



Journey Together

Clydach 2023 >> 2024

Learn how Vale Base Metals is working with the communities to transform critical minerals into prosperity and sustainable development in the U.K.

#EnergyTransitionMetals



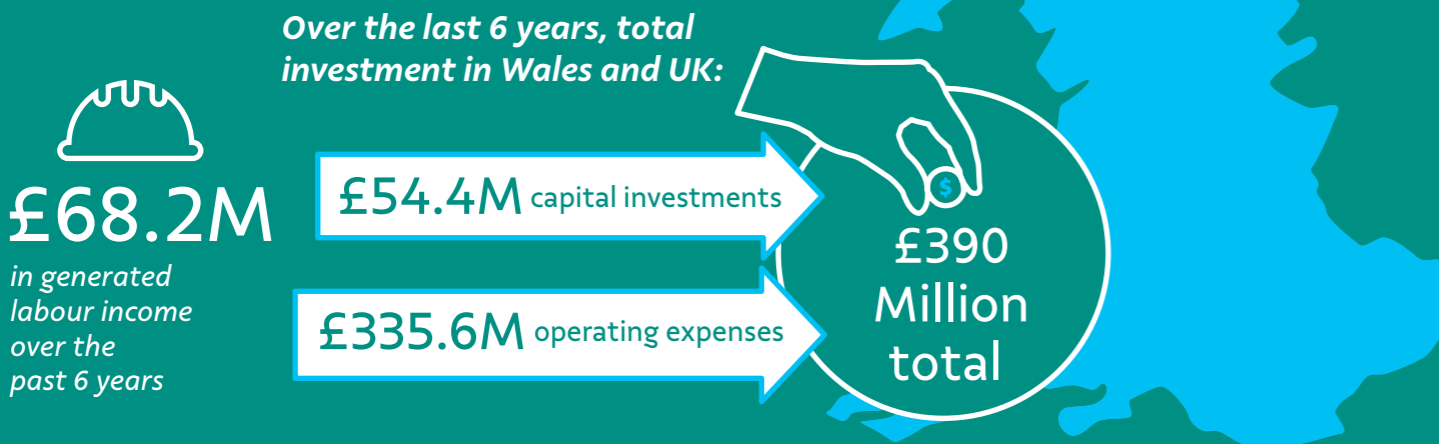
Vale Base Metals

We are a global mining company committed to safely delivering the nickel, copper, cobalt and platinum group metals essential for the world's energy transition. Our workforce of 15,000 is dedicated to transforming these critical minerals into prosperity and sustainable development across the countries in which we operate, including Canada, Brazil, Indonesia, the United Kingdom and Japan.

Our purpose is to improve life and transform the future, together. Applying leading-edge technology to sustainably mine critical minerals that drive mobility and material solutions is at the heart of what we do.

Our economic contribution:

Vale Base Metals is proud to operate in Wales and the UK — investing in safe, responsible, and sustainable refining that contributes to a strong economy.



In 2023:

At our UK Operations we produced:
31,328 tonnes of nickel.



100%

Our Clydach refinery was responsible for 100% of all refined nickel produced in the UK in 2023.



15th

We are proud to help the UK rank as the 15th largest nickel refining country in the world.



On the cover: Steve Barfoot, Senior Kiln Plant Technician, is our longest-running Vale employee in the U.K. This year marks his 47th year! In 2022, Rhiannon Davies became the first woman to hold the position of Process Operator.

A message from Darren Poland



“2023 has certainly been another year of change, for us here at Clydach Nickel Refinery and for our parent company, Vale Base Metals, as the world looks to transition metals like nickel, copper and cobalt to lead us to a cleaner, greener future.”

Vale has restructured the business to unlock our potential, and that of our sister sites across the globe. This will enable us to accelerate our aspirations to supply transition metals for alternative energy equipment like wind turbines, solar panels and related infrastructures, plus batteries for electric vehicles.

As we progress through these changes, a constant that remains dear to us here at Clydach Nickel Refinery is our aim to be a Good Neighbour. While changing our production practises takes time, we are continually moving in the right direction as we actively pursue opportunities to reduce emissions.

In 2023, for example, we achieved a 97% reduction of nickel emissions to the environment — this marks the lowest in our 121-year history. Looking ahead, we have been exploring the potential to be part of a Recycling Value Chain. This exciting scenario would see us leveraging our unique nickel refining processes to refine waste material into a Class 1 (99.9% pure nickel) products. We are in the infancy stage, but the possibilities and the potential are in sight.

Where we procure our supplies also has an impact on our environmental footprint; the more distance products must travel, the more fuel is burned. To mitigate that, we began receiving feed deliveries from a 100% electric truck last year, and whenever possible, we purchase locally, both to help the environment and to support the local economy.

