

# **BUCHANS RESOURCES LIMITED**

## **PLAN OF ARRANGEMENT**

**under Section 182 of the *Business Corporations Act* (Ontario), R.S.O. 1990, c. B16, as amended**

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## **INFORMATION CONCERNING MINCO EXPLORATION LIMITED**

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### **IMPORTANT NOTE:**

This document is intended to provide disclosure in accordance with Canadian securities laws concerning Minco Exploration Limited. (“**Minco**”) to Canadian resident holders of shares of Buchans Resources Limited (“**Buchans**”) who, upon the approval and implementation of the proposed plan of arrangement (the “**Arrangement**”) involving Buchans, Minco and Canadian Manganese Company Inc. (“**Canadian Manganese**”) pursuant to section 182 of the *Business Corporations Act* (Ontario), R.S.O. 1990, c. B16, as amended, will receive, among other things, Buchans Exchangeable Warrants which will entitle such resident holders to receive ordinary shares of Minco.

This document should be read in conjunction with the document dated November 8, 2019 entitled:

**“Buchans Resources Limited**

**Annual and Special Meeting of  
Shareholders**

**to be held**

**December 10, 2019**

**Management Information Circular”  
(the “Circular”)**

To which this document is attached as Schedule “D”, both of which have been mailed to the shareholders of Buchans.

The disclosure contained in this document supplements the disclosure contained in the Circular.

Capitalized terms used herein and not otherwise defined shall have the meanings ascribed to them in the Circular.

## Table of Contents

<b>CORPORATE STRUCTURE</b>	3
<b>THE BUSINESS OF THE COMPANY</b>	3
<b>AVAILABLE FUNDS</b>	26
<b>DIVIDEND RECORD AND POLICY</b>	26
<b>MANAGEMENT’S DISCUSSION AND ANALYSIS</b>	26
<b>DESCRIPTION OF SECURITIES</b>	34
<b>CONSOLIDATED CAPITALIZATION</b>	34
<b>OPTIONS TO PURCHASE SECURITIES</b>	35
<b>PRIOR SALES</b>	35
<b>ESCROWED SECURITIES</b>	35
<b>PRINCIPAL HOLDERS OF COMMON SHARES</b>	35
<b>DIRECTORS AND OFFICERS</b>	35
<b>EXECUTIVE COMPENSATION</b>	38
<b>AUDIT COMMITTEE AND RELATIONSHIP WITH AUDITORS</b>	40
<b>CORPORATE GOVERNANCE</b>	40
<b>RISK FACTORS</b>	42
<b>PROMOTER</b>	47
<b>LEGAL PROCEEDINGS</b>	47
<b>INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS</b>	47
<b>EXPERTS</b>	48
<b>AUDITORS, TRANSFER AGENT AND REGISTRAR</b>	48
<b>MATERIAL CONTRACTS</b>	48

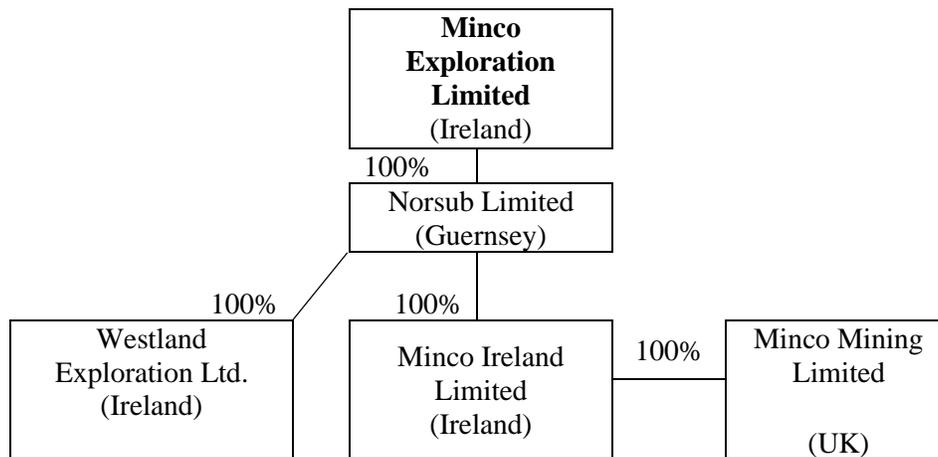
## CORPORATE STRUCTURE

Minco Exploration Limited (“**Minco**” or the “**Company**”) is an exploration and development company currently engaged in base metal exploration and development in the Republic of Ireland. The Company is currently a wholly-owned subsidiary of Buchans Resources Limited (“**Buchans**”)

Minco was incorporated as a private company pursuant to the *Companies Act 2014* of Ireland on May 28, 2019 under the name Copper Orbit Limited with registration number 650839.

On October 4, 2019 the Company changed its name to Minco Exploration Limited. Minco plans to become reregistered as a public liability company under Irish corporate law as soon as possible.

Minco operates through wholly-owned, indirect subsidiaries all of which were transferred from Buchans pursuant to an agreement dated as of June 29, 2019 for ordinary shares of Minco. The subsidiaries of Minco are as follows:



The registered office of the Company is located at 17 Pembroke Street Upper, Dublin 2, Ireland D02 AT22 and the executive office is located at Coolfore Road, QME Ardraccan, Navan, Co. Meath, Ireland.

## THE BUSINESS OF THE COMPANY

Minco holds interests in mineral assets located in the Republic of Ireland.

Further information on these mineral properties and interests can currently be found on the website of Buchans, Minco’s parent corporation, at [www.BuchansResources.com](http://www.BuchansResources.com). Further corporate, financial and other publicly available information on Buchans can be found under Buchans’ profile at [www.sedar.com](http://www.sedar.com).

Buchans proposes to reorganize its mineral assets and investments by way of a plan of arrangement (the “**Arrangement**”) involving Buchans, Canadian Manganese Company Inc. (“**Canadian Manganese**”) and the Company pursuant to section 182 of the *Business Corporations Act* (Ontario), R.S.O. 1990, c. B16, as amended, under the supervision and subject to the sanction of the Ontario Superior Court of Justice – Commercial List. The Plan of Arrangement is contained in and governed by an arrangement agreement dated October 28, 2019 (the “**Arrangement Agreement**”).

Upon the Arrangement becoming effective, the current shareholders of Buchans will hold (in addition to their Buchans Shares) one common share of Canadian Manganese and one non-transferrable warrant of Buchans (a “**Buchans Exchangeable Warrant**”). Each Buchans Exchangeable Warrant entitles the holder thereof, at his or her sole election, to receive one ordinary share of Minco or 0.25 common shares of Buchans at any time prior to

the first anniversary of the implementation of the Arrangement. Any Buchans Exchangeable Warrant not exchanged on such anniversary will be automatically exchanged for an equivalent number of ordinary shares of Minco.

Under the Arrangement Agreement, Buchans has agreed to sell to purchasers to be identified by Minco any Minco Shares which it continues to hold as a result of the exchange by shareholders of the Buchans Exchangeable Warrants for additional shares of Buchans.

The directors and officers of Minco are also currently directors and/or officers of Buchans.

As at the date hereof, neither Buchans nor Minco has any of its securities listed or quoted, has not applied to list or quote any of its securities and does not intend to apply at this time to list or quote any of its securities, on the Toronto Stock Exchange, Aequitas NEO Exchange Inc., a U.S. marketplace, or a marketplace outside of Canada and the United States of America.

Upon the Arrangement becoming effective, and subject to obtaining any necessary approvals, Minco has agreed to use its reasonable commercial efforts to either (i) make an application for admission of its ordinary shares to trading on the Irish Stock Exchange or (ii) complete another transaction whereby Minco will acquire or be acquired by a third party, the shares of which third party shall itself be admitted to trading on the Irish Stock Exchange, as soon as reasonably practicable, subject to market and trading conditions.

However, Minco cannot guarantee that such a listing or acquisition will be obtained or completed.

### **MINERAL EXPLORATION PROPERTIES**

Minco holds base metal exploration interests in the Republic of Ireland and is pursuing exploration for zinc and lead, both in joint venture with Boliden Tara Mines near Navan and on its own licences at Moate. Minco has also entered into a new exploration agreement with Boliden Tara Mines on twelve Prospecting Licences in County Galway.

The following discussion of the mineral property interests currently held by Minco and the exploration activities carried out on these properties is derived from public disclosure documents prepared and published by Buchans or Buchans' predecessor corporation, Minco plc. These documents include the following technical report prepared in accordance with National Instrument 43-101 – *Standards of Disclosure for Mineral Projects* of the Canadian Securities Administrators (“**NI 43-101**”):

- Technical Report dated October 29, 2019 and entitled *Technical Report on the Irish Zinc Exploration Project of Minco Exploration Limited a subsidiary of Buchans Resources Limited* by Dave Blaney, P. Geo. (the “**Blaney Report**”), a qualified person as defined by NI 43-101.

The Blaney Report can be found under on Buchans' website at [www.BuchansResources.com](http://www.BuchansResources.com) and under Buchans' profile at [www.sedar.com](http://www.sedar.com).

#### **Background**

Minco, through its subsidiary Minco Ireland Limited (“Minco Ireland”), is engaged in the exploration for zinc and lead in Ireland and holds interests in various prospecting licences described in this Technical Report.

Minco Ireland was incorporated in Ireland in 1966 and from 1997 until 2017 was an indirect wholly-owned subsidiary of Minco Plc, a public company incorporated in Ireland with its shares traded on the Alternative Investment Market (“AIM”) of the London Stock Exchange. In August 2017, as part of a transaction whereby all of the shares of Minco plc were acquired by Dalradian Resources Inc., all the remaining assets of Minco plc, except a 2% royalty on the Curraghinalt gold property in Northern Ireland, including Minco Ireland, were “spun out” to shareholders of Minco plc via a distribution of the shares of Buchans Resources Limited.

Minco Ireland has been actively involved in mineral exploration in Ireland for over fifty years, Minco and is the successor to Irish Base Metals Limited and Gortdrum Mines Ireland Limited, both subsidiaries of Northgate Exploration Limited, which discovered and developed the Tynagh Mine in Co. Galway that operated from 1965 to 1981; and the Gortdrum Mine in Co. Tipperary that operated from 1967 to 1975. This led to the discovery of the Tara Mine at Navan in Co. Meath in 1970, which continues in operation today.

In 1996, Minco Ireland identified the geological potential of the "Pallas Green Trend" in Counties Limerick and Tipperary, attracting Noranda Inc., then one of Canada's leading mining companies, (subsequently acquired by Xstrata plc) as a joint venture partner in 1998. This led to the discovery of the Pallas Green deposit in Co. Limerick in 2002. The Pallas Green deposit now exceeds 40 million tonnes and is the second largest mineral deposit ever discovered in Ireland. Minco Ireland later sold its 24% joint venture interest in Pallas Green to Xstrata (Glencore) for US\$19.5 million in 2011.

As the successor to the mineral properties of Ennex International Plc, a subsidiary of Northgate, which discovered the Curraghinalt gold deposit in Northern Ireland in 1984, Minco Plc retained a 2% NSR on Curraghinalt gold deposit which was sold to Dalradian Resources Inc in 2017 at an attributed value, as of the date of closing, of CDN\$29 million when Minco plc was acquired by Dalradian Resources Inc.

### **Project Description, Location and Access**

Minco's Irish Zinc Exploration Project is located in an area of central Ireland known as the Irish Midlands Orefield and is made up of sixteen (16) Prospecting Licences, comprising three discrete blocks, namely; Navan, Moate and Slievedart, located in Counties Meath, Westmeath and Galway respectively, in the Republic of Ireland. Minco holds and operates these properties through its wholly-owned, Irish subsidiaries, Minco Ireland Limited ("**Minco Ireland**") and Westland Exploration Ltd. ("**Westland**").

**Property Location:** The Navan Block consists of two contiguous prospecting licences covering a surface area of 62.08km<sup>2</sup>, immediately northwest of the town of Navan and approximately 50km to the northwest of Dublin. The Navan Block is operated under the terms of two separate Joint Venture agreements with Boliden Tara Mines, one relating to each prospecting licence.

The Moate Block is located in west-central Ireland, approximately 140 kilometres west of Dublin. The licence block consists of two contiguous prospecting licences that cover a surface area of 65.67km<sup>2</sup> and are located to the east of the town of Athlone.

The Slievedart Block is located in County Galway, immediately north and northeast of the town of Tuam. It consists of twelve contiguous prospecting licences covering a surface area of 537.38km<sup>2</sup>. The Slievedart Block is operated under the terms of a Joint Venture agreement with Boliden Tara Mines.

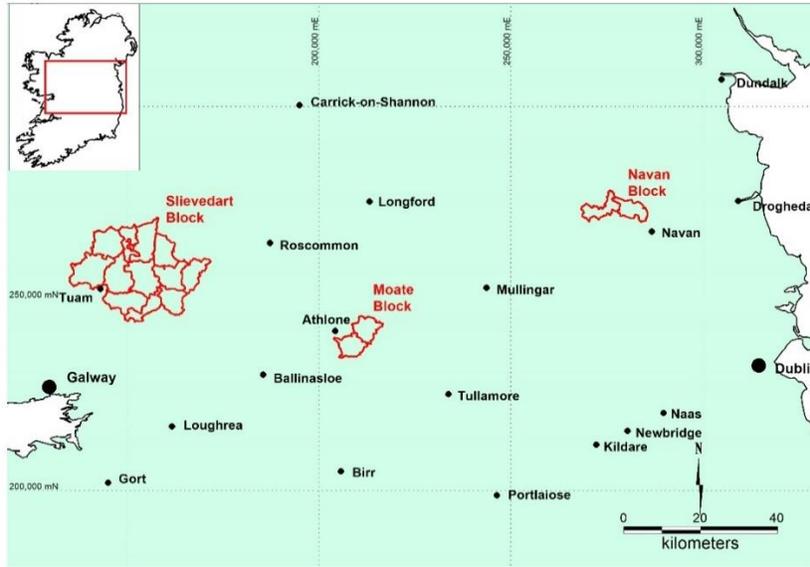


Figure 1 - Regional Map Showing the Location of the Navan, Moate and Slievedart Blocks

***Property Description:*** The Prospecting Licences were granted by the Minister for Communications, Climate Action and Environment (the “Minister”) in exercise of the powers conferred by Chapter 3 of the Minerals Development Act, 2017.

These Prospecting Licences (“PLs”) authorize the licensee to enter the licensed area and do all such things as the licensee considers necessary for the purposes of exploring for Base metals, Barite, and Silver. The licenses are valid for six years from the commencement date and may be renewed but may be revoked by the Minister if any conditions are not fulfilled.

Details on the sixteen Licences, including size and issue dates are presented in Table 1. These Licences specifically apply to the exploration for base metals, barite, and silver.

Table 1 - List of Prospecting Licenses comprising the Moate, Slievedart and Navan Blocks

PL Number	Block	Area (km2)	Date Issued
1228	Moate	32.96	03-Nov-16
1229	Moate	32.42	03-Nov-16
1440R	Navan	30.56	23-Oct-72
3373	Navan	31.26	01-Mar-93
1102	Slievedart	36.2	22-Jun-18
1362	Slievedart	39.44	22-Jun-18
1700	Slievedart	26.52	03-Jul-14
1788	Slievedart	54.33	03-Jul-14
1789	Slievedart	57.91	22-Jun-18
1791	Slievedart	46.93	22-Jun-18
2885	Slievedart	35.21	22-Jun-18
2889	Slievedart	29.3	22-Jun-18

3470	Slievedart	50.28	27-Nov-06
3471	Slievedart	50.59	27-Nov-06
3681	Slievedart	65.42	07-Jul-12
3755	Slievedart	42.42	07-Jul-12

The Licences are granted subject to the following terms and conditions:

- The licensee shall carry out prospecting, geophysical surveys or test drilling resulting in an agreed minimum expenditure requirement as specified.
- The licensee must submit work reports within one calendar-month prior to the final day of each two-year phase.
- One calendar-month before the end of each subsequent two-year phase of a license, if the licensee wishes the license to continue in force, a work programme for the second and third two-year phase of the license shall be proposed by the licensee for the approval of the Minister.
- At any time, if the Minister considers that there are reasonable grounds for doing so, may revoke the license.
- The licensee shall conduct exploration in the license area in a proper and workmanlike manner in accordance with good prospecting, environmental and safety practices.
- The licensee shall carry out all operations within the licensed area so as to avoid damage to the environment and to avoid or minimise disturbance of persons resident in the area.
- The licensee shall comply with the relevant requirements of applicable planning, development and environmental statutes and regulations.
- The licensee shall, before commencing any operation in the licensed area, furnish the Minister with the name and address of the resident Manager in Ireland.
- The licensee shall take out and maintain Public Liability and Employer's Liability insurance covering personal or property damage.
- The licensee shall keep all openings, excavations and underground workings fenced off for the protection of persons and animals.
- The licensee shall reinstate all lands affected by any operations under the License.
- The licensee shall pay and discharge all claims for compensation in respect of damage caused by the licensee to the lands or water supplies or in respect of nuisance or in respect of injury to any person, property or animals in the License area.
- A minimum of two weeks' advance notice in writing shall be given to the Minister of proposed borehole and shaft sinking intended to reach a depth of more than 20 feet.
- The licensee shall not, without the prior written approval of the Minister, assign, or attempt to assign, any rights granted by a license to any person and shall not sub-license or part with the possession of any license rights.
- The license does not grant any rights to minerals, the prospecting for which is not covered by the license, to the licensee.
- On the expiry of the license, an application for renewal may be submitted and considered by the Minister.

