Ignace Area Community Studies: Economics and Finance

Labour Baseline

June 17, 2022

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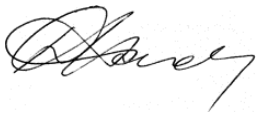
Signature 

Approved by Dave Hardy

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0	March 9, 2022	Initial Draft of Economics and Finance – Labour Baseline	JME Maxwell	Andy Keir	Dave Hardy
1	May 20, 2022	Second draft of Economics and Finance – Labour Baseline. Sections rearranged - Regional to come before Local Study Area. Edits from NWMO incorporated.	JME Maxwell	Andy Keir	Dave Hardy
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3	June 17, 2022	Final - of Economics and Finance – Labour Baseline. Edits from NWMO incorporated. Consistency addressed.	JME Maxwell	Andy Keir	Dave Hardy

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List of Acronyms:

APM	Adaptive Phased Management
CATB	Construction Association of Thunder Bay
CMHC	Canada Mortgage and Housing Corporation
EMSI	Name of data analytics company
FedNor	Federal Economic Development Agency for Northern Ontario
FIR	Financial Information Return
FTE	Full Time Equivalent
HSAL	Hardy Stevenson and Associates Limited
IABA	Ignace and Area Business Association
ICNLC	Ignace Community Nuclear Liaison Committee
KDMA	Kenora District Municipal Association
MLS	Multiple Listing Service
NCIR	Northern Communities Readiness Initiative
NTAB	Northwestern Training and Adjustment Board
NWO	Northwestern Ontario
NWMO	Nuclear Waste Management Organization
PACE	Patricia Area Community Endeavours
PWG	Partnership Working Group
WLON	Wabigoon Lake Ojibway Nation

1.0 Introduction

1.1 Background and Context

Since 2010 the Township of Ignace (Ignace or the Township) has been involved in a process of learning about the Nuclear Waste Management Organization's (NWMO) Adaptive Phased Management (APM) Project (the Project) for the long-term management of Canada's used nuclear fuel. The NWMO plans to complete all preliminary assessment work and to select one siting area to host the APM Project by 2023. The two remaining communities in the site selection process are the Township of Ignace and the Municipality of South Bruce. Preliminary studies suggest that the Project can be implemented safely in the Ignace Area for a repository that will contain and isolate used nuclear fuel from people and the environment for the long timeframes required.

Studies have been ongoing since 2010; however, further studies are required to fully assess the potential socio-economic impacts of the APM Project. Building on previous work and engagement completed to date, the NWMO and the Township of Ignace are working together to prepare a suite of community studies that will be shared. The list of socio-economic community studies is included in **Appendix A**. The information acquired through these studies is expected to help the Township of Ignace leadership and residents make informed decisions about whether the Project is a good fit for their community, and if they are willing to consider hosting it and under what circumstances and terms.

Community studies will ultimately inform the Project hosting agreement between the NWMO and the Township of Ignace. As well, they will inform agreements with the City of Dryden, and potentially other regional agreements.

Note to Reader

This and other community studies are preliminary and strategic in nature, all intended to identify possible consequences (e.g., to vulnerable populations, to local business opportunities and for local and regional job creation) in the Township of Ignace, and other local and regional communities. Using information about the APM Project known at this point in time, these community studies will describe a range of possible consequences that are the subject of specific and separate studies. For each possible consequence, potential options and strategies will be offered to leverage opportunities and/or mitigate possible negative consequences/effects.

It is important to note that these community studies (developed collaboratively by NWMO and the Township of Ignace) being investigated at this time are not the formal or final baseline or effects studies that will be part of the Impact Assessment as conducted under the regulatory process for the APM Project governed by the Impact Assessment Agreement of Canada. Effects assessment will be undertaken at a later date following the conclusion of the siting process, and the initiation of the formal regulatory process.

Community studies will ultimately inform the APM Project hosting agreement between the NWMO and the Township as Ignace. As well, they will provide pertinent information for agreements with the City of Dryden and potentially other regional agreements. The study will:

a) Explore in more detail the questions, aspirations and topics of interest expressed by the community through the Township of Ignace project visioning process;
b) Assist the NWMO and the Township of Ignace in developing and identifying possible programs and commitments that ensure the Project will be implemented in a manner that fosters the well-being of the Township of Ignace and communities in the Ignace Area and the region;
c) Advance learning and understanding on topics of interest to communities in the Ignace Area and the region; and
d) Provide the community with information it has requested to help them make an informed decision in the case of the Township of Ignace and continue to inform dialogue with communities in the Ignace Area and region prior to the conclusion of the site selection process in 2023.

The NWMO is committed to working collaboratively to ensure questions, concerns, and aspirations are captured and addressed through continuous engagement and dialogue.

The NWMO will independently engage with Wabigoon Lake Ojibway Nation and other Indigenous communities to understand how they wish to evaluate the potential negative effects and benefits that the Project may bring to their communities.

1.1.1 Land Acknowledgement

It is acknowledged that the lands and communities discussed in this report are primarily situated on the traditional territory of the Anishinaabe people of Treaty 3, and the Métis Nation.

1.2 Scope and Purpose

This is the Labour Baseline Study. It is part of a set of community studies addressing Economics and Finance. The objective of the *Labour Baseline Study* is to describe and characterize the local/regional labour supply market and household incomes in relation to siting the APM facility at the Revell site. It provides a starting point, or baseline, in terms of helping Ignace leaders and residents to understand the characteristics of the labour force that might be able to take advantage of opportunities associated with the APM project.

The specific objectives of this study are:

- Describe the local labour supply in terms of employment status;
- Describe the local labour force in terms of occupational classifications; and
- Describe the local labour needed to sustain and grow the existing businesses in the community.

Implicit in these objectives are an assessment of the supply of and demand for labour and analysis of trends and issues surrounding labour.

Ignace's Project Vision (2020) states that the APM Project must foster well-being in areas that are important to the community. Priorities in relation to the labour baseline study identified by the community include:

- The project should support community growth, while maintaining the small-town feel of Ignace.
- Growth should be managed. Community members thought that 2,500-3,000 people would be an appropriate size for Ignace. Participants wanted the focus of population growth to be not only on attracting new residents but also on retaining current residents across all age groups.
- Labour strategies to support population growth of interest to community members may include maximizing project employment and training opportunities for local residents and enhancing the facilities and services availability in the community[1].

1.3 Spatial Boundaries

It is important to understand both the regional and local labour force. Two areas have been used to frame this study:

a. Regional Study Area
b. Local Study Area

[1] InterGroup Consultants (2020). Ignace Project Visioning Community Conversations.

The Regional Study Area is outlined in **Figure 1.** It includes the Kenora District, Town of Atikokan, Town of Marathon, City of Greater Sudbury, City of Thunder Bay, City of Steinbach, and City of Winnipeg. For the Project sited in Ignace, the boundaries of the Regional Study Area are defined to meet the majority of needs for labour and goods and services. The Regional Study Area includes the communities within the Local Study Area.

Figure 1 Regional Study Area

Table 1 outlines the Regional Study Area as defined within the Work Plan and Labour Baseline Report.

Table 1 Regional Study Area Data Mapping

Regional Study Area (Work Plan)	Regional Study Area (Report)	Statistics Canada Census Division/Subdivision
Atikokan	Atikokan	Census Subdivision
Kenora	Kenora	Census Division
Thunder Bay	Thunder Bay	Census Subdivision
Steinbach	Steinbach	Census Subdivision
Winnipeg	Winnipeg	Census Subdivision
	Marathon	Census Subdivision
	Greater Sudbury	Census Subdivision
	Timmins	Census Subdivision

The Local Study Area, **Figure 2**, focuses on the communities in the Ignace area. Persons residing in this area could commute to the Project daily. The Local Study Area is comprised of the Township of Ignace, City of Dryden, Municipality of Machin, Municipality of Sioux Lookout, Melgund Local Services Board, and Wabigoon Local Services Board.

Figure 2 Local Study Area

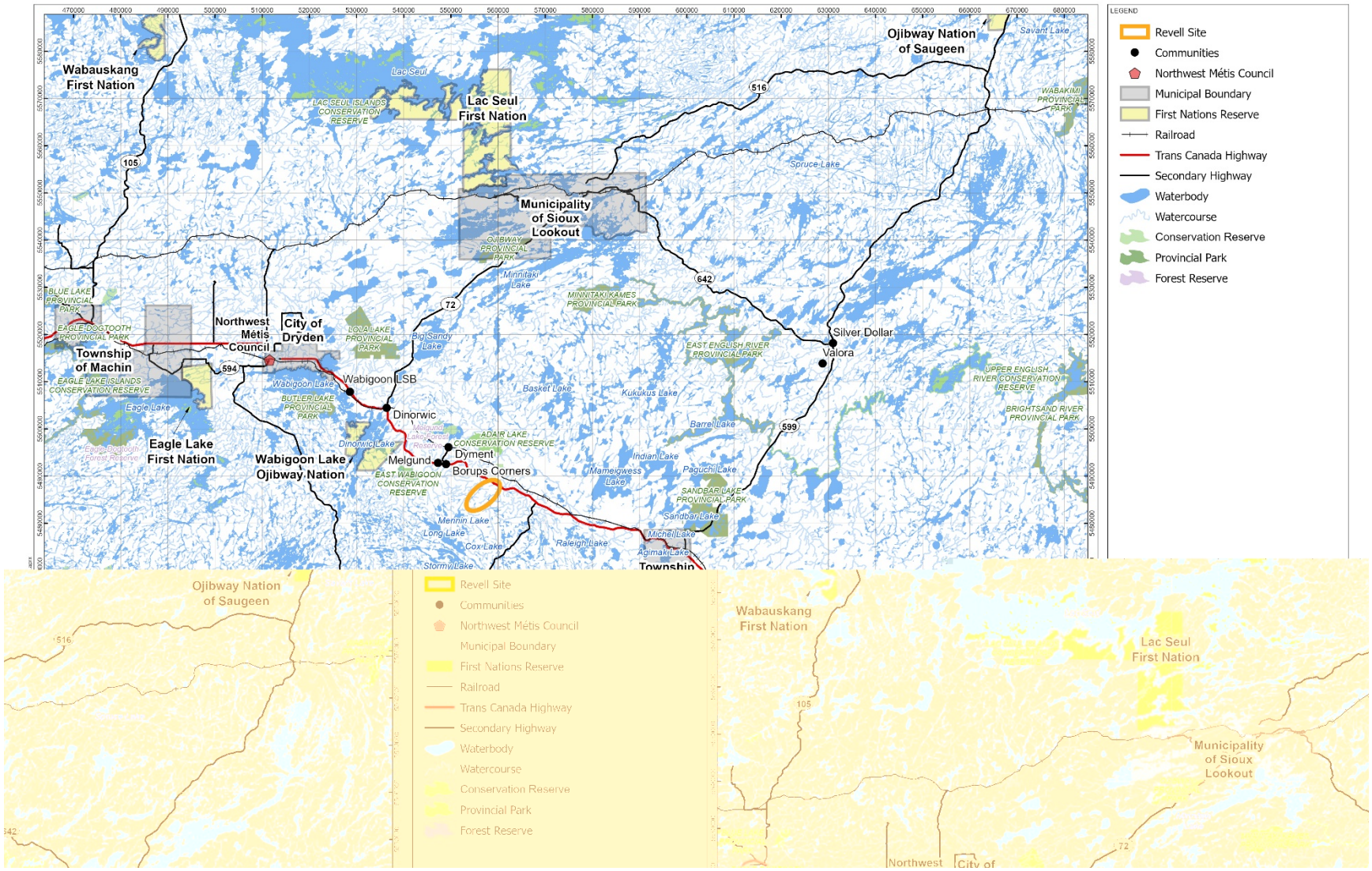


Table 2 outlines the Local Study Area as defined in the Work Plan and Labour Baseline Report. Despite some data limitations for the Melgund and Wabigoon Local Services Boards, they are included in the local study area.

Table 2 Local Study Area Data Mapping

Local Study Area (Work Plan)	Local Study Area (Report)	Statistics Canada Census Division/Subdivision	Notes
Ignace	Ignace	Census Subdivision	
Dryden	Dryden	Census Subdivision	
Machin	Machin	Census Subdivision	
Sioux Lookout	Sioux Lookout	Census Subdivision	
Melgund Local Services Board			Data not available
Wabigoon Local Services Board			Data not available

1.4 Temporal Boundaries

Labour opportunities will vary depending on the phase of the APM project. Thus, three temporal boundaries define the critical horizons of the APM Project for this study:

a. Pre-Construction – 2024 to 2032
b. Construction – 2033 to 2042
c. Operations – 2043 to 2088

Pre-construction is denoted by the in-moving of NWMO staff and others to the siting area. This phase of the Project will be closely associated with permitting and licensing activities and it will also involve both on-site and off-site initiatives. In the latter case an office and Centre of Expertise will be made operational. On site activities include site/land preparation including a road connection from the TransCanada Highway to the DGR site.

The construction phase of the Project will begin in 2033 once permits and licenses have been obtained. It will run for 10 years. The labour force will expand to include jobs associated with construction of the APM at the Revell site.

The labour force will change once again after construction to meet the needs of operating the APM facility. Following the completion of construction, site operations will commence in 2043 and continue to 2088.

2.0 Methodology

2.1 General Approach

This 'methodology' section discusses how we thought through gathering information, assessing the information and how it is presented. The general approach can be summarized in the following series of steps:

- Review a variety of data sources to assemble labour force supply and demand and job statistics for the two study areas.
- NWMO has defined the parameters regarding the jobs expected for various aspects of the APM project. We studied the NWMO parameters data to determine APM Project labour force requirements (e.g. What are the occupations and education requirements?) across the three Project phases.
- Conduct interviews with knowledge holders to understand area labour force capabilities, trends and issues.
- Review available growth strategies for communities within the Local Study Area to gain insight on future area employment forecasts.
- Assess the gaps between Project needs and the available labour. These gaps will be explicitly explored in the related Ignace and Area Community Studies: Workforce Development Study. Specifically, this Labour Baseline Study provides an important contribution to a broader analysis.

2.2 Data Collection Information Sources

Having reliable and complete data is essential to our analysis of the labour force and our ability to draw conclusions. Data was collected from the following sources:

- Statistics Canada data was used indirectly through the below data sources to assemble labour force and job statistics from 2001 to 2016.
- Manifold Data Mining Inc. (hereafter referred to as Manifold) data were used to construct labour force profiles current to 2021 for the two study areas. Manifold retrieves their data from Statistics Canada and Numeris[2].
- Emsi data for 2021 were used to assemble jobs and occupational data for each of the two study areas. Emsi combines employment data from the Survey of Employment and Payrolls and Hours with data from the Labour Force Survey, Census, and Canadian Business Patterns to form detailed geographic estimates of employment. Projections are based on the latest available Emsi industry data, 10-year past local trends in each industry and growth rates from national industry

[2] Manifold Data Mining Inc. (2022). Retrieved January 1, 2022, from Manifold: https://app.polarisintelligence.com/profile/showreport?comparison_session=true&_locale=en&component_name=comparison_list

projections from the Canadian Occupational Projection System produced by Human Resources and Skills Development Canada[3].

- The Emsi data provides a forecast of key economic variables used in this report out to 2028. To align the baseline data with the temporal boundaries of this study several variables were forecast beyond the data provided Emsi to 2042. These forecasts were derived by calculating the compound annual growth rate (CAGR) on the Emsi data between 2021 and 2028. The calculated CAGR was then used to forecast economic variables to 2042.

