

# ICE LAKE ROAD SOUTH MASTER PLAN

## PLANNING BRIEF

CITY OF WHITEHORSE  
JUNE 2, 2023



DRAFT

**PREPARED FOR:**



**GOVERNMENT OF YUKON**  
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# I. REVISION HISTORY

VERSION	DATE	DESCRIPTION
1	2023 / 06 / 02	First Draft Submitted for Review

DRAFT

# 1 INTRODUCTION & PURPOSE

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## 1.1 INTRODUCTION

3PIKAS was retained by the City of Whitehorse, Planning and Sustainability Services to carry out a Master Plan for Ice Lake Road South (ILRS). The IRLS area will provide space to accommodate commercial and industrial growth within the City of Whitehorse for the coming years. The IRLS Master Plan area will establish a vision and framework for the area. It will provide guidance on land use, density, on and off-site infrastructure, and financial feasibility for the future use of the area.

IRLS Planning Area (planning area) is located within the Traditional Territories of the Kwanlin Dün First Nation (KDFN) and Ta'an Kwäch'än Council (TKC). The planning area is approximately 32.42 ha and includes vacant Yukon government ("YG") Commissioner's land, KDFN Settlement Land (C-86B), and surveyed land (weigh station). The planning area occupies a strip of highway frontage on the west side of the Alaska Highway north of the Robert Service Way / Alaska Highway intersection.

## 1.2 PURPOSE

The IRLS Planning Brief provides a deeper understanding of the opportunities and constraints related to the site. The purpose of report is to:

- Provide a detailed review of the applicable City legislation and planning documents related to IRLS;
- Review studies completed;
- Examine how the existing work could shape and influence the future land use; and
- Undertake a thorough review of the development area to understand the specific opportunities and constraints; and
- Evaluate high-level development and employment potential.

# 2 PLANNING AREA

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The planning area (Figure 1) is located within the City of Whitehorse approximately 3.5km from Downtown Whitehorse and 1.2 km southwest of the Erik Nielsen International Airport. The area is bounded by the Alaska Highway to the east and Ice Lake Road to west. Highway Mixed-Use Commercial / Industrial lots are located on Metropolit Lane to the south. Businesses include Yukon Gardens, Blueberry Car Wash, and the Black Spruce Hotel. The Ice Lake Road bounds the area to the west. North and west of the planning area consists of Environmentally Protected lands (Rock Gardens climbing area) and Paddy's Pond / Ice Lake Regional Park (OCP, 2040).

## 2.1 LAND OWNERSHIP

The ILRS planning area comprises vacant YG Commissioner land and KDFN Settlement Land (C-86B). The weigh station occupies a narrow strip of surveyed highway frontage (LOT 1143).







FIGURE 1: PLANNING AREA




CLIENT:  
  
 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

  
 1:15,000  
 0 100 200 300 m

REVISIONS:

1	2023/05/31	Planning Area

PREPARED BY: JN      REVIEWED BY: SL  
 DATE: 2023/05/31

  
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# 3 PLANNING CONTEXT

## 3.1 REGULATORY FRAMEWORK

The ILRS planning area is subject to planning regulations adopted by the City of Whitehorse, KDFN, the Government of Yukon and other pertinent governing authorities. The ILRS Master Plan must be consistent with adopted planning documents held by City of Whitehorse, the Government of Yukon, and KDFN.

## 3.2 LEGISLATION

### 3.2.1 MUNICIPAL ACT

The Municipal Act recognizes municipalities as accountable governments responsible for services to properties. As granted by the Municipal Act, the City of Whitehorse is responsible for local government and the adoption of municipal bylaws (e.g., Official Community Plans and Zoning Bylaws), which provides a framework for development. The Municipal Act also sets out the regulations surrounding non-conforming uses and subdivisions in Yukon.

### 3.2.2 KWANLIN DÜN FIRST NATIONS LANDS ACT (2020)

The KDFN Lands Act was established in 2020 to manage the allocation of KDFN-held lands. The KDFN Lands Act specifies processes and controls for the disposition of settlement lands through lease and, in the case of fee-simple parcels, disposition through the transfer of title. The Act further specifies that in case of subdivision of lands, the KDFN Lands Act diverts to the policies and regulations outlined within the Government of Yukon Lands Act (2002).

### 3.2.3 YUKON ENVIRONMENTAL AND SOCIO-ECONOMIC ACT (YESAA)

The Yukon Environmental Socio-Economic Assessment Board (YESAB) reviews proposed activities and considers their compliance with the Yukon Socio-Economic Assessment Act (YESAA). Given the requirement for land development related activities, this project will trigger the need for a YESAB review process. As identified under Schedule 1 assessable activities include: moving earth, clearing land using a self-propelled power-driven machine, and cutting standing or fallen trees or removing fallen or cut trees (see Table 1).

TABLE 1: ASSESSABLE ACTIVITIES (YESAA REGULATIONS)

SCHEDULE 1	ITEM	DESCRIPTION
Part 13	12	On Crown land or settlement land, moving earth or clearing land using a self-propelled power-driven machine.
Part 13	18	On Crown or settlement land, cutting standing or fallen trees or removing fallen or cut trees.

