By email: industrypolicy@investment.nsw.gov.au

6 June 2022

Re: Submission on Industry Policy White Paper

Dear Sir/Madam,

Thank you for the opportunity to make a submission to the NSW Government's consultation, to prepare an Industry Policy White Paper.

BlueScope supports the government's objective, to update its industry policy to adapt to changing economic conditions and global shifts, so that it helps underpin the state's economic performance over the next 10 years. We also endorse the need to review the existing suite of policies to ensure greater coherence.

About BlueScope

BlueScope is a provider of innovative steel materials, products, systems, and technologies, headquartered in Australia with operations spread across North America, Australia, New Zealand, the Pacific Islands, ASEAN, China, and India.

We are one of the world's leading manufacturers of painted and coated steel products, and with our strong expertise in steel we provide vital components for houses, buildings, structures, automotive and more. Our 14,900 people in 18 countries manufacture and market a wide range of branded products that include pre-painted COLORBOND® steel, zinc/aluminium alloy coated ZINCALUME® steel and the LYSAGHT® range of building products.

Our iron and steelmaking operations are located in Australia, New Zealand, and the United States.

BlueScope is Australia's largest steel manufacturer, employing around 6,700 employees at more than 100 sites. The Company has a strong regional footprint, which in NSW includes facilities in the Illawarra, the Hunter, the Riverina, Central West and Western Sydney.

In the Illawarra, we operate Australia's largest steel manufacturing plant, the Port Kembla Steelworks. The Steelworks employs approximately 3,500 full-time equivalent employees, and a further 1,500 contractors. In NSW, BlueScope generates $10.3 billion in economic output per year, and is responsible for almost 1 per cent of Gross State Product, and approximately 19,000 jobs (direct and indirect).[1]

[1] IRIS Research, Economic Impact Study, 2017

BlueScope is an advanced manufacturer, with widespread use of automation and digital technology, an extensive suite of patents and intellectual property, and a research & product development facility at Port Kembla employing around 45 PhD qualified scientists. BlueScope also has a close relationship with the University of Wollongong, including through an ARC research hub, and many of our employees are graduates of the university.

We note that the Green Paper identifies advanced manufacturing as a 'core enabling technology' for both 'emerging industries' (identified in the paper as medical and life sciences, defence and aerospace, digital systems and software, and clean energy and waste) and 'established industries' (identified as agriculture and food, resources, international education, and the visitor economy). While advanced manufacturers such as BlueScope play a key role in supplying several of these sectors, our view is that advanced manufacturing should be seen as a key industry sector for NSW in its own right.

BlueScope is progressing several major investments in NSW, which will create new jobs and increase domestic manufacturing capacity and capability, including to supply fast-growing sectors such as renewable energy.

These investments include:

- **Relining the No.6 Blast Furnace at Port Kembla Steelworks**. This project, which is currently subject to a feasibility study and has a preliminary indicative cost of around $1 billion, will ensure we have a source of iron from 2026, when the currently operational No.5 Blast Furnace is expected to come to the end of its campaign. The reline project will incorporate significant investment to improve the environmental footprint of the facility, including reducing GHG emissions as well as paving the way for emerging abatement technologies to be installed when technically and commercially ready.
- **Advanced Steel Manufacturing Precinct.** In March 2022, BlueScope and its partners were awarded a $55.4 million grant from the Federal Government's Modern Manufacturing Initiative (MMI) to create an Advanced Steel Manufacturing Precinct. This grant will catalyse a further $161.6 million of investment by BlueScope to modernise its plate mill and processing capabilities, establishing a wind tower fabrication facility, building a new pipe and tube mill, along with further steel processing and fabrication capability for the renewable energy, defence, and other sectors, creating around 200 direct jobs and 1,000 indirect jobs.
- **Australian metal coating capacity**. The Company is exploring adding a seventh metal coating line at its Erskine Park site in Western Sydney, adding 240,000 tonnes of capacity with an investment of around $300 million. This additional facility will support increased domestic demand for COLORBOND®, ZINCALUME® and TRUECORE® steels, to deliver long-term growth.
- **Hydrogen Electrolyser** – as part of our Memorandum of Understanding (MoU) with Shell Energy, BlueScope is also exploring building a pilot Hydrogen Electrolyser at the Port Kembla Steelworks to produce green hydrogen, which can be used for mobility and be injected into the Blast Furnace to partially replace PCI coal, and ultimately potentially be used to manufacture Direct Reduced Iron (DRI).

