

## Sustainability Report 2021

9 June 2022

ASX Markets Announcement Office  
Exchange Centre  
20 Bridge Street  
Sydney NSW 2000

### BY ELECTRONIC LODGEMENT

### Sustainability Report 2021

Please find attached for release to the market, Xanadu Mines Ltd's *Sustainability Report 2021*.

-ENDS-

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### **About Xanadu Mines Ltd:**

Xanadu is an ASX and TSX listed Exploration company operating in Mongolia. We give investors exposure to globally significant, large-scale copper-gold discoveries and low-cost inventory growth. Xanadu maintains a portfolio of exploration projects and remains one of the few junior explorers on the ASX or TSX who control a globally significant copper-gold deposit in our flagship Kharmagtai project. For information on Xanadu visit: [www.xanadumines.com](http://www.xanadumines.com).

This Announcement was authorised for release by Xanadu's Executive Chairman and Managing Director.

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XANADU MINES

Sustainability  
**Report**  
**2021**





## FORWARD-LOOKING STATEMENTS

This document contains forward-looking statements, which are based on certain assumptions and analyses made by the Company derived from its experience and perceptions. The forward-looking statements in this document are subject to important risks, uncertainties, and assumptions, which are difficult to predict and which may affect the Company's operations that may include, amongst other things, statements regarding targets, estimates and assumptions in respect of mineral reserves and mineral resources and anticipated grades and recovery rates, production and prices, recovery costs and results, capital expenditures and are or may be based on assumptions and estimates related to future technical, economic, market, political, social and other conditions. These forward-looking statements are necessarily based upon a number of estimates and assumptions that, while considered reasonable by Xanadu, are inherently subject to significant technical, business, economic, competitive, political and social uncertainties and contingencies and involve known and unknown risks and uncertainties that could cause actual events or results to differ materially from estimated or anticipated events or results reflected in such forward-looking statements. The words believe, expect, anticipate, indicate, contemplate, target, plan, intends, continue, budget, estimate, may, will, schedule and similar expressions identify forward-looking statements. The forward-looking statements included in this document are made as of the date of this document and other than as required by law, the Company disclaims any intention or obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.





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# Message from *the Executive Chairman and Managing Director*

Dear Reader,

I am pleased to present the Xanadu Mines Ltd's (**Xanadu Mines, Xanadu** or the **Company**) second Sustainability Report on behalf of the Board of Xanadu Mines.

We present this with a backdrop of growing political and scientific recognition of the impact human activity is having on the world and its environment. This impacts the mining industry both through the behaviours and transparency expected by our investors and by changing demand for the things we produce.

Our investors demand us to be good stewards of the environment, our people and our Internal and External stakeholders and that we follow the highest standards of corporate governance. Xanadu takes this seriously and continues to improve our behaviour and practices in these areas.

At the same time, demand for copper is growing in time with a more electrified, high technology, smart economy. Through our strategic partnership with Zijin Mining, Xanadu's Kharmagtai project is being developed to help meet the growing copper supply gap in a sustainable manner, using conventional, low risk and responsible mining and processing methods. Through our other exploration programs, we will continue to leverage technology to improve productivity and sustainability in ongoing operations.

Yours faithfully,



**Colin Moorhead**

Executive Chairman and Managing Director

09/06/2022





# Message from *Vice President Exploration*

Dear Reader,

Speaking on behalf of Xanadu's Management, we are excited to present our Sustainability Report 2021, which highlights our commitment to Environment, Sustainability and Governance and our continued objective to be a global leader in sustainable exploration.

This report builds on our experience from 2020, improving and expanding the data we are able to present on our Sustainability Practices.

The Company continues to operate safely and effectively, with limited interruption, through the most recent Delta and Omicron waves of the COVID-19 pandemic.

Our key sustainability achievements in 2021 include:

- Zero safety or environmental incidents
- Technology focus with multi-spectral scanning to reduce drilling requirements and by testing new processing methods to limit waste production
- Improved the independence of our Board by adding a new non-Executive Director
- Formalised our stance on Human Rights, including the exclusion of modern slavery from our supply chain, through a new Human Rights Policy
- Leveraging strong Mongolian skill base enables effective operation through 2021 with zero expatriates
- Continuation of well-established and regarded regional education and community support programs

Our relationships, ongoing partnerships and engagement with local communities and other

stakeholders including the government remains strong, and we look forward to working together as our projects develop.

I would like to thank and acknowledge our Mongolian team, who are driving our continued growth in ESG, and their hard work to keep us at the forefront of sustainable exploration.

Yours faithfully,



**Dr. Andrew Stewart**

Vice President Exploration

09/06/2022



“ Xanadu’s Kharmagtai project is being developed to help meet the growing copper supply gap in a sustainable manner, using conventional, low risk and responsible mining and processing methods.







**Xanadu Mines Ltd  
is an exploration  
company that  
discovers and defines  
globally significant  
porphyry copper-gold  
deposits in Mongolia.**

We leverage the experience and relationships developed in-country to deliver low-cost discovery and resource growth.





# Company *Profile*

***Our position in Mongolia is a strategic advantage, with:***

- **Scale:** Multiple globally significant discoveries, still underexplored.
- **Location:** Close to copper smelters in Japan, South Korea and China, with significant land area and sparse population.
- **Infrastructure:** Established grid power, roads, rail and water supply nearby enable short time-to-production and low capital development intensity.
- **Educated Mining Culture:** Able to draw on significant mining expertise in-country, with mining representing 23% of GDP and 70% of export revenues, and >40,000 Mongolian mining professionals in the national workforce, per Institute of Economics of the National University of Mongolia<sup>1</sup>.
- **Competitive regulatory regime:** International investment agreements for mining.
- **Stable and democratic:** Supported by a 30-year history of democratic elections.

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<sup>1</sup> Investment Monitor, Mining Vulnerability Index 2021, Mongolia and Australia among countries that will suffer the most in a mining downturn.





# employees & contractors

Xanadu is led by an experienced team of exploration and mining professionals who have a track record of discovery and value creation.

	2020	2021
Total count of Mongolia based employees and contractors	127	175
Number of employees	59	89
Number of contractors	68	86
Percentage of Women	22%	25%