Being a Good Neighbour, of course, also means partnering and supporting the wonderful and tireless Community Organisations, local Councillors and Neighbourhood Police. Read page 3 for some of our collaborative Community initiatives in 2023.

As technology advances, sustainability practises will be further established, and our partnership with the Clydach Community will continue to strengthen. We look forward to being your Good Neighbour in 2024, and for many years to come.

Darren Poland
GM of U.K. Operations



Nickel is everywhere. It is used to make the coins in your pocket, the stainless-steel in your kitchen, your mobile phone, desktop computer, laptop, plus all means of transport like planes, trains, and automobiles.

Caring for our community

Vale's Clydach Refinery believes in giving back to the community in which we work, and in which many of us live and raise families.

We do this by actively listening to local residents, community organisations and schools to determine where there is a need, and then we offer support in the form of financial donations and/or volunteer work.

Listed on the back page are some of the wonderful community groups and causes we were able to donate to in 2023.



Blue plaque in honour of Philip Morgan unveiled and co-presented with the Clydach Historical Society. Our GM Darren Poland is pictured with two members of the Morgan family.



Mark Fish, Senior Coordinator of Production, checks the new VSD pumps in our Effluent Plant.

We also put boots to the ground by volunteering and attending a variety of events, some we also sponsored:

- The first-ever **Clydach Community Awards** held in April at Manor Park and organised by Councillor Matthew Bailey, which celebrated outstanding members of the community.
- **Party in the Park**, a free outdoor festival in May co-organised by Friends of Coed Gwilym Park and Swansea Canal Society.
- The village of Clydach's very first **Blue Plaque**, commemorating the

late, great Philip Morgan, which we are honoured to have on our Admin Building. The unveiling took place in September and was organised by the Clydach Historical Society.

- **'The Mond' Community Christmas tree** (cost: £1,500), which, this year, towered at 11.5 metres tall and was adorned with 10,000 sparkling lights. It was erected on 4th December by our vendor and local crane company Davies Cranes, free of charge.
- On 10th December, some of our staff dressed as elves and joined the **Mobile Christmas Grotto**,

co-organised with Councillor Brigitte Rowlands and the Neighbourhood Police. We donated 700 selection boxes, which were distributed to local children.

- On 20th December, we hosted a **The Mond Community Christmas tree lighting and music ceremony** with Glantawe Swansea Valley Lions Club and St. Benedict's Church.
- Also in December, we made a donation and delivery of **1,200 toys** for Clydach children in partnership with Gellionnen Church.

Committing to sustainability

One of our many values is to Respect our Planet and Communities. We practise this every day, in both large and small ways.

The latest buzz is (more) bees

Our 350 square-metre Pollinator Garden, planted two years ago with locally grown native wildflowers, is starting to take shape. We have observed butterflies, bees and birds, all healthy indicators. In 2024, Yellow Rattle will join the line-up as the 17th wildflower species in our garden. In addition to being pollinator-friendly, it subdues grass, allowing more space for other wildflowers to grow and thrive.

Four billion litres of water saved

Our closed-loop water system, which we reported on last year, is now fully operational and saving us more than 4 billion litres of water per year whilst reducing discharge by up to 80%, and during dry spells by 100%.

Variable speed drives, drive savings

Variable speed drives (VSDs) reduce and optimise energy consumption. Last year, we installed VSDs on the blower motors in our Kiln Plant, which generally reduced the Kiln's electrical usage by 60% and electrical costs by £700/day. This year, it's the Effluent Plant's turn. Two small raw effluent and filter feed pumps have taken the place of the previous larger pumps, thanks our closed-loop water system reducing the flow down to 20% or less of what it once was. As a result of these smaller, VSD pumps, we've reduced electrical usage in the Effluent Plant by 400kWh per day and costs by at least £80 per day. Every little bit helps!

Nickel from Clydach has a total footprint of 32.1 t CO₂e/t Ni, including Scope 1, 2, and 3 (upstream) emissions



Executive Assistant Shauna Morgan stands with Vale pensioner John White at Coed Gwilym Park Pavilion grand opening.



Tree of Light & Music Ceremony with Glantawe Swansea Valley Lions Club and St. Benedict's Church.



Clydach Community Awards.

Photo: Sustainability Coordinator Fiona Sharp.



Contributing to the local economy

Clydach Nickel Refinery opened in 1902 and, since then, has been supporting the local economy by procuring services and goods from local businesses as much as possible, and offering careers in good quality, secure jobs. Today, nickel is used in essential everyday items like mobile phones, laptops, batteries, cars and stainless-steel kitchens (and many more!). It's hard to imagine a world without nickel.



Employment Legacy

Our people are dedicated and high performing professionals, many of whom live and raise families in Clydach and closely surrounding villages.

£68,155,054 in generated labour income over the past 6 years.

202  people directly employed by Clydach Nickel Refinery in 2023.