### 3.3 PERMITS & LICENSES / REGULATORY REQUIREMENTS

Potential permits and authorizations required for the project are summarized in Table 2:

TABLE 2: AUTHORIZATIONS REQUIRED

ACT / REGULATION	APPROVAL / PERMIT	TRIGGER
<b>Highways Act, RSY 2002, c. 108</b> <b>Highways Regulation YOIC 2002/174</b>	Construction or Modification of Access to a Controlled Highway Permit	Construction or modification of road access onto the Alaska Highway.
	Performance Of Work Within Highway Right-Of-Way	Construction of a frontage road within the Alaska Highway Right-of-Way.
<b>Forest Resources Act, Yukon, SY 2008, c. 15</b>	Forest Resources Permit	On Crown or settlement land, cutting standing or fallen trees or removing fallen or cut trees. Volume of wood to be removed is estimated to be over 1,000 cubic meters (m <sup>3</sup> ).
<b>KDFN Lands Act, 2020 Rules for Land Use Authorization Applications (Part 5 Division 2)</b>	Land Use Permit or Approval	Subdivision and Land Development on KDFN Settlement Land.
<b>City of Whitehorse Zoning By-Law, 2012-20</b>	Development Permit	Road, trail development and clearing within the municipal boundaries.

### 3.4 POLICIES & PLANS

#### 3.4.1 2040 OFFICIAL COMMUNITY PLAN & ZONING

The City of Whitehorse Official Community Plan 2040 (OCP) governs land use within Whitehorse. The planning area is part of the South Growth Area and currently designated Industrial / Commercial under the OCP (Figure 2). Most of the planning area is zoned Greenbelt (PG), encompassing the vacant unsurveyed land. The remainder of the ILRS planning area is zoned Public Service (PS), which is allocated to the active Weigh Station along the Alaska Highway Right-Of-Way, Future Planning (FP), and First Nation Future Planning (FN-FP) (see Figure 3).

FIGURE 2: ILRS PLANNING AREA OCP DESIGNATIONS (OCP, 2040)

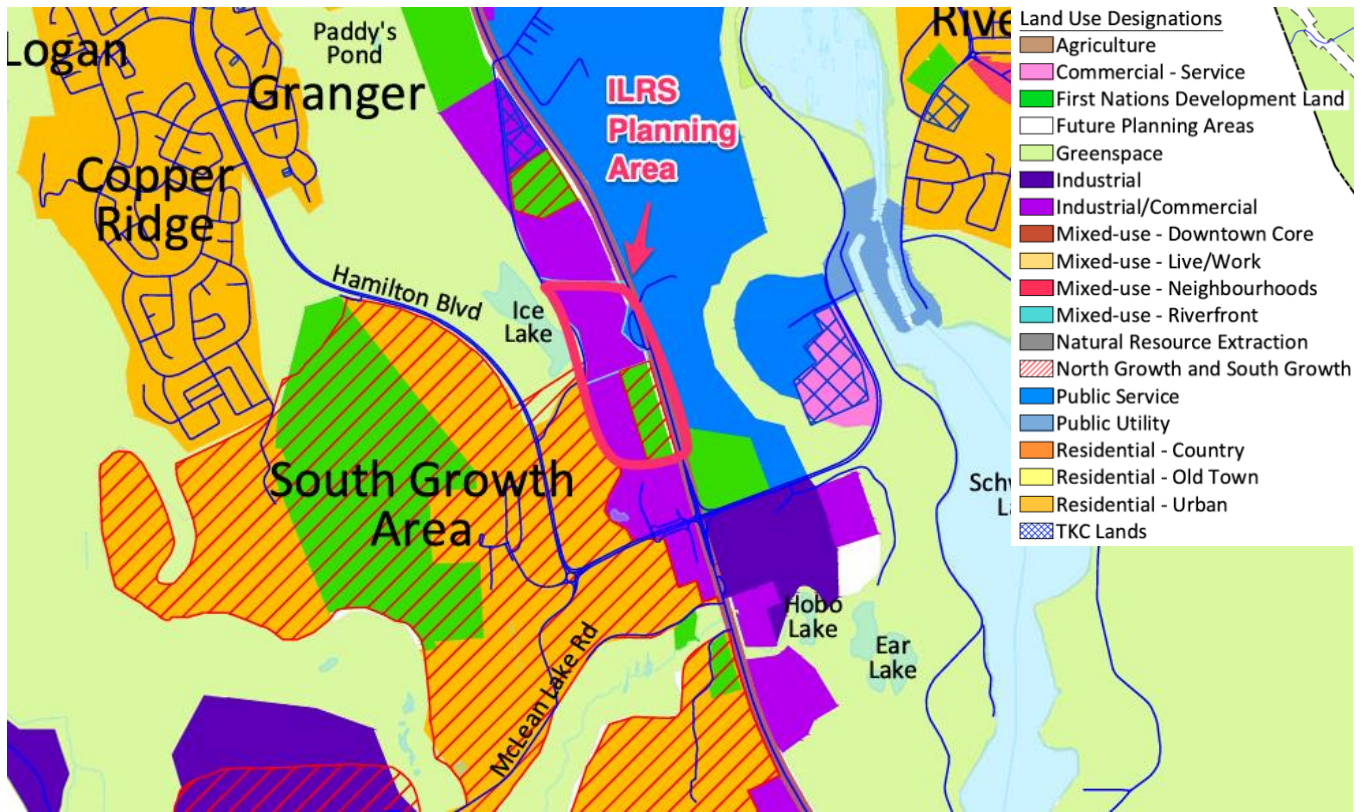


FIGURE 3: ZONING MAP



Relevant OCP policy direction regarding industrial and commercial development include:

#### **3.4.1.1 POLICIES ON INDUSTRIAL / COMMERCIAL DEVELOPMENT**

The City of Whitehorse has committed to identifying areas suitable for industrial and commercial areas. According to the OCP, an estimated 87 ha of additional Industrial land and 32 ha of additional Industrial / Commercial land will be required by 2040 to accommodate industrial and commercial growth.