**Environmental Considerations:** A number of Special Protected Areas, Special Areas of Conservation, National Heritage Areas and proposed National Heritage Areas are located within or adjacent to the Navan, Moate, and Slievedart Blocks, the specifics of which can be found on the National Parks and Wildlife Service Website. Minco is committed to conducting all exploration activities within environmental guidelines. A review of these specifically protected sites in the Moate and Navan Blocks has been undertaken. Information was compiled from a number of sources, primarily the NPWS. Additionally, the relevant County Council's "County Development Plans" have been reviewed with regard to policy on extractive industry development.

All exploration activities undertaken by Minco are conducted under adherence to the Institute of Geologists of Ireland guidelines to ensure that the highest environmental standards are maintained.

To date, exploration activity on the Navan, Moate and Slievedart Blocks has had no environmental impact.

**Joint Venture Interests:** Minco has two distinct Joint Venture (“JV”) agreements in place for the two separate licences of the Navan Block as well as a third JV agreement in place for the Slievedart Block.

Minco, via Westland, holds a 20% interest in PL 1440R (Tatestown), which is being explored under a JV with Boliden Tara Mines (80%). PL 1440R is located immediately adjacent to Boliden Tara’s large >125 million tonnes Tara zinc-lead mine at Navan, Co. Meath, and hosts part of the small Tatestown zinc-lead mineral deposit.

Minco, via Minco Ireland, has entered into a JV agreement with Boliden Tara Mines on PL 3373, contiguous to the west with PL 1440R. Under terms of this agreement, Minco can earn a 75% interest through expenditure of €250,000, in staged programmes, by 1 March 2024. Boliden Tara Mines has the right of off-take to purchase or toll process all ore that may be produced from the licence area.

Minco, via Minco Ireland, has also entered into a joint venture agreement with Boliden Tara Mines, subject to the approval of the Minister, for twelve PLs of the Slievedart Block, namely: PLs 1102, 1362, 1700, 1788, 1789, 1791, 2885, 2889, 3470, 3471, 3681, and 3755. Minco can earn a 50% interest through expenditure of €385,000 in staged programmes, by 31 July 2024. Boliden Tara has the right of off-take to purchase or toll process on all ore that may be produced from the licence area.

**Prospecting Licence Terms:** On the Moate Block, Minco, via Minco Ireland, is the sole holder of PLs 1228 and 1229. Under terms of this licence, Minco must expend a total of €150,000, in staged programmes, by 1 March 2024.

**Access and Infrastructure:** Minco’s Irish Zinc Exploration Project is accessible via an extensive network of second- and third-class roads which link into the Irish motorway / national primary road infrastructure. Over the last number of years, the road network throughout Ireland has improved greatly. All of the major cities Cork, Dublin, Waterford, Limerick and Galway are now connected by a modern two-lane motorway system. Local access within the majority of the project areas is along minor public and private roads, as well as farm tracks.

Topographically the Irish Midlands Orefield is generally flat and low lying with gently undulating, low relief hills rising only a few hundreds of meters above the central plain. The midlands area is dominated by agricultural land divided between grazing of livestock and arable crops. There is some forestry, but this predominantly confined to upland areas underlain by Devonian or Lower Palaeozoic rocks. Raised and upland bogs are widespread and can form very large features, for example the Bog of Allen covers a surface area of 958km<sup>2</sup> in Counties Kildare, Laois and Meath. Regionally, the River Shannon waterway is the main geographical feature bisecting the Midlands region and flowing from north to south decanting out of the Iron Mountains in Fermanagh to the north and flowing into the Atlantic at Limerick.

The largest city in the Republic of Ireland is Dublin (pop. 1.8 million within the metropolitan area), followed by Cork (pop. 417,000), Limerick (pop. 95,000) and Galway (80,000). There are numerous small and medium sized towns scattered throughout the country and a sizeable rural population living in farm dwellings or country houses.

Rail services in Ireland are provided by Iarnród Éireann, Ireland's national railway system. Rail services are generally limited to connecting the main cities; however, the town of Navan has a rail link to Drogheda, that connects with the main Dublin to Belfast line and has been utilised by Boliden Tara Mines to ship concentrates to Dublin Port.

Ireland is well endowed with port facilities. With Dublin, Cork, Rosslaire and Galway handling the bulk of the shipping trade. Dublin Port handles all the concentrate being shipped from the Navan Mine. Until its closure in 2014 all of the concentrates from the Lisheen Mine were shipped through the port of Cork.

Dublin Airport is located 50 km south-east of the Navan Block. The airport is a major international airport that provides routes to all the main European hubs and numerous transatlantic and middle eastern destinations. Shannon, Cork and Knock airports provide services to selected European hubs, with Shannon having a significant level of transatlantic traffic.

Ireland has a modern electricity power grid. The grid network is owned managed by the Electricity Service Board (ESB), a semi state company. The main power infrastructure is a grid of 400KV, 275KV, 220KV and 110KV transmission lines, with power sourced from thermal, hydro, wind and pumped storage facilities.

***Climate:*** The climate of Irish Midlands Orefield is mild and changeable with abundant rainfall and a lack of temperature extremes. The hottest months of the year are June, July and August with temperatures of around 18 - 20 degrees. The Irish Midlands gets rainfall all year round with the wettest months being October, November, December and January.

Apart from the weather, field work is only constrained by short days of daylight during the winter (minimum 8 hours).

### **History of Mining in the Irish Midlands Orefield:**

Modern zinc / lead / copper mining within the Irish Midlands Orefield commenced in the mid 1960's and has continued without a break until the present day. The number of operating mines has varied over this period, from a peak of four in the late seventies (Tynagh, Silvermines, Navan and Gortdrum) to the single mine operating today (Navan).

The first major economic success was the discovery of the Tynagh Deposit by Irish Base Metals Limited (a subsidiary of Northgate Exploration) in 1960. Tynagh was a 9.2Mt deposit that graded 11.2% Zn + Pb and went into production in 1965 (Clifford et al 1986). The Tynagh Deposit sub-outcropped and consisted of a residual deposit of unconsolidated, black sulphidic / oxide muds directly overlying a primary sulphide deposit of sphalerite, galena and minor copper sulphides. The discovery hole intersected 30m, grading 13.2% Pb / 1.5% Zn / 0.26% Cu and 54g/t Ag in the residual deposit. The primary mineralisation tended to be lower grade and have a higher zinc to lead ratio. Additional lenses of primary sulphide mineralisation were discovered along the strike extension of the main Tynagh controlling fault, this mineralisation had no surface geochemical or geophysical expression and was found as a result of drill testing to close off the deposit.

The success at Tynagh was quickly followed by the discovery of the Silvermines deposit by Mogul of Ireland Ltd in 1962 (Andrew 1986), with production commencing in 1968. Based upon Mogul of Ireland Ltd's production figures, the Silvermines deposit was 17.7Mt grading 6.43% Zn / 2.53% Pb with an associated barite deposit of 5.5Mt grading 84% BaSO<sub>4</sub>. Silvermines consisted of a series of, flat lying, stratiform and stratabound, massive sulphide lenses located at the base of the Waulsortian Reef succession, namely the Upper G and B Zones. Cross cutting, fault controlled "epigenetic" mineralisation is hosted within the Lower G, K, P, C and K Zones. A significant barite deposit was discovered proximal to the Upper G and B Zones at Macobar and this was mined as an open pit with subsequent underground development until the mid 1990's. Vein / fracture controlled barite / lead mineralisation had been mined in the 1950's at Shalee, on the footwall of the main Silvermines Fault and just 600m west of the Upper G Zone.

The world-class Navan Deposit (carbonate hosted Zn / Pb) is located only 3 km to the south-east of Minco's Navan Block. This deposit was discovered by Tara Exploration and Development Company in 1970, underground development started in 1973 with initial production commencing in 1977 (Ashton et al 1986, Anderson et al 1998). The Navan orebody is comprised of a series of stacked lenses of massive sulphides. The mineralisation is situated between 50 and 1800m below surface with mineable thicknesses ranging from 5m to 80m. The total size of the Navan Deposit is estimated to be in excess of 125Mt, at grades of c.8% Zn / 2% Pb.

Following on the early success with the discovery of Tynagh, Silvermines and Navan there was an extensive exploration campaign across the Irish Midlands Orefield by a range of multinational and Irish junior companies. This work discovered a number of new prospects the best of which were, Ballinalack, Keel, Lough Sheelin and Harberton Bridge. Both Ballinalack and Harberton Bridge are the subject of recent exploration using modern technology and new exploration models. The companies currently working on them, namely, Group Eleven (Ballinalack) and Zinc Mines of Ireland (Harberton Bridge) have recently reported very positive results. There was a hiatus in Zn/Pb exploration during the late 70's / 80's when exploration focus shifted to gold and uranium.

In the 1980's exploration for carbonate hosted zinc / lead mineralisation within the Irish Midlands Orefield was reignited by the discovery of the Galmoy Deposit by Conroy Petroleum and Natural Resources plc in 1986 (Doyle et al 1992). The discovery was made by drill testing IP / Resistivity geophysical targets resulting in an intersection of 8.7m grading 7.39% Zn / 0.28% Pb (Lowther et al 2003). Development of the mine commenced in May 1995, with the first concentrates produced in April 1997.

The discovery of Galmoy led to the identification of a new mineralised region, the Rathdowney Trend. Exploration along strike to the southwest of Galmoy by a joint venture between the Chevron Mineral Corporation of Ireland and Invernia West led to the discovery of the Lisheen Deposit in 1990 (Hitzman et al 1992). The discovery hole, LK-3262-01, intersected two zones of massive sulphide mineralisation, including a 6.4m interval grading 14.7% Zn / 2.7% Pb and 4.3m grading 28.8% Zn / 8.5% Pb. The mine went into production in 1999 with pre-mining resources of 16.7Mt grading 14.1% Zn / 2.4% Pb (Fusciardi et al 2002).

The development of Galmoy and Lisheen led to a reinvigoration of exploration activity within the Irish Midlands Orefield. Minco Ireland was actively exploring and used the new geological / structural models generated from interpretation of the recently discovered deposits to identify new prospective target areas.

In the early to mid 1990's Minco Ireland acquired a block of ground in north County Limerick that they considered prospective. This ground was joint ventured with Noranda Exploration Ireland Ltd. in 1998 and the collaboration resulted in the discovery of the Pallas Green deposit in 2002. This deposit is currently the largest undeveloped deposit in the Irish Midlands Orefield, and, after Navan, it is currently the second largest deposit in the orefield. It has an inferred resource of 45Mt grading 7% Zn / 1% Pb and is currently being explored by Glencore Zinc Ireland Ltd.

In addition to Pallas Green two other new deposits have been discovered during the most recent phase of exploration, namely; Kilbricken in County Clare, which has a resource of 2.7Mt at 4.7% Zn / 2.9% Pb (Indicated) and 1.7Mt at 4.4% Zn / 2.9% Pb (Inferred); and the Stonepark deposit discovered by Teck / Connemara Mining Co Plc (now Arkle Resources) in County Limerick that is currently being explored by Group Eleven Resources. The Stonepark Deposit has a current inferred resource of 5.5mt at 8.7% Zn / 2.6% Pb.

## History of Exploration on the Minco Irish Zinc Exploration Project

**Navan Block:** In the Navan Area regional exploration for base metals on PLs 1440R and 3373 began during the late 1960's and intensified following discovery of the Navan orebody in 1970. Since then, exploration has focused exclusively on the search for zinc-lead mineralisation hosted by the Navan Beds, which host the Navan orebody. Historical work was carried out by RioFinEx, Gortdrum Mines Ltd., Enfer Holdings Ltd., Irish Base Metals Limited, Westland, Kenmare Resources Plc. and Boliden Tara Mines.

Historical exploration on the Navan Block follows a typical pattern to that observed elsewhere in the Irish Midlands Orefield with a primary focus on geochemistry, supported by mapping, prospecting and litho-geochemistry. This was followed up with geophysics and ultimately diamond drilling. Soil sampling was supported with DOB Sampling in selected areas, normally to confirm and check soil anomalies. Ground geophysical surveying has included Induced Polarisation, Turam EM, VLF/EM resistivity and gravity. From the late 1990's a series of airborne surveys were carried out across the Irish Midlands Orefield by a range of private companies. In the Navan region an EM/Magnetic survey was flown by BHP. PLs 1440R and 3373 were traversed by three reflection seismic survey lines which have proven effective in defining the structural model within the underlying Lower Carboniferous stratigraphy.

In addition to the acquisition of data through drilling and geological, geochemical and geophysical surveying, a large suite of studies, interpretations and modelling has been carried out on the data acquired from the Navan Block. This work has included:

- Structural interpretation and modelling (numerous studies)
- Litho-geochemical assessment of alteration and mineralisation
- Interpretation of satellite imagery
- Conceptual studies
- Metallurgical studies
- Micropalaeontological studies
- Feasibility studies

Drilling commenced at Tatestown in 1973 and has continued in the general vicinity until the present day. It was during the tenure of Irish Base Metals Ltd / Westland Exploration Ltd. that the Tatestown / Scallanstown deposit was discovered. The Tatestown–Scallanstown deposit straddles the Blackwater River, which forms the licence boundary between PLs 1440R and 1496. Part of this deposit is located on PL 1440R, the remainder on the adjacent PL 1496, held solely by Boliden Tara Mines.

A historical resource for the Tatestown deposit was estimated at 3.6Mt grading 6.9% Zn + Pb, of which 1.6Mt is at Tatestown. Minco has not done sufficient work to classify the historical estimates as current mineral resources or mineral reserves and is not treating the historical estimate as a current mineral resource or mineral reserve.

Following the discovery of the Tatestown deposit in 1973, a large number of holes have been drilled in the eastern part of PL 1440R, between the Randalstown and Boolies Faults. In contrast, only 42 diamond drill holes, for approximately 11,000 metres of drilling, have been completed over the balance of PL1440R to the west of the Boolies Fault. Many of these drill holes were short and sited primarily to ascertain bedrock geology. The northern two kilometres of the north-south trending zone remains essentially unexplored on Licence 1440R, with just four, widely spaced intercepts comparable to those peripheral to the known deposit.

Since 1975, approximately 8000m of diamond drilling has been completed in 51 diamond drill holes on PL 3373. Twenty-six of these, had an average depth of 19.3 metres, were drilled primarily to ascertain bedrock geology. The historical work provides an extensive database upon which to focus exploration for deeper, geophysically and geochemically blind deposits down-dip to the south.

**Moate Block:** Zinc-lead exploration in the Moate area began in the late 1960's during a country wide exploration boom following the discoveries of Tynagh and Silvermines. Historical work was carried out by Gortdrum Mines Ltd., Enfer Holdings Ltd., Irish Base Metals Limited, Westland Exploration Limited, Exploration and Discovery Limited and Merrex Gold Limited.

Minco Ireland and Westland together held interests in the Moate Block licences, together with additional adjacent licences, from 1989 to 2003. During this period, JV agreements were concluded sequentially by Minco Ireland and Westland Exploration with: CEC Ireland (MIM) and Navan Resources (1996); Biliton B.V. (1998); Rio Algom (2000); and Anglo American (2001), all of which carried out various programs. The previous licences were surrendered in 2007. Three licences, PLs 1228, 1229 and 3981, were reacquired by Minco Ireland in 2015 with PL 3981 being surrendered by Minco Ireland in 2018.

Historical exploration on the Moate Block follows a typical pattern to the that observed elsewhere in the Irish Midlands Orefield, with a primary focus on geochemistry, supported by mapping and prospecting and followed up with geophysics and ultimately diamond drilling. The majority of the licence area (c.80%) is covered by shallow soil geochemistry, with grid dimensions ranging from reconnaissance to detailed scales. Soil sampling is supported with Deep Overburden Sampling (DOB) in selected areas, normally to confirm and check soil anomalies. Ground geophysical surveying has included Induced Polarisation, TEM resistivity soundings, VLF/EM resistivity and gravity. From the late 1990's a series of airborne surveys were carried out across the Irish Midlands Orefield by a range of private companies. In the Moate area EM / Magnetic surveys were flown by Billiton and Rio Algom. There was also partial coverage airborne geophysical coverage from surveys flown by Noranda, BHP, Navan Resources and Boliden Tara Mines.

The Moate area has seen intermittent exploration over the past fifty years following the discovery in 1968 of the Moyvoughly deposit by Gortdrum Mines Ltd. Moyvoughly is hosted by the Navan Beds, it is estimated to contain 125,000 tonnes averaging 8% zinc plus lead, (Poustie and Kucha 1986) and it is located immediately to the east of Minco's new licences. Between 1968 and 2015, 71 diamond drill holes, for a total of 7790m, were completed by various companies prior to reacquisition of the ground by Minco Ireland in 2015. Many of these holes were short stratigraphic holes drilled to establish bedrock geology. The targeting of drilling has historically been focused on the potential for Navan-style mineralisation, both sub- outcropping and to depths of up to 600 metres below surface.

Exploration at Moate in the past, which includes nine kilometres of diamond drilling, has focused almost exclusively on the potential for Navan-type mineralization within the Navan Beds, initially at shallow depths in the footwall of the major (300 metre throw) Moyvoughly Fault and later to depths of c.600 metres below surface in the hanging wall. The potential for Reef hosted zinc-lead mineralization of "Tynagh-type" at Moate has never been explored.

**Slievedart Block:** Zinc-lead exploration in the Slievedart area began in the late 1960's during a country wide exploration boom following the discoveries of Tynagh and Silvermines. Historical work was carried out by; Irish Base Metals Ltd., Enfer Resources Holdings Ltd., Westland Exploration Ltd., Amoco Minerals Ireland Ltd., Celtic Gold Plc., Rio Tinto Finance and Exploration Plc., Ovoca Resources Plc., Cobh Exploration Ltd., Aquitaine Mining (Ireland) Ltd. and Boliden Tara Mines Ltd.