# We create value for our shareholders by:

**Giving exposure to large-scale copper-gold discoveries in Mongolia; and,**

**Delivering low cost discovery and inventory growth**

**Progressing projects from Discovery towards Pre-Feasibility**

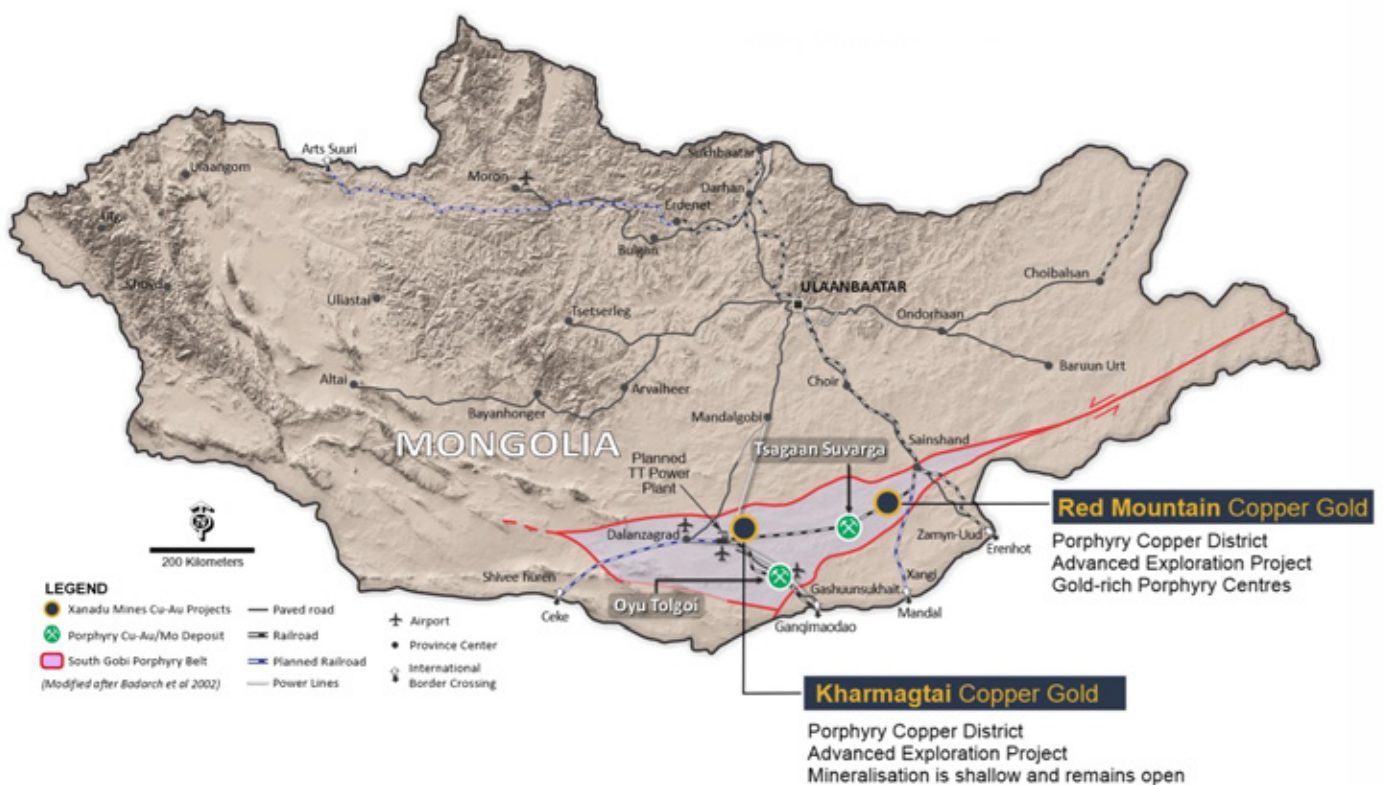


Figure 1: Location of Xanadu's copper-gold projects, within Mongolia's highly mineralised and vastly underexplored mineral belts.



# Xanadu's key projects in Mongolia include:

## **Kharmagtai District** (Xanadu 76.5%)

The flagship Kharmagtai District has continued to emerge as one of the premier undeveloped copper and gold assets globally. Kharmagtai is a highly prospective copper-gold porphyry district, located within the Omnogovi Province, approximately 420 kilometres southeast of Ulaanbaatar and 120 kilometres north of the Rio Tinto-controlled Oyu Tolgoi deposit.

There are three styles of mineralisation at Kharmagtai; porphyry style stockwork Cu-Au mineralisation, tourmaline breccia style Cu-Au mineralisation and epithermal gold associated with carbonate base metal veins. Kharmagtai currently has a JORC Compliant Mineral Resource Estimate of 1.1Bt containing 3Mt copper and 8Moz gold and is actively exploring to drive growth in this resource<sup>2</sup>.

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<sup>2</sup> ASX/TSX Announcement 8 December 2021 - Kharmagtai Resource Grows to 1.1 Billion Tonnes.



## ***Red Mountain District*** (Xanadu 100%)

The Red Mountain copper-gold district is located in the Dornogovi Province of southern Mongolia, approximately 70 kilometres west of the planned industrial centre of Sainshand. Red Mountain is a highly prospective and underexplored porphyry copper-gold district, comprising approximately 40 square kilometres. Its geology consists of multiple co-genetic porphyry copper-gold centres, mineralised tourmaline breccia pipes and copper-gold/base metal magnetite skarns.





# Development and Technology

***At Xanadu, we are committed to using modern, contemporary exploration methods to minimise our sustainability footprint and to remain at the forefront of our industry.***

This includes the use of modern geophysical tools to identify targets better and reduce the number of drill holes, energy and resource consumption to make a discovery.

Once drilling commences, Xanadu uses advanced, multi-spectrum core scanning technology to pull the maximum amount of data from each drill hole.

Artificial intelligence and machine learning are used to analyse the data and determine chemical composition, geological structure, geotechnical and geo-metallurgical characteristics. This analysis enables effective exploration with the least drilling and sustainability impact.

As Xanadu develops its exploration projects from discovery into study phases, we use technology and contemporary design to optimise safety and health outcomes and minimise environmental footprint, to enable modern and productive mines of the future.



# Statement *of Values*

The Xanadu Board has established a *Statement of Values*, which are the guiding principles for what Xanadu aspires to be, setting the standard required by the Board from its directors, senior executives, and employees to achieve that aspiration.

Xanadu's Values create a link between the Company's purpose and its strategic goals, by expressing the standards and behaviours the Board expects from its directors, senior executives and employees to fulfill its purpose and meet its goals.

## ***There are five values that guide how we work:***



### ***SUSTAINABILITY***

We are good corporate citizens and neighbours to our partners in Mongolia. We operate and explore in a way that keeps our team safe, cares for the environment, and supports the communities where we operate.



### ***INTEGRITY AND HONESTY***

We understand our reputation is our most valuable asset.



### ***SCIENTIFIC BASIS***

We apply good science to everything we do.



### ***DISCIPLINED CAPITAL MANAGEMENT***

We behave as owners and emphasise long-term value creation over short-term gains.



### ***CULTURE AND PERFORMANCE***

We value technical excellence and innovation, and we aim to attract and retain the best people for jobs at all levels.

We lead by example, supporting each other to act with integrity, be accountable, and consistently live our values every day.



**Now our second sustainability report, building on our first report and continuing to improve our ESG data and practices.**

We believe that sustainability principles should be embedded in all stages of the mine lifecycle, and we seek to lead this mindset as an exploration company.



# About this Report

***This report covers Xanadu's activities during the 2021 calendar year (1 January 2021 to 31 December 2021).***

As an ASX-listed company, we acknowledge ASX's Corporate Governance Principles and Recommendations, and draw on leading industry frameworks and processes (such as the Global Reporting Initiative (GRI) Standards and International Council on Mining and Metals (ICCM) Sustainable Development Framework) for progressively reporting

on this information in the coming years.

As part of this approach, we conducted our first materiality assessment to help define the scope of this report. We have adopted AccountAbility's Five-Part Materiality Test to help identify and prioritise our most material sustainability aspects to Xanadu and our key stakeholders. Further information on our key stakeholders is outlined in the sub-section below.



Figure 2: Materiality approach using AccountAbility's Five-Part Materiality Test to define our most material issues.

**Research:**

In determining our most material aspects, we researched and reviewed several inputs. These include an internal document review (i.e. policies, risk register), a media scan, peer benchmarking, and internal stakeholder discussions.

**Prioritise:**

This information was then consolidated, streamlined and prioritised on our risk matrix (Figure 3) to identify our most material risks.

**Validate:**

An internal workshop was held to validate these risks, with the risks of highest importance disclosed in this report.



