!	2	!
8 etector Template	Left	Thru	ight	Left	Thru	ight	Left	Thru	ight	Left	Thru	ight
Leading Detector (m,	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 etector 1 Si>e(m,	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
8 etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8 etector 1 Channel												
8 etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8 etector 2 Position(m,		9.4			9.4			9.4			9.4	
8 etector 2 Si>e(m,		0.6			0.6			0.6			0.6	
8 etector 2 Type		' I+E@			' I+E@			' I+E@			' I+E@	
8 etector 2 Channel												
8 etector 2 E@end (s,		0.0			0.0			0.0			0.0	
Turn Type	#* +pt	&A	Free	#* +pt	&A	Free	¯ rot	&A	Free	¯ rot	&A	¯ erm
¯ rotected Phases	.	4		3	/		5	2		!	-	

Lane Group	E$L	E$T	E$	%$L	%$T	%$	&$L	&$T	&$	$L	$T	$
¯ermitted Phases	4		Free	/		Free			Free			-
8 etector Phase	.	4		3	/		5	2		!	-	-
2 itch Phase												
K ini* um Initial (s,	10.0	10.0		7.0	10.0		10.0	20.0		10.0	20.0	20.0
K ini* um Split (s,	15.5	25.5		15.5	25.5		15.5	25.5		15.5	25.5	25.5
Total Split (s,	15.5	25.5		21.0	31.0		16.0	27.5		16.0	27.5	27.5
Total Split (%)	17.2%	28.3%		23.3%	34.4%		!.3/;	30.6%		!.3/;	30.6%	30.6%
K axi* um Green (s,	10.0	20.0		18.0	25.5		10.5	22.0		10.5	22.0	22.0
5ellow Ti* e (s,	3.5	3.5		2.9	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Ti* e (s,	2.0	2.0		0.1	2.0		2.0	2.0		2.0	2.0	2.0
Lost Ti* e Ad<ust (s,	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5		3.0	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Opti* i>e?	5es	5es		5es	5es		5es	5es		5es	5es	5es
) ehicle E@ension (s,	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
ecall Mode	&one	&one		&one	&one		&one	K in		&one	K in	K in
Walk Ti* e (s,		8.0			8.0			8.0			8.0	8.0
Flash Dont Walk (s,		12.0			12.0			12.0			12.0	12.0
¯edestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s,	21.6	11.5	./30	34.1	22.6	./30	10.3	20.1	./30	10.7	23.8	23.8
Actuated g/C Ratio	0.27	0.15	1.00	0.43	0.29	1.00	0.13	0.25	1.00	0.14	0.30	0.30
/c Ratio	0.15	0.39	0.06	0.77	0.48	0.08	0.53	0.41	0.19	0.57	0.51	0.16
' ontrol Delay	16.5	33.4	0.1	28.1	27.2	0.1	43.1	27.1	0.3	43.9	27.2	0.6
A ueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.5	33.4	0.1	28.1	27.2	0.1	43.1	27.1	0.3	43.9	27.2	0.6
LO	$	'	A	'	'	A	8	'	A	8	'	A
Approach Delay		21.3			24.4			19.4			26.6	
Approach LO		'			'			$			'	

Intersection Sum* ary			
Area Type:	6 ther		
' : cle Length: 90			
Actuated C: cle Length: 78.9			
&atural C: cle: 85			
' ontrol Type: Semi Act-Uncoord			
K axi* um v/c Ratio: 0.77			
Intersection Signal Delay: 23.3		Intersection LO : C	
Intersection Capacity Utili>ation 74.4%		IC4 Level of Service D	
Anal: sis Period (min) 15			

plits and Phases: 1: Hamilton Bl d/Robert Service Way



Lane Group	E$L	E$	&$L	&$T	$T	$
Lane Configurations						
Traffic Volume (vph)	5	5	5	475	--0	5
Future Volume (vph)	5	5	5	475	--0	5
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850
torage Length (m,	0.0	0.0	165.0			160.0
torage Lanes	!	0	!			!
Taper Length (m,	30.0		75.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt	0.932					0.850
Flt Protected	0.976		0.950			
atd. Flow (prot)	1547	0	1630	3261	3202	1432
Flt Permitted	0.976		0.950			
atd. Flow (perm,	1547	0	1630	3261	3202	1432
Link Speed (k/h)	50			80	80	
Link Distance (m,	229.8			234.1	280.1	
Travel Ti* e (s,	16.5			10.5	12.6	
¯eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
9 eav: Vehicles (%)	10%	10%	0;	0;	!!;	!!;
Ad< Flow (vph)	5	5	5	500	704	5
hared Lane Traffic (%)						
Lane Group Flow (vph)	10	0	5	500	704	5
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o
Lane Alignment	Left	ight	Left	Left	Left	ight
K edian Width(m,	3.7			3.7	3.7	
Link Offset(m,	0.0			0.0	0.0	
' ross2 alk Width(m,	4.8			4.8	4.8	
Two way Left Turn Lane						
9 eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
ign Control	top			Free	Free	

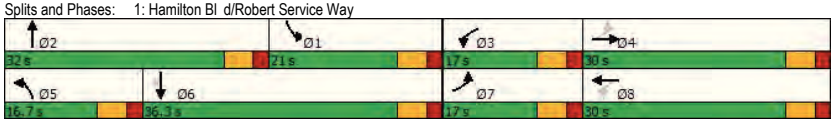
Intersection Sum* ary			
Area Type:	6 ther		
' ontrol Type: Unsignali>ed			
Intersection Capacity Utili>ation 29.0%		IC4 Level of Service A	
Anal: sis Period (min) 15			

Lane Group	E$	E$T	E$R	%$	%$T	%$R	&$	&$T	&$R	S$	S$T	S$R
Lane Configurations												
Traffic Volume (vph)	202	-!!	110	172	104	139	./	526	587	148	267	50
Future Volume (vph)	202	-!!	110	172	104	139	./	526	587	148	267	50
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
Storage Length (m,	120.0		100.0	120.0		60.0	120.0		60.0	120.0		120.0
Storage Lanes	!		!	!		!	!		!	!		!
Taper Length (m,	50.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1709	3417	1529	1615	3231	1445	1615	3231	1445	1559	3118	1395
Flt Permitted	0.529			0.273			0.950			0.950		
Satd. Flow (perm,	951	3417	1529	464	3231	1445	1615	3231	1445	1559	3118	1395
Right Turn on Red			5es			5es			5es			5es
Satd. Flow (RTOR,			267			267			563			147
Link Speed (k/h)		70			70			80			80	
Link Distance (m,		350.7			185.8			124.3			203.1	
Travel Ti* e (s,		18.0			/3-			5.6			/3!	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	4%	4%	4%	10%	10%	10%	10%	10%	10%	14%	14%	14%
¯ < Flow (vph)	213	643	!!-	!0!	109	146	83	554	-!0	156	281	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	643	!!-	!0!	109	146	83	554	-!0	156	281	53
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o
Lane ¯lignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Kedian Width(m,		6.0			6.0			5.0			5.0	
Link Offset(m,		0.0			0.0			0.0			0.0	
' ross2 alk Width(m,		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	30		25	30		25	30		40	30		25
&umber of Detectors	!	2	!	!	2	!	!	2	!	!	2	!
8etector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m,	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel												
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,		9.4			9.4			9.4			9.4	
8etector 2 Si>e(m,		0.6			0.6			0.6			0.6	
8etector 2 Type		' I+E@			' I+E@			' I+E@			' I+E@	
8etector 2 Channel												
8etector 2 E@end (s,		0.0			0.0			0.0			0.0	
Turn Type	#* +pt	&¯	Free	#* +pt	&¯	Free	Prot	&¯	Free	Prot	&¯	Perm
Protected Phases	.	4		3	0		5	2		!	-	

Lane Group	E$	E$T	E$R	%$	%$T	%$R	&$	&$T	&$R	S$	S$T	S$R
Permitted Phases	4		Free	0		Free			Free			-
8etector Phase	.	4		3	0		5	2		!	-	-
S2itch Phase												
Kini* um Initial (s,	10.0	10.0		10.0	10.0		10.0	20.0		10.0	20.0	20.0
Kini* um Split (s,	15.5	25.5		15.5	25.5		15.5	25.5		15.5	25.5	25.5
Total Split (s,	17.0	30.0		17.0	30.0		!-3.	32.0		21.0	36.3	36.3
Total Split (%)	17.0%	30.0%		17.0%	30.0%		!-3.;	32.0%		21.0%	36.3%	36.3%
Kaxi* um Green (s,	11.5	24.5		11.5	24.5		11.2	26.5		15.5	30.8	30.8
5ellow Ti* e (s,	3.5	3.5		3.5	3.5		3.5	3.5		3.5	3.5	3.5
¯ll-Red Ti* e (s,	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Lost Ti* e ¯ ⊲ost (s,	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5		5.5	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Opti* i>e?	5es	5es		5es	5es		5es	5es		5es	5es	5es
) ehicle E@ension (s,	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Recall Mode	&one	&one		&one	&one		&one	Kin		&one	Kin	Kin
Walk Ti* e (s,		8.0			8.0			8.0			8.0	8.0
Flash Dont Walk (s,		12.0			12.0			12.0			12.0	12.0
Pedestrian Calls (#/hr)		0			0			0			0	0
¯ct Effct Green (s,	33.3	20.9	0/3.	28.2	19.5	0/3.	10.5	22.2	0/3.	13.4	28.7	28.7
¯ctuated g/C Ratio	0.37	0.23	1.00	0.31	0.22	1.00	0.12	0.25	1.00	0.15	0.32	0.32
/c Ratio	0.44	0.81	0.08	0.63	0.16	0.10	0.44	0.69	0.43	0.67	0.28	0.10
' ontrol Delay	21.6	41.9	0.1	30.0	28.9	0.1	47.4	36.6	0.9	52.7	25.9	0.4
Aueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	21.6	41.9	0.1	30.0	28.9	0.1	47.4	36.6	0.9	52.7	25.9	0.4
6 S	'	8	¯	'	'	¯	8	8	¯	8	'	¯
¯pproach Delay		32.4			!/3.			!/30			31.7	
¯pproach LOS		'			$			$			'	

Intersection Sum* ary			
¯rea Type:	6ther		
' : cle Length: 100			
¯ctuated C: cle Length: 89.7			
&atural C: cle: 85			
' ontrol Type: Semi ¯ct-Uncoord			
Kaxi* um v/c Ratio: 0.81			
Intersection Signal Delay: 25.5		Intersection LOS: C	
Intersection Capacity Utili>ation 70.6%		IC4 Level of Service C	
¯nal: sis Period (min) 15			

Splits and Phases: 1: Hamilton Bl d/Robert Service Way

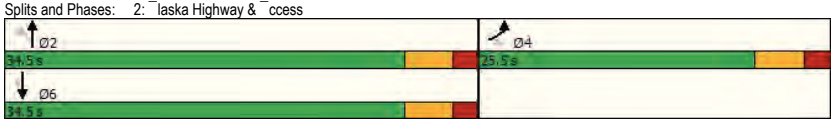


Lane Group	E$	E$R	&$	&$T	S$T	S$R
Lane Configurations						
Traffic Volume (vph)	29	0.	265	601	378	49
Future Volume (vph)	29	0.	265	601	378	49
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850
Storage Length (m,	60.0	0.0	165.0			160.0
Storage Lanes	!	!	!			!
Taper Length (m,	30.0		75.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	1615	1445	1615	3231	3118	1395
Flt Permitted	0.950		0.517			
Satd. Flow (perm,	1615	1445	0./	3231	3118	1395
Right Turn on Red		5es				5es
Satd. Flow (RTOR,		92				52
Link Speed (k/h)	50			80	80	
Link Distance (m,	229.8			234.1	280.1	
Travel Ti* e (s,	16.5			10.5	12.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	10%	10%	10%	10%	14%	14%
¯ < Flow (vph)	31	92	279	633	398	52
Shared Lane Traffic (%)						
Lane Group Flow (vph)	31	92	279	633	398	52
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o
Lane ¯lignment	Left	Right	Left	Left	Left	Right
Kedian Width(m,	3.7			3.7	3.7	
Link Offset(m,	0.0			0.0	0.0	
' ross2alk Width(m,	4.8			4.8	4.8	
Two way Left Turn Lane						
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
&umber of Detectors	!	!	!	2	2	!
8etector Template	Left	Right	Left	Thru	Thru	Right
Leading Detector (m,	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	2.0	2.0	0.6	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel						
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,				9.4	9.4	
8etector 2 Si>e(m,				0.6	0.6	
8etector 2 Type				' I+E@	' I+E@	
8etector 2 Channel						
8etector 2 E@end (s,				0.0	0.0	
Turn Type	Prot	Perm	Perm	&¯	&¯	Perm
Protected Phases	4			2	-	

Lane Group	E$	E$R	&$	&$T	S$T	S$R
Permitted Phases		4	2			-
8etector Phase	4	4	2	2	-	-
S2itch Phase						
Kini* um Initial (s,	10.0	10.0	10.0	10.0	10.0	10.0
Kini* um Split (s,	25.5	25.5	25.5	25.5	25.5	25.5
Total Split (s,	25.5	25.5	34.5	34.5	34.5	34.5
Total Split (%)	42.5%	42.5%	57.5%	57.5%	57.5%	57.5%
Kaxi* um Green (s,	20.0	20.0	29.0	29.0	29.0	29.0
5ellow Ti* e (s,	3.5	3.5	3.5	3.5	3.5	3.5
¯ll-Red Ti* e (s,	2.0	2.0	2.0	2.0	2.0	2.0
Lost Ti* e ¯ ⊲ust (s,	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag						
Lead-Lag Opti* i>e?						
) ehicle E@ension (s,	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	&one	&one	Kin	Kin	Kin	Kin
Walk Ti* e (s,	8.0	8.0	8.0	8.0	8.0	8.0
Flash Dont Walk (s,	12.0	12.0	12.0	12.0	12.0	12.0
Pedestrian Calls (#/hr)	0	0	0	0	0	0
¯ct Effct Green (s,	10.4	10.4	28.8	28.8	28.8	28.8
¯ctuated g/C Ratio	0.26	0.26	0.72	0.72	0.72	0.72
/c Ratio	0.07	0.21	0.44	0.27	0.18	0.05
' ontrol Delay	15.5	6.2	9.0	4.9	4.6	2.0
Aueue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.5	6.2	9.0	4.9	4.6	2.0
6 S	$					
¯pproach Delay	8.5			-3!	4.3	
¯pproach LOS						

Intersection Sum* ary			
¯rea Type:	6ther		
' : cle Length: 60			
¯ctuated C: cle Length: 39.8			
&atural C: cle: 60			
' ontrol Type: Semi ¯ct-Uncoord			
Kaxi* um v/c Ratio: 0.44			
Intersection Signal Delay: 5.8		Intersection LOS: ¯	
Intersection Capacity Utili>ation 47.9%		IC4 Level of Service ¯	
¯nal: sis Period (min) 15			

Splits and Phases: 2: ¯laska Highway & ¯ccess



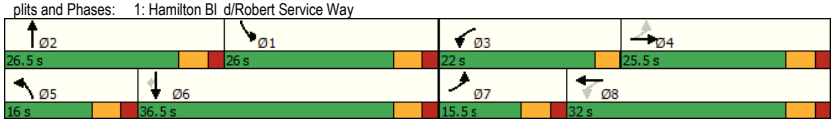
Lane Group	E$L	E$T	E$	%$L	%$T	%$	&$L	&$T	&$	$L	$T	$
Lane Configurations												
Traffic Volume (vph)	94	158	./	421	395	267	107	395	261	224	631	244
Future Volume (vph)	94	158	./	421	395	267	107	395	261	224	631	244
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850	1850
torage Length (m,	120.0		100.0	120.0		60.0	120.0		60.0	120.0		120.0
torage Lanes	!		!	!		!	!		!	!		!
Taper Length (m,	50.0			30.0			30.0			30.0		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
atd. Flow (prot)	1601	3202	1432	1709	3417	1529	1630	3261	1459	1601	3202	1432
Flt Permitted	0.508			0.521			0.950			0.950		
atd. Flow (perm,	856	3202	1432	937	3417	1529	1630	3261	1459	1601	3202	1432
ight Turn on Red			5es			5es			5es			5es
atd. Flow (RTO ,			300			300			300			257
Link Speed (k/h)		70			70			80			80	
Link Distance (m,		350.7			185.8			124.3			203.1	
Travel Ti* e (s,		18.0			-30			5.6			-3!	
¯eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	!!;	!!;	!!;	4%	4%	4%	-;	-;	-;	!!;	!!;	!!;
Ad< Flow (vph)	--	!00	92	443	416	281	113	416	275	236	664	257
hared Lane Traffic (%)												
Lane Group Flow (vph)	--	!00	92	443	416	281	113	416	275	236	664	257
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o	&o
Lane Alignment	Left	Left	ight	Left	Left	ight	Left	Left	ight	Left	Left	ight
Kedian Width(m,		6.0			6.0			5.0			5.0	
Link Offset(m,		0.0			0.0			0.0			0.0	
' ross2 alk Width(m,		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25		15	25		15	25		15	25		15
&umber of Detectors	!	2	!	!	2	!	!	2	!	!	2	!
8etector Template	Left	Thru	ight	Left	Thru	ight	Left	Thru	ight	Left	Thru	ight
Leading Detector (m,	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel												
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,		9.4			9.4			9.4			9.4	
8etector 2 Si>e(m,		0.6			0.6			0.6			0.6	
8etector 2 Type		' I+E@			' I+E@			' I+E@			' I+E@	
8etector 2 Channel												
8etector 2 E@end (s,		0.0			0.0			0.0			0.0	
Turn Type	#* +pt	&A	Free	#* +pt	&A	Free	¯rot	&A	Free	¯rot	&A	¯erm
¯rotected Phases	/	4		3	.		5	2		!	0	

Lane Group	E$L	E$T	E$	%$L	%$T	%$	&$L	&$T	&$	$L	$T	$
ermitted Phases	4		Free	.		Free			Free			0
8etector Phase	/	4		3	.		5	2		!	0	0
2itch Phase												
Kini* um Initial (s,	10.0	10.0		7.0	10.0		10.0	20.0		10.0	20.0	20.0
Kini* um Split (s,	15.5	25.5		15.5	25.5		15.5	25.5		15.5	25.5	25.5
Total Split (s,	15.5	25.5		22.0	32.0		16.0	26.5		26.0	36.5	36.5
Total Split (%)	15.5%	25.5%		22.0%	32.0%		16.0%	26.5%		26.0%	36.5%	36.5%
Kaxi* um Green (s,	10.0	20.0		19.0	26.5		10.5	21.0		20.5	31.0	31.0
5ellow Ti* e (s,	3.5	3.5		2.9	3.5		3.5	3.5		3.5	3.5	3.5
All-Red Ti* e (s,	2.0	2.0		0.1	2.0		2.0	2.0		2.0	2.0	2.0
Lost Ti* e Ad<ust (s,	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5		3.0	5.5		5.5	5.5		5.5	5.5	5.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lead		Lag	Lag	Lag
Lead-Lag Opti* i>e?	5es	5es		5es	5es		5es	5es		5es	5es	5es
) ehicle E@ension (s,	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
ecall Mode	&one	&one		&one	&one		&one	Kin		&one	Kin	Kin
Walk Ti* e (s,		8.0			8.0			8.0			8.0	8.0
Flash Dont Walk (s,		12.0			12.0			12.0			12.0	12.0
¯edestrian Calls (#/hr)		0			0			0			0	0
Act Effct Green (s,	21.1	!!3!	.03!	34.7	20.2	.03!	10.3	20.3	.03!	17.0	26.9	26.9
Actuated g/C Ratio	0.25	0.13	1.00	0.40	0.23	1.00	0.12	0.24	1.00	0.20	0.31	0.31
/c Ratio	0.33	0.40	0.06	0.82	0.52	0.18	0.58	0.54	0.19	0.75	0.66	0.41
' ontrol Delay	23.0	38.7	0.1	36.0	33.5	0.3	50.7	33.0	0.3	48.5	29.5	5.3
Aueue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	23.0	38.7	0.1	36.0	33.5	0.3	50.7	33.0	0.3	48.5	29.5	5.3
LO	'	8	A	8	'	A	8	'	A	8	'	A
Approach Delay		24.4			26.3			24.3			28.0	
Approach LO		'			'			'			'	

Intersection Sum* ary

Area Type: 6 ther
' : cle Length: 100
Actuated C: cle Length: 86.1
&atural C: cle: 85
' ontrol Type: Semi Act-Uncoord
Kaxi* um v/c Ratio: 0.82
Intersection Signal Delay: 26.2 Intersection LO : C
Intersection Capacity Utili>ation 78.8% IC4 Level of Service D
Anal: sis Period (min) 15

plits and Phases: 1: Hamilton Bl d/Robert Service Way



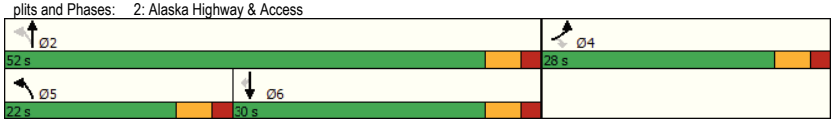
Lane Group	E$L	E$	&$L	&$T	$T	$
Lane Configurations						
Traffic Volume (vph)	120	464	315	440	635	!!!
Future Volume (vph)	120	464	315	440	635	!!!
Ideal Flow (vphpl,	1850	1850	1850	1850	1850	1850
torage Length (m,	60.0	0.0	165.0			160.0
torage Lanes	!	!	!			!
Taper Length (m,	30.0		75.0			
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00
Frt		0.850				0.850
Flt Protected	0.950		0.950			
atd. Flow (prot)	1615	1445	1630	3261	3202	1432
Flt Permitted	0.950		0.215			
atd. Flow (perm,	1615	1445	369	3261	3202	1432
ight Turn on Red		5es				5es
atd. Flow (RTO ,		474				!!/
Link Speed (k/h)	50			80	80	
Link Distance (m,	229.8			234.1	280.1	
Travel Ti* e (s,	16.5			10.5	12.6	
¯eak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
9eav: Vehicles (%)	10%	10%	-;	-;	!!;	!!;
Ad< Flow (vph)	126	488	332	463	00.	!!/
hared Lane Traffic (%)						
Lane Group Flow (vph)	126	488	332	463	00.	!!/
Enter Blocked Intersection	&o	&o	&o	&o	&o	&o
Lane Alignment	Left	ight	Left	Left	Left	ight
Kedian Width(m,	3.7			3.7	3.7	
Link Offset(m,	0.0			0.0	0.0	
' ross2 alk Width(m,	4.8			4.8	4.8	
Two way Left Turn Lane						
9eadway Factor	1.02	1.02	1.02	1.02	1.02	1.02
Turning Speed (k/h)	25	15	25			15
&umber of Detectors	!	!	!	2	2	!
8etector Template	Left	ight	Left	Thru	Thru	ight
Leading Detector (m,	2.0	2.0	2.0	10.0	10.0	2.0
Trailing Detector (m,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Position(m,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Si>e(m,	2.0	2.0	2.0	0.6	0.6	2.0
8etector 1 Type	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@	' I+E@
8etector 1 Channel						
8etector 1 E@end (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Queue (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 1 Delay (s,	0.0	0.0	0.0	0.0	0.0	0.0
8etector 2 Position(m,				9.4	9.4	
8etector 2 Si>e(m,				0.6	0.6	
8etector 2 Type				' I+E@	' I+E@	
8etector 2 Channel						
8etector 2 E@end (s,				0.0	0.0	
Turn Type	¯rot	¯erm	#* +pt	&A	&A	¯erm
¯rotected Phases	4		5	2	0	

Lane Group	E$L	E$	&$L	&$T	$T	$
ermitted Phases		4	2			0
8etector Phase	4	4	5	2	0	0
2itch Phase						
Kini* um Initial (s,	10.0	10.0	10.0	10.0	10.0	10.0
Kini* um Split (s,	25.5	25.5	15.5	25.5	25.5	25.5
Total Split (s,	28.0	28.0	22.0	52.0	30.0	30.0
Total Split (%)	35.0%	35.0%	27.5%	65.0%	37.5%	37.5%
Kaxi* um Green (s,	22.5	22.5	16.5	46.5	24.5	24.5
5ellow Ti* e (s,	3.5	3.5	3.5	3.5	3.5	3.5
All-Red Ti* e (s,	2.0	2.0	2.0	2.0	2.0	2.0
Lost Ti* e Ad<ust (s,	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Ti* e (s,	5.5	5.5	5.5	5.5	5.5	5.5
Lead/Lag			Lead		Lag	Lag
Lead-Lag Opti* i>e?			5es		5es	5es
) ehicle E@ension (s,	3.0	3.0	3.0	3.0	3.0	3.0
ecall Mode	&one	&one	&one	Kin	Kin	Kin
Walk Ti* e (s,	8.0	8.0		8.0	8.0	8.0
Flash Dont Walk (s,	12.0	12.0		12.0	12.0	12.0
¯edestrian Calls (#/hr)	0	0		0	0	0
Act Effct Green (s,	12.7	12.7	38.5	38.5	!/3.	!/3.
Actuated g/C Ratio	0.20	0.20	0.62	0.62	0.28	0.28
/c Ratio	0.39	0.73	0.62	0.23	0.73	0.24
' ontrol Delay	26.8	10.2	14.2	6.0	26.2	5.8
Aueue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	10.2	14.2	6.0	26.2	5.8
LO	'	$	$	A	'	A
Approach Delay	13.6			9.5	23.2	
Approach LO	$			A	'	