In the Slievedart area the majority of historical exploration has been focused on the potential for Waulsortian Reef-hosted mineralisation, both sub-outcropping and to depths of up to 400 metres below surface. The region was first explored by Irish Base Metals Limited who acquired the ground in 1967. The first phase of work was standard reconnaissance geological mapping / prospecting followed up by regional scale shallow soil sampling. Extension to soil sampling grids with DOB sampling focused in areas with significant soil anomalies. Geophysical surveying, consisting of Induced Polarisation, VLF/EM16R, magnetics and gravity was carried out across areas deemed prospective and follow up diamond was focused on specific target areas.

Diamond drilling has had modest success in the region immediately south of the Slievedart inlier. A number of moderate grade intersections of disseminated and fracture fill sulphide mineralisation were made at the Rosmearan, Darray North, Gortnalea and Sinking River targets. Intersections of up to 2.3m grading 6.8% Zn / Pb have been recorded within the Waulsortian Reef.

### **Geological Setting**

Minco considers that the Irish Midlands Orefield is defined by the basement structural architecture and structural movement focused by the basement has influenced:

- The Upper Palaeozoic stratigraphy hosting mineralisation; variations in stratigraphic thicknesses - including development of erosional surfaces, and facies changes.
- Variscan structure – fold/fault patterns.
- The distribution of zinc-lead-barite deposits, with the majority of the major deposits associated with the interpreted boundaries of the ore field.

Minco postulates that the major deposits are spatially associated with mineralised trends controlled by the basement Caledonian architecture. For example, the Pallas Green deposit (44.2Mt averaging 7.20 percent zinc and 1.20 percent lead) was discovered when minor, sub-outcropping, breccia hosted zinc-lead mineralisation, initially discovered by soil and overburden geochemistry in the 1970's, was recognised by a predecessor of Minco in the mid-1990's as lying along a regional trend, now known as the Limerick or Pallas Green trend.

### **Local Geology**

**Navan Block:** The Navan Block is located along the northern boundary of the Irish Midlands Orefield, contiguous with the Boliden Tara Mines mine lease. The stratigraphy can be correlated to the mine with Courceyan aged intertidal and shallow water marine sediments resting on a major unconformity upon Lower Palaeozoic sediments and volcanics. The Courceyan carbonate rocks are overlain by a succession of deeper water marine limestones of Chadian and Arundian age, referred to locally as the Upper Dark Limestone. A well-defined lithostratigraphy has been developed within this Upper Dark Limestone succession in the vicinity of the mine where the Upper Dark Limestone rests upon an angular erosion surface, or slide.

The Navan Block straddles the southern margin of the Longford Down inlier. Drilling consistently demonstrates a rapid, northwards thinning / wedging out of the Courceyan succession along the southern margin of the inlier indicating that this remained a topographically positive feature, with active basement structural control, during deposition of the Courceyan fluvial, intertidal and shallow marine basal succession.

The Boundary Fault, considered to be a Variscan re-activation of the regional basement structure, is well defined by past drilling on Licence 1440R. At outcrop, east of the Boolies Fault, it juxtaposes the northeast striking, west dipping Courceyan succession against Lower Palaeozoic basement. To the west the Boundary Fault outcrops within the limestone succession, generally within the outcrop of the Upper Dark Limestones.

On Licence 3373 the exact location of the Boundary Fault, due to the sparser drill coverage and its outcrop within the Upper Dark Limestones, is less well constrained. Interpretation of drill data and seismic profiles has identified a series of offsets of the Boundary Fault by northeast striking faults similar to those seen in the immediate vicinity of the Navan mine.

**Moate Block:** The Moate Block stratigraphy is comparable to that in the Navan area with intertidal to shallow marine sediments overlain by a succession of marine, argillaceous bioclastic limestone. This in turn is overlain by the Waulsortian micritic Reef complex. A northeast-southwest trending incursion of Reef Equivalent, or Grey Calp, widening to the northeast and closing to the southwest, penetrates the massive micritic Reef on PLs 1228 and 1229. Palaeogeographical reconstruction indicates this incursion was continuous northeastwards following the Tynagh-Ballinalack Trend.

A distinctive Reef-derived breccia sequence, approximately 50m in thickness, occurs at the base of the Grey Calp succession. This includes sub-angular to sub-rounded clasts of massive reef micrite, many with typical stromatactitic fabric, ranging in size from a few centimetres to over one meter in diameter. The breccias are matrix supported with clast supported sections and minor disseminated sphalerite is typically present. Along the southern margin of the Reef Equivalent incursion the breccias are overlain by 30m of finely bedded, Reef derived turbidites.

The Moate Block lies along the northern flank of the Moate Inlier which is centred on a perianticline fold, which is cut by the east northeast trending Moyvoughly Fault. Drilling by Minco in 2016-2017 identified a major, west northwest striking cross fault offsetting both the Moate Inlier fold and Moyvoughly Fault. The continuation of the Moyvoughly Fault to the south of this structure is uncertain, if it does it could be located to the northwest of DDH 39 as shown on section 2b.

**Slievedart Block:** The Slievedart Block covers part of the northwest Lower Carboniferous Basin. Lower Palaeozoic and Precambrian rocks form the basement to the region. Devonian Old Red Sandstone (ORS) is deposited along an unconfirmable contact with the basement. Lower Carboniferous Basal Clastics form a highly variable facies that conformably overlies the ORS, ranging from alluvial conglomerates to marginal marine sandstones and mudstones. During the Lower Carboniferous a marine transgression progressed northwards across Ireland with siliciclastics giving way to carbonate deposition. Clear evidence of depositional water depth variability can be seen throughout the Lower Carboniferous indicating a complex structural history with block uplift and subsidence.

Deformation of the Lower Carboniferous rocks was manifest in a series of south to southeast dipping graben structures controlled by reactivation of existing Caledonian faults within the underlying basement. The region can be divided into a series of northeast-southwest trending synclines and the Slievedart block is located within a broad southern extension of the Carrick-on-Shannon Syncline. Small horst blocks of Lower Carboniferous and Lower Palaeozoic rocks separate the graben structures, these are known as the Castlerea and Slievedart Inliers. A third inlier, at Glenamaddy, has an anomalous trend and it has been postulated that it is controlled by a relatively shallow granitic pluton.

The Slievedart Inlier trends northeast-southwest along the northern boundary of the licence block, forming a moderate topographic high. It is interpreted to be a horst structure that is bound by the Slievedart North and South Faults. The Slievedart North Fault has a downthrow of >300m to the northwest and the Slievedart South Fault has a downthrow of >100m to the southeast. Basal Clastics outcrop on the footwall to these faults and form most of the inlier. Historical drilling has identified numerous NNE-SSW striking faults that offset the inlier and step progressively to the northeast. Waulsortian Reef development on the southern flank of the inlier appears to be partially controlled by these cross faults. The Waulsortian Reef is conformably overlain by Oakport Fm. and Visean Shelf limestones. The western end of the Glenamaddy Inlier extends across the eastern side of the licence block where it is terminated by a NNE trending structure. The geology of the Glenamaddy Inlier is dominated by Basal Clastics.

A smaller inlier is seen at Rosmearan, PL3470, with Waulsortian Reef exposed within a spatially limited, half horst structure. The Oakport Limestone outcrops along the hangingwall of the controlling faults.

The geology of the southern part of the licence block is not well constrained due to a lack of outcrop. It has been mapped as underlain by undifferentiated Viséan Shelf limestones. Structural modelling, based upon the limited outcrop and drilling data, has postulated a half graben structure controlled by a northerly dipping normal fault system that is developed along the southern margin of the licence block.

## **Mineralization**

**Navan Block:** Localised low grade, zinc-lead mineralisation has been intersected by drilling hosted by the Navan Beds at a number of areas across the property. Minco consider this to be an indication of prospectivity of the Navan Block, in particular for potential satellite deposits to the Navan Mine analogous to recently discovered Tara Deep Deposit. However, to date only one significant mineral occurrence has been discovered, the Tatestown/Scallanstown Deposit.

The Tatestown/Scallanstown deposit was discovered by Irish Base Metals in 1972. The mineralisation is hosted by Lower Carboniferous, shallow water carbonate facies and is generally stratiform, occurring as two horizons at or close to the top of the Micrite Unit. The mineralisation consists of sphalerite, galena, pyrite / marcasite and barite that occurs as rhythmic colloform infill to fractures, voids and interparticle porosity. The mineralisation thickens and is preferentially enriched in the immediate vicinity of a northerly dipping, east-west striking normal fault, which transects the deposit. A historic resource was calculated at 3.6Mt grading 6.9% Zn+Pb.

**Moate Block:** The only significant mineral occurrence proximal to the Moate Block is the Moyvoughly Deposit, which lies approximately 3km to the northeast of the Moate Block and was discovered in 1968 by Gortdrum Mines Ltd. The deposit was discovered by shallow soil sampling with diamond drilling follow up. The zinc and lead mineralisation at Moyvoughly are hosted within shallow water, marine carbonates that are the lithostratigraphic equivalent to the Navan beds. Both cross cutting and stratiform mineral textures are present and demonstrate a close spatial relationship with faulting and fracture zones. The main sulphide species are sphalerite, galena and pyrite. Sphalerite occurs as rim cements, fine grained disseminated clusters and most prevalently as replacement of carbonate allochems and cements. Galena occurs as coarsely crystalline disseminated grains, it is less abundant than sphalerite with a Zn:Pb ratio of 6:1. Barite is abundant occurring as disseminations in the matrix of mudstones and as massive to semi-massive replacements and veins. Very rare chalcopyrite, arsenopyrite and tennantite have been recorded.

**Slievedart Block:** There are currently eight mineral occurrences located on the Slievedart Block. All of the mineralisation is hosted by the Waulsortian Reef or stratigraphic equivalent rocks. The mineralisation is closely associated with dolomitisation and occasionally silicification. Pyrite can be present in large quantities with little or no zinc-lead mineralisation. Cadmium, arsenic and thallium are common trace elements. Styles of mineralisation include cavity lining, geopetal fill of stromatactitic cavities and fracture lining. Pyrite occurs as massive bands up to 50cm thick. The style of mineralisation and setting is very similar to that described at Ballinalack where knolls of Waulsortian Reef are found in the hanging wall of normal faults and mineralisation is slightly offset from the main faults.

## Deposit Types

***“Irish Type” Ore Deposits:*** The Lower Carboniferous aged rocks of the Irish Midlands are host to one of the world’s major orefields. The ore deposits are hosted within a sequence of transgressive marine carbonate rocks lying above a wedge of Upper Devonian red beds. The deposits formed by the replacement of lithified host rocks and have distinctive characteristics and differences to other carbonate hosted zinc-lead deposits to have been given the moniker “Irish Type”.

The deposits occur preferentially within two particular stratigraphic units, the Waulsortian Reef and the Navan Beds. They occur along or immediately adjacent to normal faults, which acted as conduits for ascending hydrothermal fluids. They have a stratabound and stratiform morphology, often occurring as large-scale flat lying lenses. The deposits formed from the mixing of moderately hot (120 – 280°C), saline, slightly acidic, metal bearing, hydrothermal fluids, with relatively sulphur-rich fluids that had been derived from Carboniferous seawater.

They have a simple mineralogy with the principle sulphide species being sphalerite (ZnS), galena (PbS) and pyrite (FeS). Some deposits contain significant tonnages of barite (e.g. the Macobar Zone at Silvermines or the Garrycam Zone at Keel), Most deposits contain minor amounts of copper, silver and arsenic that can form as tennantite or chalcopyrite. The sulphide textures can be complex, ranging from replacement style to cavity infill with typically rhythmically laminated collomorphic textures. From a metallurgical perspective the simple mineralogy of this mineralisation means it is very easy to process, achieving high recoveries, with high concentrate grades and very few smelter penalty elements. Concentrate from Irish deposits is highly sought after by smelters and is considered a premium product.

Notable examples of target deposit include the Lisheen and Navan deposits. Both of which are characterized by large tonnages, high grades and are metallurgically easy to process.

The metal and sulphur in Irish Type deposits come from two independent sources. Hydrothermal circulation within the underlying crystalline basement is generally considered to be driven via heat in the crust with metals leached from the underlying Lower Paleozoic aged siliciclastic and volcanic rocks. The source of sulphur is Carboniferous seawater with open system, bacteriogenic reduction of seawater sulphate. The relative abundance of isotopically light sulphur points to the good circulation of Lower Carboniferous seawater through the sites of mineralisation.

Transport of metals occurs via convection of hydrothermal fluids, the heat for this supplied by the relatively high thermal gradient within Irish Midlands caused by crustal thinning associated with back arc extension related to the ongoing Variscan orogeny. Hydrothermal convection cells developed within local areas and tapped into the underlying basement for depths of up to 20km below surface.

The ore bearing fluids are focused into and migrate up along faults until they reach appropriate sites of deposition. These are usually areas where clean limestones have been brecciated by a range of processes, including; hydrothermal activity, dissolution collapse, tectonic/fault brecciation, igneous intrusive interactions and synsedimentary processes. The ore fluids migrate through the breccia systems where they mix with cooler sulphur rich ground waters and sulphide minerals are precipitated in open spaces or selectively replace limestones.

The typical location for Irish Type deposits is within the basal part of the Waulsortian Reef formation or as a stacked lens system within the Navan Beds. The location of the massive sulphide mineralisation is dependent upon breccia morphology or aquicludes within the Navan Bed succession.

Irish Type deposits are associated spatially and temporally with faulting and periods of extensional tectonic activity. The faults were active during the period of deposition and structural jogs or offsets can act as foci for hydrothermal fluid flow. The often complex structural setting within the deposits acts as a de-facto plumbing system, facilitating the migration of fluids away from main feeder fault zones.

Waulsortian Reef is the main host lithology for mineralisation at most of the large zinc-lead deposits in the Irish Midlands, including; Silvermines, Lisheen, Tynagh and Galmoy. Across the Irish Midlands Orefield the contact between the Waulsortian Reef and the underlying ABL is an important timeline and the rheological contrast between the massive Waulsortian Reef limestones and the underlying relatively plastic ABL often facilitates breccia development. The Waulsortian Reef can attain thicknesses of up to 1,200m (from drilling near the Shannon estuary) but it generally ranges from c.100m to c.300m in thickness. The Waulsortian Reef consists of accumulations or “banks” of massive but subtly bedded, often steep sided mounds, which coalesce into a thick units surrounded by varied but related “off reef” facies. The dominant lithofacies is a massively bedded, very pale grey micrite with large sparry masses, it is rich in crinoids and fenestrate bryozoa, commonly containing stromatactis or sheet spars and was deposited as a fine multi-component carbonate mud. It is clear from studies that the rock underwent relatively early marine diagenesis and was at least partially cemented by calcite spar as the mud-mounds grew. The very early cemented nature of the Waulsortian limestones, directly overlying soft, still relatively weak, shaley beds led to brittle fracturing, allowing cracks to open and develop, filled with vertically layered micrites and calcite silts. Evidence from recent diamond drilling demonstrates that the Waulsortian Reef has a diachronous nature, related to the northward migrating marine transgression and accordingly it is older in the southern part of the Irish Midlands Orefield, younging to the north.

The Navan Beds form the oldest Lower Carboniferous aged rocks of the northern Irish Midlands Orefield. They are a sequence of interdigitating, micrites, calcisiltites, oolites, calcarenites, shales and sandstones. They were deposited in a shallow water, peri-tidal environment, consisting of lagoons, sand bars and in some cases sabkha environments. The thickness of the Navan Beds ranges from 100 - 400m and they demonstrate an increase in the energy of the deposition environment up through the succession.

Irish Type deposits have a variety of morphologies, they are commonly considered to be tabulate, stratiform and stratabound. However, close examination shows that they have a range of morphologies that are dependent upon the depositional environment.

At the Lisheen and Galmoy deposits, located along the Rathdowney Trend, the mineralisation is strongly linked to the contact between the base of the Waulsortian Reef and the underlying ABL. The deposits form a series of flat lying lenses of massive pyrite, sphalerite and galena, with very minor quantities of chalcopyrite, tennantite, nickelite and bornite. The mineralisation is fundamentally controlled by northward dipping normal faults that have a ramp-relay, en echelon morphology and can extend for up to 1200m out from the controlling faults. The lenses have an asymmetrical aspect, thickening towards the bounding fault zones, with thickness ranging from centimetric scale to >30m.

The Silvermines deposit also is composed of a series shallowly dipping massive sulphide lenses hosted by a complex breccia stratigraphy developed with the lower part of the Waulsortian Reef succession. Like Lisheen and Galmoy the mineralisation is controlled by a series of north dipping normal faults with an en echelon morphology. At Silvermines there is well developed lead, silver and barite mineralisation along the controlling fault zone that was mined historically. The Silvermines deposit also has a significant economic barite deposit (Macobar) located proximal to the massive sulphide lenses.

Tynagh was the first deposit discovered in the Irish Midlands Orefield and it is also hosted by the Waulsortian Reef. The mineralisation is developed as a series of en-echelon pods / lenses in the hanging wall of the east-west striking and northerly dipping Tynagh Fault Zone. The amount of Waulsortian Reef in the region is limited by a rapid facies change to Reef Equivalent limestones (Grey Calp) to the north. This fact has constrained the footprint of the deposit to the immediate hanging wall of the fault zone where the Waulsortian Reef is developed and has been brecciated. The Tynagh deposit has relatively more lead and locally copper rich than the other Waulsortian Reef hosted deposits and there was large secondary oxide zone that was mined in an open pit during the early production history of the deposit.

