Baffinland

TECHNICAL SUPPORTING DOCUMENT

Mary River Project | Phase 2 Proposal | FEIS Addendum | August 2018

TSD 26

Labour Market Analysis

LABOUR MARKET ANALYSIS TSD SUMMARY

The Labour Market Analysis Technical Supporting Document describes the Phase 2 Proposal's labour demands and future labour supply conditions of several North Baffin communities. The Phase 2 Proposal builds on the extensive baseline studies and assessments carried out since 2011 for the larger Approved Project and is thus closely linked to the FEIS and previous addendums. This document is used as input to the assessment of effects on the socio-economic environment.

This labour market analysis is an objective assessment of the current and future labour supply conditions in the North Baffin communities of Pond Inlet, Arctic Bay, Clyde River, Igloolik, Hall Beach, and Iqaluit set against the labour demand of the Mary River Project (the Project).

The labour demand of the current Mine operations will remain relatively stable until the North Railway construction phase commences which will require a construction workforce. The overlap of these activities will push labour demand of approximately 2,000 or more full-time equivalent (FTE) positions. The railway will facilitate an increase in iron production to 12 Mtpa while the efficiencies granted by the railway will result in a new operational workforce. Mine operations will continue throughout construction of the South Railway, pushing total labour demand above approximately 3,000 or more FTE positions. The final operational phase of the Project will see mine operations expand to meet shipment limits through Steensby Port. Labour demand during the remaining years of opertation will be approximately 2000 FTE positions. Reclamation and closure is the final phase of the Project, spanning three years and requiring approximatley 300 FTE positions.

The analysis is focused on establishing the pool of Inuit labour that are ready, able, and willing to work for the Project at some point during its operational life. As discussed, a little more than half the population was old enough to legally participate in the Project's workforce. In addition, the majority (~90%) of jobs created by the Project require a high school diploma or its equivalency and some training or job experience as a minimum qualification. A key finding of this report was that there are not enough available, interested, and qualified Inuit to fill all the jobs created by the Project, and that coordinated efforts by all interested parties will be necessary to maximize Inuit employment.

RÉSUMÉ DE LA DOCUMENTATION TECHNIQUE COMPLÉMENTAIRE SUR L'ANALYSE DU MARCHÉ DU TRAVAIL

La documentation technique complémentaire sur l'analyse du marché du travail décrit les demandes de main-d'œuvre associées à la proposition de la phase 2 et les conditions de l'offre de main-d'œuvre future de plusieurs collectivités du nord de Baffin. La proposition de la phase 2 est fondée sur les études préliminaires et les évaluations complètes réalisées depuis 2011 pour l'ensemble du projet approuvé et est donc étroitement liée à l'énoncé des incidences environnementales (EIE) et aux addendas précédents. Ce document est utilisé pour l'évaluation des impacts sur le milieu socio-économique.

Cette analyse du marché du travail est une évaluation objective des conditions actuelles et futures de l'offre de main-d'œuvre dans les collectivités de Pond Inlet, Arctic Bay, Clyde River, Igloolik, Hall Beach et Iqaluit, au nord de Baffin, comparativement à la demande liée au projet de la rivière Mary (le Projet).

La demande de main-d'œuvre pour les opérations minières actuelles demeurera relativement stable jusqu'à ce que la phase de construction du chemin de fer du Nord commence, à quel moment la main d'œuvre de construction nécessaire augmentera. Le chevauchement de ces activités stimulera la demande de main-d'œuvre d'environ 2 000 postes équivalents temps plein (ETP) ou plus. Le chemin de fer permettra d'augmenter la production de fer à 12 TMPA, tandis que les gains d'efficacité rendus possibles par la présence du chemin de fer entraîneront une nouvelle main-d'œuvre opérationnelle. Les activités minières se poursuivront tout au long de la construction du chemin de fer du Sud, ce qui entraînera une demande de main-d'œuvre totale susmentionnée à environ 3 000 postes ETP ou plus. La dernière phase opérationnelle du projet verra l'expansion des opérations minières afin d'atteindre les limites d'expédition à travers le port de Steensby. La demande de main-d'œuvre pendant les dernières années d'exploitation sera d'environ 2 000 postes ETP. La remise en état et la fermeture constituent la dernière phase du projet, laquelle s'étend sur trois ans et nécessite environ 300 postes ETP.

L'analyse vise à établir le bassin de main-d'œuvre inuit qui est prêt, capable et désireux de travailler pour le projet à un moment donné au cours de sa vie opérationnelle. Comme on l'a vu, un peu plus de la moitié de la population était assez âgée pour participer légalement à la main-d'œuvre du projet. De plus, la majorité (~ 90 %) des emplois créés par le Projet nécessitent un diplôme d'études secondaires ou son équivalent et une certaine formation ou expérience professionnelle comme qualification minimale. Une conclusion clé de ce rapport est qu'il n'y a pas assez d'Inuits disponibles, intéressés et qualifiés pour occuper tous les emplois créés par le Projet; des efforts coordonnés de toutes les parties intéressées seront nécessaires pour maximiser l'emploi inuit.

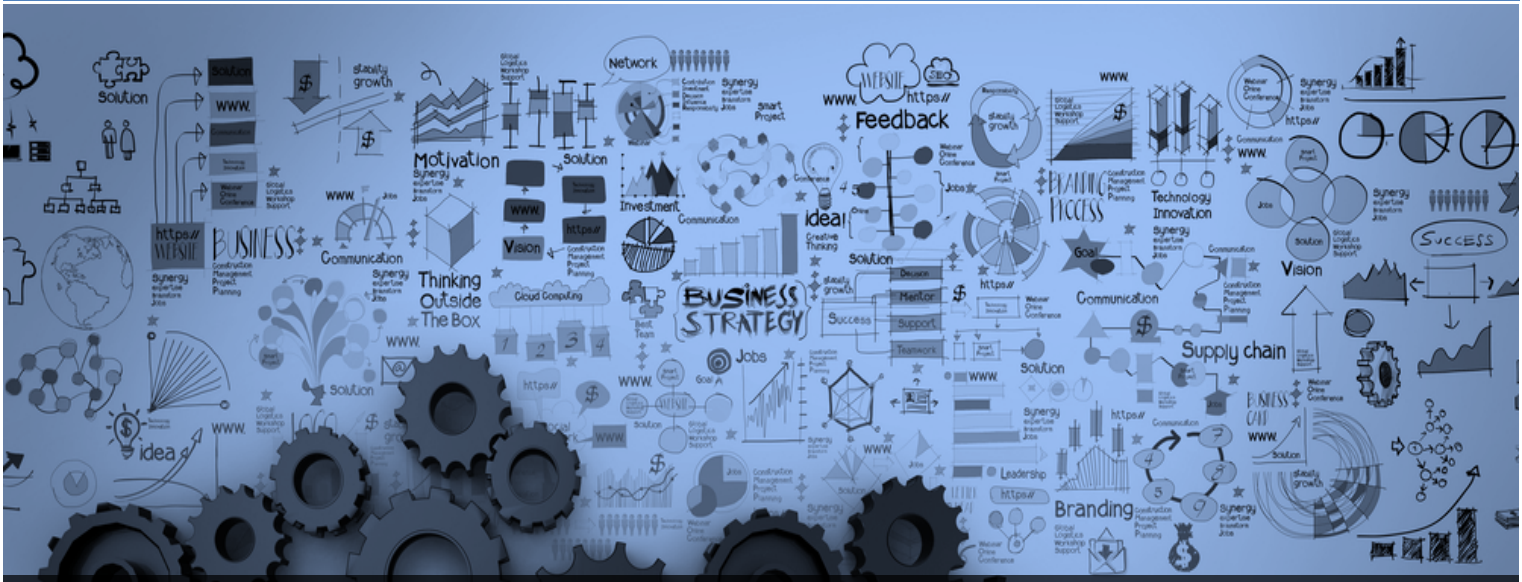
ᓴᓇᔪᓐᓇᖅᑐᑦ ᐃᓄᒋᐊᖕᓂᖕᒋᑕ ᖃᒥᕿᔾᐅᓂᖕᒋᑦ ᐃᑲᔪᐃᔾᔪᑏᑦ ᐅᓂᒃᑳᓕᐊᑦ

ᐅᓇ ᓴᓇᔪᓐᓇᖅᑐᑦ ᐃᓄᒋᐊᖕᓂᖕᒋᑕ ᖃᒥᕿᔾᐅᓂᖕᒋᑦ ᐃᑲᔪᐃᔾᔪᑏᑦ ᐅᓂᒃᑳᓕᐊᑦ ᑎᑎᖅᑲᖓ ᐅᓂᒃᑳᓇᔾᖃᖅᑐᖅ ᒪᕿᒋᓕᖅᑕᖓ ᐅᒃᑑᑎᖓᑕ ᓴᓇᔨᖃᕆᐊᖃᕐᓂᖕᒋᑕ ᖃᓄᐃᑦᑑᔾᓂᓪᓗ ᓱᕗᓂᐊᒍᓪᓗ ᓴᓇᔨᒃᓴᓂᒃ ᐱᖃᕆᐊᖃᕐᓂᕆᔭᖕᒋᑦ ᐃᓕᖅᑯᓯᕆᔭᖕᒋᓪᓗ ᖃᓯᐅᒪᓪᓚᑦ ᕿᑭᖅᑖᓗᑉ ᐅᐊᖕᓇᖕᒐᑕ ᓄᓇᓕᒋᔭᖕᒋᑦ. ᓴᓇᐅᒪᓂᐊ 2 ᐅᒃᑑᑎᖓ ᐃᓚᒋᐊᕆᔭᖃᖅᑐᖅ ᖄᖓᒍᑦ ᐊᖕᒋᕋᔪᑦ ᑐᙵᕕᑦ ᖃᐅᔨᓴᕝᕕᓂᑦ ᐊᕙᑖᓄᑦ ᑕᒪᓐᓇᓗ ᕿᒥᕈᐃᓂᖅ ᑕᐃᑲᖓᑦ 2011–ᒥ ᑖᔅᓱᒧᖓ ᐃᓗᐃᑦᑐᔪᒧᑦ ᐊᖕᒋᖅᓯᒪᔭᒧᑦ ᐅᔭᕋᖕᓂᐊᕐᓂᕐᒧᑦ ᑕᐃᒫᓪᓗ ᓂᒃᓯᒃᓯᒪᓂᖅᑲᖅᐳᖅ ᑭᖑᓪᓕᖅᐹᑉ ᐅᓂᒃᑳᖕᒋᓄᑦ FEIS ᓯᕗᓂᐊᒍᓪᓗ ᐅᐃᒍᒋᐊᖅᑕᐅᓂᑰᔾᒃᑯᑦ. ᒪᕿᒋᓕᖅᑕᖓ ᐅᒃᑑᑎᖓᑕ ᐃᓚᒋᐊᕆᔭᖃᖅᑐᖅ ᖄᖓᒍᑦ ᐊᖕᒋᕋᔪᑦ ᑐᙵᕕᑦ ᖃᐅᔨᓴᕝᕕᓂᑦ ᐊᕙᑖᓄᑦ ᑕᒪᓐᓇᓗ ᕿᒥᕈᐃᓂᖅ ᑕᐃᑲᖓᑦ 2011–ᒥ ᑖᔅᓱᒧᖓ ᐃᓗᐃᑦᑐᔪᒧᑦ ᐊᖕᒋᖅᓯᒪᔭᒧᑦ ᐅᔭᕋᖕᓂᐊᕐᓂᕐᒧᑦ ᑕᐃᒫᓪᓗ ᓂᒃᓯᒃᓯᒪᓂᖅᑲᖅᐳᖅ ᑭᖑᓪᓕᖅᐹᑉ ᐅᓂᒃᑳᖕᒋᓄᑦ FEIS ᓯᕗᓂᐊᒍᓪᓗ ᐅᐃᒍᒋᐊᖅᑕᐅᓂᑰᔾᒃᑯᑦ. ᐅᓇ ᑎᑎᕋᖅᓯᒪᔪᖅ ᐊᑐᖅᑕᐅᕗᖅ ᐃᓕᓴᐅᖃᓯᐅᔅᓴᐅᓪᓗᓂ ᑐᓂᔭᒃᓴᓄᑦ ᖃᒥᕿᔾᐅᓂᖕᒋᓐᓄᑦ ᐊᒃᑐᐃᓂᖃᕐᓂᖕᒋᑦ ᐃᓅᓯᕐᒧ–ᕿᓇᐅᔭᓕᐅᕋᓯᐊᕐᓂᕐᒧᓪᓗ ᐊᕙᑖᓄᑦ.

ᐅᓇ ᓴᓇᔪᓐᓇᖅᑐᑦ ᐃᓄᒋᐊᖕᓂᖕᒋᑕ ᖃᒥᕿᐃᓂᖅ ᐊᑭᕋᖅᑐᕋᓂ ᖃᒥᕿᐃᓂᐅᔪᖅ ᐅᓪᓗᒥ ᓯᕗᓂᑎᓐᓂᓗ ᐃᖅᑲᓇᐃᔭᕈᓐᓇᖅᑐᑦ ᐊᑐᐃᓐᓇᐅᔪᑦ ᐃᓕᖅᑯᓯᓇᙱᖅᑕᖕᒋᑕ ᖃᕿᖅᑖᓗᑉ ᐅᐊᖕᓇᖕᒐᑕ ᓄᓇᓕᖕᒋᓂᒃ ᒥᑦᑎᒪᑕᓕᒃ, ᐃᒃᐱᐊᔾᔪᒃ, ᑲᖏᖅᑐᓖᐱᒃ, ᐃᒡᓗᓕᒃ, ᓴᓂᕋᔭᒃ ᐊᒻᒪᓗ ᐃᖃᓗᐃᑦ ᓴᓂᖓᓄᑦ ᐃᖅᑲᓇᐃᔭᖅᑎᖃᕐᓂᐊᖅᑕᐅᓂᐊᑕ ᓄᓈᔭᐅ ᐅᔭᕋᖕᓂᐊᕐᕕᖓ (ᐅᔭᕋᖕᓂᐊᕐᕕᒃ).