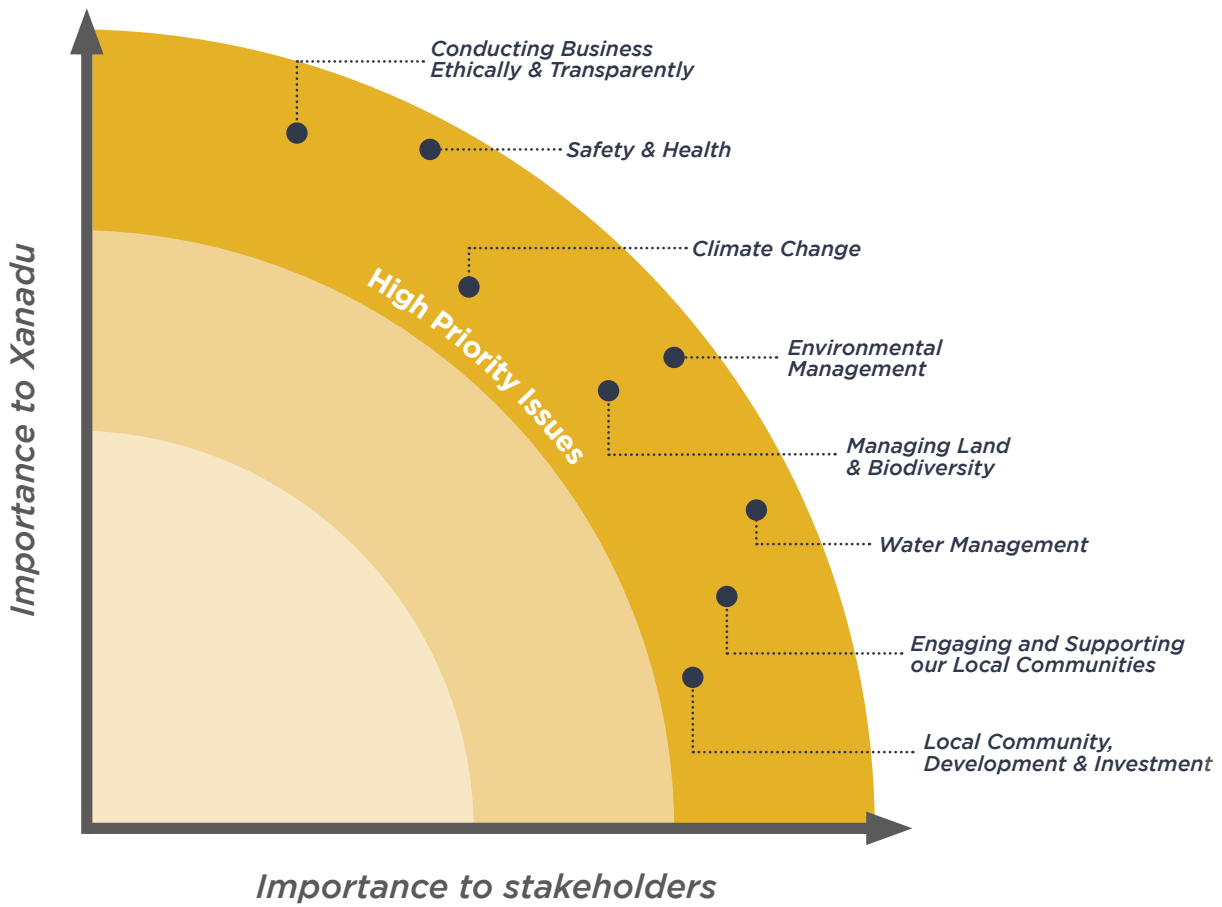


Figure 3: Xanadu's risk matrix for rating sustainability risks of importance to the business and key stakeholders.



Xanadu's material issues of highest importance are listed below, aligned to the Sustainable Development Goals that are considered most applicable.

<b>HIGH MATERIAL ISSUE</b>	<b>PAGE REFERENCE</b>
<i>Conducting business ethically and transparently</i>	24
<i>Safety and health</i>	29
<i>Climate change</i>	34
<i>Environmental management</i>	40
<i>Water management</i>	42
<i>Managing our land and biodiversity impacts</i>	44
<i>Engaging and Supporting our Local Communities</i>	48
<i>Local community development and investment</i>	50

Table 1: Xanadu's material issues of highest importance for 2021.



# Sustainability **Governance**

***This Sustainability Report has been approved by the Board of Directors, who are accountable for Xanadu's sustainability through the Safety, Health and Environment Sub-Committee***

***The Chair of the Safety, Health and Environment Committee holds primary responsibility for sustainability oversight and governance:***

- Processes in place to ensure that workplace health, safety and environment is a priority at all Xanadu operational sites;
- Processes in place to facilitate compliance with all workplace health and safety, environmental, legal and regulatory requirements in each jurisdiction that Xanadu operates;
- Processes in place to manage community relationships;

- The adequacy of reporting systems for health, safety and environment actual or potential accidents, breaches and incidents;
- Subsequent safety investigations and remedial actions conducted by management;
- Performance against Board-approved targets; and,
- Appropriate opportunities to address community sensitivities in the areas in which Xanadu operates.

A copy of the Safety, Health and Environment Committee Charter can be accessed via our website, [www.xanadumines.com](http://www.xanadumines.com).

The Audit and Risk Committee further assists the Board in identifying and managing potential or apparent business, economic, environmental, social sustainability and other non-financial risks.

The Committee will also oversee Xanadu's environmental risk management and workplace health and safety processes. A copy of the Charter can be accessed at [www.xanadumines.com](http://www.xanadumines.com).



Figure 4: Xanadu's sustainability governance structure.



Xanadu's Board of Directors comprises the following members.



**Colin Moorhead**

Executive Chairman  
and Managing Director

(B.Sc (Hons) FAusIMM (CP) GAICD)



**Ganbayar Lkhagvasuren**

Executive Director  
& Country Manager

(M.IBL)



**Michele Muscillo**

Independent  
Non-Executive Director

(LL.B)



**Tony Pearson**

Independent  
Non-Executive Director

(B.Com, MAICD)

***Xanadu's Non-Executive Board members chair and are members of the Audit & Risk Committee and the Nomination & Remuneration Committee.***



# Our Approach to Sustainability

## ***At Xanadu, we aim to be a leader in sustainable exploration.***

To help us achieve this, we have integrated Sustainability into our core business (refer to 'Statement of Values' section within this report).

We endeavour to be good corporate citizens and neighbours to our internal and external stakeholders in Mongolia and will operate and explore in a way that keeps our team safe, cares for the environment, and supports our host communities.

Our Sustainability Policy outlines clear objectives and actions to grow and operate sustainably. We aim to have safe and healthy operations, minimise our environmental footprint, develop and maintain strong relationships with our communities and governments, and act in a transparent and ethical manner.

A copy of our Sustainability Policy is below and can be found on our website at [www.xanadumines.com](http://www.xanadumines.com).



# Sustainability Policy

*Xanadu Mines aims to be a leader in sustainable exploration.*

## *Objectives*

*Xanadu Mines has the following sustainable goals.*

*Safe and  
Healthy Operations*

*Minimising our  
Environmental Footprint*

*Developing and Maintaining  
Strong Relationships with  
Communities and Governments*

*Acting in a Transparent  
and Ethical Manner*



## Actions

### **To achieve our Sustainability Goals, Xanadu will strive to:**

- Engage all stakeholders to create a safe and healthy work environment.
- Create a diverse and inclusive workplace where everyone feels safe, valued and supported.
- Respect and protect the human rights of our employees, contractors, suppliers and community members.
- Build a workforce representing the communities in which we operate to attract and retain the right people.
- Deliver benefits to host communities in a manner that supports and respects their rights and aspirations.
- Honour cultural heritage, customs and traditions of people touched by our activities.
- Engage openly, honestly and regularly with our host governments and communities and consider their views in our decision-making.
- Build relationships with suppliers to optimise value through safe, efficient, continuous improvement.
- Uphold ethical business practices and comply with legal requirements in jurisdictions where we operate.
- Establish processes to identify and manage risks and opportunities for efficient use of energy and water, to minimise waste generation, and to manage emissions that cause climate change.
- Contribute to conservation of biodiversity by effective planning and environmental management in areas affected by our operations.
- Monitor, measure, report and assure sustainability performance against public objectives and targets.