*10.14 Land needed to accommodate economic opportunities and job creation will be identified and planned strategically.*

*10.15 The City will work cooperatively with the Government of Yukon, Kwanlin Dün First Nation and Ta'an Kwäch'än Council to advance the development of commercial and industrial lands.*

#### **3.4.1.2 POLICIES ON 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.*

#### **3.4.1.3 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.*

*iii. Three key Alaska Highway intersections will be developed as gateways to Whitehorse: Robert Service Way, Two Mile Hill, and adjacent to the Erik Nielsen Whitehorse International Airport as shown in Map 3 Urban Growth Areas. These intersections should include enhanced landscaping requirements that showcase local pride and the beauty Whitehorse creating a positive first impression for visitors and residents returning home.*

*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.*

#### **3.4.1.4 REQUIREMENT FOR RESIDENTIAL MASTER PLAN**

New developments over the size of 1.5 hectares will require a master plan. The Master Plan will be submitted to City of Whitehorse Council for review to ensure that development aligns with the goal and policies outlined within the 2040 OCP.



*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.*

#### **3.4.1.5 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.*

#### **3.4.2 KDFN COMMUNITY LANDS PLAN 2020**

The Kwanlin Dün First Nation Community Lands Plan (2020) (KDFN Lands Land) provides guiding direction for 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 Self-Government Agreement 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'). The KDFN-C-86B parcel within the ILRS planning area is identified for revenue generation.

When completed, the ILRS Master Plan will be submitted to KDFN for review to ensure that development aligns with the goal and policies outlined within KDFN Lands Plan. Additionally, KDFN representatives will be participating in the collaborative ILRS planning process.

#### **3.4.3 DEVELOPMENT REGULATIONS**

Potential zones associated with the broad land use identified in the OCP could include Highway Commercial (CH), Mix Use Commercial / Industrial (CIM) and Service Industrial (IS). Table 3, Table 4, and Table 5 provide overviews of the development regulations associated with CH, CIM, and IS and zoning, respectively.

TABLE 3: ZONING REGULATION: HIGHWAY COMMERCIAL (CH)

REGULATIONS	HIGHWAY COMMERCIAL (CH)
<b>Purpose</b>	To provide a zone for high-quality commercial development primarily along arterial roadways including those that serve as entrance and tourist routes into the City.
<b>Principal Uses</b>	Animal clinics, animal shelters, commercial storage, community recreation services, crematoria, custom indoor manufacturing, eating and drinking establishments, emergency and protective services, equipment sales/rentals, heavy, fleet services, gas bars, garden centres, hostels, hotels, household repair services, indoor participant recreation services, motels, outdoor recreation equipment rentals / sales, parks, recreational vehicle parks, retail services, convenience, retail services, general less than 500 m <sup>2</sup> , vehicle sales and service, warehouse sales, trucking terminals.
<b>Secondary Uses</b>	Accessory building / structure, caretaker residence, offices (above the ground floor), outdoor storage.
<b>Floor Area Ratio</b>	0.5
<b>Max Site Coverage</b>	50%
<b>Minimum Setbacks</b>	Front – 7.5 m, Side – 3.0 m, Rear – 6.0 m
<b>Maximum Gross Floor Area</b>	The maximum gross floor area shall not exceed 7,500 m <sup>2</sup>

TABLE 4: ZONING REGULATION: MIX USE COMMERCIAL / INDUSTRIAL (CIM)

REGULATIONS	MIXED USE COMMERCIAL / INDUSTRIAL (CIM)
<b>Purpose</b>	To provide a transition zone for the development of service commercial and clean industrial uses near the city centre.
<b>Principal Uses</b>	Aircraft sales / service, animal clinics, animal shelters, auctions/auction grounds, business support services, commercial schools, commercial storage, community recreation services, custom indoor manufacturing, eating and drinking establishments, emergency and protective services, equipment sales/rentals (heavy), fabrication shops, fleet services, gas bars, garden centres, general contractor services, health services, household repair services, indoor participant recreation services, industrial, salvage, kennels, manufacturing, mobile catering food services, offices (above the ground floor), outdoor recreation equipment rentals/sales, personal service establishments (Marwell only), pet clinics, processing, light, retail services, convenience, Retail Services (Restricted), vehicle sales and service, and warehouse sales.
<b>Secondary Uses</b>	Accessory building/structure, caretaker residence, offices, outdoor storage, retail services (general).
<b>Floor Area Ratio</b>	2.0
<b>Max Site Coverage</b>	75%
<b>Minimum Setbacks</b>	Front – 6.0 m, Side – 0.0 m, Rear – 6.0/3.0 m Corner 6.0 / 3.0 m

TABLE 5: ZONING REGULATION: SERVICE INDUSTRIAL (IS)

REGULATIONS	SERVICE INDUSTRIAL (IS)
<b>Purpose</b>	To provide a zone for a mix of commercial and industrial uses including manufacturing, processing, assembly, distribution, service or repair, which may carry out a portion of their operation outdoors or require outdoor storage.
<b>Principal Uses</b>	Animal clinics, animal shelters, auctions / auction grounds, bulk fuel depots, business support services, commercial storage, custom indoor manufacturing, equipment sales / rentals (heavy), fabrication shops, fleet services, garden centres, general contractor services, industrial (salvage), manufacturing, mobile catering food services, outdoor recreation equipment rentals/sales, outdoor storage, processing (light), trucking terminals, vehicle sales and service, warehouse sales
<b>Secondary Uses</b>	Accessory building / structure, caretaker residence, offices, retail services – general (less than 500 m <sup>2</sup> ).
<b>Floor Area Ratio</b>	0.75
<b>Max Site Coverage</b>	75%
<b>Minimum Setbacks</b>	Front – 6.0 m, Side – 3.0 m, Rear – 3.0 m, Corner 6.0 / 3.0 m