ᓴᓇᔪᓐᓇᖅᑐᑦ ᐃᓄᒋᐊᖕᓂᖕᒋᑕ ᖃᒥᕿᐃᓂᖅ ᐅᓪᓗᒥ ᐅᔭᕋᖕᓂᐊᖅᑐᑦ ᐊᐅᓚᑕᖕᒋᑦ ᓱᕐᕋᓗᐊᔾᔭᖕᒋᑦᑐᑦ ᑕᐃᑯᖓ ᑎᑭᓐᓇᓱᖕᓂᐊᓄᑦ ᐅᐊᖕᓈᑕ ᓄᓇᓯᐅᑎᑯᑖᓕᓇᕝᕙᐊ ᓴᓇᔭᐅᓯᒋᐊᖅᐸᓪᓕᐊᓕᕈᓂ ᓲᖃᐃᒻᒪ ᓴᓇᔾᔭᓂᒃ ᓴᓇᔪᓐᓇᖅᑐᓂᐊᕐᒥᒐᒥ ᓴᓇᓕᕈᑎᒃ. ᐸᔾᔦᓗᖓᓂᖕᒋᑦ ᐱᓕᕆᓂᑦ ᐊᔪᐅᕆᓂᐊᓪᓚᕆᖕᒪᑦ ᓴᓇᔪᓐᓇᖅᑐᑦ ᐃᓄᒋᐊᖕᓂᖕᒋᑕ ᖃᒥᕿᐃᓂᖅ ᐃᒻᒪᖄ ᑎᑭᓪᓗᒍ 2,000 ᐅᖓᑖᓄᓪᓗ ᐃᖅᑲᓇᐃᔭᐃᓐᓇᖅᑐᑦ ᓇᓕᒧᖕᒋᓄᑦ (FTE) ᓴᓇᔨᓄᑦ. ᓄᓇᓯᐅᑎᑯᑖᓕᓇᕝᕙᒃ ᐃᓂᓪᓚᐃᒐᔭᖅᑐᖅ ᐊᖕᒋᓕᒋᐊᓇᓂᐊᒥᒃ ᓴᕙᕋᔭᒃᓴᐅᑉ ᐅᔭᕋᖕᓂᐊᖅᑕᖕᒋᑕ 12 ᒥᓕᐊᓐ ᑕᓐᓯᑦ ᐊᕐᕋᒍᑕᒫᒧᑦ ᑖᒃᑯᐊᓗ ᓄᖑᓴᐃᓂᖕᒋᑦ ᐊᐅᓚᑦᑎᓐᓂᐊᖓᓄᑦ ᓄᓇᓯᐅᑎᑯᑖᖅ ᓴᖅᑮᓂᐊᓇᓪᓗᓂ ᓄᑖᒥᒃ ᓴᓇᔪᓕᓇᔩᓂᒃ ᓄᓇᓯᐅᑎᑯᑖᓕᓇᔩᓂᒃ. ᐅᔭᕋᖕᓂᐊᕐᕕᐅᑉ ᐊᐅᓚᑕᖕᒋᑦ ᑲᔪᓯᓇᔭᖅᑐᑦ ᐅᔭᕋᖕᓂᐊᕐᓗᑎᒃ ᓴᓇᔭᐅᓯᒋᐊᕈᓂ ᓂᒋᖓᒍᑦ ᓄᓇᓯᐅᑎᑯᑖᓕᓇᕝᕙᖓ, ᐊᔪᐅᓇᓕᕐᒥᓗᑎᒃ ᑕᒪᐃᓐᓂᒃ ᑲᑎᑦᑐᓂᒃ ᓴᓇᔪᓐᓇᖅᑐᑦ ᖃᒥᕿᐃᓂᖅ ᐃᒻᒪᖄ ᐅᖓᑖᓄᑦ 3,000 ᐅᖓᑖᓄᓪᓗ ᐃᖅᑲᓇᐃᔭᐃᓐᓇᖅᑐᑦ ᓇᓕᒧᖕᒋᓄᑦ ᐃᓕᖕᒋᓂᒃ. ᑭᖑᓪᓕᖅᐹᖅ ᐊᐅᓚᓂᖓ ᓴᓇᐅᒪᓂᖓ ᐅᔭᕋᓐᓂᐊᕝᕕᐅᑉ ᑕᑯᒐᔭᖅᑐᖅ ᐅᔭᕋᖕᓂᐊᖅᑐᑦ ᐊᖕᒋᓕᒋᐊᓇᓂᐊᓂᒃ ᐅᓯᒃᑲᖅᑕᕈᓐᓇᖅᑕᖕᒋᑕ ᐃᓱᖓᓄᑦ ᑎᑭᓪᓗᒍ ᐃᒃᐱᑭᑦᑐᐊᔾᔩᑉ ᐅᒥᐊᕐᔪᐊᓕᓇᕝᕙᐊᒍᑦ. ᓴᓇᔪᓐᓇᖅᑐᑦ ᑭᖑᓪᓕᖅᐹᖑᔪᑦ ᐊᕐᕌᒍᖕᒋᒍᑦ ᐃᒻᒪᖄ 2000 ᐅᖓᑖᓄᓪᓗ ᐃᖅᑲᓇᐃᔭᐃᓐᓇᖅᑐᑦ ᓇᓕᒧᖕᒋᓄᑦ ᐃᓃᑦ. ᓄᓇᒥᒃ ᐅᑎᖅᑎᑦᑎᓂᖅ ᒪᑐᓯᕙᓪᓕᐊᓂᓪᓗ ᑭᖑᓪᓕᖅᐹᖑᒍᕗᖅ ᐅᔭᕋᖕᓂᐊᖅᑑᑉ, ᐊᕐᕌᒍᑦ ᐱᖓᓱᑦ ᐊᓂᒍᕐᓗᑎᒃ, ᐊᒻᒪᓗ 300 ᐅᖓᑖᓄᓪᓗ ᐃᖅᑲᓇᐃᔭᐃᓐᓇᖅᑐᑦ ᓇᓕᒧᖕᒋᓄᑦ ᐃᓂᓂᒃ ᐊᑐᕐᓗᑎᒃ.

ᐅᓇ ᖃᒥᕿᐃᓂᖅ ᓵᙱᔭᕐᑲᖅᑐᖅ ᓴᖅᕿᓇᓯᐊᕐᓂᕐᒥᒃ ᐅᓄᕐᓂᖕᒋᑕ ᐃᓄᐃᑦ ᐃᖅᑲᓇᐃᔭᕈᓐᓇᖅᑐᑦ ᐱᔪᓐᓇᑦᑎᐊᖅᑐᑦ, ᐊᖑᖕᒋᑦᑎᐊᖅᑐᑦ, ᐊᒻᒪᓗ ᐱᔪᒪᓂᖅᑲᖅᑐᑦ ᓴᓇᔪᒪᓂᕐᒥᒃ ᐅᔭᕋᖕᓂᐊᕐᕕᖕᒧᑦ ᐃᓚᖓᒍᑦ ᐊᐅᓚᓂᓇᔭᖕᒐᑕ. ᐅᖃᐅᓯᐅᖅᑲᐅᓪᓗᓂ, ᐃᒻᒪᖄ ᖃᑎᓪᓗᐊᖕᒋᑕ ᐅᖓᑎᑦᑎᐊᖓᓂ ᐃᓄᒋᐊᖕᓂᖕᒋᑕ ᐃᓐᓇᕈᖅᓯᒪᓂᓃᑦ ᒪᓕᒋᖅᑎᒍᑦ ᐃᓚᐅᒋᐊᒥ ᐅᔭᕋᖕᓂᐊᕐᕕᐅᑉ ᓴᓇᔨᖕᒋᓐᓄᑦ. ᖄᒃᑲᓐᓂᐊᖑᑦ, ᐅᓄᓂᖕᒍᔪᑦ (~90%) ᐃᖅᑲᓇᐃᔩᑦ ᓴᖅᑭᑦᑦ ᐅᔭᕋᖕᓂᐊᕐᕕᖕᒧᑦ ᐱᕐᑲᓇᐊᕐᑲᖅᑎᑦᑎᔪᑦ ᖁᑦᑎᓐᓂᖅᓴᐅᑉ ᐃᓕᓐᓂᐊᕝᕙᐅᑉ ᐸᐃᑉᐹᖓᓂ ᐊᓂᒍᐃᔾᔪᑎ ᓇᓕᒧᖓᓂᓪᓘᓐᓃᑦ ᐊᒻᒪ ᐱᓕᒻᒪᒃᓴᐃᓃᑦ ᐊᒻᒪᓘᓐᓃᑦ ᐃᖅᑲᓇᐃᔭᓕᒪᓃᑦ ᐊᖅᐸᓯᖕᖑᓪᓗᒃ ᑎᑭᑦᑕᓇᐊᓕᑦ. ᐋᑎᖕᖅ ᖃᐅᔨᔭᐅᓂᑯ ᐅᓂᒃᑳᓕᐊᒧᑦ ᑕᒪᒃᑯᐊ ᐊᒥᓗᐊᕐᒪᑕ ᐊᑐᐃᓐᓇᐅᔪᑦ, ᐱᔪᒪᓂᖅᑲᖅᑐᑦ, ᐊᒻᒪᓗ ᓇᓪᓕᖅᓯᓯᒪᔪᑦ ᐃᓄᖕᒋᑦ ᓴᓇᔭᒃᓴᓕᒫᓄᑦ ᐃᓕᔪᓐᓇᕋᔭᖅᑐᑦ ᐃᖅᑲᓇᐃᔩᓕᒫᓄᑦ ᐅᔭᕋᖕᓂᐊᕐᕕᐅᑉ, ᐊᒻᒪᓗ ᑲᑐᔾᔨᓕᒫᓗᑎᒃ ᐃᓚᐅᓂᖅᑲᖅᑐᓕᒫᑦ ᐱᔪᒪᔪᓗ ᓴᖅᕿᔮᓇᐊᓕᒃ ᖁᑦᑎᖑᒥᒃ ᐃᖅᑲᓇᐃᔭᖅᑎᖅᑲᐅᒪᒍᑦᑕ ᐃᓄᖕᓂᒃ ᓄᓇᓕᖕᒥᐅᑕᓂᒃ.



Baffinland Iron Mines Corporation
Mary River Project—Phase 2 Proposal

Labour Market Analysis

Prepared by Impact Economics

Technical Supporting Document No. 26

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Impact Economics
PO Box 774 Stn Main, Yellowknife, NT, X1A 2N6
(w) +1.867.873.8008 / (m) +1.867.444.6191
clinton@impacteconomics.ca
www.impacteconomics.ca

Summary of Key Findings

The 2017 Labour Market Analysis describes the labour force demand created by the Mary River Project (the Project). It also describes the labour supply in Nunavut and details regarding how this supply might change over time. A key finding of this report is that there are not enough available, interested, and qualified Inuit to fill all the jobs created by the Project; this is true today and will be true for the entire life of the project.

Labour Demand

The Project will require a sizeable workforce throughout its 21-year operational life span that will include two significant construction projects and stepped increase in operations. A 3-year closure and reclamation project will follow that will have its own labour requirements.

Using full-time equivalency (FTE) terms[1], the Project created 933 FTE jobs in 2016 and Baffinland is reporting 1,180 FTE jobs were created in 2017. As a point of comparison, Statistics Canada reports that total employment for the entire territory was 13,500 in 2016, which includes full-time and part-time employment. Moving forward, Baffinland expects labour demand to grow even higher. From 2018 to 2020, the Early Revenue Phase that is currently underway will need a larger workforce than what exists today averaging 1,360 FTE jobs annually over this time frame. At the same time, the proposed Phase 2 North Railway construction project will need its own workforce, estimated to be approximately 550 FTE jobs from 2019 to 2021, with a peak employment of more than 1,000 in 2020.

The new transportation system will allow Baffinland to expand its ore production to 12 million tonnes per annum (Mtpa) from the current 4.2 Mtpa production rate. This larger operation is expected to continue until 2035 and will require a workforce of approximately 1,000 people on average on a FTE basis.

Baffinland will begin construction of the already approved South Railway and Steensby Inlet port facility in 2021. This is a larger project than the North Railway needing four years to complete and a labour force in excess of 4,500 person years, which is equal to an average of 1,145 FTE jobs annually. This infrastructure will facilitate further expansions in production that will bring about the need for another 950 FTE jobs. From 2025 to 2035, the Mary River Project is expected to produce 30 Mt of ore annually and employ an average of 1,960 people on a FTE basis.

The 3-year closure and reclamation project will take place from 2036 to 2038 and will employ approximately 300 people on a FTE basis each year.

Labour Supply

In 2016, there were a little more than 10,000 Inuit living in the LSA communities, which include Pond Inlet, Arctic Bay, Clyde River, Igloolik, Hall Beach and Iqaluit.[2] This is a small population in comparison to the labour force needs of the Project. The main purpose of this research is to determine a reasonable estimate of the potential Inuit labour supply that could be available to work at the Project.

It's fair to assume that not everyone living in the LSA should be included in this estimate of *potential* labour. For example, almost half of the population is too young to be in the workforce—they're not

[1] Full-time equivalency is a method of normalizing employment data. A full time job at the mine site was made equal to working 2,016 hours, based on working 12 hours per day for 14 days and with 12 shifts per year (which is based on the assumption that there are 13 shifts per year and one is taken as holiday). An employee who works for less time would be reported as working a smaller percentage of one FTE job, while an employee that works additional shifts or overtime would be reported as a percentage greater than one FTE job.

[2] These communities are the focal point of the analysis because they are the points of hire within Nunavut for the Project.

ready for work. If one were to only count the Inuit population older than 18 and younger than 60, the potential workforce number drops from 10,000 to approximately 5,700.

These people are old enough but can all of them potentially work at the Project? The abilities of this potential labour must be considered. The vast majority of jobs created by the Project require a high school diploma or its equivalency and some training as a minimum qualification, however, as few as 35% of the Inuit population aged 25 to 64 have graduated from high school.[3] Taking education into consideration lowers the potential pool of Inuit workers in the LSA to approximately 2,200.[4]

Using the estimated 2,200 Inuit who are old enough and have a high school diploma or its equivalency is a realistic starting point in the assessment of the Project's future Inuit workforce—this group is ready (they are old enough) and able (they have the basic education requirements). However, there are other factors that might prevent someone from taking a job there. These factors are not easily quantified because they represent an individual's willingness to work at the Project. For example

- Employment—being employed does not disqualify someone from applying for a job with the Project, but an individual's current job satisfaction (including extrinsic and intrinsic rewards) would influence the decision whether or not to apply for work at the Project.
- Aptitudes—Not everyone possesses the mental and physical abilities to do the work required. This goes beyond education, training, or experience, and is more focussed on other factors that are more difficult to quantify but are nonetheless critical when determining a realistic labour pool.
- Interest—Working at a fly-in/fly-out (FIFO) mining project is not for everyone; some are simply not interested and would prefer other types of full-time wage employment.
- Familiarity with Wage Employment—for some Inuit, a job at the Project will be their first experience in the workforce and it can take some time before becoming accustomed to the requirements of employment.
- Family responsibilities—Many Inuit have large families (three or more children) and they may care for elder parents or other dependents. For some Inuit, taking a job that would have them leave their families for two weeks is simply not possible. This is particularly true for single-parent families or if a partner is already employed by the Project.
- Language—English can be a barrier (perceived or otherwise) for some Inuit who would otherwise choose to work. Although the IIBA clearly states that lack of fluency in English will not necessarily be a barrier to employment, linguistic issues may affect participation in the training necessary to take up a position in the Project workforce.
- Criminal record— A criminal record may disqualify someone from employment with the Project depending on the frequency and severity of their criminal activities.
- Dependencies—There is a wide range of dependencies that deter potential employees from seeking employment at the Project;
    - at one end of that range are addictions that prevent someone from working in a camp setting for two weeks at a time,
    - on the other end is public housing, where residents might be concerned the cost of their public housing unit will rise as a result of their higher income and do not believe the increased cost is affordable.[5]
- Competition for Inuit Labour—it must be emphasized that there are other demands for Inuit labour from throughout the Nunavut economy. Government, education, health, Inuit

[3] The percentage of Inuit with a high school diploma living in Iqaluit is higher.
[4] It should be noted that there are jobs available that do not require a high school education. In 2016, there were 94 of these jobs representing 10% of the Project's labour requirements.
[5] Baffinland has announced it will compensate Inuit employees living outside the LSA for travel costs. This should mitigate the challenges associated with public housing that prevented potential labour from relocating to a designated point-of-hire community.

organisations, as well as other industries (construction, fishing, etc.) are keen to increase their Inuit employment record, and in some cases, are legally obliged to do so. Therefore, there is competition for Inuit labour.

These are all factors that could prevent someone from applying for work at the Project and should be accounted for in the assessment of potential labour supply. Some are easily quantified such as age, employment status, and education, while other factors are more qualitative in nature such as aptitudes, interest, and family responsibilities, but are no less critical when determining the potential workforce.

It is also important to recognize that many of these challenges will be in place throughout the entire life of the Project. For example:

- Even the most optimistic assumption for improving high school graduation rates would still see them below 50% for the majority of the Project's life span;
- Demand for Inuit labour from other employers throughout the Nunavut economy, especially those with post-secondary education or training, will not go away and might even intensify over time; and,
- Other challenges such as family constraints, aptitudes, and interest will always exist and are not necessarily unique to the jobs being created by the Project.

Labour Force Participation

Nevertheless, there is evidence that the Project's potential labour supply will grow over time and that the Inuit employment record will improve accordingly. For one thing, labour markets are not static. Every year, there will be more Inuit entering the workforce adding to the supply of potential labour for the Project. The Mary River Project is still a relatively new phenomenon within the Baffin economy. One should expect the Project to increase its penetration into the regional labour market over the next few years through increased awareness of the employment opportunities and benefits and through ongoing investments in recruitment and training.

One can also look to the employment record at Agnico Eagle Mines Ltd.'s Meadowbank Mine for evidence for what is possible. Inuit participation in that project has grown to 25% of its operations' workforce after 6 years of operations.