The Navan Deposit is the only economic deposit, discovered to date, that is hosted by the Navan Beds. The Navan Deposit is by far the largest deposit in the Irish Midlands Orefield and ongoing exploration continues to add resources which currently can be conservatively estimated to be >125Mt at 8% Zn / 2% Pb. The mineralisation is dominated by sphalerite and galena with pyrite rich zones concentrated in the hanging wall, basinal limestones above the new Tara Deep Zone and within the Conglomerate Group Ore hosted by the Boulder Conglomerate. The Navan Orebody consists of numerous stratabound ore lenses that are vertically stacked through the Navan Beds succession. The deposit sub-outcrops to the north of the Blackwater River and dips gently to the southwest, quasi-continuous mineralisation has been traced for more than 5km down dip. A new zone (Tara Deep) has recently been found within a few kilometers of the main deposit in discrete, fault controlled, blocks, at depths of up to 1800m below surface.

The mineralogy of Irish Type massive sulfide consists of 10 - 80% iron sulfide, mainly in the form of pyrite or marcasite, with sphalerite and galena also being major constituents. Pyrite can often form discrete, spatially separate lenses relative to the base metal rich zones. Chalcopyrite, bornite, nickelite, tennantite and tetrahedrite are present in minor amounts; the copper and nickel rich minerals tend to be found proximal or within the controlling fault systems. The gangue is mainly calcite and/or dolomite.

Metal distribution and concentration within the deposits is controlled by the proximity to the feeder fault zones and to the physiochemical characteristics at the time of deposition. Proximal to the primary or second order feeders the metal grades tend to increase and minor constituents such as copper / nickel / arsenic / silver also tend to be elevated.

Alteration haloes associated with Irish Type deposits are typically developed laterally to the deposit or within the immediate hanging wall above the deposits.

The alteration assemblages can be found both lateral to and above the massive sulphides;

- *Silica alteration*, enrichment by silica is noted at Silvermines where intensive silicification of the supra-Reef limestones can be up to 70m thick. At Silvermines and Tynagh, jasper with associated haematite forms a laterally extensive halo concentrated along the ABL / Waulsortian Reef contact.
- *Iron Formation*, a distinct iron formation composed primarily of haematite with jasper, forms a laterally extensive halo at Tynagh that is up to 10's of metres thick and can be traced for a radius of 7km (Clifford et al, 1992). The Tynagh Iron Formation occurs at the base of Reef / ABL contact, extending across a facies change to Grey Calp (Reef Equivalent) into the Tynagh Basin. Similar well developed Iron Formation is also noted at Crinkill, a sub-economic occurrence located along the Navan-Silvermines Trend.
- *Dolomitisation*, dolomite occurs at all of the Irish Type deposits to a greater or lesser extent. Dolomitisation related to the hydrothermal processes commonly occurs as a replacement, veining or as a breccia matrix. The chemical characteristics of the dolomite varies across the deposits, with more distal mangoan dolomite, giving way to ferroan dolomite with proximity to the feeder faults. Evidence of magnesite have been noted adjacent to the main feeder structures in a number of areas.

## **Exploration**

Minco has carried out detailed studies of the Irish Midlands Orefield and is of the opinion that the area remains prospective for the discovery of more "Irish Type" carbonate hosted zinc-lead deposits. This opinion is based upon over fifty years of experience in Irish and UK exploration, data derived from previous exploration by various companies that is available on open file with the EMD and GSI, and the development of innovative regional geological concepts that resulted in discovery of the Pallas Green deposit.

It has long been recognised that an area of uplift variously referred to as the Wales-Brabant Massif; more recently sub-divided into the Midlands micro-craton and Leinster-Welsh massif; had major influence on deposition throughout the Carboniferous, including the development of the coal fields during the Westphalian. It is postulated that the Irish Midlands Orefield is centred on and structurally localised by the westward continuation Wales-Brabant Massif. It is proposed that:

- the structurally controlled northern margin of the Wales-Brabant Massif coincides with the southern margin of the Longford Down inlier and defines the northern margin of the Irish Midlands Orefield with the Navan deposits located where this is offset by major, northeast striking, Caledonide structure.
- the southern boundary of the Irish Midland Orefield coincides with the westward extension of the southern boundary of the Wales-Brabant Massif. In the southeast of Ireland, in county Waterford, subsidence along this structural trend during the late Devonian and early Carboniferous resulted in a rapid southwards thickening of the Old Red Sandstone conglomerate and sandstone succession in the Comeragh Mountains and, in counties Tipperary, Limerick and Clare, the alignment of volcanic centres within the Lower Carboniferous.
- the northwestern and southeastern boundaries of the Orefield are defined by northeast striking Caledonide basement structures, indicated by regional magnetic and gravity surveys, and referred to as the Tynagh-Ballinalack and Rathdowney trends respectively.

Zinc-lead mineralisation is widely distributed throughout the Lower Carboniferous limestone succession, both within and beyond the limits of the Irish Midlands Orefield. The widespread discovery of minor zinc-lead deposits beyond the limits of the structurally defined Orefield clearly demonstrate that mineralisation was not limited to that area and that the potential for economic mineralisation extends beyond the limits of the Orefield. That said, however, it is notable that, with the exception of Silvermines, all of the economic zinc-lead deposits, together with many of the larger prospects, are located along the boundaries of the Orefield.

***Navan Block:*** At Navan, Minco has contributed to the ongoing exploration programme through funding and technical input to the JV that is being managed by Boliden Tara Mines. Recent exploration has consisted of seismic surveying and diamond drilling. In the Tatestown-Donaghpatrick area the Navan Beds have been tested by nine drill holes, all of which intersected significant widths of low-grade zinc-lead mineralisation. The most recent hole NO2478, intersected extensive low-grade sulphide mineralisation within a fault constrained intersection. The best interval was 1.5m grading 0.85% Zn within a zinc and lead enriched envelop. The basal part of the Upper Dark Limestones (UDL) in this area contains bands and laminae rich in fine grained disseminated pyrite. This fact is particularly noteworthy because the UDL overlying the Tara Deep deposit contains the same style of pyrite enrichment.

A gravity survey is imminent on PL3373 and is designed to increase station density and help refine the geological / structural model. Three diamond drill holes have been drilled on PL3373 since the commencement of the JV. These holes were designed to test stratigraphy and structure in areas with poor historical data density

The Tatestown/Scallanstown-Donaghpatrick area on Licence 1440R represents the most advanced exploration target. It covers an area of approximately 1.5km<sup>2</sup> and remains open to the west and southwest. The Navan Beds have been intersected by nine drill holes within this area, all of which intersected significant widths of low-grade zinc-lead mineralisation. To the north the area is constrained by the Boundary Fault.

The Tatestown-Scallanstown deposit is centered on the east-west striking Tatestown Fault and lies within a well-defined, two-kilometre wide, north-south trending, zone of mineralisation, which is a peripheral extension of the large Navan mineralised system. Traced by drilling, this zone extends north-south for four kilometres, terminated to the south by the Randalstown Fault, which separates it from the main body of the Navan mineralisation, and to the north by the Boolies Fault, a major reverse fault with a throw of around 400m identified by seismic surveying.

The partially explored Tatestown–Scallanstown mineralisation, located between the Randalstown and Boolies Faults, remains open to the north in area B at depths of 300 to 400m below surface. Of the five drill holes within area B, all have intersected significant widths of low-grade zinc-lead mineralisation within the Navan micrite. The southern boundary of area B (Figure 2 - Navan Block Exploration Map - Tatestown-Donaghpatrick Geology (Boliden Tara Mines)Figure 2) is defined by an east-west fault. This is comparable to the Tatestown Fault to the south which localises the thickest and highest grades within the Tatestown-Scallanstown area, primarily on Licence 1440R. The east-west fault along the southern boundary of area B remains unexplored and could have similar grade-width potential. The three holes drilled in area C to the west of the N1 fault, first identified on seismic profiles, have also intersected significant widths of low-grade mineralisation at depths of around 400m to 700m below surface within the southwest dipping Navan micrite. Drill hole NO2478, the only hole within area A between the Boolies and N1 faults, intersected extensive zinc-lead mineralisation throughout the entire Pale Beds succession immediately above the N1 fault. Located within 2.5 km of the Navan Mine workings the Tatestown/Scallanstown-Donaghpatrick mineralisation is considered part of the Navan Mine-Tara Deep mineralising system and, as such, has significant exploration potential. However, it should be noted that mineralisation on adjacent or nearby projects is not indicative that mineralisation will be hosted on Minco’s licences.

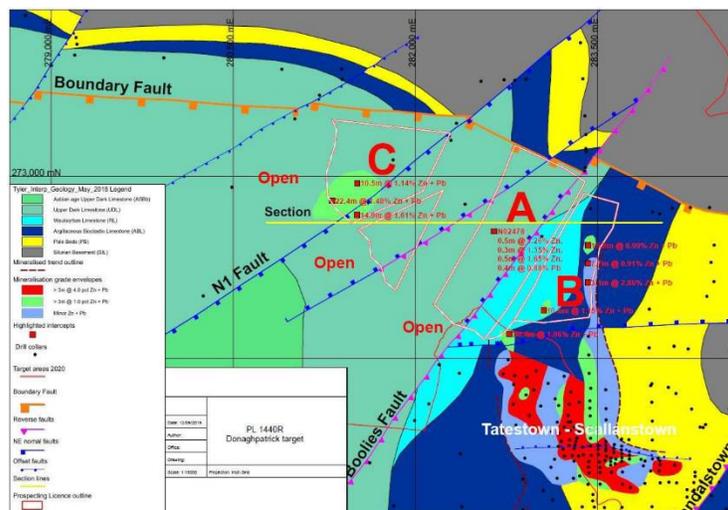


Figure 2 - Navan Block Exploration Map - Tatestown-Donaghpatrick Geology (Boliden Tara Mines)

To the west of the Tatestown/Scallanstown-Donaghpatrick area, on Licences 1440R and 3373, exploration will target the extension of the Boundary Fault, or “Boundary Fault Corridor”, to the west. Four structurally defined target areas located eight to fifteen kilometers west of the Tara Mine have been identified on Licence 3373 where the Boundary Fault appears offset by major northeast striking faults. The Navan micrite is projected to lie at depths of 550 to 800 metres below surface.

It is Minco’s opinion that the mineralisation that has been outlined at Tatestown/Scallanstown is an indication of the overall prospectivity of the block and of the potential for the discovery of a deposit in the range of 5 to 10 million tonnes, with average grades in the range of 7% to 10% (Zn+Pb), similar to the average grade of the nearby Navan Mine. The Tatestown-Scallanstown area is a target for future exploration, although it is uncertain if future exploration will result in the deposit being delineated as a mineral resource. The main target areas on the Navan Block are located within the structurally controlled corridors to the west of the Tatestown-Scallanstown deposit.

**Moate Block:** In November 2015 Minco was granted three new PLs 1228, 1229 and 3981, centered on a specific geological target identified by Minco, with potential for zinc-lead mineralization of the Tynagh Mine type.

The licences are located along the northwestern margin of the Irish Midland Orefield on the “Tynagh-Ballinalack Trend”, comparable to the Lisheen Trend, which underlies the Lisheen and Galmoy Mines in Tipperary and Kilkenny, and the Pallas Green Trend which underlies the Pallas Green deposits discovered by Minco in 2007.

The Moate target lies mid-way between the former Tynagh Mine, located 50 kilometres to the southwest, and the similar styled Ballinalack deposit, situated 35 kilometres to the northeast. The Tynagh Mine operated successfully from 1965 to 1981 producing 9,000,000 tonnes of ore, from both open pit and underground, at average grades of approximately 7% lead, 5.5% zinc, 0.5% copper and 2.6 ounces of silver per tonne.

Minco’s studies of previous drilling have outlined a geological setting that Minco believes mirrors that at the former Tynagh Mine, where zinc-lead mineralization was hosted by breccias developed at the margin between the Reef and off-Reef limestone facies. The geology at Moate is also comparable to that at the smaller Ballinalack deposit. A ten kilometre long target has been outlined at a depth of 150 metres below surface, with potential for Reef hosted zinc-lead mineralisation of Tynagh-type.

Minco has carried out a data review and target generation programme for the Moate Block. This has involved acquisition and interpretation of all the historic drilling data. Modelling by Minco geologists identified a major, west northwest striking basement trend that has a 20° anticlockwise jog where it intersects the fault controlling the northern margin of the Moate Inlier. This offset to a major fault is a classic structural target where the rotation of the faults creates a dilatant zone focusing mineralising, hydrothermal fluids into this region. This is a priority target area for the current exploration programme.

The exploration target concept on the Moate Block is an analogy of the Tynagh Deposit. Historic exploration was concentrated on the footwall side of the main controlling faults of the Moate inlier, targeted on the Moyvoughly Beds, a Navan Beds Equivalent facies. The low-grade mineralisation, intersected by this drilling, is modeled as footwall mineralisation derived from a major mineralising fault, analogous to the footwall mineralisation found at Shallee near Silvermines and at Ballinalack. The stratigraphic setting on the hanging wall side of the main fault (Figure 29) is analogous to the setting at Tynagh, with a major facies change from Waulsortian Reef micrites to Grey Calp (Reef Equivalent). The target postulated for this area is a Tynagh analogy, with well developed, brecciated Waulsortian Reef developing along the main controlling fault and becoming mineralised over a vertically extensive section, with a relatively small lateral footprint.

**Slievedart Block:** Minco has reviewed the technical data compiled by Boliden Tara Mines and identified a range of high-quality exploration targets that require follow up work. The data from the TELLUS regional airborne geophysical survey was processed, modelled and interpreted by a consultant geophysicist. This work was co-funded by Minco and Boliden Tara Mines and has produced a new structural interpretation for the block. This interpretation has supported the concept of a half graben, controlled by a northerly dipping normal fault underlying the southern part of the block. Minco and Boliden Tara Mines consider this to be broadly analogous to the structural setting seen at the Galmoy deposit. During late September 2019, and early October 2019, a 2D seismic acquisition program was undertaken over a length of 21 kilometres, supported in part by the Geological Survey of Ireland. At the time of writing the data was being processed and was not yet available.

In addition to the geophysical modelling / interpretation, a single drill hole (3470/15) has been drilled at the Ballymoney target zone. Drill hole 3470/15 was a follow up to a series of holes drilled by Boliden Tara Mines at this target. This hole intersected Waulsortian Reef hosted, fine grained pyrite. A small, shallow soil sampling programme designed to validate historic data and increase sample density across a prospective fault trace has been carried out. Samples were collected on a 200m x 50m grid spacing at a depth of 30-40cm.

There is widespread and significant mineralisation seen in the northern part of the Block. Boliden Tara Mines have proposed a model that interprets the mineralisation as distal, low grade, isolated pods related to a much larger mineralising system controlled by major structures developed to the south of the block. Drilling on Boliden Tara Mines's Strokestown Block has influenced this concept as the Mt Mary Fault was found to control thickening Waulsortian at several locations in the hanging-wall of the fault. This is analogous to the Galmoy area where a half graben has developed dipping to the south with the main controlling structures located along the southern margin. These faults acted as the main conduits for the mineralising hydrothermal fluids that transported the metal to sites of deposition at Galmoy. Historical exploration at Galmoy was concentrated on the discontinuous, low-grade, shallow/sub-outcropping mineralisation to the north, only moving south towards the main control as the geological model evolved and focused the exploration into this region.

The widespread and significant mineralisation seen in the northern part of the Block is difficult to explain. Boliden Tara Mines have proposed a model that explains the mineralisation as distal, low grade, isolated pods related to a much larger mineralising system controlled by major structures developed to the south of the Block. This is analogous to the Galmoy area where a half graben has developed dipping to the south with the main controlling structures located along the southern margin. These faults acted as the main conduits for the mineralising hydrothermal fluids that transported the metal to sites of deposition at Galmoy. Historic exploration at Galmoy was concentrated on the discontinuous, low-grade, shallow / sub-outcropping mineralisation to the north, only moving south towards the main control as the geological model evolved and focused the exploration into this region.

## Drilling

Minco has recently carried out as operator, or co-funded with their JV partner Boliden Tara Mines, drilling on the Navan, Moate, and Slievedart Blocks of the Irish Zinc Exploration Project.

All of the drilling carried out either by Minco or their JV partner Boliden Tara Mines was diamond drilling. Typically, in a drill hole the overburden is open hole drilled with a NW tricone bit, cased off and an NQ diameter hole, with core recovery throughout, is drilled to the target depth. Holes are stopped in the Sub Waulsortian Reef ABL facies where the target horizon is the base of the Waulsortian Reef or in the Old Red Sandstone or Lower Palaeozoics where the target horizon is the Navan Beds.

**Navan Block:** At the Navan Block, five holes have been drilled during the current joint venture by Minco / Boliden Tara Mines on PL's 1440R and 3373.

During 2017, Boliden Tara Mines, operator of the JV, completed an infill drilling programme of four drill holes between and peripheral to existing mineralised zones on Licence 1440R, with all four holes intersecting economic grade mineralisation over widths between two and nine metres. The drilling confirmed the continuity of the deposit, the very widespread nature of mineralisation in this area and the potential for extensions.

Table 2 - Intersections from Navan Drilling

Hole ID	From	To	Thickness	Zn %	Pb %
N02434	112.8	121.5	8.7	1.3	0.21
N02435	107.7	109.8	2.1	2.19	0.2
N02435	110.7	117.6	6.9	0.81	0.25
N02436	108.5	118.2	9.7	2.36	0.28
N02440	98.7	107.7	9	6.35	0.66

At the end of 2018 Boliden Tara Mines drilled one-deep hole of 1,225m on PL 1440R, approximately two kilometres to the north of the Tatestown-Scallanstown deposit (N02478). The hole intersected Navan Beds between 1,000 and 1,200 metres down hole, which were extensively calcite veined, dolomitised and brecciated

with pervasive low-grade mineralization of sphalerite-galena common throughout. The encouraging results of this deep hole supports the concept of a continuous mineralized corridor extending north-northwest from Tatestown, which, in turn, might reflect a larger property scale northwest-southeast trend extending through the main Navan Mine area to the new Tara Deep deposit in the southeast.