## 3.5 STUDIES

The following studies have been reviewed and provide valuable information that will shape the ILRS development concepts. Feasibility studies were completed by Aperture Consulting Inc., Ecofor Consulting Ltd., Ausenco Sustainability Inc., and Wedler Engineering. The studies were completed outside 3Pikas’ scope of work for this project. Studies completed include:

### 3.5.1 PHASE I AND II ENVIRONMENTAL SITE ASSESSMENT (ESA)

A Phase I Environmental Site Assessment was conducted on behalf of the Government of Yukon Department of Community Services, Land Development Branch (LDB). The Aperture Consulting Inc. (Aperture) reviewed available historical records obtained from Yukon Environment (YG) and other government departments, conducted a site visit, reviewed historical aerial photographs, and interviewed Yukon government, KDFN, and City of Whitehorse employees familiar with the site.

The Phase I ESA identified one Area of Potential Environmental Concern (APEC) within the ILRS area and six APECS in the area surrounding the Study Area (referred to as Area 4 and Area 5 in the report). According to the Aperture, APECs 1 through 6 identified in the surrounding area are not considered a risk based on the distance from the study area, site topography, and the inferred groundwater flow direction.

The APEC within the boundary of the Study Area is referred to a *cleared area adjacent to the weigh scales* (APEC 7). The development history of this area has not been determined, and a Phase II investigation was recommended for this area. However, no evidence of contamination in connection with the Study Area was identified for the APECs.

LDB has retained the services of an Environmental Consultant to complete a subsequent Phase II ESA for the cleared area adjacent to the weigh scales. A draft report is expected to be completed by June 15, 2023.

### ***3.5.2 HERITAGE RESOURCE OVERVIEW ASSESSMENT (HROA)***

Ecofor Consulting Ltd. (Ecofor) was retained by LDB to conduct a Heritage Resource Overview Assessment (HROA) of the planning area. Ecofor completed a desktop review of the study area's physical, environmental and cultural, as well as historical values. This study aims to identify areas with elevated potential for encountering previously undocumented heritage resources.

This review identified two areas of elevated heritage potential for surface / subsurface heritage resource sites. Based on the results of this HROA, a Heritage Resources Impact Assessment (HRIA) is recommended for the two areas of elevated potential for surface / subsurface heritage resource sites. Ecofor also recommends a pedestrian survey in all areas of moderate Culturally Modified Tree potential identified in the HROA.

### ***3.5.3 HERITAGE RESOURCE IMPACT ASSESSMENT (UNDERWAY)***

LDB has retained a Heritage Resource Consultant to complete a follow-up HRIA. An interim report is expected to be completed by the end of June 2023.

### ***3.5.4 DESKTOP GEOTECHNICAL REVIEW***

Ausenco Sustainability Inc. (Ausenco) was retained by LDB to complete a Desktop Geotechnical Assessment of the planning area. Ausenco determined that the geotechnical conditions are typical for the Whitehorse area and could include permafrost or ice-rich soils. Ausenco noted that moderate to steep slopes could pose challenges to development and septic fields might not be feasible due to the presence of shallow bedrock.

Ausenco recommends additional ground intrusive detailed geotechnical investigations before development to determine the subsurface soil conditions.

### ***3.5.5 SITE SERVICING AND ACCESS ASSESSMENT***

LDB retained Wedler Engineering (Wedler) to evaluate servicing requirements. Wedler reviewed anticipated servicing requirements for the development, including waterworks, wastewater, stormwater, power, and telecommunications.

#### **3.5.5.1 WATER**

Water for domestic use and fire protection could eventually be supplied from the nearby 300 mm ductile iron water main, terminating near the intersection of the southern corner of Condor Road (Figure 4). A booster pump station will be required to ensure the flows and pressures meet fire flow requirements at the furthest hydrant per Whitehorse's design criteria (Wedler, 2022).

#### **3.5.5.2 WASTEWATER**

The nearest sanitary sewer main is located near the southern corner of Condor Road (Figure 4). Wedler assumed that in the event of a future connection to the existing sanitary main, the main would be able to accommodate the sanitary flow from the development. The grades are sufficient to allow for gravity conveyance. However, capacity constraints with the existing sanitary sewer may require off-site



upgrades. Specifically, the existing system in the Hillcrest Sanitary Catchment is near capacity, as is Lift Station #1 (Wedler, 2022).

### **3.5.5.3 STORMWATER**

Wedler provided recommendations for stormwater management. Post-development flows should be limited to pre-development rates and any additional run-off volume should be detained on-site before release. Lot owners could provide onsite storm detention facilities and could be included in onsite works during lot development. Using the pre-development flow rate as a release rate, Wedler calculated a detention volume of 1,122 m<sup>3</sup>.

The following strategies were provided to consider for mitigating the increase runoff from the site post-development:

- Design landscaped area to provide rainwater storage capacity (e.g., infiltration swale or rain garden) of at least 5% of the required detention volume. This may include a rock reservoir below ground for storage.
- Provide overland flow routes through site grading design for major storms (i.e., 1 in 100-year recurrence interval).
- Design onsite facilities with a suitable overflow and site grading to safely convey excess flows without causing property damage or other unwanted effects.