Increasing Inuit participation is a long-term commitment for Baffinland. It should be understood that success cannot be achieved over night and that progress will be slow at times. Establishing realistic annual targets where there are improvements each and every year can be a productive approach. Baffinland is investing in its Inuit workforce and will continue to do so, but lowering or eliminating many of the constraints to employment will be the responsibility of others, including individuals, families, communities, Inuit organisations, and government departments and agencies. And, while all parties are genuinely interested in improving the workforce participation of Inuit in the Project, it must be acknowledged that some factors that prevent an otherwise eligible person from working cannot be eliminated.

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1 Introduction

This labour market analysis is an objective assessment of the current and future labour supply conditions in the North Baffin communities of Pond Inlet, Arctic Bay, Clyde River, Igloolik, and Hall Beach, and Iqaluit set against the labour demand of Mary River Project (the Project).

The Project proponent, Baffinland Iron Mines Corporation (Baffinland), is planning (upon regulatory approval) an expansion of its operations (the Phase 2 Proposal) through the construction of a railway to the port at Milne Inlet that will facilitate an increased rate of production from 4.2 million tonnes per annum (Mtpa) to 12 Mtpa. An already approved, but not yet built, railway heading south from the Mine Site to a port at Steensby Inlet will add an 18 Mtpa mining operation to the existing mine production.

The schedule of the Phase 2 Proposal is presented in Figure 1.1 alongside the existing Early Revenue Phase (ERP), and the already approved South Railway and Steensby Inlet port construction and 18 Mtpa operation. According to this schedule, the mine will operate through 2035, with mine closure from 2036 to 2038.

Area	2018	2019-2020	2021	2022-2023	2024	2025-2035
Mine	5.5 Mtpa	6 Mtpa	12 Mtpa	12 Mtpa	21 Mtpa	30 Mtpa
Tote Road/Trucking	5.5 Mtpa	6 Mtpa	12 Mtpa*	NA	NA	NA
North Rail	NA	NA	12 Mtpa*	12 Mtpa	12 Mtpa	12 Mtpa
South Rail	NA	NA	NA	NA	9 Mtpa	18 Mtpa
Milne Port	5.5 Mtpa	6 Mtpa	12 Mtpa	12 Mtpa	12 Mtpa	12 Mtpa
South/Steensby Port	NA	NA	NA	NA	9 Mtpa	18 Mtpa

***** during commissioning, both rail and trucking will be used

Source: Baffinland Iron Mines Corporation

Figure 1.1: Phase 2 Proposal Timeline

A larger workforce is an important component of the expanded operations and construction projects. The labour demand of the current mine operations has grown from 933 in 2016 in full-time equivalent (FTE) terms to 1,181 in 2017 and will grow again to 1,360 in 2018 and remain at that level for two more years.[6] The three-year North Railway construction phase will start in 2019. It requires an estimated 1,660 person years of labour, averaging 550 FTE jobs per year with a peak employment of 1,050.[7] The overlap of these two activities (ERP operations and the North Railway construction) will push labour demand over 2,000 FTE jobs by 2020.

The railway will facilitate an increase in iron production to 12 Mtpa while the efficiencies granted by the railway will result in an operational workforce of 1,010 that will remain in place until the mine closes in 2035.

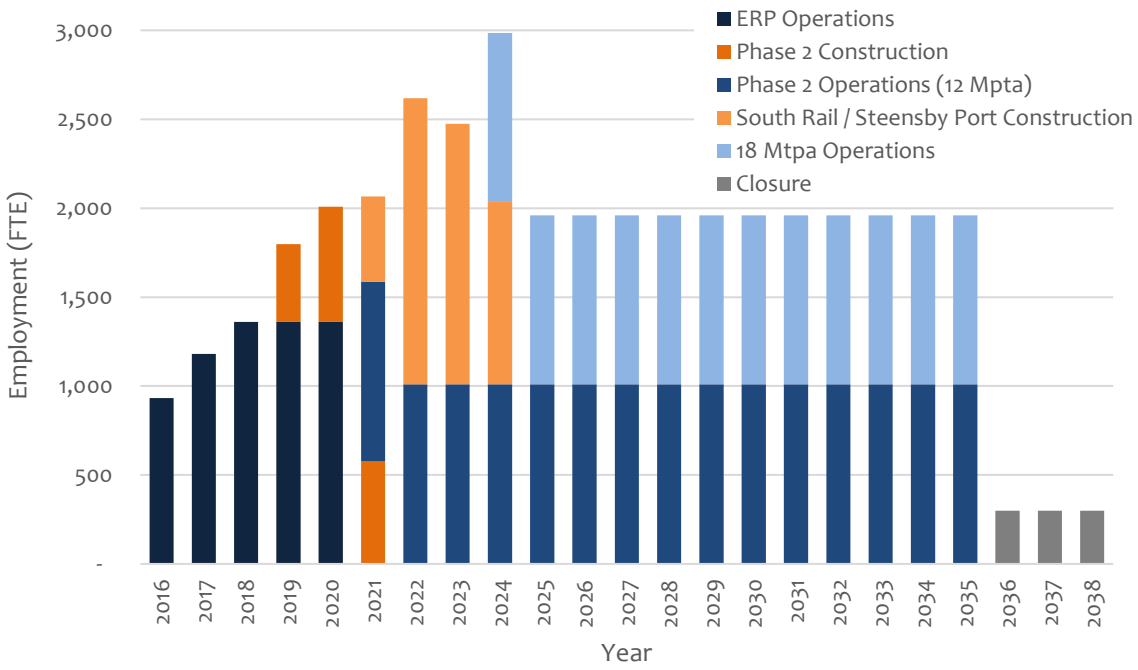
[6] All employment data are presented in FTE terms unless otherwise noted.
[7] Employment numbers have been rounded and therefore may not add up.

With the North Railway construction project completed, attention will turn to the South Railway and Steensby Inlet port. This is a four-year project starting in 2021. This is a much more substantive endeavour than the North Railway, requiring an average labour force of 1,145 per year, peaking in 2022 at 2,680. Again, these construction-related jobs are in addition to the operations jobs.

The final operational phase of the Project will see dual mining operations with a combined production of 30 Mtpa, rail service to ports at Milne and Steensby Inlets, seasonal shipping from Milne Port, and year-round shipping from Steensby Port. Labour demand is expected to settle at 1,960 in FTE terms for the remaining 11 years of operations, from 2025 to 2035. Reclamation and closure is the final phase of the Project. It will span three years, requiring an estimated 300 employees.

The Project's labour force needs can be separated into the different operation and construction phases. These phases include:

- Early Revenue Phase (ERP) or Current Phase (present to 2020)
- Phase 2 Construction Phase (2019 to 2021)
- Phase 2 (12 Mtpa) Operation Phase (2021 to 2035)
- Steensby Port and South Railway Construction Phase (2021 to 2024)
- 18 Mtpa Operations Phase (2024 to 2035)
- Closure and Reclamation (2036 to 2038)



Source: Baffinland Iron Mines Limited.

Figure 1.2: Mary River Project Workforce Requirements, by phase

Labour from the LSA communities cannot supply the Project with all of its labour force needs. Baffinland reported its 2016 workforce was 933 (in FTE terms). That same year, Statistics Canada reported total employment for the entire territory was 13,500 jobs—a figure that includes full-time and part-time employment. Inuit employees represented 14.7% of the workforce, equal to 138 FTE jobs.[8] The 2016 record of employment is the starting point for understanding the labour supply issues facing the LSA.

Included in this analysis are:

- A review of the 2016 employment record
- A look at the Project's future labour demand
- A review of the current population and demographics of the LSA
- An investigation into the future labour supply in the LSA
- An examination of the Indigenous workforce of other northern mining districts, including the employment record of Agnico-Eagle Mine's Meadowbank Mine and the diamond mines in the Northwest Territories

Before proceeding, it is important to clarify some important points. First, when investigating a labour market—and especially when attempting to determine the number of employees that will work in a particular industry for a particular employer—one must remember that Canadians are free to pursue any work they choose. Simply being unemployed and qualified are not sufficient conditions to assume an individual will work at the Project. This simply means they are a part of the *potential* workforce. An individual might choose to work elsewhere for any number of reasons.

Second, there are other demands for Inuit labour within the Baffin region. This will be described later on in the report, but it is an important point to introduce now. The Government of Nunavut is the largest employer in the territory with a broad range of staffing needs in public administration, education, and health. Under Article 23 of the Nunavut Agreement, the territory's public government should be representative of the population, which implies 84% of GN staff should be Inuit. To meet this requirement, the Government of Nunavut is actively pursuing increased employment of ready, willing, and able Inuit labour. The federal government, Inuit organisations, other industries, and businesses have Inuit hiring mandates or policies as well. In other words, there is competition amongst employers to attract qualified Inuit employees. Given the relatively low number of Inuit labour with the necessary qualifications, an employer that meets its Inuit employment targets likely does so to the detriment of other employers that have their own Inuit employment targets.

Third, the analysis includes an investigation into the participation of Inuit in the mining industry in the Kivalliq Region and Indigenous people in the diamond mines in the Northwest Territories. These examples help demonstrate the levels of Indigenous employment achieved elsewhere and the investments or mitigation measures taken to improve this employment. These examples offer a useful comparison, but one should not assume the social, economic, and cultural conditions are identical across the different jurisdictions and therefore they are not perfect comparisons. This analysis is presented as an Appendix to the report.

And fourth, the labour market analysis will concern itself exclusively with direct employment effects, including employment with the Project's contractors. However, the Project will also have indirect and induced effects on job creation. The numbers will be small relative to the number of direct jobs, but

[8] This report estimated fulltime equivalency using 2,080 work hours per year calculated as 52 weeks per year x 40 hours per week. As stated earlier, this report and all future employment reports will assume a FTE work year is equal to 2,016 hours, which is based on 12 hour days x 14 days per shift x 12 shifts per year (13 shifts minus 1 shift taken as holiday). As a result of this change, the 905 FTE jobs stated in the 2016 Socio-Economic Monitoring Report are stated as 933 FTE jobs in this Labour Market Analysis. The new formula does not change the relative contribution, nor does it change the number of hours worked by Inuit.

not insignificant to the region. These jobs tend to be located in communities, often with more traditional 9 AM to 5 PM, Monday to Friday, work schedules that are desirable for people who are less inclined or unable to meet the rotational work requirements of the Project. These indirect and induced jobs represent additional competition for Inuit labour and therefore represent a risk to Baffinland's Inuit employment targets.

As a final point, this report can be read in the context of the Inuit Impact and Benefit Agreement (IIBA) concluded between Baffinland Iron Mines Corporation (Baffinland) and the Qikiqtani Inuit Association (QIA) in 2013. The IIBA includes a number of provisions respecting Inuit employment, training and education, and in particular, requires Baffinland and QIA to establish an annual Minimum Inuit Employment Goal (MIEG), which stipulates the prescribed percentage of Inuit Project employment on a yearly basis. To that end, this report provides evidence for Baffinland and the QIA to establish realistic employment targets for the coming year and to develop a process for determining these targets in future years.

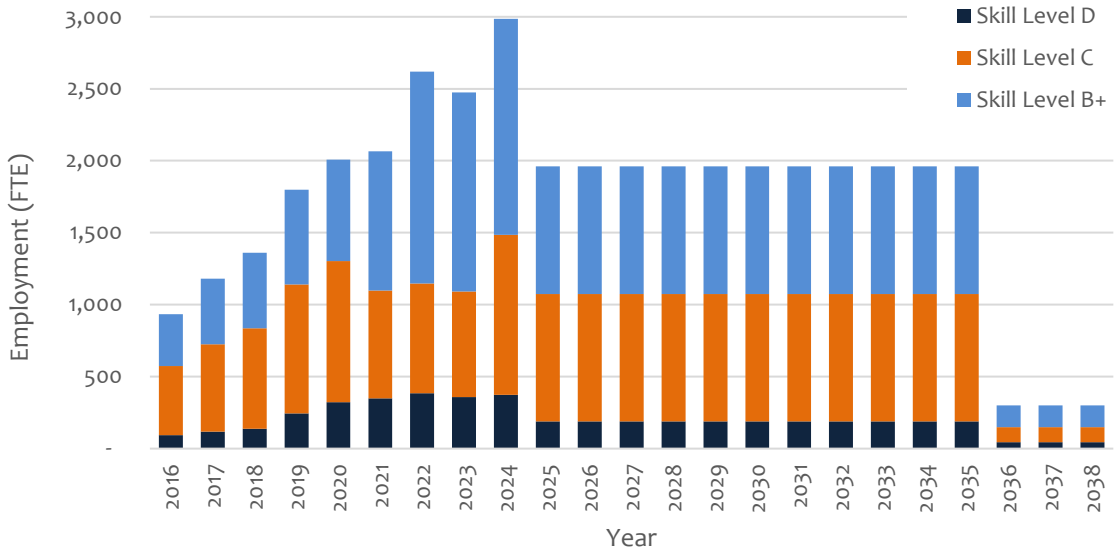
2 Project Labour Demand

Baffinland has estimated its future workforce requirements for the Project. These estimates include the labour needs of its contractors, but do not include any indirect or induced effects that would create additional labour demand.

All jobs have been assessed according to the level of education and/or experience they require. The National Occupational Classification matrix was used during the regulatory process for the approved Mary River Project to assign jobs a classification according to the skill levels needed in that job. The original five levels were condensed into three levels for the purpose of estimating future labour requirements where levels O, A, and B category jobs were grouped together into a single category B+ and where levels C and D were left unchanged.

- Level B and higher occupations are jobs that usually require apprenticeship training or college/university education. This level includes industrial trades, drillers, blasters, supervisors, technical occupations, managers and professional occupations. This category also includes Level O jobs, which are defined as all management-level employment.
- Level C occupations usually require secondary school and/or occupation-specific training. This level includes jobs such as heavy equipment operators, administrative support, scheduling jobs, and occupations in food and beverage services.
- Level D jobs are those where on-the-job training is usually provided. These may include kitchen helpers, cleaners, security guards, trades helpers and labourers.

The Project's overall labour force needs presented in Chapter 1 can be shown in terms of their skill levels. The vast majority of jobs created by the Project are classified as Level C or Level B+. Over the entire 21-year operation (2015 to 2035), the three years of reclamation, and including all construction phases, Level C and Level B+ jobs represent 43% and 46% of the workforce, respectively, while Level D jobs account for approximately 12% of the total.



Source: Baffinland Iron Mines Limited.

Figure 2.1: Labour Force Requirements, by job classification

2.1 Early Revenue Phase

The Early Revenue Phase (ERP) is underway and will continue until the North Railway is operational. Employment during this phase has grown to 1,181 in 2017 and will expand to 1,360 in 2018 and remain at that level until 2020.

Jobs requiring minimal education (Level D classification) represent 10% of the total, averaging 125 jobs over the five-year period 2016 to 2020. Level C is the largest skill category with 636 positions, on average. Level B and higher jobs total 478 on average (Table 2.1).

Table 2.1: Mary River Project Labour Demand—Early Revenue Phase (Current) Operations

	2016	2017	2018	2019	2020	Total	Annual Average
Skill Level B and Higher Workforce	360	456	525	525	525	2,391	478
Skill Level C Workforce	479	606	698	698	698	3,179	636
Skill Level D Workforce	94	119	137	137	137	624	125
Total Workforce	933	1,181	1,360	1,360	1,360	6,194	1,239

2.2 Proposed Phase 2 Construction

The proposed Phase 2 construction project will have a separate workforce from the ERP.

Work rotations are often longer for construction, with the majority of work crews adopting a 4 and 2 schedule (4 weeks in and 2 weeks out), and some using a 6 and 2 schedule. With that said, many employees from the LSA were able to work a 2 and 2 schedule during the initial construction project.

It is the nature of construction projects that the size of workforce can undergo large fluctuations. It is not uncommon that some workers with specialized skills are on site for short time period, after which they are no longer required. This can cause the total workforce to swell at times.

The combination of longer work rotations and the coming and going of specialized work crews results in a notable difference between the estimated workforce in person years (FTE) and the estimated peak workforce. Both are provided in the construction phase employment tables.