These investments will contribute to economic growth and improved living standards in NSW, as well as helping to support local manufacturing (including defence), fabrication, and building & construction businesses.

BlueScope also believes that an ongoing, competitive domestic steel industry is an important national asset, especially after recent disruptions to global supply chains from the pandemic, military conflict, and trade restrictions.

Overview of our submission

Several of the major transformative forces identified in the Green Paper are and will have a significant effect on BlueScope's business in NSW and beyond, including its competitiveness, investment plans and workforce. These transformative forces include:

- The transition to net zero emissions by 2050
- Advanced manufacturing opportunities
- Workforce skills and availability
- The increasing role of digital technology
- Innovation and research & development
- Building a circular economy.

This submission addresses each of these transformative forces in turn, providing an explanation of why they are important for BlueScope and their potential impact on the Company, the steps the Company is taking to address them, and our views about the role of government policy levers in relation to each.

Further, the steel products manufactured by BlueScope play a critical role in assisting other NSW businesses, existing and emerging, to respond to these transformative forces. This submission includes recommendations for government industry policies that will assist the state, businesses, and communities to respond to these forces, strengthening the economy, protecting the environment, and creating jobs.

Transition to net zero emissions by 2050

BlueScope's Port Kembla Steelworks uses the blast furnace (BF) ironmaking process, in which iron ore and metallurgical coal are smelted at high temperature to produce virgin iron. Cokemaking and sintering operations support the blast furnace. Iron is further processed into steel via a Basic Oxygen Furnace (BOF), in which scrap steel is added and oxygen is blown in at high velocity. Off-gases from these processes include carbon monoxide and carbon dioxide, a proportion of which are captured and re-used including to generate electricity.

Further processes convert raw steel into slab (slab caster), hot rolled coil (hot strip mill) and cold rolled coil (cold rolling mill). Midstream manufacturing facilities (located in the adjacent Springhill Works) take coil steel and process it to manufacture coated steel products such as ZINCALUME® steel and painted steel products such as COLORBOND® steel. A paint line is also located at Erskine Park (Western Sydney Service Centre). Direct emissions from these midstream facilities are mostly associated with ovens used to finish products.

Steel products will play an essential role in reducing emissions across the economy, including as vital components in renewable energy generation infrastructure, electricity transmission & distribution infrastructure, energy efficient buildings and sustainable transport.

However, the global steel industry is also a source of greenhouse gas emissions, with 7-9 per cent of global greenhouse gas (GHG) emissions attributable to the industry. Around 70 per cent of global iron and steel production is currently via the BF-BOF process, with the balance largely accounted for by electric arc furnace (EAF) production (which in turn relies on scrap steel and virgin iron units originally sourced primarily from Blast Furnace operations).

BlueScope acknowledges the Paris agreement on climate change. The Company has set two mid-term 2030 GHG emissions intensity targets and a 2050 net zero goal. It has also committed to an initial capital allocation of up to $150 million for climate change projects and initiatives over five years, and an indicative expectation of $300 – $400M in capital expenditure to meet our mid-term commitments and make progress on our longer-term abatement journey.

To achieve these targets and goal will require adoption of both existing GHG abatement technologies, as well as breakthrough technologies[2] when they become technically and commercially viable.

We are actively exploring emerging and breakthrough technologies to reduce the GHG emissions intensity of current production processes, including the development of green supply chains. To enable this transition, we are working with others across industry, governments, suppliers, customers and communities, universities and researchers and investors.