2.2.1 Knowledge Holder Interviews

In addition to gaining knowledge from the labour force baseline data, we recognized that many people across Northwestern Ontario also pay attention to labour force needs. Knowledgeable regional and local experts were identified and consulted. Interviews were conducted with economic development organizations, area employers, planning officials and municipal administrators to gain insight into labour force characteristics and issues in the Local Study Area. The list of knowledge holders interviewed is set out in **Appendix B**. The rationale for who was interviewed was in large part based on professional experience and knowledge of the types of agencies and personnel most likely able to provide insight into the labour force characteristics of the study areas. No interviews were conducted with any municipal elected officials.

2.2.2 Ignace and Area Working Group

To support the baseline and community studies work, comments were obtained from the Ignace and Area Working Group (IAWG). The IAWG is made up of the Township of Ignace staff and leaders and a diverse range of staff from municipalities, Indigenous communities, service providers, businesses, civil society, and other interests - both local and regional. The Township of Ignace and NWMO prepared feedback reports noting the IAWG's input.

The collection of community knowledge was supported through the IAWG, who acted as an advisory body throughout the community studies to ensure local perspectives were considered throughout the process.

2.3 Assessment

Once we gathered reliable labour force data from a range of sources and assessed NWMO APM labour requirements our attention turned to assessing the implications in terms of establishing a baseline. The following provides our analysis framework:

1. The framework is characterized as an analysis of "supply and demand".

[3] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1. Note: Projections were estimated using a compound annual growth rate between 2021 and 2028 projections.

2. The current and projected supply of labour was derived from statistical data, documents and insights garnered through interviews.

3. The demand for labour was derived from the existing and forecast employment projections, focused on aggregated occupational categories of interest provided by the NMWO based on the future Project needs.

4. The overall project time-line extends over many decades but critical dates for the purposes of this study area are:

    - 2023: one of two locations (Ignace or South Bruce) will be selected for the Project;
    - 2024: 200 NWMO staff will begin working from the Centre of Expertise to be located in Ignace. Some staff will transfer to the siting area and others will be hired into the organization from many sources and locations to fill staffing gaps;
    - 2033 to 2042: the APM repository and associated on-site facilities will be constructed; and
    - 2043: operations will begin for a period of about 42 years.

5. Based on the Project timeline the framework for temporal assessment is:

    - Pre-Construction – 2024 to 2032
    - Construction – 2033 to 2042
    - Operations – 2043 and beyond

2.4 Linkages with Other Studies

This study is closely linked with the following Community Studies currently underway:

Study Name	**Objective**
Labour – Opportunities to Enhance Local Employment Study	A Workforce Development Study that focuses on attracting and retaining labour and new residents to Ignace and area.
Housing Study	Focus on how to provide housing to meet the demands of the Workforce
Economic Development Study	Focuses on pre-construction economic development opportunities and extrapolates to construction and operations phases.
Growing the Population and Opportunities Study	Examines trends in population dynamics with and without the APM Project.

This study should be read in conjunction with these other studies to fully appreciate and understand the labour markets in the study areas. The findings in this Study will provide insight into the local and regional labour supply markets during the Pre-Construction, Construction and Operations phases of the APM Project.

This assessment does not include the following elements included in the workplan for the labour baseline:

- A focus on Science, Technology, Engineering and Math graduates from nearby universities
- An analysis of the impacts on the project on labour
- An assessment of options for attracting and retaining labour related to the project

These elements are included in the Workforce Development Study.

3.0 Existing Conditions

This section documents the existing labour conditions in the Regional and Local study areas.

Based on the analysis of the data in the following sections we conclude that the Regional Study Area has the skilled labour force required to meet most of the Project requirements. The Local Study Area has a materially smaller labour force that only meets some of the Project requirements. In this later case, recruitment of workers from outside the Local Study Area will be necessary to supply the APM Project. Anecdotal evidence gathered from interviews suggests that competition for labour is fought through increasing competitive wages and some are willing to leave their current positions and relocate to wherever they can find the highest wage.[4]

The APM Project labour requirement is minor in comparison to the supply of skilled labour within Regional Study Area.

3.1 Focus on Project Requirements

The focus on project requirements helps us to understand the demand for labour through an assessment of the labour required by the APM Project. We first focus on the labour in the Regional Study and Local Study Area without the impacts of the Project. The quantity, type and timing of labour required for the APM Project is described in **Table 3**. This information provides context when determining the availability of labour in the Study Areas.

[4] Kenora District Municipal Association. (2022, February 11). Knowledge Holder Interview. (Hardy Stevenson, Interviewer)

Table 3 APM Labour Requirements[5] [6]

		NWMO Staff	Surface Trades	Underground Trades	Total
On-site	Pre-construction (2028)	20	-	-	20
	Construction (2033)	40	300	130	470
	Operations (2043)	510	10	60	580
Off-site	Pre-construction (2028)	180	-	-	180
	Construction (2033)	170	-	-	170
	Operations (2043)	120	-	-	120
Total	Pre-construction (2028)	200	-	-	200
	Construction (2033)	210	300	130	640
	Operations (2043)	630	10	60	700

In addition to the total labour requirements by phase, NWMO identified broad categories of occupational groupings that provide a profile of the types of occupations that will characterize its workforce for the Project timeframe. These groupings are as follows:

- Resources Workers;
- Constructors and Manufacturers;
- Operators;
- Technicians and Professionals; and
- Managers.

Table 4 National Occupational Classification by Occupational Groupings[7]

Occupational Grouping	National Occupational Classification
Resource Workers	Natural Resources and Agricultural Workers
	Natural Resources and Agricultural Supervisors
Constructors and Manufacturers	Industrial/Electrical Construction Trades
	Processing and Manufacturing
Operators	Transportation O&M
	Equipment O&M
	Supervisors and Control Operators
Technicians and Professionals	Technician in Natural and Applied Sciences
	Professional Occupations in Natural and Applied Sciences
	Professionals in Business and Finance
Managers	Middle Management
	Specialized Middle Management
	Senior Management

[5] Nuclear Waste Management Organization (NWMO). (2021). Community Studies Planning Assumptions. November 2021.
[6] 'On site' refers to staff working at the Revell site while 'Off site' refers to staff working at the Centre of Expertise.
[7] Nuclear Waste Management Organization (NWMO). (2021). Community Studies Planning Assumptions. November 2021

The Project also has a requirement for skilled labour with post-secondary certificates, diplomas, or degrees. The lens of labour quantity, types of occupations, and education will be used to focus the baseline assessment of the Study Areas.

3.2 Regional Study Area

Both the Regional and Local Study Areas characterize the labour force using four indicators: 1) labour force; 2) occupations and education; 3) industry demand; and 4) income. The geography of the Regional Study Area is set out in **Figure 1.**

The Regional Study Area encompasses a large labour force concentrated in Winnipeg, Greater Sudbury, and Thunder Bay. Paradoxically while the Regional Study Area is experiencing an eight percent unemployment rate, it is currently struggling to fill all the available employment positions, particularly skilled trades. The labour force consists of large and growing number of workers in NWMO denoted occupational categories. Over half of the working aged population has a post-secondary certificate, diploma or degree. The industries with the greatest demand for labour in the Regional Study Area are Health Care and Social Assistance, Retail Trade, and Public Administration. The Manufacturing industry employs just under 50,000 workers and Construction industry employs just over 35,000. The Forestry and Mining industries are not amongst the top 10 largest industries by jobs. Annual employment income ranges around $60,000 to $80,000 depending on the community. Higher skilled labourer's have six figure incomes.

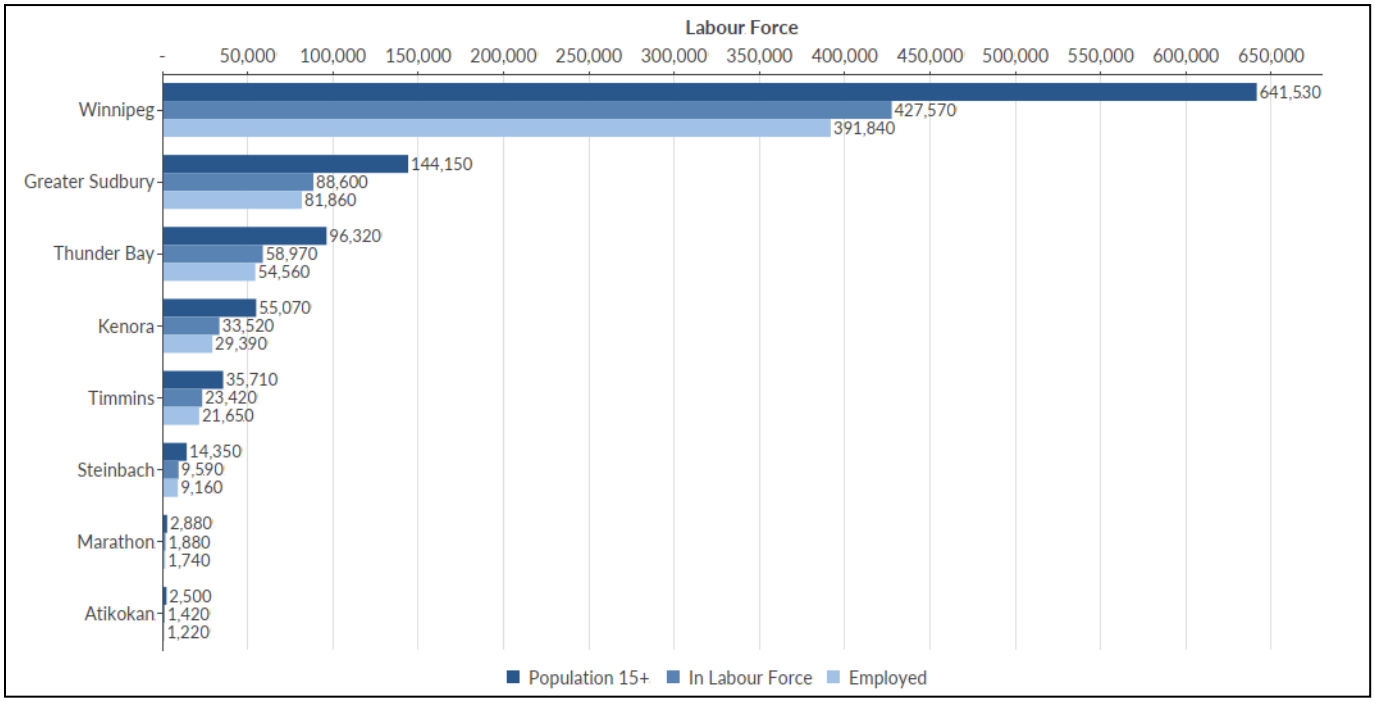
3.2.1 Labour Force

Based on Manifold 2020 data, the Regional Study Area has a labour force population (age 15 years plus) of approximately 993,000. Persons active in the labour force total approximately 645,000 and those employed sum to roughly 591,000. The overall labour force participation rate is in the order of 65 percent and the employment rate is 92 percent, and the unemployment rate is about 8.5 percent. Winnipeg, Greater Sudbury, and Thunder Bay are the key labour force centres within the Regional Study Area. These communities are also the largest population centres in this Regional Study Area. It is therefore not surprising that this is the primary source of labour.

Figure 3 presents the labour force profile within the Regional Study Area by census subdivision and census division (Kenora District). **Figure 4** presents the participation and unemployment rates within the Regional Study Area by census subdivision and census division (Kenora District). Even though unemployment rates in the Regional Study Area are as high as 12 and 14 percent in Kenora and Atikokan there is an acute shortage of skilled trades resulting in job postings going unfilled[8]. This trend is also seen in the rest of Canada and in many industrialized countries around the world.

[8] Kenora District Municipal Association (2022, February 11). Knowledge Holder Interview. (Hardy Stevenson, Interviewer)

Figure 3 Regional Study Area Labour Force Profile (2020)[9]



[9] Manifold Data Mining Inc. (2022). Retrieved January 1, 2022, from Manifold: https://app.polarisintelligence.com/profile/showreport?comparison_session=true&_locale=en&component_name=comparison_list

Figure 4 Regional Study Area Participation and Unemployment Rates (2020)[10]

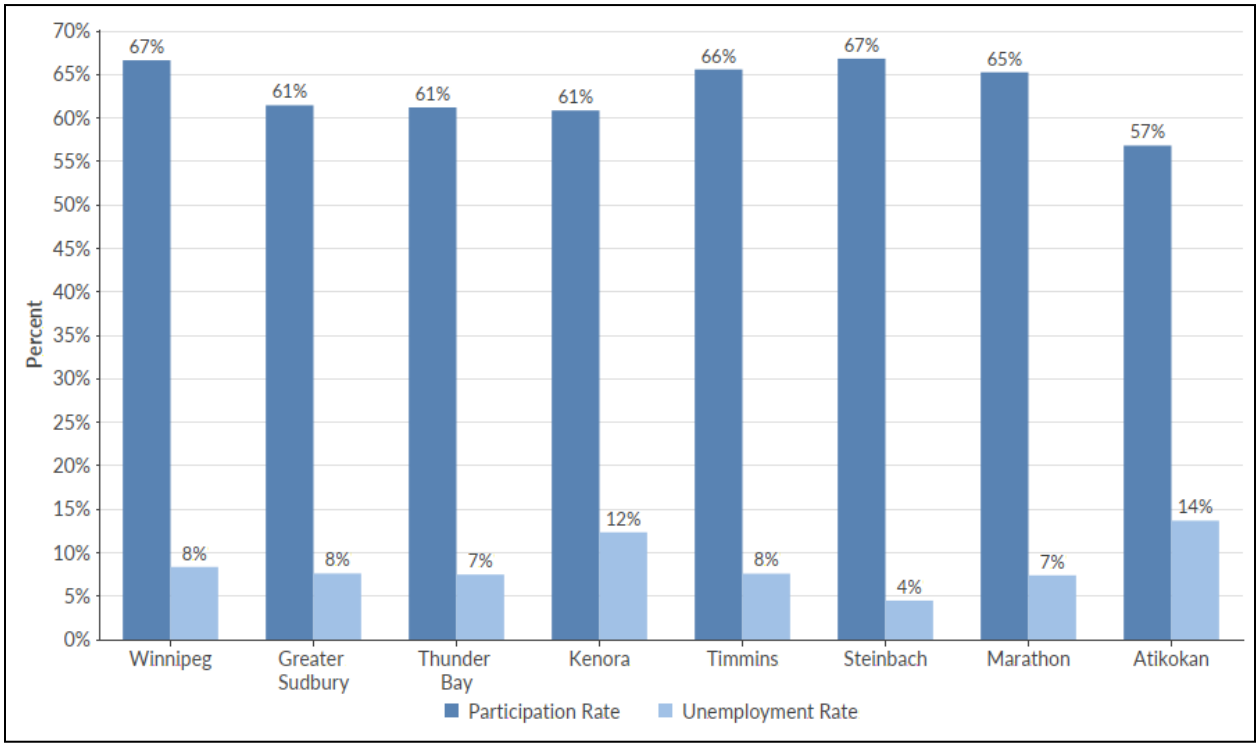
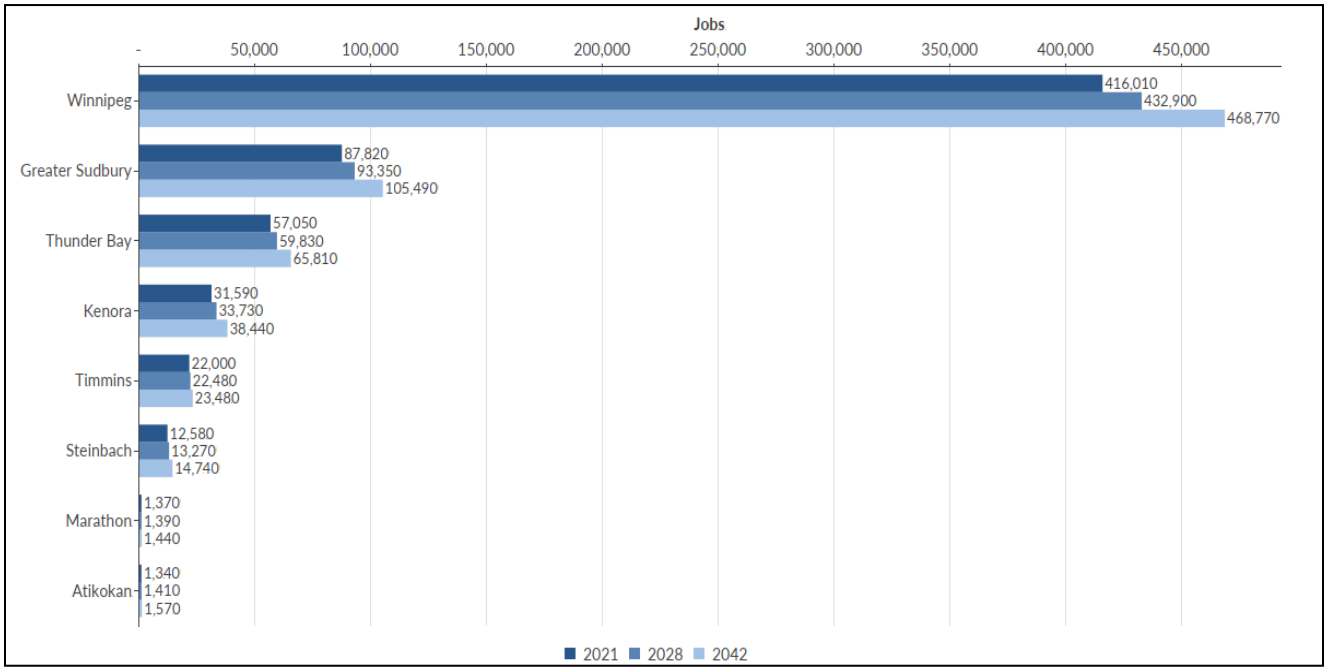