The proposed Phase 2 construction project requires a workforce of 1,662 person years of labour over a three-year project timeframe, equal to an annual average of 554 FTE jobs. From this average, an estimated 28% (257 FTE jobs) will be classified as Level D jobs, while 43% will be Level C jobs and 29% will be Level B+ jobs (Table 2.2). The workforce will peak in 2020, when an estimated 1,050 will be working on the project.

Table 2.2: Mary River Project Labour Demand—North Railway Construction Phase

	2019	2020	2021	Total	Annual Average
Skill Level B and Higher Workforce	132	180	174	486	162
Skill Level C Workforce	198	282	234	714	238
Skill Level D Workforce	108	186	168	462	154
Total Workforce (FTE)	426	648	576	1,662	554
Estimated Peak Workforce	710	1,050	950		

2.3 12 Mtpa Operation Phase

The opening of the North Railway will allow production at the Mine to grow to 12 Mtpa. It will also bring greater efficiencies to the Mine's operations. In particular, fewer road maintenance and transportation-related jobs will be needed. The decline in these types of jobs will outnumber any additional production-related jobs.

The demand for unskilled (Level D) labour will fall from 137 in the final year of the ERP (2020) to an annual average of 95 from 2021 to 2035. Demand for Level C labour will fall from 698 to 410. Level B+ jobs will remain relatively stable during the transition into the larger operation, averaging 505 FTE jobs over the 15-year timeframe (Table 2.3).

Table 2.3: Mary River Project Labour Demand—12 Mtpa Operation Phase

	Total	2021 to 2035 (annual average)
Skill Level B and Higher Workforce	7,577	505
Skill Level C Workforce	6,153	410
Skill Level D Workforce	1,422	95
Total Workforce	16,160	1,010

2.4 South Railway and Steensby Port Construction

The final construction phase is based on estimates provided in the *2012 Final Environmental Impact Statement* for Mary River. It includes the construction of a railroad south from the Mine Site to Steensby Inlet where a new port facility will be built. This work is expected to commence in 2021 after the North Railway has been built. This is a much larger project requiring a much larger workforce, in part because it includes the construction of a port, but also because the South Railway is longer and there isn't a tote road in place to facilitate the movement of construction materials or to improve the logistics of the project. This phase will span four years.

These factors combine to raise the estimated workforce to just under 4,600 person-years over the four years of port and rail construction activities, averaging 1,145 person-years annually. It is estimated that 18% of these jobs will be classified as Level D work, meaning there will be an average of 206 jobs created that do not require specialized training or trade certification. The workforce is expected to peak in the second year of construction at 2,680 jobs.

Table 2.4: Mary River Project Labour Demand— Steensby Port and South Railway Construction

	2021	2022	2023	2024	Total	Annual Average
Skill Level B and Higher Workforce	288	965	878	616	2,747	687
Skill Level C Workforce	106	354	322	226	1,007	252
Skill Level D Workforce	86	289	264	185	824	206
Total Workforce (FTE)	480	1,608	1,464	1,026	4,578	1,145
Estimated Peak Workforce	800	2,680	2,440	1,710		

2.5 18 Mtpa Operation Phase

The second rail and port facility will allow Baffinland to expand its mining operation by an additional 18 Mtpa for the final 12 years of production, from 2024 to 2035. This expanded operation will bring about the need for a much larger workforce when compared to the 1,010 needed for the 12 Mpta phase. The new production will add 380 Level B+ jobs, 475 Level C jobs, and 95 Level D jobs to the existing operations workforce, bringing the total labour demand to an estimated 1,960 FTE jobs.

Table 2.5: Mary River Project Labour Demand—18 Mtpa Operation

	Total	2024 to 2035 (annual average)
Skill Level B and Higher Workforce	4,560	380
Skill Level C Workforce	5,700	475
Skill Level D Workforce	1,140	95
Total Workforce	8,550	950

2.6 Closure and Reclamation

Closure and Reclamation will span three years after production has ended and will include reclaiming the mine site, railways, and port facilities. Baffinland estimates it will require 300 employees annually to complete these tasks.

Table 2.6: Mary River Project Labour Demand—Closure and Reclamation

	Total	2036 to 2038 (annual average)
Skill Level B and Higher Workforce	450	150
Skill Level C Workforce	315	105
Skill Level D Workforce	135	45
Total Workforce	900	300

2.7 Summary

Table 2.7 contains the estimated labour force requirements by skill level for the entire life of the Project. Note that operations do not stop during the construction phases. The proposed Phase 2 construction will combine with the ongoing ERP operations, followed by a second construction phase (Steensby Port and South Railway) that will combine with the Phase 2 Proposal and 12 Mtpa operations. Labour demand will stabilize in 2025 until operations wrap up in 2035, and the 3-year reclamation and closure phase takes over.

Table 2.7: Mary River Project Cumulative Labour Demand, 2016 to 2040

	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Level B and Higher	360	456	525	657	705	967	1,470	1,384	1,501	885	885	885	885
Level C	479	606	698	896	980	750	764	732	1,111	885	885	885	885
Level D	94	119	137	245	323	349	384	358	374	190	190	190	190
Total Workforce (FTE)	933	1,181	1,360	1,798	2,008	2,066	2,618	2,474	2,986	1,960	1,960	1,960	1,960
Estimate Peak Workforce	933	1,181	1,360	2,070	2,410	2,760	3,690	3,450	3,670	1,960	1,960	1,960	1,960

	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	Total	Annual Average
Level B and Higher	885	885	885	885	885	885	885	150	150	150	**18,211**	**792**
Level C	885	885	885	885	885	885	885	105	105	105	**17,068**	**745**
Level D	190	190	190	190	190	190	190	45	45	45	**4,607**	**200**
Total Workforce	1,960	1,960	1,960	1,960	1,960	1,960	1,960	300	300	300	**39,886**	**1,734**
Estimate Peak Workforce	1,960	1,960	1,960	1,960	1,960	1,960	1,960	300	300	300		

3 Potential Inuit Labour Supply

3.1 What is the Potential Inuit Labour Supply and how is it determined?

The potential Inuit labour supply can be defined simply as Inuit who are ready, able, and willing to work at the Project.

Readiness implies an individual is old enough to work and is not otherwise unavailable to work.[9,10]

Ability implies the individual has the right education and training, and is mentally and physically able to complete the tasks required of the job.

Willingness implies that an individual wants a job and will make whatever changes in their life necessary to take the job. As an example, a majority of the Project's jobs require employees to work in a camp with a 2-week work rotation. This rotation is an insurmountable barrier for some individuals who are otherwise ready and able to work. This factor also includes individuals who are employed but are willing to leave their current job for one with the Project.

The first step in establishing an estimate of the potential Inuit labour supply is to examine the regional population to determine who is ready to work. The region is referred to as the Local Study Area and includes the communities of Arctic Bay, Pond Inlet, Clyde River, Igloolik, Hall Beach, and Iqaluit. This LSA is sometimes divided between the North Baffin communities and Iqaluit as part of the analysis.

Estimating the ready workforce is relatively straightforward. The median age of North Baffin LSA community residents was approximately 21 at the time of the last Census meaning the number of Inuit residents meeting the age requirements is a little more than half of the regional population. This subset of the region's total population is considered the ready workforce—they live in the right region and they meet the minimum age requirement.

While technically correct, it is not accurate to assume everyone within this working-age population is a potential employee. As proof of this, the majority of jobs created by the Project require the employee have at least a high school diploma or its equivalency and some training or work experience. Many of the jobs require a professional designation, years of experience, or a university education. So, at a minimum, the ready workforce should be separated according to their general qualifications for the types of jobs being created.

- Ready workers without a high school diploma or its equivalency qualify for entry-level jobs. These types of jobs represent approximately 10% of the operations workforce and about 20% of construction jobs. It is important to note that Inuit currently fill the majority of the Level D jobs associated with the ERP, so in terms of increasing Inuit employment, there are not a lot gains to be made in this area.
- Ready workers with a high school diploma or its equivalency qualify for a wider variety and larger number of jobs, and have the prerequisite education to participate in training needed for advancement.

Past Census have found that approximately 35% of Nunavut's Inuit adult population have acquired a high school diploma. This lowers the potential Inuit labour force by 65% from those simply ready for work.

[9] Workers' Safety and Compensation Commission regulations preclude Baffinland from hiring anyone under the age of 18.
[10] Individuals who are incarcerated, serving in the Canadian Armed Forces, or are medically unable to work are a part of this group of people who are old enough but not available to work. Statistics Canada defines this ready group as the labour force's source population.

Inuit who are ready and able to work represent, at least theoretically, the potential labour supply. These individuals live in the LSA, they are of the right age, and they have the basic education required for employment and job-related training.

The difference between this theoretical supply and the actual or realistic supply is the willingness of individuals to work at the Project. Not everyone wants a job at a mine. Others are unwilling to make changes in their lives that would enable them to work a mine. There are numerous reasons or circumstances for this. Some of the more common reasons are cited below:

- *Employment status*—being employed does not exclude anyone from applying for work at the Project, but it does mean that the individual doesn't need the job. Changing jobs would likely be based on a comparison of benefits (intrinsic and extrinsic) and be conditional on the other potential constraints.
- *Aptitudes*—not everyone possesses the mental and physical abilities to do the work that is required. As examples, some jobs include strenuous physical activities, while others require long periods of constant careful attention.
- *Interest*—working at a mining project is not for everyone, some are simply not interested in the jobs available and would prefer other types of employment. Others are simply not interested in working 12 hours a day for 14 consecutive days in a remote setting. For example, Agnico Eagle Mines Ltd reported that some of its younger, unmarried Inuit employees left their jobs because they missed their girlfriend/boyfriend.
- *Familiarity with wage employment*—for some Inuit, work at the Project will be their first job and it can take time before becoming accustomed to the requirements of employment.
- *Family responsibilities*— Many Inuit have large families (three or more children) and they may care for elder parents or other dependents. For some Inuit, taking a job that would have them leave their families for two weeks is simply not possible. This is particularly true for single-parent families or in families where one partner is already working at a job that has them away from home for extended periods—this would include employment at the Project or any other job that requires regular travel away from home.
- *Language*—English can be a barrier (perceived or otherwise) for some Inuit who are otherwise ready, able, and willing to work. For example, while the IIBA clearly states that lack of fluency in English will not necessarily be a barrier to employment, linguistic issues may affect participation in the training necessary to take up a position in the Project workforce.
- *Criminal record*—crime rates are extremely high in Nunavut, and particularly so for young Inuit. A criminal record may disqualify someone from employment with the Project depending on the number and severity of criminal activities.
- *Dependencies*—different dependencies can deter someone from seeking employment in a camp setting. One example of a dependency is addictions that would make working in a camp setting for 2 weeks difficult if not impossible. Another example is public housing, where residents might be concerned the cost of their public housing unit will rise as a result of their higher income and do not believe the increased cost is affordable.[11]

[11] Baffinland has announced it will compensate Inuit employees living outside the LSA for travel costs. This should mitigate the challenges associated with public housing that prevented potential labour from relocating to a designated point-of-hire community.

The biggest challenge in assessing the implications of these willingness factors is that a majority of them are not easily quantified. The absence of data should not be interpreted as meaning these reasons are any less important in the assessment. However, it does mean that other methods are needed to help inform their significance.

One such method is to look at examples of Inuit or Indigenous workforce participation in the mining industry in other regions of Nunavut and the Northwest Territories. For example, in the Kivalliq Region, approximately 7% of the Inuit population that can be deemed "ready for work" is employed at the Meadowbank Mine. Their experience can be used as a comparison to the experience of the Mary River Project and the estimation of potential labour supply in the LSA.

Other factors were considered in estimating the ready, able, and willing labour force. These factors are not often found in a standard labour market analyses, but were relevant in the context of Nunavut and the Project. For example:

- The Labour Market Analysis is concerned primarily with Inuit labour in the LSA. Inuit from other regions and non-Inuit in the LSA are both potential sources of labour and it is important to point out that the MIEG treats all Inuit equal regardless of residency. However, it is also true that the Inuit labour from the LSA has been given priority status and Baffinland has established the six communities as pick-up points for employment.
- The employment status of ready, able, and willing Inuit is not included in the initial calculations to determine the potential Inuit labour supply, however, if one were to view the goal of maximizing Inuit employment more holistically, unemployed labour would be the primary target. To this end, Baffinland has not made a practice of recruiting from within other industries and from other employers, but inevitably, its workforce will include at least some individuals who choose to leave their current job to take up a new one with the Project.
- Another variable to consider is gender. Baffinland is actively promoting employment amongst women and the IIBA establishes access to employment opportunities for women as a priority. However, examples from other mining projects in Nunavut and the NWT suggest women tend to fill 15% or 20% of the workforce, and rarely much more. Baffinland might be able to improve upon this, but there is a downside risk in assuming it will. This doesn't mean women should not be considered a part of the potential labour supply, but it does mean the probability of filling mining positions with women is likely low in comparison to men.
- It is also useful to add further refinements to the ready workforce estimates; that is, there are good reasons to narrow this group from all individuals aged 18 to 99 to something more reasonable. For example, any position requiring education or training beyond a high school diploma likely excludes individuals who are 18 years of age. Similarly, being 60 years of age or older does not exclude someone from working at the Project, however, for the purpose of this exercise, old age might be a legitimate factor in affecting the abilities or willingness to work—especially in the case of new hires. For these reasons, the age range that most accurately reflects the ready workforce was assumed to be 19 to 59.[12]
- Inuit who are ready and able to work at the Project, but have chosen to concentrate the majority of their productive efforts in the traditional or subsistence economy are an important consideration. These individuals are difficult to capture using standard survey methods. It is not uncommon for these people to participate in the wage economy from time to time, sometimes on a part-time or seasonal basis, so they can appear to be available for work according to survey

[12] Later on in the report the 25 to 64 age cohort is used as a proxy for the 19 to 59 age cohort. 19 to 59 is the age range for individuals who are ready to work at the Project. Additionally, the 25 to 64 age cohort is often used by Statistics Canada when reporting socio-economic cross-sectional data (e.g. employment, education, income).

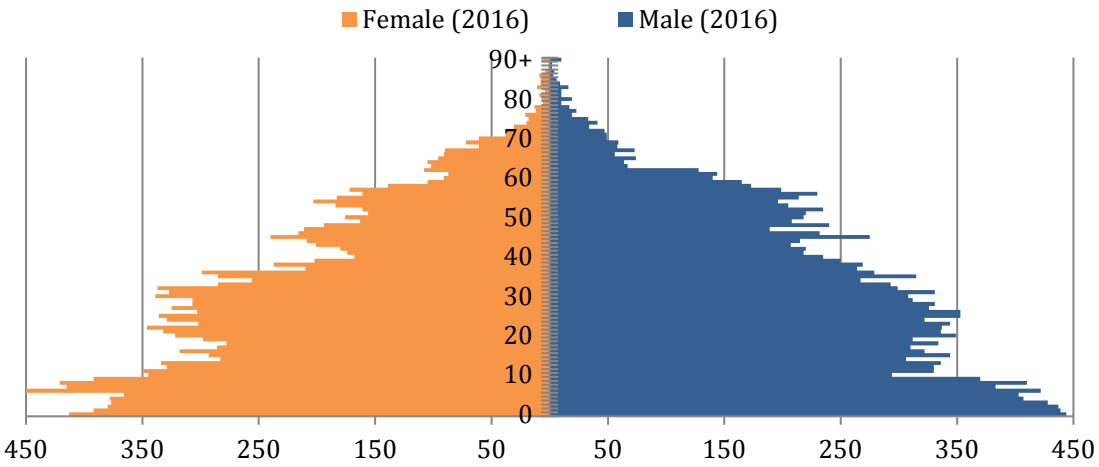
methods such as Statistics Canada's *Labour Force Survey*. Other times, they will be recorded as "Not in the Labour Force" but might meet the ready and able conditions. Regardless, these people are not likely candidates for work at the Project, but could be inadvertently included in the potential labour supply estimates.