By delivering on these commitments, we will maintain and enhance our licence to operate.

Xanadu will aim to align its sustainability policies and self-assessment practices to International Council on Mining & Metals (ICMM) 10 Mining Principles.

We will apply our Risk Management Framework to manage sustainability risks.

This policy is to be read in conjunction with all other Xanadu policies available on our website. All Xanadu employees, contractors and suppliers are required to comply with these commitments.

# Conducting business ethically and transparently

***As part of ensuring we maintain a sustainable and profitable business, Xanadu is committed to upholding ethical business practices across all our sites and offices.***

Our position is clearly stated in our Code of Conduct and is reflected in our Sustainability Policy. All our employees, contractors and suppliers must comply with our Code of Conduct. The Code outlines mandatory requirements in:

- ethical business (including anti-bribery and corruption);
- supply chain free from modern slavery (analysis of this is a work in progress)
- employment practices (including equal opportunity and anti-discrimination, harassment and offensive behaviour);
- workplace health and safety; and,
- community and environment.

A copy of our Code of Conduct can be accessed on our website, [www.xanadumines.com](http://www.xanadumines.com).

Further to our Code of Conduct, Xanadu upholds its ethical business practices through its Anti-Bribery and Corruption Policy (available on our website). The purpose of this Policy is to protect the interests of Xanadu stakeholders, the integrity of Xanadu's reputation and to set out the position of Xanadu and its controlled entities (Xanadu or the Company) on bribery and corruption.

This outlines the responsibilities of all individuals working for or with Xanadu in observing and upholding Xanadu's commitment to conducting business in an ethical and honest way and with the highest level of integrity. This policy also provides information and guidance on how to recognise and deal with bribery and corruption issues.

This policy applies to all directors and employees of Xanadu, as well as contractors, agents and consultants of Xanadu and any third party who conducts business activities on Xanadu's behalf or distributes Xanadu's products (including suppliers, distributors, resellers, and consultants).



# 100%

*of employees educated in  
anti-bribery & corruption practices*

***The key principles of our Anti-Bribery and Corruption Policy state that:***

- Xanadu conducts business in an ethical and honest way and Xanadu is committed to instilling a strong anti-corruption and anti-bribery culture. It is the aim of Xanadu to maintain the highest level of integrity in all interactions with third parties.
- Xanadu strives to participate as a strong competitor in its global market, and is committed to doing so without the use of bribery or other corrupt practices.
- Xanadu applies a zero-tolerance approach to acts of bribery and corruption by its workforce and any third parties. Any breach of this policy will be regarded as a serious matter and will result in disciplinary action which may include termination of employment or other contracts as applicable.

Xanadu takes the issue of modern slavery and exploitation seriously and takes steps to ensure this does not occur within our supply chain.

We source our drilling, geophysical survey and core analysis services within Mongolia, via long term supplier relationships, and on terms and conditions that comply with Mongolian laws. Looking forward, Xanadu will continue to work with its suppliers to understand their supply chains and partner with them to develop awareness of the risk of Modern Slavery.

In addition to conducting ethical business, we also endeavour to engage with our key stakeholders wherever possible. Some of our key methods for engaging transparently include: face-to-face discussions; regulatory report submissions; employee briefings and townhalls; community visits; contractual agreements; and, industry meetings and events.

A full list of the ways we engaged with our key stakeholder groups is identified in the following section, *'Engagement With Our Stakeholders'*.

# Engagement with our Stakeholders

***Engagement with our key stakeholders underpins our business performance and the livelihoods that are impacted through our business.***

***We acknowledge the need for effective engagement, and continually strive to build and improve our relationships through open and honest dialogue and respecting other points of view to bring about mutually-beneficial outcomes.***

Xanadu regularly engages a broad network of key internal and external stakeholder groups. The way we engage these groups and their areas of interest during the reporting period is summarised in the table below.

We have dedicated personnel responsible for developing and maintaining these relationships. Due to the nature of our business and location, we put specific focus on our local communities and governments to ensure that we understand their views and that they are effectively informed about our activities.

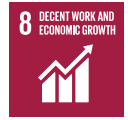


STAKEHOLDER GROUP	STAKEHOLDER TYPE	METHOD OF ENGAGEMENT	AREAS OF INTEREST
<b>Shareholders</b>	Shareholders, analysts	<ul style="list-style-type: none"> <li>Annual reports, quarterly reports, half-yearly financial reporting</li> <li>Website and email, investor briefings, one-on-one discussions</li> <li>Market announcements</li> <li>Annual General Meeting</li> <li>Industry conferences</li> <li>One on one meetings</li> </ul>	<ul style="list-style-type: none"> <li>Safety performance</li> <li>Exploration results</li> <li>Development profile</li> <li>Executive remuneration</li> <li>Community relations</li> <li>Financial performance</li> <li>Share price</li> </ul>
<b>Employees and Contractors</b>	Management, employees, contractors	<ul style="list-style-type: none"> <li>Employee briefings</li> <li>Email, social events, notice boards, toolbox meetings, performance reviews</li> <li>Town hall meetings</li> <li>Whistleblower service</li> <li>Direct engagement between people leaders and their teams</li> </ul>	<ul style="list-style-type: none"> <li>Operational performance</li> <li>Safety and environmental performance</li> <li>Employee involvement</li> <li>Employment development opportunities</li> </ul>
<b>Local Communities</b>	Local residents, communities, landowners	<ul style="list-style-type: none"> <li>Community relations team visits</li> <li>Resident/community meetings</li> <li>Site visits</li> <li>Regular communication with leaders and community generally, providing feedback forums</li> <li>Sponsorships and partnerships</li> </ul>	<ul style="list-style-type: none"> <li>Impact on, and relations with, communities</li> <li>Environmental impacts</li> <li>Contributions to community services and infrastructure</li> <li>Land use</li> </ul>
<b>Suppliers</b>	Local suppliers, non-local suppliers	<ul style="list-style-type: none"> <li>Out to market approaches</li> <li>Open and collaborative face-to-face engagement and discussions</li> <li>Regular performance meetings</li> <li>Contractual agreements</li> </ul>	<ul style="list-style-type: none"> <li>Long-term relationships and collaboration</li> <li>Supply chains free from modern slavery</li> </ul>
<b>Government</b>	Mongolia federal, state, regional and local governments; Australia federal government	<ul style="list-style-type: none"> <li>Open and collaborative face-to-face engagement</li> <li>Annual reports, website and email, compliance audits and inspections</li> <li>Regulatory submissions</li> <li>Direct engagement on matters of local importance</li> <li>Industry body involvement</li> </ul>	<ul style="list-style-type: none"> <li>Royalty and licence fees</li> <li>Safety performance</li> <li>Employment</li> <li>Proposed changes in legislation and regulations</li> <li>Environmental management and rehabilitation</li> </ul>
<b>Industry</b>	Mining and/or exploration industry, business and professional associations, local country and regional business associations	<ul style="list-style-type: none"> <li>Meetings, reports and discussions around the specific considerations of mining and considerations for policy</li> <li>Reports, face-to-face discussions, presentations, collaborative agreements</li> </ul>	<ul style="list-style-type: none"> <li>Environmental impacts</li> <li>Safety performance</li> <li>Mental health</li> </ul>
<b>NGOs</b>	Environmental, community, mining	<ul style="list-style-type: none"> <li>Meetings, reports</li> <li>Exploring collaborative opportunities</li> </ul>	<ul style="list-style-type: none"> <li>Impacts to people, communities and the environment</li> <li>Bribery, corruption and disclosure of payments</li> </ul>
<b>Education</b>	Tertiary & vocational institutions	<ul style="list-style-type: none"> <li>Conference attendance</li> <li>Meetings, reports, face-to-face discussions</li> </ul>	<ul style="list-style-type: none"> <li>Education and opportunities for those in host communities</li> </ul>

Table 2: Methods of engagement and areas of interest across Xanadu's key stakeholder groups for the 2021 reporting period.