Figure 5 sets out job projections for the Regional Study Area municipalities and district. Between 2021 and 2042, jobs in the area are expected to grow by 14.3 percent from approximately 629,760 jobs to 719,740 jobs. Of this job growth, Winnipeg and Greater Sudbury account for 70,430 (78.3 percent), Thunder Bay and Kenora District account for 15,610 (17.3 percent) and the remaining municipalities account for 3,940 (4.4 percent). While the nominal growth in jobs is proportionate to the current number of jobs by community, employment in Greater Sudbury is forecast to have the fastest relative growth in employment demand.

[10] Manifold. (2022). Retrieved January 1, 2022, from Manifold: https://app.polarisintelligence.com/profile/showreport?comparison_session=true&_locale=en&component_name=comparison_list

Figure 5 Regional Study Area – Job Growth (2021, 2028, 2042)[11]



Based on the total job numbers in 2021, 2028 and 2042, the approximate percentage distribution of jobs among the constituent municipalities and district that make up the Regional Study Area is provided in **Table 5**. The majority of employment in the Regional Study Area exists within Winnipeg, Greater Sudbury, and Thunder Bay which combined make up nearly 90 percent of jobs. Based on the current and projected jobs in these areas, it is likely that a significant portion of the Project labour requirement will be obtained from these areas now and into the future.

[11] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1. Note: Projections were estimated using a compound annual growth rate between 2021 and 2028 projections.

Table 5 Regional Study Area – Job Distribution (2021, 2028, 2042)[12]

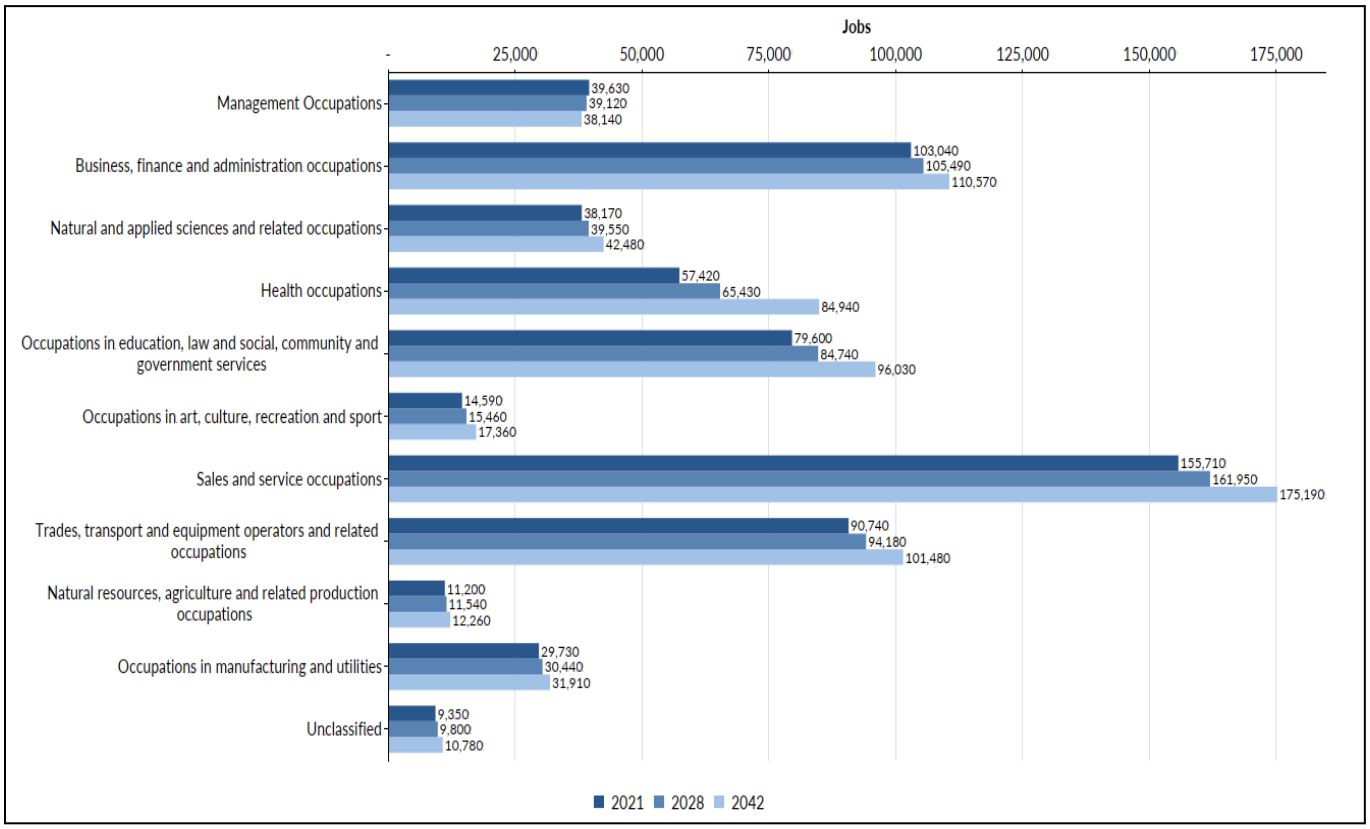
	2028		2033		2043	
	Total Jobs	% Distribution	Total Jobs	% Distribution	Total Jobs	% Distribution
Winnipeg	432,900	65.8%	445,380	65.5%	471,440	65.1%
Greater Sudbury	93,350	14.2%	97,520	14.3%	106,420	14.7%
Thunder Bay	59,830	9.1%	61,900	9.1%	66,260	9.1%
Kenora	33,730	5.1%	35,340	5.2%	38,800	5.4%
Timmins	22,480	3.4%	22,830	3.4%	23,550	3.3%
Steinbach	13,270	2.0%	13,770	2.0%	14,850	2.1%
Marathon	1,390	0.2%	1,410	0.2%	1,440	0.2%
Atikokan	1,410	0.2%	1,470	0.2%	1,580	0.2%
Sum of Regional Study Area	629,760	100.0%	658,360	100.0%	719,740	100.0%

3.2.2 Occupations and Education

Figure 6 sets out total current and projected jobs by occupational category in the Regional Study Area. In 2021, the top occupations are sales and service occupations (155,710); business, finance and administration occupations (103,040); and trades, transport and equipment operators and related occupations (90,740). Occupations at the bottom of the spectrum include occupations in art, culture, recreation and sport (14,590); natural resources, agriculture and related production occupations (11,200); and unclassified (9,350). In 2042, the top and bottom ranking occupations is the same with more persons employed in each occupational category. **Appendix C** provides a breakdown of the occupations included within these occupational categories.

[12] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1. Note: Projections were estimated using a compound annual growth rate between 2021 and 2028 projections.

Figure 6 - Regional Study Area Total Current & Projected Jobs by Occupational Category (2021, 2028, 2042)[13]

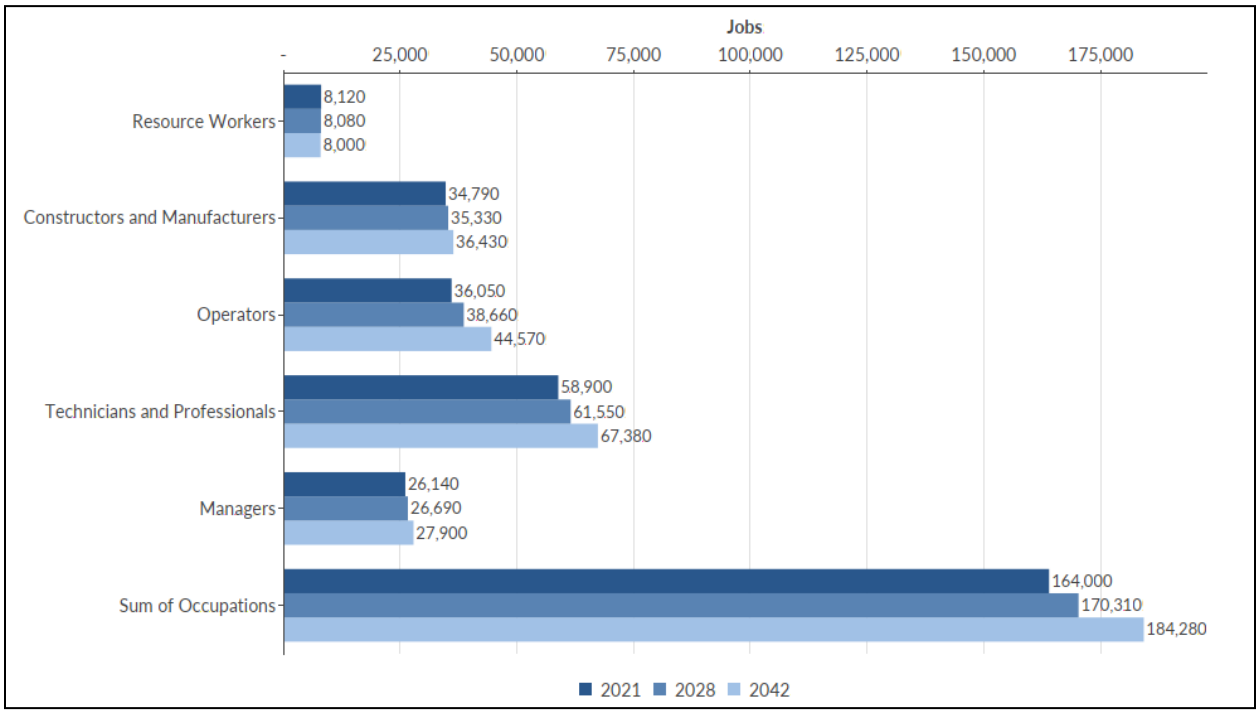


One can reasonably draw the conclusion that the APM Project demand for labour represents a very small percentage of the total labour force available within the Regional Study Area. Thus, the Regional Study Area is very well equipped to supply most of the required labour for the APM Project. For some job specifications/ qualifications, NWMO will look well outside the Region.

NWMO furnished a set of occupational groupings that provide a high-level profile of the types of occupations that will characterize its workforce over the Project timeframe. In other words, these are the categories of workers that the APM project will need. **Figure 7** provides a summary breakdown of the presence of these occupations within the Regional Study Area.

[13] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1. Note: Projections were estimated using a compound annual growth rate between 2021 and 2028 projections

Figure 7 Regional Study Area – Jobs in NWMO Denoted Occupational Categories (2021, 2028, 2042)[14]



In 2021, these occupational groupings sum to 164,000 which accounts for approximately 26 percent of the jobs in the Regional Study Area. In 2042, these occupational groupings sum to 184,280 jobs which accounts for approximately 26 percent of the jobs in the Regional Study Area. This shows that while the total number of jobs under these occupational groupings are expected to increase by 2042, the percent of these jobs within the Regional Study is expected to remain steady over time at 26 percent. The occupations that are required for the Project are abundant in the Regional Study Area and are growing in abundance proportionately over time. The Regional Study Area has a large number of occupations relative to the Project's total employment needs; however, employers in the Regional Study Area are struggling to fill positions. So, there will be competition for skilled workers. This particularly prevalent with trades positions which are decreasing due to an aging demographic[15].

[14] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1. Note: Projections were estimated using a compound annual growth rate between 2021 and 2028 projections.

[15] Thunder Bay Chamber of Commerce. (2022, February 14). Knowledge Holder Interview. (Hardy Stevenson, Interviewer)

Table 6 provides an aggregated summary of the distribution of these occupations by constituent municipalities and district of the Regional Study Area. In 2021, Winnipeg and Greater Sudbury account for approximately 80 percent of the total, meaning that most of the skilled labour will likely come from these areas within the Regional Study Area. Thunder Bay, Kenora District, and Timmins account for roughly 17 percent and Steinbach, Marathon, and Atikokan make up the balance. The distribution of NWMO denoted occupations among the constituent municipalities and district remains relatively unchanged by 2042.