A realistic estimate of the potential Inuit labour supply is determined by combining the ready, able, and willing factors. The key point is that one cannot simply look at the entire Nunavut population when studying labour force participation. The actual pool of potential workers is a small fraction of this larger number. Figure 3.1 provides an illustration of what this process looks like.

Figure 3.1: Representation of How the Labour Supply Criteria Helps in Determining the Potential Labour Force

3.2 Population Demographics

Nunavut's 2016 population was estimated at 37,082; 84% (31,234) of that population were Inuit.[13] The population is young, with the median age of 24.7 compared to 40.6 for Canada.[14,15] Figure 3.2 shows the demographic structure of the territory, which highlights the large percentage of residents under the age of 19 and the low percentage of residents over the age of 60.



Source: Statistics Canada (2017). Demography Division. CANSIM 051-0001.

Figure 3.2: Nunavut's Population Pyramid, 2016

It is worth noting the contrast between Iqaluit and the rest of the territory. Iqaluit's population is still young by Canadian standards with a median age of 30.1, but is significantly older than the North Baffin LSA communities (Table 3.1). A median age that is close to 20 implies almost half of the population are not eligible (i.e. not ready) for work at the Project.

Table 3.1: Median Age, 2011

	Median Age
Nunavut	24.1
Arctic Bay	22.5
Clyde River	20.7
Hall Beach	21.2
Igloolik	21.1
Pond Inlet	22.5
Iqaluit	30.1
Source: Statistics Canada, *2011 Census*	

[13] Statistics Canada, *Demography Division*, published by the Nunavut Bureau of Statistics
[14] Statistics Canada, *2011 Census*
[15] The *2016 Census of Canada* is used but not in its entirety. This is because Statistics Canada has not yet adjusted its results to account for undercoverage. That work, along with the details contained within the Long-form Census, including important socioeconomic data will be published later in 2017.

The LSA population represents 38% of the territory's total population. Estimates published by the Nunavut Bureau of Statistics (the Bureau) show the combined population of Pond Inlet, Arctic Bay, Igloolik, Clyde River, and Hall Beach (i.e. the North Baffin LSA) was 6,608 in 2016 while Iqaluit's population was estimated to equal 7,590 (Table 3.2). Table 3.3 further illustrates the age distribution of the population, especially in the North Baffin communities. Table 3.4 on the following page contains estimates of community populations by age-cohort and ethnicity.

Table 3.2: 2016 Population Estimates

	Total Population	Inuit	%	Non-Inuit	%
Nunavut	37,082	31,234	84%	5,848	16%
LSA Total	14,198	10,455	74%	3,743	26%
North Baffin LSA	6,608	6,247	95%	361	5%
Arctic Bay	876	828	95%	48	5%
Clyde River	1,127	1,085	96%	42	4%
Hall Beach	956	915	96%	41	4%
Igloolik	1,986	1,850	93%	136	7%
Pond Inlet	1,663	1,569	94%	94	6%
Iqaluit	7,590	4,208	55%	3,382	45%

Source: Nunavut Bureau of Statistics, Population Estimates

Table 3.3 Population Estimates by Age Cohort

	North Baffin LSA			Iqaluit		
	Female	Male	Total	Female	Male	Total
Total	3,238	3,370	6,608	3,730	3,860	7,590
0 to 4	431	448	879	301	345	646
5 to 14	738	747	1,485	592	479	1,071
15 to 24	589	579	1,168	449	528	977
25 to 44	904	994	1,898	1,343	1,311	2,654
45 to 64	463	474	937	890	1,106	1,996
65 and over	113	128	241	155	91	246

Source: Nunavut Bureau of Statistics, Population Estimates.

Table 3.4: Regional Population Estimates

	Total	0 to 4	5 to 14	15 to 24	25 to 44	45 to 64	65 and over
				(by age cohort)			
Nunavut	**37,082**	**4,095**	**7,273**	**6,414**	**10,932**	**6,899**	**1,469**
Inuit	31,234	3,764	6,665	5,701	8,788	4,975	1,342
non-Inuit	5,848	331	608	713	2,144	1,924	127
Local Study Area	**14,198**	**1,525**	**2,556**	**2,145**	**4,552**	**2,933**	**487**
Inuit	10,455	1,271	2,151	1,762	3,148	1,736	387
non-Inuit	3,743	254	405	384	1,404	1,197	100
North Baffin	**6,608**	**879**	**1,485**	**1,168**	**1,898**	**937**	**241**
Inuit	6,247	848	1,434	1,122	1,772	842	229
non-Inuit	361	31	51	46	126	95	12
Iqaluit	**7,590**	**646**	**1,071**	**977**	**2,654**	**1,996**	**246**
Inuit	4,208	423	717	640	1,377	894	157
non-Inuit	3,382	223	354	337	1,277	1,102	89
				(percentage of population)			
Nunavut	**100%**	**11%**	**20%**	**17%**	**29%**	**19%**	**4%**
Inuit	100%	12%	21%	18%	28%	16%	4%
non-Inuit	100%	6%	10%	12%	37%	33%	2%
Local Study Area	**100%**	**11%**	**18%**	**15%**	**32%**	**21%**	**3%**
Inuit	100%	12%	21%	17%	30%	17%	4%
non-Inuit	100%	7%	11%	10%	37%	32%	3%
North Baffin	**100%**	**13%**	**22%**	**18%**	**29%**	**14%**	**4%**
Inuit	100%	14%	23%	18%	28%	13%	4%
non-Inuit	100%	9%	14%	13%	35%	26%	3%
Iqaluit	**100%**	**9%**	**14%**	**13%**	**35%**	**26%**	**3%**
Inuit	100%	10%	17%	15%	33%	21%	4%
non-Inuit	100%	7%	10%	10%	38%	33%	3%
				(percentage of Inuit)			
Nunavut	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Inuit	84%	92%	92%	89%	80%	72%	91%
non-Inuit	16%	8%	8%	11%	20%	28%	9%
Local Study Area	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Inuit	74%	83%	84%	82%	69%	59%	79%
non-Inuit	26%	17%	16%	18%	31%	41%	21%
North Baffin	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Inuit	95%	97%	97%	96%	93%	90%	95%
non-Inuit	5%	3%	3%	4%	7%	10%	5%
Iqaluit	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**
Inuit	55%	65%	67%	66%	52%	45%	64%
non-Inuit	45%	35%	33%	35%	48%	55%	36%

Note: The shaded area denotes actual data from Statistics Canada. The unshaded area denotes estimates.

3.2.1 Population Projections

Nunavut's population was projected forward 20 years using the *Nunavut Demographics Model* developed by Impact Economics. Nunavut has the highest fertility rates in the country and the youngest population. Together, the two variables combine to generate a high natural rate of population growth. Net migration was assumed to follow historical trends, which means the territory loses as many as 200 more residents through migration each year. Highlights from this population forecast include:

- The overall population is predicted to grow to more than 46,000 by 2036.
- Nunavummiut aged 19 to 59—the age cohort from which the majority of the Project's workforce will come from—will grow by 4,300 over the 20-year time period.
- The median age will climb to 28.

It is possible to estimate the change in LSA residents aged 25 to 64 using the details provided in Table 3.3 and Table 3.4. This 40-year age cohort is used as a proxy for the 19 to 59-age cohort that represents the ready workforce as described earlier. The 25 to 64 age cohort is an established age grouping for demographic and socioeconomic data published by Statistics Canada.

Residents aged 5 to 44 in 2016 will be 25 to 64 in 2036, while those aged 45 to 64 in 2016 will be 65 or older by that time. Thus, the calculation requires that one take the 5 to 44 age cohort from 2016 and move it ahead 20 years making adjustments for migration and the probability of deaths during that time.

Using this simple methodology, the number of North Baffin residents aged 25 to 64 can be estimated to grow to just over 4,000 by 2036 while the number of Inuit within this population is estimated to grow to just over 3,800—an increase of almost 1,200 (see Table 3.5a). **If the Project is going to grow its Inuit workforce, these new entrants into the labour market are important to study.**

Table 3.5(a): Projected Population of North Baffin LSA, 20-year outlook

	Total	Inuit
Aged 25 to 64 in 2016	**2,835**	**2,614**
Aged 5 to 44 in 2016	4,551	4,327
Total deaths within the 2016 5 to 44 age cohort over the 20-year time period	-258	-245
Net Migration within the 2016 5 to 44 age cohort over the 20-year time period	-287	-273
Aged 25 to 64 in 2036	**4,006**	**3,809**
Change over 20 years (aged 25 to 64 cohort)	**+1,171**	**+1,195**

Notes:
- 2016 population estimates by age cohort and territory-wide population projections for mortality and migration.
- Mortality and migration rates are projections based on historical territorial data.
- Mortality rates and migration data are not available at the community level on an annual basis. LSA communities were assigned a percentage of territorial estimates based on 2016 age distributions.

Iqaluit has a different demographic profile than the rest of the territory and is affected by migration from throughout Nunavut and from southern Canada to a much greater degree than anywhere else in the territory. It is also important to note that 45% of Iqaluit's population is non-Inuit. These differences represent challenges in estimating Iqaluit's future Inuit population.

Using the same methodology as applied to the North Baffin LSA, it can be observed that the number of Iqaluit residents aged 5 to 44 in 2016 was almost identical to those aged 25 to 64; 4,700 and 4,650, respectively (Table 3.5b). However, there is a difference between the Inuit populations of these two cohorts; 2,270 and 2,734. Historically, Iqaluit has been a community that grows as a result of in-migration, but it is also true that in the last ten years, Iqaluit's rate of growth has matched that of Nunavut. For the purpose of this study, it can be assumed that net migration cancels any losses caused by death, meaning the population aged 25 to 64 will be left virtually unchanged, but the number of Inuit in that age cohort will grow by approximately 464.

Table 3.5(b): Projected Population of Iqaluit, 20-year outlook

	Total	Inuit
Aged 25 to 64 in 2016	**4,650**	**2,270**
Aged 5 to 44 in 2016	**4,700**	**2,734**
Total deaths within the 2016 5 to 44 age cohort over the 20-year time period	-293	-170
Net Migration within the 2016 5 to 44 age cohort over the 20-year time period	+293	+170
Aged 25 to 64 in 2036	**4,700**	**2,734**
Change over 20 years (aged 25 to 64 cohort)	**+50**	**+464**

Taken together, the entire LSA population aged 25 to 64 is predicted to expand from its 2016 number (7,485) to just over 8,700, while the total Inuit population in this age cohort will expand from 4,884 to 6,543 (see Figure 3.3). For simplicity, it was assumed that the growth path would be linear. **This age-cohort represents the underlying pool of available labour; that is, it is an approximation of the ready labour supply**. In the next sections, other factors are applied to this number to determine more precisely the labour that is ready, able, and willing to work for the Project.

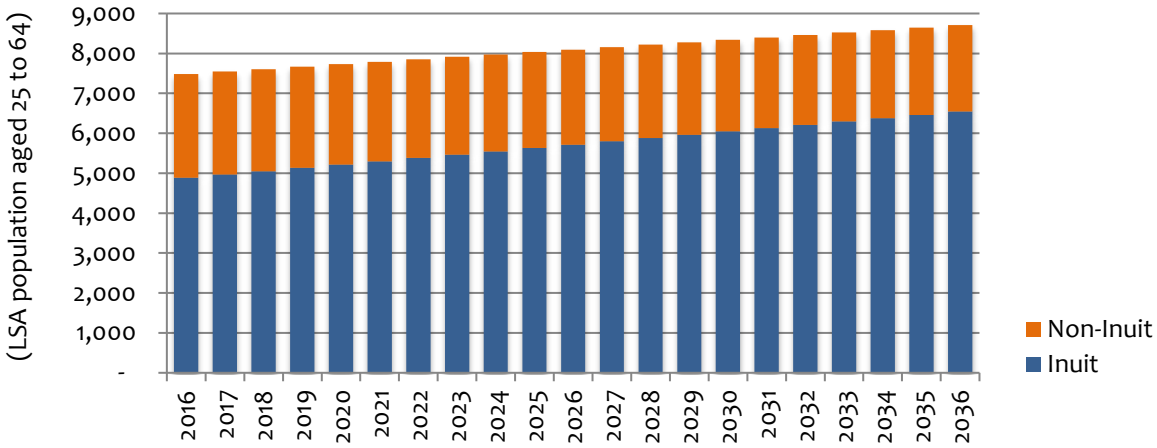


Figure 3.3: Ready LSA Labour Supply

3.3 Education Levels

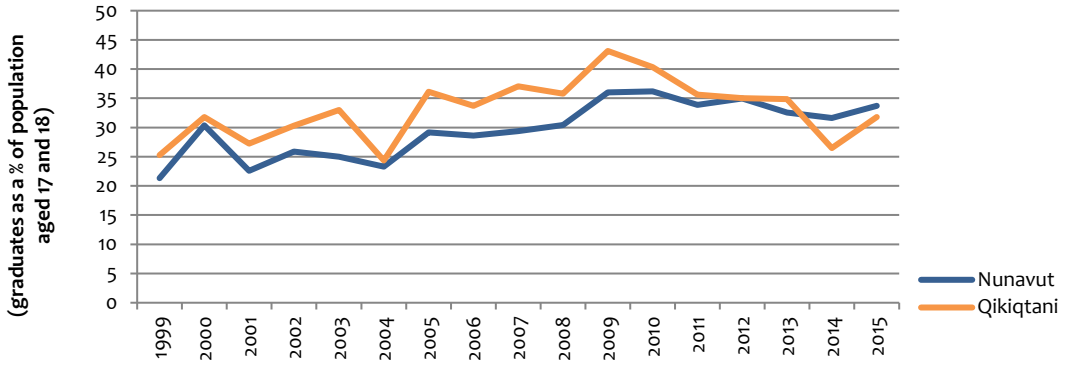
The next step in the analysis is to study the education levels of LSA residents to determine how many are able to work—that is, how many have the minimum required qualifications. While the IIBA requires Baffinland to consider skills and equivalencies as an alternative to formal certification where appropriate, education levels are still considered in this analysis to be an important limiting factor.

Not having a high school certificate does not mean a person is unemployable, but it does reduce the probability of working and lowers the number and range of jobs he or she is qualified to do. It should be reiterated that Baffinland expects that entry-level or unskilled jobs where a high school diploma or its equivalency are not prerequisites for employment will represent just 10% of all the operations-related jobs created by the Project. Education and training are vital for increased participation.

The Project has introduced mitigation measures that address training and workforce readiness (and specific training and education initiatives are mandated by the IIBA), however, these can only affect graduation rates indirectly through incentives for students to remain in school. Families, communities, governments, and students themselves, have far greater roles in producing high school graduates that are able to work. It is also a critical point that investments in training are more successful in improving the employability of labour when that labour has the foundational numeracy and literacy skills typically associated with a high school education or its equivalency.

The *2011 National Household Survey* found that 35% of residents aged 15 and over living in the Baffin Region, but excluding Iqaluit, had a high school diploma or certificate.[16] In Iqaluit, 67% of residents in this age cohort have graduated from high school. The higher education levels in Iqaluit are a reflection of in-migration from other parts of Nunavut and Canada. These migrants tend to relocate because of employment opportunities and have already attained high school certificates and, often times, university diplomas prior to their arrival.

Low graduation rates have long been an issue for the territory and will have implications for the assessment of a potential labour force for the Project.[17] Since the *National Household Survey* was conducted in 2011, rates have shown little progress. Graduation rates have been as high as 36% for Nunavut (2010) and 43% for the Qikiqtani Region (2009), but on average, have been 33% and 35%, respectively, over the past decade (Figure 3.4). At these rates, no more than 3 or 4 of every 10 students entering the workforce will actually qualify for jobs requiring a high school certificate as a prerequisite.



Source: Department of Education. Graduation Rates. Published by Nunavut Bureau of Statistics.

Figure 3.4: Graduation Rates, 1999 to 2015

[16] Statistics Canada (2012). *National Household Survey*

[17] Clinton G. and Vail, S. (2001). *2001 Nunavut Economic Outlook*. The Conference Board of Canada, May 2001.