Best management practices were also identified, including:

- Retaining and re-establishing native vegetation within the developed area.
- Reducing hard surfaces using gravel, permeable pavements, or structural grass systems for parking areas.
- Storing and re-using rainwater to reduce runoff volume and flows.
- Using oil-silt separators (hydrodynamic oil grit separator manhole) to treat runoff from hard surfaces.
- Placing 300 mm of amended topsoil in any landscaped areas.

### **3.5.5.4 POWER AND TELECOMMUNICATIONS**

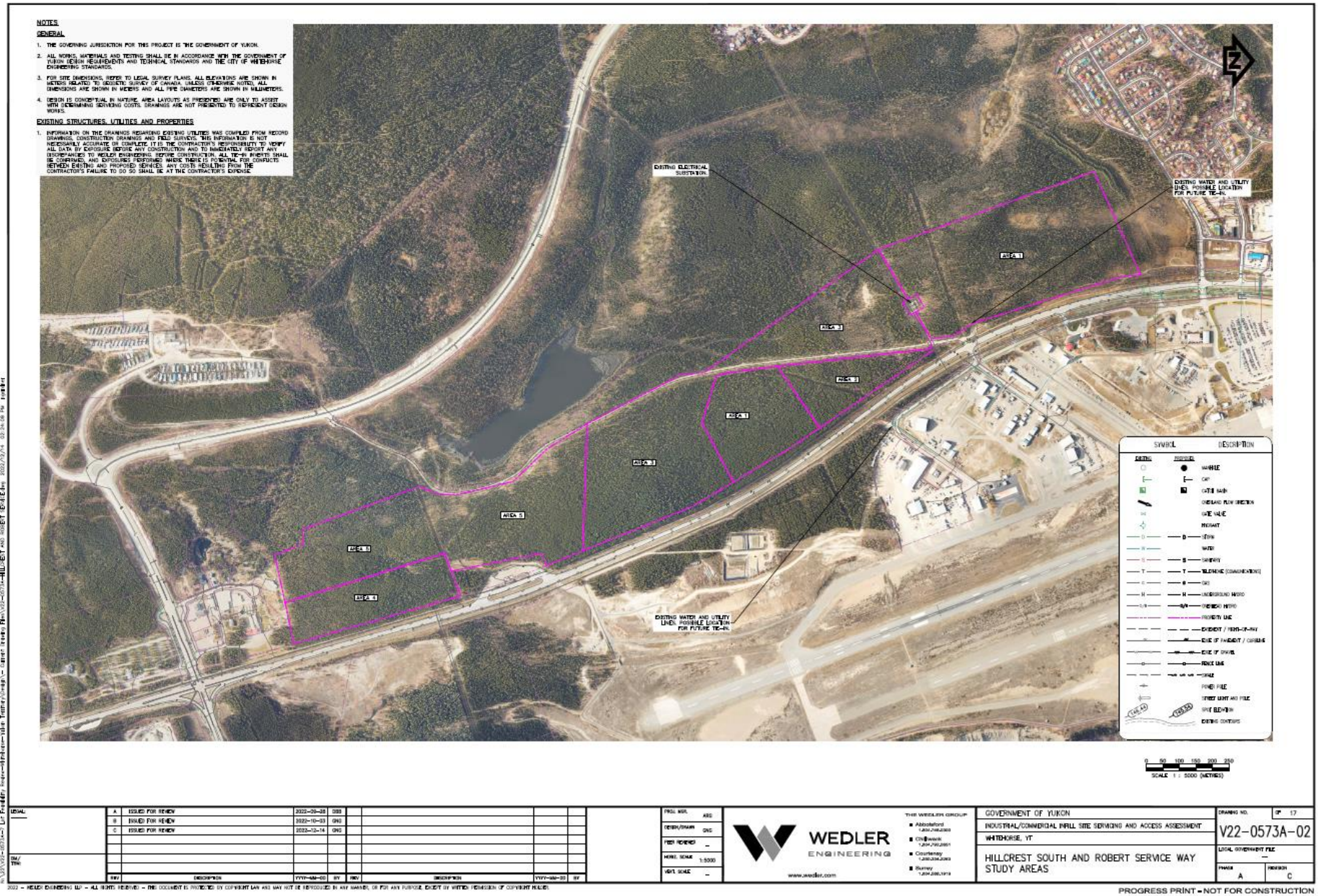
A nearby substation abuts KDFN C-56B. It is located north of the planning area and accessed through Ice Lake Road (Figure 4). Overhead power service runs on the east side of the Alaska Highway. ATCO Electric has confirmed the feasibility of providing overhead power service to the site. Approximately 12 to 16 power poles would be needed to provide 3-phase primary powerlines (Wedler, 2022).

### **3.5.5.5 ACCESS**

Three potential road access points were identified:

- South Access (frontage road running parallel to the Alaska Highway from the South Access)
- Ice Lake Rd / Hamilton Blvd intersection
- Ice Lake Rd / Alaska Highway intersection

FIGURE 4: POTENTIAL WATER AND SEWER CONNECTIONS





# 4 SITE CONDITIONS

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## 4.1 VEGETATION

The planning area consists mostly of Lodgepole Pine and White Spruce. According to vegetation inventory data for the City of Whitehorse, the planning area contains mature lodgepole pine and white spruce stands ranging from 80 to 120 years old.

## 4.2 SURFICIAL GEOLOGY

Surficial geology consists of Morainal (till), Eolian / Morainal (till), Glaciofluvial / Eolian, and Glaciofluvial / Morainal (till) deposits (Ausenco, 2022). While the southwest portion of the site is covered by a Morainal deposit, which consists of sand and mud, the northwest portion of the site consists of a glaciofluvial ridge feature, which consists of gravel and sand. The east side of the site is covered by a mix of eolian and glaciofluvial deposits, which consists of gravelly and sandy materials.