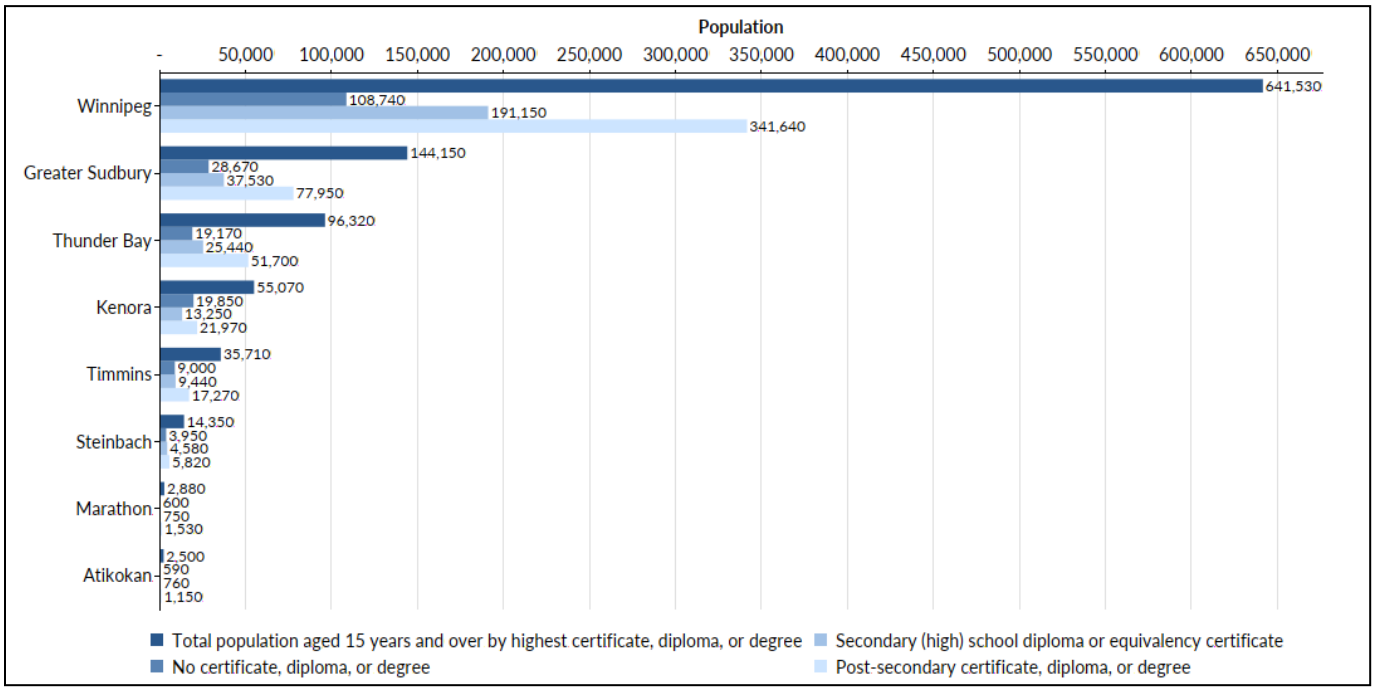
Table 6 Distribution of Jobs within Regional Study Area for NWMO Denoted Occupational Categories (2021, 2028, 2042)[16]

	2021		2028		2042	
	Total Jobs	% Distribution	Total Jobs	% Distribution	Total Jobs	% Distribution
Winnipeg	106,030	64.7%	109,720	64.4%	117,490	63.9%
Greater Sudbury	25,450	15.5%	26,950	15.8%	30,210	16.4%
Thunder Bay	13,460	8.2%	13,840	8.1%	14,620	8.0%
Kenora	8,130	5.0%	8,650	5.1%	9,770	5.3%
Timmins	6,710	4.1%	6,720	3.9%	6,740	3.7%
Steinbach	3,480	2.1%	3,680	2.2%	4,120	2.2%
Marathon	390	0.2%	390	0.2%	380	0.2%
Atikokan	350	0.2%	370	0.2%	420	0.2%
Sum of Regional Study Area	164,000	100.0%	170,320	100.0%	183,750	100.0%

Figure 8 sets out total population age 15+ years by highest educational attainment for the constituent municipalities and district of the Regional Study Area. The Regional Study Area has a total population (age 15+ years) of approximately 992,510. Of this total, 190,560 (19.2 percent) have no certificate, diploma, or degree; 282,920 (28.5 percent) have secondary (high) school diploma or equivalency certificate; and 519,030 (52.3 percent) have a post-secondary certificate, diploma, or degree. This indicates a large level of availability of skilled and educated labourers within the Regional Study Area that could potentially provide much of the labour to the APM Project.

[16] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1. Note: Projections were estimated using a compound annual growth rate between 2021 and 2028 projections

Figure 8 Regional Study Area – Population Aged 15 Years and Over by Highest Level of Educational Attainment (2020)[17]



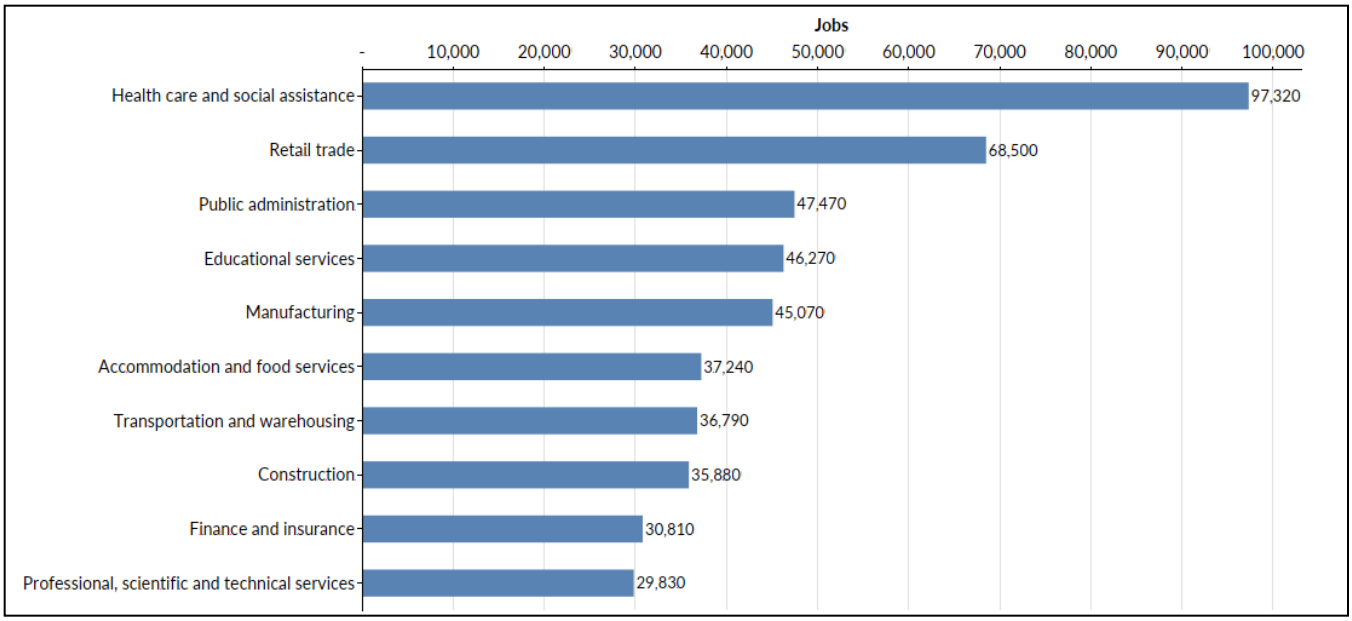
3.2.3 Industry Demand

Figure 9 sets out the top 10 industry sectors in the Regional Study Area based on job counts. Health care tops the list, followed by retail trade. Public administration; educational services; and manufacturing occupy the next range, followed by accommodation and food services; transportation and warehousing; and construction. The lower part of the spectrum is comprised of financial insurance; and professional, scientific and technical services. Speaking from a Northwestern Ontario perspective, a knowledge holder identified that main economic drivers in the area are regional offices, mining, forestry, pulp and paper sawmills, and healthcare.[18] The transportation, warehousing, construction and manufacturing sectors will all be important for the success of the Project and are available in varying degrees within the Regional Study Area. Accommodation and food services will also be important particularly in the Construction and Operations phases of the Project.

[17] Manifold Data Mining Inc. (2022). Retrieved January 1, 2022, from Manifold: https://app.polarisintelligence.com/profile/showreport?comparison_session=true&_locale=en&component_name=comparison_list

[18] Thunder Bay Chamber of Commerce (2022, February 14). Knowledge Holder Interviews. (Hardy Stevenson, Interviewer).

Figure 9 Regional Study Area Top 10 Industries by Number of Jobs [19]



3.2.4 Income

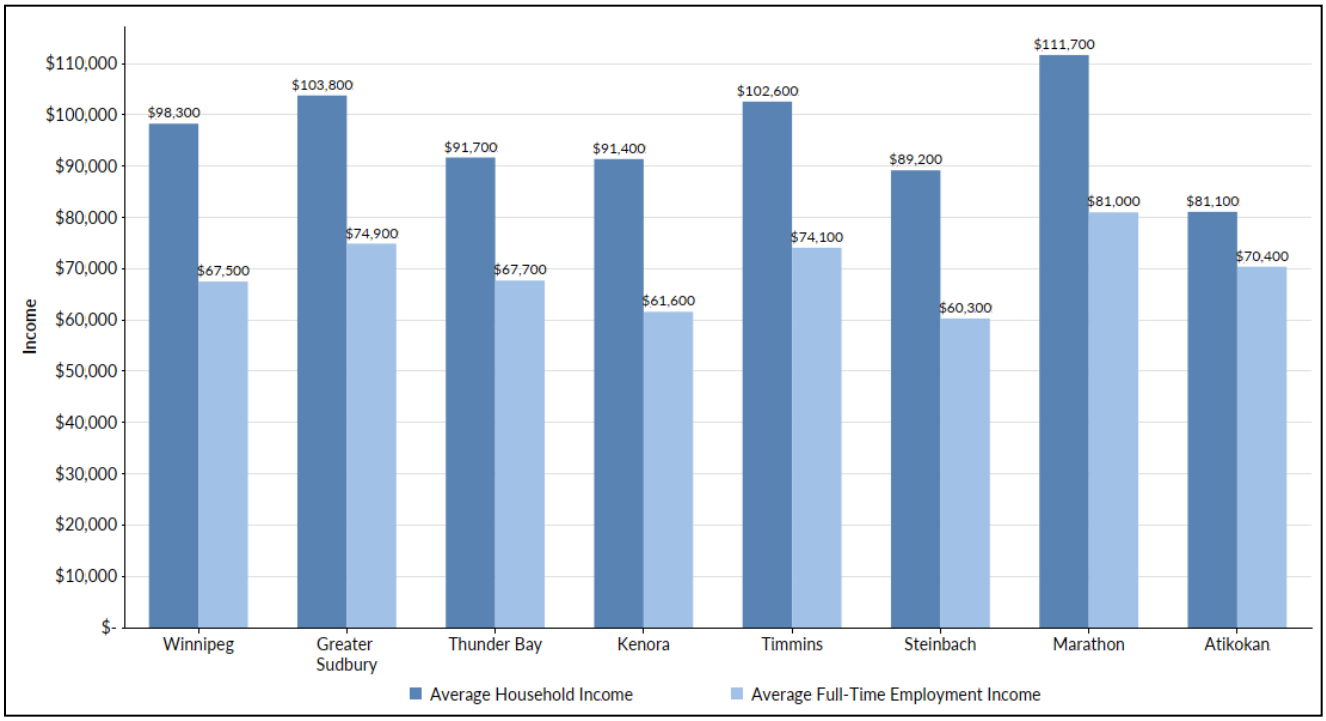
Figure 10 sets out average household income and average full-time employment income for the constituent municipalities and district of the Regional Study Area. Amongst the constituent municipalities and district, average household income ranges between roughly $81,000 to $112,000. Marathon has the highest average household income (approximately $112,000) followed by Greater Sudbury, Timmins and Winnipeg that occupy a range of $98,000 to $104,000. The next group of municipalities/district Thunder Bay, Kenora District, and Steinbach have average household incomes in the range of $89,000 to $92,000. Atikokan has the lowest average household income of approximately $81,000.

Based on several knowledge holder interviews we learned that skilled labour is often paid high salaries; with six figure incomes being the norm. While household income includes all income sources, from all residents in a household, individual employment income is limited to the earnings of a single worker from employment. With regards to average individual full-time employment income, the range amongst the constituent municipalities and district of the Regional Study Area is between approximately $81,000 to $60,000. Marathon has the highest average full-time employment income (approximately $81,000), Greater Sudbury, Timmins, Atikokan, Thunder Bay and Winnipeg average full-time employment income falls within the range of $67,000 to $75,000, and Kenora District and Steinbach have the lowest average

[19] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1

full-time employment income between $60,000 to $62,000. Key knowledge holder interviews indicated that skilled workers will relocate to wherever they can find the highest wages[20].

Figure 10 Regional Study Area Breakdown of Average Household Income and Average Full-Time Employment Income[21]



3.3 Local Study Area

The communities in the Local Study Area are all within the boundaries of the Regional Study Area and are set out in **Figure 2.** The Local Study Area communities are all generally within a one-hour drive time of the Revell DGR Project site**.** The Local Study Area has a fraction of the workforce that exists within the Regional Study Area. This workforce is concentrated in Dryden and Sioux Lookout. The Local Study Area faces the same paradox as the Regional Study Area, with unemployment in some communities running as high as 16 percent while many industries have high-paid, vacant positions to fill. The Local Study Area has a smaller quantity of workers in the occupations required for the Project, but these occupations are forecasted to grow faster than other occupations in the area.

Similar to the Regional Study Area, just under half of the working aged population in the Local Study Area have a post-secondary certificate, diploma or degree. The Construction industry employs just

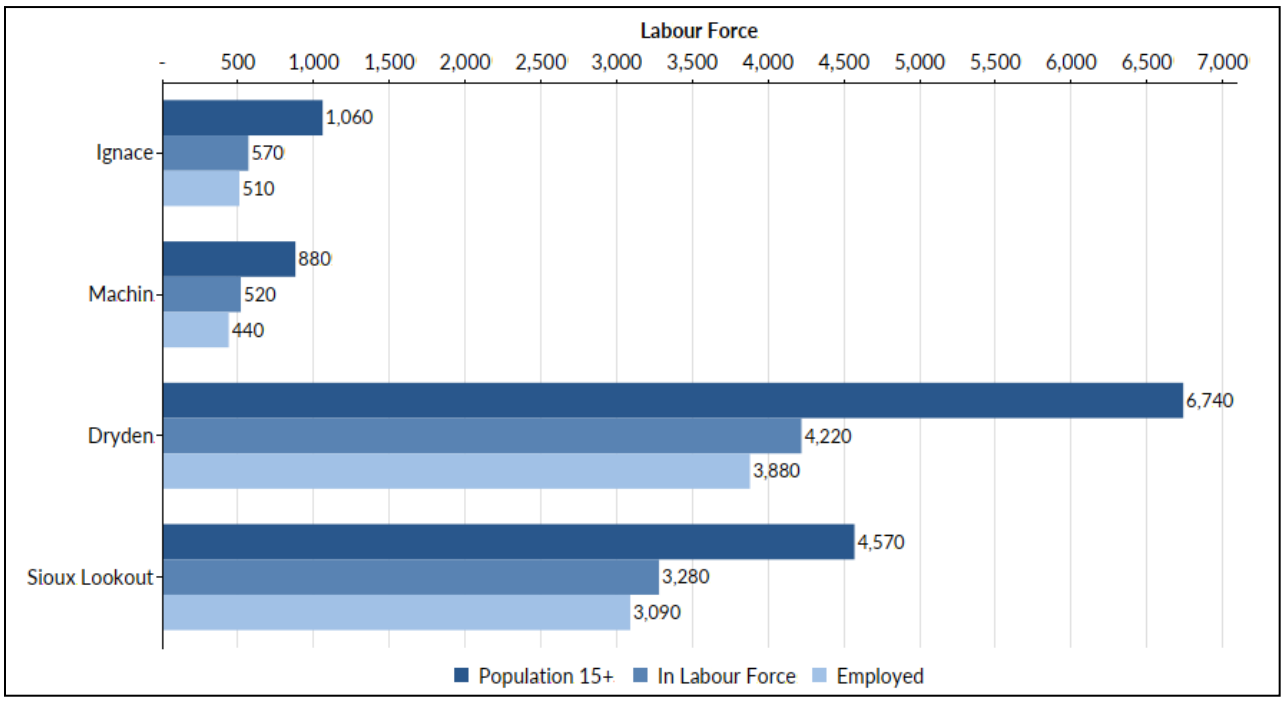
[20] Kenora District Municipal Association (2022, February 11). Knowledge Holder Interview. (Hardy Stevenson, Interviewer)
[21] Manifold Data Mining Inc. (2022). Retrieved January 1, 2022, from Manifold: https://app.polarisintelligence.com/profile/showreport?comparison_session=true&_locale=en&component_name=comparison_list

under 500 people and the Manufacturing industry employs just under 400. While the Forestry and Mining industries are not amongst the top 10 largest industries in the area, the vast majority (67 percent) of manufacturing jobs are associated with pulp and sawmill operations. Average annual employment incomes are slightly lower compared to the Regional Study Area and range from approximately $60,000 to $70,000 depending on the community. The Local Study Area has some labour with the characteristics required for the Project, but the supply is not sufficient to fulfill the Project labour requirements. It is likely that labour will need to come from outside the Local Study Area to fulfill the Project need.