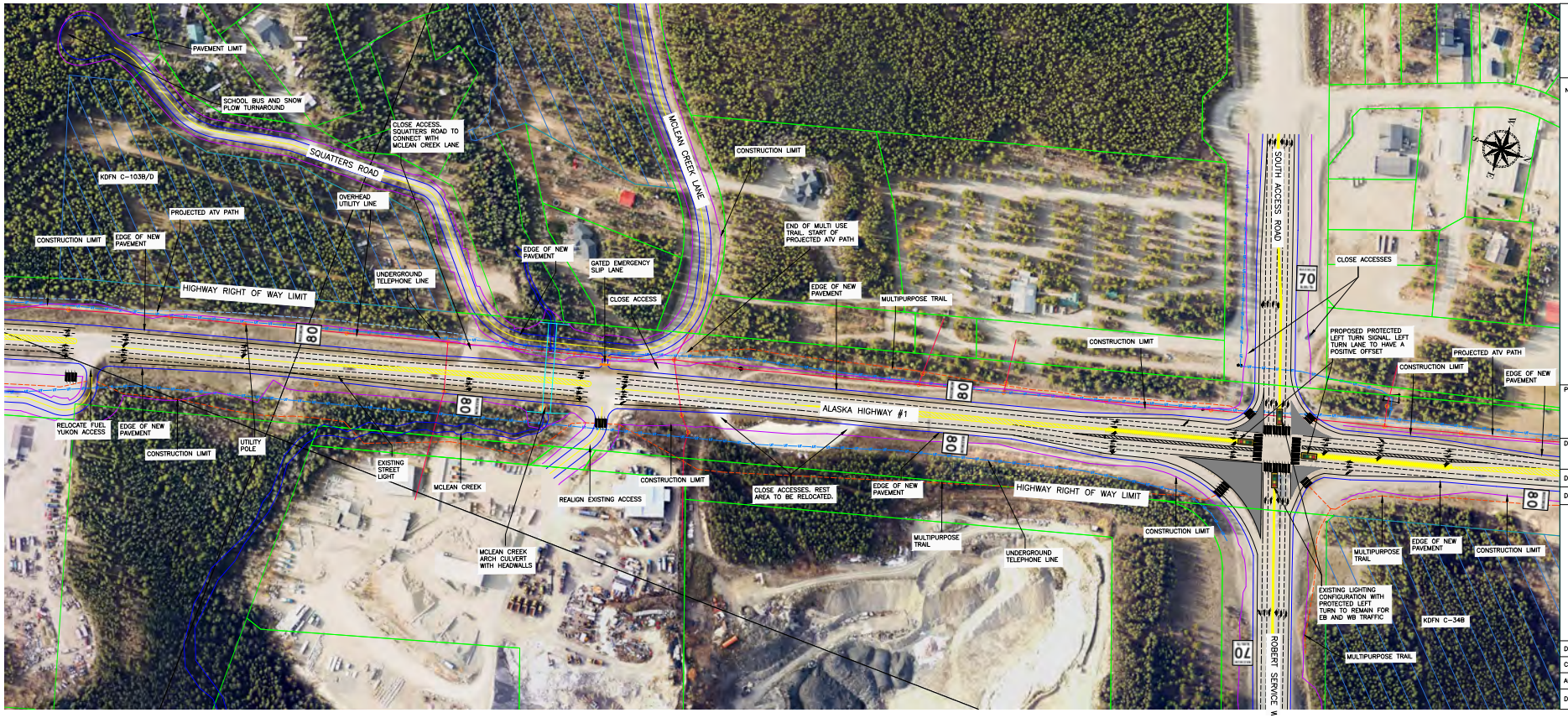
Intersection Sum* ary

Area Type: 6 ther
' : cle Length: 80
Actuated C: cle Length: 62.5
&atural C: cle: 70
' ontrol Type: Semi Act-Uncoord
Kaxi* um v/c Ratio: 0.73
Intersection Signal Delay: 15.5 Intersection LO : B
Intersection Capacity Utili>ation 58.0% IC4 Level of Service B
Anal: sis Period (min) 15

plits and Phases: 2: Alaska Highway & Access



APPENDIX C
Proposed Lane Configurations



Yukon

NOTES:

1. COORDINATE GRID SHOWN IN NAD83-(CSRS) ZONE 8.

PROJECT:
INTERSECTION AND FRONTAGE ROAD UPGRADES
km 1417.8 – km 1420.2
ALASKA HIGHWAY #1

DRAWING TITLE:
SQUATTERS ROAD AND ROBERT SERVICE WAY INTERSECTION

DATE: NOV 2021	HORIZONTAL SCALE: 1:1000
DRAWN: TM	VERTICAL SCALE: 1:1000

DESIGN:	P. Smith; T. Mamotea, E.I.T.
CHECKED:	S. MacDougall, P. Eng.
APPROVED:	
DRAWING NO. 001km1420	SHEET 02 of 06

Yukon

NOTES:

1. COORDINATE GRID SHOWN IN NAD83-(CSRS) ZONE 8.

PROJECT:
INTERSECTION AND FRONTAGE ROAD UPGRADES
km 1417.8 – km 1420.2
ALASKA HIGHWAY #1

DRAWING TITLE:
WHITEHORSE WEIGH SCALES

DATE: NOV 2021	HORIZONTAL SCALE: 1:1000
DRAWN: TM	VERTICAL SCALE: 1:1000

DESIGN:	P. Smith; T. Mamotos, E.I.T.
CHECKED:	S. MacDougall, P. Eng.
APPROVED:	
DRAWING NO. 001km1420	SHEET 03 of 06

APPENDIX D
Traffic Signal Warrant

Yukon Government - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	Alaska Highway	Direction (EW or NS)	NS	Road Authority:	Yukon Government
Side Street (name)	Weigh Scale	Direction (EW or NS)	EW	City:	Whitehorse
Quadrant / Int #		Comments	2026 Backgound AM + PM Peak times 2.61	Analysis Date:	2024 Mar 27, Wed
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	2023 Sep 05, Tue
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
Alaska Highway	NB	1		2					1,100	2			
Alaska Highway	SB			2			1		2,200	2			
Weigh Scale	WB									0			
Weigh Scale	EB				1					1			
Are the Weigh Scale EB right turns significantly impeded by through movements? (y/n)							n						
							n						
							n						
							n						

Saturation Flow Rates (if not default) (vphpl)		Default Saturation Flow Rates (vphpl)
Left Turn		1,650
Through		1,800
Right Turn		1,500

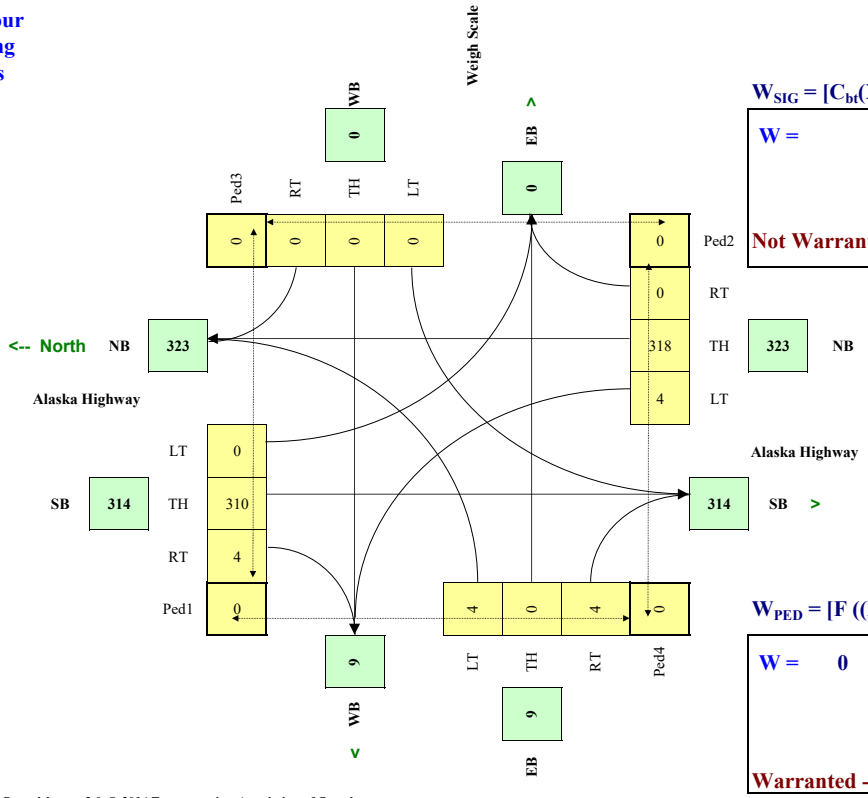
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	30,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Alaska Highway	NS	80	14.0%	n	0.0
Weigh Scale	EW		10.0%	n	0.0

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
6 Hour Average																
	26	1910	0	0	1857	26	0	0	0	26	0	26				
Total (6-hour peak)	26	1,910	0	0	1,857	26	0	0	0	26	0	26	0	0	0	0
Average (6-hour peak)	4	318	0	0	310	4	0	0	0	4	0	4	0	0	0	0
Actual Pedestrian Crossing Distance (m)																

Average 6-hour Peak Turning Movements



$W_{SIG} = [C_{bt}(X_{v\text{-}v}) / K_1 + (F (X_{v\text{-}p}) L) / K_2] \times C_i$

W =	4	4	0
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

$W_{PED} = [F ((Xped_m)d_m/K_2) + (Xped_s)d_s/K_3)]$

W = 0

Warranted - Complex Intersection

Yukon Government - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	Alaska Highway	Direction (EW or NS)	NS	Road Authority:	Yukon Government
Side Street (name)	Weigh Scale	Direction (EW or NS)	EW	City:	Whitehorse
Quadrant / Int #		Comments	2026 Back+Dev AM + PM Peak times 2.61	Analysis Date:	2024 Mar 27, Wed
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	2023 Sep 05, Tue
				Date Entry Format:	(yyyy-mm-dd)

Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
Alaska Highway	NB	1		2					1,100	2			
Alaska Highway	SB			2			1		2,200	2			
Weigh Scale	WB									0			
Weigh Scale	EB	1				1				1			
							n						
Are the Weigh Scale EB right turns significantly impeded by through movements? (y/n)							n						
							n						
							n						

Saturation Flow Rates (if not default) (vphpl)		Default Saturation Flow Rates (vphpl)
Left Turn		1,650
Through		1,800
Right Turn		1,500

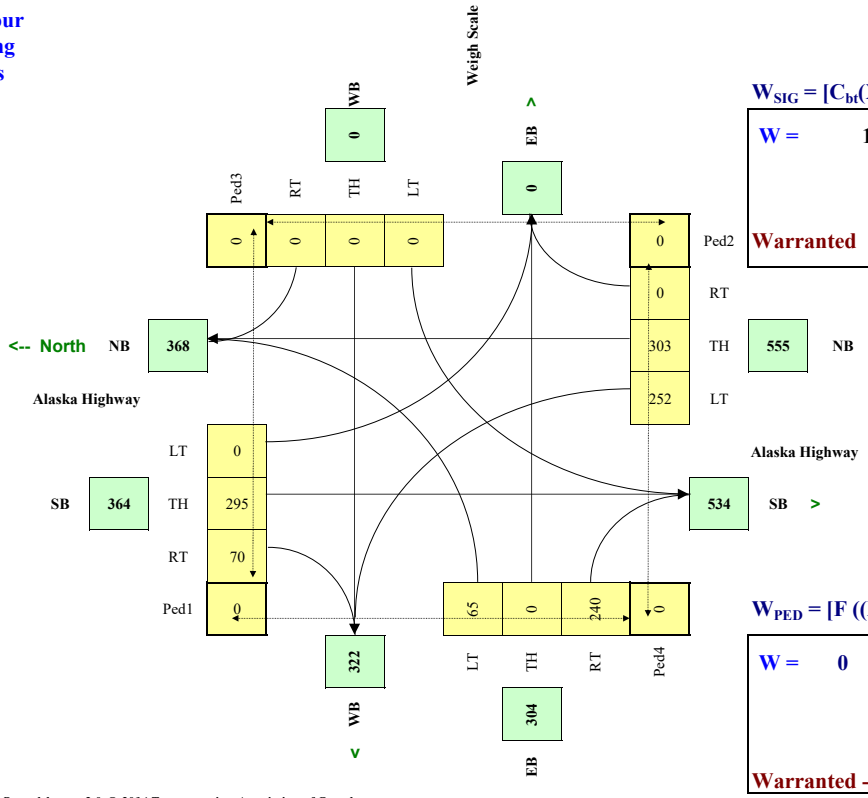
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	30,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Alaska Highway	NS	80	14.0%	n	0.0
Weigh Scale	EW		10.0%	n	0.0

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
6 Hour Average																
	1514	1818	0	0	1767	417	0	0	0	389	0	1438				
Total (6-hour peak)	1,514	1,818	0	0	1,767	417	0	0	0	389	0	1,438	0	0	0	0
Average (6-hour peak)	252	303	0	0	295	70	0	0	0	65	0	240	0	0	0	0
Actual Pedestrian Crossing Distance (m)																

Average 6-hour Peak Turning Movements



$W_{SIG} = [C_{bt}(X_{v\text{-}v}) / K_1 + (F (X_{v\text{-}p}) L) / K_2] \times C_i$

W =	146	146	0
		Veh	*Ped*

Warranted

RESET SHEET

$W_{PED} = [F ((Xped_m)d_m/K_2) + (Xped_s)d_s/K_3)]$

W = 0

Warranted - Complex Intersection

Yukon Government - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	Alaska Highway	Direction (EW or NS)	NS	Road Authority:	Yukon Government
Side Street (name)	Weigh Scale	Direction (EW or NS)	EW	City:	Whitehorse
Quadrant / Int #		Comments	2046 Backgound AM + PM Peak times 2.61	Analysis Date:	2024 Mar 27, Wed
for Warrant Calculation Results, please hit 'Page Down'	CHECK SHEET			Count Date:	2023 Sep 05, Tue
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Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
Alaska Highway	NB	1		2					1,100	2			
Alaska Highway	SB			2			1		2,200	2			
Weigh Scale	WB									0			
Weigh Scale	EB				1					1			
Are the Weigh Scale EB right turns significantly impeded by through movements? (y/n)							n						
							n						
							n						
							n						

Saturation Flow Rates (if not default) (vphpl)		Default Saturation Flow Rates (vphpl)
Left Turn		1,650
Through		1,800
Right Turn		1,500

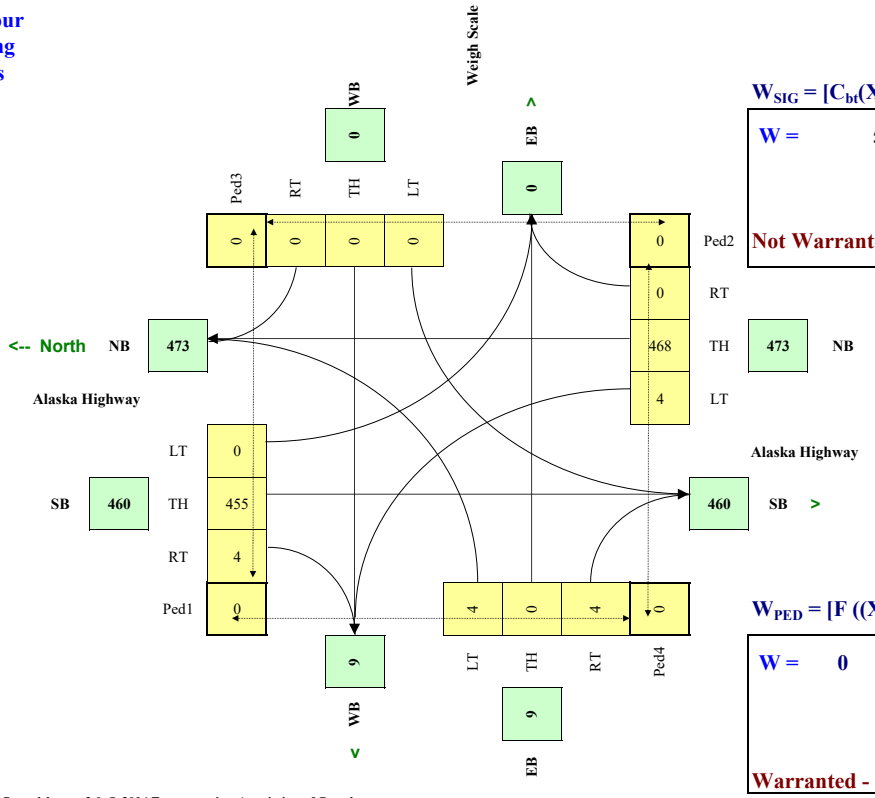
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	30,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Alaska Highway	NS	80	14.0%	n	0.0
Weigh Scale	EW		10.0%	n	0.0

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
6 Hour Average																
	26	2810	0	0	2732	26	0	0	0	26	0	26				
Total (6-hour peak)	26	2,810	0	0	2,732	26	0	0	0	26	0	26	0	0	0	0
Average (6-hour peak)	4	468	0	0	455	4	0	0	0	4	0	4	0	0	0	0
Actual Pedestrian Crossing Distance (m)																

Average 6-hour Peak Turning Movements



$W_{SIG} = [C_{bt}(X_{v\text{-}v}) / K_1 + (F (X_{v\text{-}p}) L) / K_2] \times C_i$

W =	5	5	0
		Veh	*Ped*

Not Warranted - Vs<75

RESET SHEET

$W_{PED} = [F ((Xped_m)d_m/K_2) + (Xped_s)d_s/K_3)]$

W = 0

Warranted - Complex Intersection

Yukon Government - Traffic Signal & Pedestrian Signal Head Warrant Analysis

Main Street (name)	Alaska Highway	Direction (EW or NS)	NS	Road Authority:	Yukon Government
Side Street (name)	Weigh Scale	Direction (EW or NS)	EW	City:	Whitehorse
Quadrant / Int #		Comments	2046 Back+Dev AM + PM Peak times 2.61	Analysis Date:	2024 Mar 27, Wed
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Lane Configuration		Excl LT	Th & LT	Through	Th+RT+LT	Th & RT	Excl RT	RT Channelization (y/n)	UpStream Signal (m)	# of Thru Lanes	LT Phase Type	RTOR Allowed (y/n)	Actuated Thru Phase
Alaska Highway	NB	1		2					1,100	2			
Alaska Highway	SB			2			1		2,200	2			
Weigh Scale	WB									0			
Weigh Scale	EB	1				1				1			
							n						
Are the Weigh Scale EB right turns significantly impeded by through movements? (y/n)							n						
							n						
							n						

Saturation Flow Rates (if not default) (vphpl)		Default Saturation Flow Rates (vphpl)
Left Turn		1,650
Through		1,800
Right Turn		1,500

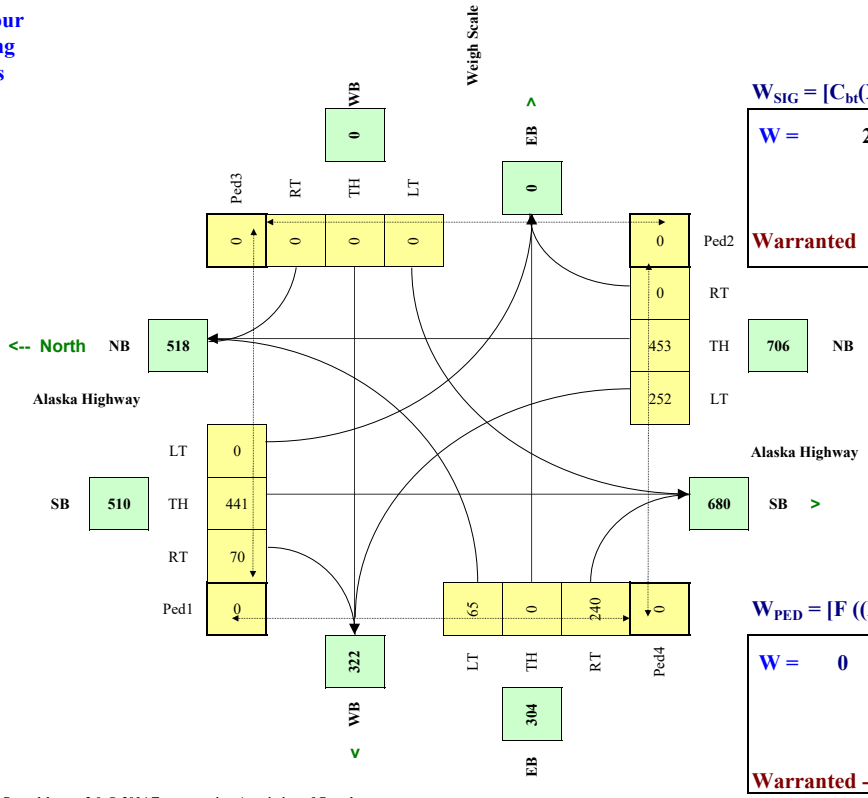
Demographics		
Elem. School/Mobility Challenged	(y/n)	n
Senior's Complex	(y/n)	n
Pathway to School	(y/n)	n
Metro Area Population	(#)	30,000
Central Business District	(y/n)	n

Other input		Speed (Km/h)	Truck %	Bus Rt (y/n)	Median (m)
Alaska Highway	NS	80	14.0%	n	0.0
Weigh Scale	EW		10.0%	n	0.0

Set Peak Hours

Traffic Input	NB			SB			WB			EB			Ped1 NS	Ped2 NS	Ped3 EW	Ped4 EW
	LT	Th	RT	LT	Th	RT	LT	Th	RT	LT	Th	RT	W Side	E Side	N Side	S Side
6 Hour Average																
	1514	2719	0	0	2643	417	0	0	0	389	0	1438				
Total (6-hour peak)	1,514	2,719	0	0	2,643	417	0	0	0	389	0	1,438	0	0	0	0
Average (6-hour peak)	252	453	0	0	441	70	0	0	0	65	0	240	0	0	0	0
Actual Pedestrian Crossing Distance (m)																

Average 6-hour Peak Turning Movements



$W_{SIG} = [C_{bt}(X_{v\text{-}v}) / K_1 + (F (X_{v\text{-}p}) L) / K_2] \times C_i$

W =	207	207	0
		Veh	*Ped*

Warranted

RESET SHEET

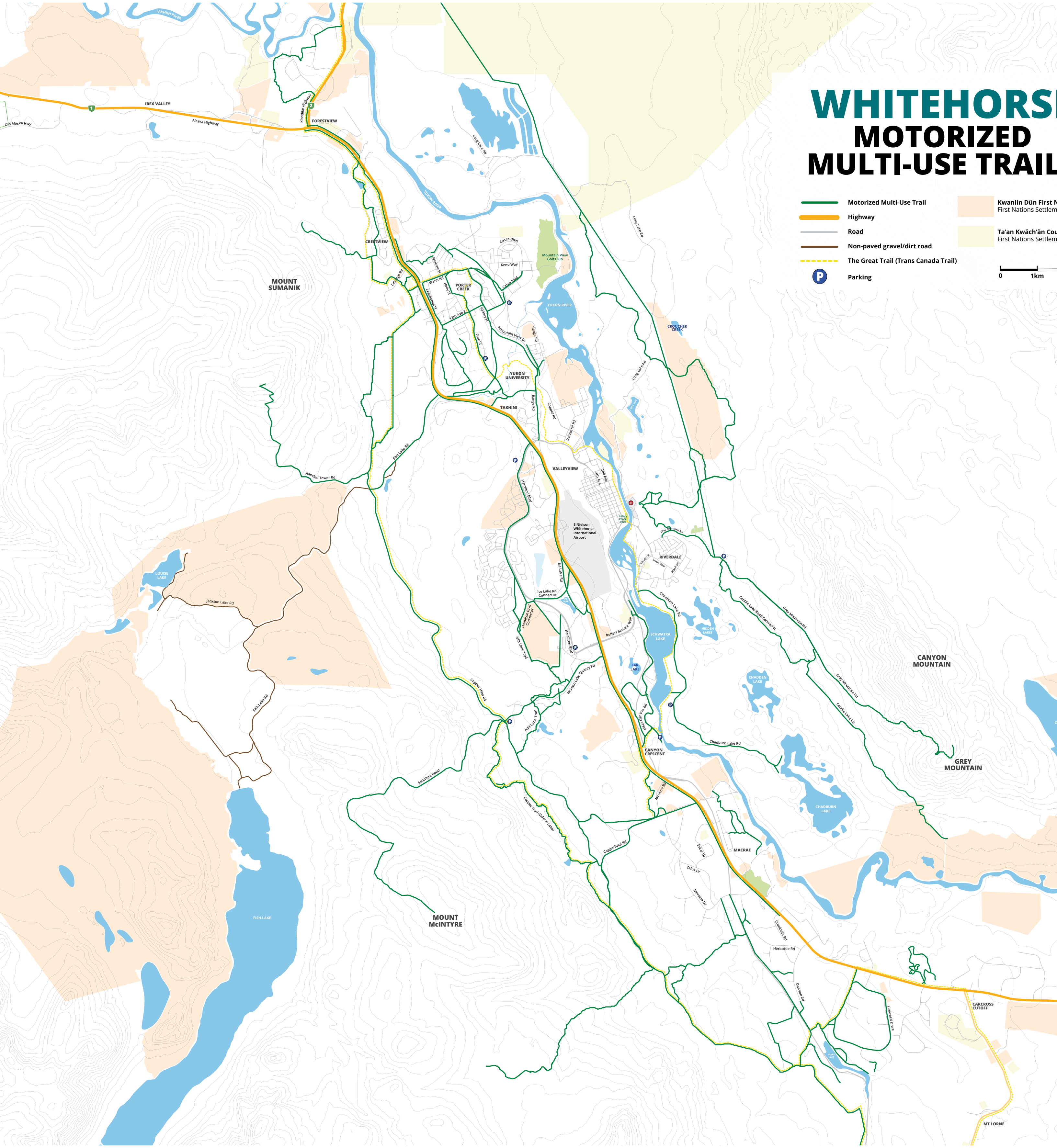
$W_{PED} = [F ((Xped_m)d_m/K_2) + (Xped_s)d_s/K_3)]$