# Promoting a *Safe Workplace*

## Safety and Health

***Xanadu is committed to maintaining a healthy and safe working environment for all its people.***

Xanadu employees and contractors are required to comply with all applicable workplace health and safety laws and regulations, as well as Xanadu's policies and procedures, to ensure that its people work in an environment that is safe and without risk to one's health.

***Our position on Safety and Health is reflected in our Sustainability Policy. Through our Policy, we aim to:***

- Engage all stakeholders to create a safe and healthy work environment.
- Create a diverse and inclusive workplace where everyone feels safe, valued and supported.
- Respect and protect the human rights of our employees, contractors, suppliers and community members.

A copy of Xanadu's Sustainability Policy can be accessed on our website, [www.xanadumines.com](http://www.xanadumines.com).



# 0

***lost time injuries  
and no fatalities***

*As at 09/06/2022*



## Case Study

# Xanadu's protection of its people during the COVID-19 pandemic

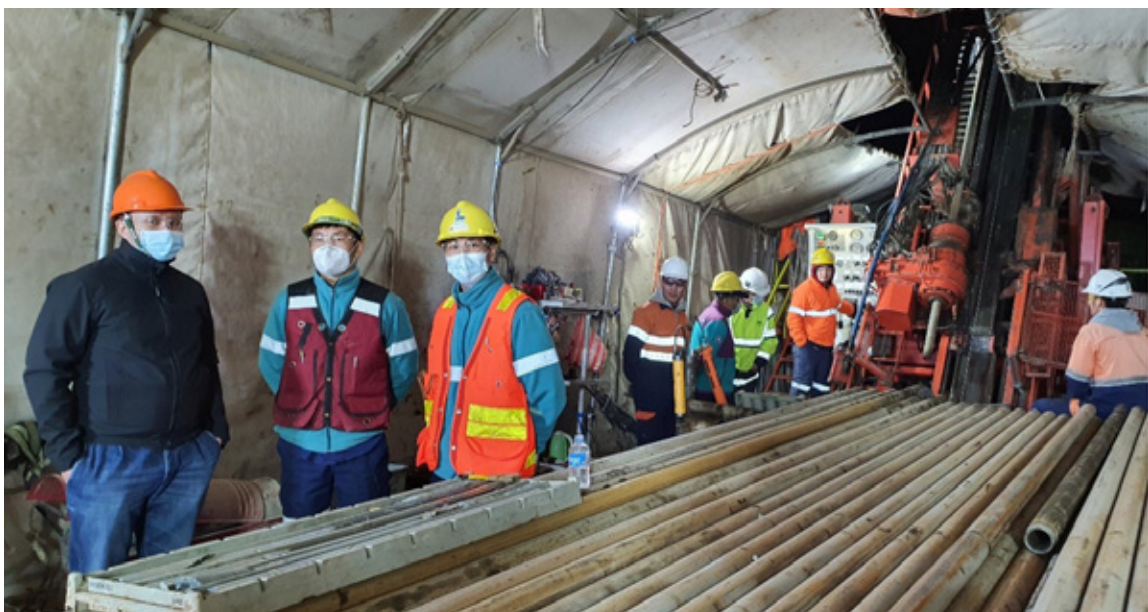
### ***Xanadu's people are our priority.***

The impact of COVID-19 continues to be felt throughout the world and in Mongolia. Xanadu continues to evaluate the risk to our people as well as our operations and seeks to minimise the impact through well-established risk based practices and procedures.

Mongolia saw a rapid increase in infections in Q1 of 2021, and in response, Xanadu accelerated efforts to vaccinate employees at the Kharamagtai camp through a partnership with local hospitals. This approach resulted in 100% vaccination of employees and contractors by the end of Q2 2021.

In parallel with this, an isolation and medical triage capacity was set up at Kharamagtai, which successfully limited infections on site and enabled personnel who did contract COVID-19 to receive immediate treatment and safely isolate until they were able to return to their homes and work.

With these actions, Xanadu has been able to protect its people at the same time as it continues uninterrupted operations.





## Case Study

# Supporting the development of local medical facilities

### **Access to quality medical treatment is critical in sparsely populated places like the Gobi Desert**

The Tsogtsetsii hospital, approximately 90km away from Kharamgtai, serves 7,300 residents and is one of the closest facilities to the Company's Kharamgtai operation.

Xanadu has a cooperation agreement in place with the Tsogtsetsii hospital, both to ensure quality care for Xanadu employees and contractors if required, but also to support a facility that serves the community over a large region.

During 2021, Xanadu funded the renovation of the hospital reception area, which helps it maintain a high standard of service for the local community and for our employees and contractors.

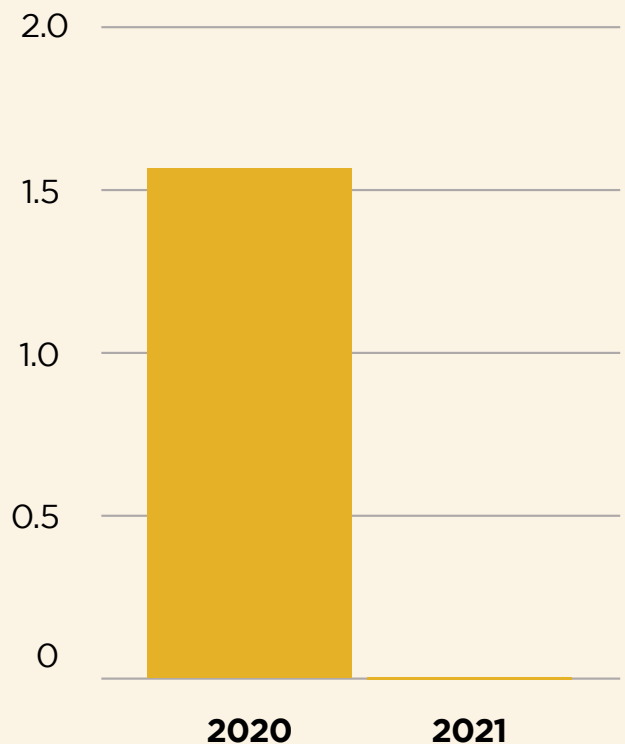


# Best in Class Workplace Safety in 2021

0.00

*\*TRIFR is Total Recordable Injury Frequency Rate (the number of total recordable injuries per 200,000 exposure hours. Total recordable injuries include medically-treated injuries, alternate duty /restricted work injuries, lost time injuries and fatalities. This calculation was due to one medically-treated injury occurring during the reporting period.*

*TRIFR\* per 200,000 exposure hours*



*Total Recordable Injury Frequency Rate: the 2020 rate has been lowered in 2021 from 1.58 to 0.*







# Climate *Change*

*Xanadu acknowledges the climate change science and supports the Paris Agreement goals, and we recognise that the mining sector has a role to play in reducing global greenhouse gas emissions.*

As an explorer, Xanadu has a relatively small emission footprint. However many of the discoveries we make will be developed, by experienced operators, into mines which have a larger climate footprint. We set the groundwork for these to be modern, low energy intensity mines through our early stage studies.



In addition to reducing our own energy intensity through camp upgrades and efficient equipment, Xanadu aims to make a larger impact to the future emission of others by integrating low energy intensity technologies and design into concept studies for its projects.