£11,488,837 paid in total wages paid by Vale Base Metals in 2023.

Major Emergency Safety instructions can be accessed here: <https://vale.com/united-kingdom>



Adrian Jones, Business Planning & Production Specialist, leads a tour in our Bulk Handling building.



Process Production Advisor Aled Rees talks with two apprentices.

Innovating for a safe and sustainable future

Innovation is often linked with technology. Here at Clydach Nickel Refinery, we are also tapping into innovation to reduce risks and increase safety.



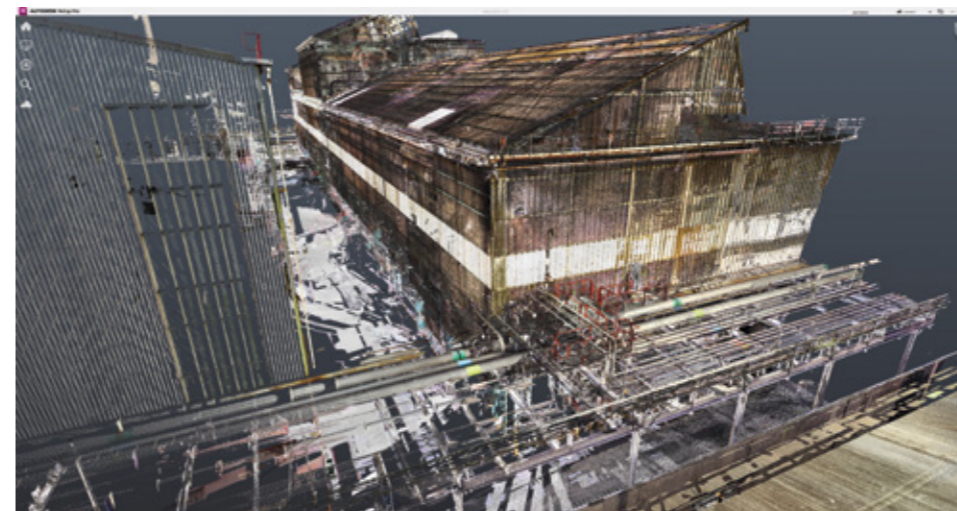
LifeVac is an anti-choking device.

Life Matters Most

We recently added LifeVacs, an easy-to-use anti-choking device, to all our first aid kits here at Clydach Nickel Refinery, and we are in the process of gifting some to the community. Stay tuned for more!

New analyser is 50 times better

At Vale, we are always looking to improve our processes and technological advancements, especially when it comes to safety. Case in point: we have used gas analysers to monitor the plant atmosphere for as long as they've been around. This year, we installed a new analyser, which is up to 50 times more sensitive. It cost approximately US\$250,000 and was rigorously tested by our sister sites in Canada.



A simulation, or digital twin, of our Powder Plant, left, and Kiln Plant on right.











Digital twin aids safety, training

We are in the very early stages of developing an integrated simulation model, or 'digital twin,' of every Plant in our Refinery, which will help us work safer and more efficiently. Once it's up and running, the digital

twin will allow us to visualise and simulate modifications to equipment and will include critical details like dimensions, materials, and exact locations. Importantly, it will help train new operators before they begin working on the actual, online process equipment — thus eliminating any potential risk.

£43,450+

In 2023, we invested £43,450+ in the community of Clydach, including:

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|---------|---|--|
| £15,000 |  | To the Swansea Canal Society for ongoing work to revive the once thriving canal. |
| £7,000 |  | To The Mond Golf Club to assist in addressing flood damage suffered by this beloved Community Club. |
| £5,000 |  | To Men's Shed Clydach for an electrical supply system, which will replace the generator, their only power source to date. |
| £5,000 |  | To Craigfelen Primary School for a new youth club with a quiet corner and soft furnishings, plus pool table, board games, karaoke machine and more. |
| £5,000 |  | To Gellionnen School for their football kit, equipment and sensory garden. |
| £3,000 |  | To Vardre RFC for clubhouse refurbishment. |
| £2,000 |  | To Leon Heart Fund for a forest teaching area in Cwmtawe school, a garden in the parents' accommodation at Singleton Hospital, and for more defibrillators in the community. |
| £550 |  | To Friends of Clydach Heritage Centre to replace outdated and obsolete laptops. |
| £500 |  | To Gellionnen Chapel for Christmas hampers. |
| £400 |  | To Clydach Historical Society for printing historical book. |

Contact Us:

Telephone: 01792 842501

Vale's Clydach Nickel Refinery

Ynyspenllwch Road, Clydach, Swansea, SA6 5QR, United Kingdom

United Kingdom — Vale <https://vale.com/united-kingdom>

Vale Base Metals | LinkedIn <https://calinkedin.com/company/vale>

[Vale.com/basemetals](https://vale.com/basemetals)