## 4.3 TOPOGRAPHY

Publicly available contour, lidar, and aerial imagery data were used to evaluate the site's topography. A slope analysis visually showing slope steepness was prepared (Figure 6). The site's topography consists of moderately steep (12%-18%) to steep (>18%) slopes throughout the site with some relatively gentle slope areas on the KDFN's parcel, and at the top of the small glaciofluvial ridge (northwest portion of the planning area). The majority of the grades vary between 3% and 12%, with some steep and very steep slopes exceeding 30%.

The steeper portions of this area will need to be reviewed by a geotechnical engineer to confirm the extent of the developed potential.

## 4.4 LAND USE

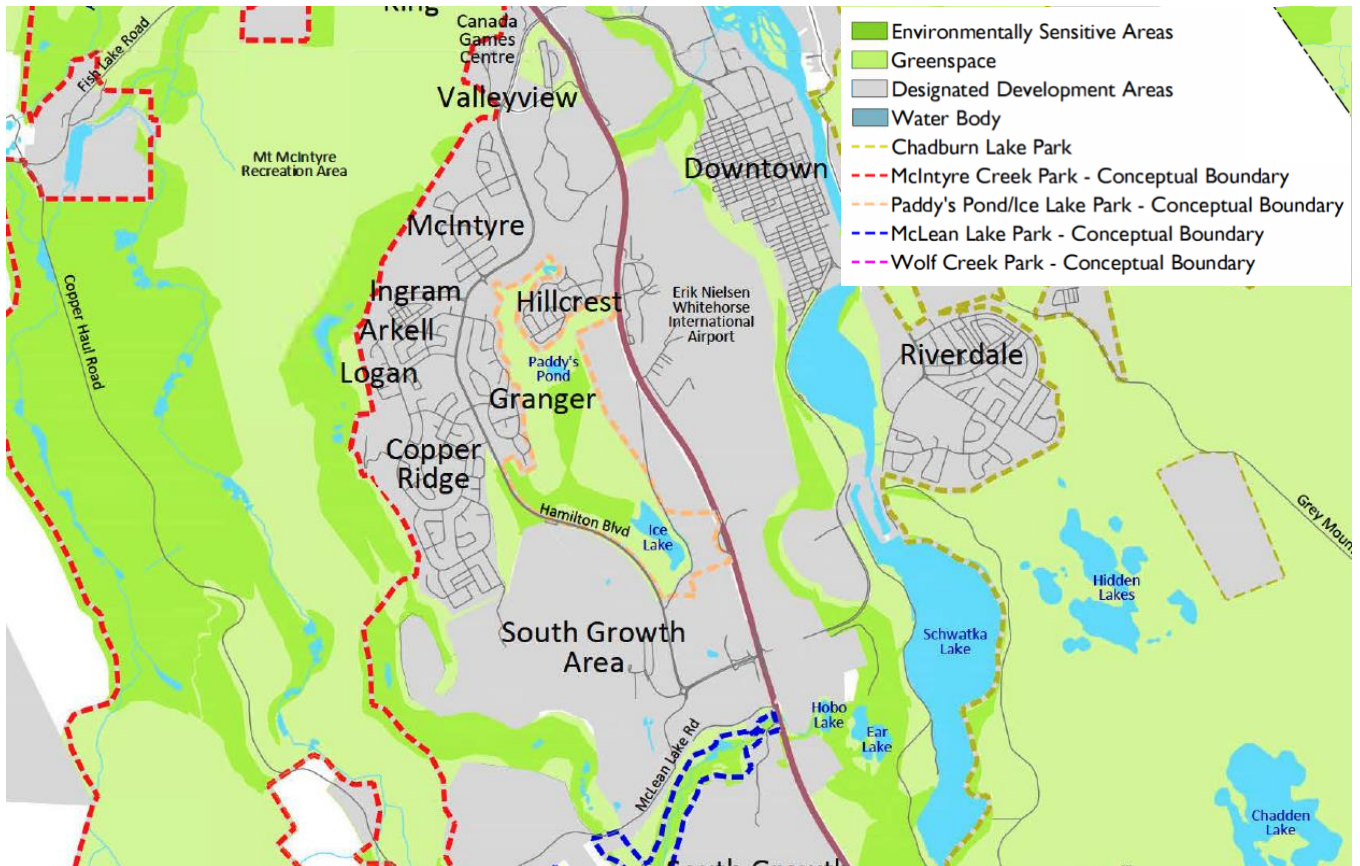
Surrounding land uses include the Alaska Highway to the east; Highway Commercial and Mixed-Use Commercial / Industrial lots on Metropolit Lane to the south; Greenspace to the west (Rock Gardens climbing area and the Paddy's Pond / Ice Lake Regional Park); unsurveyed vacant future industrial land to the north (Zoned Future Planning); and public service land east of the site and across the Highway. A narrow, surveyed parcel of land (zoned Future Planning) exists between the Highway and the Greenhouse and Metropolit Subdivision area.

Established businesses on Metropolit Lane include the Yukon Gardens, Blueberry Car Wash, Certified Heating, All Paws Veterinary, and Black Spruce Hotel.

### 4.4.1 PADDY'S POND / ICE LAKE ENVIRONMENTALLY SENSITIVE AREA

A large greenspace area is located immediately west of the planning area, which also overlaps and is adjacent to a large Greenspace area around the Paddy's Pond Environmentally Sensitive area. The Paddy's Pond / Ice Lake Park conceptual boundary (to be confirmed through future park planning) of the proposed Paddy's Pond / Ice Lake Regional Park overlaps a portion of the planning area (Figure 5).