Through use of technology and design, our discoveries prepare to become new mining projects with a low carbon footprint from their earliest stages of planning.

At Xanadu, our Climate Change Policy outlines our objectives and actions to manage and mitigate against its impacts.

***Within this policy, our objectives are to:***

- Provide transparent reporting of our Scope 1 and Scope 2 emissions
- Look for opportunities to reduce our climate change impact; and,
- Consider risks and opportunities from climate change as part of business decisions.

To learn more about our position on Climate Change, please view our Policy below or visit our website at [www.xanadumines.com](http://www.xanadumines.com).

# Climate Change Policy

***Xanadu Mines is committed to the sustainable discovery, definition and development of world class copper – gold deposits.***

***This requires us to identify, assess and report our impact to the climate, which is one of the most significant challenges facing the world today.***

We acknowledge the climate change science and support the Paris Agreement goals, and we recognise that the mining sector has a role to play in reducing global greenhouse gas emissions.

Xanadu recognises the need to identify and integrate climate change and energy use into our strategic planning as we manage our portfolio. We will work with our stakeholders including governments, investors, lenders, insurers, customers, suppliers, host communities and industry associations to develop strategies that contribute to a future low carbon economy in our operating countries.

## Scope

***This policy applies to all Xanadu operations and exploration projects.***

## Objectives

***Xanadu Mines aims to:***

- Provide transparent reporting of our Scope 1 and Scope 2 emissions
- Look for opportunities to reduce our climate change impact
- Consider risks and opportunities from Climate Change as part of business decisions





## Actions

- Seek to identify and manage climate change risks and opportunities, consistent with our objective to sustainably deliver superior returns to our shareholders.
- Develop transparent climate change reporting of performance metrics and targets to meet the needs of our stakeholders, including governments, investors, lenders, insurers, customers and communities. Progressively align reporting to the GRI and Task Force on Climate-related Financial Disclosures (TCFD) frameworks.
- Utilise measurement and verification methods of our energy use and greenhouse gas emissions that are consistent with international sustainability standards.
- Pro-actively assess options to increase our use of renewable power and low emission energy technologies to reduce intensity of greenhouse gas emissions.
- Assess climate change scenarios that impact future energy prices, ensuring the cost of carbon informs business decisions.
- Partner with experts to identify potential physical threats from climate change at current and planned project locations and invest in an appropriate manner to build resilience.
- Contribute constructively to policy development in our host countries, sharing learnings with industry bodies and governments to promote stable, predictable regulatory regimes that facilitate investment.

## Case Study

# Technologies a focus in Kharmagtai studies

### *Xanadu is using the latest technology to design a more sustainable mine.*

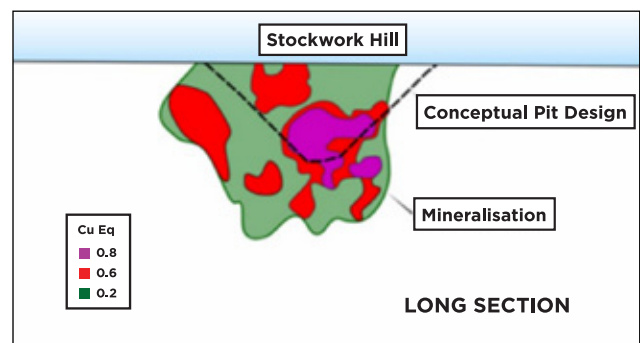
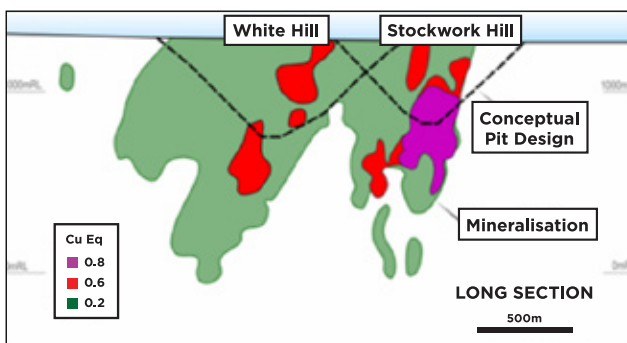
As part of our Development Studies for Kharmagtai, we are investigating use of technology to significantly reduce both Scope 1 and Scope 2 emissions from a future mining operation.

Reduction in future Scope 1 emissions is focused around two key technology areas. The first is the use of electric in-pit crush and convey technology to reduce use of diesel trucks and increase the pit depth to capture additional high grade material. The second is the use of advanced leaching technology, which has the potential to convert the top 20-30 metres of weathered material from waste into productive ore, which will reduce haulage to waste stockpiles and significantly reduce waste stripping costs.

Reduction in future Scope 2 emissions is focused around technology to reduce the energy used to process material through the grinding circuit. Techniques being investigated include beneficiation,

coarse particle separation and flotation, and ore sorting. As part of our ongoing Exploration, we are reducing our existing Scope 1 emission intensity per area of exploration. This is achieved by the use of multi-spectral core scanning technology and artificial intelligence to maximise the data we collect from each drill hole. This technology captures important information about geological, geotechnical and geometallurgical and other information, reducing the need to do duplicate drilling for each discipline, which has been a historic practice for mining companies.

To accelerate this technology development, Xanadu partnered with Japan Oil, Gas and Metals National Corporation (JOGMEC) in a Research & Development Agreement to collect and share data and analysis. As of May 2022, we have scanned over 100,000 metres of current and historic drill core from both Kharmagtai and Red Mountain into our database



Concept Study Pits and Block Cave Design for Stockwork Hill

# 22

*litres of diesel  
per metre drilled\**

# 25

*litres of diesel  
per metre drilled  
including drilling,  
camp, & transport*

# 1009

*total tones of operations  
diesel used*

*\*Based on 528,000 litres of diesel used in 2021.*



# Caring for the *Environment*

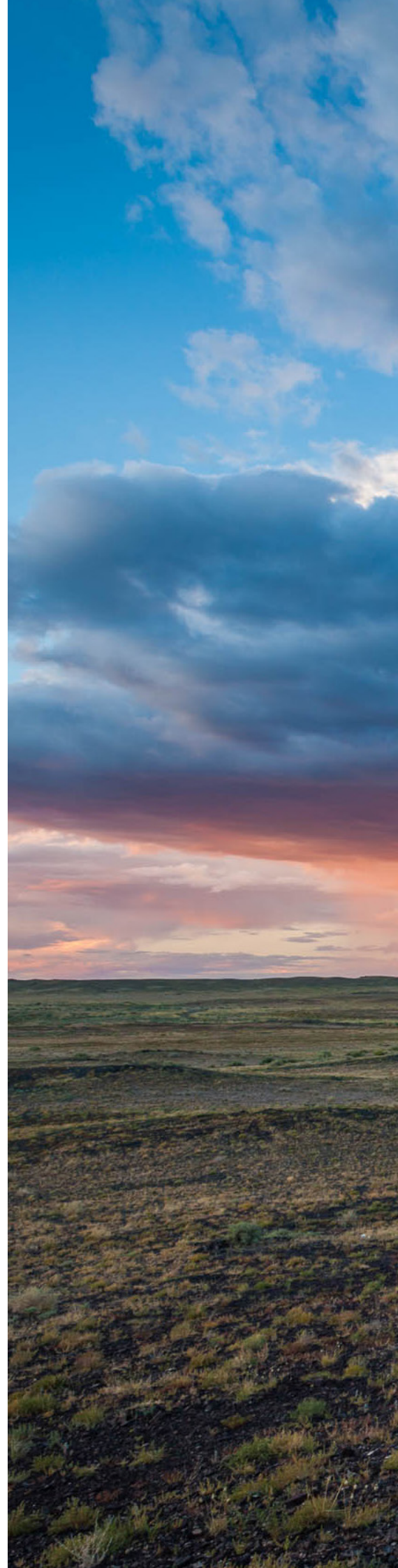
## Environmental Management

*At Xanadu, we respect and care for the environment in which we operate and on which our host communities depend.*

We abide by all local laws and regulations, and we are committed to doing business in an environmentally responsible manner, whilst identifying environmental risks that may arise out of our operations.