3.3.1 Labour Force

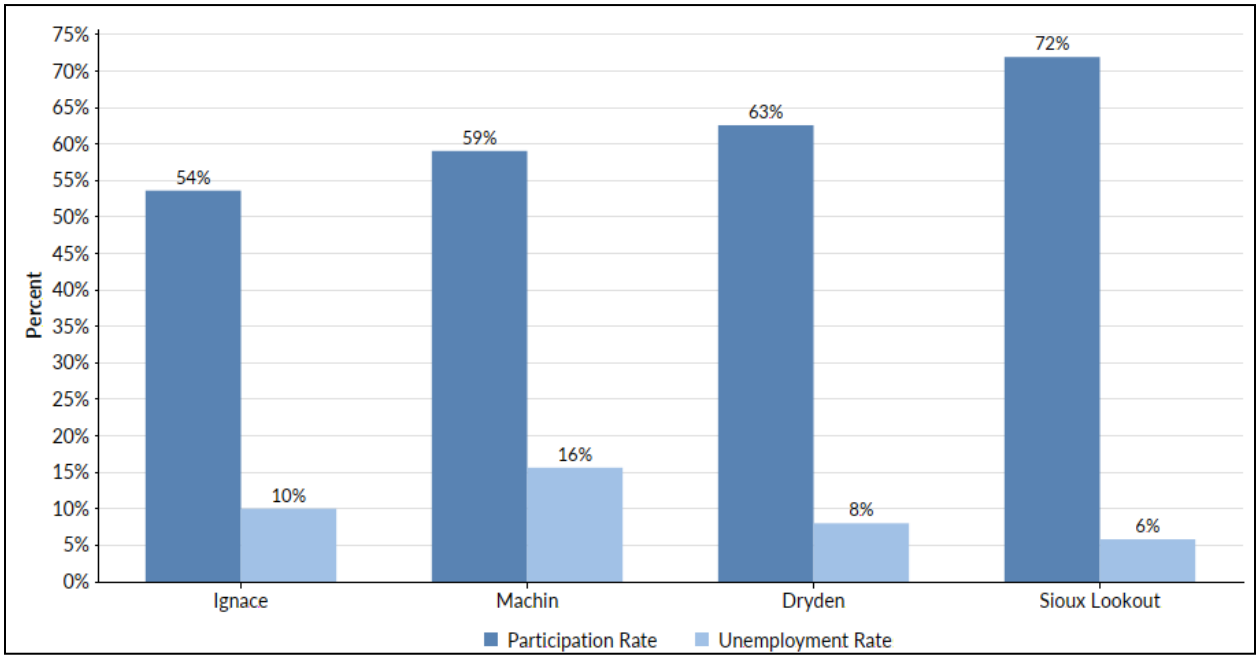
Manifold 2020 data reveals that the Local Study Area has a labour force population (age 15 years plus) of approximately 13,250. Persons active in the labour force total approximately 8,590 and those employed sum to 7,920. The overall labour force participation rate is in the order of 64.8 percent and the unemployment rate is about 7.8 percent. Dryden and Sioux Lookout have the largest concentration of labour in the Local Study Area and are therefore likely to contribute more labour to the Project in comparison to Ignace and Machin. **Figure 11** presents the labour force profile for the Local Study Area municipalities. **Figure 12** presents the participation and unemployment rates within the Local Study Area by municipality.

Figure 11 Local Study Area Labour Force Profile (2020)[22]



[22] Manifold Data Mining Inc. (2022). Retrieved January 1, 2022, from Manifold: https://app.polarisintelligence.com/profile/showreport?comparison_session=true&_locale=en&component_name=comparison_list

Figure 12 Local Study Area Participation and Unemployment Rate (2020)[23]



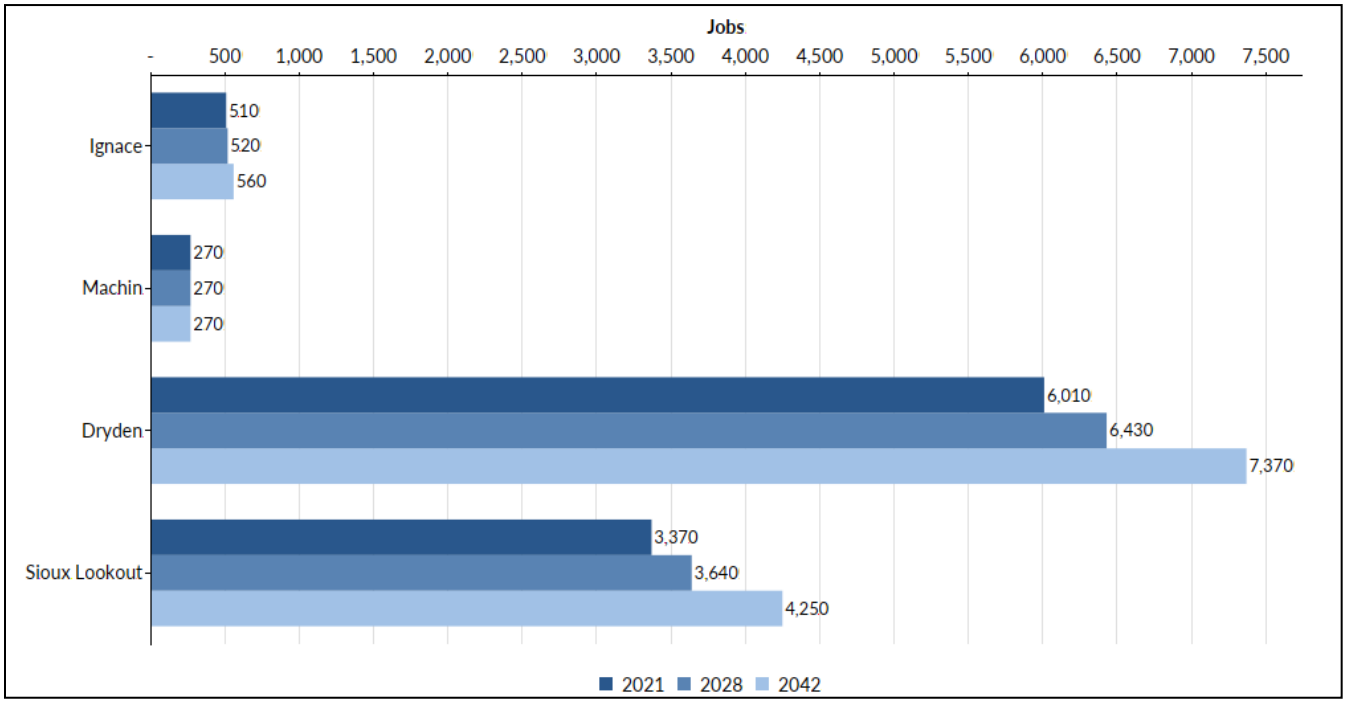
The aging demographic of Ignace is closely linked to its lower participation rate. Other factors that may be influencing the participation and unemployment rates in the Local Study Area include increases in enrollment in post-secondary education and natural business cycles. Ignace's labour force has always struggled as it is highly specialized to the mining and forestry industries[24]. Many businesses within the Local Study Area rely on income from tourism related activities which is cyclical. While unemployment ranges from six percent – 16 percent by community, the Local Study Area is also experiencing labour shortages in all areas, and within the skilled trades particularly.

Figure 13 sets out employment projections based on Emsi data for the Local Study Area communities. Between 2021 and 2042, jobs in the area are expected to grow by 22.5 percent from approximately 10,160 to 12,450. Dryden and Sioux Lookout account for 97.8 percent of the job growth and Ignace accounts for the balance. Zero job growth is projected in Machin.

[23] Manifold Data Mining Inc. (2022). Retrieved January 1, 2022, from Manifold: https://app.polarisintelligence.com/profile/showreport?comparison_session=true&_locale=en&component_name=comparison_list.

[24] Township of Ignace (2022, February 28). Knowledge Holder Interview. (Hardy Stevenson, Interviewer).

Figure 13 Local Study Area Jobs Growth (2021 – 2042)[25]



Nearly all the projected job growth between 2021 and 2042 in the Local Study Area is occurring in Dryden and Sioux Lookout. Dryden and Sioux Lookout are hubs in the Local Study Area with industries that support household spending, with larger population and labour bases well positioned to capture growth in the area. Job growth without the Project is projected to be very minimal between 2021 and 2042 for Ignace and Machin. The current distribution of labour and projected job growth suggest that Dryden and Sioux Lookout will be relatively well positioned in the Local Study Area to supply the Project with labour.

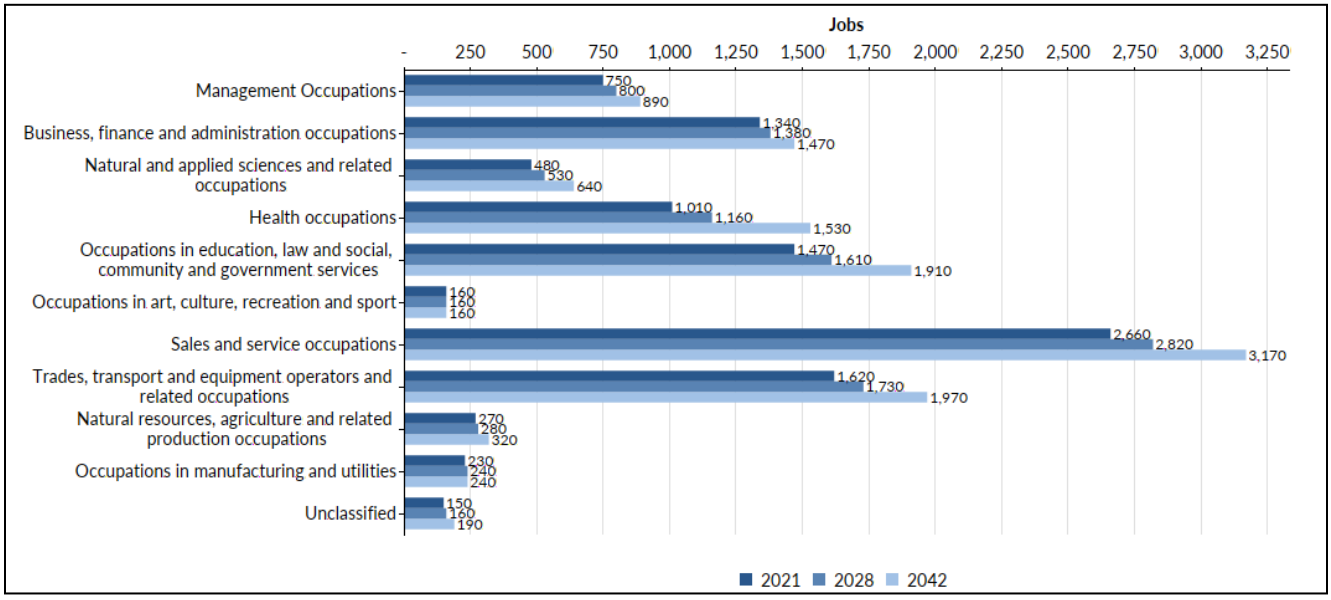
3.3.2 Occupations and Education

The Local Study Area has some skilled labour to supply the Project with a significant proportion of post-secondary graduates within Dryden and Sioux Lookout in particular. **Figure 14** sets out total jobs by occupational category in the Local Study Area. In 2021, the top occupations are sales and service occupations (2,660); trades, transport and equipment operators and related occupations (1,620); and occupations in education, law and social, community and government services (1,470). Occupations at the bottom of the spectrum include occupations in manufacturing (mostly pulp and sawmill operations) and utilities (230); occupations in art, culture, recreation and sport (11,190); and unclassified (150). In

[25] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1. Note: Projections were estimated using a compound annual growth rate between 2021 and 2028 projections.

2042, the top-ranking occupations are the same with more persons employed in each occupational category. The order of the bottom ranking occupations shifts with occupations in art, culture, recreation and sport ranking last with no growth in this occupational category. The trades, transport and equipment operators, and related occupations will be a valuable resource throughout all phases of the Project.

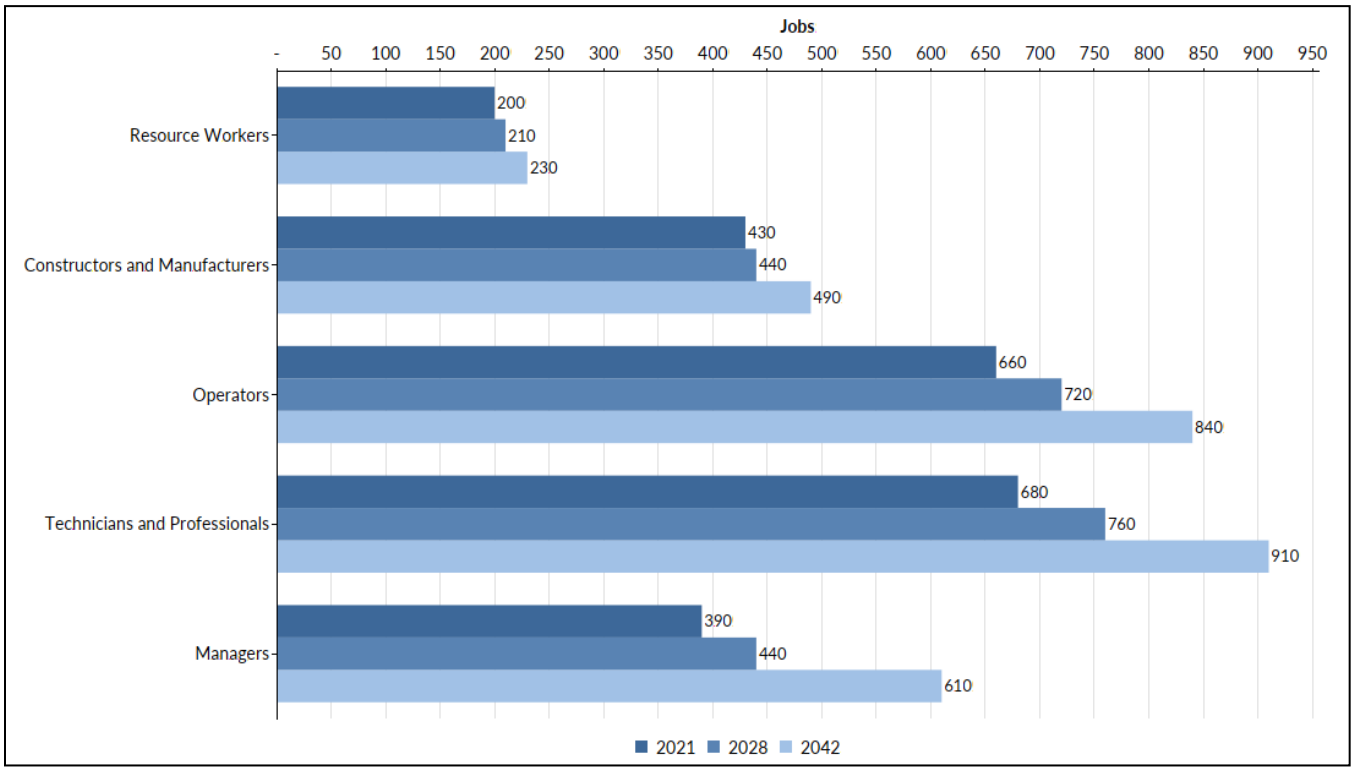
Figure 14 Local Study Area Jobs by Occupation (2021, 2028, 2042)[26]



The occupational groupings provided by NWMO, provide a high-level profile of the types of occupations that will characterize its workforce over the Project timeframe. **Figure 15** provides a summary breakdown of the presence of these occupational groups within the Local Study Area.