The most promising breakthrough technology, which is currently being piloted in Europe, is hydrogen direct reduced iron. This technology would replace metallurgical coal with green hydrogen, produced via electrolysis using renewable energy, in the ironmaking process. BlueScope has announced a Memorandum of Understanding (MoU) with Shell Energy to build and operate a pilot green hydrogen electrolyser at Port Kembla Steelworks. Subsequent processes, including a Melter and/or EAF, would transform direct reduced iron into steel products. Adoption of such technology would require substantial capital investment, as well as significantly increasing operating costs compared to current iron and steelmaking technologies.

[2] More information on BlueScope's climate strategy and decarbonisation pathway can be found in our Climate Action Report.

A key technical challenge will be to develop and implement the technology to cost-effectively manufacture direct reduced iron from the hematite ores that predominate in areas such as the Pilbara. To date, magnetite ores have been more suitable for piloting hydrogen DRI production worldwide due to their higher grade once processed and lower impurities. Using hematite ores in DRI production and melter technology are key focuses of BlueScope's MoU with Rio Tinto.

Adoption of breakthrough technology is therefore dependent on several enablers including the availability of affordable and reliable renewable energy and green hydrogen at scale, the availability of quality raw materials, and appropriate policy settings.

A key issue that policy would need to address is how to ensure breakthrough technology could be operated profitably by its proponents, in a world where countries have differing levels of climate change ambition, and breakthrough technologies would need to compete in international markets against existing, lower-cost but higher-emissions iron and steelmaking technologies.

With respect to energy policy, it is critical that the policy initiatives already being executed, including the Electricity Infrastructure Roadmap and the hydrogen hub initiative, effectively deliver low cost, reliable renewable electricity, and renewable gas to industrial users to enable incremental improvements in emissions intensity and also facilitate the uptake of breakthrough technologies.

Role of public policy:

BlueScope supports several of the NSW Government's policies to help industry to reduce its emissions, including the Net Zero Plan and key component programs such as the Net Zero Industry and Innovation Program, low carbon industry and high emitting industry funding, the hydrogen hub initiative, and clean manufacturing precincts.

We also support policies to increase the amount of renewable energy, namely the Electricity Infrastructure Roadmap and key component programs such as Renewable Energy Zones, including the recently announced Renewable Manufacturing Fund.

Specific measures that the NSW Government should take to help the steel industry reduce its emissions, include:

- Support for research & development into both emerging and breakthrough technologies, including to understand the opportunities and barriers to the adoption of such technologies, and how public policy could address them.
- Use of grants and co-funding to support investment in the piloting of breakthrough technologies, where such investments have the potential to deliver material reductions in GHG emissions but are not currently commercially viable.
- Support for projects through policy measures such as exemptions from network use of system (NUoS) charges and access to revenue from green certificate schemes for project proponents.
- Investment in supporting infrastructure, including firmed renewable energy, electricity transmission & distribution infrastructure, and green hydrogen production, ensuring that this investment delivers lower cost energy than currently to industrial users to support the transition to low emissions technologies.
- Ensuring an accelerated and streamlined planning approval framework for major investments and pilot projects, including projects to reduce greenhouse gas emissions. Many of these projects are costly and complex, or sub-scale and speculative in nature, and will not generate commercial returns. But they will be essential in paving the way for the later full-scale transition to net zero. Some are also likely to be in receipt of funding support by governments, with such funding subject to tight timeframes for meeting key project milestones. Delays in planning approvals or unnecessarily onerous planning requirements risk preventing such projects from proceeding, especially with delays in procurement for long lead time items (e.g. major capital components for projects that might have 24 month or more timeframes for delivery).
- Working with the Federal Government to explore policies to ensure domestic manufacturers who invest in clean technology are able to operate on a level playing field with competitors in international and domestic markets.