FIGURE 5: OVERLAP WITH THE PLANNING AREA



## 4.5 TRAILS

The area has numerous official trails (Figure 7). 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 6). The single-track non-motorized Rock Gardens Trail transects the planning area roughly from north to south. The City of Whitehorse built the trail. The Weigh Station Access trail runs east west and connects to Ice Lake Road. The Cut Line trail follows the KDFN C-86B surveyed cutline and powerline.

TABLE 6: TRAILS

TRAILS	OVERLAP WITH STUDY AREA (M)
Rock Gardens Trail	975
Weigh Station Access Trail	453
Cutline Trail (Road)	359
<b>Total</b>	<b>1,787</b>



FIGURE 6: SLOPE

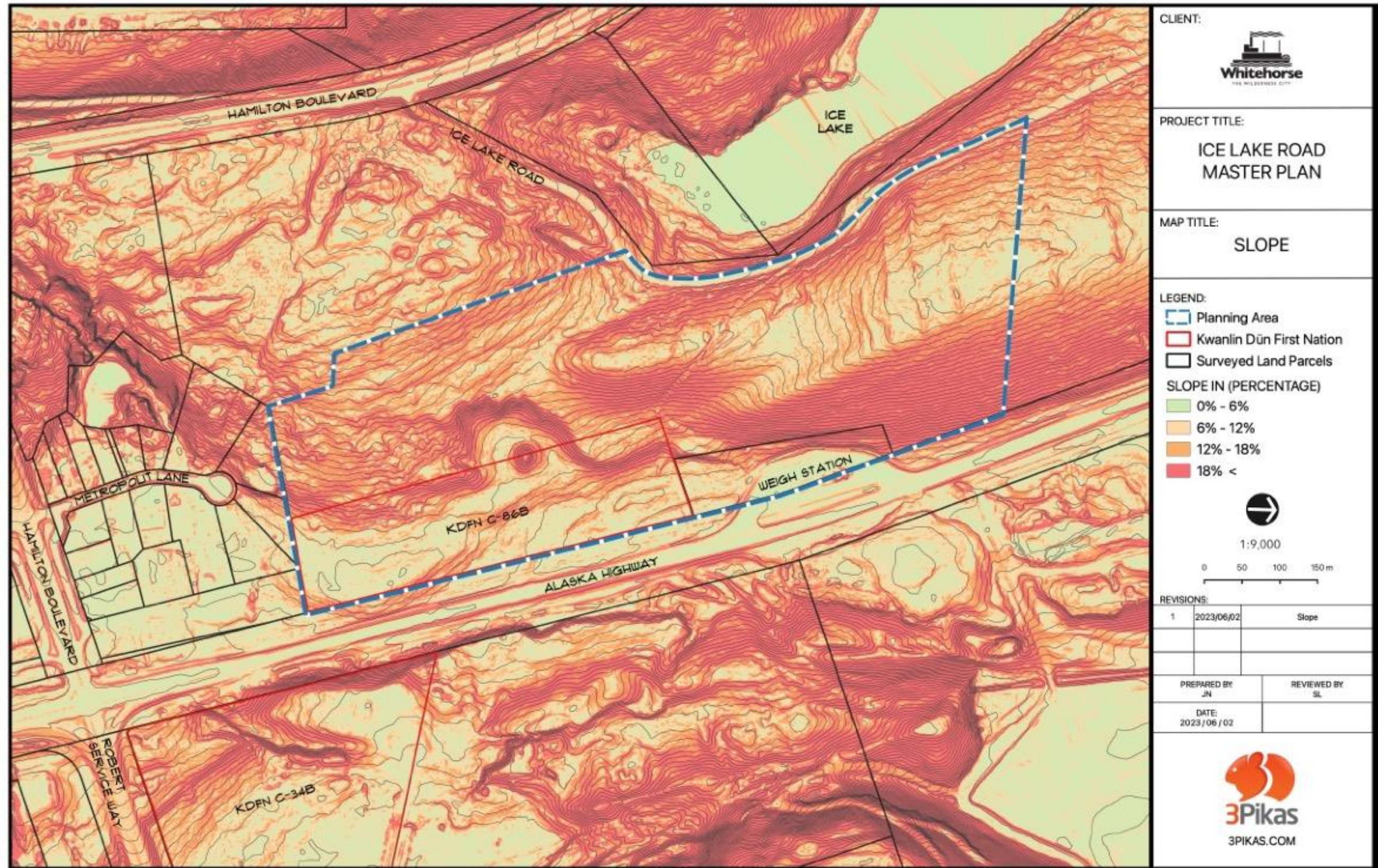
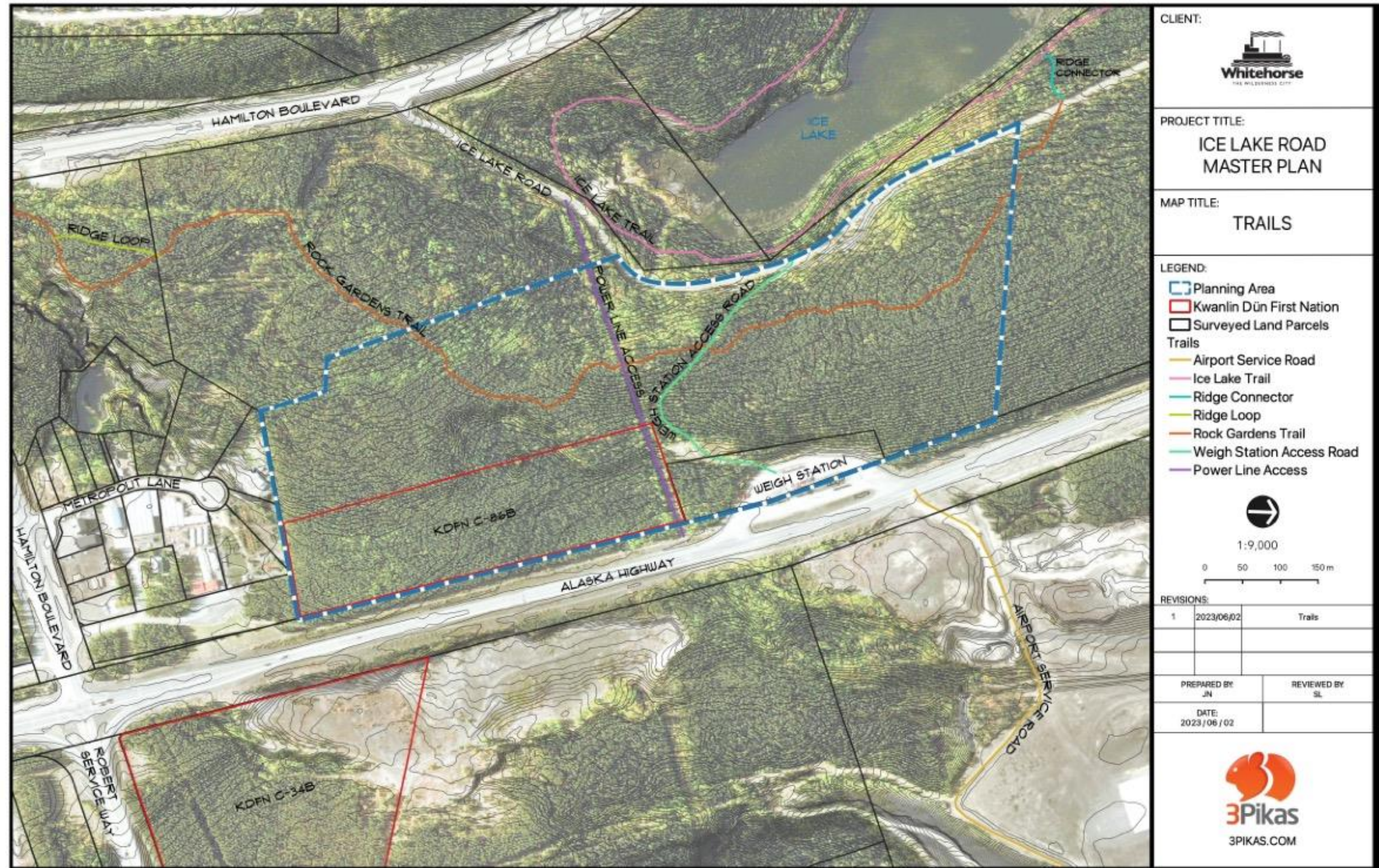