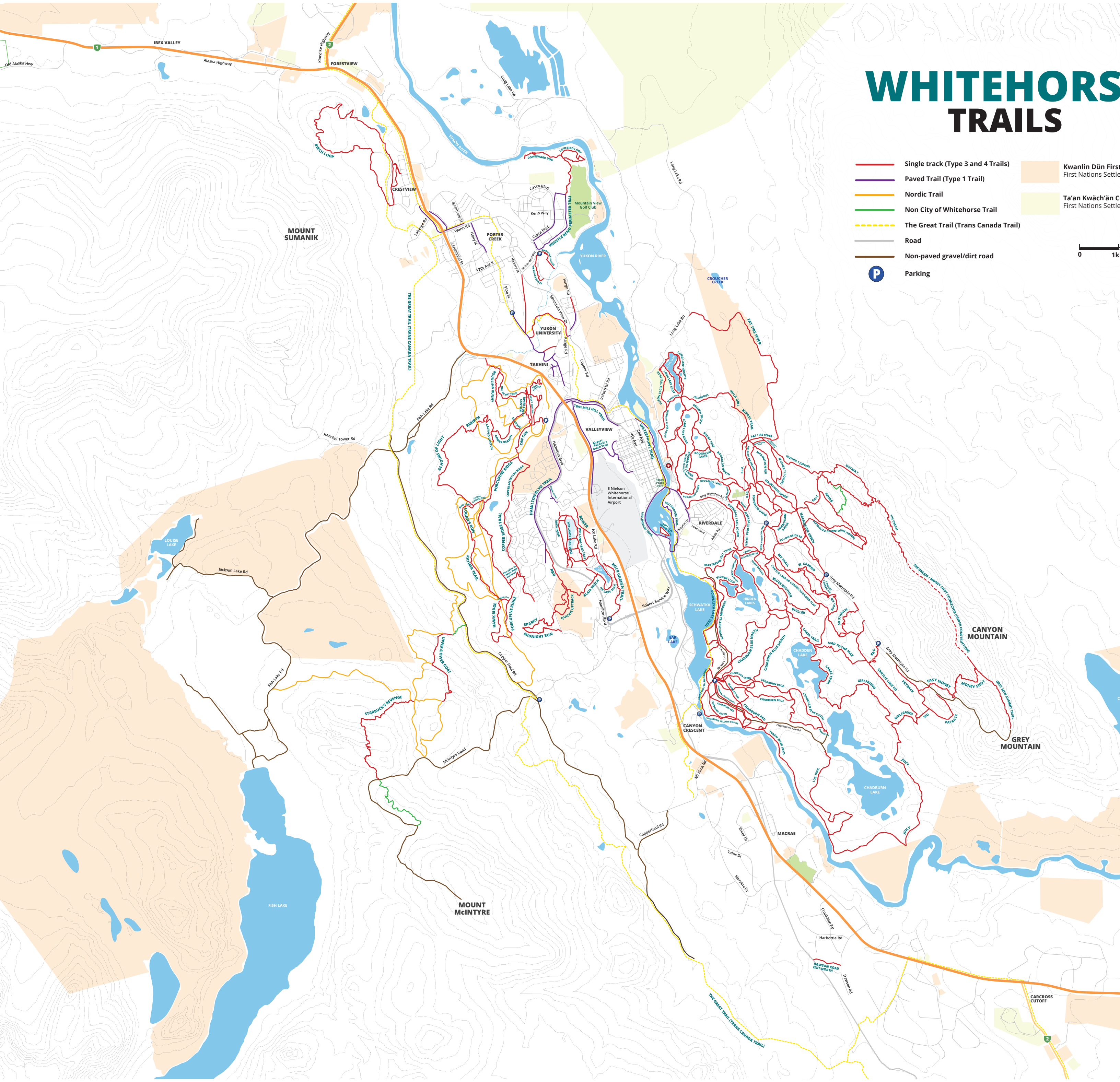
W = 0

Warranted - Complex Intersection

APPENDIX E

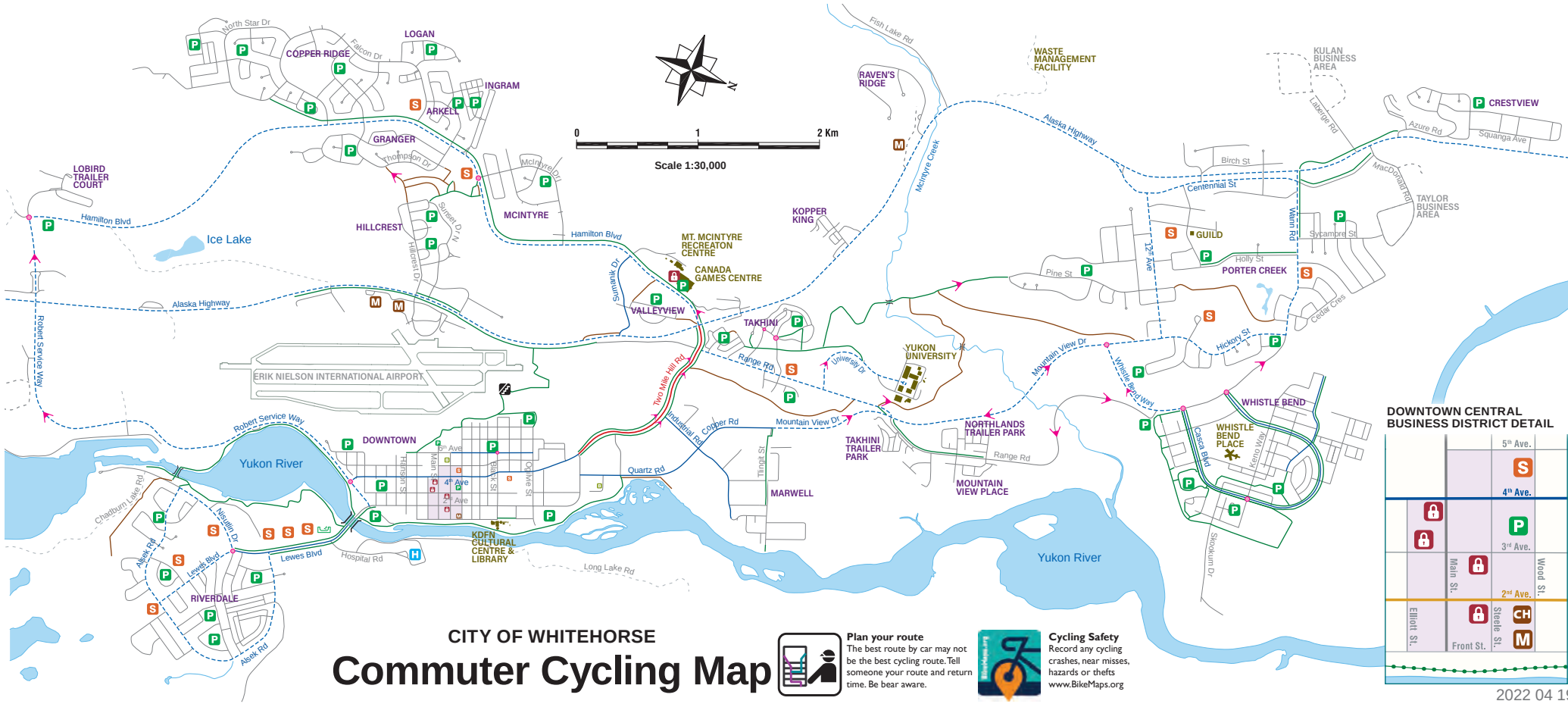
Motorized Multi-Use Trails Map, Whitehorse Trails Map and Commuter Cycling Map


WHITEHORS
MOTORIZED
MULTI-USE TRAIL
Motorized Multi-Use Trail
Highway
Road
Non-paved gravel/dirt road
The Great Trail (Trans Canada Trail)
Parking
Kwanlin Dün First N
First Nations Settlem
Ta'an Kwäch'än Cou
First Nations Settlem
0
1km
TAKHINI RIVER
IBEX VALLEY
Alaska Highway
Old Alaska Hwy
Klondike Highway
FORESTVIEW
Long Lake Rd
YUKON RIVER
CRESTVIEW
MOUNT
SUMANIK
PORTER
CREEK
Mountain View
Golf Club
YUKON
UNIVERSITY
TAKHINI
VALLEYVIEW
Haeckel Tower Rd
Fish Lake Rd
Jackson Lake Rd
LOUISE
LAKE
FISH LAKE
CROUCHER
CREEK
RIVERDALE
SCHWATKA
LAKE
HIDDEN
LAKES
CHADDEN
LAKE
CANYON
MOUNTAIN
GREY
MOUNTAIN
CHADBURN
LAKE
Chadburn Lake Rd
CANYON
CRESCENT
Copper Haul Rd
McIntyre Road
Robert Service Way
MACRAE
MOUNT
McINTYRE
CARCROSS
CUTOFF
MT LORNE


WHITEHORS
TRAILS
Single track (Type 3 and 4 Trails)
Paved Trail (Type 1 Trail)
Nordic Trail
Non City of Whitehorse Trail
The Great Trail (Trans Canada Trail)
Road
Non-paved gravel/dirt road
Parking
Kwanlin Dün First
First Nations Settle
Ta'an Kwäch'än C
First Nations Settle
0
1k
IBEX VALLEY
Alaska Highway
Old Alaska Hwy
Klondike Highway
FORESTVIEW
Long Lake Rd
YUKON RIVER
BIRCH LOOP
CRESTVIEW
MOUNT
SUMANIK
PORTER
CREEK
Casca Blvd
Keno Way
Mountain View
Golf Club
WHISTLE BEND PERIMETER TRAIL
Centennial St
12th Ave
Pine St
YUKON
UNIVERSITY
TAKHINI
Range Rd
Copper Rd
Industrial Rd
CROUCHER
CREEK
FAT TIRE FEVER
THE GREAT TRAIL (TRANS CANADA TRAIL)
Fish Lake Rd
Haeckel Tower Rd
TWO MILE HILL TRAIL
VALLEYVIEW
E Nielson
Whitehorse
International
Airport
Hamilton Blvd
RIVERDALE
Grey Mountain Rd
PORCUPINE RIDGE
COPPER RIDGE TRAIL
HAMILTON BLVD TRAIL
LOUISE
LAKE
Jackson Lake Rd
Robert Service Way
SCHWATKA
LAKE
HIDDEN
LAKES
CHADDEN
LAKE
CANYON
MOUNTAIN
GREY
MOUNTAIN
SPARKY
MIDNIGHT RUN
Copper Haul Rd
STARBUCK'S REVENGE
UPPER/LOWER GOAT
McIntyre Road
CANYON
CRESCENT
Chadburn Lake Rd
CHADBURN
LAKE
MACRAE
Copperhaul Rd
MOUNT
McINTYRE
FISH LAKE
Talus Dr
Moraine Dr
Crowhurst Rd
Harbottle Rd
DAWSON ROAD
EXIT NORTH
Dawson Rd
CARCROSS
CUTOFF
THE GREAT TRAIL (TRANS CANADA TRAIL)

CITY OF WHITEHORSE

Commuter Cycling Map



DOWNTOWN CENTRAL BUSINESS DISTRICT DETAIL

2022 04 19

Plan your route
The best route by car may not be the best cycling route. Tell someone your route and return time. Be bear aware.

Cycling Safety
Record any cycling crashes, near misses, hazards or thefts www.BikeMaps.org

Legend

- Bicycle accessible shoulder (paved shoulder; cycling may be shared with on-street parking)
- Painted bicycle lane
- Multi-use path - paved - cyclists yield to pedestrians
- Multi-use path - gravel - cyclists yield to pedestrians
- Local street
- Main road - higher vehicle volume and speed
- Busy road – On street cyclists prohibited

- Steep Hill (Direction points uphill)
- Roundabout (Bicycles and vehicles merge single file)
- Stairs (with bicycle-accessible ramp)
- School
- Park
- Campground
- Skateboard Park
- Bike Shop
- Museum
- City Hall
- Hospital
- Bike Locker
- Central Business District - No cycling on sidewalks

Required by Law*

Helmet*
Must wear an approved helmet - includes children in a bike trailer or on a trail-a-bike

Single File*
Ride single file except when passing

Bike lights*
Must use a white headlight and a red tail light between sunset and sunrise and at all times with reduced visibility (e.g. fog, smoke)

Use hand signals*
Let motorists and other cyclists know what you are doing – use the appropriate hand signal when turning or passing

Bike Lane*
Vehicles must not travel, stop or park in bike lanes.

Bike Ban*
Two Mile Hill Road surface from Alaska Highway to Second Avenue – cyclists must use the off-road trails on either side

Headphones*
Must not wear headphones that cover both ears

Sidewalk Riding*
May only ride on the sidewalk outside Central Business District if <12 years old (all year); or in winter when roadway/bike lanes are impassible.

Cycle Safe on Streets and Trails

Beware of car doors
Look into vehicles to anticipate doors opening on parked cars. Ride with your head up and look several metres ahead.

Be careful at intersections
Most collisions occur at intersections. Obey all traffic signals. Watch for turning vehicles.

Making a left turn
1.Signal and make the left turn as a vehicle, from the left lane
2.Cycle through the intersection, dismount - cross as a pedestrian

Watch for right turns
On a shared street, do not pass cars on the right - you disappear into their blind-spot.

See and be seen
Establish eye contact to ensure motorists know you are there.

Ride in a straight line
Ride 0.5 m from the gutter to avoid hazards (e.g. broken glass and grates). Do not weave between parked cars or into side-streets

Scan the road
Shoulder check, signal, shoulder check when changing lanes
Consider using a mirror to monitor traffic

Be visible
Wear bright clothing with reflective tape
Your bicycle needs a red rear reflector. Add reflectors to your spokes to be seen from the side

Be Alert on all routes
Scan ahead to anticipate and avoid path obstructions – broken glass, pot holes, debris & slippery sections (ice, loose gravel or silt)

Keep to the right
When using multi-use trails, stay on the right hand side of the trail. Move off of the trail when stopping for a rest.

Signal when passing
Use your voice or bell to inform others that you are passing
Yield to pedestrians on multi-use paths

Roundabouts
1. Merge with traffic to form a single lane, yield to traffic in the roundabout, signal as you exit
2. Dismount, walk, and use crosswalks

Year Round Cycling
Dress for the weather and be prepared for slippery and rough conditions.
Avoid busy streets.

Bikes on/in the bus
Rack on bus for 2 bikes; bikes inside bus with driver permission. Customers must load and unload bikes without driver assistance. No additional charge for bikes.

Bike Locker
Lockers are for day use only and protect bikes and panniers from vandalism, theft and weather. Cyclists must provide own locks.

Lock your bike when unattended

islengineering.com

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8.3 APPENDIX C: WHAT WE HEARD REPORT (CITY OF WHITEHORSE, 2023)

Ice Lake Road South Master Plan

What We Heard Report: Summer 2023 Engagement

September 2023

Planning and Sustainability Services
City of Whitehorse

Whitehorse

TABLE OF CONTENTS

1.0 Introduction

The City of Whitehorse is creating a master plan for the Ice Lake Road South (ILRS) area to accommodate commercial and industrial growth within the city. The study area includes vacant government land, First Nation settlement land, and surveyed land. It's located alongside a section of the Alaska Highway.

Incorporating the insights gained through a design charrette held in June, along with comprehensive background reports and expert technical advice, the city's consultant collaborated with key stakeholders including Kwanlin Dün First Nation (KDFN) and the Government of Yukon to create a land use concept for the area. To refine this concept into the final master plan, the public had the opportunity to give feedback. This input will help inform the final land use concept that the City staff will present together with the associated report to Council for their approval.

This report provides a summary of the feedback received through the online survey. The survey was developed for all audiences and additional questions were posed to those interested in buying a commercial or industrial lot. The survey was hosted on Engage Whitehorse from August 14 to 28, 2023 and promoted on social media and in newspapers, leading to 93 responses. Additionally, 4 comments were collected from social media posts.

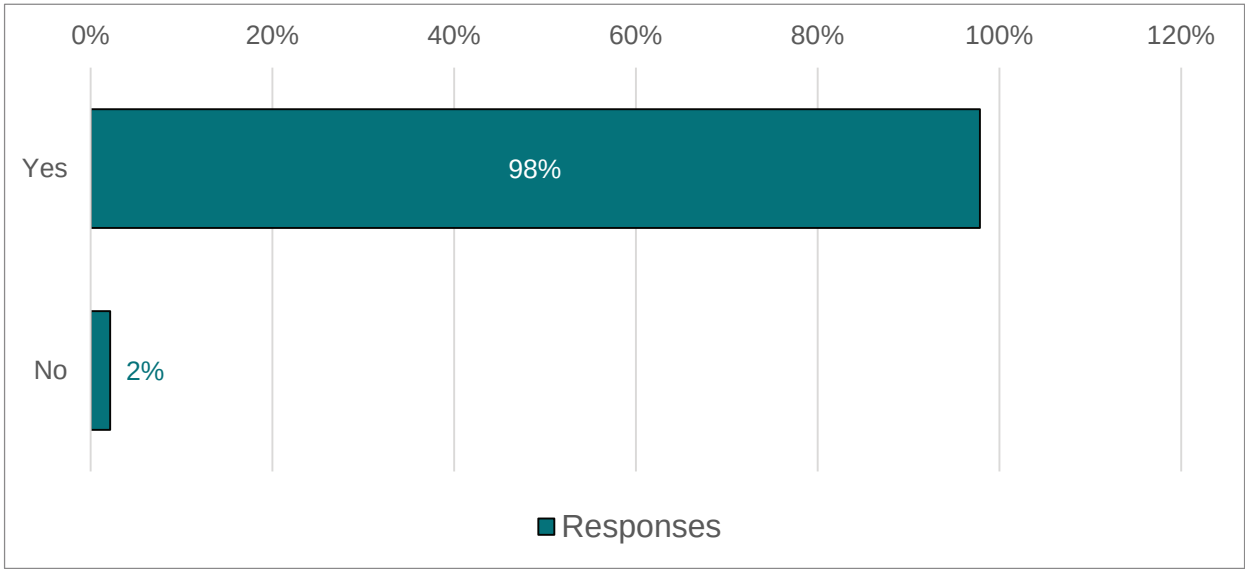
2.0 Survey Results

The following section provides an overview of results from the survey. The complete survey can be found in Appendix B. The survey had 93 responses. Most questions allowed respondents to choose from multiple choice answers. Some questions allowed respondents to choose an 'other' response and to specify their answer to the question. A full list of responses to the open-ended questions and comments to "other" responses is included in Appendix C.

2.1 PARTICIPANT PLACE OF RESIDENCE

All survey participants were asked to indicate whether or not they reside in Whitehorse. The majority of respondents (98 per cent) indicated living in Whitehorse. Two per cent indicated they don't live in the City of Whitehorse. Refer to Figure 1.

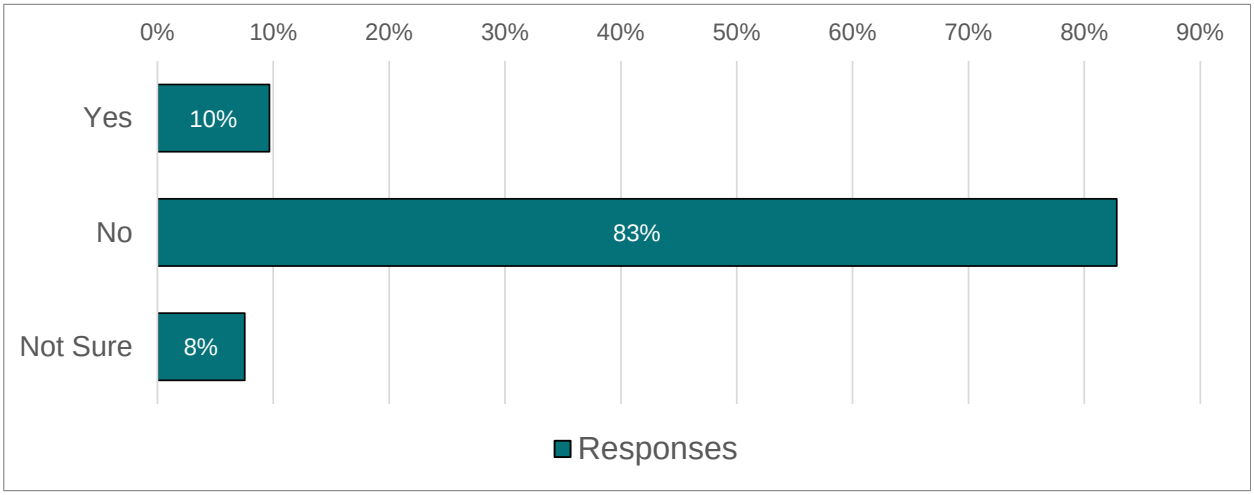
Figure 1. Do you live in the City of Whitehorse? (Question 1)



2.2 PURCHASING OR LEASING A COMMERCIAL / INDUSTRIAL LOT

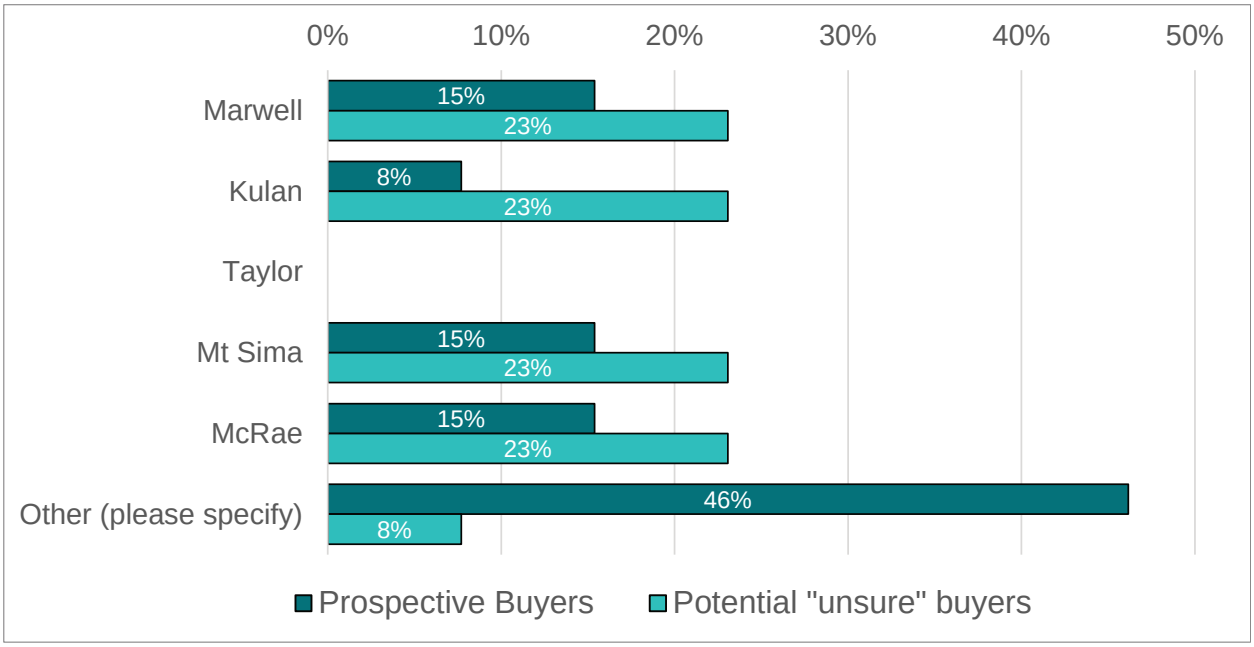
All survey participants were asked to indicate whether they were looking to purchase or lease a commercial or industrial lot. Ten per cent of the respondents were interested to acquire a commercial or industrial lot, while 7 per cent were unsure. The majority was not looking to purchase or lease a commercial or industrial lot. Refer to Figure 2.

Figure 2. Are you currently looking to purchase or lease a commercial or industrial lot? (Question 2)



The respondents who indicated interest or unsureness of leasing or purchasing a commercial or industrial lot were asked specific questions such as which area of Whitehorse would be the most attractive location. Marwell, Mt Sima and McRae were perceived the most attractive locations for commercial and industrial lots with the Kulan neighbourhood close behind. Taylor was not perceived as an attractive location to the survey participants and received no votes. The other responses suggested the Ice Lake Road South area as it is not heavy commercial, Downtown, Near Yukon Gardens, or Copper Ridge. Refer to Figure 3.

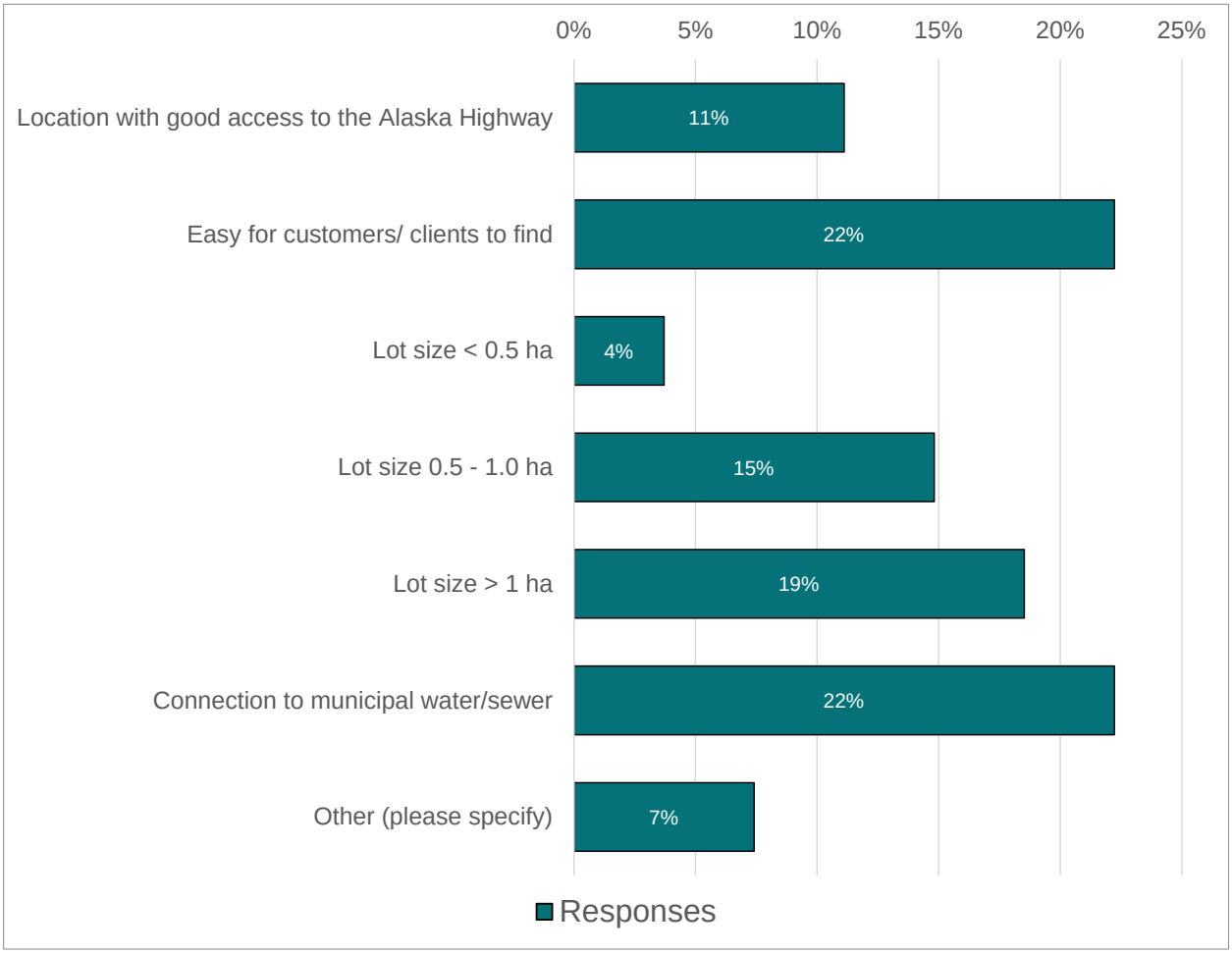
Figure 3. For the lot you want to purchase or lease, what areas of Whitehorse are the most attractive? (Choose all that apply) (Question 3)



The other additional question to the respondents who indicated interest in purchasing or leasing a commercial or industrial lot was to indicate essential features they were looking for in said lot. The most valued features were accessibility for customers or clients to locate the business and the connection to municipal water and sewer. Refer to Figure 4.

“Other” Responses recommended preserving existing forest in the green space to make the industrial subdivision more attractive and another outlined the need to be around other industrial users to create an industrial hub with room for expansion instead of having industrial uses dispersed in town.

Figure 4. What are the essential features or ‘must haves’ you are looking for in a commercial or industrial lot? (Choose all that apply) (Question 4)



2.3 PLANNING AREA CHARACTERISTICS

All respondents were asked to describe important aspects about the area. This was an open response question and the following section provides a summary of the responses received. For individual comments refer to Question 5 in Appendix C.