Table 3 - Collar Data for Drillhole N02478

Hole ID	Started	Completed	Depth (m)	easting	northing	inclination	Azimuth
NO2478	03/12/2018	06/02/2019	1225.6	282,297	273,295	90	0

Hole NO2478 was collared in Upper Dark Limestone (UDL) that continued to a depth of 571.8m. There were a number of interesting and possibly significant features intersected within the UDL succession. At c.420m a 7m thick zone of breccia / conglomerate was intersected (figure 33), the clasts were very angular and consisted dominantly of Waulsortian Reef facies. The angularity and the presence of Waulsortian within Chadian / Arundian facies would suggest that the Waulsortian was exposed and being actively eroded nearby, this is indicative of active faulting and uplift in this area.

At the base of the UDL there is selective replacement of the coarser grained beds and laminae by fine grained pyrite. This style of pyrite mineralisation is also seen in the UDL stratigraphically above the Navan and Tara Deep deposits.

There is a normal succession from the UDL to the Navan Beds through Waulsortian Reef, ABL and Shaley Pales, however there is no evidence of the Arundian unconformity that is seen in the mine area. The Navan Beds however, have some interesting characteristics that could be considered prospective. Firstly, there is a pervasive ferroan dolomite alteration through the entire Navan Beds sequence, this is analogous to the main Mine area. Secondly, there is persistent, low grade zinc -lead mineralisation that can become quite intense over narrow intervals and thirdly, the Micrite Unit hosts crosscutting evaporites and is more intensely brecciated than normal

**Moate Block:** At the Moate Block, Minco has drilled 13 holes for a total of 1299m since drilling recommenced in 2016. The holes have been a combination of vertical and angled holes and recently a hole was drilled, designed to test a major structural offset to the Moyvoughly Fault.

Table 4 - Collar Data for Minco's Moate Drilling (2016 – 2019)

Hole ID	Started	Completed	Depth (m)	easting	northing	inclination	Azimuth
16-1229-35	09/09/2016	16/9/2016	146	209 265	238 465	70	162
16-1229-36	20/9/2016	28/9/2016	209	209 330	238 340	70	162
16-1229-37	10/04/2016	10/05/2016	52	210 215	239 705	60	160
16-1229-38	10/07/2016	10/12/2016	100	209 500	239 370	70	162
16-1229-39	19/10/2016	27/10/2016	193	209 000	239 225	70	142
16-1229-40	16/11/2016	29/11/2016	229	209 380	239 155	50	142
16-1228-40	16/12/2016	17/12/2016	23	211 304	239 595	90	000
16-1228-41	20/12/2016	21/12/2016	23	210 975	239 550	90	000
16-1229-41	22/12/2016	16/1/2017	13	210 795	239 628	90	000
17-1228-42	18/1/2017	18/1/2017	20	211420	239 740	90	000
17-1228-43	19/1/2017	20/1/2017	35	211 068	239 840	90	000
17-1228-44	20/1/2017	23/1/2017	50	211 458	239 845	90	000
17-1228-45	24/1/2017	30/1/2017	206	211 130	239 918	90	000

Drilling was concentrated in three areas centred on the townlands of Knockanea-Fardrum and Crosswood areas (PL 1229) and Tully (PL 1228). 1303m were drilled on PL 1229 and 357m on PL 1228.

Minco's drilling programme initially focused on PL 1229 over the southwestern three kilometers of the target area, adjacent the ENE striking Moyvoughly Fault, where five holes (1229-35 to 1229-39) were drilled for a total of 700 metres. Reef derived breccias comparable to those at Tynagh were intersected confirming the geological model, and in drill holes 1229-38, 39 and 40 the breccias contained widespread trace amounts of disseminated sphalerite. The 2019 drill hole, 19-1229-42, was designed to explore for Tynagh-type mineralisation associated with the faulted flank of the Waulsortian Reef margin and was sited in the Crosswood area to explore the northern margin of the Waulsortian Reef north of the cross fault. This hole confirmed the fault location and constrained the target further to the east-northeast. The 2016-2019 drill programme on PL1229 has confirmed the geological model and enhanced the exploration potential of the Licence.

On PL1228 the geological structure has proven more complicated than expected as the Moyvoughly Fault was not intersected in the drilling programme. The Moyvoughly Fault is believed to have been straddled by the drilling and to have a reversed throw of approximately 150m. To the NE, on PL 1228, previous drilling indicates the Moyvoughly Fault is present with a down-throw of approximately 180m to the north, while on PL 3581, further north, the fault was intersected by previous drilling with a throw of 300m. The drilling on PL1228, in the Tully area has defined a major west northwest striking cross fault off-setting the Moyvoughly Fault and the proposed Tynagh-Ballinalack basement structure. There is evidence that the cross fault is also a regional structure, localised by basement structure. The strike of the cross fault swings from west northwest to east-west over a strike length of 1.5 kilometres where it offsets the Tynagh-Ballinalack trend, possibly reflecting movements along the basement structures during the Variscan. The structural pattern is comparable to the setting of the Silvermines where the zinc-lead-barite deposits are localised north of an east-west striking flexure of a regional east northeast fault. 17-1228-45 sited north of the cross fault intersected reef derived breccias comparable to those in 16-1229-38, 16-1229-39 and 16 1229-40 in the Knockanea area.

A 2019 drill hole was designed to explore for Tynagh-type mineralisation associated with the faulted flank of the Waulsortian Reef margin and was sited to explore the northern margin of the Waulsortian Reef north of the cross fault.

The primary target horizon remains Reef derived breccia systems developed along the reef margin. Although not demonstrated by recent drilling, there remains potential in the target area for the development of Ballinalack-type Reef knolls associated with the Reef margin, possibly associated with the cross fault.

***Slievedart Block:*** Minco has been involved with the design and targeting of a single drill hole at the Ballymoney Bridge target on the Slievedart Block. This drill hole 3470/15 was sited to test the source of a widespread shallow EM response from a 2010 survey at Ballymoney Bridge and interpreted to be an anomalous overburden response. The hole was designed to follow up drill hole 3470/11 that intersected well-developed Waulsortian Limestone from 239.5-308.1m. The section from 239.5-282.5m shows abundant pyrite throughout with lesser sphalerite and galena.

Dolomitisation is only weakly developed in places. The upper part of this zone from 239.5-251.0m shows development of crackle breccias with pyrite and minor sphalerite as matrix fill. The lower part of this zone shows large cavities with linings of pyrite and sphalerite. Pyrite and sphalerite are also present as fine-grained layers within muddy sediment infill to the cavity spaces. Some cavities have narrow intervals of high-grade sphalerite mineralisation with only minor galena noted. Pyrite veining is also common throughout this section. From 274.0m concentrations of pyrite start to decrease and from 282.5m are restricted to minor veins. A thin band of massive pyrite was noted near the base of the Waulsortian at 303.4m.

## **Sampling, Analysis, and Data Verification**

Minco has established a detailed Standard Operating Procedure (“SOP”) for the collection and preparation of geological samples for shipment to the laboratory for analysis. All samples are weighed, bagged and labelled and the details recorded for Minco’s own records and for the information of the laboratory. Full details of these procedures are set out in the Blaney Report and are considered fit for purpose by the author of the report.

The primary laboratory selected by Minco is ALS Loughrea (formerly ASA-OMAC Laboratories Limited) Co. Galway. This laboratory has been the subject of an audit by the Manager of Geochemistry, of the SFI Research Centre in Applied Geosciences funded by the Science Foundation Ireland and found to be acceptable.

Secondary laboratories used for check assays of “pay” commodities (in this case Zn, Pb and Ag) and to verify particle size distribution in pulp and coarse reject samples are Intertek-Genalysis, Perth, Western Australia and AGAT Labs, Mississauga, Canada.

Duplicate litho geochem and core samples are taken and analyzed to monitor total sampling variance and check for sample heterogeneity or sampling bias.

Samples are transported to the laboratory by Minco’s technical staff to ensure that the chain of custody is always within Minco’s control and maintained to the highest possible standard.

Each sample shipment is documented upon arrival as follows:

- checking for spillages and general sample integrity.
- verifying that samples match sample shipment requisition numbers provided by samplers.
- identifying and flagging of samples, which are urgent.
- identifying and flagging of high-grade samples for special handling to avoid cross contamination of samples.

Samples are analysed in batches of forty. Each batch will contain the following:

- thirty-five samples
- two duplicate samples
- two blank samples
- one Certified Reference Standard or one In-house Standard

Approximately 5% of coarse crush rejects are re-analyzed at the primary laboratory. Approximately 5% of mineralized pulp samples are submitted to a secondary laboratory for check assays.

ALS-OMAC Laboratories in Loughrea has developed and employs an extensive quality control/quality assurance programme to ensure the production of accurate and reliable data. CanMet Certified reference material and In-house Standards are used in the laboratory. Each batch of 35 samples analysed will contain one standard of similar composition to monitor the analysis. A minimum of three individuals, including two assayers, check results prior to reporting. All QC/QA data accompanies each report

## **Mineral Processing Metallurgical Testing**

No modern mineral processing and metallurgical tests have been performed on material from the Navan, Moate or Slievedart Blocks.

The nature of the mineralization at Navan is closely comparable to that of the Tara Mine, adjacent to Navan, where processing is achieved via conventional comminution and froth flotation.

## **Mineral Resource and Mineral Reserve Estimates**

Minco has no current official NI43-101 compliant reserve / resource estimates on any of its properties.

The Tatestown-Scallanstown deposit straddles the Blackwater River, which forms the licence boundary between PL's 1440R and 1496. Part of this deposit is located on PL 1440R on which Minco holds a 20% interest and the remainder is on the adjacent PL 1496, held 100% by Boliden Tara Mines. Minco is not treating the historical estimates of the Tatestown–Scallanstown deposit as a current mineral resource or mineral reserve.

## **AVAILABLE FUNDS**

At June 30, 2019, Minco has approximately \$9,108(€6,118) available to it and had an estimated consolidated working capital deficiency of -\$22,649(-€15,214) as at June 30, 2019.

Minco's working capital after the completion of the Arrangement is dependent upon the successful closing of a proposed private placement of Minco Shares to be completed as soon as possible after completion of the Arrangement. There is no assurance that the Minco Financing will be completed. If the Minco Financing is not completed, the Minco Shares may not be listed for trading on any stock exchange.

Buchans has agreed to pay and discharge all of Minco's costs and expenses (including professional fees and outlays) in connection with the Arrangement.

## **DIVIDEND RECORD AND POLICY**

Minco has not, since the date of its incorporation, declared or paid any dividends on its ordinary shares (“**Minco Shares**”) and does not currently have a policy with respect to the payment of dividends. The payment of dividends will depend on the earnings, if any, and Minco's financial condition and other factors as the directors of Minco consider appropriate.

## **MANAGEMENT'S DISCUSSION AND ANALYSIS**

The following management discussion and analysis (“**MD&A**”) of financial condition and results of operations of Minco Exploration Limited, provides information that Management believes is relevant to an assessment and understanding of the results of operations and the financial condition of Minco.

This MD&A should be read in conjunction with the audited carve-out consolidated financial statements and the notes thereto of the Company for the year ended 31 December 2018, and the condensed interim carve-out financial statements and the notes thereto for the six-month period ended June 30, 2019, both of which have been prepared in accordance with International Financial Reporting Standards (“**IFRS**”). As Minco did not exist as a legal entity prior to 31 December 2018, the carve-out financial statements have been prepared from the financial records of Buchans on a carve-out basis. All amounts are stated in Euros, unless otherwise noted.

The historical financial information contained in this discussion relating to periods prior to the incorporation of the Company are derived from the consolidated financial statements of Buchans for the same periods.

The discussion contains forward-looking statements that involve numerous risks and uncertainties, including those risks set forth herein under the heading “**RISK FACTORS**” elsewhere in this document. Actual results of Minco could differ materially from those discussed in such forward-looking statements as a result of these risks and uncertainties.

## Company Overview

Minco was incorporated under the *Companies Act 2014* of the Republic of Ireland on 28 May 2019 for the purpose of holding the Ireland and UK assets of Buchans and to pursue the exploration and development of same. Minco is a wholly-owned subsidiary of Buchans.

Details of the exploration activities and results of Minco are set out elsewhere under the section *The Business of the Company – Mineral Exploration Properties*”.

## Overview

Minco holds base metal exploration property interests in the Republic of Ireland and is pursuing exploration for zinc and lead, both in joint venture with Boliden Tara Mines near Navan and on its own licences at Moate. Minco has also entered into a new exploration agreement with Boliden Tara Mines on twelve Prospecting Licences in Galway.

## Exploration and Evaluation Assets

For the period ended June 30, 2019 and the years ended 31 December 2018, 2017 and 2016

	30 June 2019	Additions	31 December 2018	Additions	31 December 2017	Impairment	Additions	31 December 2016
	€	€	€	€	€	€	€	€
Navan	350,360	2,050	348,310	6,717	341,593	-	64,172	277,421
Moate	251,530	-	251,530	13,247	238,283	-	68,562	169,721
Kells	81,829	850	80,979	80,979	-	-	-	-
Slieve Dart	109,085	850	108,235	108,235	-	-	-	-
Pennines	-	-	-	-	-	(1,952,100)	-	1,952,100
Total	792,804	3,750	789,054	209,178	579,876	(1,952,100)	132,734	2,399,242

## Results of Operations

The Company recorded no revenue in the years ended 31 December 2018 or 31 December 2017 or in the periods ended 30 June 2019 or 30 June 2018.

For the year ended 31 December 2018, the Company recorded a loss of €189,084, compared to a loss of €2,114,415 for the year ended 31 December 2017. The loss for the year ended 31 December 2017 included an impairment provision against exploration assets located in the United Kingdom in the amount of €1,952,100.

Administrative expenses for the year ended 31 December 2018 amounted to €187,868 compared to €151,425 for the year ended 31 December 2017.

Management and administration of the Company was provided by Buchans. The carve-out financial statements include an allocation of general and administrative expenses estimated to relate to the Company and presented as management fees in the statement of loss.

For the six-month period ended 30 June 2019, the Company recorded a loss of €65,284, compared to a loss of €82,106 for the six-month period ended 30 June 2018.

For the three-month period ended 30 June 2019, the Company recorded a loss of €27,522, compared to a loss of €27,004 for the three-month period ended 30 June 2018.

During the year ended 31 December 2018, Minco invested €209,178 (2017 - €132,734) on exploration of its mineral properties.

## SELECTED ANNUAL INFORMATION

The following selected annual information has been derived from the financial statements of the Company, which have been prepared in accordance with International Financial Reporting Standards.

Expressed in Euros Except for per share amounts	Year ended 31 Dec. 2018 €	Year ended 31 Dec. 2017 €	Year ended 31 Dec. 2016 €
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Loss before taxation and other items	(187,868)	(151,425)	(133,458)
Net loss for the period	(189,084)	(2,114,415)	(150,739)
Total assets	831,616	623,122	4,362,911
Cash and cash equivalents	15,682	8,899	1,927,377
Owner's investment	779,332	553,956	4,228,386

## Summary of Quarterly Results

Expressed in €000's, Except for per share amounts	30 June 2019 €	31 March 2019 €	31 Dec. 2018 €	30 Sept. 2018 €	30 June 2018 €	31 March 2018 €	31 Dec. 2017 €	30 Sept. 2017 €	30 June 2017 €	31 March 2017 €
Net (loss) gain	(37)	(28)	(93)	(48)	(27)	(21)	(1,959)	(44)	(43)	(68)
Net (loss) gain per share - basic and diluted	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)
Total assets	801	829	832	749	800	744	623	2,559	2,589	4,073
Working capital/ Deficiency	(18)	(15)	(10)	(15)	33	(120)	(26)	48	59	1,552

- The loss for the quarter ended 31 December 2017 included an impairment provision against exploration assets in the amount of €1,952,100.

## LIQUIDITY AND CAPITAL RESOURCES

At 31 December 2018, Minco held €15,682 (31 December 2017- €8,899) in cash, and had a working capital deficiency of €9,723, compared to a working capital deficiency of €25,920 at 31 December 2017. At 30 June 30, 2019, Minco held €6,118 in cash and cash equivalents.

At 31 December 2018 and 30 June 2019, Minco held interests in mineral properties with a combined book value of €789,054 and €792,804, respectively. The balance sheet values for these assets may not represent that which could be obtained if the assets were to be offered for sale.

At 31 December 2018 and 30 June 2019, the Company had a working capital deficiency, had not achieved profitable operations, had an accumulated deficit since inception and expects to incur further losses in the development of its business. The Company has relied on equity financing and/or advances from its parent Buchans to fund its working capital requirements. The Company will need to generate additional financial resources in order to fund its planned programs. There is a risk that additional financing will not be available to the Company on a timely basis or on acceptable terms.

Minco's working capital after the completion of the Arrangement is dependent upon the successful closing of a proposed private placement of Minco Shares to be completed as soon as possible after completion of the Arrangement. There is no assurance that the Minco financing will be completed. If the Minco financing is not completed, the Minco Shares will not be listed for trading on any stock exchange.

## **Metal Prices**

Metal prices are a key factor in the future outlook for the mining and mineral exploration industry as a whole.

The improvement in base metal prices which began in late 2016, continued throughout 2017 and into the first half of 2018, but stalled mid-year as the optimism provided by shrinking metal inventories and generally declining mine production was overshadowed by the growing threat of a US-China trade war, tariffs, potential interest rate hikes in the US, uncertainty in Europe and a general slowdown in the global economy. These conditions caused most metal prices to retreat in the second half of 2018, before stabilizing towards year end.