[26] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1. Note: Projections were estimated using a compound annual growth rate between 2021 and 2028 projections.

Figure 15 Local Study Area – Jobs in NWMO Denoted Current and Projected Occupational Categories (2021, 2028, 2042)[27]



In 2021, these occupational groupings sum to 2,360 which accounts for approximately 23 percent of the jobs in the Local Study Area. In 2042, these occupational groupings sum to 3,080 which accounts for a slight increase of approximately 24 percent of the area jobs. There are currently few people in the Local Study Area employed in the NWMO occupational categories of interest and this is not projected to change by the Construction or Operations phase of the Project. While there will be opportunities for labour in these occupational categories to meet the Project needs, the quantity of labour in these categories is relatively low compared to the Project requirement. This is an opportunity for growth since considerable labour for the APM Project will likely need to come from outside of the Local Study Area[28].

Table 7 provides an aggregated summary of the distribution of these occupations by constituent municipalities of the Local Study Area. In 2021, Dryden and Sioux Lookout account for approximately 90 percent of the total and Ignace and Machin make up the balance. The distribution of NWMO denoted occupations amongst the constituent municipalities remains virtually unchanged by 2042 where Dryden

[27] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1. Note: Projections were estimated using a compound annual growth rate between 2021 and 2028 projections.

[28] Intergroup Consultants Ltd. (2022). Ignace and Area Community Studies - Growing the Population. forthcoming.

and Sioux Lookout account for approximately 91 percent of the total and Ignace and Machin account for nine percent. The concentrations of the occupations required by the Project add further evidence to the relative strength of Dryden and Sioux Lookout as strong suppliers of labour to the Project within the Local Study Area.

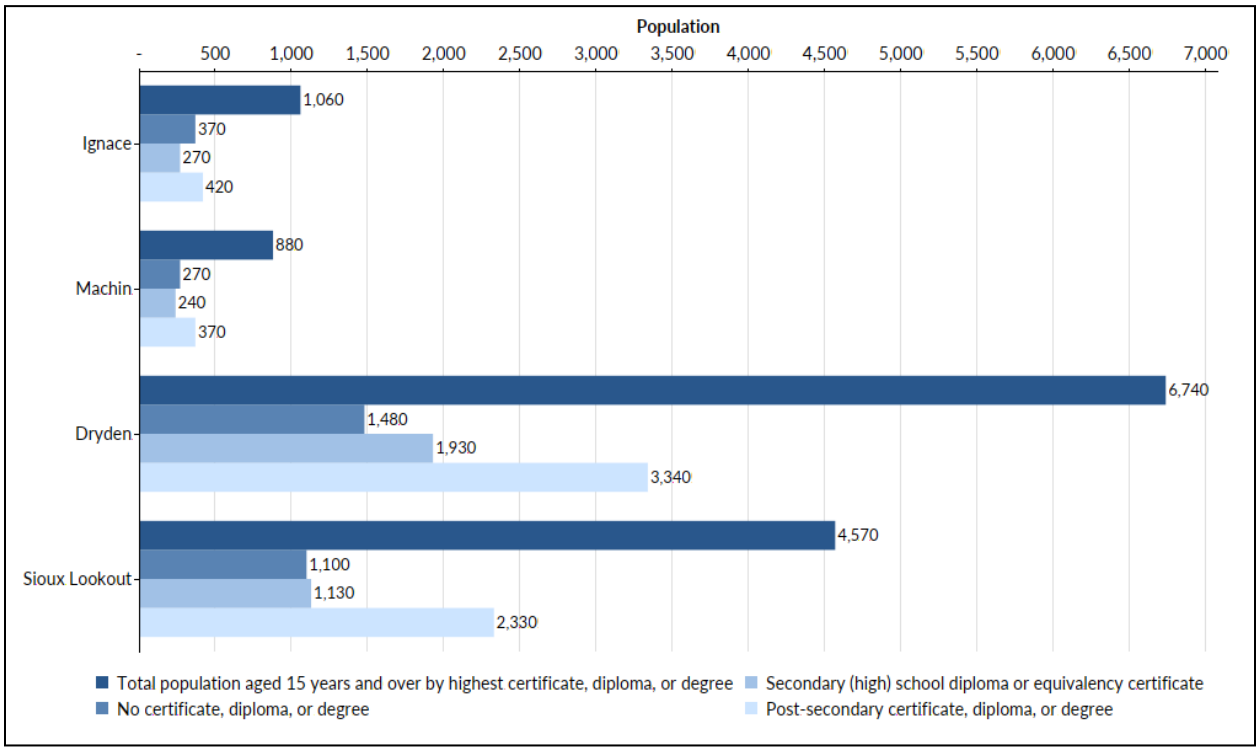
Table 7 Distribution of Jobs within Local Study Area for NWMO Denoted Occupational Categories (2021, 2028, 2042)[29]

	2021		2028		2042	
	Total Jobs	% Distribution	Total Jobs	% Distribution	Total Jobs	% Distribution
Ignace	130	5.5%	140	5.4%	150	4.9%
Machin	100	4.3%	110	4.3%	120	3.9%
Dryden	1,440	61.3%	1,580	61.5%	1,900	62.3%
Sioux Lookout	680	28.9%	740	28.8%	880	28.9%
Sum of Local Study Area	2,350	100.0%	2,570	100.0%	3,050	100.0%

Figure 16 sets out the total population (age 15+ years) by highest educational attainment for the constituent municipalities of the Local Study Area. The Local Study Area has a total population (age 15+ years) of approximately 13,240. Of this total, 3,220 (24.3 percent) have no certificate, diploma, or degree; 3,570 (27.0 percent) have secondary (high) school diploma or equivalency certificate; and 6,450 (48.7 percent) have a post-secondary certificate, diploma, or degree. Consistent with the Regional Study Area, half of the population (age 15+ years) has a post-secondary certificate, diploma, or degree required for some skilled positions.

[29] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1. Note: Projections were estimated using a compound annual growth rate between 2021 and 2028 projections.

Figure 16 Local Study Area- Population Aged 15 Years and Over by Highest Level of Educational Attainment (2020)[30]

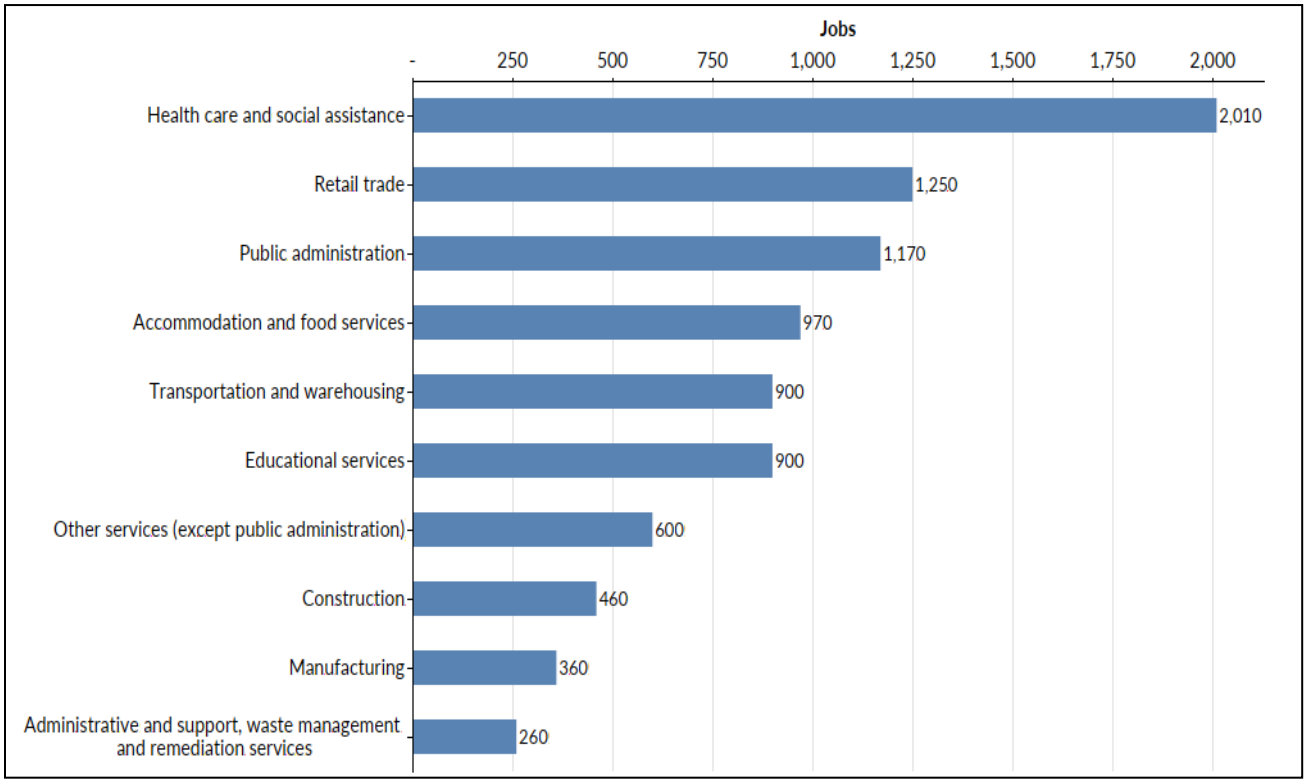


3.3.3 Industry Demand

Figure 17 sets out top 10 industry sectors in the Local Study Area based demand for employees. Health care tops the list, followed by retail trade and public administration. Accommodation and food services, transportation and warehousing, and educational services occupy the mid-range followed in the lower part of the spectrum by other services, construction, manufacturing (mostly pulp and sawmill operations) and administrative support, waste management and remediation services.

[30] Manifold Data Mining Inc. (2022). Retrieved January 1, 2022, from Manifold: https://app.polarisintelligence.com/profile/showreport?comparison_session=true&_locale=en&component_name=comparison_list

Figure 17 Local Study Area Top 10 Industry Sectors by Number of Jobs (2021)[31]



The Local Study Area is not a construction, resource, or trade leading area. While Forestry and Mining industries are not amongst the top 10 largest industries by jobs, most of the manufacturing jobs are associated with pulp and sawmills. Many of these industries struggle to acquire skilled labour to fill available positions. Several firms within the Local Study Area noted during key knowledge holder interviews that recruiting for skilled labour positions was difficult and they have resorted to bringing in labourers from Manitoba and Quebec.[32] The inability to fill gaps within the labour force, from entry level positions to engineering professionals has resulted in a number of businesses being forced to temporarily close due to the lack of available workers.[33]

3.3.4 Income

Figure 18 sets out average household income and individual average full-time employment income for the constituent municipalities of the Local Study Area. Amongst the constituent municipalities average household income ranges between roughly $82,000 to $109,000. Sioux Lookout has the highest average

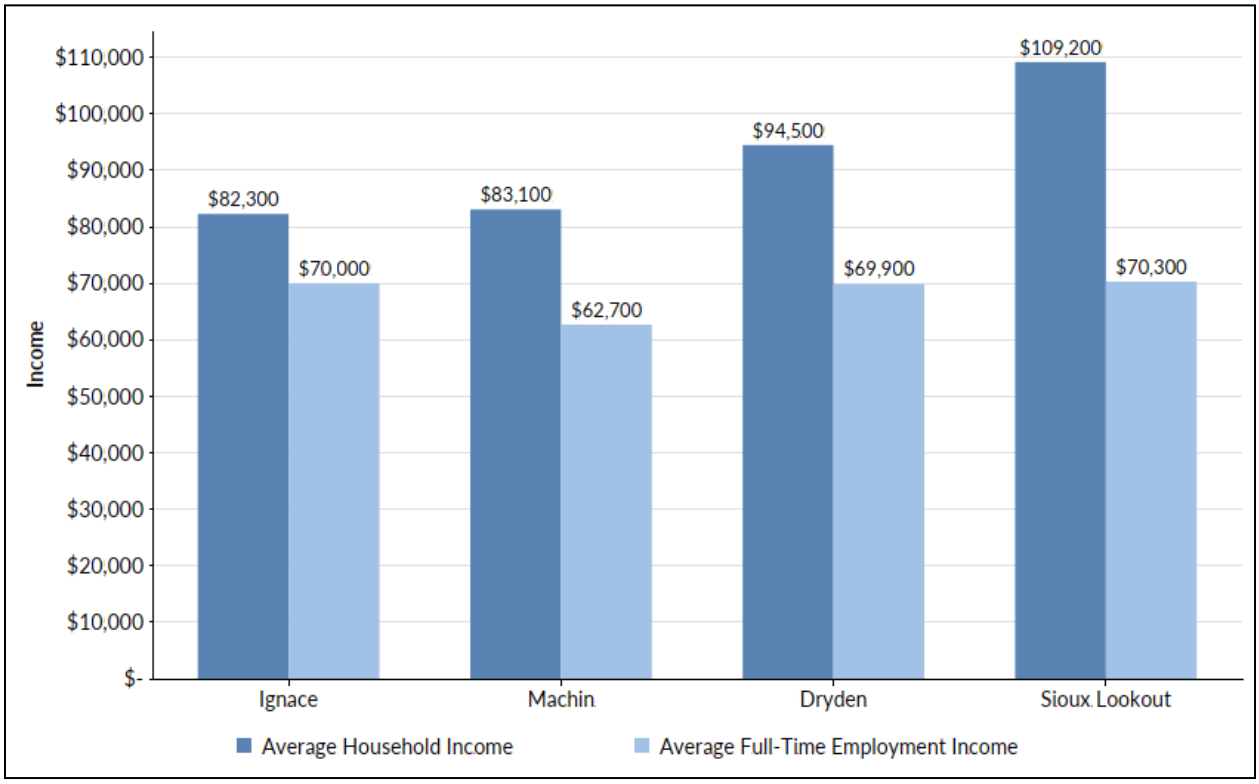
[31] Emsi. (2022). Retrieved January 12, 2022, from https://a.economicmodeling.com/analyst/?t=3dry2#h=Zn6MW&nation=ca&vertical=standard&page=home&halt=true&login=1

[32] Ricci's Trucking & Raleigh Falls Timber. (2022, February 7). Knowledge Holder Interview. (Hardy Stevenson, Interviewer)

[33] Northern Ontario Heritage Fund Corporation. (2022, January 28). Knowledge Holder Interview. Hardy Stevenson, Interviewer)

household income (approximately $109,000) followed by Dryden (approximately $95,000), Ignace and Machin occupy a range of $82,000 to $83,000. As a regional health centre, Sioux Lookout has a higher portion of medical salaried workers. Ignace household incomes are lower because the proportion of double household incomes is much higher in Sioux Lookout and Dryden. Ignace has fewer double-income households because it has a higher proportion of retirees. Similar to the Regional Study Area, labour in the Local Study Area is willing to change jobs for increases in pay.