The existing use of the area for recreation, along with its valuable trails and rock climbing spots, was strongly emphasized. Suggestions emerged about creating alternative trails and maintaining highway tree buffers to harmonize urban growth with the retention of green spaces. The importance of safeguarding the wetlands, wildlife habitats, and preventing pollution was consistently highlighted. Recommendations encompassed the assessment of impacts on wildlife, noise, and traffic. Additionally, the area's proximity to Paddy's Pond/ Ice Lake Park was acknowledged as significant for infrastructure and waste management considerations related to the proposed development. Concerns arose about water runoff, giving an example about impacts on Paddy's Pond due to runoff from the Copper Ridge Neighbourhood in the past.

Commenters also highlighted the challenging rugged landscape and cliffs, questioning its suitability for extensive development, and noting the absence of municipal services such as water, sewer, and power.

There were concerns about converting green spaces into industrial zones, prompting the suggestion of exploring alternative options. Worries encompassed potential noise issues, the risk of losing trails, and the potential negative effects on existing adjacent businesses. To mitigate noise, the proposal of a larger treed green belt was introduced to separate properties from the proposed development. It was also suggested to ensure the protection of designated park land from commercial/industrial activity to prevent encroachment.

It was pointed out that families of business owners reside in neighboring properties, asking to consider the potential impact of the commercial/industrial development on them. It was brought to attention that all adjacent businesses rely on well water and concerns about contaminant risks to the water table were raised, with specific focus on Yukon Gardens as a large commercial garden center that provides fresh local produce. The proposed development was seen as a potential risk to local food security.

Infrastructure enhancements at the Hamilton Boulevard and Alaska Highway intersection were suggested, with an emphasis on cyclist safety. Concerns were voiced about the impact of wider roads on vehicle speeds in areas shared with cyclists and recreational users.

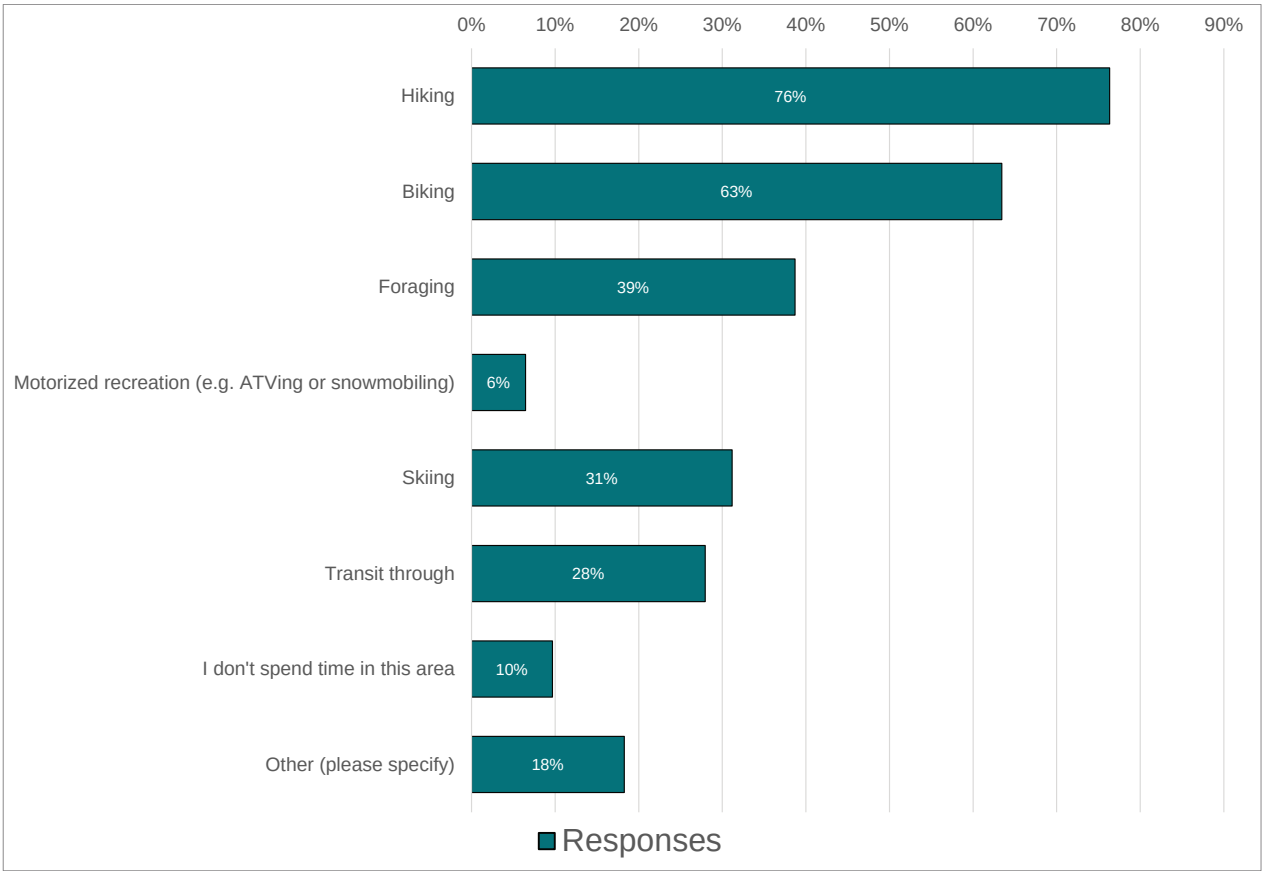
Survey participants underscored the necessity of carefully balancing development with the preservation of the areas recreational, ecological, and community values. The comments introduced suggestions such as considering residential units and mentioned historical aspects like old Alaska Highway building artifacts and a potential First Nations burial site in the area. Refer to Question 5 in Appendix B.

2.4 PLANNING AREA ACTIVITIES

Survey participants were asked about their engagement with the designated area and their activities within it. The majority of respondents indicated using the area for hiking and biking, followed by foraging activities. Refer to Figure 4.

Other responses encompassed various recreational pursuits, including walking, running, nature observation, orienteering, dog walking, and swimming. Please refer to Question 6 in Appendix C for a full list of other responses.

Figure 4. Have you spent time in this area? If so, what did/do you do there? (Choose all that apply) (Question 6)

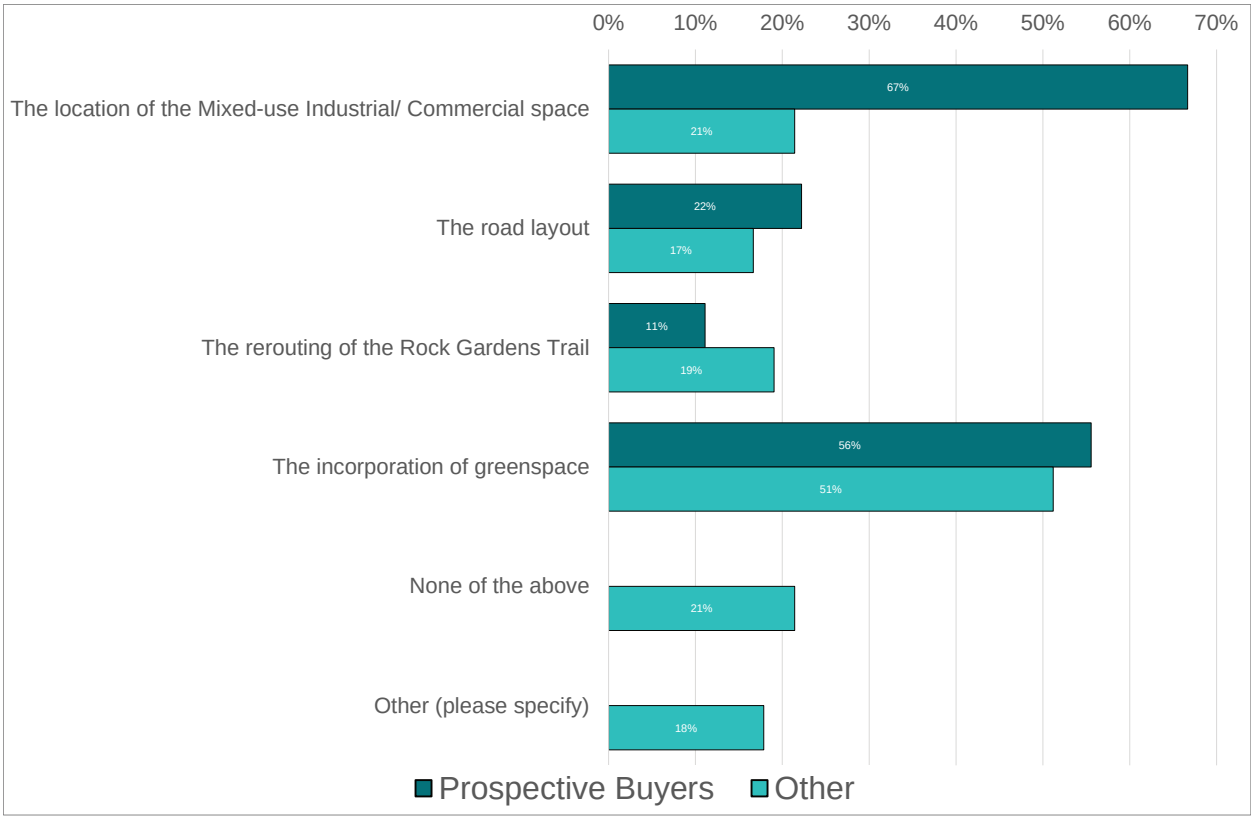


2.5 CONCEPT EVALUATION

PREFERRED DESIGN ASPECTS

The survey participants were asked about aspects they liked in the conceptual design. The most favored element across respondent groups was the incorporation of the greenspace within the plan. While prospective buyers for commercial/ industrial lots were pleased with the location of the Mixed-use Industrial/ Commercial space, respondents not interested in purchasing one did not share their enthusiasm. Eighteen participants expressed dislike of all design aspects, with 9 “other” comments echoing this sentiment. While there were differences between the respondent groups, only a fifth of both respondent groups indicated liking the road layout. Refer to figure 5.

Figure 5. What do you like about the conceptual design? (Choose all that apply) (Question 7)



Other comments included positive response to the KDFN block adjacent to the highway, coupled with reservations about the proposed blocks near Ice Lake. This aligns with another comment preferring a single lot width along a single parallel road to the Alaska Highway, while another recommended relocating access roads away from the highway.

Additional feedback suggested the need for transparency regarding development plans for Ice Lake Road North. Concerns were raised about the impacts and complications the development might pose for wildlife and their crossings in the future. Please refer to Question 7 in Appendix C for a full list of other responses.

IDEAS FOR IMPROVEMENT

The survey participants had opportunity to share their ideas for improving or changing the proposed conceptual design. The feedback provided a range of perspectives and suggestions for enhancing the design, while taking into account numerous considerations. Refer to Question 8 in Appendix C for a full list of responses. Some of the prominent suggestions and improvements included:

Increased Buffer:

A consistent theme was the request for a larger buffer between Ice Lake and the commercial/industrial area. Some respondents suggested exploring the possibility of regrading to shift the commercial/industrial zone closer to the Alaska Highway, while maintaining more distance from Ice Lake to safeguard wildlife corridors and considering the needs of the existing ecosystem. A common suggestion was to incorporate a larger green belt into the project to mitigate environmental impacts, preserve local ecosystems, and enhance the area's aesthetic and well-being.

While recognizing the addition of greenspace in the concept, concerns were also raised about ensuring the protection of Paddy's Pond Regional Park. Suggestions included incorporating a physical barrier between the commercial area and the park to prevent unwanted access.

Environmental Impact:

Concerns were raised about the compatibility of industrial/commercial development with existing adjacent properties, such as Yukon Gardens. A significant concern was the potential environmental impact, particularly on food security and local ecosystems. Respondents urged thorough reassessment of the location, potentially relocating the development to a more suitable area. Some participants suggested alternative locations for industrial development, such as utilizing disused quarries, to minimize impact on undisturbed land and prioritize responsible development.

Preservation of Trails:

It was recommended to maintain the integrity of existing trails like the rock gardens climbing area and to consider motorized multi-use trails alongside the road network. Those provisions for pedestrian and cyclist to access through the development would ensure connectivity.

Mixed-Use Development:

Several participants voiced preferences for residential use over industrial, suggesting housing solutions such as garden homes, apartments, and high-density living to address the housing crisis and encourage sustainable development. Some respondents proposed transforming the area into a progressive living community highlighting the potential for housing and emphasizing senior living as a lucrative opportunity.

Transportation Infrastructure:

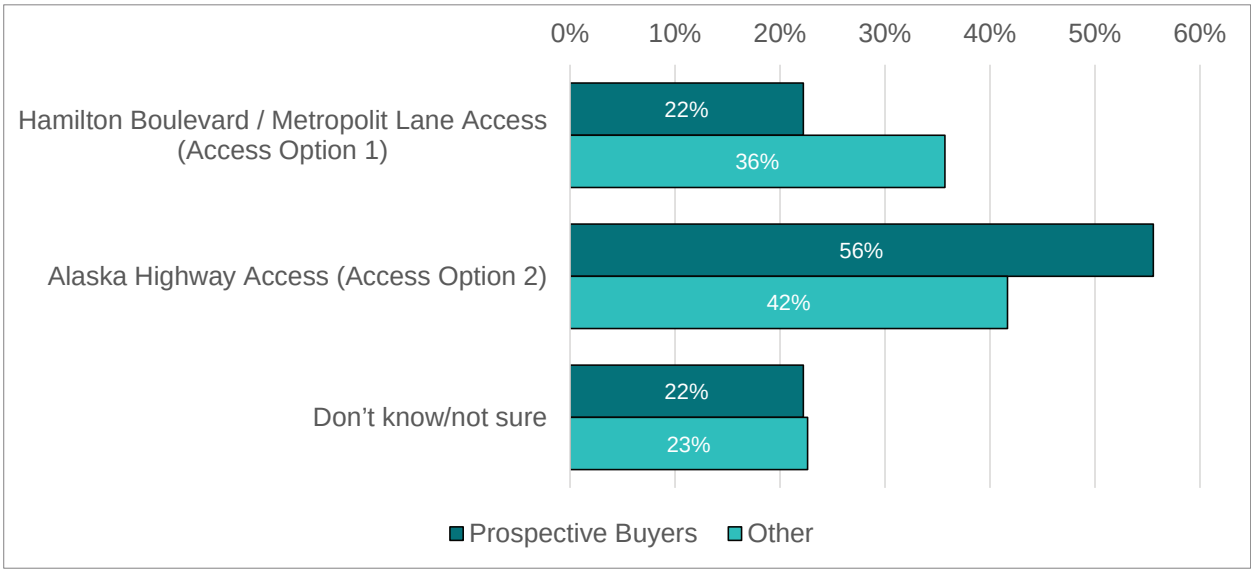
The issue of highway access was frequently addressed, with suggestions to either utilize existing options or introduce traffic lights to regulate the flow. Suggestions included considering both accesses to have two ways to exit and to connect the roads within the development into a loop instead of the proposed cul-de-sacs. Concerns were raised about potential traffic impacts on existing roads and the need to avoid uncontrolled highway access. The importance of well-designed road access, pedestrian connections, and active transportation options was highlighted to ensure safety, convenience, and minimize negative impacts on existing infrastructure.

ACCESS OPTIONS

The concept included two access options that are being considered: One at Hamilton Boulevard / Metropolit Lane, and another at the Alaska Highway. The survey participants were asked which access option they preferred.

In general, the Alaska Highway Access option received the highest number of votes. While individuals inclined towards acquiring a commercial/industrial lot distinctly favored the Highway choice, the other respondents exhibited a divided stance between the two alternatives. Refer to Figure 6.

Figure 6. Which access option do you prefer? (Question 9)



Respondents were then asked to explain their preference for the access option they picked. The following section is a summary of these comments. A complete list of comments can be viewed for Question 10 in Appendix C.

Access option 1 preference: Hamilton Boulevard / Metropolit Lane Access

Respondents expressed preference for access option 1 off Hamilton Boulevard mostly due to safety concerns. They noted that the slower traffic on Hamilton Boulevard compared to the fast-moving Alaska Highway made Option 1 a safer choice. This sentiment was emphasized in light of speeding on the Alaska Highway and the lack of consistent speed limit enforcement. Access via Hamilton Boulevard was perceived safer for turning vehicles. This was contrasted however with the challenges of merging onto the high-speed Alaska Highway.

Comments highlighted Option 1's alignment with the existing road network, potentially minimizing the necessity for additional roads and preserving green spaces. Furthermore, Option 1 was seen as providing improved connectivity to the planned South Growth Area while avoiding direct highway access. They suggested reducing access points to enhance traffic flow and road management, aiming to lower accident risks and improve safety.

Concerns were expressed about potential disruptions from additional lights and existing issues like congestion and unfavorable highway layout changes were noted. Respondents believed that Option 1 could potentially divert slow-moving trucks off the Alaska Highway for turns, which would enhance overall traffic flow of the highway. Respondents emphasized the Alaska Highway's significance as a major travel route, favoring its use for through-travel rather than direct business access. It was also believed that Option 1 was a more cost-effective solution than introducing another traffic light to the highway.

Access option 2 preference: Alaska Highway Access

The Access Option 2 from the Alaska Highway was favored by the majority of respondents as the preferred main access point for the development due to its direct route and capacity to handle heavy vehicles. This option was anticipated to effectively manage larger vehicles, minimize disruptions to existing businesses and services, and maintain a safer environment.

Both present and potential traffic issues on Hamilton Boulevard were emphasized. Concerns centered around Option 1's use of Hamilton Boulevard/Metropolit Lane due to its residential nature and potential congestion, especially with the expansion of the southern growth area. The absence of parking at Yukon Gardens and the possibility of concealing the proposed subdivision development under Option 1 were highlighted.

While Hamilton Boulevard was perceived as already confusing for traffic flow, an increased traffic impact, particularly at the intersection of Hamilton Boulevard and the

Alaska Highway, raised concerns. To minimize heavy truck traffic on residential roads, the idea of utilizing the now four-lane Alaska Highway was suggested. Respondents believed this approach would not only reduce disruptions to green spaces compared to Option 1, but also confine noise to the highway.

Option 2, using the Alaska Highway, was seen as a solution to avoid congestion, potential accidents, and negative impacts on local businesses and Metropolit Lane residents, including the daycare. If executed effectively, this access point was believed to have the potential to reduce speeds on the Alaska Highway, indicating to travelers that they had entered city limits and reducing hazards near Hillcrest and the airport.

Responders stressed the importance of segregating industrial and residential traffic to maintain a harmonious living environment. Opting for Alaska Highway access was viewed as an effective strategy, providing efficient customer access while ensuring separation of industrial traffic from residential zones. This approach also eliminated the need to navigate around for accessing different lots within the proposed development.

Some respondents suggested considering alternatives, such as connecting Ice Lake Road to the Alaska Highway near the Air North hangar turnoff. The idea of having two access points was proposed to accommodate varying traffic types.

In summary, the Alaska Highway emerged as the favored choice by respondents due to its directness and capacity, whereas apprehensions were expressed about Hamilton Boulevard's residential nature and traffic-related concerns. Utilizing the Alaska Highway was perceived as a solution to segregate traffic, ensure safety, and minimize disruptions.

Don't know / Not sure

Various respondents exhibited uncertainty regarding their preferred access option. While an individual emphasized the importance of an access choice that would facilitate safe entry and exit from the commercial site, as well as the seamless flow of through traffic, they encountered difficulty in evaluating the current options due to a lack of comprehensive information available.

The Hamilton/Metropolit option faced criticism for its potential impact on heavy truck traffic. The feasibility of left turns in the face of morning traffic and the proximity to existing lights were cited as challenges. Potential backups of heavy truck traffic was also a raised concern for the Alaska Highway Access. Criticism centered on the proposal to introduce new traffic lights in general.

Some participants firmly expressed their desire to preserve green spaces and opposed any development. Another comment leaned towards the Alaska Highway option as their preference, simultaneously suggesting that having both options available, including the Hamilton Boulevard alternative, would be the most favorable arrangement.

VALUES AND ADDITIONAL INSIGHTS

The survey closed with another open ended question asking the participants whether the preliminary land use scenario captured their values for a Commercial / Industrial Subdivision and to outline anything that the planning team had missed. A full list of comments can be viewed for Question 11 in Appendix C.

It was noted that there was an advocacy for larger lots, exceeding one hectare in size. Concerns were expressed regarding the careful assessment of compatibility in regards to the impact on neighboring businesses and residences. Concerns were consistently expressed regarding the anticipated increase in traffic, and the noise levels generated by industrial activities.

One comment emphasized the preference for not having first nation land leases, highlighting the perception that owning the land is considered crucial for business growth. Moreover, concerns were raised about the limited size of the subject area, with some stakeholders worried about the limited opportunities for expansion. It was noted that the provision of city services would be valuable.

There was an appreciation for the presence of green space, although it was suggested that further consideration might be needed for additional physical barriers as it was commented that garbage often ends up in the greenspace behind industrial areas.

Questions were raised about how the project would impact existing trails and recreational areas, particularly in relation to the Rock Garden trail. Comments included a request for the inclusion of motorized multi-use trails within the study area. Additionally, there was expressed interest in establishing a paved trail to facilitate commuter access through Metropolit Lane.

While the incorporation of green space was viewed positively, concerns persisted regarding potential green space loss. Some stakeholders proposed retaining tree buffers to shield the subdivision from the highway, while others suggested a larger buffer around Ice Lake, emphasizing the desire for more green space preservation, particularly the marsh area. Additional concerns were raised regarding air quality and the limited information available about wildlife activity in the study area. Environmental concerns also included worries about garbage, attractants from industrial use, and potential harm to Ice Lake and its wildlife.

Concerns were raised about the compatibility of the proposed zoning with the existing neighborhood. Respondents pointed out a missed need for housing in the area under consideration, questioning why residential development was not being considered and the idea of mixed-use zoning to incorporate residential areas was put forward. There was a consensus among some stakeholders to keep commercial and industrial zones close to the highway while promoting residential development around Ice Lake.

Several respondents expressed a strong disapproval of the development altogether, calling for a complete re-evaluation of the project and questioning the necessity of commercial and industrial development, especially in an ecologically valuable area. They felt that the proposed development did not align with the city's values or the ethos of its residents. Concerns were raised about the development's impact on the visual appeal of the city's entrance and potential risks to the community's well-being, including environmental, social, and economic factors. Some believed that an alternate location should be considered, and the comments suggested a preference for commercial and industrial zones to be located further away from the city core. Some recommended encouraging to subdivide lots in the Marwell area rather than clearing more trees or to develop in already impacted areas. Some respondents thought the project would be better suited for the McRae area, and they wished to see industrial land use hidden from view or placed further away from residential properties and greenspace.

Some comments provided generally expressed positive sentiments toward the proposed concept and considered it a "reasonable compromise" between planned growth and preserving suburban wilderness. Some respondents found the location favorable. However, they suggested that the survey could have benefited from a longer lead time.

In summary, the feedback received from various stakeholders reflects a diverse range of perspectives and concerns regarding the proposed development project. Key themes include a preference for larger lots, concerns about compatibility and environmental impact, and a desire to retain green space while carefully considering potential barriers. The feedback also highlighted the importance of addressing noise, traffic, and wildlife-related issues.

3.0 Social Media Comments

Through our social media survey promotion, we've received 4 comments, each offering unique perspectives on the proposed development:

One respondent expressed support for the Access Option 1, considering it the only viable choice and suggesting that adding another set of traffic lights would be unnecessary, while another participant raised concerns about the proposed intersection's proximity to the scale. Another comment strongly opposed the development, citing environmental concerns. This individual argued against cutting down more trees and placing polluting elements into an environmentally sensitive area. In response to that, there was a question posed about where this kind of development should be located instead.

Despite the limited number of comments, these perspectives collectively underscores the importance of environmental conservation and infrastructure considerations.

4.0 Key Takeaways

The recent survey conducted on the Preliminary land use scenario for the Ice Lake Road South industrial and commercial master plan yielded several crucial insights that will shape the future development of the area.

The survey revealed that the majority of respondents reside in Whitehorse, suggesting that local residents are invested in the development of this area. It was apparent that the survey reached only a few respondents interested in purchasing commercial or industrial lots. This finding might necessitate further efforts to engage potential buyers.

It is worth noting that the majority of potential buyers expressed a preference for lot sizes exceeding one hectare, emphasizing the need for accommodating larger properties in the development plan and indicating a need for spacious and versatile commercial or industrial spaces. Accessibility, both in terms of physical access and connection to essential city services like water and sewer systems, has been highlighted as a critical factor for consideration.

Marwell, Mount Sima, and McRae were perceived as attractive locations for commercial/ industrial businesses. These areas may have unique advantages or infrastructure that make them appealing.

The area and its adjacent surroundings are greatly used for recreational purposes, underscoring the need to balance development with the preserving of recreational amenities. There was a notable concern about the potential loss of greenspace, with multiple suggestions to widen buffers and retain natural areas wherever possible.

Many comments suggested incorporating residential elements. While participants generally favored mixed-use development, key stakeholders recommended a hub of industrial and commercial activity within the area.

Respondents expressed dissatisfaction with the proposed road layout in the concept plan and questioned its feasibility. While the Alaska Highway option was favored, concerns arose regarding the installation of additional traffic lights on the highway, generating significant dissatisfaction among the community. It is noteworthy that there were ambiguous responses to the different access options, often citing road safety as a shared concern.

In conclusion, the feedback portrayed the complexity and diversity of perspectives among the participants. These key takeaways will be instrumental in shaping the master plan to create a thriving and harmonious urban landscape that addresses the diverse needs of the community.