After having risen consistently for almost two years, the price of zinc began falling in mid-2018; however, the average price remained virtually unchanged compared to 2017. The silver price was negative from mid-2018 onwards, although the price of gold remained stable.

The zinc price in 2018 averaged US\$2,920/tonne in 2018, an increase from US\$2,895/tonne in 2017. The price of zinc was affected by the economic issues and an increase of mine supply in 2018. After rising to US\$3,600/tonne in February, its highest level since 2007, the price declined over 30% to the US\$2,284/tonne level, a 22-month low, in August, and to a 52-week low of US\$2,314/tonne in late September 2018.

Several large new zinc mines opened new sources of mined zinc and negatively impacted the price, including the start-up of the Century tailings project, the ramp-up of MMG's Dugald River project and the restart of some of the idled Glencore capacity.

According to the International Lead and Zinc Study Group global demand for refined zinc metal was expected to rise in 2019, and the expectation is that global demand for refined zinc will exceed global supply, drawing down stocks. Demand for zinc in China remains strong.

## **RELATED PARTY TRANSACTIONS**

Transactions between the Company and its subsidiaries, which are related parties, have been eliminated on consolidation and are not disclosed.

On 28 June 2019, an aggregate of 600,000 Minco Shares were issued to Buchans in consideration for the indirect acquisition of Minco's mineral exploration properties and certain intercompany accounts pursuant to a subscription agreement made on June 28, 2019. Subsequently, on 03 October 2019 these Minco Shares were subdivided into 60,010,000 Ordinary Shares.

On 24 October 2019, 141,284 shares were cancelled and as at the date hereof, there are 59,868,716 Minco shares issued and outstanding.

Management and administration of the Company was provided by Buchans. The carve-out financial statements include an allocation of general and administrative expenses estimated to relate to the Company and presented as management fees in the statement of loss.

No fees were paid by the Company to directors for their services as directors of the Company in the years ended 31 December 2018 or 2017 or in the periods ended 30 June 2019 or 2018.

## **CRITICAL ACCOUNTING ESTIMATES**

The Company's financial statements are prepared in accordance with IFRS and require management to make estimates and assumptions about future events that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities, if any, at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. Such estimates and assumptions affect the carrying value of assets, impact decisions as to when exploration and development costs should be capitalized or expensed and affect estimates for asset retirement obligations and reclamation costs. Other significant estimates made by the Company include factors affecting valuation of tax accounts. The Company regularly reviews its estimates and assumptions; however, actual results could differ from these estimates and these differences could be material.

### **Adoption of New Accounting Standards**

The standards and interpretations within IFRS are subject to change. For further details, please refer to Note 3 of the 31 December 2018 audited consolidated carve-out financial statements.

## **PRINCIPAL RISKS AND UNCERTAINTIES**

The realization of mineral exploration assets is dependent on the development of economic ore reserves and is subject to a number of significant potential risks including:

### **Exploration, Development and Operating Risk**

Resource exploration and development is a speculative business, characterized by a number of significant risks including, among other things, unprofitable efforts resulting not only from the failure to discover mineral deposits but also from finding mineral deposits that, though present, are insufficient in quantity and quality to return a profit from production. The marketability of minerals acquired or discovered by Minco may be affected by numerous factors that are beyond the control of Minco and that cannot be accurately predicted, such as market fluctuations, the proximity and capacity of milling facilities, mineral markets and processing equipment, and such other factors as government regulations, including regulations relating to royalties, allowable production, importing and exporting minerals and environmental protection, the combination of which factors may result in Minco not receiving an adequate return of investment capital. Many of the properties in which Minco holds an interest are in the exploration stage only and are without a known body of commercial ore. Development of the subject mineral properties would follow only if favourable exploration results are obtained and a positive feasibility study is completed.

The business of exploration for minerals and mining involves a high degree of risk. Few properties that are explored are ultimately developed into producing mines. There is no assurance that Minco's mineral exploration and development activities will result in any discoveries of commercial bodies of ore. The long-term profitability of Minco's operations will in part be directly related to the costs and success of its exploration and development programs, which may be affected by a number of factors.

Substantial expenditures are required to establish reserves through drilling and to develop the mining and processing facilities and infrastructure at any site chosen for mining. Although substantial benefits may be derived from the discovery of a major mineralized deposit, no assurance can be given that minerals will be discovered in sufficient quantities to justify commercial operations or that funds required for development can be obtained on a timely basis and at an acceptable cost.

In addition to the above, there can be no assurance that current exploration programs will result in profitable mining operations. The recoverability of the carrying value of interests in mineral properties and Minco's continued existence is dependent upon the preservation of its interests in the underlying properties, the discovery of economically recoverable reserves, the achievement of profitable operations, or the ability of Minco to raise

additional financing, if necessary, or alternatively upon Minco's ability to dispose of its interests on an advantageous basis. Changes in future conditions could require material write-downs of the carrying values.

#### **No Assurance of Production**

Minco has limited experience in placing resource properties into production, and its ability to do so will be dependent upon using the services of appropriately experienced personnel or entering into agreements with other major resource companies that can provide such expertise. There can be no assurance that Minco will have available to it the necessary expertise when and if Minco places its resource properties into production and whether it will produce revenue, operate profitably or provide a return on investment in the future.

#### **Fluctuating Mineral Prices**

Metal prices are subject to significant fluctuation and are affected by a number of factors which are beyond the control of Minco. The principal factors include: diminished demand which may arise if economic growth in North America, Europe and/or China are not sustained; supply interruptions due to changes in government policies in base and precious metals, war, or international trade embargos; increases in supply resulting from the alleviation of professional and skilled labour shortages experienced by the world's largest producers; and, increases in supply resulting from the discovery and the development of new sources of base and precious metals. The effect of these factors on Minco's operations cannot be predicted.

#### **Factors beyond Minco's Control**

The exploration and development of mineral properties and the marketability of any minerals contained in such properties will be affected by numerous factors beyond the control of Minco. These factors include government regulation, high levels of volatility in market prices, availability of markets, availability of adequate transportation and refining facilities and the imposition of new or amendments to existing taxes and royalties. The effect of these factors cannot be accurately predicted.

#### **Failure to Obtain Additional Financing**

Minco expects to have sufficient financial resources necessary to undertake its currently planned activities, subject to completion of the Minco financing. There can be no assurance that Minco will be successful in obtaining any additional required funding necessary to conduct additional exploration or evaluation, if warranted, on Minco's current exploration properties or any properties that may be acquired or to develop mineral resources on such properties, if commercially mineable quantities of such resources are located thereon. Failure to obtain additional financing on a timely basis could cause Minco to forfeit its interest in such properties. If additional financing is raised through the issuance of equity or convertible debt securities of Minco, the interests of shareholders in the net assets of Minco may be diluted.

#### **Environmental Risks and Hazards**

Minco's operations are subject to environmental regulations in the various jurisdictions in which it operates. Environmental legislation provides for restrictions and prohibitions on spills, releases or emissions of various substances produced in association with certain mining industry operations, such as seepage from tailings disposal areas, which would result in environmental pollution. A breach of such legislation may result in the imposition of fines and penalties. In addition, certain types of operations require the submission and approval of environmental impact assessments. Environmental legislation is evolving in a manner that means standards are stricter, and enforcement, fines and penalties for non-compliance are more stringent. Environmental assessments of proposed projects carry a heightened degree of responsibility for companies and directors, officers and employees. The cost of compliance with changes in governmental regulations has a potential to reduce the profitability of operations.

## **Competition**

The mining industry is intensely competitive in all its phases, and Minco competes with other mining companies in connection with the acquisition of properties producing or capable of producing, precious and base metals. Many of these companies have greater financial resources, operational experience and technical facilities than Minco. Competition could adversely affect Minco' ability to acquire suitable properties or prospects in the future. Consequently, Minco' operations and financial condition could be materially adversely affected.

## **Management**

The success of Minco is currently largely dependent on the performance of its directors and officers. There is no assurance Minco can maintain the services of its directors and officers or other qualified personnel required to operate its business. The loss of the services of these persons could have a material adverse effect on Minco and its prospects. Some of the directors and officers also serve as directors and/or officers of other companies which are engaged and will continue to be engaged in the search for additional business opportunities on behalf of other companies, and situations may arise where these directors and officers will be in direct competition with Minco. Conflicts, if any, will be dealt with in accordance with the relevant provisions of applicable corporate and securities laws.

Recruiting and retaining qualified personnel is critical to Minco' success. The number of persons skilled in the acquisition, exploration and development of mining properties is limited and competition for such persons is intense. As Minco' business activity grows, additional key financial, administrative and mining personnel as well as additional operations staff will be required. Although Minco believes it will be successful in attracting, training and retaining qualified personnel, there can be no assurance of such success. If Minco is not successful in attracting, training and retaining qualified personnel, the efficiency of operations could be affected.

## **FINANCIAL RISK MANAGEMENT**

### **Fair value**

The carrying amounts for cash and cash equivalents, marketable securities amounts receivable and accounts payable and accrued liabilities on the consolidated statements of financial position approximate fair value because of the limited term of these instruments.

### **Interest rate risk**

Minco finances its operations through the issue of equity shares and has no fixed interest rate agreements. Minco had €15,682 and €6,118 in cash and no cash equivalents at 31 December 2018 and 30 June 2019, respectively. A one percent change in interest rates will result in a corresponding change in interest income of approximately Nil based on cash equivalent balances existing at 31 December 2018 and 30 June 2019.

### **Liquidity risk**

Minco' liquidity exposure is confined to meeting obligations under short term trade creditor agreements. This exposure is financed from a combination of cash, additional issues of ordinary equity shares and other financing arrangements.

### **Credit risk**

With respect to credit risk arising from financial assets of Minco, which comprise of cash and cash equivalents, cash deposits give risk to credit risks on the amounts due from counter-parties. The Company controls and monitors the distribution of this exposure by ensuring that all financial instruments are held with reputable and financially secure institutions and that exposure to credit risk is distributed across a number of institutions. At 31 December 2018 all cash and short-term deposits had a maturity date of 30 days or less. Credit risk is actively managed across

the portfolio of institutions by ensuring that material surplus funds are placed with counter-parties that have a credit rating of at least BBB-.

### **Foreign currency risk**

Minco has exposure to currency exchange fluctuations and restrictions as Minco's currencies are spread over Euro (€), US Dollars (US\$), and Sterling Pounds (£). Minco seeks to minimize its exposure to currency risk by closely monitoring exchange rates. Minco does not presently utilize swaps or forward contracts to manage its currency exposures, although such facilities may be used where appropriate in the future.

Further details of Minco's financial risk management policies are set out in Note 11 of the 31 December 2018 audited financial statements.

### **OFF-BALANCE SHEET ARRANGEMENTS**

There are no off-balance sheet arrangements.

### **FINANCIAL INSTRUMENTS**

The Company has cash balances and no interest-bearing debt. The Company's current policy is to invest excess cash in investment-grade short-term deposit certificates issued by major banks. The Company periodically monitors the investments it makes and is satisfied with the credit ratings of its banks.

The Company has designated its cash and cash equivalents as held-for-trading, which are measured at fair value. Fair value estimates of financial assets and liabilities are made at the balance sheet date, based on relevant market information and information about the financial instrument. These estimates involve uncertainties and are subjective in nature. Other financial instruments included in current assets are classified as loans and receivables, which are measured at amortized costs. Accounts payable and accrued liabilities are classified as other financial liabilities, which are measured at amortized cost. As at 31 December 2018 and 30 June 2019, the carrying and fair value amounts of the Company's financial instruments were the same.

### **OUTSTANDING SHARE CAPITAL**

As at the date hereof, there are 59,868,716 ordinary shares outstanding.

### **FORWARD-LOOKING STATEMENTS**

*This management's discussion and analysis contains certain forward-looking statements relating to, but not limited to, Minco's expectations, intentions, plans and beliefs. Forward-looking information can often be identified by forward-looking words such as "anticipate", "believe", "expect", "goal", "plan", "intend", "estimate", "may" and "will" or similar words suggesting future outcomes, or other expectations, beliefs, plans, objectives, assumptions, intentions or statements about future events or performance. Forward-looking information may include reserve and resource estimates, estimates of future production, unit costs, costs of capital projects and timing of commencement of operations, and is based on current expectations that involve a number of business risks and uncertainties. Factors that could cause actual results to differ materially from any forward-looking statement include, but are not limited to, failure to establish estimated resources and reserves the grade and recovery of ore which is mined varying from estimates, capital and operating costs varying significantly from estimates, delays in obtaining or failures to obtain required governmental, environmental or other project approvals, delays in the development of projects changes in exchange rates, fluctuations in commodity prices, inflation and other factors. Forward-looking statements are subject to risks, uncertainties and other factors that could cause actual results to differ materially from expected results. Shareholders and prospective investors should be aware that these statements are subject to known and unknown risks uncertainties and other factors that could cause actual results to differ materially from those suggested by the forward-looking statements. Shareholders are cautioned not to place undue reliance on forward-looking information. By its nature, forward-looking information involves numerous assumptions, inherent risks and uncertainties, both general and specific, that contribute to the possibility that the predictions, forecasts, projections and various future events will not occur. Minco undertakes no obligation to update publicly or otherwise revise any forward-looking information whether as a result of new information, future events or other such factors which affect this information, except as required by law.*

## DESCRIPTION OF SECURITIES

### Ordinary Shares

Minco’s authorized capital initially consisted of 1.0 million ordinary shares of €1.00 each (“**Minco Shares**”), of which 600,100 ordinary shares were issued and outstanding and held by Buchans as at June 30, 2019. On October 3, 2019, Minco subdivided its authorized and capital into 100 million ordinary shares of €0.01 each and its issued capital into 60,010,000 ordinary shares of €0.01 each.

On October 24, 2019, 141,284 shares were cancelled and as at the date hereof, there are 59,868,716 shares outstanding.

Holders of ordinary shares are entitled to dividends if, as and when declared by the directors, to one vote per ordinary share at meetings of shareholders and to receive the remaining property of Minco upon the liquidation, dissolution or winding-up of Minco, whether voluntary or involuntary.

Following implementation of the Arrangement, all of the issued Minco Shares will be held by Buchans subject to reduction upon the optional exercise by the holders of the Buchans Exchangeable Warrants to receive Minco Shares on the basis of one Minco Share for every Buchans Exchangeable Warrant held.

As at the date hereof, Minco does not have any of its securities listed or quoted, and has not applied to list or quote any of its securities, on the Toronto Stock Exchange, Aequitas NEO Exchange Inc., a U.S. marketplace, or a marketplace outside of Canada and the United States of America.

Following the Arrangement becoming effective, and subject to obtaining any necessary approvals, Minco has agreed to use its reasonable commercial efforts to make an application for the admission to trading of the Minco Shares on the Irish Stock Exchange as soon as reasonably practicable, subject to market and trading conditions, provided however that Minco does not guarantee that such a listing will be obtained or completed.

## CONSOLIDATED CAPITALIZATION

The following table sets forth the consolidated capitalization of Minco as at the dates indicated before and after giving effect to the Arrangement. This table should be read in conjunction with the consolidated financial statements of Minco included in the Circular.

Designation of Security	Outstanding as at June 30, 2019 (unaudited)	Outstanding as at the date hereof (unaudited)	Outstanding as of the date hereof after giving effect to the Arrangement (unaudited)
Long-term Debt	Nil	Nil	Nil
Shareholders’ Equity Owners Net Investment	€777,490	€777,490	€777,490
Ordinary Shares (Authorized – 100 million ordinary shares at €0.01 each)	€2,625,000 600,100 Ordinary Shares	€2,625,000 59,868,716 Ordinary Shares	€2,625,000 59,868,716 Ordinary Shares
Retained Earnings (Deficit)	(€1,847,510)	(€1,847,510)	(€1,847,510)

## OPTIONS TO PURCHASE SECURITIES

### Incentive Stock Option Plan

Minco does not currently have a stock option plan.

### Outstanding Options

As at the date hereof, no options to purchase securities of Minco have been issued or are outstanding.

### PRIOR SALES

On May 28, 2019 an aggregate of 100 Minco Shares were issued as incorporator's shares for a total cash consideration of €100. These shares are now held by Buchans.

On June 28, 2019, an aggregate of 600,000 Minco Shares were issued to Buchans in consideration for the indirect acquisition of Minco's mineral exploration properties and certain intercompany accounts having an aggregate fair value of €2,625,000 pursuant to a subscription agreement made on June 28, 2019. Subsequently, on October 3, 2019 these Minco Shares were subdivided into 60,010,000 Ordinary Shares.

On October 24, 2019, 141,284 shares were cancelled and as at the date hereof, there are 59,868,716 Minco shares issued and outstanding.

### ESCROWED SECURITIES

As at the date hereof, there are no securities of Minco held in escrow or that are subject to a contractual restriction on transfer.

### PRINCIPAL HOLDERS OF COMMON SHARES

As at the date hereof, to the knowledge of the directors and officers of Minco, no person beneficially owns, directly or indirectly, or exercises control or direction over, Minco Shares carrying more than 10% of the voting rights attaching to all outstanding Minco Shares, except as follows:

Name	Designation of Class	Type of Ownership	Number and Percentage of Minco Shares owned before giving effect to the Arrangement	Number and Percentage of Ordinary Shares owned after giving effect to the Arrangement
Buchans Resources Limited	Ordinary Shares	Direct	59,868,716 100%	59,868,716 <sup>(1)</sup> 100%

<sup>(1)</sup>Subject to reduction upon exercise of the Buchans Exchangeable Warrants.