From these graduation rates, the territory produces 200+ graduates each year (with the highest number being 245 in 2009). The Qikiqtani Region typically produces in excess of 100 graduates annually, though the number over the past two years has been lower (Table 3.6).

Table 3.6: Nunavut Secondary School Graduates, 2011 to 2015

	2010/11	2011/12	2012/13	2013/14	2014/15
Number of Graduates - Total					
Total, Nunavut	229	240	218	206	208
Total, 17 and 18 Year Olds[1]	1,353	1,368	1,340	1,303	1,234
Graduation Rate	33.9	34.9	32.5	31.6	33.7
Number of Graduates – Qikiqtani Region					
Total Graduates, Qikiqtani	119	124	119	86	95
Total, 17 and 18 Year Olds	668	708	683	650	598
Graduation Rate (%)	35.6	35.0	34.8	26.5	31.8
Percentage of Total Graduates by Sex					
Females	50.2	52.1	55.5	55.3	56.7
Males	49.8	47.9	44.5	44.7	43.3
Percentage of Total Graduates by Ethnicity					
Inuit	90.0	95.0	95.0	92.7	93.8
Non-Inuit	10.0	5.0	5.0	7.3	6.3

Source: Department of Education, Government of Nunavut. Prepared by Nunavut Bureau of Statistics, October 18, 2016

The *2011 National Household Survey* provides an estimate of the education status of the LSA population by highest certificate, diploma, or degree (Table 3.7).[18,19] There are more residents in Iqaluit with post-secondary education than in the North Baffin LSA communities (60% of Iqalummiut have some measure of postsecondary certificate, diploma, or degree compared to 31% of the North Baffin LSA population). This would suggest that Baffinland might be able to fill some jobs requiring higher levels of education from within the Iqaluit labour market. However, 45% of Iqaluit's residents are non-Inuit, and Inuit with higher levels of education who are living in Iqaluit are typically already employed. Therefore, to attract and retain skilled Inuit workers from Iqaluit, Baffinland will have to entice them away from their current employment.

[18] The National Household Survey replaced the Long-form Census in 2011. Participation in the survey was voluntary. As such, the number of participants in Igloolik and Clyde River were too low to meet minimum requirements needed to establish a reasonable estimate. Therefore, an estimate of the education status of residents of these two communities is not available. It must be assumed that the education status in these communities follows the same pattern as surrounding communities throughout the North Baffin region.

[19] Results from the recent *2016 Census* will be released later in 2017 and will provide a more current account of education levels in these communities though they are not expected to reveal any major changes from the data in this table.

Table 3.7: LSA Population by Education

	Iqaluit	%	Arctic Bay, Pond Inlet, Hall Beach	%
Total population aged 25 to 64 years	**3,780**		**1,200**	
No certificate, diploma or degree	**920**	**24%**	**715**	**60%**
High school diploma or equivalent	**600**	**16%**	**120**	**10%**
Postsecondary certificate, diploma or degree	**2,260**	**60%**	**375**	**31%**
Apprenticeship or trades certificate or diploma	290	8%	125	10%
College, CEGEP or other non-university certificate or diploma	885	23%	170	14%
University certificate or diploma below bachelor level	115	3%	0	0%
University certificate, diploma or degree at bachelor level or above	975	26%	50	4%
Bachelor's degree	635	17%	50	4%
University certificate, diploma or degree above bachelor level	340	9%	10	1%

Source: Statistics Canada, *2011 National Household Survey*
Note that figures may not add up due to the effects of rounding. Data for Igloolik and Clyde River have been suppressed by Statistics Canada because of an insufficient response to the survey.

3.4 Employment Status of Potential LSA Labour Supply

Nunavut's labour market is characterized by a shortage of jobs, especially ones with low skill level requirements, and high rates of unemployment, especially outside Iqaluit. The introduction of a mining project such as the one at Mary River can seem, at least initially, as a great opportunity to address these labour market challenges. Ideally, if the LSA could supply the Project with all of its labour needs, that would go a long way in eliminating unemployment and transforming the overall financial wellbeing of the population. So there is an interest in looking at the unemployed population first, before considering those who are already working.

The most current labour force data is gathered by Statistics Canada through its *Labour Force Survey* (Table 3.8). The drawback to this survey is that it represents the entire territory, and does not provide data on a community-by-community basis. However, it does disaggregate the data between Inuit and non-Inuit, gender, and age, all of which is relevant to this assessment.

From the data one can see the unemployment rate is very high by Canadian standards (national unemployment is currently below 7%) and there is a large segment of the working age population that is not in the labour force. In the context of a typical Labour Market Analysis, these results would be seen as positive because it suggests there are a large number of residents ready to work (they are old enough) and who are unemployed.

The next important point is that almost all unemployed Nunavummiut are Inuit. Non-Inuit residents tend to be working or are not in the labour market—in 2016, there were 4,900 non-Inuit of working age, 4,300 were in the labour force, and 4,200 were employed. This is an important fact for the Project's employment goals. Inuit make up the vast majority of unemployed or idle labour, which aligns with the goal of employing Inuit as a priority.

A final point is the difference in labour force characteristics related to gender. The unemployment rate amongst females is half that of males. A part of this difference can be explained by the fact that fewer females participate in the workforce. But it is also true that females in Nunavut perform better in school and therefore, as a whole, are more qualified for a wider variety of jobs. These gender-related data have only a small effect on estimates of the potential labour supply because the Project is expected to attract male employees more so than female employees. However, it should also be acknowledged the IIBA establishes access to employment opportunities for women as a priority.

Table 3.8: Labour Force Characteristics, 2016

	Total (15+)
Population	24,200
Labour force	15,900
Employment	13,500
Unemployment	2,400
Not in the labour force	8,300
Participation rate (%)	65.6
Employment rate (%)	55.9
Unemployment rate (%)	14.9

	Inuit	Non-Inuit
Population	19,400	4,900
Labour force	11,600	4,300
Employment	9,400	4,200
Unemployment	2,200	X
Not in the labour force	7,800	600
Participation rate (%)	60.0	88.1
Employment rate (%)	48.4	85.6
Unemployment rate (%)	19.3	X

	Male	Female
Population	12,500	11,700
Labour force	8,600	7,300
Employment	6,900	6,600
Unemployment	1,600	700
Not in the labour force	4,000	4,400
Participation rate (%)	68.4	62.6
Employment rate (%)	55.3	56.4
Unemployment rate (%)	19.2	9.8

	Youth (15 to 24)	Adult (25+)
Population	5,900	18,300
Labour force	2,800	13,100
Employment	2,200	11,400
Unemployment	600	1,700
Not in the labour force	3,100	5,200
Participation rate (%)	47.1	71.6
Employment rate (%)	36.3	62.2
Unemployment rate (%)	22.9	13.1

Source: Statistics Canada, Labour Force Survey, Special Tabulations

File prepared by Nunavut Bureau of Statistics, March 6, 2017

New employment data for the LSA communities will not be available until later when Statistics Canada publishes the final results of its *2016 Census*. The new results are expected to show an improved labour market throughout the LSA that will be attributed, at least in part, to the Project's job creation. Until these new data are released, the analysis must rely on community-level employment data collected as a part of the *2011 National Household Survey* (Table 3.9).

Participation and employment rates were low for the North Baffin communities in 2011, with averages of 53.8% and 42.7 % respectively.[20] This indicates a large percentage of the North Baffin adult population are neither working nor are they looking for work. Iqaluit is entirely different. That community exhibits a very robust labour market, with a participation rate over 78% and an unemployment rate close to 9%.

Table 3.9: LSA Community Labour Markets, 2011*

	Baffin	Iqaluit	Baffin excl Iqaluit	Arctic Bay	Hall Beach	Pond Inlet
Total population aged 15 years and over	11,590	4,980	6,610	515	340	1,010
In the labour force	7,475	3,920	3,555	270	175	540
Employed	6,380	3,560	2,820	205	115	420
Unemployed	1,100	360	740	70	60	120
Not in the labour force	4,120	1,060	3,060	245	165	475
Participation rate	64.5	78.7	53.8	52.4	51.5	53.5
Employment rate	55	71.5	42.7	39.8	33.8	41.6
Unemployment rate	14.7	9.2	20.8	25.9	34.3	22.2

Source: Statistics Canada. 2013. 2011 National Household Survey. Released September 11, 2013. http://www12.statcan.gc.ca/nhs-enm/2011/dp-pd/prof/index.cfm?Lang=E

Note: * Data for Igloolik and Clyde River were withheld by Statistics Canada because of underrepresentation of residents of those communities in the survey.

These labour market data lend further support to the goal of concentrating hiring efforts in North Baffin LSA communities in addition to the efforts in employing Inuit. That is, the majority of unemployed labour within the LSA fall within one or both of these two population segments.

[20] By comparison, participation and employment rates for Canada are 65.7% and 61.6% respectively.

3.5 Estimating the Future Labour Supply

As already noted, there are a limited number of jobs with the Project that do not require a high school diploma and the majority of these are already filled by Inuit from the LSA—in 2016, 53 of the 94 FTE Level D jobs were filled by LSA Inuit. If the Inuit employment number is to grow beyond the number of unskilled positions, it will have to be in jobs that require a high school certificate or equivalency in combination with some training and on-the-job experience. Therefore, estimates of the future labour supply should be focussed on Inuit residents that have graduated from high school or have otherwise earned a high school diploma; that is, it can be assumed that the LSA will produce enough workers to fill most, if not all, unskilled jobs at the Project, but for Inuit participation to grow beyond that it will have to be in higher skilled positions.

This future labour supply can be estimated by combining the projections for the working age population with assumptions on future graduation rates.

- There were approximately 2,600 Inuit in the North Baffin LSA aged 25 to 64 in 2016.
- It is estimated that 915 of these people have a high school certificate.
- The cohort will grow by approximately 1,200 (2,600 to 3,800) in 20 years from 2016 to 2036.
- It was shown earlier that graduation rates were 33% in 2014-15.
- If they remain at that rate, then 400 of these new entrants into the workforce will have a high school diploma.
- If graduation rates were assumed to rise incrementally to 50%, then the region will produce 500 high school graduates.

These results can be divided by gender. Recent evidence suggests females perform better in school in Nunavut—54% of graduates over the past five years were female. Maintaining that difference over the forecast period, the number of North Baffin Inuit male graduates will increase by 230 while female graduates will rise by 270 (see Figure 3.5).

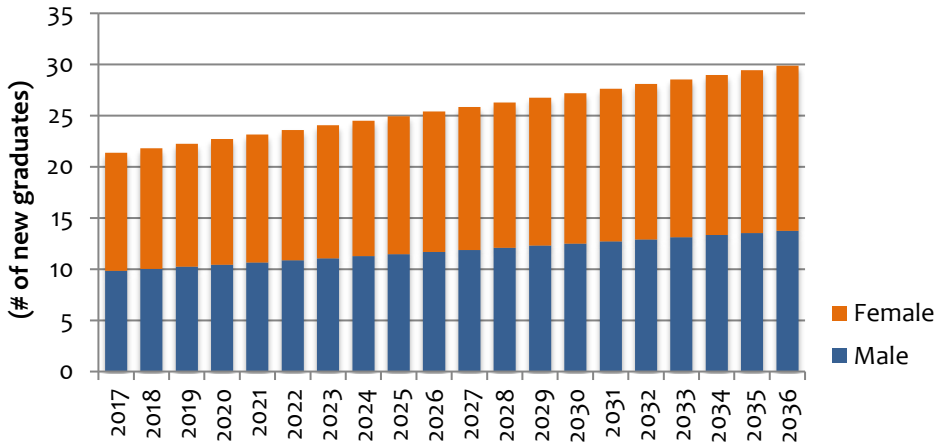


Figure 3.5 North Baffin Graduates Entering the Workforce Each Year

Similar estimates can be made for the Inuit population in Iqaluit. It is estimated that 1,300 Inuit aged 25 to 64 living in Iqaluit (57%) have a high school education. The number of Inuit in this age bracket is expected to grow by just over 460 over the next 20 years. Assuming a graduation rate of 60% for Inuit students in the city, the number of Inuit aged 25 to 64 who have a high school diploma will increase by 275 or approximately 14 annually.

Together, the North Baffin and Iqaluit Inuit aged 25 to 64 with a high school diploma are expected to grow from approximately 2,215 in 2016 to 3,000 by 2036 (see Figure 3.6). **This is an approximation of the ready and able Inuit labour supply.**

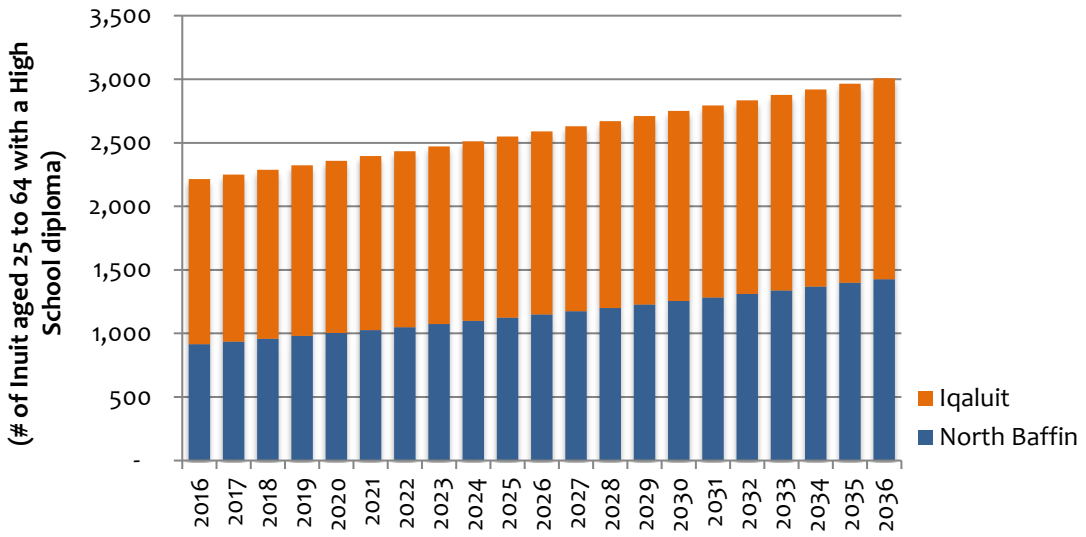
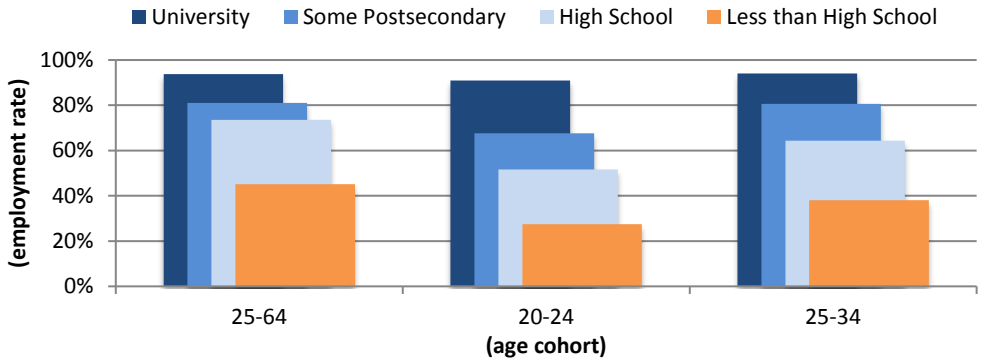


Figure 3.6: Ready and Able Inuit Labour Supply

As noted earlier, there is a keen interest from within the region to see the Project contribute to lowering the unemployment rate throughout the LSA, and in particular, within the Inuit population residing in North Baffin communities. Until the 2016 Census data are released, estimates are needed to determine the ready and able Inuit labour force by employment status in order to determine the number who are currently without a job—presumably, the best candidates for employment at the Project.

Again, data from the *2011 National Household Survey* can help in determining a reasonable estimate. The probability of having a job without also having a high school diploma is low. In other words, the majority of unemployed residents in the LSA are without a high school certificate (see Figure 3.7).