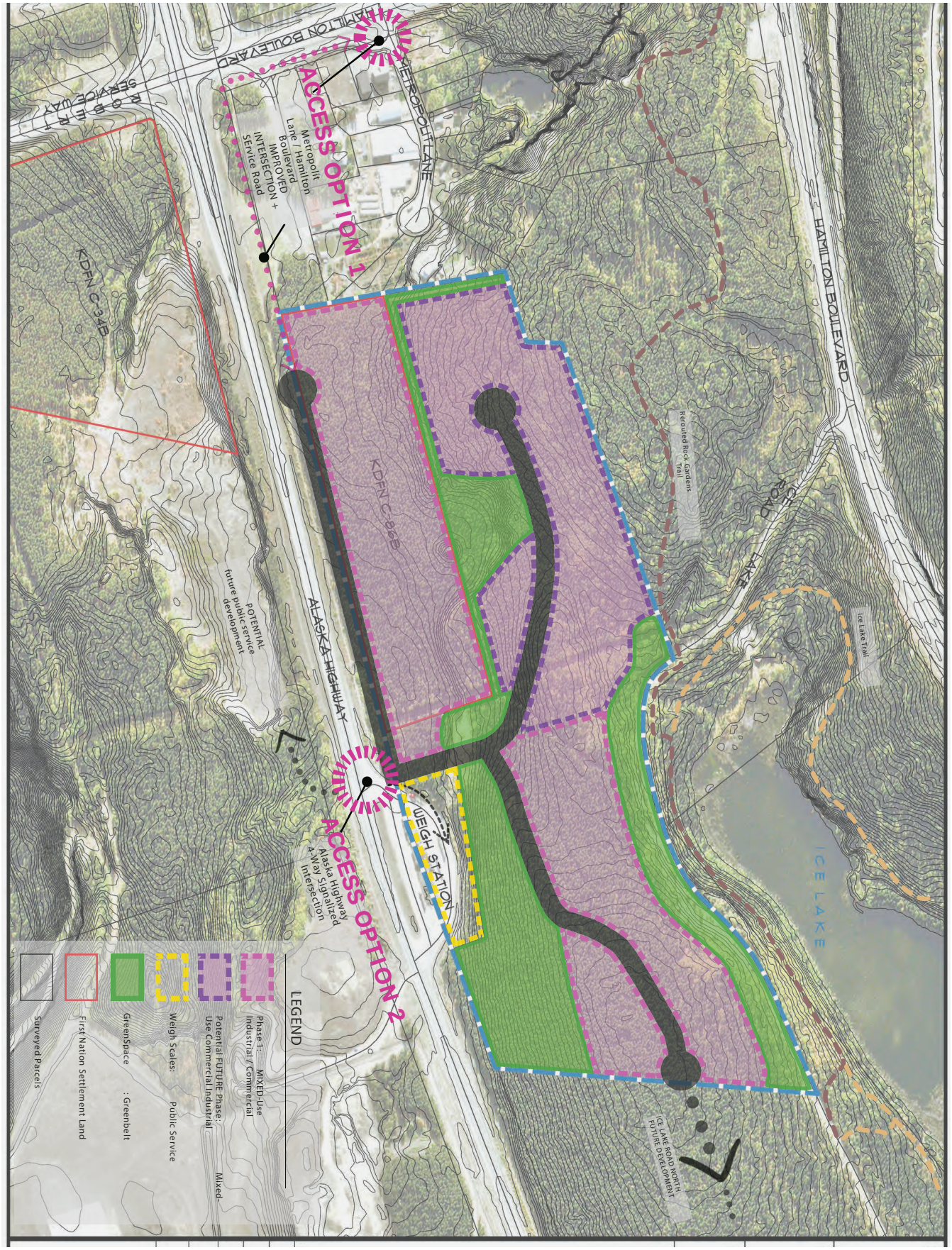
5.0 Next Steps

The final preferred land use concept will be informed by the public input provided through the input sessions and surveys, as well as by policy direction, Council strategic priorities, technical information, and the landowner interests. In addition to the final preferred concept plan, the consultant will prepare a Master Plan report that provides recommendations on how the area should develop.

The final step in the process is to present the Master Plan, which includes the preferred land use concept and the report, to City Council for their approval.

6.0 Appendix

Appendix A - Concept Plan


ACCESS OPTION 1
Metropolit Lane / Hamilton Boulevard IMPROVED INTERSECTION + SErvice Road
METROPOLITAN LANE
HAMILTON BOULEVARD
ROBERT SERVICE WAY
KDFN C-34B
KDFN C-36B
HAMILTON BOULEVARD
Rerouted Rock Gardens Trail
ICE LAKE ROAD
Ice Lake Trail
ALASKA HIGHWAY
POTENTIAL future public service development
ACCESS OPTION 2
Alaska Highway 4-Way Signalized Intersection
WEIGH STATION
ICE LAKE
ICE LAKE ROAD NORTH FUTURE DEVELOPMENT
LEGEND
Surveyed Parcels
First Nation Settlement Land
GreenSpace : Greenbelt
Weigh Scales: Public Service
Potential FUTURE Phase: Use Commercial Industrial Mixed-
Phase 1: MIXED-Use Industrial / Commercial

Appendix B - Survey

Ice Lake Road South Master Plan

Engage Whitehorse

Survey

Ice Lake Road South Master Plan

The Ice Lake Road South Master Plan project is being carried out by the City of Whitehorse, in partnership with Kwanlin Dün First Nation and Government of Yukon. When completed, the Master Plan will provide direction for the development of a mixed-use commercial and industrial subdivision to meet growing demand and create economic opportunities. The plan will establish a vision and framework for the area including different land uses, access, roads, trails, and other features, as well as guidance on lot density, on and off-site infrastructure, and costing / financial feasibility.

The City of Whitehorse is looking for feedback on the preliminary land use scenario (an early draft concept) to hear your feedback and ideas. Your input will inform the refinement of the design as it moves through to more detailed planning and design phases, before going forward for council approval and environmental assessment (YESAB).

Thank you for your participation in this brief survey. The results of the survey will be posted after the survey closes on August 28.

Land Acknowledgement:
The City of Whitehorse and the Consultant Team recognizes and acknowledges that this project is taking place in the Traditional Territories of the Ta'an Kwäch'än Council and Kwanlin Dün First Nation, whose land, cultures, histories, and languages will continue to guide and influence how we move around our beautiful city for many years to come.

Ice Lake Road South Master Plan

Engage Whitehorse

Do you live in the City of Whitehorse?

(Choose any one option) (Required)

- [ ] Yes
- [ ] No
- [ ] Prefer not to answer

Are you currently looking to purchase or lease a commercial or industrial lot?

(Choose any one option) (Required)

- [ ] Yes
- [ ] No
- [ ] Not Sure

Ice Lake Road South Master Plan

Engage Whitehorse

For the lot you want to purchase or lease, what areas of Whitehorse are the most attractive? (Choose all that apply)

(Choose all that apply) (Required)

- [ ] Marwell
- [ ] Kulan
- [ ] Taylor
- [ ] Mt Sima
- [ ] McRae
- [ ] Other (please specify)

What are the essential features or 'must haves' you are looking for in a commercial or industrial lot? (Choose all that apply)

(Choose all that apply) (Required)

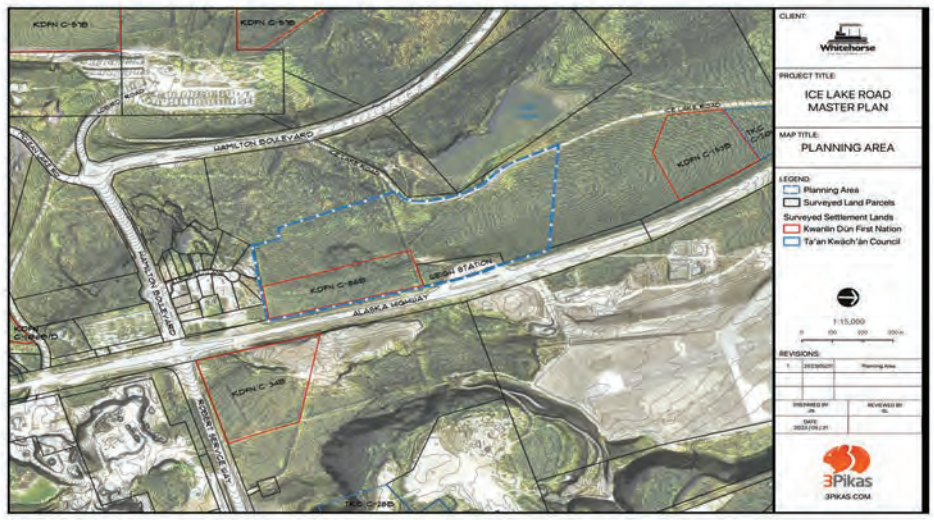
- [ ] Location with good access to the Alaska Highway
- [ ] Easy for customers/ clients to find
- [ ] Lot size < 0.5 ha
- [ ] Lot size 0.5 - 1.0 ha
- [ ] Lot size > 1 ha
- [ ] Connection to municipal water/sewer
- [ ] Other (please specify)

Ice Lake Road South Master Plan

Engage Whitehorse

Planning Area

The planning area (see map) is located within the city of Whitehorse approximately 3.5km from Downtown Whitehorse and 1.2 km southwest of the Erik Nielsen International Airport terminal. The Hamilton Boulevard / Alaska Highway intersection is about 250 meters south of the planning area.



What is important for the planning team to know about this area?

Have you spent time in this area? If so, what did/do you do there? (Choose all that apply)

(Choose all that apply) (Required)

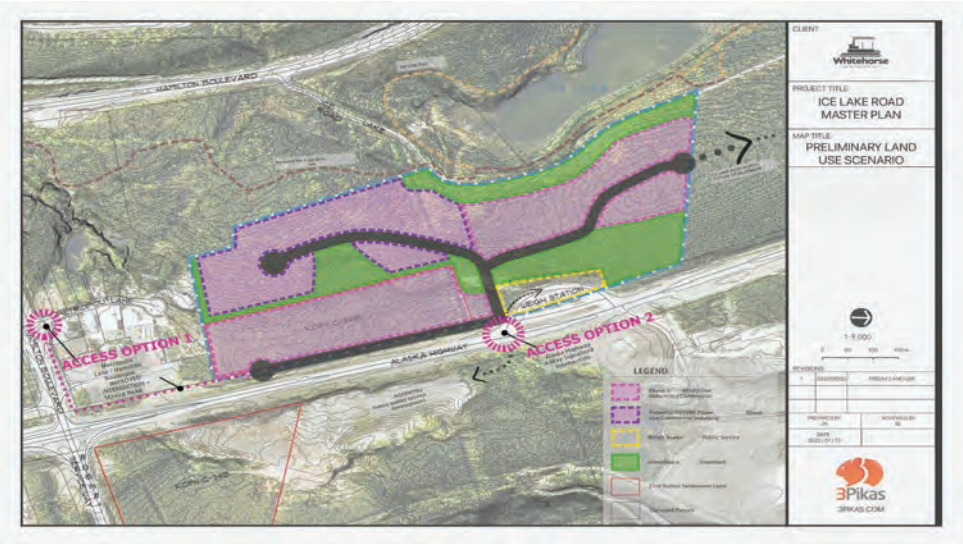
- [ ] Hiking
- [ ] Biking
- [ ] Foraging
- [ ] Motorized recreation (e.g. ATVing or snowmobiling)
- [ ] Skiing
- [ ] Transit through
- [ ] I don't spend time in this area
- [ ] Other (please specify)

Ice Lake Road South Master Plan

Engage Whitehorse

Design and Land Use Concept

The preliminary land use scenario is a 'first draft' that describes the emerging design and land uses. This includes industrial/commercial areas, greenspace/buffer areas, and road courses. There are two access options that are being considered: one at Hamilton Boulevard / Metropolit Lane, and another at the Alaska Highway. The preliminary land use scenario can be seen below or downloaded here.



What do you like about the conceptual design? (Choose all that apply)

(Choose all that apply) (Required)

- ☐ The location of the Mixed-use Industrial/ Commercial space
- ☐ The road layout
- ☐ The rerouting of the Rock Gardens Trail
- ☐ The incorporation of greenspace
- ☐ Other (please specify)

What are your ideas for improving or changing the design?

Ice Lake Road South Master Plan

Engage Whitehorse

Which access option do you prefer?

(Choose any one option) (Required)

- [ ] Hamilton Boulevard / Metropolit Lane Access (Access Option 1)
- [ ] Alaska Highway Access (Access Option 2)
- [ ] Don't know/not sure

Please explain your preference for the access option.

Does the preliminary land use scenario capture your values for a Commercial / Industrial Subdivision? What did we miss?

Appendix C - “Other” Comments and Open Ended Questions and Responses

QUESTION 3

For the lot you want to purchase or lease, what areas of Whitehorse are the most attractive? (Choose all that apply)

	"Other" Responses to Question 3
1	This area, because it's not heavy commercial. Other subdivisions have quite a bit of industrial activity. Yukon gardens is nice as it's less heavy industrial.
2	Downtown
3	Downtown
4	not sure - future plan
5	Downtown
6	Near Yukon Gardens, Copperridge
7	AK HIGHWAY NEAR airport, McLean lake, or Hamilton

QUESTION 4

What are the essential features or 'must haves' you are looking for in a commercial or industrial lot? (Choose all that apply)

	"Other" Responses to Question 4
1	Lots of Greenspace. Other industrial subdivisions have no trees left, amd become a bit of a wasteland. Preserving existing forest in Greenspan would make an industrial subdivision much nicer.
2	Lots of green belt/greenspace. The commercial subdivisions are typically very devoid of any trees in Whitehorse! Why is this not being developed as residential?
3	Needs to be around other industrial users, industrial users are too dispersed in town…ie mechanics, machinists, shipping, etc…key is to have one large industrial hub with lots of expansion room

QUESTION 5

What is important for the planning team to know about this area?

	Question 5 Responses
1	Infrastructure upgrades to Hamilton Blvd and Alaska Highway intersection are needed to make the area more friendly to cyclists. As I understand, they are already planned but the MP should consider this if not. Upgrades to hamilton blvd at proposed access 1 would also be needed.
2	That the planning area bumps up against the City recognized Paddy's Pond/ Ice Lake Park. This is not indicated on the map. This needs to be recognized in regards to some precautions that need to be considered with a park as a neighbour. Garbage, Parking, Traffic calming measures. Perhaps some fencing in some cases.
3	it is an existing area for trails and recreation use, wildlife habitat and carbon sink. It should never be considered for development.
4	Ensuring that that new users of this land do not contaminate it and that wetlands are preserved.
5	This area is a beautiful active use zone, with excellent trails, beautiful forest, green space close by.
6	This area backs onto a much appreciated and used recreation and park area (Ice Lake and Paddy's Pond area)
7	Your nap doesn't make clear that this backs on to a city park. I'm sure the city knows this, but they are not educating survey participants well.
8	Maintain wilderness trails and preserve forested areas - think of climate change, and to consider noise and wildlife corridor; traffic!
9	The area provides greeenspace for recreational activities such as walking and biking.
10	This is an ecologically important area: it provides necessary habitat between the airport, Lobird, Hillcrest and Copper Ridge/Grainger for all sorts of wildlife including bears, moose, caribou, etc. Its location near the pond/marsh by the Rock Gardens, Ice Lake, and the moist areas into which Ice Lake drains to the east/ north east, further connecting to Paddy's pond near Hillcrest, mean that development here should carefully consider if the destruction of this wildlife corridor is necessary.
11	Area has trails and is used for recreation, also there is an Orienteering map of part of the area, for recreation.
12	Retain Greenspace wherever possible.
13	Bike trail access from Hamilton to highway
14	it is one of the important green areas that are constantly diminishing due to development.

	Question 5 Responses
15	The trails around Ice Lake are well used. Additionally there is a rock climbing area (rock gardens) which is important to many. Access to these recreational areas should be maintained.
16	An active wildlife corridor which there is very little of left in the city. This should be preserved as is.
17	Avoid direct access from the Alaska Highway, and avoid more traffic lights on the highway.
18	Choose access option 1; Option 2 is a bad idea. We don't need/want another set of traffic lights
19	Maybe before we plan on more commercial/industrial, we use up the other land we already have developed…how many empty commercial/industrial properties are out there? Just drive through Marwell. Just another money grab for already wealthy people in the Yukon.
20	The area is used by many people for recreation. There will be a great deal of push back on developing this area especially if the new Lobird development goes ahead. It would be useful to offer alternate trails for users in that area!
21	very impt that there be preserved a buffer of trees along the alaska highway wherever possible, to preserve what little is left of a nice visual of our "wilderness city" for people driving/cycling/etc along the highway, especially visitors. roads in and out of the future lots/commercial/industrial area should be from the rear not from the highway. We have an opportunity to keep whse from becoming just like any other city along a highway so let's do that.
22	Trail use by residents.
23	Multi user tail nearby used by dog walkers, runners, cyclists, and recreational motorized vehicles.
24	More services available on the highway to reduce having to go into the downtown core
25	Important recreational values at Rock Gardens, and trails around Ice Lake
26	It will be unfortunate to turn trails and greenspace so close to houses into industrial properties.
27	We have seen deer, moose and bears passing through that area. Reducing the green space for wildlife is not good for them as humans will kill them if they access their property or garbage. I feel having wildlife corridors in the "wilderness" city is paramount to those of us who enjoy nature. Why not grow vertical? What are the obstacles?
28	This area has a long traditions of people hiking, walking, cycling, berry picking and mushroom foraging.

	Question 5 Responses
29	This area is currently a green belt area with many trails that are used daily by area and non-are residents. Also , it is an area for birds, wildlife and plant life to thrive It will be important for any future development to recognize and incorporate the current trail usage and birds, wildlife and plants.
30	This is an important recreation and harvesting area for area residents from both Granger and Hillcrest.
31	I would avoid access from the Alaska HIghway. The access from the Metropolit area would be preferable due to the highway already being congested, and the lack of a proper merge lane from the south access to the highway going towards the airport. The new lanes did not accommodate a merge in this area, it is a bit dangerous at this point already.
32	This area is adjacent to Yukon Gardens which is a green quiet subdivision with businesses, a daycare, vet clinic, retail and Yukon Gardens and a Hotel and houses and the noise of commercial business could adversely affect the business. There needs to be a larger green belt with trees separating these properties to act as a noise barrier.
33	I have many questions and concerns relating to the planned Commercial/Industrial use of the Ice Lake Proposal. I just learned about this proposal yesterday and although I don't live in the area, I do use the trails behind the proposed development that will be impacted by this proposal. I also know several people who live and operate businesses on Metropolit Lane who will be directly impacted by this plan. Two residents in the area just learned about the Ice Lake Project yesterday. 1. The Phase 1 document for Ice Lake development was to include meetings with the City's project manager, City staff, staff from KDFN, TKC, the Government of Yukon, and private landowners. If private land owners did not know about the project until recently, how were they invited to attend the consultation meeting? Could the city please report out on how many private land owners were invited and how many attended this important stakeholders meeting? How did the city communicate with the land owners and when? 2. The Ice Lake Proposed Plan abuts Yukon Gardens and impacts seven other businesses and six residences on Metropolit Lane including: A Daycare Veterinary Clinic Yukon Garden Centre Yukon Garden Greenhouses Heating Retailer And two other independent businesses where the owners live on the property. In total there are six families are living within the Metropolit Lane area and will be impacted by this commercial/industrial development.

	Question 5 Responses
	3 Did the planning committee consider the incompatibility of having a commercial/industrial development bordering a large garden centre that provides fresh produce for residents? Yukon Gardens is a long-established business that has been in operation at their present location for 38 years. In the past few years the business has built a number of state-of-the-art green houses to expand local availability of fresh produce for Yukoners. At a time when food security is an issue globally, we can ill-afford risking any measure of food security, especially in Yukon. We do not have to tap our long-term memory to remember the number of recent spring/summer highway closures we experienced due to fires, and road and bridge washouts. 4 Did the planning committee conduct a detailed water, environmental and wildlife assessment for this proposal? Was the planning committee aware that all above business and residences on are well water? Was this considered when they did their water assessment? Should contaminants make their way into the area's water table the impact to a large commercial garden centre would be catastrophic, as it would for all businesses and residents in the area I hope the committee will also consider the loss of yet another non-motorized green space used by many residents for walking and skiing. Can we not protect some green space in our city?
34	This area has been used extensively for recreation for generations. It's a fantastic green space that should remain as preserved an undisturbed as possible. One of our most attractive features as the Wildlife City is the Wild part.
35	This area is heavily used for recreation and is a wildlife corridor.
36	There's beautiful walking trails and a steep slope in there. It is a substantial wildlife corridor as there is relatively little human activity. It would make a great residential space. Could it be considered for residential development instead?
37	I live in Hillcrest and use the Ice Lake loop often. Obviously the development will encroach on this well-used recreation area, but I would guess that the vast majority of the area essentially gets no use and could potentially be better used.
38	Build houses.
39	Should be used for businesses that support the airport and aviation….make it a hub…minimize mixed use areas
40	Lovely hiking area close to residential area
41	This area is heavily and enthusiastically used for recreation year round - hiking around Ice Lake and rock climbing at the Rock Garden.
42	This area has many artifacts from the building of the Alaska Highway. On this site a camp housed workers. Many old bottles and a root cellar are still on property. In addition there may be an old burial site of First Nations. This area is used extensively by bikers, hikers and walkers.

	Question 5 Responses
43	It is a good area for development. Well connected.
44	Is industrial demand forecasted to require this much land in the long term in Whitehorse? Consider whether some industrial zoning in this area should be re-considered to encourage room for more residential in a very convenient location to downtown. If industrial / commercial, should be restricted to light industrial and commercial only...it's time to get the gravel pits out of downtown and residential.
45	It is a sensitive natural space that is enjoyed recreationally by many residents of Copper Ridge, Granger and Hillcrest
46	Ice lake road is a popular walking, biking, running area. It would be disappointing if the development would negatively impact this area with nose pollution or being able to see the development from the trails
47	Please keep a BIG buffer between the lake and allowed development. Not sure why Metropolit Lane is getting special treatment.
48	Portions in the area marked and adjacent to it are valuable recreation and wildlife areas
49	I'm in favour of increasing city density rather than increasing Whitehorse's "country residential" footprint on the Yukon wilderness, so I'm generally supportive of new development in the target area. That said, I also value the time I've spent on the trail system around Ice Lake, so I'm hopeful that any future development will strike a reasonable balance between urban growth and maintenance of vital green space.
50	There are trails in the area. And a lake
51	This is a greenbelt for many activities (walking, biking etc).
52	this is a wildlife area with an extensive trail system that is well utilized by citizens of Whitehorse.

	Question 5 Responses
53	I am writing to express my deep concern regarding the proposed development of the land located in the Ice Lake Road area. Having an intimate knowledge of this region, I believe it is imperative to scrutinize the feasibility of such development more closely. The area in question is characterized by its rocky terrain and imposing cliffs, making it unsuitable for extensive development. Moreover, the absence of essential city services such as water, sewer, and power infrastructure further underscores the inappropriateness of this location for such ventures. One critical consideration that must not be overlooked is the proximity of this area to Yukon's only year-round vegetable production facility. The region boasts a notably low water table, and any development endeavors have the potential to compromise the vital food security of our community. The potential pollutants associated with this proposed development also raise alarms, given the potential negative impact on the facility's operations. The area serves an important recreational function, with recently developed trails that have become popular among residents and visitors alike. These trails contribute significantly to our city's overall well-being and quality of life. As we look towards the future, it is vital to safeguard these recreational opportunities for the community. Taking into account the existing neighbors, including a hotel, nearby homes, and a substantial RV park, it is clear that the envisaged large commercial and industrial development is ill-suited for this locale. I urge that, if development in this area is deemed necessary, it should be accompanied by the establishment of surrounding green belts. This approach would not only respect the needs of the existing community but also protect the delicate balance of our local ecosystem. While I understand the importance of urban expansion, there are undoubtedly other areas within our city that are better suited for such endeavors. I kindly implore you to thoroughly reassess the implications of this proposed development and consider alternative locations that align more harmoniously with the existing surroundings. Thank you for your time and attention to this matter. Your thoughtful consideration of these concerns is of utmost importance to preserving the integrity and prosperity of our community.

	Question 5 Responses
54	I am writing to draw your attention to a matter of critical concern regarding the proposed development of a specific parcel of land in our city, namely the Ice Lake Road area. My intimate familiarity with this region leads me to believe that a thorough reevaluation of this project is necessary. The geographical characteristics of the area cannot be ignored. The presence of rocky outcrops and towering cliffs renders this location fundamentally unsuitable for extensive development. What's more, the absence of basic municipal services such as water, sewer, and power infrastructure further underscores the impracticality of this endeavor. One pivotal consideration pertains to the adjacent presence of Yukon's sole year-round vegetable production facility. The region's inherently low water table poses a significant risk to the food security that this facility provides to our community. The potential introduction of pollutants due to this development could inflict irreparable damage to this vital resource. Beyond these concerns, the region has developed into a cherished recreational space with recently established trails that have gained popularity amongst residents and visitors alike. These trails play a vital role in enhancing our city's overall well-being and lifestyle. It is imperative that we safeguard these recreational assets for the well-being of our community. Given the existing fabric of the neighborhood, including a hotel, nearby residences, and a substantial RV park, the prospect of a substantial commercial and industrial development raises valid apprehensions. If the decision to proceed with development is made, I urge you to include provisions for protective green belts that can help mitigate the potential disruption this project may cause. While urban expansion is an essential aspect of progress, it is essential that we make informed decisions that do not compromise the existing harmony of our community. As we deliberate the best path forward, let us consider alternative areas within our city that are better equipped to accommodate the proposed development without jeopardizing the delicate equilibrium that exists in Ice Lake Road. I earnestly implore your team to conduct a comprehensive review of this proposed development, taking into account the concerns raised in this letter. Your thoughtful consideration and diligent assessment of the potential repercussions are pivotal in maintaining the prosperity and sustainability of our community. Thank you for your time and dedication to ensuring the well-being of our city.
55	It is a well used recreation area used by all kinds of users!

	Question 5 Responses
56	The Ice Lake Road is not listed as a trail or under trail use, but it is used moderately to heavily by mountain and fat bikes, walkers and other recreation users year round. If traffic will be allowed on that road or the road is paved, then a trail should be developed to allows uninterrupted access of recreation users linking Rock garden trail to Ice Lake Trail and Ice Lake trail to Hamilton Blvd. Please no super wide roads that will increase vehicle speeds in areas that might mix with bikers and recreation users. Otherwise, I support the land use.
57	Developing this area, will add more traffic to an already congested area with tractor trailers and large loads slowing for weigh scales.
58	Many people use the trails for hiking, biking and wild harvesting.
59	Please consider mixed use zoning, to include residential units, with requirements that there be at least one multi-unit rental property.
60	Ice Lake is a great habitat for wildlife, birds, waterfowl,moose bears etc. It will be very important to mitigate impacts. Runoff should be managed carefully so that we don't lose another natural pond/lake near Hillcrest. Paddy's Pond was severely impacted by the runoff caused by the buildout of Copper Ridge. It is now permanently flooded with many dead trees which have fallen over into the pond. The same can be said for the former clay pits/bike pump track.
61	Would be a good location for businesses related to the airport, maybe even a park and ride. Height restrictions related to airport requirements.
62	These trails are heavily used by residents, walking, hiking and biking. There is a great deal of wildlife in this area, bears, coyotes, foxes many species of birds.
63	This land represents a very significant natural land for all residential areas bordering the area..and one of the few accessible by foot to all residents. Many residents from other areas of the city are known to use this area.It is used by wildlife serves as avian nesting area both non migratory and migratory. The Ice Lake/ Paddys Pond Regional Park proposed designation was created in the 2014 Whitehorse OCP and to my knowledge remains in the 2040 OCP.This commercial /industrial master plan removes significant land used by wildlife and their presence in the Proposed Regional Park and bordering neighbourhoods. The planning of this commercial /industrial plan must not encroach on the designated park land and ensure protection from commerce/industrial activity.

QUESTION 6

Have you spent time in this area? If so, what did/do you do there?
(Choose all that apply)

	Other Responses to Question 6
1	Running, observing nature, taking kids out to enjoy the forest and learn.
2	Orienteering, also skating on Ice Lake
3	Reside in Yukon gardens
4	Rock climbing, outside of area but close
5	Dog walks
6	Rock climbing
7	Running
8	Walking
9	running, walking with family, looking for frogs, cranberries etc.
10	Live beside development
11	Swimming in Ice lake and rock climbing
12	Swimming
13	snow shoeing
14	walking and running
15	Kick sledding Snow shoeing
16	Walking
17	Where I can walk from my home to non paved/asphalt walking all seasons .where with increasing temperatures it is cooler and can see and enjoy the more natural space good for my emotional and physical health.