### DIRECTORS AND OFFICERS

The directors and executive officers of Minco are currently directors and executive officers of Buchans. The following table sets out, for each of Minco's directors and executive officers, the individual's name, municipality of residence, positions with Minco, principal occupation, and, if a director, the month and year in which such individual became a director. Directors hold office for a term of one (1) year until the next annual meeting of shareholders of Buchans or until their successors are duly elected or appointed.

Name and Municipality of Residence	Offices with Minco	Principal Occupation	Director/Officer Since	Shares held Directly or Indirectly or over which control or direction is exercised	
				Pre-Arrangement	Post Arrangement
John F. Kearney Ontario, Canada	Chairman and Director	Mining Executive  Chairman and CEO of Labrador Iron Mines Holdings Limited	May 28, 2019	Nil	Nil <sup>(1)</sup>
Patrick D. Downey	Director	Chartered Professional Accountant	October 28, 2019		Nil <sup>(2)</sup>
Terence McKillen	Director	Professional Geologist (Retired)	October 28, 2019		Nil <sup>(3)</sup>
Peter McParland Ireland	Chief Executive and Director	Business Executive	May 28, 2019	Nil	Nil <sup>(4)</sup>
Michael Power	Director	Professional Engineer	October 28, 2019		Nil
Danesh Varma Kingston United Kingdom	Secretary and Director	Chartered Accountant	May 28, 2019	Nil	Nil <sup>(5)</sup>

- Notes
- (1) Will hold 2,546,969 Buchans Exchangeable Warrants exchangeable for up to 2,546,969 Minco Shares.
  - (2) Will hold 186,500 Buchans Exchangeable Warrants exchangeable for up to 186,500 Minco Shares.
  - (3) Will hold 213,050 Buchans Exchangeable Warrants exchangeable for up to 213,050 Minco Shares.
  - (4) Will Hold 473,000 Buchans Exchangeable Warrants exchangeable for up to 473,000 Minco Shares.
  - (5) Will Hold 2,505,548 Buchans Exchangeable Warrants exchangeable for up to 2,505,548 Minco Shares.

As of the date hereof, the directors and executive officers of Minco as a group do not beneficially own, directly or indirectly, any Minco Shares. Following completion of the Arrangement, directors and executive officers of Minco as a group will beneficially own, directly or indirectly, 5,925,067 Buchans Exchangeable Warrants exchangeable for up to 5,925,067 Minco Shares which will represent approximately 9.90% of the issued and outstanding Minco Shares if all such warrants are exchanged for Minco Shares.

The following relates to the directors and officers of Minco. Except as noted below, each of Minco directors and executive officers has been engaged for more than five years in his or her present principal occupation.

**John F. Kearney** – Mr. Kearney, Chairman, is a mining executive with over 45 years of experience in the mining industry. He is currently a director or senior officer of numerous mineral ventures including, Labrador Iron Mines Holdings Limited, Anglesey Mining Plc and is also Chairman of Xtierra. He holds degrees in law and economics from the University College Dublin and a Masters in Business Administration from Trinity College Dublin. He is a member of the Law Society of Ireland.

**Patrick D. Downey** – Mr. Downey is a Canadian Chartered Professional Accountant and an Institute of Corporate Directors Certified Director with over 35 years of experience in the mining industry. He has been a director, CEO and CFO of Toronto Stock Exchange and New York Stock Exchange listed companies, including Northgate Minerals Corp., The companies he has been associated with have been involved in numerous mining operations primarily involving gold and copper mines in Australia, Canada, Chile, Mexico and the USA. Mr. Downey is Chairman of the Audit Committee.

**Terence N. McKillen** – Mr. McKillen is a retired professional geologist with 47 years of experience in the mining industry. He was Chief Executive of Xtierra and Minco from 2007 until April 2013. He holds degrees in geology from the University of Dublin (Trinity College) and the University of Leicester. He is a lifetime honorary member of the Association of Professional Geoscientist of Ontario. Mr. McKillen is a director of Xtierra Inc. and Conquest Resources Limited. He has extensive experience in exploration and development projects in Ireland, Europe, Africa, Southeast Asia, as well as North, Central and South America.

**Peter McParland** – Mr. McParland is the founder and Managing Director of Quarry and Mining Equipment (QME) with over 40 years experience in the Mining and Tunnelling industries. QME is an International Mining Contractor, and is also a long-established Global Equipment Supplier of both new, and reconditioned, Mining and Tunneling Equipment. QME headquarters are in Navan, Ireland and also operate from offices in Toronto, Canada and Perth, Australia. He is also a Director of several private companies, both in the mining and medical and health care fields.

**Michael Power** – Mr. Power is a director of Greencastle Resources Ltd., Moydow Resources Limited, Conroy Gold and Natural Resources Plc, and Minerex Drilling Contractors Limited. He is a Professional Engineer registered in Ontario and is also a Chartered Financial Analyst with 50 years of experience in the mining industry in Canada and worldwide. Based in Toronto, Mr. Power was formerly Vice-President and Secretary of Moydow Mines International Inc., Vice-President of Corporate Development at Hemlo Gold Mines Ltd. and previously Noranda Mines.

**Danesh Varma** – Mr. Varma, Chief Financial Officer, is a Chartered Professional Accountant with over 31 years of experience in the mining finance industry, having been a director of American Resource Company, Northgate Exploration Ltd. and Westfield Minerals Ltd. Mr. Varma holds directorships with Labrador Iron Mines Holdings Limited, Brookfield Infrastructure Partners L.P. and Anglesey Mining Plc.

### **Penalties or Sanctions**

No director, officer, promoter or other member of Management has, during the ten years prior to the date hereof, been subject to any penalties or sanctions imposed by a court or securities regulatory authority relating to trading in securities, promotion, formation or management of a publicly traded company, or involving fraud or theft.

### **Cease Trade Orders, Bankruptcies, Penalties or Sanctions**

No proposed director is, or within the ten years prior to the date hereof has been, a director, or executive officer of any company that, while that person was acting in the capacity of a director or executive officer of that company or within a year of that of person ceasing to act in that capacity, was the subject of a cease trade order or similar order or an order that denied the issuer access to any statutory exemptions for a period of more than thirty consecutive days, or became bankrupt or made a voluntary assignment in bankruptcy, made a proposal under any legislation relating to bankruptcy or insolvency or has been subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold its assets, except as follows:

- a. John F. Kearney and Danesh Varma are directors and/or officers of Labrador Iron Mines Holdings Limited which on April 2, 2015, instituted proceedings in the Ontario Superior Court of Justice for a financial restructuring by means of a plan of arrangement under the Companies' Creditors Arrangement Act which plan was approved on December 6, 2016 and sanctioned by the Court on December 14, 2016.
- b. Michael Power was a Director of San Gold Corporation which on December 22, 2014, filed a Notice of Intention to Make a Proposal under the Bankruptcy and Insolvency Act (Canada). On December 23, 2014, trading of the common shares and subordinated unsecured convertible debentures was suspended by the Investment Industry Regulatory Organization of Canada and the Toronto Stock Exchange. On March 5, 2015, San Gold Corporation obtained Court approval to conduct a Sale and Investor Process (SIPA). Mr. Power resigned as a director of San Gold Corporation on June 22, 2015.

### **Personal Bankruptcies**

No proposed director has within the ten years prior to the date hereof become bankrupt or made a proposal under any legislation relating to bankruptcy or insolvency or been subject to or instituted any proceedings, arrangement or compromise with creditors or had a receiver, receiver manager or trustee appointed to hold the assets of the proposed director.

### **Conflicts of Interest**

The transactions in which directors, senior officers, promoters or principal holders of Minco securities have had an interest in are described herein under the headings "*Interest of Management and Others in Material Transactions*", "*Options to Purchase Securities*" and "*Executive Compensation*". Other than as described under these headings, there are no material transactions with or involving the directors, senior officers, promoters or principal holders of securities of Minco that have occurred since incorporation. Some of the directors and officers of Minco are engaged and will continue to be engaged in the search for additional business opportunities on behalf of other corporations, and situations may arise where these directors and officers will be in direct competition with Minco. Certain of Minco's directors and officers also serve as directors and/or officers of companies which may enter into contracts with Minco in the future. In the event that this occurs, a conflict of interest will exist. Directors in a conflict of interest position are required to disclose such conflicts to Minco.

The directors of Minco are required by law to act honestly and in good faith with a view to the best interests of Minco and to disclose any interests that they may have in any material contract or material transaction. If a conflict of interest arises at a meeting of the board of directors, any director in a conflict is required to disclose his interest and abstain from voting on such matter.

The directors and officers of Minco are aware of the existence of laws governing accountability of directors and officers for corporate opportunity and requiring disclosures by directors of conflicts of interest in respect of Minco and are required to comply with such laws in respect of any directors' and officers' conflicts of interest or in respect of any breaches of duty by any of its directors or officers.

## **EXECUTIVE COMPENSATION**

### **Named Executive Officers**

During the period from incorporation until June 30, 2019, Minco had two Named Executive Officers ("NEOs") as defined under applicable Canadian securities regulations; namely, John F. Kearney; Chairman and Danesh Varma, Secretary.

## **Summary of Compensation**

The NEOs have received no compensation of any kind from Minco during the period from incorporation until the date hereof. Minco does not plan to provide regular compensation to its executive officers during the next 12 months, however, it is anticipated that certain of its officers will be engaged from time to time to provide services as consultants to Minco and they will be compensated at standard industry rates on the basis of the actual time spent and the nature of the services provided.

Minco does not have a formal annual incentive bonus plan in place. Any award of a bonus to executive officers would be entirely at the discretion of the Board.

## **Stock Options and Other Compensation Securities**

Minco does not currently have an incentive stock option or stock appreciation right plan

During the period from incorporation until June 30, 2019, there were no incentive stock options and SARs (stock appreciation rights) granted to or exercised by the Directors or NEO's.

## **Defined Benefit or Actuarial Plan**

Minco does not have a defined benefit or actuarial pension plan.

## **Compensation Governance**

Minco does not have a Compensation Committee. Compensation matters will be reviewed by the full Board of Directors when required. An interested board member is required to abstain from voting on matters concerning his or her own compensation. Currently, the directors of Minco do not receive fees in their capacities as directors.

The Board will rely on the general knowledge and experience of its members, and recommendations from the Chief Executive Officer, in reviewing appropriate levels of compensation for Named Executive Officers and the implementation of, or amendment to, any other aspects of compensation that the Board may review from time to time. The current Board has relevant general, but not direct, experience in executive compensation and compensation policies and practices in the mineral resources business gained through current and prior experience in business and in the minerals industry. Minco has not had any contractual arrangement with any compensation consultant at any time since incorporation.

The Board as a whole will be responsible for considering the risks associated with Minco compensation policies and practices and has not yet identified any specific risks associated with Minco compensation policies and practices that are reasonably likely to have a material adverse effect.

Because of the current scale and scope of Minco operations, and the limited number of senior management and employees, and the oversight by the Board of all significant activities, including risk management, the Board does not believe that Minco compensation policies and practices would encourage any executive officer to take inappropriate or excessive risk.

Minco NEOs or Directors are not prohibited from purchasing financial instruments, including, prepaid variable forward contracts, equity swaps, collars, or units of exchange funds that are designed to hedge or offset a decrease in market value of equity securities granted as compensation or held, directly or indirectly, by the Named Executive or Director.

## **Termination and Change of Control Benefits**

Minco has no compensatory plan or arrangement in respect of compensation received, or that may be received, by a NEO since incorporation or in Minco's current financial year to compensate such NEO in the event of the termination of employment (whether voluntary, involuntary or constructive), resignation, retirement, a change of control of Minco or a change in responsibilities of the NEO following a change in control.

## **INDEBTEDNESS OF DIRECTORS AND EXECUTIVE OFFICERS**

None of the Directors, officers, or associates of such persons have been indebted to Minco at any time since incorporation. No such person has been indebted to any other entity where such indebtedness is the subject of a guarantee, support agreement, letter of credit or similar arrangement or understanding provided by Minco in respect of the purchase of securities or otherwise.

## **INTERESTS OF INFORMED PERSONS IN MATERIAL TRANSACTIONS**

No informed person of Minco, proposed Director of Minco, or associate or affiliate of any informed person or proposed Director of Minco has or has had any material interest, direct or indirect, in a transaction since the commencement of Minco's most recently completed financial year or in any proposed transaction which has materially affected or would materially affect Minco.

## **INDEMNIFICATION OF DIRECTORS AND OFFICERS**

The articles of Minco provide that Minco is required to indemnify a director or officer, or former director or officer, or a person who acts or acted at the request of Minco as a director or officer of a body corporate of which Minco is or was a shareholder or creditor, and his or her heirs and legal representatives, against all costs, charges and expenses, including an amount paid to settle an action or satisfy a judgment, reasonably incurred by him or her in respect of any civil, criminal or administrative action or proceeding to which he or she is made a party by reason of having been a director or officer of such body corporate if (a) he or she acted honestly and in good faith with a view to the best interests of Minco, and (b) in the case of a criminal or administrative action or proceeding that is enforced by a monetary penalty, he or she had reasonable grounds for believing that his or her conduct was lawful.

## **AUDIT COMMITTEE AND RELATIONSHIP WITH AUDITORS**

### **Audit Committee**

As a wholly-owned subsidiary of Buchans, Minco does not have an Audit Committee at present but intends to appoint one as soon as possible following implementation of the Arrangement.

The Audit Committee, when constituted, will adopt a written Charter which will comply with applicable legal and regulatory requirements.

## **CORPORATE GOVERNANCE**

The Directors of Minco are committed to maintaining high standards of corporate governance and to managing Minco in an honest and ethical manner. The Board believes that its corporate governance policies and procedures are appropriate in light of the size, nature and stage of development of Minco. The Board is accountable to shareholders for good corporate governance and has adopted the following procedures in this regard.

### **Board of Directors**

The Board currently comprises six members, four of whom the Board has determined are "independent" within the meaning of Canadian National Instrument 58-101, Disclosure of Corporate Governance Practices (the "NI 58-101").

A Director who has no direct or indirect material relationship with the Company is independent within the meaning of NI 58-101. A "material relationship" is defined as a relationship which could, in the view of the Board, be reasonably expected to interfere with the exercise of a director's independent judgment.

The Chairman of the Board, John F. Kearney, is not considered independent in that he is also Chief Executive Officer of the Company. Danesh Varma, Chief Financial Officer is also considered non-independent.

Messrs. Downey, McKillen, McParland, and Power are considered independent Directors since they are all independent of management and free from any material relationship with the Company. The basis for this determination is that none of the independent Directors has been employed by the Company, received direct remuneration from the Company or had any material contracts with or material interests in the Company which could interfere with their ability to act with a view to the best interests of the Company.

Minco intends to recruit at least two more independent directors as soon as practicable following implementation of the Arrangement.

### **Directorships**

The following Directors of Minco are at present directors of reporting issuers (or equivalent):

Minco Director	Name of Reporting Issuer
John Kearney	Anglesey Mining Plc (LSE:AYM) Conquest Resources Limited (TSXV:CQR) Labrador Iron Mines Holdings Limited (OTC: LBRMF) Xtierra Inc. (TSXV:XAG)
Terence McKillen	Conquest Resources Limited (TSXV:CQR) Xtierra Inc. (TSXV:XAG)
Michael Power	Conroy Gold and Natural Resources Plc (AIM:CGNR) Greencastle Resources Ltd. (TSXV:VGN)
Danesh Varma	Anglesey Mining Plc (LSE:AYM) Brookfield Infrastructure Partners L.P. (TSX:BIP; NYSE:BIP) Labrador Iron Mines Holdings Limited (OTC: LBRMF) Xtierra Inc. (TSXV:XAG)

### **Orientation and Continuing Education**

The Board recognizes the importance of continuing education to ensure that members of the Board maintain the skill and knowledge for them to meet their obligation as directors. Minco currently has no formal orientation and education program for Board members. Information (such as recent reports, technical reports and various other operating, property and budget reports) is provided to Board members to ensure that they are familiarized with Minco's business and the procedures of the Board. In addition, directors are encouraged to visit Minco's properties at least once per year. Minco also encourages continuing education of its Directors by distributing information on industry and regulatory matters and by facilitating attendance at industry conferences, seminars or courses.

### **Ethical Business Conduct**

After consideration, the Board has decided not to adopt a written code of business conduct and ethics due to Minco's small size and limited scale of operations.

In addition, as some of the Directors of Minco also serve as Directors and officers of other companies engaged in similar business activities, the Directors must comply with the conflict of interest provisions under applicable corporate legislation, as well as the relevant securities regulatory instruments, in order to ensure that Directors exercise independent judgment in considering transactions and agreements in respect of which a Director or officer

has a material interest. Any interested Director is required to declare the nature and extent of his or her interest and is not entitled to vote at meetings of Directors where such a conflict arises.

The Board believes that the fiduciary duties placed on individual directors by Minco's governing corporate legislation and the common law and the restrictions placed by applicable corporate legislation on an individual director's participation in decisions of the Board in which the Director has an interest are sufficient to ensure that the Board operates in the best interests of Minco.

### **Nomination of Directors**

The Board does not have a separate nominating committee. The Board performs the functions of a nominating committee with responsibility for the appointment and assessment of Directors. In view of the current size of Minco and the current scale of its operations, the composition of the current Board and the service of the current members of the Board, a separate nominating committee has not as yet been considered necessary by Minco.

While there are no specific criteria for Board membership, Minco will attempt to attract and maintain Directors with business experience and a particular knowledge of mineral exploration, project development and mining or other areas such as finance which would assist Minco. Nominations to the Board will be the result of recruitment efforts by Minco and discussions among the Directors prior to the consideration by the Board as a whole.

### **Compensation**

Given the current stage of development of Minco, the Directors of Minco do not currently receive fees in their capacities as Directors.