- The employment rate for Nunavummiut aged 25 to 64 without a high school diploma is 45%.
- For those aged 25 to 34, the employment rate is lower at 38%.
- For those aged 20 to 24, the employment rate drops to 28%.



Source: Statistics Canada, 2011 National Household Survey.

Figure 3.7: Employment rate by education status and age cohort in Nunavut

Not shown in the figure is the employment rate for residents with at least a high school diploma (that is, combining the results for everyone with at least a high school diploma), which is 82%. This result can be applied to the 2016 ready and able Inuit labour supply shown earlier, **separating the 2,215 ready and able Inuit who are a part of the labour supply into two groups, where 1,820 are employed and 395 are unemployed**.

There isn't enough evidence to separate the data further by community and it should be noted that the 82% employment rate was calculated from a population that included non-Inuit residents.

Repeating an earlier conclusion, these calculations offer evidence that the largest pool of Inuit labour who are currently unemployed or not in the labour force are also without a high school education. How this changes over the next twenty years requires an added assumption on the future labour demand from the LSA economy as a whole not just from the Project. A safe assumption here is that an education is becoming increasingly important to one's employability, and that demand for Inuit with higher levels of education will only increase. A conclusion for the Project, then, is that competition for this Inuit labour will grow and will be a constant challenge for the Project in meeting its Inuit employment targets.

For the simple purpose of demonstration, one can assume the 82% employment rate remains unchanged over the life of the Project. This would result in a ready, able, and unemployed Inuit labour supply shown in Figure 3.8.

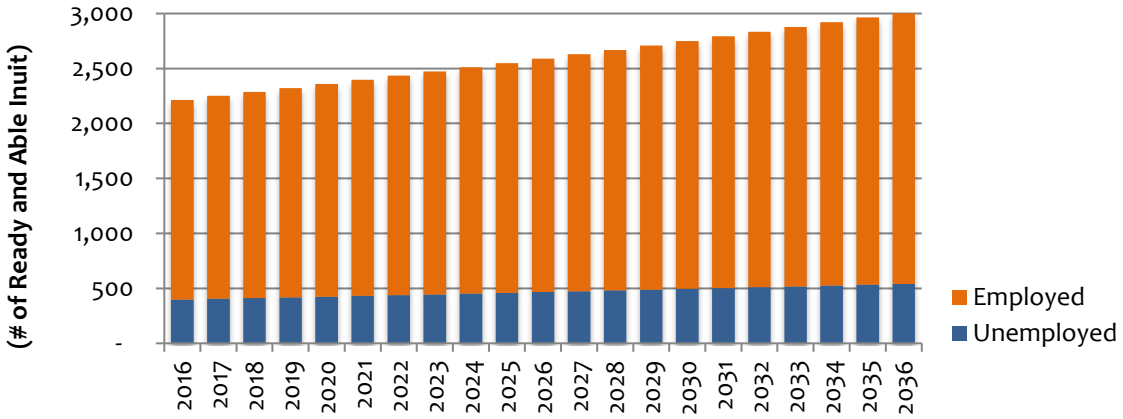


Figure 3.8: Employment Status of Ready and Able Inuit Labour Supply

Returning to the projected ready and able Inuit labour supply, it is also important to consider that only a fraction of these people will apply for jobs with the Project. Recall the additional factors that can be barriers (perceived or otherwise) to participation in the Project's workforce that are in addition to their current employment status:

- Aptitudes;
- Interest;
- Familiarity with wage economy;
- Family responsibilities;
- Language;
- Criminal record; and,
- Dependencies.

These are largely qualitative factors, and therefore it is not possible to determine precisely how many of these ready and able people are also willing to work at the Project. For example:

- How many are already employed and are willing to leave their current job?
- How many are fully capable, but who are just not interested?
- How many have family responsibilities that prevent them from working at the Project?
- How many are ready and able but participate fulltime in the traditional economy?

There is other evidence that can help piece together a better understanding of how these barriers affect the potential labour supply. The Meadowbank Mine in the Kivalliq Region has been operating since 2010. Inuit employment was relatively stable for the first five years of operations, averaging close to 250, before climbing to 300 in 2015. (see Appendix A for a full analysis of Inuit employment at the Meadowbank Mine as well as the employment record of NWT diamond mines).[21] This employment record was achieved from an Inuit population aged 25 to 64 of 4,230, meaning the participation rate of the ready workforce was 7%.

Agnico Eagle surveys its employees for reasons why they leave their job with the Project. Their answers help explain some of the potential barriers to participation. Among the reasons cited are:

- Spousal relationship issues
- Did not like the work or too tired to continue working
- Too much gossip amongst co-workers
- No babysitter or daycare
- Found a new job in town
- Homesick – need to go home
- Work was too hard or did not like the work

Note that these are largely issues of willingness and are similar to the possible barriers to employment that were listed earlier in this chapter.

The analysis presented in Appendix A also provides evidence of the investments Agnico Eagle have made in growing its Inuit workforce, the types of jobs Inuit are filling, and more details on the challenges faced by employees and the employer.

An important lesson from the experience of Agnico Eagle and of the diamond mines in the NWT is the evolution of investments in training. In both cases, the initial approach (from the mining companies and government) was to use the increased labour demand generated from large mining projects as an impetus to address skills gaps within the labour force. This approach was initially successful in getting a large number of people through a basic training regiment and giving a lot of people an opportunity for employment. However, this approach also contributed to high rates of turnover as many newly trained individuals found they were not ready, able, and willing to work at these mine sites. These training programs also found that students without the required numeracy and literacy skills were not as successful as those with these skills.

The results prompted important changes in approach. Investments in training became more focussed on individuals who showed a higher probability of success. Students were made aware of the work requirements as a part of the initial training. And, more emphasis was given to education upgrading in an effort to improve students success rate once the enrolled in training programs.

The experience of Inuit at the Meadowbank Mine does not provide enough information to determine a precise estimate of the willingness of the LSA's Inuit labour supply, but it does offer a reasonable starting point. For example, it is reasonable to assume that similarities exist between Inuit households

[21] The ready Inuit labour supply in the North Baffin LSA (number of Inuit aged 25 to 64) was 2,600 in 2016.

in the Kivalliq Region and the North Baffin LSA. There are also similarities in education and employment levels prior to the mines' development. Thus, it can be surmised that possible labour force constraints related to aptitude, interest, family, etc. are also similar.

More caution is advised when using the Meadowbank results in the analysis of Iqaluit's labour supply. The socio-economic conditions in Iqaluit are different than they were in the Kivalliq Region in 2010 when the mine went into production and Inuit are far more likely to be employed in Iqaluit. Higher levels of education and income suggest Iqaluit residents are less likely to be attracted to job opportunities at a mine site. The physical distance between Iqaluit and Mary River compared to that between Baker Lake and Meadowbank is another factor to consider.[22]

3.6 Summary of Labour Force Estimation

This chapter has been focussed on establishing an estimate of Inuit labour that are ready, able, and willing to work for the Project at some point during its operational life.

The 2016 population was used as the starting point to which employment constraints were added. This base population was separated by age and ethnicity. From the 14,000 people living in the LSA, approximately 7,500 are in the 25 to 64-age range and 4,900 of those are Inuit. This group represents the basic or ready labour supply; **all LSA Inuit employees will come from this group**.[23]

There is an argument for separating the basic labour supply by gender. Baffinland is committed to increasing the participation of women in its Project, but evidence from other mining projects in Nunavut and the Northwest Territories shows this can be a challenge. It is not uncommon to find women representing no more than 20% of a mining project's workforce, and often times, this percentage is below 15%. This fact doesn't eliminate women from the potential labour supply, but it does suggest there are additional challenges in attracting and retaining female employees.

Education levels were applied to the ready labour supply, thus establishing a ready and able labour supply. In North Baffin LSA communities, approximately 35% (915) of the adult Inuit population have a high school diploma, certificate, or equivalency. The percentage is higher in Iqaluit at close to 76% but the non-Inuit population has a major influence on this percentage. Using data from the 2011 National Household Survey, it was estimated that 57% (~1,300) of Iqaluit's adult population had completed high school or its equivalency.

Adding the education variable separates the labour supply into two groups: (1) individuals who could work in unskilled jobs where a high school education is not necessarily a prerequisite for employment; and, (2) individuals who could work in semi-skilled or higher skill-level jobs that typically require a high school education combined with additional training, education, and/or work experience. This second category represents 90% of the operational jobs at the Project, and is therefore an important category to follow.

The base population was also subdivided by employment status. Unemployed or inactive labour is thought to be the more willing to work at the Project. However, the majority within this group have not completed high school. This led to the conclusion that if the Project is to increase Inuit labour force participation, it will have to attract qualified employees who are likely employed elsewhere.

Another option for attracting Inuit employees who lack formal education and skill certifications includes being more flexible in employing Inuit based on equivalencies (as committed to in the IIBA).

[22] In the NWT, the operators of the three diamond mines have been largely unsuccessful in attracting Indigenous labour from regions outside the North and South Slave. Employers have observed reluctance on the part of potential labour from the Sahtu, Gwich'n, and Inuvialuit regions to join their workforce. Anecdotally, it has been suggested that many of the potential workers from these regions don't see the diamond mines as a part of their economy.

[23] Remember that the 25 to 64 age cohort is being used as a proxy for the population that are old enough to work at the project.

Additional training, skills upgrading, and apprenticeship programs offered by Baffinland could also assist in this regard.

As a final step, additional constraints were considered such as an individual's aptitude, interest, family situation, language, and dependencies. These are all reasons why someone who is otherwise ready and able to work might choose not to or will not remain in their new job for very long. Combined, these factors were described as an individual's willingness to work at the Project. They are qualitative but are no less important to understanding the potential Inuit labour supply. The Meadowbank Mine in the Kivalliq Region provided evidence of these willingness factors through its owner's experience with turnover and challenges in growing the Inuit workforce.

Figure 3.9 helps in visualizing how the basic labour force (the ready labour supply) is reduced to more accurately reflect a realistic estimate of the potential workforce (the ready, able, and willing labour supply). The key finding is that this final number is a very small fraction of the basic number. Other important findings relate to how many Inuit qualify for jobs requiring a high school education and that point to a need to attract new hires from within the Inuit population who are already employed, as well as the need to implement new training and skills upgrading programs, to increase hiring based on equivalencies, and to look at non-Inuit labour from within the LSA.

Figure 3.9: Ready, Able, and Willing Inuit Labour Supply

4 Conclusion

The 2017 Labour Market Analysis has described the labour demand by job classification generated by the Mary River Project and what should be expected in terms of Inuit workforce participation. A key finding of this report was that there are not enough available, interested, and qualified Inuit to fill all the jobs created by the Project, but that growth is possible and indeed, should be expected.

A focus of this research was to determine a reasonable estimate of the LSA's Inuit labour supply. This will provide, among other things, the required background information for establishing realistic employment targets.

The LSA Inuit population was 10,000 in 2016, but not all of these people can or should be considered a part of this pool of *potential* labour. For starters, almost half of the population is too young to be in the workforce. In addition, the majority (~90%) of jobs created by the Project require a high school diploma or its equivalency and at least some training or job experience as a minimum qualification. However, Nunavut has the lowest high school graduation rates in the country. With education levels included in the labour supply estimate, the potential pool of Inuit workers fell to approximately 2,200.

Projections of population growth and graduation rates established estimates of the future labour supply where the pool of ready labour will grow incrementally to 6,000 by 2036 while the ready and able labour supply will grow to 3,000 over the same time frame.

However, there are other factors in addition to age and education that must be considered. These are not easily quantified because they involve an individual's willingness to work at the Project. Some of the factors considered in this report include:

- Current employment status (willingness to change jobs)
- Aptitudes
- Interest
- Familiarity with Wage Employment
- Family responsibilities
- Language
- Criminal record
- Dependencies
- Competition from other employers

None of these factors disqualify an individual from employment at the Project, but depending on the circumstances of each individual, they can deduce the likelihood of applying for a job and/or being successful in their employment over the long term.

Combining what was learned about the LSA's Inuit population and the potential constraints to employment, it seems reasonable to conclude that the Project will improve its Inuit employment record over time. Progress is likely to be slow however and will be dependent on such things as higher graduation rates.

Annual employment targets can be useful but should be realistic and based on up-to-date information on the Inuit labour supply, changes in the labour needs of the Project, and changes in the competition for Inuit labour from elsewhere in the economy. Ultimately, improving Inuit labour force participation will be a shared responsibility. Baffinland has an important role in attracting and retaining Inuit employees, but individuals, families, communities, Inuit organisations, and government departments can also contribute.

It is assumed that all parties are genuinely interested in improving the workforce participation of Inuit in the Project, however, it must be acknowledged that some factors that prevent an otherwise eligible person from working cannot be eliminated and are out of the control of industry.

Appendix A: Participation of Indigenous Labour at Other Northern Mining Operations

Agnico Eagle Mines Limited's Meadowbank Mine located in the Kivalliq Region of Nunavut and the diamond mines located in the Northwest Territories (i.e. Ekati, Diavik, and Snap Lake) are the most recent examples of northern mines that have experience in growing their resident Indigenous workforce. These two examples provide evidence of the challenges and opportunities in entering this type of labour market.

Meadowbank Mine[24]

Labour Force Experience

The Meadowbank Gold Mine is situated northwest of Baker Lake, Nunavut. It began production in 2010. Prior to that, the Kivalliq region's last mining operation was the Rankin Inlet nickel and copper mine that closed in 1962.

When Meadowbank entered production, there were 246 Inuit employed in the operations' workforce out of a total workforce of 602 (Table A1).[25] The number remained close to that mark until 2015, when it grew to 302. It is important to note that Agnico Eagle has three classifications for jobs: permanent, temporary (or non-permanent), and on-call. Furthermore:

- The majority of Inuit working at the mine are permanent employees.
- Inuit fill all on-call positions.
- Inuit fill only a small fraction (5%) of temporary jobs.

Most jobs associated with production are permanent, while all construction jobs are temporary. There were 39 Inuit employed in non-permanent construction jobs in December 2010 compared with 571 non-Inuit from southern Canada.

Table A1: Meadowbank Mine Employment

	2010	2011	2012	2013	2014	2015
Inuit Employment	246	249	247	244	269	302
Non-Inuit Employment	356	453	540	521	519	511

Source: Meadowbank Gold Mine 2015 Socio-Economic Monitoring Report

What is not shown in the employment numbers is the effect of turnover. Turnover within the construction workforce has been extremely high, in large part, because of the temporary nature of the jobs—layoffs, end of term or end of job, temporary jobs, and quitting are all included in the turnover calculation. But the turnover in permanent positions was also high over the first five years of operations (Table A2). Many Inuit residents who were without a job in 2010 were given the opportunity to work at the mine site, but not all of them were necessarily ready, willing, and able to

[24] The facts and data in this section originate from the *Meadowbank Gold Mine 2015 Socio-Economic Monitoring Report* prepared by Stratos Inc. for Agnico Eagle Mines Ltd. December 2016.

[25] Note that these figures do not include construction or development labour. Agnico Eagle classifies these jobs as non-permanent. The number of Inuit employed in non-permanent jobs equaled 39 in December 2010 compared with 571 non-permanent (construction) jobs filled by southern workers. In relative terms, Inuit represented 6.4% of the construction crew at that time.

continue working there. Turnover amongst Inuit employees in the first year of operations was 39%. Reasons given by employees for leaving their job include:

- Spousal relationship issues
- Did not like the work or too tired to continue working
- Too much gossip amongst co-workers
- No babysitter or daycare
- Found a new job in town
- Homesick – need to go home
- Work was too hard or did not like the work
- Increase in rent for social service housing

Table A2: Employee Turnover

	2010	2011	2012	2013	2014	2015
Inuit (non-permanent)	172%	131%	127%	67%	70%	25%
Inuit (permanent)	39%	23%	16%	23%	26%	12%
Non-Inuit	7%	5%	11%	5%	7%	3%

Source: Meadowbank Gold Mine 2015 Socio-Economic Monitoring Report

Agnico Eagle reports employment by gender, but does not subdivide that indicator by ethnicity. It must be assumed that not all female employees are Inuit or Nunavummiut. The percentage of women employed in permanent positions has oscillated between 8% and 18% (Table A3).