FIGURE 7: TRAILS





# 5 DEVELOPMENT POTENTIAL

A build-out calculation was prepared to help evaluate the site's development potential and inform the land use concepts. The build-out calculation is based on an assumed 1 lot per ha density to meet Environmental Health setback requirements for on-site servicing (wells and septic), known development constraints (slopes / geotech conditions, etc.) and land uses (road right-of-way, greenspace, and industrial use). The build-out calculation is expressed as several industrial lots per hectare.

We have assumed the following conservative land use mix allocation: 25% greenspace (accounting for terrain constraints), 15% road, 5% institutional (weigh station), and 55% industrial use (Table 7). The estimated number of industrial lots at full build-out is 17.

TABLE 7: PRELIMINARY ASSUMED LAND USE MIX

Land Use Mix	Area (ha)	Area (%)	Est. # of Lots
Industrial use	17.70	55%	17.7
Institutional	1.75	5%	
Greenspace	8.10	25%	-
Roads	4.86	15%	-
Total	32.42	100%	17.7

## 5.1 EMPLOYMENT POTENTIAL

A key additional input is the employment potential at full build-out. For this exercise, we have utilized an industrial employment benchmark density of 25 jobs per net hectare and a 20% site coverage. These metrics are based on the findings from the Industrial Area Growth Strategy for the City of Calgary (Cushman & Wakefield, 2021). In the study, Cushman & Wakefield analyzed datasets in Calgary and found that 25-40 jobs per net hectare align with observations in other major metro areas in Canada. According to Cushman & Wakefield, the upper end of the range includes business parks with a considerable share of flex industrial properties with a higher component of office-type uses, and the lower end of the range reflects a greater extent of outside storage of machinery, equipment, and raw and finished goods. We have selected the lower end of the range (25 jobs / net ha) to reflect Whitehorse's economic conditions (i.e., fewer intensive industrial forms compared to major centres).

The report determined that the average site coverage for industrial uses city-wide was 40%. However, a quick visual review of Sima's existing buildings indicates that site coverage tends to be less than 20% (i.e., a 1-hectare site home to a 2,000 m<sup>2</sup> building has a site coverage of 20%). Additionally, given the proposed development's unserviced nature and terrain constraints, we have used 20% site coverage to estimate the employment potential at full build-out. Based on the above assumptions, the estimated number of jobs at full build-out is 88 (Table 8).

TABLE 8: EMPLOYMENT POTENTIAL AT FULL BUILD-OUT

Land Use	20% Site Coverage	Job Density / Ha	Est. Employment Potential
Industrial use	3.45	25	88.5