Figure 18 Local Study Area Average Household Income and Average Full-Time Employment Income[34]



The difference in average household incomes for the Local Study Area communities is partially attributed to the difference in household size. The average household in Sioux Lookout is approximately 2.6 persons whereas in Ignace it is just two. Machin and Dryden both have an average of 2.2 persons per household (please refer to the Housing Study for further detail).

[34] Manifold Data Mining Inc. (2022). Retrieved January 1, 2022, from Manifold: https://app.polarisintelligence.com/profile/showreport?comparison_session=true&_locale=en&component_name=comparison_list

4.0 Conclusions and Observations

1. The labour force requirements of the APM Project occur in three waves.

    - Pre-construction 2024 to 2032: ~ 200 persons
    - Construction 2033 to 2042: ~ 640 persons
    - Operations 2043 to 2088 ~ 700 persons

2. During the pre-construction phase by 2028, approximately 200 NWMO staff comprised of persons relocating from Southern Ontario and new hires will perform their jobs at the on-site and off-site locations in the siting area.

3. In the second wave of the project which coincides with the construction phase, 10 additional NWMO staff and about 430 construction trades will be added to the Project workforce. Of the trades people, 300 will be involved in surface facility construction and 130 in below ground excavation activities.

4. In the third wave of the project, which coincides with operations, the Project labour force will be comprised of 630 NWMO staff and 70 trades. Of the latter, 10 workers will be involved in surface facility maintenance and 60 staff will continue excavation activities.

5. The labour pool in the Regional Study Area which includes the metropolitan areas of Winnipeg, Sudbury and Thunder Bay is large and multifaceted. It can meet most of the labour force requirements of the APM Project across all phases.

6. Stepping down to the Local Study Area the labour pool is dramatically smaller and although some Project workforce requirements can currently be met by this area it does not have the capacity to meet all the labour needs compared to the regional labour force.

7. Moreover, when considering the labour force supply capabilities of the Local Study Area not all constituent communities are equal. The main concentrations of labour are in Dryden and Sioux Lookout both now and in the projected baseline future to 2042.

8. Ignace currently has a labour pool that represents about 5 percent of the Local Study area and this share is projected to contract without new developments such as the APM Project. This baseline projection could dramatically change if the APM is located in the Ignace area. The Project would become a catalyst for a variety of changes beyond attracting a larger labour base to Ignace and area communities. The Workforce Development study addresses this impact.

9. Given the preceding, it seems fair to conclude that under current baseline circumstances only a small fraction of the Project labour force requirements can be met by Ignace. There is much better ability but still insufficient when considering the labour supply capabilities of Local Study Area as a whole. Only at the level of the Regional Study Area is there strong confidence that labour force requirements of the Project can be fully met.

Notwithstanding the above it also noteworthy to consider some of the issues and trends that interplay with these labour pools.

10. Within the Local Study Area there are several issues that impact employment potential, such as:
    - Attracting youth back to work in the area after they pursue post-secondary education.
    - Attracting young couples to work in the area given its remoteness and employment challenges for dual career households.
    - Addressing challenges around transportation and lack of opportunities in some communities regarding employment, business development, education and training.
    - Availability of suitable (i.e., quantity and types) housing in some locations.
    - The fact that people with the skills and experience needed by the Project are fully employed.

11. With respect to trends, labour force growth is expected across the Regional Study Area. Among the job categories of interest to NWMO this growth is projected to be approximately 12 percent between 2021 and 2042 (164,000 to 184,000). Looking at Project operations, the labour force requirement in 2043 represents 0.4 percent of the occupations of interest in the regional area.

12. However, the occupations of interest for the Project are also of strong interest to other sectors (i.e., mining and forestry) and therefore attracting and retaining these types of workers to the Project will likely involve competitive recruitment.

13. At the level of the Local Study Area given a much smaller labour pool, inter-industry sector competition for specific labour skillsets will become even more acute. For the Project, the construction phase and its need for trades is the stage most susceptible to these recruitment challenges.

14. However, this also presents an opportunity for inter-industry cooperation to jointly create and implement plans that enhance the local labour supply with new skills better equipped to leverage evolving opportunities like the APM Project. This is explored in greater detail in the Workforce Development study.

15. Given the fact that recruiting workers may be competitive with other sectors it is important to look for potential advantages. To this end the labour requirements of the Project can be differentiated from the labour needs of resource industries as APM Project jobs will be stable and long term. Knowledge holders stated that the permanent long-term nature of APM Project jobs is likely to attract new workers from outside the area with associated implications for growth, economic and workforce development.

16. Based on all of the preceding in this section it can be concluded that the labour supply at the regional level is currently sufficient to meet the needs of the APM Project across its various phases. Although the Local Study Area can supply some of the labour needs of the Project it cannot meet all the requirements and the shortfall is quite acute for Ignace itself. To meet the labour needs of the Project workers will need to be recruited to the area on either a permanent or traveler basis. Permanent residency is more likely during operations whereas traveler residency

is more probable during construction. This is an opportunity for Ignace and area communities to meet growth objectives, as described in other studies.

The reader is encouraged to review this labour baseline study in conjunction with other key studies (i.e., Growing the Population, Workforce Development, Housing and Economic Development) to appreciate the full suite of interrelated implications for Ignace and area communities.

5.0 Gaps and Challenges

The analysis of the impact of the Project, including "Gaps and challenges" identified as Step 2 of the Ignace Community Studies Economics and Finance Workplan for the Labour Baseline are fully addressed in the Northwest Community Studies Workforce Development Study. The analysis of the impact of the Project in the Workforce Development Study overlays the Project demand for labour on the existing labour demands and identifies the related opportunities, gaps and challenges. The "Northwest Community Studies Workforce Development Study's Section 4 Change Analysis" assesses the impact of the Project's labour to existing baseline labour conditions. This section of the Workforce Development report, identifies in detail the challenges and opportunities related to the Project's impacts on labour.

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Appendices

Appendix A - List of Community Studies

Study Name	Study Proponent	Lead Consultant
Community and Culture	NWMO	InterGroup Consultants Ltd and Scatliff+Miller+Murray
Local and Regional Economics and Finance	NWMO	Hardy Stevenson and Associates Limited
People and Health	NWMO	InterGroup Consultants Ltd
Infrastructure	Township of Ignace	WSP
Tourism	Township of Ignace	Urban Systems

Appendix B - Key Knowledge Holders

Interviewee	Organization
Executive Director	Northwest Training and Adjustment Board
Manager	Northwest Business Centre
Executive Officer	Thunder Bay Home Builders Association
Northern Development Advisor	Northern Ontario Heritage Fund Corporation
Initiatives Officer	FedNor
Economic Development Officer	Township of Machin
Owner/Operator	Sunset Carpentry
HR	Treasury Metals
Program Manager	Crossroads Employment & Training Centre
Executive Director	Sioux Lookout Mining Centre of Excellence
Owner/Operator	Ricci Trucking/Raleigh Falls Timber
Principal	KPDSB - Ignace/Upsala Schools
Executive Director	Thunder Bay Chamber of Commerce
MGR Planning & Development	Township of Ignace
Mayor and KDMA President	Township of Ear Falls
EDO	City of Dryden
CAO	Township of Sioux Lookout
CAO	Township of Atikokan
Mill Manager	Ignace Sawmill - Resolute
Treasurer	Township of Ignace
IABA	Ignace
Executive Director	PACE - Dryden
Manager	Nexus/Alterna Credit Union - Ignace
Manager	Dryden Regional Airport/Loomex
EDO	City of Kenora
Director	Hoshizaki House Dryden District Crisis Shelter
Regional Public Affairs Manager	Domtar Mill, Dryden
CEO	KDSB - Dryden

Appendix C - Occupational Categories

Management Occupations	Managers in agriculture
	Legislators
	Senior government managers and officials
	Senior managers - financial, communications and other business services
	Senior managers - health, education, social and community services and membership organizations
	Senior managers - trade, broadcasting and other services, n.e.c.
	Senior managers - construction, transportation, production and utilities
	Financial managers
	Human resources managers
	Purchasing managers
	Other administrative services managers
	Insurance, real estate and financial brokerage managers
	Banking, credit and other investment managers
	Advertising, marketing and public relations managers
	Other business services managers
	Telecommunication carriers managers
	Postal and courier services managers
	Engineering managers
	Architecture and science managers
	Computer and information systems managers
	Managers in health care
	Government managers - health and social policy development and program administration
	Government managers - economic analysis, policy development and program administration
	Government managers - education policy development and program administration
	Other managers in public administration
	Administrators - post-secondary education and vocational training
	School principals and administrators of elementary and secondary education
	Managers in social, community and correctional services
	Commissioned police officers
	Fire chiefs and senior firefighting officers
	Commissioned officers of the Canadian Armed Forces
	Library, archive, museum and art gallery managers
	Managers - publishing, motion pictures, broadcasting and performing arts
	Recreation, sports and fitness program and service directors
	Corporate sales managers
	Retail and wholesale trade managers
	Restaurant and food service managers
	Accommodation service managers
	Managers in customer and personal services, n.e.c.
	Construction managers

	Home building and renovation managers
	Facility operation and maintenance managers
	Managers in transportation
	Managers in natural resources production and fishing
	Managers in horticulture
	Managers in aquaculture
	Manufacturing managers
	Utilities managers
Unclassified	Unclassified
Business, Finance, and Administration Occupations	Financial auditors and accountants
	Financial and investment analysts
	Securities agents, investment dealers and brokers
	Other financial officers
	Human resources professionals
	Professional occupations in business management consulting
	Professional occupations in advertising, marketing and public relations
	Supervisors, general office and administrative support workers
	Supervisors, finance and insurance office workers
	Supervisors, library, correspondence and related information workers
	Supervisors, mail and message distribution occupations
	Supervisors, supply chain, tracking and scheduling co-ordination occupations
	Administrative officers
	Executive assistants
	Human resources and recruitment officers
	Property administrators
	Purchasing agents and officers
	Conference and event planners
	Court officers and justices of the peace
	Employment insurance, immigration, border services and revenue officers
	Administrative assistants
	Legal administrative assistants
	Medical administrative assistants
	Court reporters, medical transcriptionists and related occupations
	Health information management occupations
	Records management technicians
	Statistical officers and related research support occupations
	Accounting technicians and bookkeepers
	Insurance adjusters and claims examiners
	Insurance underwriters
	Assessors, valuators and appraisers
	Customs, ship and other brokers
	General office support workers

	Receptionists
	Personnel clerks
	Court clerks
	Data entry clerks
	Desktop publishing operators and related occupations
	Accounting and related clerks
	Payroll administrators
	Banking, insurance and other financial clerks
	Collectors
	Library assistants and clerks
	Correspondence, publication and regulatory clerks
	Survey interviewers and statistical clerks
	Mail, postal and related workers
	Letter carriers
	Couriers, messengers and door-to-door distributors
	Shippers and receivers
	Storekeepers and partspersons
	Production logistics co-ordinators
	Purchasing and inventory control workers
	Dispatchers
	Transportation route and crew schedulers
Natural and Applied Science and Related Occupations	Physicists and astronomers
	Chemists
	Geoscientists and oceanographers
	Meteorologists and climatologists
	Other professional occupations in physical sciences
	Biologists and related scientists
	Forestry professionals
	Agricultural representatives, consultants and specialists
	Civil engineers
	Mechanical engineers
	Electrical and electronics engineers
	Chemical engineers
	Industrial and manufacturing engineers
	Metallurgical and materials engineers
	Mining engineers
	Geological engineers
	Petroleum engineers
	Aerospace engineers
	Computer engineers (except software engineers and designers)
	Other professional engineers, n.e.c.
	Architects

	Landscape architects
	Urban and land use planners
	Land surveyors
	Mathematicians, statisticians and actuaries
	Information systems analysts and consultants
	Database analysts and data administrators
	Software engineers and designers
	Computer programmers and interactive media developers
	Web designers and developers
	Chemical technologists and technicians
	Geological and mineral technologists and technicians
	Biological technologists and technicians
	Agricultural and fish products inspectors
	Forestry technologists and technicians
	Conservation and fishery officers
	Landscape and horticulture technicians and specialists
	Civil engineering technologists and technicians
	Mechanical engineering technologists and technicians
	Industrial engineering and manufacturing technologists and technicians
	Construction estimators
	Electrical and electronics engineering technologists and technicians
	Electronic service technicians (household and business equipment)
	Industrial instrument technicians and mechanics
	Aircraft instrument, electrical and avionics mechanics, technicians and inspectors
	Architectural technologists and technicians
	Industrial designers
	Drafting technologists and technicians
	Land survey technologists and technicians
	Technical occupations in geomatics and meteorology
	Non-destructive testers and inspection technicians
	Engineering inspectors and regulatory officers
	Inspectors in public and environmental health and occupational health and safety
	Construction inspectors
	Air pilots, flight engineers and flying instructors
	Air traffic controllers and related occupations
	Deck officers, water transport
	Engineer officers, water transport
	Railway traffic controllers and marine traffic regulators
	Computer network technicians
	User support technicians
	Information systems testing technicians

Health Occupations	Nursing co-ordinators and supervisors
	Registered nurses and registered psychiatric nurses
	Specialist physicians
	General practitioners and family physicians
	Dentists
	Veterinarians
	Optometrists
	Chiropractors
	Allied primary health practitioners
	Other professional occupations in health diagnosing and treating
	Pharmacists
	Dietitians and nutritionists
	Audiologists and speech-language pathologists
	Physiotherapists
	Occupational therapists
	Other professional occupations in therapy and assessment
	Medical laboratory technologists
	Medical laboratory technicians and pathologists' assistants
	Animal health technologists and veterinary technicians
	Respiratory therapists, clinical perfusionists and cardiopulmonary technologists
	Medical radiation technologists
	Medical sonographers
	Cardiology technologists and electrophysiological diagnostic technologists, n.e.c.
	Other medical technologists and technicians (except dental health)
	Denturists
	Dental hygienists and dental therapists
	Dental technologists, technicians and laboratory assistants
	Opticians
	Practitioners of natural healing
	Licensed practical nurses
	Paramedical occupations
	Massage therapists
	Other technical occupations in therapy and assessment
	Dental assistants
	Nurse aides, orderlies and patient service associates
	Other assisting occupations in support of health services
Occupations in Education, Law and Social, Community and Government Services	University professors and lecturers
	Post-secondary teaching and research assistants
	College and other vocational instructors
	Secondary and elementary school teachers and educational counsellors, n.e.c.
	Secondary school teachers
	Elementary school and kindergarten teachers