***We are committed to minimising our environmental footprint through our Sustainability Policy. Through our Policy, we aim to:***

- Establish processes to identify and manage risks and opportunities for efficient use of energy and water, to minimise waste generation, and to manage emissions that cause climate change.
- Contribute to conservation of biodiversity by effective planning and environmental management in areas affected by our operations.





# 12,404

*hectares of land under  
Xanadu's stewardship*

# ZERO

*environmental incidents*



# Water Management

*In Mongolia where our projects are located, community access to potable water is limited.*

***We provide both drilling support and training to maintain ground water access for our local communities.***

We acknowledge that water is a precious resource in Mongolia and we responsibly manage our water in alignment with Mongolian environmental standards.

We engage a drilling contractor to help establish pollution ponds or bunds to prevent any spills of contaminated water. We ensure that the management of our impacts on local water wells are effectively communicated with our communities, encouraging open dialogue to address any concerns.



# 0.25

*m<sup>3</sup> groundwater used per metre drilled\**





## Case Study

# Ground water access for local communities

### *Water in the Gobi Desert is a scarce resource.*

***Potable water in the Gobi Desert is a scarce resource that must be protected.***

All water use by both livestock herders and local communities comes from ground water. Xanadu understands this dependence on ground water and the challenges this can present.

Regular measurement is important in order to effectively manage this critical resource, and Xanadu has trained and employed local families to do this for the community. These measurements establish a baseline and measure changes in groundwater quality and levels to understand usage and determine when it is necessary to remediate or establish a new well.

During 2021, a total of 108 measurements were made by the families Xanadu employs.





# Managing our Impact to Land and Biodiversity

***At Xanadu, we respect the land where we operate and endeavour to minimise impact from our exploration operations.***

***We manage our project activities in alignment with Mongolian Environmental Standards.***

These Standards clearly outline requirements to minimise land disturbance and manage rehabilitation. Some of these requirements include:

- Separating soil and vegetation within the topsoil during sampling procedures and return once the sample has been taken;
- Discretely signalling sample spots and in a manner that does not cause harm to livestock;
- Excavating trenches only when necessary, storing the soil cover separately. After mapping and sample removal, trenches must be closed and covered with the soil layer and re-vegetated.
- Protecting slopes from pluvial erosion through the execution of preventative drainage channels; and,
- Revegetating slopes immediately after any field activity with native grass seeds and plants to promote fast recovery.

These Standards also include our management of local fauna and flora, condemning any engagement with local animals (native or feral) and protecting the habitats of local plant species by not removing or damaging any vegetation without attaining prior approval.



< 1

*hectare of  
land disturbed*



# Supporting our *Communities*

*Xanadu aims to maintain our strong location relations, based on mutual understanding and sustainable goals.*



Xanadu is a responsible corporate citizen and actively supports the communities in which we live and work. All personnel are expected to uphold the Company's commitment to pursue good corporate citizenship while engaging in its corporate activity. The Company supports and encourages its people to actively contribute to the needs of the community.

***We are committed to supporting our host communities through our Sustainability Policy.***

***Through our Policy, we aim to:***

- Respect and protect the human rights of our employees, contractors, suppliers and community members.
- Build a workforce representing the communities in which we operate to attract and retain the right people.
- Deliver benefits to host communities in a manner that supports and respects their rights and aspirations.
- Honour cultural heritage, customs and traditions of people touched by our activities.
- Engage openly, honestly and regularly with our host governments and communities and consider their views in our decision-making.





# *community grievances*





# Engaging and Supporting our Local Communities

## *Xanadu listens to our local communities and works together with them to be a good partner*

We regularly work to develop open and transparent dialogue with our local communities about our activities. We believe this is the foundation to being a responsible corporate citizen.

We listen to our local citizens and seek to better understand their needs and concerns.

We endeavour to continue to be a 'good partner', supporting local development through employment, investment in local infrastructure, donations, scholarships, various local programs and entrepreneurship support. This is based on the understanding and support of local government decisions.



## Case Study

# Building Up the Local Education Infrastructure

*Xanadu aims to focus its community expenditure on education and economic development of the people where we operate.*

One of our key education achievements in 2021 was the refurbishment and outfitting of a classroom at a kindergarten in the regional Kharmagtai district.

This facility admits 230 children between 2-5 years old, with 8 classes and 35 instructors.

By providing a new classroom, furniture, fittings and toys, Xanadu helps the development of our youngest stakeholders as well as their parents who depend on the facility and the education it provides.

This was achieved in partnership with the local government and highlights the Company's ability to work together both with regional government as well as local communities.





# Local Community Development and Investment

*Xanadu understands the impact our activities can have on our local communities and aims to provide support with a balance of vital services and longer term investment.*

***A constructive and transparent approach is important to ensure that our communities understand our activities and impacts, and benefit from us.***

We understand that in such remote locations, there is much opportunity to support and develop the communities, to enable them to meet their short-term needs but to also discover new opportunities to help them thrive in the longer term, without forming dependencies on our regional presence.

Through meaningfully engaging with our host governments and communities regularly, we endeavour to continue to identify and support growth opportunities for our communities that aligns to their needs and expectations.





## Case Study

# Supporting our communities through educational assistance

*Xanadu continues to grow our long term future of communities through secondary educational assistance and company internship programs.*

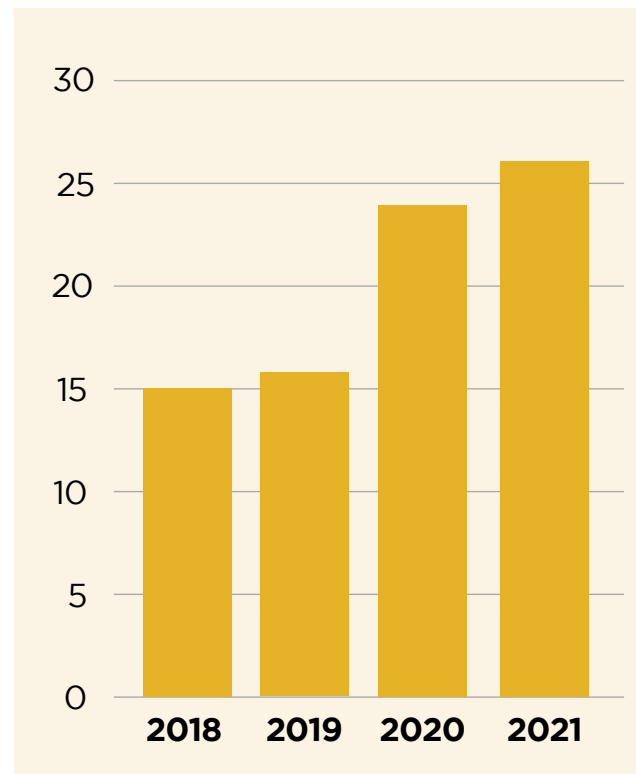
**We acknowledge the importance of developing our communities through supporting education of youth as they make the transition from school into the working economy.**

This enables younger generations to develop their skills, explore opportunities, and help give back to their communities.

Each year Xanadu provides tertiary education support to our host communities through scholarships. Students are encouraged to attend different universities and fields of study, such as engineering, medicine, accountancy and sciences.