No cash compensation has been paid to directors since incorporation. Directors who also provide professional or consulting services to the Company may be compensated based upon the invoiced value of the services provided. Directors are entitled to be reimbursed for all reasonable expenses incurred in attending meetings of the board or any committee of the board.

### **Other Board Committees**

The Board has not established any other committees.

### **Assessments**

Given the size of Minco and its current stage of development and scale of operations, the Board believes that its structure and composition is appropriate and that the Board is functioning effectively at the current time. The Board will assess the contributions and effectiveness of the Board as a whole, and each individual Director, in order to determine whether each is functioning effectively.

## **RISK FACTORS**

### **Minco at Exploration Stage Only- Limited Operating History**

Minco has no history of earnings. Minco's properties are in the exploration stage and there are no known commercial quantities of mineral reserves on the properties. There can be no assurance that Minco will place its resource properties into production or generate revenue, operate profitably or provide a return on investment in the future.

### **Additional Financing**

Minco does not currently have sufficient financial resources necessary to undertake all of its currently planned activities. There can be no assurance that Minco will be successful in obtaining any required funding necessary to conduct exploration on Buchans' exploration properties or to develop mineral resources on such properties, if

commercially mineable quantities of such resources are located thereon. Failure to obtain additional financing on a timely basis could cause Minco to forfeit its interest in such properties. If additional financing is raised through the issuance of equity or convertible debt securities of Buchans, the interests of shareholders in the net assets of Minco may be diluted.

### **Absence of Public Trading Market**

The Minco Shares will not be listed or quoted on any stock exchange in the short term, nor will there be any trading facility for the Minco Shares on completion of the Arrangement. There is no certainty that such a listing or admission will be obtained. There can be no assurance that an active market for Minco Shares will develop or be sustained after the Effective Date. If an active public market for Minco Shares does not develop, the liquidity of an investor's investment may be limited. In the absence of an active and liquid trading market, holders of Minco Shares may have difficulty selling their shares.

Since the Minco Shares have not been traded on a market or stock exchange their value is and may remain uncertain. There can be no assurance that Minco Shares can be sold in the future at the same price as that at which they have been valued for the purposes of the acquisition of Minco's mineral exploration properties from Buchans.

As the Minco Shares will not be subject to any market or exchange rules pending the future admission of Minco Shares to trading on the Irish Stock Exchange, holders of Minco Shares will not be afforded the same level of protections and disclosures of material information, or the publication of financial information and compliance with certain corporate governance standards as shareholders of a company whose shares are admitted to trading on the Irish Stock Exchange.

### **Market Volatility and Lack of Liquidity**

If the Minco Shares are, at some time in the future, listed on a stock exchange, it should be noted that securities of exploration companies have experienced substantial volatility in the past, often based on factors unrelated to the financial performance or prospects of the companies involved. These factors include macroeconomic developments in Europe, the UK and globally, and market perceptions of the relative attractiveness of particular industries. Minco's share price is also likely to be significantly affected by short-term changes in metal prices or in Minco's financial condition or results of operations as reflected in quarterly earnings reports. Other factors unrelated to Minco's performance that may have an effect on the price of the Minco Shares include the following:

- the extent of analytical coverage available to investors concerning Minco's business may be limited if investment banks with research capabilities do not follow its securities;
- the limited trading volume and general market interest in Minco's securities may affect an investor's ability to trade the Minco Shares;
- the relatively small size of the publicly held shares will limit the ability of some institutions to invest in Minco's securities; and
- a substantial decline in Minco's share price that persists for a significant period of time could cause its securities to be delisted from any stock exchange upon which they are listed, further reducing market liquidity.

As a result of any of these factors, the market price of Minco Shares at any given point in time may not accurately reflect Minco's long-term value.

### **Title Risks**

Although Minco has exercised the usual due diligence with respect to determining title to and interests in its properties, there is no guarantee that such title to or interests in the properties will not be challenged or impugned and title insurance is generally not available. Minco's mineral property interests may be subject to prior unregistered agreements or transfers or native land claims and title may be affected by, among other things, undetected defects. Surveys have not been carried out on any of Minco's properties in accordance with local laws; therefore, their existence and area could be in doubt. Until competing interests in the mineral lands have been determined, Minco can give no assurance as to the validity of title of Minco to those lands or the size of such mineral lands.

## **Exploration, Development and Operating Risk**

Resource exploration and development is a speculative business, characterised by a number of significant risks including, among other things, unprofitable efforts resulting not only from the failure to discover mineral deposits but also from finding mineral deposits that, though present, are insufficient in quantity and quality to return a profit from production. The marketability of minerals acquired or discovered by Minco may be affected by numerous factors that are beyond the control of Minco and that cannot be accurately predicted, such as market fluctuations, the proximity and capacity of milling facilities, mineral markets and processing equipment, and such other factors as government regulations, including regulations relating to royalties, allowable production, importing and exporting minerals and environmental protection, the combination of which factors may result in Minco not receiving an adequate return of investment capital. All of the licences to which Minco has a right to acquire an interest are in the exploration stage only and are without a known body of commercial ore. Development of the subject mineral properties would follow only if favourable exploration results are obtained and a positive feasibility study is completed.

The business of exploration for minerals and mining involves a high degree of risk. Few properties that are explored are ultimately developed into producing mines. There is no assurance that Minco's mineral exploration and development activities will result in any discoveries of commercial bodies of ore. The long-term profitability of Minco's operations will in part be directly related to the costs and success of its exploration and development programs, which may be affected by a number of factors.

Substantial expenditures are required to establish reserves through drilling and to develop the mining and processing facilities and infrastructure at any site chosen for mining. Although substantial benefits may be derived from the discovery of a major mineralized deposit, no assurance can be given that minerals will be discovered in sufficient quantities to justify commercial operations or that funds required for development can be obtained on a timely basis.

### **No Assurance of Production**

Mineral exploration is highly speculative in nature, involves many risks, and frequently does not lead to the discovery of commercial reserves of minerals. While the rewards can be substantial if commercial reserves of minerals are found, there can be no assurance that Minco's past or future exploration efforts will be successful, that any production therefrom will be obtained or continued, or that any such production which is attempted will be profitable.

### **Factors Beyond Minco's Control**

The exploration and development of mineral properties and the marketability of any minerals contained in such properties will be affected by numerous factors beyond the control of Minco. These factors include government regulation, high levels of volatility in market prices, availability of markets, availability of adequate transportation infrastructure and related facilities and the imposition of new or amendments to existing taxes and royalties. The effect of these factors cannot be accurately predicted.

### **Insurance and Uninsured Risks**

Minco's business is subject to a number of risks and hazards generally, including adverse environmental conditions, industrial accidents, labour disputes, unusual or unexpected geological conditions, ground or slope failures, cave-ins, changes in the regulatory environment and natural phenomena such as inclement weather conditions, floods and earthquakes.

Such occurrences could result in damage to mineral properties or production facilities, personal injury or death, environmental damage to Minco's properties or the properties of others, delays in development or mining, monetary losses and possible legal liability.

Although Minco will purchase insurance to protect against certain risks in such amounts as it considers reasonable, such insurance may not cover all the potential risks associated with a mining company's operations. Minco may also be unable to maintain insurance to cover these risks at economically feasible premiums. Insurance coverage may not continue to be available or may not be adequate to cover any resulting liability. Moreover, insurance against

risks such as environmental pollution or other hazards as a result of exploration and production is not generally available to Minco or to other companies in the mining industry on acceptable terms. Minco might also become subject to liability for pollution or other hazards which may not be insured against or which Minco may elect not to insure against because of premium costs or other reasons. Losses from these events may cause Minco to incur significant costs that could have a material adverse effect upon its financial performance and results of operations.

### **Environmental Risks and Hazards**

Minco operations may be subject to environmental regulations in the various jurisdictions in which it operates. Environmental legislation provides for restrictions and prohibitions on spills, releases or emissions of various substances produced in association with certain mining industry operations, such as seepage from tailings disposal areas, which would result in environmental pollution. A breach of such legislation may result in the imposition of fines and penalties. In addition, certain types of operations require the submission and approval of environmental impact assessments. Environmental legislation is evolving in a manner that means standards are stricter, and enforcement, fines and penalties for non-compliance are more stringent. Environmental assessments of proposed projects carry a heightened degree of responsibility for companies and directors, officers and employees. The cost of compliance with changes in governmental regulations has a potential to reduce the profitability of operations. Minco intends to comply fully with all applicable environmental regulations.

### **Government Regulation and Permitting**

The current or future operations of Minco, including development activities and commencement of production on its properties, require permits from various federal, provincial or territorial and local governmental authorities, and such operations are and will be governed by laws and regulations governing prospecting, development, mining, production, exports, taxes, labour standards, occupational health, waste disposal, toxic substances, land use, water use, environmental protection, land claims of local people, mine safety and other matters.

Such operations and exploration activities are also subject to substantial regulation under applicable laws by governmental agencies that will require Minco to obtain permits, licences and approvals from various governmental agencies. There can be no assurance, however, that all permits, licences and approvals that Minco may require for its operations and exploration activities will be obtainable on reasonable terms or on a timely basis or that such laws and regulations will not have an adverse effect on any mining project which Minco might undertake.

Failure to comply with applicable laws, regulations, and permitting requirements may result in enforcement actions thereunder, including orders issued by regulatory or judicial authorities causing operations to cease or be curtailed, and may include corrective measures requiring capital expenditures, installation of additional equipment or remedial actions. Parties engaged in mining operations may be required to compensate those suffering loss or damage by reason of mining activities and may have civil or criminal fines or penalties imposed for violations of applicable laws or regulations and, in particular, environmental laws.

Amendments to current laws, regulations and permits governing operations and activities of mining companies, or more stringent implementation thereof, could have a material adverse impact on Minco and cause increases in exploration expenses, capital expenditures or production costs or reduction in levels of production at producing properties or require abandonment or delays in development of new mining properties.

### **Lags**

Minco is unable to predict the amount of time which may elapse between the date when any new mineral reserve may be discovered, the date upon which such discovery may be deemed to be economic pursuant to a feasibility study and the date when production will commence from any such discovery.

### **Infrastructure**

Mining, processing, development and exploration activities depend, to one degree or another, on adequate infrastructure. Reliable roads, bridges, power sources and water supply are important determinants which affect capital and operating costs. There can be no assurance that Minco will be successful in obtaining access to such infrastructure on economically feasible terms or at all. Failure to obtain access to such infrastructure could render

Minco's properties unviable. Unusual or infrequent weather phenomena, terrorism, sabotage, government or other interference in the maintenance or provision of such infrastructure could adversely affect Minco's operations, financial condition and results of operations.

### **Competition**

The mining industry is intensely competitive in all its phases, and Minco competes with other mining companies in connection with the acquisition of properties producing or capable of producing, precious and base metals. Many of these companies have greater financial resources, operational experience and technical facilities than Minco. Competition could adversely affect Minco's ability to acquire suitable properties or prospects in the future. Consequently, Minco's revenue, operations and financial condition could be materially adversely affected.

### **Executives and Conflicts of Interest**

Minco is dependent on certain key executives and the loss of these executives may adversely affect our business and results of operations. Due to the relatively small size of the Company, the loss of these persons or Minco inability to attract and retain additional highly skilled or experienced employees may adversely affect its business and future operations.

Certain of the directors and officers of the Company also serve as directors and/or officers of, or have significant shareholdings in, other companies involved in natural resource exploration and development and consequently there exists the possibility for such directors and officers to be in a position of conflict. In addition, some of the directors and officers are engaged and will continue to be engaged in the search for additional business opportunities on behalf of other corporations, and situations may arise where these directors and officers will be in direct competition with Minco.

Conflicts, if any, will be dealt with in accordance with the relevant provisions of applicable corporate and securities laws. Any decision made by any of such directors and officers involving Minco will be made in accordance with their duties and obligations to deal fairly and in good faith with a view to the best interests of Minco and its shareholders. In addition, each of the directors is required to declare and refrain from voting on any matter in which such directors may have a conflict of interest.

To the extent that such other companies may participate in ventures in which Minco may participate, the directors of Minco may have a conflict of interest in negotiating and concluding terms respecting the extent of such participation. In the event that such a conflict of interest arises at a meeting of the Company's directors, a director who has such a conflict will abstain from voting for the approval of such participation or such terms.

From time to time several companies may collectively participate in the acquisition, exploration and development of natural resource properties thereby allowing for their participation in larger programs, permitting involvement in a greater number of programs and reducing financial exposure in respect of any one program. It may also occur that a particular company will assign all or a portion of its interest in a particular program to another of these companies due to the financial position of the company making the assignment.

Under Irish Company Law, the directors of the Company are required to act honestly, in good faith and in the best interests of the Company. In determining whether or not Minco will participate in a particular program and the interest therein to be acquired by it, the directors will primarily consider the degree of risk to which the Company may be exposed and its financial position at that time.

### **Limited Experience with Development-Stage Mining Operations**

Minco has limited experience in placing resource properties into production, and its ability to do so will be dependent upon using the services of appropriately experienced personnel or entering into agreements with other major resource companies that can provide such expertise. There can be no assurance that Minco will have available to it the necessary expertise when and if Minco places its resource properties into production in the future.

### **Ability to Attract and Retain Qualified Personnel**

Recruiting and retaining qualified personnel is critical to Minco's success. The number of persons skilled in the acquisition, exploration and development of mining properties is limited and competition for such persons is intense. As Minco's business activity grows, additional key financial, administrative and mining personnel as well as additional operations staff will be required. Although Minco believes it will be successful in attracting, training and retaining qualified personnel, there can be no assurance of such success. If Minco is not successful in attracting, training and retaining qualified personnel, the efficiency of operations could be affected.

### **Fluctuating Mineral Prices**

Factors beyond the control of Minco may affect the marketability of metals discovered, if any. Metal prices are subject to significant fluctuation and are affected by a number of factors which are beyond the control of Minco. The principal factors include: diminished demand which may arise if current rates of economic growth in India and China are not sustained; war, or international trade embargoes; increases in supply resulting from the alleviation of professional and skilled labour shortages experienced by the world's largest base metal producers; and, increases in supply resulting from the discovery and the development of new sources of base metals. The effect of these factors on Minco's operations cannot be predicted.

### **Foreign Currency Exchange**

Exchange rate fluctuations may affect the costs that Minco incurs in its operations. Minco's financing and operating activities have been denominated in Euro, while prices for base metals are generally quoted in U.S. dollars. The appreciation of the U.S. dollar against the Euro, if it occurs, may have a significant impact on Minco's financial position and results of operations in the future.

### **Dividends**

Minco has not paid any dividends on its Common Shares since incorporation. Minco has a limited operating history and there can be no assurance of its ability to operate its projects profitably. Payment of any future dividends will be at the discretion of Minco's board of directors after taking into account many factors, including Minco's operating results, financial condition and current and anticipated cash needs.

## **PROMOTER**

Buchans, having taken the initiative in substantially reorganizing Minco as contemplated in the Arrangement, is considered a promoter of Minco within the meaning of applicable securities laws. Buchans currently owns all of the issued shares of Minco. Upon completion of the Arrangement, Buchans will continue to hold all the shares of Minco subject to reduction upon the possible exchange of Buchans Exchangeable Warrants for Minco Shares at the option of the holders of such warrants.

Under the Arrangement Agreement, Buchans has agreed to sell to purchasers to be identified by Minco any Minco Shares which it continues to hold as a result of the exchange by shareholders of the Buchans Exchangeable Warrants for additional shares of Buchans.

## **LEGAL PROCEEDINGS**

Management is not aware of any material legal proceedings, actual, contemplated or threatened to which Minco or any of its subsidiaries is a party or to which any of their properties or assets are subject.

## **INTEREST OF MANAGEMENT AND OTHERS IN MATERIAL TRANSACTIONS**

No director, executive officer or principal shareholder of Minco, and no associate or affiliate of the foregoing, has had a material interest, direct or indirect, in any transaction that has materially affected or will materially affect Buchans except all of the directors of Minco are currently directors of Buchans.

## **EXPERTS**

Information of a scientific or technical nature regarding Buchans properties included in this Circular is based upon the Technical Report referred to under the heading “*Business of the Company*” above. The author of this technical report is a “Qualified Person” as such term is defined in NI43-101. The Author of this Technical Report is independent of Minco within the meaning of NI43-101 and do not have any interest in any of Minco’s properties.

Terence N. McKillen, P. Geo., Minco’s non-independent Qualified Person does not have any interest in any of Minco’s properties.

## **AUDITORS, TRANSFER AGENT AND REGISTRAR**

### **Auditors**

Upon completion of the Arrangement, it is intended to appoint UHY Farrelly Dawe White Ltd, FDW House, Blackthorn Business Park, Coes Road, Dundalk, Co. Louth, Ireland, as Auditors of Minco.

### **Transfer Agent and Registrar**

The transfer agent and registrar for the Minco Shares will be Computershare Investor Services (Ireland) Ltd., located at Heron House, Corrig Road, Sandyford Industrial Estate, Dublin 18

## **MATERIAL CONTRACTS**

Except for contracts made in the ordinary course of business, the following are the only material contracts entered into by Minco since January 1, 2018 or currently still in effect:

1. Arrangement Agreement among Buchans, CMC, and Minco dated as of October 28, 2019 relating to the Arrangement and described in the Circular; and
2. Subscription Agreement between Copper Orbit Limited (“**Copper Orbit**”) (subsequently reconstituted as Minco) and Buchans dated as of June 29, 2019 relating to the acquisition of Buchans’ interest in Minco’s mineral exploration properties for shares of Copper Orbit.

Copies of the above material contract may be inspected prior to Effective Date and for a period of 30 days thereafter during normal business hours at Buchans executive office at Suite 1805, 55 University Avenue, Toronto, Ontario, Canada, M5J 2H7.