Advanced manufacturing opportunities

BlueScope's Advanced Steel Manufacturing Precinct (ASMP) is focused on building industry capability, primarily in the clean energy sector. NSW, and Australia more broadly, is heavily reliant on imported fabricated steel components for renewable generation such as wind towers, solar structures and for transmission infrastructure. This is a source of enormous economic leakage that will amplify as the state's grid is decarbonised in the years ahead.

BlueScope aims to support NSW in harnessing the opportunity to onshore manufacturing of value-added goods, which will not only create jobs and economic activity, but also help mitigate the risks of reliance on global supply chains for critical infrastructure. This risk is particularly acute in an environment of global net zero targets, where countries will be competing against each other for low-emissions goods and resources that we currently import.

Role of public policy:

BlueScope has secured critical co-funding from the Australian Government, via its Modern Manufacturing Initiative (MMI). However, the NSW Government also has a key role to plate to ensure the success of the initiative, including through:

- Policy settings in relation to **minimum local content**, which are a pre-requisite for private sector investment to occur. Initial capital expenditure for these manufacturing facilities is significant and best incentivised by leveraging government procurement. The NSW Renewable Energy Zone's will require manufactured goods at a scale that will underwrite significant new industry capability. The success of this approach has been proven in many jurisdictions around the world (we can provide examples if needed).
- **NSW Government co-investment.** BlueScope welcomes the NSW Renewable Manufacturing Fund announced by Minister Kean in February 2022. The objectives of the fund mirror those of the ASMP, and an additional funding contribution by the NSW government (which is allowed for under the Australian Government's MMI Collaboration Scheme), would further improve the attractiveness of the project and help maximise its benefits to the NSW economy.

Workforce skills and availability

The availability of both skilled and less skilled people is of fundamental importance to BlueScope. The Company runs extensive recruitment programs, including for roles in engineering, innovation, operations, trades, IT, finance and accounting, sales, marketing, customer service, health and safety, human resources, legal, research, technology, logistics and supply chain.

The Company operates programs to recruit and help train apprentices and undergraduates (cadets), with support from external partners. That includes an apprentice program with Hunter Valley Training Company (HVTC), which has worked with BlueScope since 1998 to produce apprentices and trainees across several disciplines, including mechanical and electrical trades. There are around 90 apprentices hosted at BlueScope's Port Kembla operations at any one time, with annual intakes of new apprentices.

Currently, critical constraints existing in two key areas:

1. Availability of supply of people in the market;
2. Availability of skillset of people in the market.

The first issue relates to the number of people available and looking for work. While this is challenging in metropolitan regions, it is most challenging in regional areas where BlueScope has several of its operations, and where there is significant competition across industries for resources in both skilled and less skilled roles.

This fact, combined with economic factors such as inflation and rising interest rates, provides an environment where people are moving jobs or choosing jobs for minimal differences in income. Even in roles where we do not require candidates to have experience and provide them with training, we are finding it difficult to fill roles and currently have nearly 400 such vacancies across Australia.

In relation to the more skilled workforce, tradespeople are currently particularly challenging to source, as are people with digital and IT skills. In this area, those industries that have the capacity to pay more (e.g. services sectors) are securing talent, whereas industries that are trade exposed and have different remuneration levels and structures can find it difficult to attract talent.

The second issue of skillset availability is significant at present and is likely to remain so over the coming five years. There are two elements to this: the first is availability of skills that exist today, most notably trades (e.g. fitters and turners, electricians, roofers), digital and IT specialists, and engineers across all disciplines; the second issue is in identifying those skills that will be needed for the future.

In terms of shortages of today's skillsets, there has been a lack of take up of trade pathways over the past five years generally. It can be difficult for people to support themselves on apprentice wages, which makes it particularly prohibitive for people to undertake apprenticeships later in their careers when they are likely to have more financial responsibilities. It also makes it less attractive for parents, particularly women, to take on these roles when re-entering the workforce after having children, particularly given the cost of childcare.