Table A3: Employment by Gender

	2010	2011	2012	2013	2014	2015
Male	512	649	673	688	669	619
Female	90	53	114	77	120	138
(% of females)	15%	8%	14%	10%	15%	18%

Source: Meadowbank Gold Mine 2015 Socio-Economic Monitoring Report

The majority of Inuit employees work in unskilled or semi-skilled positions (Table A4). In 2015, just 1% of the Inuit workforce (3 people) worked in skilled positions and none worked in either professional or management jobs.

Table A4: Inuit Employees by Job Classification

	2014	2015
Management (A)	0%	0%
Professional (A)	0.4%	0%
Skilled (B)	1.9%	1.0%
Semi-Skilled (C)	42.4%	46.0%
Unskilled (D)	55.4%	53.0%

Source: Meadowbank Gold Mine 2015 Socio-Economic Monitoring Report

The employment numbers should be viewed alongside the population data for the Kivalliq Region to make better sense of the participation rate (Table A5 and A6). The region is home to 10,528 residents as of 2016, 9,526 (90.5%) of who are Inuit, and 45% of who are between the ages of 25 and 64. The 302 Inuit residents working at Meadowbank represent approximately 7% of the Inuit population aged 25 to 64 in the region.[26]

Table A5: Kivalliq Population, 2016

	Total	Inuit	Non-Inuit
Kivalliq Region	10,528	9,526	1,002
Arviat	2,772	2,591	181
Baker Lake	1,997	1,815	182
Chesterfield Inlet	473	427	46
Coral Harbour	1,080	1,034	46
Naujaat	1,069	1,015	54
Rankin Inlet	2,675	2,205	470
Whale Cove	462	439	23

Source: Nunavut Bureau of Statistics

Table A6: Kivalliq Population by Age Cohort, 2016

	Population	% of Total
0 to 4	1,234	12%
5 to 14	2,252	21%
15 to 24	1,974	19%
25 to 44	2,945	28%
45 to 64	1,762	17%
65 and over	361	3%
Total	10,528	100%

Source: Nunavut Bureau of Statistics

[26] It is understood that Inuit between the ages of 18 and 24 are eligible for work at Meadowbank. The 25 to 64 age range is used because it is a close proxy of the working age population and is readily available across Nunavut's communities.

The relative stability in the mine's Inuit workforce and the 7% participation rate provide some evidence to the willingness of the Inuit labour supply to work at this project. One should exercise caution in making too much of this evidence however, since the number of unskilled and semi-skilled jobs appears to be the most significant factor in limiting participation.

Education and Training Efforts

Agnico Eagle has made several investments in education and training (Table A7). For example, it has invested $284,000 per year in school-based initiatives to grow interest in math, science, and mining among school-aged children over the period 2010 to 2014. The company has also provided scholarships to encourage post-secondary education.

The company invests over $3 million annually in the Kivalliq Mine Training Society (KMTS) though cash and in-kind support and $190,000 annually in the Arviat Diamond Drillers and Welders Program. The KMTS provides support for the development and delivery of community-based work readiness and labour pool initiatives to help prepare Inuit for employment opportunities. The KMTS has also supported the Arviat Drillers program, as well as community based initiatives, such as the Making it Work program and Community Net-Work program, which provide supports to communities to help employees and their families cope with the challenges that come with employment.

Table A7: Agnico Eagle Mine Limited's Cash and In-Kind Support for Training

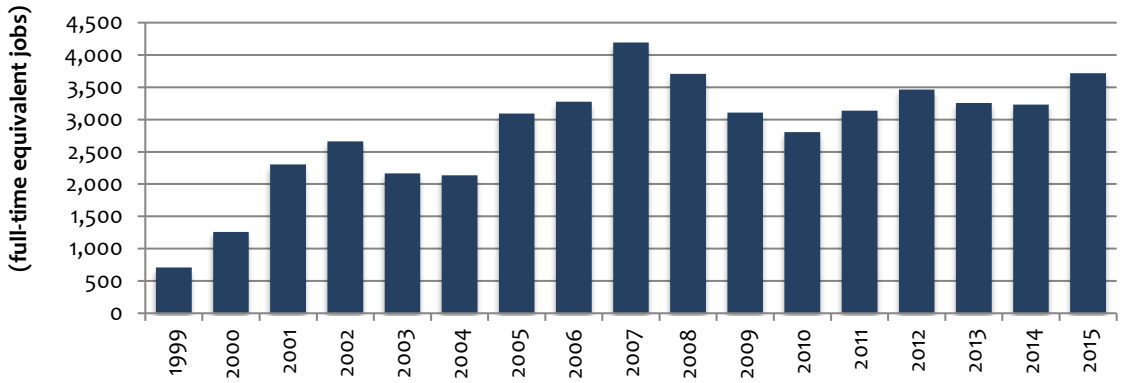
	2010	2011	2012	2013	2014	2015
Kivalliq Mine Training Society	$1M	$0	$3.3M	$3.6M	$3.6M	$3.6M
Arviat Diamond Drillers and Welders Program	$250,000	$60,000	$190,000	$190,000	$190,000	$190,000

Source: Meadowbank Gold Mine 2015 Socio-Economic Monitoring Report

NWT Diamond Mines (Ekati, Diavik, and Snap Lake)

Labour Force Experience

As of mid-2015, there were three operating mines in the North Slave region of the Northwest Territories (however, the Snap Lake Mine closed in December 2015). All three operated fly in/fly out (FIFO) work camps on a 2-week rotation. The labour requirements of these operations share some similarities with the proposed expansion of Baffinland's Mary River Project in that the total labour demand grew over the course of 10 to 15 years, starting with a single mine creating 708 FTE jobs in its first full year of production (1999), and reaching 3,700 FTE jobs by 2015, with the peak employment coming in 2007 with close to 4,200 FTE jobs (Figure A1).[27]



Source: *Socio-Economic Monitoring Reports*, 1999 to 2015, Diavik Diamond Mines Inc., BHP Billiton, De Beers Canada, Dominion Diamonds Corporation.

Figure A1: Job Creation in NWT's Diamond Mining Industry, 1999 to 2015

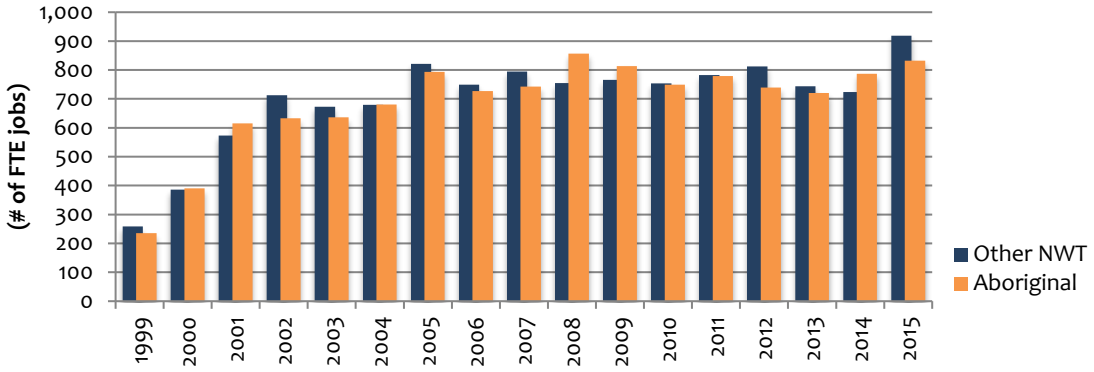
Over the 16 years[28] of mining activity since operations began at Ekati, which includes the construction of two additional mines (Diavik and Snap Lake), the NWT resident workforce has grown to a range between 1,400 and 1,600 jobs on a FTE basis. In the most recent year for which data are available, 2015, this workforce totalled 1,750—easily its highest level to date. Within these employment results, approximately half of the resident employees are of Indigenous decent (Figure A2).

Observe the relative stability in the participation of NWT labour in the operations workforce of the three diamond mines. Since 2005, the average NWT Indigenous workforce has equalled 775 with a standard deviation of 45. This stability is set against an overall workforce that changes every year, primarily due to the varied labour force requirements of construction or development projects at the mine sites. As a result, the relative participation rate is more varied (Figure A3).

The stability can also be examined as a means of understanding the willingness of the ready and able labour supply to participate in mining jobs. Though similar to the Meadowbank Mine, the number of unskilled and semi-skilled jobs is likely a more significant factor in limiting participation at the NWT mines.

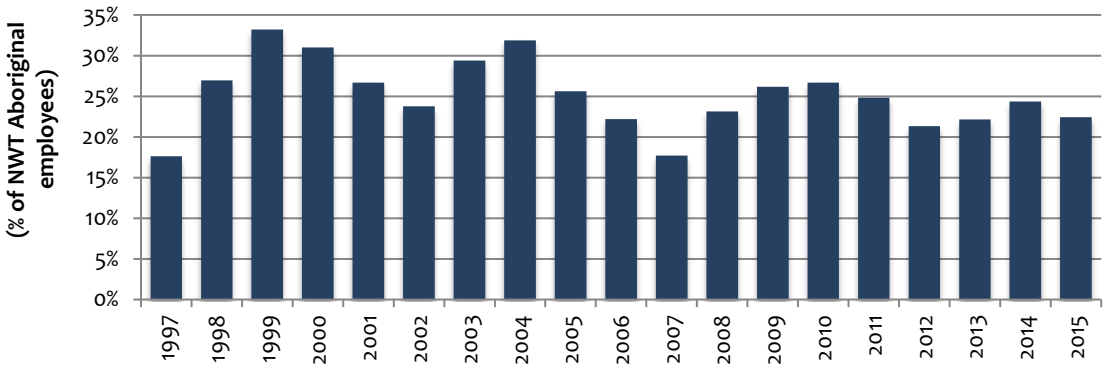
[27] These data were assembled from annual Socio-Economic Monitoring reports produced by the mine owners over the past 16 years.

[28] The first full year of the first mine's operations is the starting point of the analysis, similar to the Labour Market Analysis timeframe for Baffinland's Mary River Project.



Source: *Socio-Economic Monitoring Reports*, 1999 to 2015, Diavik Diamond Mines Inc., BHP Billiton, De Beers Canada, Dominion Diamonds Corporation.

Figure A2: NWT Resident Employment in Diamond Mining, 1999 to 2015



Source: *Socio-Economic Monitoring Reports*, 1999 to 2015, Diavik Diamond Mines Inc., BHP Billiton, De Beers Canada, Dominion Diamonds Corporation.

Figure A3: Relative Contribution to Mine Employment by NWT Indigenous residents, 1997 to 2015

The relative participation of Indigenous residents in NWT's mining industry would be much higher if the analysis were to look exclusively at the operations side of these mines. This is because construction-related jobs have not been as attractive to the Indigenous labour. There are several possible reasons for this:

- The majority of construction jobs require skills that the resident workforce does not have.
- The volume of tradespeople needed far exceeds the supply.
- The construction jobs are temporary.

By comparison, the operations jobs are full-time permanent positions, there are a greater variety of jobs, and the opportunity for promotion is better.

There are more skilled positions at the NWT diamond mines than any other positions—48.4% of all jobs. NWT Indigenous employees represent 12% of the workforce for that job classification. There are far fewer unskilled jobs—308 out of 3,420 (9%)—but NWT Indigenous employees fill 54% of these jobs (Table A8).

Table A8: Indigenous Workforce by Job Classification, 2015

	NWT Indigenous	Total Jobs	%
Management	0	35	0%
Professional	18	379	5%
Skilled	199	1,655	12%
Semi-skilled	427	1,048	41%
Unskilled	166	308	54%
Total	810	3,420	24%

Source: *Socio-Economic Monitoring Reports*, 1999 to 2015, Diavik Diamond Mines Inc., BHP Billiton, De Beers Canada, Dominion Diamonds Corporation.
Note: Construction jobs are excluded.

The large majority of the NWT Indigenous workforce lives in the North Slave, South Slave, or Tlicho region of the territory, though each mine does employ Indigenous people who live elsewhere in the territory and each mine owner offers some form of travel incentive to compensate them for the cost of travel to an official pick-up point. The Indigenous population of the three primary regions was 12,218 in 2015, with the entire territory's Indigenous population equalling 22,257 (Table A9).

Table A9: Indigenous Labour Force Participation in NWT mining, 2014

	Indigenous Labour working at mines	Indigenous Population (2015)	%
Primary Affected Communities	737	12,218	6.0%
Other Communities	50	10,039	0.5%
Total	787	22,257	3.5%

Source: Socio-Economic Monitoring Reports and NWT Bureau of Statistics, Population by Ethnicity

Education and Training Efforts[29]

The three diamond mines invest in education and training through a combination of on-site training and apprenticeships, contributions to the NWT Mine Training Society (MTS), and funding scholarships in an effort in increase NWT Indigenous and non-Indigenous employment and retention and to promote the advancement of its existing employees. Over a ten-year period from 2004 to 2013, the mining industry provided $16.7 million in cash and in-kind support to MTS programs. This contribution is in addition to government support for training in mine operation and service positions that equalled $32.2 million over the same time period.

The combined investments from industry and government have resulted in 1,074 northern residents gaining employment, where 1,050 were Indigenous residents. In total, 2,796 people have been assessed for training by the MTS between 2004 and October 2014, of whom 2,149 have received training or other supports.

[29] The facts and figures in this section are sourced from the NWT & Nunavut Chamber of Mines, 2014. "Measuring Success 2014." Compiled by the NWT and Nunavut Chamber of Mines, November 2014.

The MTS has targeted training in a number of areas: Mineral Process Operating Technician; Camp Cook; Cook Apprenticeship; Heavy Equipment Operator; Geoscience Field Assistant; Introduction to Underground Mining; Underground Mining; and General Construction. Most recently, in addition to specific job skills, programs include life skills training to help participants settle into employment and be able to balance home and work life. In addition, students from the Underground Miner Training Program and Mineral Process Operator Training Program are provided paid term training positions at the mines and many are hired into full-time positions. As of 2012, the three diamond mines had sponsored more than 200 apprenticeships, 100 underground miners, and 65 trades trainees.

The NWT diamond mines also support higher education through various scholarship programs. In 2013, the three companies provided nearly $464,000 in scholarships under a variety of banners including Impact Benefit Agreement or Participation Agreement beneficiaries, Socio-Economic Agreement commitments, employee dependants, special post-secondary scholarship and sponsorships, and to non-IBA affiliated recipients.

Important Takeaways from Other Northern Mine Employment

The two northern mining districts discussed have been successful in employing a larger number of Indigenous residents than what were originally predicted in their respective environmental assessments. After facing initial periods where turnover was a principal concern, both have been challenged in growing this workforce beyond unskilled and semi-skilled jobs. Indigenous resident participation in the mining industry grew quickly but topped out when this group had filled a majority of unskilled and semi-skilled jobs.

The challenge does not appear to be a lack of training programs or training dollars. Rather, too many within this Indigenous workforce do not have the education requirements needed to enrol in higher learning programs or progress into more skilled positions. And, there is evidence that suggests progress in the area of education has been slow and even stagnant at times. To further exacerbate the situation, most new jobs created at mine sites once they are up and running tend to be in skilled positions. For example, in 2012, 52% of the jobs at the Snap Lake Diamond Mine were classified as unskilled or semi-skilled, while 42% was classified as skilled. By 2015, the percentage of unskilled and semi-skilled jobs had dropped to 38% of the overall workforce, while the relative number of skilled jobs had grown to 55%. As a result, Indigenous resident participation in that project dropped in relative and absolute terms.[30]

Analysis has shown that job creation alone is not enough to ensure Indigenous resident employment. And in all four mines examined, the mines' owner(s) have invested heavily in training. The marginal benefits of these investments appear to decrease over time and are limited by the absence of new candidates for training programs. Training can assist some employees in gaining promotion from unskilled to semi-skilled positions, but further education or successful apprenticeships are typically required to move into skilled positions.

[30] De Beers Canada, 2016. *2015 Employment Report*. Reported in the 2015 Socio-Economic Monitoring Report.