During 2021, Xanadu supported 26 children across Kharmagtai and Red Mountain regions to attend university, an incremental increase from 2020.

In addition we grant internships to those who wish to develop experience or employment in the mining industry. We are committed to continue our investment in education, which helps improve the economic development and future of our host communities.



Graph 1: Total number of school scholarship grants awarded in 2018-2021.

# Sustainability Frameworks

At Xanadu, we believe that sustainable development should be considered in all stages of the mining lifecycle. As an exploration company, we endeavour to integrate sustainability principles into our current exploration activities as well as the studies we undertake to prepare projects for future operation.

**We acknowledge and strive to align with international frameworks and benchmarks to crystallise this vision.**

## United Nations' Sustainable Development Goals

Xanadu strongly supports the UN Sustainable Development Goals (SDGs). To help meet the intent of these Goals, we have mapped these against our most material issues within this report (refer to page 17). We aim to further integrate these Goals within our strategy moving forward.

HIGH MATERIAL ISSUE	SUSTAINABLE DEVELOPMENT GOAL	HIGH MATERIAL ISSUE	SUSTAINABLE DEVELOPMENT GOAL
Conducting business ethically and transparently	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	Water management	6 CLEAN WATER AND SANITATION
Climate change	13 CLIMATE ACTION	Managing our land and biodiversity impacts	15 LIFE ON LAND
Safety and health	3 GOOD HEALTH AND WELL-BEING 8 DECENT WORK AND ECONOMIC GROWTH	Engaging and supporting our local communities, partnerships and businesses	3 GOOD HEALTH AND WELL-BEING 4 QUALITY EDUCATION 6 CLEAN WATER AND SANITATION 8 DECENT WORK AND ECONOMIC GROWTH
Environmental management	6 CLEAN WATER AND SANITATION 15 LIFE ON LAND	Local community development and investment	11 SUSTAINABLE CITIES AND COMMUNITIES

## International Council on Mining and Metals

Xanadu considers the International Council on Mining and Metals (ICMM) Sustainable Development Framework to be leading practice in providing appropriate standards on sustainability performance. We aim to align with ICMM's 10 Principles. A summary of how we seek to align is outlined in the below table.



ICMM Principle	Our Alignment	Report Section (page)
<b>Principle 1</b> Implement and maintain ethical business practices and sound systems of corporate governance.	Xanadu's Code of Conduct and Anti-Bribery and Corruption Policy govern the Company's approach to ensuring ethical business practices, employment practices, health and safety, community and environment and a supply chain devoid of modern slavery. The Board is responsible for establishing and monitoring ethical business practices, and all employees receive education in these policies as part of their onboarding.	Sustainability Governance (page 20)
<b>Principle 2</b> Integrate sustainable development considerations within the corporate decision-making process.	Sustainability considerations are integrated into the company's decision-making. Sustainability aspects are included within the Board's sub-committees on Safety, Health and Environment, as well as Audit and Risk. Xanadu's Sustainability Policy outlines the company's key objectives and commitments.	Sustainability Frameworks (page 29)
<b>Principle 3</b> Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by our activities.	Human rights considerations are integrated in the way that Xanadu engages and supports its host communities, whether through providing water to local families and herders or through school scholarship grants. For more information, refer to our case studies on pages 45, 51 and 53.	Caring for the Environment; Supporting Our Communities (pages 42, 48)
<b>Principle 4</b> Implement risk management strategies based on valid data that has been collected, used and reported and on sound science	Risk management is governed by the Board's Audit and Risk Committee and strategies developed and implemented in association with Xanadu's Risk Management and Sustainability Policies.	Sustainability Governance (page 20)
<b>Principle 5</b> Seek continual improvement of our health and safety performance.	Xanadu's approach to Safety and Health is governed by the Board's Safety, Health and Environment Committee and facilitated through the implementation of its Sustainability Policy and site standards.	Promoting a Safe Workplace (page 38)
<b>Principle 6</b> Seek continual improvement of our environmental performance.	Xanadu's environmental performance is governed by the Board's Safety, Health and Environment Committee. The company endeavours to minimise its environmental footprint through adhering to its Sustainability Policy and site standards.	Caring for the Environment (page 42)



ICMM Principle	Our Alignment	Report Section (page)
<b>Principle 7</b> Contribute to conservation of biodiversity and integrated approaches to land use planning.	Xanadu's people respect the land and its native flora and fauna in which it operates and endeavours to minimise its impact by complying to site environmental standards.	Caring for the Environment (page 42)
<b>Principle 8.</b> Facilitate and encourage responsible product design, use, re-use, recycling and disposal of our products.	Xanadu's Scoping Study, for future development of its products, uses technology to design in process safety and modern, contemporary caving operations and processing systems to ensure maximum re-use of resources, minimise waste production, and dispose of tailings in a responsible manner.	Climate Change (page 32)
<b>Principle 9</b> Contribute to the social, economic and institutional development of the communities in which we operate.	Xanadu regularly engages its host communities to build and maintain strong relationships, and understand what social, economic and institutional opportunities are important to them. We pride ourselves on supporting and contributing to our local communities to encourage benefits that are meaningful to them, as well as long-term development opportunities for their future growth.	Supporting Our Communities (page 48)

Table 3: Xanadu's alignment to International Council on Mining and Metals' sustainable development principles.

### Global Reporting Initiative

Xanadu has considered the Global Reporting Initiative (GRI) Standards in preparing our Sustainability Report 2021. Xanadu will progressively align to those standards which are applicable to our business, and we will provide transparency in future reports as to our progress toward this alignment. As Kharmagtai moves to Pre-Feasibility stage, additional data will be generated, enabling greater alignment to the GRI.





“

At Xanadu, we care about our people and the families in our communities, and we work hard to minimise our environmental impact at every opportunity.

*Our people work together with our governments and communities to support their needs and expectations, and to allow our communities to develop in a sustainable way over time.*

*Munkhsaikhan Dambiinyam*  
Chief Operating Officer



# Corporate *Directory*

## **Directors**

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### **Colin Moorhead**

Executive Chairman and Managing Director

### **Ganbayar Lkhagvasuren**

Executive Director

### **Michele Muscillo**

Independent Non-Executive Director

### **Tony Pearson**

Independent Non-Executive Director

## **Company Secretary**

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### **Phil Mackey**

## **Registered Office - Australia**

---

c/o Company Matters Pty Limited

Level 12, 680 George Street

Sydney NSW 2000

Tel: +61 2 8280 7497

Fax: +61 2 9287 0350

## **Registered Office - Mongolia**

---

Suite 23, Building 9B

Olympic Street, Khoroo 1, Sukhbaatar District

Ulaanbaatar 14240

Tel: +976 11 7012 0211

## **Share register**

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Computershare Investor Services Pty Limited

Level 3, 60 Carrington Street

Sydney NSW 2000

Tel: +61 1300 855 080

## **Auditor**

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Ernst and Young

200 George Street

Sydney NSW 2000

## **Stock exchange listing**

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Xanadu Mines Ltd shares are listed on the Australian Securities Exchange and Toronto Stock Exchange (ASX and TSX code: XAM)

## **Website**

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[www.xanadumines.com](http://www.xanadumines.com)

## **ABN**

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92 114 249 026

## **Corporate Governance Statement**

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**The Company's Corporate Governance Statement can be found on the Company's website:**

[www.xanadumines.com/site/about/corporate-governance](http://www.xanadumines.com/site/about/corporate-governance)



[@XanaduMines\\_ASX](https://twitter.com/XanaduMines_ASX)



[au.linkedin.com/company/xanadu-mines-limited](https://au.linkedin.com/company/xanadu-mines-limited)





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