Role of public policy:

There are several ways in which government can help to address workforce and skills shortages:

- Influencing the number of workers that are available, though measures such as immigration, incentives for people nearing retirement to stay in the workforce, and incentives for people to populate regional areas of the state.
- In the case of immigration, this would obviously require the NSW Government to work with the Federal Government. Areas that should be examined include streamlining visa processes and requirements for roles where there are recognised skills shortages (current processes are complex and often require external support to navigate, increasing costs and affecting timeliness). Visa simplification focused on regional areas, as well as measures to help with housing support and community engagement, would also be welcome.
- There is a significant opportunity for the government to create a new model for developing trade-based skills within the Australian market and actively encouraging people into these career streams.
- In relation to digital, IT and engineering skills availability the opportunity exists to increase this skills pool through both immigration and ongoing encouragement within the school environment. Promoting the opportunity these roles bring in terms of creativity and innovation, as well as investing in STEM training and education, would increase the number of students engaging in and selecting these subjects, and would generate greater interest across a broader pool of people including women.

Digital transformation

Major transformative forces shaping the Australian steel industry include climate change and net zero, digital technology disruption, energy, raw material and labour cost inflation, and gaps in the skills and capabilities needed to address the challenges and opportunities these forces present.

All of these transformative forces will affect the competitiveness of manufacturing and industry. One of the keys to substantially improving the cost competitiveness of operations is through automation, artificial intelligence, and industry 4.0 technologies.

A broad scale transformation of manufacturing operations in this manner requires a sustainable advanced engineering and manufacturing industry and workforce, investment in STEM skills in universities towards an industrial pathway, improved industry 4.0 trade qualifications and skills, and availability of skilled workers particularly in regional areas (see also above section).

BlueScope has invested in a dedicated digital transformation function and digital manufacturing teams to support our organisation to navigate this digital technology opportunity. This investment has included the creation of new roles in data science, project management, IT, engineering (mechanical, electrical, materials, and automation) to help the business leverage these technologies to drive new forms of operational efficiency. About 40 new roles have been created in total, including 10 new positions at Port Kembla Steelworks.

Projects that have been undertaken include using predictive analytics and machine learning to optimise steelmaking and metal coating processes, image analysis from hundreds of cameras located across the Steelworks to monitor operations and identify bottlenecks or production issues, and using machine learning to optimise the operation of the hot strip mill, improving steel production, and reducing defects in finished products.

However, there are several critical gaps hindering full realisation of the opportunities from digital transformation:

- The depth of talent in innovation and industry 4.0 in NSW and across Australia
- High demand for IT and digital technology skills
- Limited investment in innovation and advanced manufacturing industry in Australia
- Lack of local technology companies to support the transition
- Difficulty in attracting and retaining skilled people in a tight labour market.

Role of public policy:

- Investment by government in the future of local and advanced manufacturing, helping to increase the availability of technology capability in regional areas, and investment in supporting the growth in university pathways for digital and related skills, are all critical to being able to achieve our vision.

Innovation and research & development

BlueScope supports the NSW Government's strategy to improve the quality and quantity of skills by incentivising investment in education and training by both employers and workers, and by supporting the alignment of training and education services to match industry skill needs. It is very important that our education and training systems keep pace with skill shortages and changes in industry requirements to avoid mismatches.

There is also a need to improve coordination between industries, government, education, and training providers with better integration of higher education and training into industry policy. This includes improving the connection and collaboration between Universities, TAFE, and industry to develop and importantly, apply transformative technologies that increase productivity, generate new product offerings, and enable delivery of new industrial opportunities associated with GHG goals and targets.

Currently, there is a shortage of skills capability and capacity to translate, develop and scale new fundamental research for commercial benefit, which would create new jobs.

Well-targeted public investment in science and technology can accelerate productivity gains and economic growth, by de-risking the successful commercialisation of technologies from R&D pipelines. This can include digital technologies and climate action related technologies, along with other productivity enhancing technologies. Private enterprise can simultaneously connect and commercialise a suite of synergistic technologies where the "sum can be greater than the parts" across multiple fronts, including productivity/digital transformation, new workplace skills, new products, and addressing climate change.