QUESTION 7

What do you like about the conceptual design? (Choose all that apply)

	Other Responses to Question 7
1	Absolutely nothing
2	I don't like any of it, sorry.

	Other Responses to Question 7
3	This is very biased wording. These are some of the specific items I dislike.
4	KDFN block is fine - along the highway - two blocks close to ice lake are all wrong
5	It would be helpful to see what is planned north of the Ice Lake Road planning area
6	Nothing. It does not maintain a wildlife corridor.
7	None. We don't need it
8	2 access roads are away from the highway. so should be the third.
9	Nine
10	Not a big fan of how far back it goes. I would like the idea of a single lot width off a single parallel road to the Alaska highway.
11	Although it incorporates greenspace, that space is currently habitated by lliving beings and you will destroy their home and will make it complicated for wildlife to cross.
12	None.
13	I don't care for yet cutting more urban forest. The City will never meet its Climate Change goals if it continues to do so. I do not care for the development of commercial lots in the south east part of Ice Lake in Phase 1 and future development.
14	absolutely nothing. leave the whole are alone. full stop.
15	Again, why not residential?

QUESTION 8

What are your ideas for improving or changing the design?

	Responses to Question 8
1	A larger buffer between Ice Lake and the commercial/industrial area. It looks like slopes are an issue but if re-grading is possible, move the commercial/industrial area closer to the Alaskan Highway and leave more space between the new uses and Ice Lake.
2	Although there is greenspace added, I wonder what else can be added to make sure the PPIL Regional Park is protected. Should the Commercial area have some kind of physical barrier between it and the park to prevent garbage, vehicles etc. from accessing that area. This may be an item for the next stage.
3	scrap it and develop elsewhere. Or not at all.

	Responses to Question 8
4	Instead of more industrial space, why don't you consider turning this entire area into a progressive living community, with garden homes, apartments, semi-independent and assisted living? We already have an abundance of industrial space. There is a lot of money in senior living!
5	A larger buffer between green space and industrial
6	No uncontrolled highway access. Use option 1 or plan to build a traffic light.
7	Stay close to highway and away from trails, wildlife and lake
8	Scrapping it. This isn't a suitable place for an industrial subdivision. There are ample locations along the Alaska Highway south of Whitehorse and in Marwell. Making better use of these areas should be the first priority. Eventually (as the need arises), disused quarries such as those found along McLean Lake road be more appropriate as this would make use of already-disturbed land.
9	It's hard to judge without knowing the plans for the 'Future planning' parcel
10	Higher density of Greenspace. The industrial subdivisions in Whitehorse are devoid of greenspace!
11	Don't develop it. We need wildlife corridors. Often deer in this area as well as bears, wolves, coyotes, foxes.... I have even seen caribou here.
12	Not clear what there are for services, if any.
13	We don't need more commercial/industrial and if we do, there are areas that are not part of our intact forest landscapes. Is Wilderness city just a marketing ploy at this point?
14	Is it possible to include a park for people in the industrial area to use?
15	keep a buffer of trees all along the Alaska Highway. Don't have the lots be visible from the highway .keep access discreet as well as safe. don't bung up this stretch of highway.
16	There's too many new roads adjacent to the highway proposed. I'm concerned this will reduce green space available, and encroach development within a large wildlife corridor. Keep access by extending existing ones near Yukon Gardens.

	Responses to Question 8
17	The area immediately adjacent to the weigh scales should be accessed from access option #2. Do not make the access off of Hamilton Boulevard. This is way more difficult and burdensome for heavy truck traffic. Also, why was access for this whole area other then the FN portion not considered down the existing Ice Lake Road. Either the Ice Lake Road should be considered as the best option or the access by the weigh scales should connect up to access along the Ice Lake Road that connects to the Alaska Highway by the Air North hanger turn off. Parcels larger than 1 hectare should be made available and lots do not need to be serviced.
18	Would like to see greater setbacks from the rock gardens climbing area and Ice Lake
19	Not a big fan of how far back it goes. I would like the idea of a single lot width off a single parallel road to the Alaska highway.
20	Do not go ahead with this plan. The green space right across the Alaska Highway is also being developed. How can wildlife survive?
21	Please specify that there will be MMU trails alongside the road network. The area is directly adjacent to the South Growth Area, and if/when that is developed, active transportation should be able to move through both the South and North Ice Lake Road areas on trails seperate/protected from roads. If Access 1 is developed, active transportation should be able to travel through the area all the way to the Hillcrest Dr/Alaska Highway intersection. Widen the buffer between Paddy's Pond Regional Park and the commercial use. A large Greenspace buffer between the Alaska Highway and commercial uses is unnecessary. I recognize this may be costly given the slopes.
22	Keep the green space/buffer wider below the Ice Lake road (south east part of lake) and move the commercial closer to highway (even it it means removing grade). Leave those forests for the diversity in plant community they offer and the numerous services (health, environmental and social) urban forest serve.
23	The current Hamilton Blvd/Metropolitan Lane access is currently a lane exit just west of the Alaska Hwy interchange and would require reworking to ensure smooth and safe traffic flow. Also, how will vehicles turning off from South Alaska access lane safely (as, at present, they have to turn into far right lane to enter)? I'm not in favour of Alaska Hwy Option #2 right at the weigh scales as certain times of the year there is a lot of big rig traffic entering and exiting this area.
24	I'm not sure of the benefit of including a sliver of greenspace between two industrial areas. What's the point? It'll just fill up with garbage anyway like the other green spaces near industrial lots.

	Responses to Question 8
25	Putting commercial/industrial in this area is a horrible idea. It is going to amplify car dependence along the highway meaning large parking lots and non-public transit development on these lots . Especially for such a central area of the city that should be the focus of high density development. If the city is determined to develop this area then it should be primarily high density residential that can enhance public and active transportation, and compliment the greenspace and Ice Lake area around it which people can enjoy.
26	as stated, the access should not be off the highway
27	More greenspace between Yukon Gardens and the new commercial development Have the commercial cul de sac moved so that heavy traffic and truck noise isn't immediately beside Yukon Gardens property
28	I believe the design does not meet the City of Whitehorse's Master Plan guidelines. It is certainly not compatible with the long established Commercial/Residential area of Metropolit Lane and Yukon Gardens. The City should not approve the Commercial/Industrial development in this area.
29	don't develop there.
30	I'm all for development and recognize that we need more land availability. I however don't understand the need for industrial land inside the habitation radius of the city core. If you look at the radius created by Hamilton Blv, it would make more sense to have mixed use development with an enfosys on housing as this area is well connected to the core via road and trails. Industrial spaces should be pushed out to locations such as the quarries or expanding the industrial area down in Marwell. Housing is our biggest issue and not all people want to live in Whistle Bend. At least you wouldn't have traffic issues and the bus already goes past this area.
31	I'm concerned about heavy industrial use in an area that is currently without any known contamination or see a lot of human use, especially as it would likely be unserviced, with a significant number of septic systems. I'm curious as to why it has not been explored as a residential subdivision. Seems like it could be a much better use of the land, especially since not everyone wants to live in Whistlebend.
32	The cul de sac or dead end roads don't make much sense. Why not have them all connect in a loop.
33	Would probably like to see as much of a green space buffer between the development and ice lake as possible, so if that could be increased by decreasing the space on the highway side, I think that would be preferable.
34	Limit mixed use, focus on an aviation services hub

	Responses to Question 8
35	It's hard to disagree with plans to develop accessible land within the city. However, this is long-established recreational space and I would hope this would continue. Much as I understand that the highway corridor in this area is primarily industrial/commercial and this fits in, there is a serious need for affordable housing - and at a higher density, not just large lots.
36	The design and industrial use is not compatible with neighbouring properties. Yukon Gardens subdivision is green and contains greenhouses, retail businesses, a hotel and daycare and vet clinic. To zone this area industrial commercial creates the potential for heavy industry with pollutants and located next to commercial greenhouses that grow vegetables for sale does not make sense.
37	It looks good to me, as proposed.
38	Keep mixed used right along the highway only. Given the amount of undeveloped land available across the highway seems unnecssary to go so deep into the undeveloped area...residential around ice lake would be a much better use of the land.
39	More green space between Icelake and the development…
40	Incorporating some residential development
41	More green space; commercial designation only--NO industrial.
42	Maintain the integrity of the current rock gardens trail. This is important considering that the area on the other side of Hamilton blvd may be developed in the future potential eliminating trails such as Quickie.
43	More commercial space would be better
44	Trail access for pedestrians and cyclist through the back of the lot would improve the active transportation options to the property. As designed, a worker commuting by bike from Copper Ridge would have to go all the way around the property for access. A link in the middle and/or at either end would provide better access by active transportation and "future proof" the design (in case say, the trails in the back become paved in the future). If access option 1 is chosen, I'd like to see an active transportation link at access option 2.
45	I can't tell if the design includes modest access to Ice Lake for recreational non-motorized boating (canoe/kayak/SUP). Currently, boats have to be carried in. A small launch area that could be driven to, or close to, might be worth considering. I realize there might be strong resistance to the idea of opening up the lake to increased traffic, though.
46	I'd rather the space be mixed use residential than commercial/industrial as we are currently in a housing crisis
47	Create a larger buffer between the lake and the development
48	Don't do it.

	Responses to Question 8
49	While I understand the importance of urban progress, I firmly believe that significant changes are needed to ensure the safety, sustainability, and well-being of our community. Firstly, I cannot emphasize enough the potential risks to food security in the Yukon associated with this development. The low water table and the possibility of pollutants pose a direct threat to the only year-round vegetable production facility in our region. In light of these risks, I urge the thorough reassessment of this project's location. It is clear that the current site is not suitable for development of this scale and nature. Should it be absolutely necessary to move forward with this project, I insist that a considerably larger green belt be integrated into all aspects of the proposed development. This green belt would serve to mitigate environmental impact, preserve local ecosystems, and enhance the overall aesthetic and well-being of the area. Our community deserves a development that is considerate of its surroundings and respectful of the existing environment.
50	I am writing to convey my unwavering opposition to the proposed development in the Ice Lake Road area. The risks associated with this project, particularly concerning food security and environmental sustainability, are too substantial to be overlooked. After careful analysis of the current site, I firmly believe that this development should not proceed in its present location. The concerns regarding the preservation of food security in the Yukon cannot be overstated. The low water table and potential pollution risks pose a grave threat to an essential year-round vegetable production facility, which plays an indispensable role in ensuring our community's nutritional well-being. Should the decision to proceed with development be deemed unavoidable, I strongly advocate for the reconsideration of the location. It is imperative that an alternative site be identified, one that does not compromise our critical resources and environment. While development is essential, it must be conducted responsibly, with a clear focus on sustainability and the long-term benefit of our community. Moreover, if the necessity of development in the Ice Lake Road area cannot be averted, it is paramount that a significantly larger green belt space be incorporated into all sections of the proposed project. This green belt would serve as a buffer zone, mitigating potential environmental and ecological disruptions while respecting the needs of the surrounding community.
51	address Ice Lake Road access and trail use

	Responses to Question 8
52	Access should be onto Hamilton with a timed traffic light (located well before your 'soothing circle' roundabout), then get lights at Alaska Hwy/Robert Service Way on a timer.
53	Please consider mixed use zoning, to include residential units, with requirements that there be at least one multi-unit rental property.
54	Connect on both the Hamilton boulevard side and Al highway so as to have two ways to exit
55	If you are going to make an access off the highway, put in a signalized intersection. It might slow traffic down. The new highway has increased speeds in that area to 100 km/h, despite the 60-80 km/h zones.
56	Why would you want to put an industrial area adjacent to several residential areas that use that space, including Hillcrest, Granger and Copper Ridge residents and others who travel to use the space. It doesn't appear to fit with the Agricultural/commercial or veterinary businesses that currently exist next to Hamilton Boulevard either.
57	don't understand road design Looks like the plan is to remove all natural trees from the highway

QUESTION 10

Please explain your preference for the access option.

Option 1 Hamilton/ Metropolit Access Preference

	Responses referring to Option 1 preference
1	You've already screwed up the highway enough. Highways by their very definition should be for travelling through an area, not business access.
2	Safer. Cars move too quickly on Alaska highway and there is no enforcement of speed limit.
3	YG is working to reduce uncontrolled highway accesses. If you want highway access, it must be signalled.
4	To avoid more turning vehicles on the highway and increased risk of accidents
5	Don't want yet another traffic light on the Alaska Highway
6	Keeps the highway clear of accesses
7	Avoid the busy highway, avoid the need for more/new lights on the highway.
8	Option 2 is a bad idea, another set of lights is not needed or wanted
9	don't have access off the highway, we'll need yet another light and it will be a gong show

	Responses referring to Option 1 preference
10	Having option 2 so close to Hamilton Blvd will slow down traffic passing by on Alaska Highway. There's too many roads being proposed. Try to reduce them and keep more green space.
11	Minimize number of access points on the highway
12	More cost effective
13	I think both access points would be alright but I wouldn't want to see another traffic light on the highway.
14	better connection to South Growth Area.
15	The Alaska Highway is a racetrack without any policing, so any turns directly off the highway will increase a risk of accidents.
16	busy highway already - and not well planned out with the newest changes.
17	Safer than onto a highway where too many people speed. There will also be conflict with heavy transport traffic due to the scales.
18	Potentially less impact on trails and natural areas.
19	Entrance and egress via Hamilton seems like a safer option versus allowing more cars to turn into high-speed traffic on the Alaska Highway.
20	I think it would get slow moving trucks off the Alaska Highway to do their turns and keep this throughway more open.
21	Access from Hamilton Blvd will be safer due to less traffic, slower speed, etc at access point.
22	Signalized intersection.
23	It minimizes damages to the natural area because the road access would be adjacent to Hamilton Blvd which has already interrupted the natural area
24	Still good access to the Alcan, but no traffic lights on the highway.

Option 2 Alaska Highway Access Preference

	Responses referring to Option 2 preference
1	If the South Growth Area develops, I think it would be better to have less traffic pressure on hamilton blvd, as oppossed to the Alaskan Highway.
2	Better to have trucks and other large vehicles turning directly off the highway, rather than causing congestion and accident potential on a largely residential road.
3	Highway is a major transit way - keep the noise there
4	If this access is properly implemented, it could slow down traffic along the Alaska highway and further signal to travellers that they are within city limits. It's easy right now to just treat the Alaska Highway as a high-speed highway until one gets to 2 mile Hill, which is a hazard to people near Hillcrest and the airport.
5	Less frontage road

	Responses referring to Option 2 preference
6	keep robert service moving, now that there are 4 lanes on highway, use that
7	It leads directly off the Alaska Highway and through a minimum amount of green space. The other option would be more disruptive and destructive.
8	Traffic on Hamilton is already a problem and sure to get worse if the Lobird development goes through. Maybe move the intersection with the Alaska Highway further from the weigh station and use an on demand light setup.
9	Alaska highway. Easier and more direct for larger vehicles.
10	The area immediately adjacent to the weigh scales should be accessed from access option #2. Do not make the access off of Hamilton Boulevard. This is way more difficult and burdensome for heavy truck traffic. Also, why was access for this whole area other then the FN portion not considered down the existing Ice Lake Road. Either the Ice Lake Road should be considered as the best option or the access by the weigh scales should connect up to access along the Ice Lake Road that connects to the Alaska Highway by the Air North hanger turn off. Parcels larger than 1 hectare should be made available and lots do not need to be serviced.
11	It make sense visually.
12	Reducing creating roads
13	It is more simple and easier to access the parcel and uses the existing Alaska Highway corridor.
14	I'm not a fan of parallel service roads.
15	Option number 2 will make less congestion at the Alaska Highway South intersection.
16	There are several businesses and a daycare on the corner of Metropolit Lane. The additional traffic would cause extensive issues. In addition the land in front of Yukon Gardens is currently used as a parking lot and has for many years. There would no area to park to shop at the Gardens. In the spring in particular this parking lot is in an overflow situation and this access would prevent customers from shopping and dramatically reduce our revenue to the point we might be out of business. A larger investment would be required to make the road accessible for trucks.
17	Proposing Hamilton Boulevard an access road to this development should not even be offered as an option. As one who travels to town daily, this high traffic and high collision area does not need additional vehicles added to mix. The additional commercial traffic would also impede the businesses and residences in the area, including a Day Care. Combine the access for the Ice Lake development with the weight station access on the Alaska Highway.

	Responses referring to Option 2 preference
18	More efficient access with less driving around to get to the lots
19	Going through Yukon Gardens doesn't provide the easiest access and somewhat hides the entire subdivision.
20	turning left out of metropolit to go into downtown can be tricky so more lots may make that trickier, but maybe it would be fine with a round about or light at metropolit and hamilton??
21	Industrial uses should be kept off of more residential roads
22	How about 2 access points? If this is commercial/industrial use, then there's some logic in access from the highway where it looks more direct than through properties off Hamilton Blvd.
23	Metropolit Lane is a quiet street with businesses and residents. On the corner is a daycare and potential for harm as the children are often out playing exists.
24	residential seems likely to develop on Hamilton extension in time, better to keep industrial / light commercial traffic away from residential accesses
25	Alaska Highway is already set up for access. It makes no sense to add to the confusing parts of Hamilton Blvd.
26	Easier access for residents not located in copper ridge
27	It will create an intersection which will slow down the highway traffic
28	Less traffic on the Alaska highway, Hamilton is already pretty busy.
29	A crucial aspect often overlooked is the choice of access road. I strongly advocate for the use of the Alaska Highway road as the primary access point to the development. The other proposed access road, passes by a daycare and a hotel, is ill-equipped for the industrial traffic that could be generated by this project. Prioritizing safety and convenience for all parties involved is a responsibility we should not take lightly. In closing, I implore you to consider the profound implications of this proposed development on our community. The need for development should be balanced with the preservation of our environment, community safety, and the well-being of our residents. A change in location, combined with enhanced safety measures and a larger green belt, will ultimately result in a more harmonious and sustainable project.

	Responses referring to Option 2 preference
30	The choice of access road is of paramount importance. Given the potential scale of industrial traffic, I strongly recommend that the Alaska Highway road be utilized as the primary access point. The current access road, which passes by a daycare and a hotel, is ill-suited to accommodate heavy industrial traffic. Prioritizing the Alaska Highway road would not only ensure safety but also minimize disruptions to established services and businesses in the area. In conclusion, I implore you to reconsider the feasibility of this development in its current location. The risks to food security, the environment, and the overall well-being of our community are simply too high to justify proceeding without a comprehensive reassessment. Let us work together to identify an alternative site or, if necessary, implement substantial modifications to ensure responsible and sustainable development. Thank you for your time and consideration of these crucial matters. The future of our community's prosperity and harmony hangs in the balance.
31	Easier customer access. Keeps industrial and residential traffic separate.

Don't know / not sure

	Responses referring to Don't know/ not sure
1	No access. Don't develop it.
2	I wonder if the Hamilton Blvd one would be safer with it being 80 km/h in there but I'm not sure.
3	We don't need more roads and commercial development
4	Prefer an access option that ensures safe entry and exit from commercial site while ensuring safe and smooth travel of through traffic. I don't have enough information to see how the current options will address this.
5	I don't like any of this.
6	This is heavy truck traffic you are adding - Hamilton/Metropolit option - left turn would be a joke for long loads due to morning traffic and close proximity to existing lights. By the way, fix the lights at existing intersection - those lights are very confusing!! Alaska Hwy option - a second light so close to the one at top of Robert Service Way is asinine, let alone heavy truck traffic backups waiting to turn left.
7	I would prefer to keep the space protected from commercial development
8	I would prefer the AK highway option (#2) if only one of the two options is possible but ideally two exits (both options 1 and 2) would be best.

QUESTION 11

Does the preliminary land use scenario capture your values for a Commercial/ Industrial Subdivision? What did we miss?

	Responses to Question 11
1	no comment
2	I am not keen on a Commercial/Industrail Subdivision next to a Regional Park. But I can some thought has gone into the greenspace barrier between the subdivision and the park. I just think further physical barriers might need to be considered. Living in HIllcrest, we get a lot of garbage into the greenspace behind Burns Road industrial area. It is difficult to get the businesses to take some responsibility for the garbage. We have had some limited success.
3	You missed the desperate need for more housing.
4	No, commercial industrial should be located further out of town
5	Please please god come up with a zoning designation for car dealers and force Ford out of downtown It's bad enough they use up all the public parking, nevermind the massive waste of space that is their lot. Are there opportunities to provide upgrades and amenities for the ice lake municipal park? It is a little known and probably underused space that could benefit from a proper trailhead, parking lot and a new trail or two.
6	Hate commercial in the is area.
7	Don't really have any. Just concerned about increased traffic, noise etc and removal of valuable green space that I use frequently
8	Absolutely not. I haven't seen anything to justify the need for this development. If such a need exists, it should not take place in an ecologically valuable area anyways.
9	It's hard to tell from the map how it impacts the existing trails
10	I like the incorporation of Greenspace. That's important. Provision of city services would also be valuable. The density of septic systems in Yukon Gardens is very high.
11	Ha ha! When will it ever end? The constant chewing away at our green spaces, this time up close to a lovely small lake and destroying part of a green recreational area.
12	You completely missed considering NOT developing it!
13	I don't have these values

	Responses to Question 11
14	We don't need more commercial/industrial…maybe the lots at Sima didn't need to be so big because most out there arent even using the whole thing. There are still empty lots undeveloped in Marwell. Maybe encourage people to subdivide instead of clearing more trees.
15	I think it is very good especially the incorporation of green space in the plan.
16	keep the subdivision basically invisible from the highway, much like Sima, by retaining a buffer of trees. replace the mature coniferous forest with a mix of conifers and deciduous; ensure a good screen
17	No. Please ensure there is more green space. Once you expand this area, it'll look like the area beside Hillcrest.
18	The development should incorporate lots larger than 1 hectare. It should also look to fully build out the Ice Lake Road area including the portion that has been identified for a future phase.
19	Yes
20	More buffer to allow for recreational uses around Ice Lake and the rock gardens area
21	I think this development would be better suited out towards Macrae
22	Commercial/Industrial subdivisions are ugly, usually dirty because there is no enforcement around cleaning their own garbage so knowing that a nice green space that we enjoy on a regular bases will be gone, along with the being that live in it, is heartbreaking, sad and the City should explore other options. Why not go vertical?
23	MMU trails within the study area.
24	I cannot comment on this.
25	Not sure. It's not clear to me how the Rock Garden trail will be rerouted or how the development will impact enjoyment of the geeenbelt areas.
26	Since it is in my neigbourhood I am apprehensive about the potential impacts on an area that I use daily.
27	I'd rather see industrial land use tucked away from public view. This risks making that stretch of the highway particularly unattractive.
28	No commercial/industrial development. This area needs a total rethink if it is to be developed.
29	Heavy use commercial industrial should not be side
30	We have areas for commercial/industrial development in the city but when proposing a new development the City of Whitehorse must consider the compatibility of new projects and their impact on long established, non-industrial businesses and residences.
31	I'd like to see this sort of development considerably more distant from residential property and not in conflict with the fantastic and rare green space that makes that residential property so attractive.

	Responses to Question 11
32	As mentioned in previous comments. No. Industrial/commercial should not take up valuable and close to the city core lands. Mixed use is a much better format in that area and should be focused on housing.
33	I'm unclear as to why it would not be a candidate for residential lots. Why, good lord, why must we all be forced to buy crappy houses in Whistlebend? It would be nicer to see more greenspace. There's also a marsh in there that should be preserved. More greenspace would be good for the animals using it as a corridor.
34	As long as it isn't a first nation land lease. No business owners want then. Part of growing a small, medium or large business is owning the land. Without that, peoples hard work over 10, 15, 20, 30 years doesn't get the benefit it should.
35	If the access stays on the highway, it might be nice to see a paved trail/commuter access through to metropolit
36	Generally it is small and not a lot of expansion opportunities
37	I would have like some mixed use with affordable housing. Regardless I hope you're planning to incorporate transit somewhere along this length of highway.
38	Again the industrial commercial zoning is not compatible with the existing businesses and residents. Change the zoning
39	Looks good to me as proposed
40	See previous comments about keeping it close to the AK Hwy corridor and allowing residential development around Ice Lake
41	Why is this happening right next to the only lake in the area? Is there really nowhere better to develop?
42	Do we need more industrial land? Would like to see some residential lots incorporated
43	No attention to air quality or where air from industrial activities will go. Not enough green space and especially buffer between Ice Lake and development. No information provided on wildlife activity and use in the area. Horrific timing to get any reasonable feedback-short timeframe at the height of summer/back to school.
44	No. Recreation areas currently in use could be adversely affected.
45	It's fine, but personally I'd like to see more mixed commercial/light industrial/residential within city limits.
46	From what I can tell, it looks like a reasonable compromise between planned growth and maintenance of suburban wilderness areas.
47	I don't feel as if this is an ideal location for a mixed use commercial/industrial subdivision and would hope for mixed used commerical/residential
48	Meh. It seems like there could be more development in already impacted areas like across the highway from the with scales

	Responses to Question 11
49	I would prefer this subdivision not exist. Have you thought about garbage? Wildlife attractants caused by industrial use? Damage, pollution to Ice Lake and wildlife?
50	I am writing to express my deep concern and disappointment regarding the proposed commercial-industrial development in the Ice Worm Lake area. As a long-standing member of the Whitehorse community, I feel compelled to voice my strong opposition to a project that does not reflect the values of our city nor the ethos of its residents. The location, being one of the first sights anyone coming up the Alaska Highway from the south encounters, holds a special significance. It serves as an introduction to our community, a gateway that should embody the spirit and identity of Whitehorse. This proposed development starkly contrasts with our city's cherished reputation as "the wilderness city," a title that symbolizes our commitment to harmonizing urban life with the surrounding natural environment. I must assert that the prospect of a large commercial-industrial lot in this prominent location is deeply concerning. It not only disrupts the visual appeal of our city's entrance but also poses substantial risks to the well-being of our community. The potential environmental, social, and economic impacts of such a development could be significant and far-reaching. I firmly believe that this development should be reconsidered for an alternative location that is more in line with the values and identity of Whitehorse. A location that does not detract from the beauty of our city and that aligns with our commitment to environmental sustainability and responsible urban planning. In conclusion, I urge you to take into account the collective voice of the Whitehorse community, one that values its unique natural surroundings and seeks to maintain a harmonious coexistence between urban and wilderness elements. It is my sincere hope that the city's planning decisions will reflect the aspirations and identity of its residents, and that we can work together to find an alternative solution that better aligns with our shared values. Thank you for your attention to this matter. Your thoughtful consideration will undoubtedly shape the future of our city's landscape and character.