	Educational counsellors
	Judges
	Lawyers and Quebec notaries
	Psychologists
	Social workers
	Family, marriage and other related counsellors
	Professional occupations in religion
	Probation and parole officers and related occupations
	Employment counsellors
	Natural and applied science policy researchers, consultants and program officers
	Economists and economic policy researchers and analysts
	Business development officers and marketing researchers and consultants
	Social policy researchers, consultants and program officers
	Health policy researchers, consultants and program officers
	Education policy researchers, consultants and program officers
	Recreation, sports and fitness policy researchers, consultants and program officers
	Program officers unique to government
	Other professional occupations in social science, n.e.c.
	Paralegal and related occupations
	Social and community service workers
	Early childhood educators and assistants
	Instructors of persons with disabilities
	Other instructors
	Other religious occupations
	Police officers (except commissioned)
	Firefighters
	Non-commissioned ranks of the Canadian Armed Forces
	Home child care providers
	Home support workers, housekeepers and related occupations
	Elementary and secondary school teacher assistants
	Sheriffs and bailiffs
	Correctional service officers
	By-law enforcement and other regulatory officers, n.e.c.
Occupations in Art, Culture, Recreations and Sport	Librarians
	Conservators and curators
	Archivists
	Authors and writers
	Editors
	Journalists
	Translators, terminologists and interpreters
	Producers, directors, choreographers and related occupations
	Conductors, composers and arrangers

	Musicians and singers
	Dancers
	Actors and comedians
	Painters, sculptors and other visual artists
	Library and public archive technicians
	Technical occupations related to museums and art galleries
	Photographers
	Film and video camera operators
	Graphic arts technicians
	Broadcast technicians
	Audio and video recording technicians
	Other technical and co-ordinating occupations in motion pictures, broadcasting and the performing arts
	Support occupations in motion pictures, broadcasting, photography and the performing arts
	Announcers and other broadcasters
	Other performers, n.e.c.
	Graphic designers and illustrators
	Interior designers and interior decorators
	Theatre, fashion, exhibit and other creative designers
	Artisans and craftspersons
	Patternmakers - textile, leather and fur products
	Athletes
	Coaches
	Sports officials and referees
	Program leaders and instructors in recreation, sport and fitness
Sales and Service Occupations	Retail sales supervisors
	Technical sales specialists - wholesale trade
	Retail and wholesale buyers
	Insurance agents and brokers
	Real estate agents and salespersons
	Financial sales representatives
	Food service supervisors
	Executive housekeepers
	Accommodation, travel, tourism and related services supervisors
	Customer and information services supervisors
	Cleaning supervisors
	Other services supervisors
	Chefs
	Cooks
	Butchers, meat cutters and fishmongers - retail and wholesale
	Bakers
	Hairstylists and barbers

	Tailors, dressmakers, furriers and milliners
	Shoe repairers and shoemakers
	Jewellers, jewellery and watch repairers and related occupations
	Upholsterers
	Funeral directors and embalmers
	Sales and account representatives - wholesale trade (non-technical)
	Retail salespersons
	Maîtres d'hôtel and hosts/hostesses
	Bartenders
	Food and beverage servers
	Travel counsellors
	Pursers and flight attendants
	Airline ticket and service agents
	Ground and water transport ticket agents, cargo service representatives and related clerks
	Hotel front desk clerks
	Tour and travel guides
	Outdoor sport and recreational guides
	Casino occupations
	Security guards and related security service occupations
	Customer services representatives - financial institutions
	Other customer and information services representatives
	Image, social and other personal consultants
	Estheticians, electrologists and related occupations
	Pet groomers and animal care workers
	Other personal service occupations
	Cashiers
	Service station attendants
	Store shelf stockers, clerks and order fillers
	Other sales related occupations
	Food counter attendants, kitchen helpers and related support occupations
	Support occupations in accommodation, travel and facilities set-up services
	Operators and attendants in amusement, recreation and sport
	Light duty cleaners
	Specialized cleaners
	Janitors, caretakers and building superintendents
	Dry cleaning, laundry and related occupations
	Other service support occupations, n.e.c.
Trades, Transport, and Equipment Operators and Related Occupations	Contractors and supervisors, machining, metal forming, shaping and erecting trades and related occupations
	Contractors and supervisors, electrical trades and telecommunications occupations
	Contractors and supervisors, pipefitting trades
	Contractors and supervisors, carpentry trades

	Contractors and supervisors, other construction trades, installers, repairers and servicers
	Machinists and machining and tooling inspectors
	Tool and die makers
	Sheet metal workers
	Boilermakers
	Structural metal and platework fabricators and fitters
	Ironworkers
	Welders and related machine operators
	Electricians (except industrial and power system)
	Industrial electricians
	Power system electricians
	Electrical power line and cable workers
	Telecommunications line and cable workers
	Telecommunications installation and repair workers
	Cable television service and maintenance technicians
	Plumbers
	Steamfitters, pipefitters and sprinkler system installers
	Gas fitters
	Carpenters
	Cabinetmakers
	Bricklayers
	Concrete finishers
	Tilesetters
	Plasterers, drywall installers and finishers and lathers
	Roofers and shinglers
	Glaziers
	Insulators
	Painters and decorators (except interior decorators)
	Floor covering installers
	Contractors and supervisors, mechanic trades
	Contractors and supervisors, heavy equipment operator crews
	Supervisors, printing and related occupations
	Supervisors, railway transport operations
	Supervisors, motor transport and other ground transit operators
	Construction millwrights and industrial mechanics
	Heavy-duty equipment mechanics
	Heating, refrigeration and air conditioning mechanics
	Railway carmen/women
	Aircraft mechanics and aircraft inspectors
	Machine fitters
	Elevator constructors and mechanics

	Automotive service technicians, truck and bus mechanics and mechanical repairers
	Motor vehicle body repairers
	Oil and solid fuel heating mechanics
	Appliance servicers and repairers
	Electrical mechanics
	Motorcycle, all-terrain vehicle and other related mechanics
	Other small engine and small equipment repairers
	Railway and yard locomotive engineers
	Railway conductors and brakemen/women
	Crane operators
	Drillers and blasters - surface mining, quarrying and construction
	Water well drillers
	Printing press operators
	Other trades and related occupations, n.e.c.
	Residential and commercial installers and servicers
	Waterworks and gas maintenance workers
	Pest controllers and fumigators
	Other repairers and servicers
	Longshore workers
	Material handlers
	Transport truck drivers
	Bus drivers, subway operators and other transit operators
	Taxi and limousine drivers and chauffeurs
	Delivery and courier service drivers
	Heavy equipment operators (except crane)
	Public works maintenance equipment operators and related workers
	Railway yard and track maintenance workers
	Water transport deck and engine room crew
	Boat and cable ferry operators and related occupations
	Air transport ramp attendants
	Other automotive mechanical installers and servicers
	Construction trades helpers and labourers
	Other trades helpers and labourers
	Public works and maintenance labourers
	Railway and motor transport labourers
Natural Resources, Agriculture and Related Production Occupations	Supervisors, logging and forestry
	Supervisors, mining and quarrying
	Contractors and supervisors, oil and gas drilling and services
	Underground production and development miners
	Oil and gas well drillers, servicers, testers and related workers
	Logging machinery operators

	Agricultural service contractors, farm supervisors and specialized livestock workers
	Contractors and supervisors, landscaping, grounds maintenance and horticulture services
	Fishing masters and officers
	Fishermen/women
	Underground mine service and support workers
	Oil and gas well drilling and related workers and services operators
	Chain saw and skidder operators
	Silviculture and forestry workers
	General farm workers
	Nursery and greenhouse workers
	Fishing vessel deckhands
	Trappers and hunters
	Harvesting labourers
	Landscaping and grounds maintenance labourers
	Aquaculture and marine harvest labourers
	Mine labourers
	Oil and gas drilling, servicing and related labourers
	Logging and forestry labourers
Occupations in Manufacturing and Utilities	Supervisors, mineral and metal processing
	Supervisors, petroleum, gas and chemical processing and utilities
	Supervisors, food and beverage processing
	Supervisors, plastic and rubber products manufacturing
	Supervisors, forest products processing
	Supervisors, textile, fabric, fur and leather products processing and manufacturing
	Supervisors, motor vehicle assembling
	Supervisors, electronics manufacturing
	Supervisors, electrical products manufacturing
	Supervisors, furniture and fixtures manufacturing
	Supervisors, other mechanical and metal products manufacturing
	Supervisors, other products manufacturing and assembly
	Central control and process operators, mineral and metal processing
	Central control and process operators, petroleum, gas and chemical processing
	Pulping, papermaking and coating control operators
	Power engineers and power systems operators
	Water and waste treatment plant operators
	Machine operators, mineral and metal processing
	Foundry workers
	Glass forming and finishing machine operators and glass cutters
	Concrete, clay and stone forming operators
	Inspectors and testers, mineral and metal processing
	Metalworking and forging machine operators

	Machining tool operators
	Other metal products machine operators
	Chemical plant machine operators
	Plastics processing machine operators
	Rubber processing machine operators and related workers
	Sawmill machine operators
	Pulp mill machine operators
	Papermaking and finishing machine operators
	Other wood processing machine operators
	Paper converting machine operators
	Lumber graders and other wood processing inspectors and graders
	Woodworking machine operators
	Textile fibre and yarn, hide and pelt processing machine operators and workers
	Weavers, knitters and other fabric making occupations
	Fabric, fur and leather cutters
	Industrial sewing machine operators
	Inspectors and graders, textile, fabric, fur and leather products manufacturing
	Process control and machine operators, food and beverage processing
	Industrial butchers and meat cutters, poultry preparers and related workers
	Fish and seafood plant workers
	Testers and graders, food and beverage processing
	Plateless printing equipment operators
	Camera, platemaking and other prepress occupations
	Binding and finishing machine operators
	Photographic and film processors
	Aircraft assemblers and aircraft assembly inspectors
	Motor vehicle assemblers, inspectors and testers
	Electronics assemblers, fabricators, inspectors and testers
	Assemblers and inspectors, electrical appliance, apparatus and equipment manufacturing
	Assemblers, fabricators and inspectors, industrial electrical motors and transformers
	Mechanical assemblers and inspectors
	Machine operators and inspectors, electrical apparatus manufacturing
	Boat assemblers and inspectors
	Furniture and fixture assemblers and inspectors
	Other wood products assemblers and inspectors
	Furniture finishers and refinishers
	Plastic products assemblers, finishers and inspectors
	Industrial painters, coaters and metal finishing process operators
	Other products assemblers, finishers and inspectors
	Labourers in mineral and metal processing
	Labourers in metal fabrication

	Labourers in chemical products processing and utilities
	Labourers in wood, pulp and paper processing
	Labourers in rubber and plastic products manufacturing
	Labourers in textile processing
	Labourers in food and beverage processing
	Labourers in fish and seafood processing
	Other labourers in processing, manufacturing and utilities

Appendix D - Glossary

Term	Definition
Adaptative management	Adaptive management is defined consistent with the CNSC's definition of adaptive management (REGDOC-3.6): A planned and systematic process for continuously improving management practices (primarily environmental) by learning from their outcomes. For an environmental assessment it involves, among other things, the implementation of new or modified mitigation measures over the life of the Project to address unanticipated environmental effects. Note: the need to implement adaptive management measures may be determined through an effective follow-up program.
Adaptive Phased Management (APM) Project	The Deep Geological Repository and other required infrastructure for the safe, long-term management of Canada's used nuclear fuel.
Community	The use of the term 'community' (a group of people living either in the same place or having a particular characteristic in common) will be qualified to specify the specific community of reference.
Community Studies Purpose	Community studies will inform the primary APM Project hosting agreement between the NWMO and the Township of Ignace. In addition, they will provide pertinent information for agreements with the City of Dryden as well as other potential regional agreements.
Ignace Area	Delineates the general area surrounding the potential APM Project location Deep Geological Repository in Northwestern Ontario; mainly comprising of City of Dryden, Machin, the Local Service Board of Wabigoon, the Local Service Board of Melgund (Dyment and Borups Corner), and Sioux Lookout. The area is located in Treaty #3 within the traditional territories of multiple Indigenous and Métis communities.
Ignace and Area Working Group	The Township of Ignace and the NWMO have established a working group inclusive of the Township of Ignace, Wabigoon Lake Ojibway Nation, and other Indigenous and non-Indigenous local and regional community members and observers to collaboratively design and implement baseline and community studies to provide a basis for achieving informed decision making related to the APM Project.

Term	Definition
Local Study Area	The Local Study Area refers to the communities/areas most likely to experience future direct, indirect, and induced impacts of the APM Project - both positive and negative. For the purposes of the baseline studies, the potential "host" community (i.e., Ignace) is considered central to the Local Study Area, while other communities may be included on a topic-by-topic basis relative to potential future impacts and cumulative impacts. The Local Study Area will vary by baseline component/study as well as phase of the Project. For example, for workforce the Local Study Area includes communities that can commute to the Revell Site or the Centre of Expertise within an hour drive. This means that Ignace, Dryden, Sioux Lookout (for the Revell Site) and Machin (for the Revell Site) and unincorporated municipalities constitute the primary Local Study Area (micro labour-shed). This micro labour-shed includes settlement areas (unincorporated communities) between Dryden, Ignace, and Sioux Lookout. The preliminary spatial boundaries are as follows: • Ignace; • Dryden; • Machin; • Sioux Lookout; • The Local Service Board of Melgund; and • The Local Service Board of Wabigoon.
Neighboring Community	Communities in Northwestern Ontario surrounding the Project or included in both Local and Regional Study Areas (i.e., Dryden, Sioux Lookout, Machin, and unincorporated municipalities).
Neighboring Community Leadership	For the purpose of engagement on draft materials, neighboring community leadership in this context refers to municipal administrative leadership inclusive of the Local Service Board of Wabigoon, the Local Service Board of Melgund, etc.
Potential Municipal Host Communities	Two municipal siting communities remain in the process. These are the Township of Ignace and the Municipality of South Bruce. Ignace has participated in the NWMO's site selection process since initiation in 2010.
Project Site	Used to describe the location of the primary APM infrastructure including the Deep Geological Repository, and ancillary infrastructure to support operations.

Term	Definition
Regional Study Area	The Regional Study Area refers to the area used to provide context for each component and may also experience future impacts of the APM Project (both positive and negative). During the future impact assessment, cumulative effects will be considered within the Regional Study Area. The Regional Study Area will also vary by baseline component/study as well as phase of the Project. In some instances, the regional boundaries are either narrowly defined by the area within the Kenora District or more broad in scope such as the labour baseline for example: • Atikokan; • Kenora; • Thunder Bay; • Steinbach; and • Winnipeg.
Revell Site	Revell Batholith Temporary Withdrawal Area.
Rights Holders	First Nation and Métis communities who have asserted and or hold recognized treaty and/or Indigenous rights and whose Traditional Territories include the Project site.
Siting Area	In the context of the Community Studies for Northwestern Ontario, 'siting area' refers to the Ignace Siting Area defined above for 'Ignace Area'.
South Bruce Area	Delineates the general area surrounding the potential APM Project location in southwestern Ontario; mainly comprising Bruce County (excluding the South Bruce Peninsula) and northern portions of Huron County, but not extending to the shores of Lake Huron. The area is located in Treaty #45 1/2 in the traditional territory of the Saugeen Ojibway Nation as well as the asserted traditional territories of Métis communities.
Spatial Boundaries as defined in Baseline Design Report	Spatial boundaries vary by topic and will be refined over the course of engagement. It is anticipated spatial boundaries will reflect inputs from local governments, the public, Indigenous communities, federal and provincial government departments and agencies, and other interested parties, consistent with the Tailored Guidelines template. Two general spatial study areas are considered as part of the Community Studies that referred to as the Local Study Area and Regional Study Area.