Role of public policy:

- There is opportunity for Government policy and support to take a holistic approach to supporting business rather than the current singular approach of individual programs to address individual elements of the transformation, such as separate programs for modern manufacturing vs clean manufacturing, net zero and innovation. This would assist industry to more efficiently develop holistic plans that address the multiple challenges and opportunities that exist, to support commercialisation and growth of businesses and products. Government support can be effective when private investment is dampened by uncertainty, long time horizons for payback, or a lack of information about how effective a new technology will be for its intended commercial purpose.
- Government can also play a role to encourage development and adoption of new technology by coordinating actions between industry, research institutions, higher education institutions and government. These actions can better match technologies to the critical needs of industry and prepare the workforce skills needed to apply them.

Building a circular economy

BlueScope's manufacturing processes are optimised to minimise our use of resources, reduce waste, and reuse or convert waste materials into other valuable products. As well as the commercial benefits realised, this approach

promotes a circular economy, preventing waste materials from going to landfill and supporting raw materials to be used in sectors beyond the iron and steel industry. The by-products from steel manufacturing have many uses including road base, cement manufacture, pigments, and fertiliser.

One significant further circular economy opportunity in NSW is to boost domestic recycling of scrap metal.

Processed scrap metal is currently used in the blast furnace – basic oxygen furnace process, with BlueScope's Port Kembla Steelworks using approximately 24 per cent scrap in this process. Scrap can also be melted in electric arc furnaces, including potentially along with DRI.

The increased use of scrap reduces the emissions intensity of blast furnace iron and steelmaking by avoiding the emissions associated with the melting of virgin iron ore, and the domestic steel industry would like to use more scrap. However, processed scrap availability is currently limited in Australia, as approximately 1 million tonnes per annum of ferrous scrap is exported in unprocessed or semi-processed form.

Scrap metal utilised in Australia is sorted and processed to a specification that allows it to be used in the steel manufacturing process, and any contaminants that cannot be recycled are typically sent to landfill, with reputable operators complying with relevant environmental regulations and paying significant landfill fees. Scrap metal that is exported is not typically sorted or processed to a standard, and the disposal of contaminants in overseas jurisdictions is often unknown or not subject to stringent regulation.

At the same time as scrap is exported, Australia's steel industry is having to import processed scrap metal to meet its needs, including to assist in GHG abatement. While the Australian Government has set a 1 July 2024 deadline to ban the export of waste glass, plastics, tyres, paper and cardboard, no ban on scrap metal exports has been announced. Implementing such a ban would ensure scrap is available to be processed and consumed domestically, with the flow on benefits of reducing Australia's exports of waste, generating economic activity locally and assisting the Australian steel industry in reducing GHG emissions.

Role of public policy:

- A ban on un-processed scrap metal exports would ideally be implemented at a national level to ensure consistent application across Australia, and the steel industry and its partners in the recycling industry are currently discussing such an approach with the Federal Government. However, if a national ban is not implemented, then a ban by NSW as a key steel and scrap producing state could be implemented.
- High electricity costs are also a barrier to cost-effectively recycling scrap metal domestically. Investment by government in electricity infrastructure, including firmed renewable energy and electricity transmission & distribution infrastructure, should be aimed at ensuring lower cost energy than currently, including for industrial users.

Conclusion

Thank you again for the opportunity to make a submission to assist in development of the government's Industry Policy White Paper.

If you have any questions or require further information, we would be very happy to discuss our submission with you in more detail. We would also be very happy to host officials from Investment NSW or other arms of government to a tour of the Port Kembla Steelworks, to familiarise you with the production processes, economic contribution, environmental performance, and research and innovation activities at the plant. In the first instance, please contact David Jenkins, Manager Government Relations at david.jenkins@bluescope.com or 0408 507 850.

Yours sincerely

(signed)

John Nowlan
Chief Executive Australian Steel Products