	Responses to Question 11
51	I am writing to express my deep concern and profound disappointment regarding the proposed commercial-industrial development in the Ice Lake Road area. This project, as it stands, is wholly incongruent with the values and character of the Whitehorse community. As a concerned resident who takes pride in our city's identity, I find it disheartening to see a project of this nature being considered. The location of the development, positioned along the Alaska Highway as one of the first glimpses visitors have of our city, holds immense significance. It should serve as a testament to our commitment to preserving the natural beauty that surrounds us, rather than a stark industrial contrast. The very essence of Whitehorse, often referred to as "the wilderness city," embodies a delicate balance between urban and natural elements. This proposed large-scale commercial-industrial lot contradicts this balance and threatens to compromise the integrity of our identity. Furthermore, the potential risks and implications for our community cannot be ignored, both in terms of environmental impact and the overall well-being of our residents. I strongly urge the reconsideration of this development's location, in favor of an alternative site that better aligns with the values that make Whitehorse unique. The entrance to our city should reflect our dedication to maintaining the harmony between human progress and the environment. In closing, I appeal to you to uphold the spirit and reputation of our community by making decisions that resonate with our shared values. Let us strive for a solution that respects our identity as "the wilderness city" and promotes a sustainable, responsible approach to development. Thank you for your time and consideration. The future landscape of Whitehorse depends on choices that reflect the true essence of our community.
52	Feels like a good location. Longer lead time for the survey given summer/back to school timing.
53	All of this depends on what type of industrial would be allowed there. We can't even get a 2-lane highway built straight through on Alaska Hwy and now you are adding to it? How about the mess we are currently in with Mountainview traffic into industrial area? Ever try to enter that morning/afternoon funnel driving a heavy truck?
54	It will impact the hillcrest community by taking away some of our cherished green space

	Responses to Question 11
55	Please consider mixed use zoning, to include residential units, with requirements that there be at least one multi-unit rental property.
56	Yes
57	I hope there will be no heavy industrial uses here. The impact of noise on wildlife at Ice Lake and on nearby residents will be an issue.
58	I am not in favour of expanding a commercial/industrial subdivision in this area.
59	More or less. My expectations from the City of Whitehorse are pretty low given past results... and I'm sure you'll fail to meet them regardless going forward.

8.4 APPENDIX D: SURVEY 2 RESPONSE SUMMARY REPORT

Survey Responses

31 May 2024 - 16 June 2024

Survey on the Land Use Concept

Engage Whitehorse

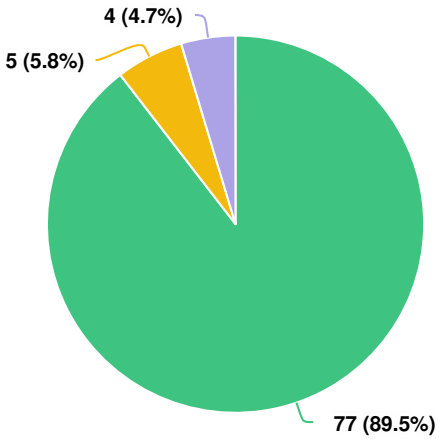
Project: Ice Lake Road South Master Plan

BANG THE TABLE engagementHQ

VISITORS					
82					
CONTRIBUTORS			**RESPONSES**		
82			86		
1 Registered	0 Unverified	81 Anonymous	1 Registered	0 Unverified	85 Anonymous

SURVEY QUESTIONS

Q1 Do you live in the City of Whitehorse?

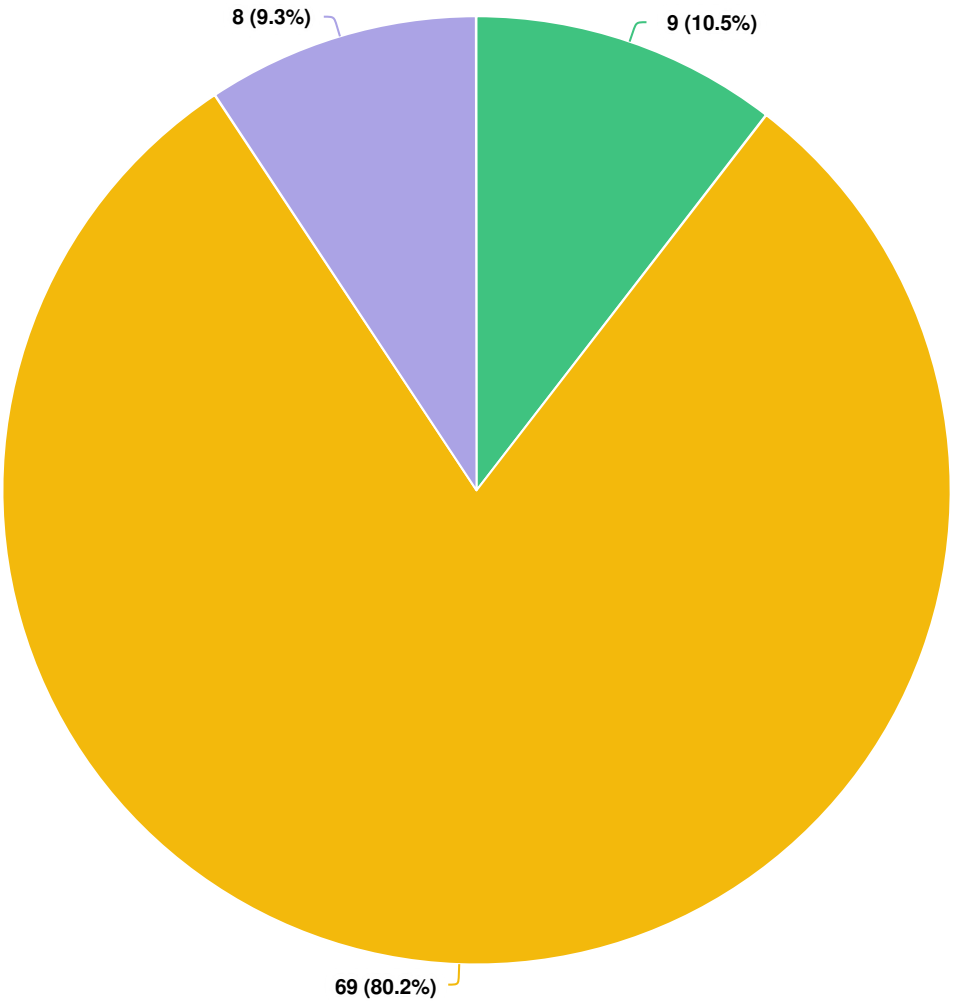


Question options

Yes No Prefer not to answer

Mandatory Question (86 response(s))
Question type: Radio Button Question

Q2 Are you currently looking to purchase or lease a commercial or industrial lot?

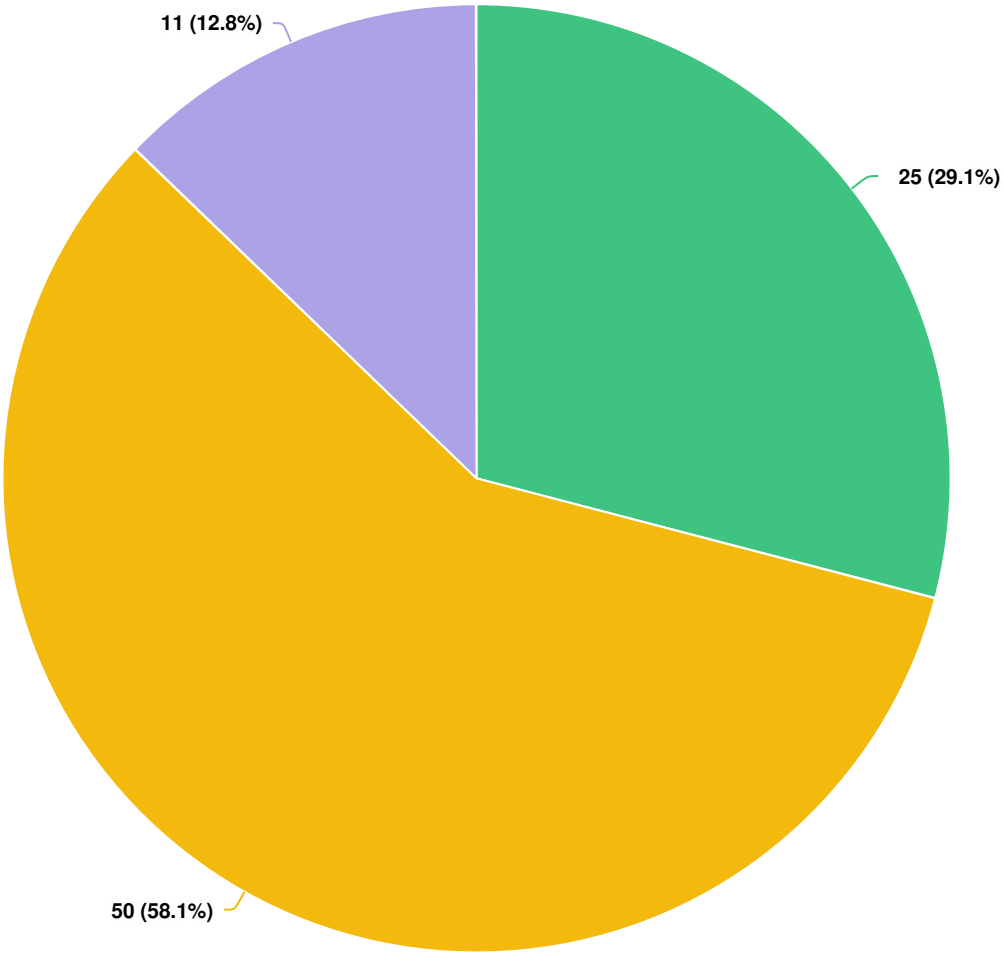


Question options

Yes No Not Sure

Mandatory Question (86 response(s))
Question type: Radio Button Question

Q3 Did you participate in the August 2023 Ice Lake Road South Master Plan survey?

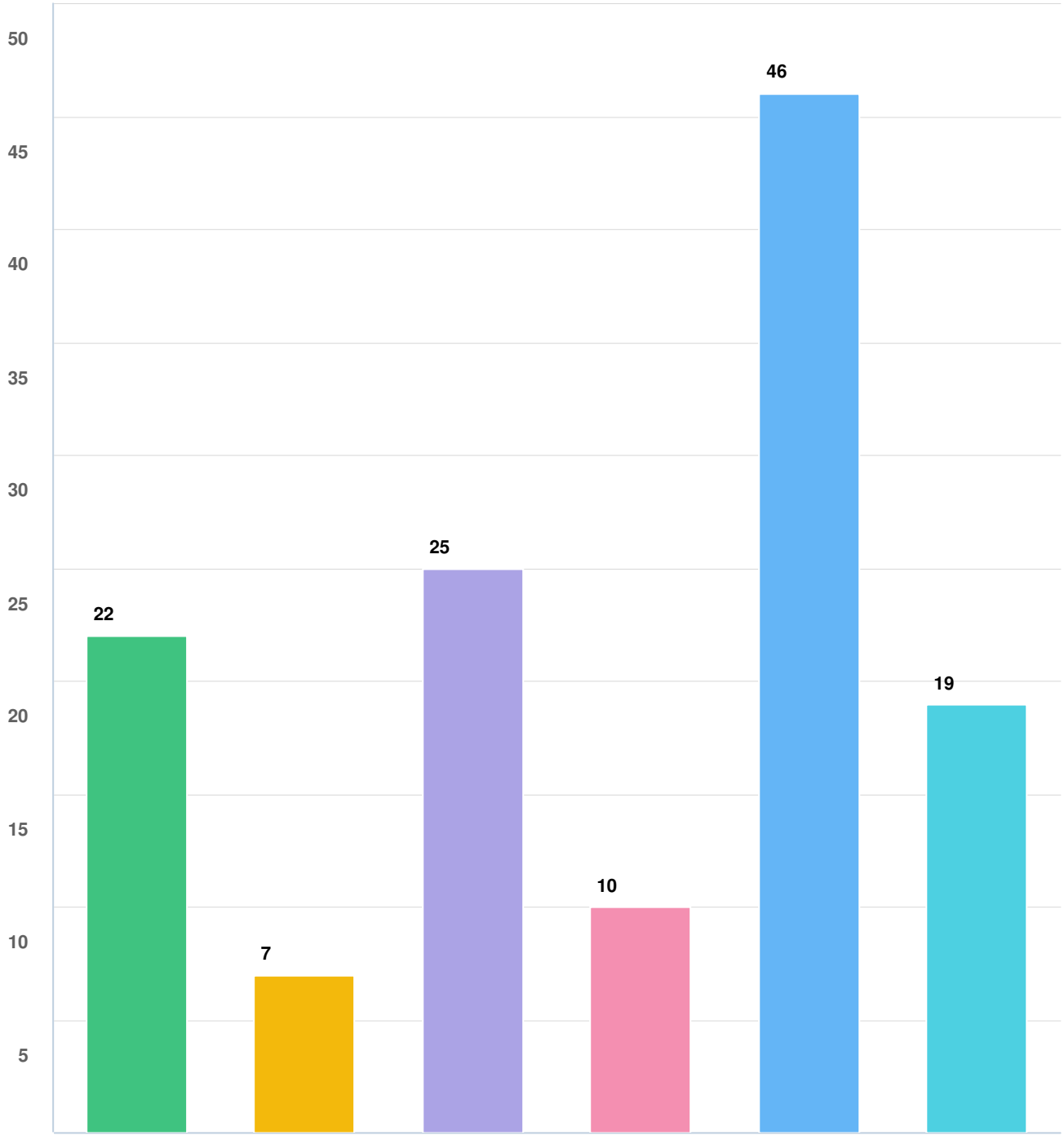


Question options

Yes No Not sure

Mandatory Question (86 response(s))
Question type: Radio Button Question

Q4 What do you like most about the current land use concept? (Select up to three)

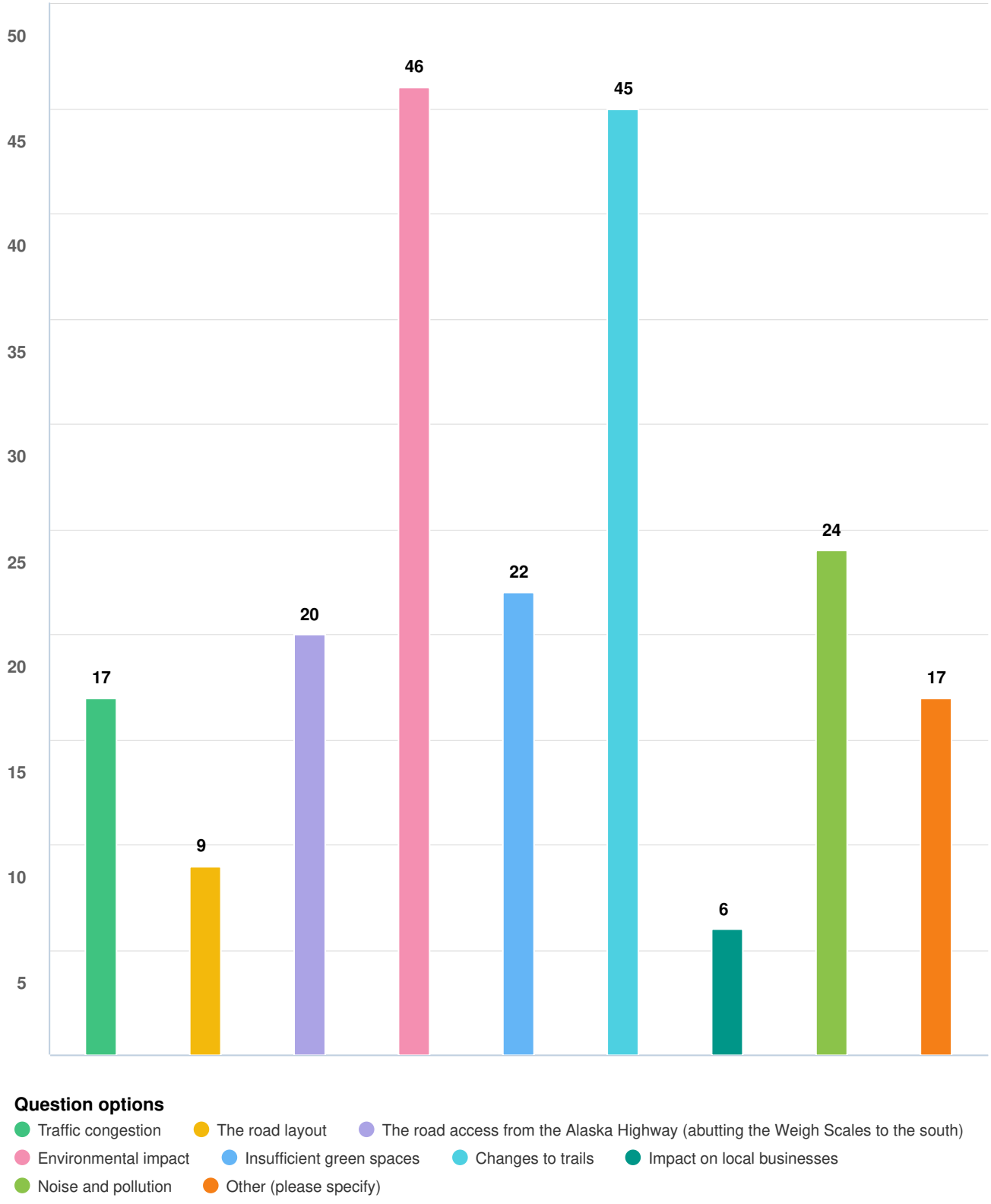


Question options

- The location of the Mixed-use Industrial/ Commercial space
- The road layout
- The road access from the Alaska Highway (abutting the Weigh Scales to the south)
- The rerouting of the Rock Gardens Trail
- The incorporation of greenspace
- Other (please specify)

Mandatory Question (86 response(s))
Question type: Checkbox Question

Q5 What are your main concerns about the current land use concept? (Select up to three)



Mandatory Question (86 response(s))
Question type: Checkbox Question

Q6 Do you have any specific suggestions for improving the current land use concept to address your concerns? (Optional)

Screen Name Redacted 5/31/2024 11:45 PM	High density mix used residential development
Screen Name Redacted 6/03/2024 02:34 PM	ensure lots don't drain into Ice Lake. Be more specific about how active transportation will safely cross the Alaska Highway to get into the area.
Screen Name Redacted 6/03/2024 06:06 PM	This is beautiful, wildlife rich wilderness. The small number of lots would be much better accommodated in current industrial areas. Stop taking the wilderness out of the wilderness city. Growth should not be your only goal.
Screen Name Redacted 6/03/2024 06:21 PM	A green belt buffer should be add all around and inside the development. I'm worry about the environmental impact of the project, it is very close from the lake, the change of the topography and drainage will have a negative impact on it. Putting a development there will also impact the users of the and create a precedent for more development.
Screen Name Redacted 6/03/2024 06:28 PM	It will be important to consider noise and compatibility with the adjacent Hillcrest residential area. More intensive industrial uses should only be permitted as conditional uses that may be permitted after undertaking public consultation
Screen Name Redacted 6/03/2024 07:43 PM	Only develop the parcels that front the highway (C-86B)
Screen Name Redacted 6/03/2024 08:23 PM	Limit the development to the highway corridor.
Screen Name Redacted 6/03/2024 10:58 PM	Without the bike/walking trails marked on the map, it is difficult to make suggestions. Suffice it to say, that I value the trails around ice Lake and hope they will Be accommodated within this plan, with a nice 10 m buffer.
Screen Name Redacted	Mixed use in highway is fine but should be residential against Ice

6/04/2024 09:32 AM	Lake. We need more land to build more houses to increase supply!
Screen Name Redacted 6/04/2024 11:42 AM	I'm curious to know why the need to develop this land, when other industrial/commercial spaces have not been use to capacity. The tank farm for instance.
Screen Name Redacted 6/04/2024 12:45 PM	Move the access road as it will increase commercial vehicle collision risk
Screen Name Redacted 6/04/2024 12:47 PM	First create a survey that obtains fair feedback and consider housing. I dislike the rerouting if trails, and putting industrial so close to green spaces.
Screen Name Redacted 6/04/2024 01:41 PM	I am glad to see green spaces will be protected. How will this affect downtown businesses? There's already a housing and worker shortage, why are we needing more businesses? Our power and waste treatment can't keep up with current population. What are the proposed commercial uses?
Screen Name Redacted 6/04/2024 06:47 PM	I'm not sure what kind of commercial activities will be allowed in this space. Will there be bylaws to limit noise, hours of operation, etc? Should we expect the area to be used for heavy equipment?
Screen Name Redacted 6/04/2024 07:53 PM	Align the highway access with the snow dump access on the other side of the highway so that there is only one intersection. It’s safer that way. And ask for a traffic light or roundabout there. Green space is good,but that’s a lot.
Screen Name Redacted 6/04/2024 08:29 PM	Very strange road layout off the Alaska highway, focussed on dead end roads. It’s unclear whether you’re connecting to the ice lake road, why not? What’s the plan? There’s no flow to the roads, and they all back on to other roads or trails. Not a very natural layout. Doesn’t connect with the roads by Yukon gardens area either.
Screen Name Redacted 6/04/2024 09:28 PM	More parks
Screen Name Redacted 6/04/2024 10:11 PM	what is the plan for the scales?

Screen Name Redacted 6/04/2024 11:06 PM	Curious how you prepare the lots before selling them. Is it possible to leave vegetation and trees? Or sell the lots uncleared? It gives more flexibility for development and uses
Screen Name Redacted 6/05/2024 09:07 AM	Keep a thick lining of trees to the back
Screen Name Redacted 6/05/2024 03:35 PM	Semi drivers have limited places to stay with their trucks. Airport chalet being the only place. Another highway motel is needed that's easy for semis to get in and out. Or a husky truck stop with showers, something like that.
Screen Name Redacted 6/05/2024 06:10 PM	This plan brings building very close to ice lake, impacting local wildlife and making it nearly impossible to prevent high levels of pollutants from construction getting into the lake. To minimize environmental impact I believe these lots should be constructed closer to the highway and closer together so that larger areas of green space are kept intact rather than split into multiple small greenspace areas.
Screen Name Redacted 6/05/2024 10:23 PM	Less green space, more ind/comm lots
Screen Name Redacted 6/05/2024 11:05 PM	Maintain existing trails, increase the buffer between trails, the lake and ghrr et new development
Screen Name Redacted 6/05/2024 11:21 PM	Less "art" more function... industrial space is previous in the north, dont squander it with curvy hard to utilize roads and green space.
Screen Name Redacted 6/06/2024 04:00 PM	The greenspace must incorporate Firesmart principles. This is a key area where a fire could spread to the city.
Screen Name Redacted 6/06/2024 04:21 PM	Look at Ear Lake and what happened to the water there. This would be too much congestion.
Screen Name Redacted 6/06/2024 11:23 PM	No
Screen Name Redacted 6/07/2024 06:21 PM	Is it going to impact the truckers who need the scales?

Screen Name Redacted
6/08/2024 07:44 AM

Develop elsewhere

Screen Name Redacted
6/08/2024 02:42 PM

The southbound (eastern) highway ramp for acceleration of commercial vehicles crosses the entrance to an industrial area where other commercial vehicles may be entering or exiting the highway. The amount of traffic entering and exiting the Alaska highway to report to the weigh scales may cause congestion and increasing risk to highway users.

Screen Name Redacted
6/08/2024 10:54 PM

Don’t like have industrial area so close to residential and trial system.

Screen Name Redacted
6/10/2024 09:46 AM

I do not like anything about this plan and I will not locate my business in this development. This location is a serious mistake. You are turning the Alaska Highway into a “stroad” which is to be avoided at all costs for both safety and efficiency. Feel free to look it up if you skipped that part of your planning classes. This area should feed onto a service road or at least Hamilton Blvd. The t-bone accidents this plan will create will cost the public system millions every year like any high collision intersection, never mind the death and injury.

Screen Name Redacted
6/10/2024 12:09 PM

Every time a development is built in Whitehorse the default seems to be strip and grade the entire area (even if the fill needs removal and replacement anyway). Could these lots to be sold as undeveloped, with just the road and road grading complete? That would be my ideal scenario, as I am looking for a treed commercial lot. This strategy could save time and development costs as well. And I would greatly appreciate (as many others would to I believe) the opportunity to purchase an undeveloped lot that isn't just a barren clear cut wasteland of gravel. Is there a reason this isn't possible?

Screen Name Redacted
6/10/2024 12:45 PM

To make sure the downtown doesn't suffer from a new commercial developement, you need to make a clear list of what is allowed as «commercial» use. Industrial is ok, but the type of commerce has to be different from what is offered downtown. B to B, yes, retail, no.

Screen Name Redacted
6/10/2024 04:22 PM

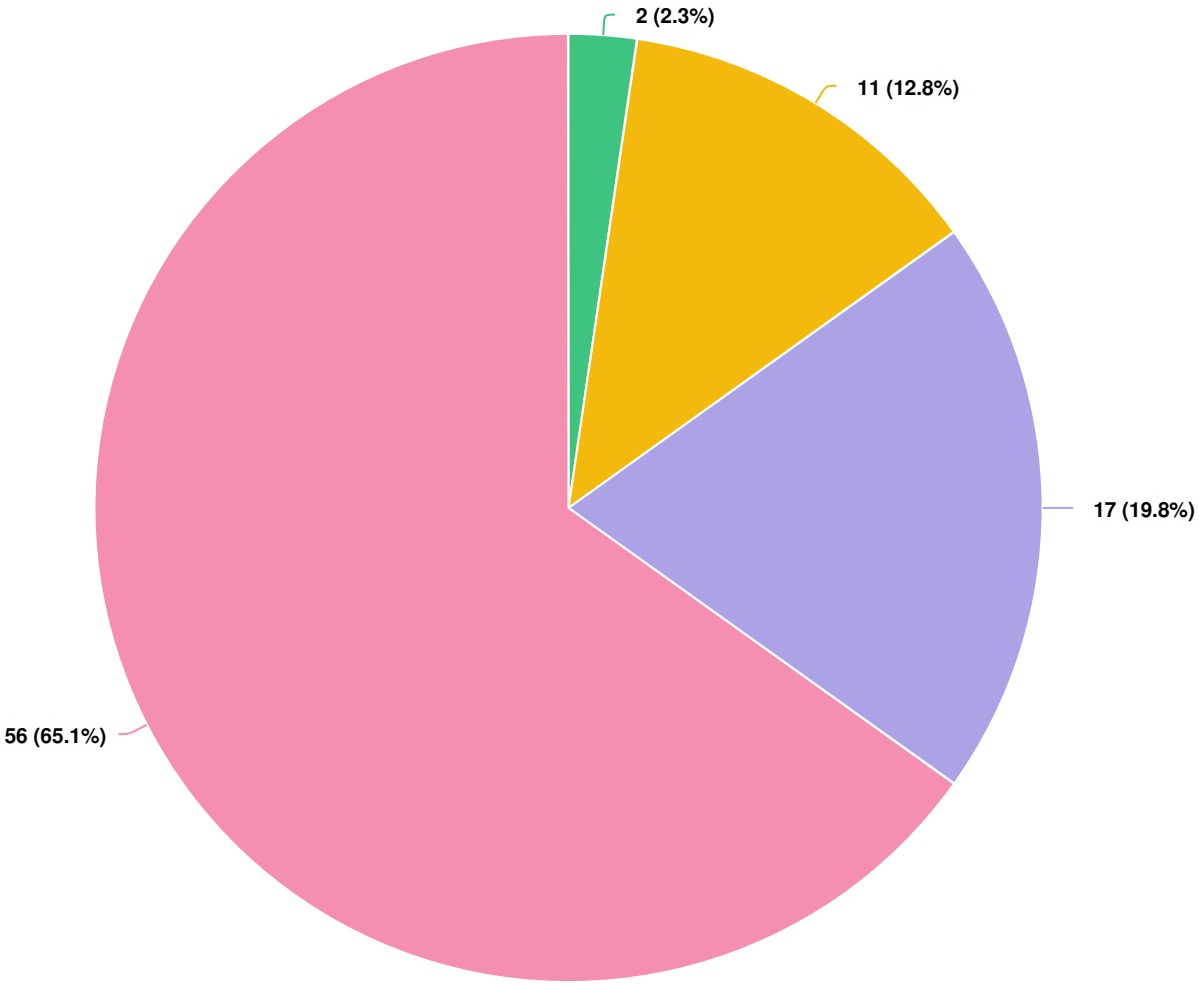
I believe I said this in the last survey. There is an incredible amount of commercial and industrial land in Whitehorse. This beautiful property could be used to create accessibility seniors housing that would be convenient for medical personnel and families. It would address the acute shortage of housing suitable for middle-income hard working taxpayers who put a lot of work into building Whitehorse. Keep the

	industrial land on the outskirts and put sensible housing close to other communities.
Screen Name Redacted 6/11/2024 09:57 PM	Ensure enough work is done to account for sufficient land area for onsite well and septic before selling lots and release larger lot sizes if necessary. Develop additional commercial & industrial land at the same time
Screen Name Redacted 6/11/2024 10:29 PM	It would be great to see the existing industrial areas, kulan, Marwel, McRae, and Mt Sima expanded. This area currently doesn't have an industrial feel. If this area is developed to commercial/industrial it would be nice to see a green space buffer around existing businesses and residents. As well a buffer between the lots and the highway would be nice, similar to kulan area.
Screen Name Redacted 6/12/2024 03:02 PM	Larger lots. Less greenspace. Speed up the timelines. Give more assurances that the land is actually useable - we will be spending significant amounts of money on this land and everything you do to make it more expensive or increase the risk only further drives up prices for land in a community that is already struggling.
Screen Name Redacted 6/13/2024 05:52 PM	More distance between ice lake and industrial lots.
Screen Name Redacted 6/14/2024 09:30 AM	The greenspace provided is insufficient and does not comply with the City of Whitehorse Bylaws. Allocating only 42% usable land for such a large development is not justifiable. Additionally, the Alaska Highway in this area is already congested, and introducing a busier access point will exacerbate the situation. The land in question consists mostly of bedrock with a very fragile water table. Existing wells in the area are already struggling to produce sufficient water. Moreover, this area is a critical wildlife route. The development will significantly disrupt local wildlife, impacting their natural habitat and corridor patterns. This could have far-reaching consequences on the local ecosystem.
Screen Name Redacted 6/14/2024 12:25 PM	A greater easement between Yukon Gardens and Alaska Highway First Nation property. The area is a high wildlife corridor and is used frequently. Studies on water, waste should be conducted including the effect of increased water consumption that might disturb the water table which is essential to Yukon Gardens

Screen Name Redacted 6/14/2024 12:58 PM	This area should not be developed
Screen Name Redacted 6/16/2024 11:21 PM	Why is growth the goal? Ugly commercial development along the highway will make our city look terrible. It won't give residents or tourists the sense that they are in the wilderness city. More development is long to lead to more traffic issues, more noise (as people accelerate/decelerate), and less wilderness

Optional question (44 response(s), 42 skipped)
Question type: Essay Question

Q7 If you provided feedback during the previous public engagement process for this project, do you feel that your comments were adequately addressed in the current land use concept?



Question options

- Yes, completely
- Yes, somewhat
- No, not at all
- I did not provide feedback during the previous public engagement process.

Mandatory Question (86 response(s))
Question type: Radio Button Question

Q8 Please explain your answer to the previous question. (Optional)

Screen Name Redacted 6/03/2024 06:06 PM	This development should be stopped. The benefits in no way justify the costs.
Screen Name Redacted 6/03/2024 06:28 PM	I recall seeing the previous concept plan but can't recall if I provided formal input
Screen Name Redacted 6/03/2024 07:43 PM	Sigh.
Screen Name Redacted 6/03/2024 08:15 PM	I thought there was an option previously to have the access go through the Yukon Gardens business area, which I preferred.
Screen Name Redacted 6/03/2024 08:23 PM	I don't think anyone cares what the current users of this space think. This will be be determined by business interests and not the citizens of hillcrest.
Screen Name Redacted 6/04/2024 09:32 AM	Requested consideration of including residential
Screen Name Redacted 6/04/2024 10:24 AM	Unaware it was happening until now - shared in the Granger Facebook page.
Screen Name Redacted 6/04/2024 11:42 AM	This is the first that I am hearing about the future land use.
Screen Name Redacted 6/04/2024 12:47 PM	Again, the previous survey only allowed for "what I like about this plan" generating feedback to support your plan, not truly asking rwaidents for feedback.
Screen Name Redacted 6/05/2024 11:21 PM	I was not aware of the previous engaement
Screen Name Redacted 6/06/2024 04:00 PM	This development is broadly opposed.

Screen Name Redacted 6/06/2024 04:21 PM	N/A
Screen Name Redacted 6/10/2024 12:09 PM	I am still concerned about the environmental health impact of unserviced lots in the area, but not sure it has been adequately addressed yet.
Screen Name Redacted 6/10/2024 04:22 PM	I have already said what I think should be done with this land
Screen Name Redacted 6/11/2024 09:57 PM	The main highway access was changed to the Alaska Highway, however it does not look like lot sizes have been addressed as the average lot size will only be 0.65 hectares if 21 lots are developed.
Screen Name Redacted 6/12/2024 03:02 PM	We requested larger lots/
Screen Name Redacted 6/13/2024 05:52 PM	I do not remember if I provided feedback and don't remember the differences between this concept and the last
Screen Name Redacted 6/14/2024 09:30 AM	Firstly, the land consists mostly of bedrock with insufficient water tables. The existing water tables already have toxic levels of minerals, making them unsuitable for human consumption. This poses a significant challenge for providing safe and adequate water supply to the development. Furthermore, the greenspace provided is insufficient and does not comply with the City of Whitehorse Bylaws. Allocating only 42% usable land for such a large development is not justifiable. Proper greenspace is essential for the well-being of residents and the preservation of the local environment. Additionally, this area is a critical wildlife route. The development will significantly disrupt local wildlife, impacting their natural habitat and corridor patterns. This could have far-reaching consequences on the local ecosystem and biodiversity. Another major concern is the zoning. The proposed zoning for this development does not match the existing zoning in the area, leading to potential conflicts and inconsistencies with the surrounding community. Moreover, the Alaska Highway in this area is already congested, and introducing a busier access point will exacerbate the situation, leading to increased traffic and safety concerns.
Screen Name Redacted 6/14/2024 12:25 PM	I do not believe the zoning compatibility with adjacent property nor the need for a greater easement between Yukon Gardens and the First Nation Highway property was considered or addressed. The fact that

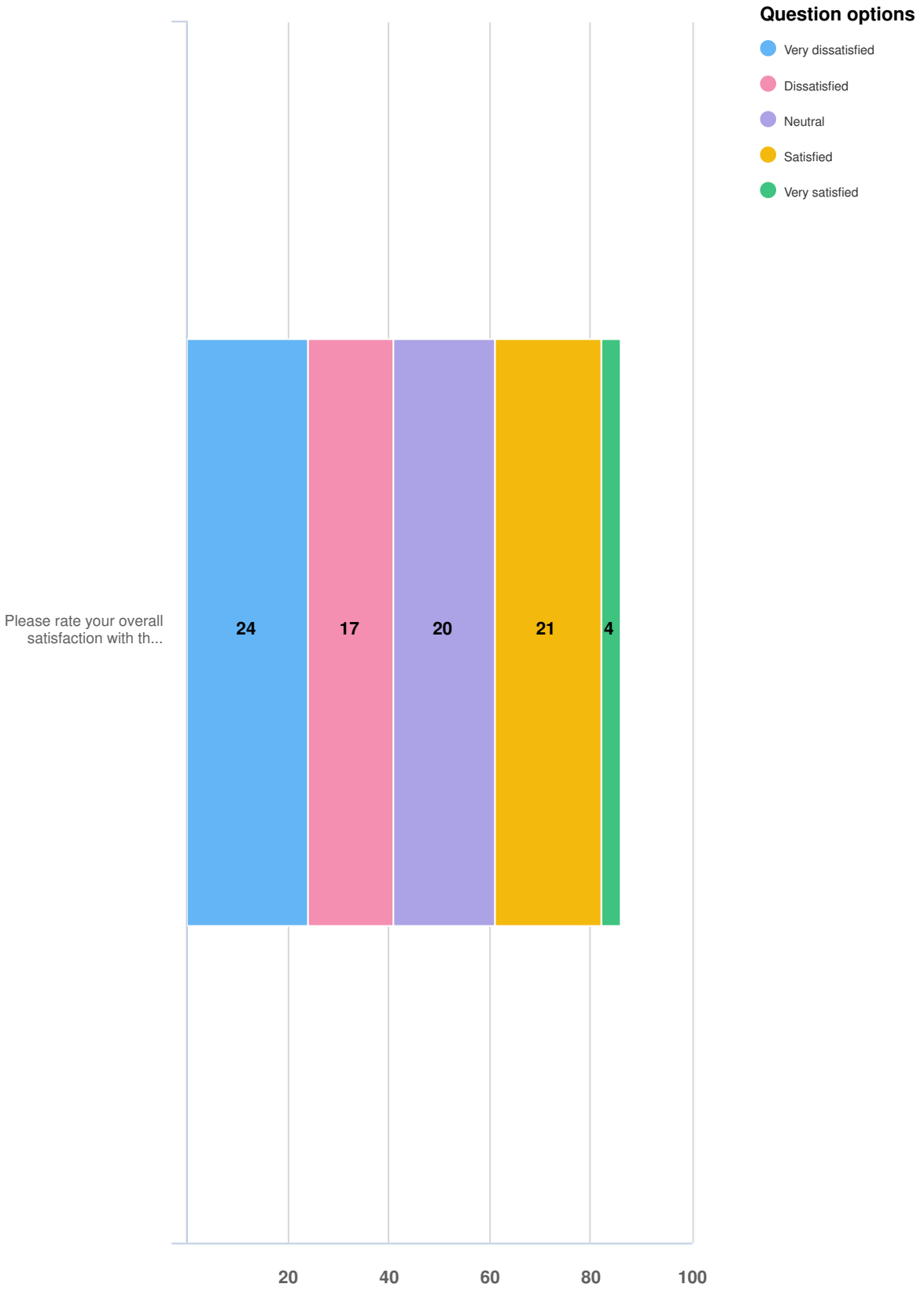
this is a wildlife corridor was dismissed but living in this area and seeing these animals frequently was dismissed. A traffic survey needs to be conducted as well as water study.

Screen Name Redacted
6/14/2024 12:58 PM

You don't listen

Optional question (20 response(s), 66 skipped)
Question type: Essay Question

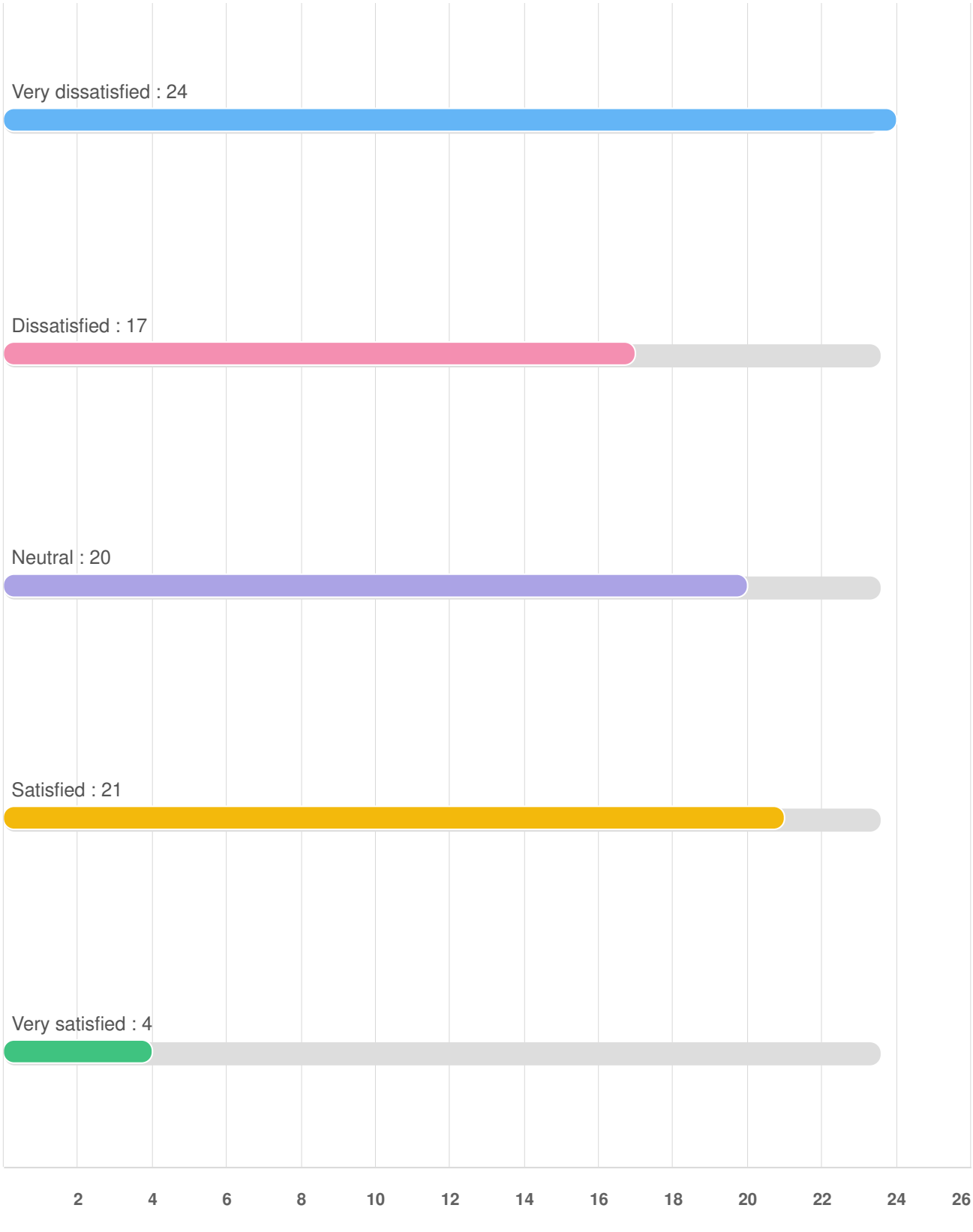
Q9 How would you rate your overall satisfaction with the current land use concept?



Mandatory Question (86 response(s))
Question type: Likert Question

Q9 How would you rate your overall satisfaction with the current land use concept?

Please rate your overall satisfaction with the current land use concept.



Q10 What do you feel should be changed in the final version that will go to Council? What needs to be kept the same? (Optional)

Screen Name Redacted 5/31/2024 11:45 PM	Restart the plan with a completely new vision for this area.
Screen Name Redacted 6/03/2024 02:34 PM	more specifics on the intersection that will allow safe access for active transportation.
Screen Name Redacted 6/03/2024 06:06 PM	Stop this madness and keep industrial development in industrial areas.
Screen Name Redacted 6/03/2024 06:28 PM	I'll miss the Rock Garden Trail as it is now. But if it's one First Nations settlement land than I can accept that it will need to be rerouted
Screen Name Redacted 6/03/2024 07:43 PM	See previous comment.
Screen Name Redacted 6/03/2024 08:15 PM	I recreate in the area frequently, using the ice lake loop so have some concern.about the development, but still feel it's a good use of a space that otherwise doesn't have high recreation value.
Screen Name Redacted 6/03/2024 08:23 PM	Keep development limited to the highway corridor and protect the green space around ice lake.
Screen Name Redacted 6/04/2024 09:32 AM	More residential
Screen Name Redacted 6/04/2024 11:42 AM	The Wilderness City is changing quickly as is our active living options. More and more of our charm, character and uniqueness is being aroded.
Screen Name Redacted 6/04/2024 12:47 PM	More greenspace and housing, not industrial
Screen Name Redacted	We currently have a labour shortage, what are these proposed

6/04/2024 01:41 PM	businesses and how are they going to be staffed especially with YNP applications on hold?
Screen Name Redacted 6/04/2024 06:47 PM	I would just like a better idea of what kind of commercial activity to expect in this area. Overall, I think that placing businesses along the highway is good. Because I have a hard time envisioning the type of business activities that will go in there, its difficult to know the impact it will have on the trail system and wildlife. The trails are well used and there are lots of wildlife and unique plants that thrive around Ice Lake and Paddy's Pond. I'd like that protected, so noise, dust and traffic need to be carefully regulated. It would be nice to have the green space protected as a designated parkland--maybe it already is (?).
Screen Name Redacted 6/04/2024 07:53 PM	Highway access alignment with existing access across the road. Make better use of the land north of the weigh station.
Screen Name Redacted 6/04/2024 08:29 PM	Focused on a better road layout and connectivity. Address issues with local trail access
Screen Name Redacted 6/04/2024 10:11 PM	make sure the scales is not removed.
Screen Name Redacted 6/04/2024 11:06 PM	Green space looks great. Again interested in a lot that isn't cleared
Screen Name Redacted 6/04/2024 11:51 PM	Leave land as is
Screen Name Redacted 6/05/2024 07:40 AM	Keep green spaces
Screen Name Redacted 6/05/2024 03:35 PM	Commercial semi truck rest/ shower or motel with enough room for the trucks
Screen Name Redacted 6/05/2024 06:10 PM	Lots should be kept closer to the highway and closer together to keep the larger greenspace intact and minimize environmental impact.
Screen Name Redacted 6/05/2024 07:48 PM	Create a residential development around ice lake

Screen Name Redacted 6/05/2024 10:23 PM	Less green space, more ind/comm lots
Screen Name Redacted 6/05/2024 11:05 PM	Change the road layout to be farther from bike trails and greenspace
Screen Name Redacted 6/05/2024 11:21 PM	Ensure 2 access points to the indistrial park off the highway , so that trucks dont have to turn around inside the park with trailers. Ensure intersections have wide corner allowances to facilitate turning with large trucks and truck/trailer combinations (that may have wide loads on them)
Screen Name Redacted 6/06/2024 04:21 PM	Let First Nations do their thing first then revisit.
Screen Name Redacted 6/06/2024 10:39 PM	We live in a wilderness City, why keep jamming everything into one space/area so that we are living cheek by jowl. It’s so important to have recreational opportunities in our neighborhoods and backyards. There is also already so much noise pollution with the highway and airport in this area. Adding yet more industrial and commercial spaces and cutting down yet more trees is going to again decrease the enjoyment of those of us who have lived in this area for years.
Screen Name Redacted 6/08/2024 07:44 AM	Don't develope this space.
Screen Name Redacted 6/08/2024 02:42 PM	Everything is good except the access point beside the weigh scale
Screen Name Redacted 6/08/2024 10:54 PM	Don’t like having industrial area so close to residential and recreational (ice lake trials, rock gardens,etc.).
Screen Name Redacted 6/10/2024 09:46 AM	See my previous comment
Screen Name Redacted 6/10/2024 12:09 PM	I would again emphasize my desire to see this development move forward without the approach of clearcutting, stripping and filling all the lots, so that it's just a barren expanse of gravel. Let the buyer take care lot development. This will make the project more affordable, as instead of paying government contractor rates to grade the lots, the buyers can work on the private market, hopefully getting a more

	reasonable price, and they can tailor the lots to their needs. As in my case, I need a treed commercial lot. Thanks!
Screen Name Redacted 6/10/2024 04:22 PM	No industrial land in this location.
Screen Name Redacted 6/11/2024 09:57 PM	There is too much greenspace and a limited number of lots being released. Either the master plan should have incorporated a larger area to account for undesirable areas of land for development or even the undesirable portions should have still been released or a combination of both
Screen Name Redacted 6/11/2024 10:29 PM	Route the green space so it buffers existing residents and businesses.
Screen Name Redacted 6/12/2024 03:02 PM	Keep: access to the highway Change: lot size
Screen Name Redacted 6/13/2024 05:52 PM	A larger buffer between the lake and industrial area.
Screen Name Redacted 6/14/2024 09:30 AM	Upon review, it is clear that the land in question poses several significant challenges that make it unsuitable for development. First and foremost, the land is predominantly bedrock, which results in insufficient water tables. The existing water sources contain toxic levels of minerals, rendering them unfit for human consumption. Ensuring a safe and adequate water supply for the development would be a major issue. The allocation of greenspace is also a critical problem. With only 42% of usable land designated for such a large development, it fails to comply with the City of Whitehorse Bylaws. Adequate greenspace is vital for maintaining the quality of life for residents and preserving our local environment. This area is a vital wildlife corridor, and the proposed development would severely disrupt the natural habitat and migration patterns of local wildlife. This disruption could have lasting negative impacts on the ecosystem and biodiversity of the region. Another issue is the zoning mismatch. The proposed zoning for this development does not align with the current zoning in the surrounding area, leading to potential conflicts and inconsistencies within the community. Furthermore, the section of the Alaska Highway near the proposed development is already a high-risk area with frequent accidents. Increasing access to this already dangerous stretch of road without thorough consideration would only exacerbate the problem. Has a comprehensive traffic study been conducted to evaluate the potential impact of increased access?

	Ensuring the safety of all road users must be a priority. I strongly urge you to reconsider this development. The implications for water quality, greenspace, wildlife, and traffic safety are substantial. Additionally, this area includes city trails that are used daily by Whitehorse residents for both recreation and commuting. Disrupting these trails would negatively affect the quality of life for many who depend on these outdoor spaces.
Screen Name Redacted 6/14/2024 12:25 PM	The zoning and the easement as mentioned above. The assess off the Alaska Highway should be kept.
Screen Name Redacted 6/16/2024 11:21 PM	Keep a larger buffer from ice lake (and all water bodies). Make the frontage on the highway smaller. Stop ruining our neighborhood trails. Stop growing!

Optional question (39 response(s), 47 skipped)
Question type: Essay Question

8.5 APPENDIX E: SUMMARY OF WEBINAR Q&A

The following is a summary of the Question-and-Answer session held during the public Webinar session for the Ice Lake Road South project held June 11, 2024, 6:30-8PM. Questions and responses are edited for clarity.

Q1: When are lots expected to be for sale?

> **Response:** We don't have a firm timeline on that, and it can vary depending on the pace at which the developers proceed. At least 2-3 years, although this could stretch out more depending on what the landowners wish to do and the results of more detailed site feasibility and design work.

Q2: With onsite servicing required and lots looking to be 0.5 hectares there is risk to the actual viability of the proposed development.

> **Response:** There will be a range of lot sizes. The 0.5 hectares is the minimum lot size outlined in the Zoning Bylaw for unserviced Industrial / Commercial lots. Ultimately, it will be up to the developers to determine the exact lots sizes through the detailed design and subdivision process that come next.

Q3: Section 5.2: "However, due to the steep slopes and shallow bedrock, it could be cost prohibitive to develop wells. Additional analysis should be undertaken to determine the feasibility of development wells within the proposed development area." Shouldn't the plan consider making lots larger to increase the business case/viability of these lots? When will this additional analysis be completed?

> **Response:** The Master Plan provides the flexibility for the design to be adjusted to better accommodate onsite servicing, as more information is gathered in future design stages. With input from the Engineering team, the Master Plan flags that trucked water and holding tank systems should be feasible, but that more information (i.e., detailed geotechnical investigations) are needed to determine the viability / capacity of onsite well and septic systems.

Q4: Is the plan for the lots to be undeveloped? I.e. not cleared or graded?

> **Response:** The plan leaves this open ended for the developers to decide based on market conditions and other considerations during detailed design. There may be some extra fill from the road construction that could be used to pre-grade some lots.

Q5: What is the definition of Commercial/Industrial and how is it compatible with Highway Commercial and the adjacent property?

Response: The designation Industrial/Commercial comes from the Official Community Plan and is one of many land use designations provided by the city. This designation generally refers to uses that are less retail-focused and more oriented towards light manufacturing, processing, indoor agriculture, storage, and warehousing.

The Highway Commercial designation suggested in the plan applies to the KDFN settlement parcel or highway frontage areas. This zone is considered compatible with the Industrial / Commercial designation within the planning area, and with the zoning in Metropolit Lane area (mix of Industrial / Commercial and Highway Commercial).

However, it's important to note that the KDFN parcel is currently designated First Nation Development Lands, which align with the Self-Government agreement. This allows KDFN to develop the area in ways that are most beneficial for the First Nation and its citizens, primarily aimed at revenue generation.

The plan proposes highway commercial use for this area, which is consistent with discussions with KDFN. If KDFN chooses to develop the area in a significantly different manner from the Master Plan, a process to revisit and potentially amend the master plan would be required.

Q6: Does Industrial allow for a salvage area?

Response: Yes, salvage areas are permitted within the Industrial / Commercial designation.

Q7: What other surveys are required (water, environmental)?

Response: The project will require assessment by the Yukon Environmental and Socio-Economic Assessment Board, which may result in the need for more environmental work being completed. The planning area does not have any mapped ecological sensitive habitat

Q8: Visual mitigation is only required between the Alaska Highway not between Yukon Gardens and the new development? Why?

Response: The Official Community Plan and the zoning bylaw both speak about like the highway itself being like a gateway to the city and that there should be a higher standard of development that presents the city in an attractive way. That means that some unsightly uses should be screened from view from the highway corridor. In terms of visual mitigation between different properties, that's not typically required when a use is beside a similar use. You're already expecting to have neighbors doing similar things, and so screening is not a requirement. As for the land use concept, there is a short stretch of the (planned Highway Commercial) KDFN parcel that abuts the Metropolit lane area, and the rest is planned to be Greenspace. So, there is a more limited interface, so to speak between these areas as well.

Q9: When will the next opportunity be for the public to comment?

Response: Council will have a public input session during the regular meeting when the Master Plan is considered by Council. This will likely be in late August or early September (exact date to be confirmed). If you subscribe to the project, we'll post updates on the schedule as it moves into that Council process, and we will publish the date.